



# Island Forests

## 2018-2038 Forest Management Plan

### Volume II

Ministry of Environment  
March 2017

## **Executive Summary**

The 20 year Forest Management Plan (FMP) for the Island Forests is being developed by the Forest Service Branch, Saskatchewan Ministry of Environment. The forest estate modelling analysis is a critical component for developing the FMP because modelling results will provide assistance for generating a long term sustainable forest resource management strategy as well as determining the short term operational targets in the next FMP implementation term, including the Harvest Volume Schedule (HVS), which is called Annual Allowable Cut (AAC) in other jurisdictions. Based on the Forest Management Planning Document (FMPD), the FMP documentation is divided into three parts, namely Volumes I, II and III. While Volume I is designed for presenting the background information, and Volume III for presenting the planned management activities in next FMP term within a licence area, Volume II is designed for presenting the information about the forest estate modelling analysis, including model input, assumptions, targets, model formulation, results and report. Specifically, Volume II should include the following 6 documents,

1. Planning inventory
2. Forest Development Document
3. Silvicultural Ground Rule (SGR) Document
4. Values, Objects, Indicators, and Targets (VOITs) Document
5. Forest Estate Modelling Assumption Document
6. Forest Estate Modeling Analysis Report

This document has been compiled for fulfilling the Volume II requirements of the FMPD. The planning inventory was not treated as an independent document, but it was included as an appendix in Forest Estate Modelling Assumption Document (Chapter 4, Island Forests Timber Supply Area).

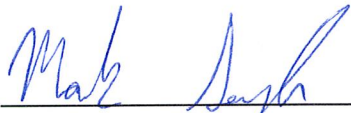
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## Island Forests Forest Management Plan – Volume II

Foundation Documents  
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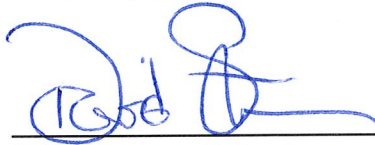
I recommend that this forest management plan document be approved for implementation and certify that it has been prepared in accordance with the requirements of the draft Forest Management Planning Standard, and relevant policies and obligations. I also certify that this forest management plan document has been prepared in accordance with the approved standards of other applicable codes.



Mark Doyle, RPF  
Forest Management Planning Coordinator  
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May 3, 2017  
[date]

Approved in Principle by:



Dave Stevenson, RPF  
Manager, Planning Policy & Protection  
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May 3, 2017  
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# Chapter 1

## Island Forests FMP Volume II:

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## Forest Development Report

Island Forests Timber Supply Area



Ministry of Environment  
May 2012

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## 1. Introduction

The forest management plan (FMP) being developed for the Island Forests requires the production of a forest development report (Saskatchewan Environment 2007). This report will describe the yield curves/tables used as input to the forest estate modeling, along with related issues including landbase stratification and input data.

A detailed description of the landbase and forest inventory can be found in the Forest Characterization Report (Saskatchewan Ministry of Environment 2012).

## 2. Volume Sampling

A field sampling program using fixed-area temporary sample plots (TSP) was completed in 2007 and 2008, using the provincial government's volume sampling field protocol (Saskatchewan Environment 2004b). Heights were measured and recorded on a sub-sample of the trees within the plot (every 5<sup>th</sup> tree). Sample points were allocated using a stratified random sampling approach, with strata defined by Provincial Forest Type (PFT – 10 classes), Height (5 classes) and Crown Closure (2 classes), targeting an approximately equal distribution across strata. Plots considered inaccessible – more than a reasonable walking distance from a trail – were not sampled, with replacement from candidate stands of the same stratum. A total of 962 plots were established.

## 3. Development Types

Development Type (DT) is an aggregation of forest stands into strata with similar species composition and developmental characteristics, and is a primary input to the forest estate modeling process (Saskatchewan Environment 2007).

Although the TSP volume sampling was initially stratified by Provincial Forest Type (PFT), a decision was made to not use PFT as the DT. Instead, the data was post-stratified into DTs consistent with the existing in-house "Species Association", in order to maintain consistency with the province's other systems, including the stand and stock tables used for area and volume reporting.

Although province-wide there are a total of 18 potential Species Associations, some do not occur within the Island Forests (e.g. S IP – pure lodgepole pine, H mM – pure Manitoba maple). Table 1 shows the 13 Species Associations used for initial curve fitting, with the amount of area of each type within the Island Forests.

Table 1. Development Type Descriptions and Forest Area by Development Type.

DT Code	DT Name	SFVI Parameters and Criteria	Description	Area (ha)	%
11	S wS	Includes all of PFT WSF	Softwood stands dominated by white spruce	9,573	4.95
12	S bS	PFT is BSL, with $bS \geq tL$	Softwood stands dominated by black spruce	9,345	4.83
13	S jP <sup>1</sup>	PFT is JLP, with $jP \geq iP$	Softwood stands dominated by jack pine	71,033	36.70
14	S tL	PFT is BSL, with $tL > bS$	Softwood stands dominated by tamarack	9,558	4.94
21	S bSjP	PFT is BSJ	Softwood stands dominated by a combination of black spruce with jack pine	2,242	1.16
31	SH sPtA <sup>2</sup>	PFT is SMW, with $wS \geq tL$	Mixedwood stands dominated by spruce/fir	3,528	1.82
32	SH jPtA	PFT is PMW, with $jP \geq iP$	Mixedwood stands dominated by jack pine	7,898	4.08
51	HS tAsP	PFT is HSM, with $tA \geq bP$	Mixedwood stands dominated by aspen with spruce/fir/tamarack as minor component	4,306	2.22
52	HS tAjP	PFT is HPM, with $jP \geq iP$	Mixedwood stands dominated by aspen with jack pine as minor component	10,280	5.31
54	HS bPsP	PFT is HSM, with $bP \geq tA$	Mixedwood stands dominated by balsam poplar with spruce/fir/tamarack as minor component	325	0.17
71	H tA	PFT is TAB, with $tA \geq wB$	Hardwood stands dominated by trembling aspen	61,694	31.88
72	H bP	PFT is AOH, with $bP \geq mM$ , $wE$	Hardwood stands dominated by balsam poplar	3,217	1.66
73	H wB	PFT is TAB, with $wB > tA$	Hardwood stands dominated by white birch	546	0.28
	Other	None of the above.	None of the above.	3	0.00
TOTAL				193,547 <sup>3</sup>	100.00

<sup>1</sup> Note: The Island Forests SFVI does not contain any lodgepole pine<sup>2</sup> Note: The IF SFVI does not contain any DT 34 (SHtLtA)<sup>3</sup> Total may not sum exactly due to rounding.

Following post-stratification of the TSP data, some DTs were clearly under-represented. Table 2 shows the sample distribution by Species Association, Age class (decade), and Crown Closure class (CC - four classes).

Although height class was used as part of the initial sample stratification, it is not considered for yield curve development as stand height is closely correlated with stand age.<sup>4</sup>

As shown in Table 2, CC class 4 had little sample representation. Although the initial strategy had been to use two crown closure classes as part of the DT stratification, it was felt that this would introduce a bias. Instead the yield curves would be fit by DT as defined by Species Association, and CC (four classes) would be used as a predictor variable within the model.

## 4. Data Management

The TSP data was edited using the CruiseComp software and errors were checked and corrected until acceptable tolerance limits were achieved. The data was compiled using the provincial taper equation (Gal and Bella 1994) to calculate stem volumes to three utilization standards (Table 3).

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<sup>4</sup> TSP data can be used for both estimating current growing stock, i.e. Stand & Stock tables, and for developing yield tables/curves. For the latter, age is the predictor, whereas for the former, height is a better basis for stratification.



Table 2. TSP distribution by Development Type, Age class, and Crown Closure class.

		AGE																	
DT	CC <sup>5</sup>	10	20	30	40	50	60	70	80	90	100	110	120	130	140	160	210	Total	
11	1				2	4	3	4		4		1						18	
	2		1	1	1	4	2	8	13	19	1		3	2		3		58	
	3				3		1	7	7	9	13	3	6	2	2		1	54	
	4						3											3	
12	1					1			1	1			4					7	
	2							1		2		1	4		2			10	
	3				1		2	5	7	4	3	3	6		1			32	
	4				1													1	
13	1	2	10	4	7	9	1	6	3	2								44	
	2		10	5	13	7	9	11	17	15	3	1	5					96	
	3		9	8	18	5	8	9	13	19	2		1					92	
14	1			1	7	5	2	1	4	1	1	2						24	
	2		1					1	1	2	1	1	4	1				12	
	3				2	1	1	1		4	4	4		4				21	
	4								1			1	1	1				4	
21	1						1											1	
	2							2	1	2								5	
	3						3		3				1					7	
	4										1							1	
31	1							1	3	3								7	
	2					1		3	1	7		1	1					14	
	3				4			2	3	4	1	2		3				19	
32	1	2	9	1		3	4	2	1									22	
	2	7	2	1	5	5	1	2	5	2								30	
	3		1	1			2	6	3	2								15	
51	1			2	2		1	1										6	
	2		1	1	1	6	4	6	7	1	2							29	
	3							5	5	3	2							15	
52	1	12	2	3	4				3	1								25	
	2	6	7		4	2	4	3	4	1								31	
	3	1	2		6		3	6	3	1	2							24	
54	3	1																	1
71	1	4	1	3	5	6	3	1	4									27	
	2	11	15	2	7	10	12	12	8	6								83	
	3	4	22	1	5	9	6	25	15	11	4							102	
	4				1													1	
72	1	1	1			4		1	1									8	
	2					2	2	2	2									8	
	3		2					1	1									4	
73	3	1																	1
Total		50	97	34	99	84	78	135	140	126	40	21	36	13	5	3	1	962	

<sup>5</sup> Crown Closure (CC) classes are: 1 (A) 6-30%; 2 (B) 31-55%; 3 (C) 56-80%; 4 (D) 81-100%.

Table 3. Utilization standards used for yield curve preparation.

	Utilization Standard		
	3010 (Sawlog)	3008 (Pulpwood)	3005 (Prov. Baseline)
Top d.i.b. (cm)	10.0	8.0	5.0
Stump height (cm)	30	30	30
Min. merchantable bole length (m)	5.2	5.2	5.2
Log length (m)	2.6	N/A	N/A

Yields represent gross merchantable volume only, *i.e.* no deductions for cull/decay/defect were applied. Logs were not sorted into product classes. The 3010 utilization standard only includes full logs (the top “short log” was excluded from the compilation), whereas the 3008 and 3005 utilization standards include all volume from stump to the specified top d.i.b.

## 5. Yield Curve Development

There are many possible successional pathways that forest stands could potentially follow between the current condition and the condition at the next rotation. Successional pathways could be accounted for within yield curves, or alternatively using transitions between development types. The yield curves developed in this project do not account for succession, *i.e.* the transition matrix approach will be used in the wood supply analysis.

A modified two parameter yield curve equation was chosen:

$$Yield = (a * (Age - Adj)^{(b + (CC * 0.25 - 0.075) * c)}) * EXP(-a * (Age - Adj))$$

Where:

$a$  is parameter  $A$ , constrained to values  $\leq 0.03$  and  $\geq 0.019$

$Adj$  is an age adjustment factor - used because young stands do not contain merchantable volume - as follows:

8 years for utilization standard 3005

10 years for utilization standard 3008

12 years for utilization standard 3010

$(b + (CC * 0.25 - 0.075) * c)$  is parameter  $B$ , in which

CC = 1 Crown Closure class A, 6 – 30%, midpoint 0.175

2 Crown Closure class B, 31 – 55%, midpoint 0.475

3 Crown Closure class C, 56 – 80%, midpoint 0.675

4 Crown Closure class D, 81 – 100% +, midpoint 0.925.

$b$  is constrained to values  $\leq 2.5$  and  $\geq 1$

$c$  is constrained to values  $\leq 0.4$  and  $\geq 0.1$

Constraints were used for all parameters to keep the yield curve shape biologically reasonable (e.g. yields should peak and eventually decline).

Outliers were eliminated before curve fitting. Only two plots were deleted in the first regression attempt. One excluded plot is located in a 207 year-old white spruce stand and the other plot is a 10 m tall tamarack stand with a total merchantable volume of 612 m<sup>3</sup>, which includes a 472 m<sup>3</sup> hardwood component.

An initial regression run produced unreasonable results for Development Type 51-HStAsP. To obtain a more biologically realistic curve shape, all four plots from age class 100 were deleted before subsequent regression attempts.

The SPSS statistical software was used to plot scatter points and line trends of the sample plot volumes by Development Type and age class. Those trends indicated that Development Types 54, 72 and 73 could not be fitted.

Three volumes - Combined merchantable, Softwood and Hardwood - were fitted separately at each of the three utilization standards. For some DTs, visual comparison of the yield curves revealed incompatibilities at very young or very old age classes, e.g. component Softwood/Hardwood volumes greater than Combined volumes; volume with a closer utilization standard (e.g. 3005) smaller than volume to a larger top dib (e.g. 3008). Where such discrepancies occurred, the coefficients were adjusted manually to harmonize with the 3008 or 3010 curves. The resulting coefficients and fit statistics are listed in Tables 4a through 4c. Note that the  $r^2$  value given in these tables represents the fit prior to the final harmonization.

Fit statistics are not shown for the minor component, e.g. hardwoods in softwood-dominated DTs, softwoods in hardwood-dominated DTs. An exception is DT 51 (HS tAsP), where the softwood coefficients were chosen because a better fit was obtained than with the hardwood component. In application, the minor component is derived by subtraction of the major component from combined volume, thus ensuring compatibility.

Table 4a. Regression parameters: utilization standard 3010.

DT	Coefficient	Combined	r <sup>2</sup>	Softwood	r <sup>2</sup>	Hardwood	r <sup>2</sup>
11	a	0.01950	0.233	0.01900	0.243	NA	NA
	b	2.27470		2.24680		NA	
	c	0.17065		0.17065		NA	
12	a	0.01900	0.129	0.01887	0.152	NA	NA
	b	2.18967		2.18400		NA	
	c	0.17609		0.17609		NA	
13	a	0.01900	0.365	0.01900	0.355	NA	NA
	b	2.05926		2.05500		NA	
	c	0.40000		0.40000		NA	
14	a	0.01900	0.152	0.01900	0.158	NA	NA
	b	2.08148		2.05073		NA	
	c	0.11375		0.11651		NA	
21	a	0.01950	0.154	0.01950	0.159	NA	NA
	b	2.15000		2.14600		NA	
	c	0.18991		0.18534		NA	
31	a	0.02500	0.251	0.01980	0.121	NA	NA
	b	2.19100		2.05240		NA	
	c	0.33648		0.31563		NA	
32	a	0.02200	0.396	0.01900	0.285	NA	NA
	b	2.15871		2.09171		NA	
	c	0.29938		0.19459		NA	
51	a	0.02200	0.293	0.01900	0.149	NA	NA
	b	2.25913		1.95800		NA	
	c	0.22319		0.38761		NA	
52	a	0.02200	0.362	NA	NA	0.02600	0.367
	b	2.07519		NA		1.95000	
	c	0.32567		NA		0.40000	
71	a	0.02800	0.285	NA	NA	0.02800	0.286
	b	2.08975		NA		2.06598	
	c	0.40000		NA		0.40000	

Table 4b. Regression parameters: utilization standard 3008.

DT	Coefficient	Combined	r <sup>2</sup>	Softwood	r <sup>2</sup>	Hardwood	r <sup>2</sup>
11	a	0.01950	0.240	0.01900	0.254	NA	NA
	b	2.30521		2.27920		NA	
	c	0.17065		0.17065		NA	
12	a	0.01913	0.128	0.01900	0.151	NA	NA
	b	2.21330		2.20800		NA	
	c	0.20661		0.20661		NA	
13	a	0.01911	0.383	0.01900	0.368	NA	NA
	b	2.08000		2.07220		NA	
	c	0.40000		0.40000		NA	
14	a	0.01900	0.158	0.01900	0.169	NA	NA
	b	2.10588		2.07144		NA	
	c	0.13230		0.13845		NA	
21	a	0.01950	0.223	0.01950	0.231	NA	NA
	b	2.21573		2.20994		NA	
	c	0.18991		0.18534		NA	
31	a	0.02500	0.237	0.01980	0.101	NA	NA
	b	2.22216		2.07300		NA	
	c	0.31988		0.30962		NA	
32	a	0.02200	0.402	0.01900	0.285	NA	NA
	b	2.18204		2.10139		NA	
	c	0.28435		0.19091		NA	
51	a	0.02200	0.268	0.01900	0.137	NA	NA
	b	2.26806		1.97857		NA	
	c	0.24023		0.38761		NA	
52	a	0.02200	0.402	NA	NA	0.02600	0.407
	b	2.08273		NA		1.98800	
	c	0.36808		NA		0.40000	
71	a	0.02800	0.311	NA	NA	0.02800	0.315
	b	2.12225		NA		2.10065	
	c	0.40000		NA		0.40000	



Table 4c. Regression parameters: utilization standard 3005.

DT	Coefficient	Combined	r <sup>2</sup>	Softwood	r <sup>2</sup>	Hardwood	r <sup>2</sup>
11	a	0.01950	0.238	0.01900	0.255	NA	NA
	b	2.31980		2.29400		NA	
	c	0.17065		0.17065		NA	
12	a	0.01950	0.126	0.01937	0.151	NA	NA
	b	2.22543		2.21900		NA	
	c	0.23990		0.23990		NA	
13	a	0.01950	0.381	0.01940	0.362	NA	NA
	b	2.09736		2.08950		NA	
	c	0.40000		0.40000		NA	
14	a	0.01900	0.167	0.01900	0.182	NA	NA
	b	2.11492		2.07995		NA	
	c	0.15363		0.16120		NA	
21	a	0.01950	0.299	0.01950	0.310	NA	NA
	b	2.27000		2.26600		NA	
	c	0.18991		0.18534		NA	
31	a	0.02500	0.217	0.01980	0.079	NA	NA
	b	2.24400		2.09400		NA	
	c	0.30437		0.29319		NA	
32	a	0.02200	0.399	0.01900	0.284	NA	NA
	b	2.21000		2.11000		NA	
	c	0.26206		0.18610		NA	
51	a	0.02200	0.253	0.01900	0.129	NA	NA
	b	2.28300		1.99600		NA	
	c	0.23032		0.37220		NA	
52	a	0.02200	0.429	NA	NA	0.02600	0.435
	b	2.09200		NA		2.00226	
	c	0.36808		NA		0.40000	
71	a	0.02800	0.315	NA	NA	0.02800	0.323
	b	2.13617		NA		2.11511	
	c	0.40000		NA		0.40000	

There were no regression values for DTs 54 and 73 due to small sample size. DT 72 had an unreasonable result and therefore is not listed in Tables 4a through 4c.

A full set of 120 yield tables (10 DTs \* 4 Crown Closure Classes \* 3 Utilization Standards) can be found in Appendix 1. Yield and mean annual increment (MAI) are calculated by 5-year increments to age 200.

Example yield curves for each of the 10 DTs, at the three utilization standards, are graphed in Appendix 2. To avoid clutter, the graphs include Crown Closure classes 1 (A) and 4 (D) only.

Appendix 3 shows scatterplots of the source TSP data for each combination of DT and utilization standard, with yield curves superimposed

## 6. Cull and Decay

The yield curves represent gross merchantable volume, *i.e.* deductions for decay and cull have not been applied. Decay factors will be applied during the wood supply analysis.

## 7. References

- Gal, J. and I.E. Bella. 1994. New stem taper functions for 12 Saskatchewan timber species. Nat. Resourc. Can., Can. For. Serv., Northwest Reg., North. For. Cent., Edmonton, Alberta. Inf. Rep. NOR-X-338.
- Saskatchewan Environment. 2004a. Saskatchewan forest vegetation inventory (Approved version 4.0). Saskatchewan Ministry of Environment – Forest Service. Provincial standard within the Forest Planning Manual.
- Saskatchewan Environment. 2004b. Volume sampling field specifications. Ministry of Environment – Forest Service.
- Saskatchewan Environment. 2007. Forest management planning document (Approved version 1.0). Ministry of Environment – Forest Service. Provincial standard within the Forest Planning Manual.

# **Appendices**

## **Forest Development Report (Forest Management Plan Volume II Chapter 1) Island Forests Timber Supply Area**

Forest Inventory and Planning Unit

Forest Service

May 2012



## Appendix 1. Yield Tables

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## Development Type 11 - S wS

## Crown Closure Class A

## Utilization 3010

$$\text{Yield} = (a * (\text{Age} - 12)^{(b + (CC * 0.25 - 0.075) * c)}) * \text{EXP}(-a * (\text{Age} - 12))$$

Coefficients:

	Combined	Softwood
a	0.019500	0.019000
b	2.274700	2.246800
c	0.170645	0.170645
CC	1	1

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	0.23	0.22	0.01	0.02	0.01	0.01
20	2.01	1.86	0.15	0.10	0.09	0.01
25	5.59	5.10	0.49	0.22	0.20	0.02
30	10.73	9.73	1.00	0.36	0.32	0.03
35	17.12	15.46	1.66	0.49	0.44	0.05
40	24.43	22.00	2.43	0.61	0.55	0.06
45	32.37	29.08	3.29	0.72	0.65	0.07
50	40.64	36.46	4.18	0.81	0.73	0.08
55	49.01	43.93	5.08	0.89	0.80	0.09
60	57.29	51.32	5.97	0.95	0.86	0.10
65	65.30	58.48	6.82	1.00	0.90	0.10
70	72.91	65.30	7.61	1.04	0.93	0.11
75	80.02	71.68	8.34	1.07	0.96	0.11
80	86.56	77.56	8.99	1.08	0.97	0.11
85	92.46	82.90	9.56	1.09	0.98	0.11
90	97.71	87.66	10.05	1.09	0.97	0.11
95	102.27	91.83	10.45	1.08	0.97	0.11
100	106.16	95.40	10.76	1.06	0.95	0.11
105	109.38	98.38	10.99	1.04	0.94	0.10
110	111.94	100.80	11.15	1.02	0.92	0.10
115	113.88	102.66	11.23	0.99	0.89	0.10
120	115.23	103.99	11.24	0.96	0.87	0.09
125	116.02	104.83	11.18	0.93	0.84	0.09
130	116.28	105.21	11.07	0.89	0.81	0.09
135	116.06	105.15	10.91	0.86	0.78	0.08
140	115.41	104.70	10.71	0.82	0.75	0.08
145	114.35	103.89	10.46	0.79	0.72	0.07
150	112.94	102.76	10.18	0.75	0.69	0.07
155	111.20	101.33	9.87	0.72	0.65	0.06
160	109.19	99.65	9.54	0.68	0.62	0.06
165	106.92	97.74	9.19	0.65	0.59	0.06
170	104.45	95.63	8.82	0.61	0.56	0.05
175	101.80	93.36	8.44	0.58	0.53	0.05
180	99.00	90.94	8.06	0.55	0.51	0.04
185	96.09	88.41	7.68	0.52	0.48	0.04
190	93.08	85.79	7.29	0.49	0.45	0.04
195	89.99	83.09	6.90	0.46	0.43	0.04
200	86.87	80.34	6.52	0.43	0.40	0.03



## Development Type 11 - S wS

## Crown Closure Class B

## Utilization 3010

$$\text{Yield} = (a * (\text{Age} - 12)^b + (CC * 0.25 - 0.075) * c) * \text{EXP}(-a * (\text{Age} - 12))$$

Coefficients:

	Combined	Softwood
a	0.019500	0.019000
b	2.274700	2.246800
c	0.170645	0.170645
CC	2	2

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	0.24	0.23	0.01	0.02	0.02	0.02
20	2.20	2.03	0.17	0.11	0.10	0.01
25	6.23	5.69	0.54	0.25	0.23	0.02
30	12.13	11.01	1.13	0.40	0.37	0.04
35	19.57	17.67	1.90	0.56	0.50	0.05
40	28.17	25.36	2.81	0.70	0.63	0.07
45	37.57	33.76	3.81	0.83	0.75	0.08
50	47.46	42.58	4.88	0.95	0.85	0.10
55	57.54	51.58	5.96	1.05	0.94	0.11
60	67.57	60.54	7.04	1.13	1.01	0.12
65	77.35	69.27	8.07	1.19	1.07	0.12
70	86.70	77.65	9.05	1.24	1.11	0.13
75	95.49	85.54	9.95	1.27	1.14	0.13
80	103.63	92.86	10.77	1.30	1.16	0.13
85	111.03	99.55	11.48	1.31	1.17	0.14
90	117.66	105.56	12.10	1.31	1.17	0.13
95	123.49	110.88	12.62	1.30	1.17	0.13
100	128.51	115.48	13.03	1.29	1.15	0.13
105	132.71	119.37	13.34	1.26	1.14	0.13
110	136.13	122.57	13.56	1.24	1.11	0.12
115	138.78	125.10	13.68	1.21	1.09	0.12
120	140.71	126.98	13.72	1.17	1.06	0.11
125	141.94	128.26	13.68	1.14	1.03	0.11
130	142.53	128.95	13.57	1.10	0.99	0.10
135	142.51	129.11	13.40	1.06	0.96	0.10
140	141.95	128.78	13.17	1.01	0.92	0.09
145	140.88	127.99	12.88	0.97	0.88	0.09
150	139.36	126.80	12.56	0.93	0.85	0.08
155	137.42	125.23	12.20	0.89	0.81	0.08
160	135.13	123.33	11.80	0.84	0.77	0.07
165	132.52	121.13	11.38	0.80	0.73	0.07
170	129.63	118.69	10.95	0.76	0.70	0.06
175	126.51	116.02	10.49	0.72	0.66	0.06
180	123.19	113.16	10.03	0.68	0.63	0.06
185	119.71	110.15	9.56	0.65	0.60	0.05
190	116.10	107.01	9.09	0.61	0.56	0.05
195	112.39	103.77	8.62	0.58	0.53	0.04
200	108.61	100.45	8.16	0.54	0.50	0.04

## Development Type 11 - S wS

## Crown Closure Class C

## Utilization 3010

$$\text{Yield} = (a * (\text{Age} - 12)^b + (CC * 0.25 - 0.075) * c) * \text{EXP}(-a * (\text{Age} - 12))$$

Coefficients:

	Combined	Softwood
a	0.019500	0.019000
b	2.274700	2.246800
c	0.170645	0.170645
CC	3	3

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	0.25	0.24	0.01	0.02	0.02	0.02
20	2.40	2.22	0.18	0.12	0.11	0.01
25	6.95	6.35	0.60	0.28	0.25	0.02
30	13.73	12.45	1.28	0.46	0.41	0.04
35	22.37	20.20	2.17	0.64	0.58	0.06
40	32.47	29.23	3.23	0.81	0.73	0.08
45	43.62	39.19	4.43	0.97	0.87	0.10
50	55.43	49.73	5.70	1.11	0.99	0.11
55	67.56	60.56	7.00	1.23	1.10	0.13
60	79.71	71.41	8.30	1.33	1.19	0.14
65	91.62	82.06	9.56	1.41	1.26	0.15
70	103.10	92.33	10.76	1.47	1.32	0.15
75	113.95	102.08	11.88	1.52	1.36	0.16
80	124.06	111.17	12.89	1.55	1.39	0.16
85	133.34	119.54	13.79	1.57	1.41	0.16
90	141.70	127.12	14.57	1.57	1.41	0.16
95	149.11	133.88	15.23	1.57	1.41	0.16
100	155.55	139.78	15.77	1.56	1.40	0.16
105	161.02	144.84	16.19	1.53	1.38	0.15
110	165.54	149.05	16.48	1.50	1.36	0.15
115	169.12	152.45	16.67	1.47	1.33	0.14
120	171.81	155.06	16.76	1.43	1.29	0.14
125	173.66	156.92	16.74	1.39	1.26	0.13
130	174.70	158.06	16.64	1.34	1.22	0.13
135	174.99	158.54	16.45	1.30	1.17	0.12
140	174.59	158.40	16.20	1.25	1.13	0.12
145	173.56	157.69	15.87	1.20	1.09	0.11
150	171.95	156.46	15.50	1.15	1.04	0.10
155	169.83	154.76	15.07	1.10	1.00	0.10
160	167.24	152.63	14.61	1.05	0.95	0.09
165	164.24	150.13	14.11	1.00	0.91	0.09
170	160.88	147.30	13.59	0.95	0.87	0.08
175	157.22	144.18	13.04	0.90	0.82	0.07
180	153.29	140.81	12.48	0.85	0.78	0.07
185	149.15	137.23	11.91	0.81	0.74	0.06
190	144.83	133.48	11.34	0.76	0.70	0.06
195	140.36	129.60	10.77	0.72	0.66	0.06
200	135.80	125.60	10.20	0.68	0.63	0.05

## Development Type 11 - S wS

## Crown Closure Class D

## Utilization 3010

$$\text{Yield} = (a * (\text{Age} - 12)^{(b + (CC * 0.25 - 0.075) * c)}) * \text{EXP}(-a * (\text{Age} - 12))$$

Coefficients:

	Combined	Softwood
a	0.019500	0.019000
b	2.274700	2.246800
c	0.170645	0.170645
CC	4	4

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	0.27	0.25	0.01	0.02	0.02	0.02
20	2.62	2.42	0.20	0.13	0.12	0.01
25	7.76	7.08	0.67	0.31	0.28	0.03
30	15.53	14.08	1.44	0.52	0.47	0.05
35	25.57	23.09	2.48	0.73	0.66	0.07
40	37.43	33.70	3.73	0.94	0.84	0.09
45	50.63	45.49	5.14	1.13	1.01	0.11
50	64.73	58.08	6.65	1.29	1.16	0.13
55	79.32	71.10	8.22	1.44	1.29	0.15
60	94.02	84.23	9.79	1.57	1.40	0.16
65	108.54	97.21	11.33	1.67	1.50	0.17
70	122.59	109.80	12.80	1.75	1.57	0.18
75	135.98	121.81	14.17	1.81	1.62	0.19
80	148.53	133.10	15.43	1.86	1.66	0.19
85	160.12	143.56	16.56	1.88	1.69	0.19
90	170.64	153.09	17.55	1.90	1.70	0.19
95	180.04	161.65	18.39	1.90	1.70	0.19
100	188.29	169.20	19.09	1.88	1.69	0.19
105	195.38	175.74	19.64	1.86	1.67	0.19
110	201.30	181.26	20.05	1.83	1.65	0.18
115	206.10	185.78	20.32	1.79	1.62	0.18
120	209.80	189.34	20.46	1.75	1.58	0.17
125	212.46	191.98	20.48	1.70	1.54	0.16
130	214.13	193.74	20.39	1.65	1.49	0.16
135	214.87	194.67	20.20	1.59	1.44	0.15
140	214.74	194.83	19.92	1.53	1.39	0.14
145	213.83	194.27	19.56	1.47	1.34	0.13
150	212.18	193.06	19.12	1.41	1.29	0.13
155	209.88	191.25	18.63	1.35	1.23	0.12
160	206.98	188.90	18.08	1.29	1.18	0.11
165	203.56	186.07	17.49	1.23	1.13	0.11
170	199.67	182.81	16.86	1.17	1.08	0.10
175	195.38	179.17	16.21	1.12	1.02	0.09
180	190.75	175.21	15.53	1.06	0.97	0.09
185	185.82	170.98	14.84	1.00	0.92	0.08
190	180.66	166.51	14.15	0.95	0.88	0.07
195	175.30	161.85	13.45	0.90	0.83	0.07
200	169.79	157.04	12.75	0.85	0.79	0.06

## Development Type 12 - S bS

## Crown Closure Class A

## Utilization 3010

$$\text{Yield} = (a * (\text{Age} - 12)^{(b + (CC * 0.25 - 0.075) * c)}) * \text{EXP}(-a * (\text{Age} - 12))$$

Coefficients:

	Combined	Softwood
a	0.019000	0.018870
b	2.189675	2.184000
c	0.176093	0.176093
CC	1	1

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	0.21	0.20	0.00	0.01	0.01	0.01
20	1.65	1.62	0.03	0.08	0.08	0.00
25	4.42	4.33	0.09	0.18	0.17	0.00
30	8.27	8.10	0.17	0.28	0.27	0.01
35	12.96	12.68	0.28	0.37	0.36	0.01
40	18.24	17.84	0.40	0.46	0.45	0.01
45	23.89	23.36	0.53	0.53	0.52	0.01
50	29.72	29.06	0.66	0.59	0.58	0.01
55	35.57	34.77	0.80	0.65	0.63	0.01
60	41.29	40.37	0.92	0.69	0.67	0.02
65	46.79	45.75	1.04	0.72	0.70	0.02
70	51.98	50.83	1.15	0.74	0.73	0.02
75	56.80	55.55	1.25	0.76	0.74	0.02
80	61.19	59.87	1.33	0.76	0.75	0.02
85	65.14	63.74	1.40	0.77	0.75	0.02
90	68.63	67.17	1.46	0.76	0.75	0.02
95	71.64	70.14	1.50	0.75	0.74	0.02
100	74.19	72.66	1.53	0.74	0.73	0.02
105	76.27	74.72	1.55	0.73	0.71	0.01
110	77.91	76.36	1.55	0.71	0.69	0.01
115	79.13	77.58	1.55	0.69	0.67	0.01
120	79.94	78.41	1.54	0.67	0.65	0.01
125	80.38	78.87	1.51	0.64	0.63	0.01
130	80.48	78.99	1.48	0.62	0.61	0.01
135	80.25	78.80	1.45	0.59	0.58	0.01
140	79.72	78.32	1.40	0.57	0.56	0.01
145	78.94	77.58	1.36	0.54	0.54	0.01
150	77.91	76.61	1.30	0.52	0.51	0.01
155	76.68	75.43	1.25	0.49	0.49	0.01
160	75.26	74.07	1.19	0.47	0.46	0.01
165	73.68	72.54	1.13	0.45	0.44	0.01
170	71.96	70.89	1.08	0.42	0.42	0.01
175	70.13	69.11	1.02	0.40	0.39	0.01
180	68.20	67.24	0.96	0.38	0.37	0.01
185	66.19	65.29	0.90	0.36	0.35	0.00
190	64.12	63.29	0.84	0.34	0.33	0.00
195	62.01	61.23	0.78	0.32	0.31	0.00
200	59.87	59.15	0.72	0.30	0.30	0.00

## Development Type 12 - S bS

## Crown Closure Class B

## Utilization 3010

$$\text{Yield} = (a * (\text{Age} - 12)^b + (CC * 0.25 - 0.075) * c) * \text{EXP}(-a * (\text{Age} - 12))$$

Coefficients:

	Combined	Softwood
a	0.019000	0.018870
b	2.189675	2.184000
c	0.176093	0.176093
CC	2	2

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	0.22	0.21	0.00	0.01	0.01	0.01
20	1.81	1.78	0.03	0.09	0.09	0.00
25	4.94	4.85	0.10	0.20	0.19	0.00
30	9.39	9.20	0.19	0.31	0.31	0.01
35	14.88	14.56	0.32	0.43	0.42	0.01
40	21.13	20.66	0.46	0.53	0.52	0.01
45	27.87	27.25	0.62	0.62	0.61	0.01
50	34.88	34.11	0.78	0.70	0.68	0.02
55	41.97	41.03	0.94	0.76	0.75	0.02
60	48.96	47.87	1.09	0.82	0.80	0.02
65	55.73	54.49	1.24	0.86	0.84	0.02
70	62.15	60.78	1.37	0.89	0.87	0.02
75	68.16	66.67	1.50	0.91	0.89	0.02
80	73.69	72.09	1.60	0.92	0.90	0.02
85	78.69	77.00	1.69	0.93	0.91	0.02
90	83.14	81.37	1.76	0.92	0.90	0.02
95	87.03	85.20	1.82	0.92	0.90	0.02
100	90.35	88.49	1.86	0.90	0.88	0.02
105	93.11	91.22	1.89	0.89	0.87	0.02
110	95.34	93.43	1.90	0.87	0.85	0.02
115	97.04	95.14	1.90	0.84	0.83	0.02
120	98.24	96.36	1.89	0.82	0.80	0.02
125	98.98	97.12	1.86	0.79	0.78	0.01
130	99.28	97.45	1.83	0.76	0.75	0.01
135	99.18	97.39	1.79	0.73	0.72	0.01
140	98.71	96.97	1.74	0.71	0.69	0.01
145	97.90	96.22	1.68	0.68	0.66	0.01
150	96.79	95.17	1.62	0.65	0.63	0.01
155	95.40	93.85	1.56	0.62	0.61	0.01
160	93.78	92.29	1.49	0.59	0.58	0.01
165	91.94	90.53	1.42	0.56	0.55	0.01
170	89.93	88.58	1.34	0.53	0.52	0.01
175	87.76	86.49	1.27	0.50	0.49	0.01
180	85.45	84.26	1.20	0.47	0.47	0.01
185	83.05	81.92	1.12	0.45	0.44	0.01
190	80.55	79.50	1.05	0.42	0.42	0.01
195	77.99	77.02	0.98	0.40	0.39	0.01
200	75.39	74.48	0.91	0.38	0.37	0.00



## Development Type 12 - S bS

## Crown Closure Class C

## Utilization 3010

$$\text{Yield} = (a * (\text{Age} - 12)^b + (CC * 0.25 - 0.075) * c) * \text{EXP}(-a * (\text{Age} - 12))$$

Coefficients:

	Combined	Softwood
a	0.019000	0.018870
b	2.189675	2.184000
c	0.176093	0.176093
CC	3	3

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	0.23	0.22	0.00	0.02	0.01	0.01
20	1.98	1.95	0.03	0.10	0.10	0.00
25	5.53	5.43	0.11	0.22	0.22	0.00
30	10.67	10.45	0.22	0.36	0.35	0.01
35	17.08	16.72	0.37	0.49	0.48	0.01
40	24.46	23.93	0.54	0.61	0.60	0.01
45	32.51	31.79	0.72	0.72	0.71	0.02
50	40.94	40.03	0.91	0.82	0.80	0.02
55	49.53	48.42	1.11	0.90	0.88	0.02
60	58.06	56.76	1.30	0.97	0.95	0.02
65	66.37	64.89	1.48	1.02	1.00	0.02
70	74.32	72.68	1.64	1.06	1.04	0.02
75	81.80	80.00	1.79	1.09	1.07	0.02
80	88.73	86.80	1.93	1.11	1.08	0.02
85	95.05	93.00	2.04	1.12	1.09	0.02
90	100.72	98.58	2.14	1.12	1.10	0.02
95	105.71	103.50	2.21	1.11	1.09	0.02
100	110.03	107.76	2.27	1.10	1.08	0.02
105	113.68	111.37	2.31	1.08	1.06	0.02
110	116.66	114.33	2.33	1.06	1.04	0.02
115	119.00	116.67	2.33	1.03	1.01	0.02
120	120.73	118.41	2.32	1.01	0.99	0.02
125	121.88	119.59	2.29	0.98	0.96	0.02
130	122.48	120.23	2.26	0.94	0.92	0.02
135	122.58	120.37	2.21	0.91	0.89	0.02
140	122.21	120.06	2.15	0.87	0.86	0.02
145	121.42	119.33	2.09	0.84	0.82	0.01
150	120.23	118.22	2.01	0.80	0.79	0.01
155	118.70	116.76	1.94	0.77	0.75	0.01
160	116.86	115.00	1.85	0.73	0.72	0.01
165	114.74	112.97	1.77	0.70	0.68	0.01
170	112.38	110.70	1.68	0.66	0.65	0.01
175	109.82	108.23	1.59	0.63	0.62	0.01
180	107.08	105.58	1.50	0.59	0.59	0.01
185	104.19	102.78	1.41	0.56	0.56	0.01
190	101.19	99.87	1.32	0.53	0.53	0.01
195	98.10	96.87	1.23	0.50	0.50	0.01
200	94.94	93.79	1.15	0.47	0.47	0.01

## Development Type 12 - S bS

## Crown Closure Class D

## Utilization 3010

$$\text{Yield} = (a * (\text{Age} - 12)^b + (CC * 0.25 - 0.075) * c) * \text{EXP}(-a * (\text{Age} - 12))$$

Coefficients:

	Combined	Softwood
a	0.019000	0.018870
b	2.189675	2.184000
c	0.176093	0.176093
CC	4	4

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	0.24	0.23	0.00	0.02	0.02	0.02
20	2.17	2.14	0.04	0.11	0.11	0.00
25	6.20	6.07	0.12	0.25	0.24	0.00
30	12.12	11.86	0.25	0.40	0.40	0.01
35	19.61	19.19	0.42	0.56	0.55	0.01
40	28.33	27.71	0.62	0.71	0.69	0.02
45	37.92	37.08	0.84	0.84	0.82	0.02
50	48.05	46.98	1.07	0.96	0.94	0.02
55	58.45	57.14	1.31	1.06	1.04	0.02
60	68.85	67.31	1.54	1.15	1.12	0.03
65	79.05	77.29	1.76	1.22	1.19	0.03
70	88.87	86.90	1.97	1.27	1.24	0.03
75	98.17	96.01	2.15	1.31	1.28	0.03
80	106.84	104.52	2.32	1.34	1.31	0.03
85	114.81	112.34	2.47	1.35	1.32	0.03
90	122.01	119.42	2.59	1.36	1.33	0.03
95	128.42	125.73	2.69	1.35	1.32	0.03
100	134.01	131.24	2.76	1.34	1.31	0.03
105	138.78	135.97	2.82	1.32	1.29	0.03
110	142.75	139.90	2.85	1.30	1.27	0.03
115	145.94	143.08	2.86	1.27	1.24	0.02
120	148.37	145.52	2.85	1.24	1.21	0.02
125	150.08	147.25	2.83	1.20	1.18	0.02
130	151.11	148.33	2.78	1.16	1.14	0.02
135	151.51	148.78	2.73	1.12	1.10	0.02
140	151.32	148.65	2.66	1.08	1.06	0.02
145	150.58	148.00	2.59	1.04	1.02	0.02
150	149.36	146.86	2.50	1.00	0.98	0.02
155	147.68	145.28	2.41	0.95	0.94	0.02
160	145.61	143.30	2.31	0.91	0.90	0.01
165	143.18	140.97	2.21	0.87	0.85	0.01
170	140.44	138.34	2.10	0.83	0.81	0.01
175	137.42	135.43	1.99	0.79	0.77	0.01
180	134.17	132.29	1.88	0.75	0.73	0.01
185	130.73	128.96	1.77	0.71	0.70	0.01
190	127.12	125.46	1.66	0.67	0.66	0.01
195	123.39	121.84	1.55	0.63	0.62	0.01
200	119.55	118.11	1.44	0.60	0.59	0.01

## Development Type 13 - S jP

## Crown Closure Class A

## Utilization 3010

$$\text{Yield} = (a * (\text{Age} - 12)^b + (CC * 0.25 - 0.075) * c) * \text{EXP}(-a * (\text{Age} - 12))$$

Coefficients:

	Combined	Softwood
a	0.019000	0.019000
b	2.059263	2.055000
c	0.400000	0.400000
CC	1	1

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	0.19	0.19	0.00	0.01	0.01	0.01
20	1.37	1.35	0.01	0.07	0.07	0.00
25	3.49	3.46	0.04	0.14	0.14	0.00
30	6.35	6.28	0.08	0.21	0.21	0.00
35	9.74	9.61	0.13	0.28	0.27	0.00
40	13.46	13.27	0.19	0.34	0.33	0.00
45	17.37	17.11	0.26	0.39	0.38	0.01
50	21.33	21.00	0.33	0.43	0.42	0.01
55	25.24	24.83	0.40	0.46	0.45	0.01
60	29.01	28.53	0.47	0.48	0.48	0.01
65	32.57	32.03	0.55	0.50	0.49	0.01
70	35.89	35.27	0.62	0.51	0.50	0.01
75	38.92	38.24	0.68	0.52	0.51	0.01
80	41.64	40.90	0.74	0.52	0.51	0.01
85	44.04	43.25	0.80	0.52	0.51	0.01
90	46.12	45.27	0.85	0.51	0.50	0.01
95	47.87	46.98	0.89	0.50	0.49	0.01
100	49.31	48.38	0.93	0.49	0.48	0.01
105	50.44	49.47	0.97	0.48	0.47	0.01
110	51.28	50.29	0.99	0.47	0.46	0.01
115	51.84	50.83	1.01	0.45	0.44	0.01
120	52.15	51.12	1.03	0.43	0.43	0.01
125	52.22	51.18	1.04	0.42	0.41	0.01
130	52.08	51.03	1.05	0.40	0.39	0.01
135	51.73	50.68	1.05	0.38	0.38	0.01
140	51.21	50.16	1.05	0.37	0.36	0.01
145	50.53	49.49	1.04	0.35	0.34	0.01
150	49.70	48.67	1.03	0.33	0.32	0.01
155	48.76	47.74	1.02	0.31	0.31	0.01
160	47.71	46.70	1.01	0.30	0.29	0.01
165	46.56	45.58	0.99	0.28	0.28	0.01
170	45.34	44.38	0.97	0.27	0.26	0.01
175	44.06	43.12	0.95	0.25	0.25	0.01
180	42.73	41.81	0.92	0.24	0.23	0.01
185	41.36	40.46	0.90	0.22	0.22	0.00
190	39.97	39.09	0.87	0.21	0.21	0.00
195	38.55	37.71	0.85	0.20	0.19	0.00
200	37.13	36.31	0.82	0.19	0.18	0.00

## Development Type 13 - S jP

## Crown Closure Class B

## Utilization 3010

$$\text{Yield} = (a * (\text{Age} - 12)^b + (CC * 0.25 - 0.075) * c) * \text{EXP}(-a * (\text{Age} - 12))$$

Coefficients:

	Combined	Softwood
a	0.019000	0.019000
b	2.059263	2.055000
c	0.400000	0.400000
CC	2	2

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	0.21	0.21	0.00	0.01	0.01	0.01
20	1.68	1.67	0.01	0.08	0.08	0.00
25	4.52	4.47	0.05	0.18	0.18	0.00
30	8.48	8.38	0.10	0.28	0.28	0.00
35	13.32	13.15	0.18	0.38	0.38	0.01
40	18.78	18.52	0.26	0.47	0.46	0.01
45	24.64	24.27	0.36	0.55	0.54	0.01
50	30.69	30.21	0.47	0.61	0.60	0.01
55	36.76	36.17	0.58	0.67	0.66	0.01
60	42.72	42.02	0.70	0.71	0.70	0.01
65	48.45	47.64	0.81	0.75	0.73	0.01
70	53.86	52.94	0.92	0.77	0.76	0.01
75	58.90	57.87	1.03	0.79	0.77	0.01
80	63.50	62.37	1.13	0.79	0.78	0.01
85	67.64	66.42	1.23	0.80	0.78	0.01
90	71.30	69.99	1.31	0.79	0.78	0.01
95	74.47	73.08	1.39	0.78	0.77	0.01
100	77.16	75.70	1.46	0.77	0.76	0.01
105	79.36	77.84	1.52	0.76	0.74	0.01
110	81.11	79.54	1.57	0.74	0.72	0.01
115	82.41	80.80	1.61	0.72	0.70	0.01
120	83.29	81.65	1.65	0.69	0.68	0.01
125	83.79	82.12	1.67	0.67	0.66	0.01
130	83.91	82.22	1.69	0.65	0.63	0.01
135	83.71	82.01	1.70	0.62	0.61	0.01
140	83.19	81.49	1.70	0.59	0.58	0.01
145	82.40	80.70	1.70	0.57	0.56	0.01
150	81.36	79.66	1.69	0.54	0.53	0.01
155	80.09	78.41	1.68	0.52	0.51	0.01
160	78.63	76.98	1.66	0.49	0.48	0.01
165	77.00	75.37	1.63	0.47	0.46	0.01
170	75.23	73.62	1.61	0.44	0.43	0.01
175	73.33	71.76	1.58	0.42	0.41	0.01
180	71.33	69.79	1.54	0.40	0.39	0.01
185	69.25	67.75	1.50	0.37	0.37	0.01
190	67.10	65.64	1.47	0.35	0.35	0.01
195	64.91	63.48	1.43	0.33	0.33	0.01
200	62.68	61.30	1.38	0.31	0.31	0.01

## Development Type 13 - S jP

## Crown Closure Class C

## Utilization 3010

$$\text{Yield} = (a * (\text{Age} - 12)^b + (CC * 0.25 - 0.075) * c) * \text{EXP}(-a * (\text{Age} - 12))$$

Coefficients:

	Combined	Softwood
a	0.019000	0.019000
b	2.059263	2.055000
c	0.400000	0.400000
CC	3	3

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	0.23	0.23	0.00	0.02	0.02	0.02
20	2.07	2.05	0.02	0.10	0.10	0.00
25	5.84	5.77	0.06	0.23	0.23	0.00
30	11.33	11.19	0.14	0.38	0.37	0.00
35	18.23	17.99	0.24	0.52	0.51	0.01
40	26.21	25.84	0.37	0.66	0.65	0.01
45	34.95	34.43	0.52	0.78	0.77	0.01
50	44.15	43.47	0.68	0.88	0.87	0.01
55	53.54	52.69	0.85	0.97	0.96	0.02
60	62.91	61.88	1.03	1.05	1.03	0.02
65	72.06	70.85	1.21	1.11	1.09	0.02
70	80.84	79.46	1.39	1.15	1.14	0.02
75	89.13	87.57	1.56	1.19	1.17	0.02
80	96.84	95.11	1.73	1.21	1.19	0.02
85	103.89	102.00	1.88	1.22	1.20	0.02
90	110.23	108.21	2.03	1.22	1.20	0.02
95	115.85	113.69	2.16	1.22	1.20	0.02
100	120.73	118.45	2.28	1.21	1.18	0.02
105	124.87	122.48	2.39	1.19	1.17	0.02
110	128.29	125.80	2.48	1.17	1.14	0.02
115	131.00	128.44	2.56	1.14	1.12	0.02
120	133.03	130.40	2.63	1.11	1.09	0.02
125	134.43	131.74	2.68	1.08	1.05	0.02
130	135.21	132.49	2.72	1.04	1.02	0.02
135	135.44	132.69	2.75	1.00	0.98	0.02
140	135.14	132.38	2.77	0.97	0.95	0.02
145	134.37	131.60	2.77	0.93	0.91	0.02
150	133.16	130.39	2.77	0.89	0.87	0.02
155	131.56	128.80	2.75	0.85	0.83	0.02
160	129.61	126.87	2.73	0.81	0.79	0.02
165	127.34	124.64	2.70	0.77	0.76	0.02
170	124.81	122.15	2.66	0.73	0.72	0.02
175	122.04	119.42	2.62	0.70	0.68	0.01
180	119.07	116.50	2.57	0.66	0.65	0.01
185	115.94	113.42	2.52	0.63	0.61	0.01
190	112.67	110.20	2.46	0.59	0.58	0.01
195	109.28	106.88	2.40	0.56	0.55	0.01
200	105.82	103.48	2.34	0.53	0.52	0.01

## Development Type 13 - S jP

## Crown Closure Class D

## Utilization 3010

$$\text{Yield} = (a * (\text{Age} - 12)^b + (CC * 0.25 - 0.075) * c) * \text{EXP}(-a * (\text{Age} - 12))$$

Coefficients:

	Combined	Softwood
a	0.019000	0.019000
b	2.059263	2.055000
c	0.400000	0.400000
CC	4	4

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	0.26	0.26	0.00	0.02	0.02	0.02
20	2.55	2.53	0.02	0.13	0.13	0.00
25	7.54	7.46	0.08	0.30	0.30	0.00
30	15.12	14.94	0.19	0.50	0.50	0.01
35	24.94	24.61	0.33	0.71	0.70	0.01
40	36.58	36.06	0.52	0.91	0.90	0.01
45	49.58	48.85	0.73	1.10	1.09	0.02
50	63.52	62.54	0.98	1.27	1.25	0.02
55	77.99	76.75	1.24	1.42	1.40	0.02
60	92.65	91.14	1.52	1.54	1.52	0.03
65	107.19	105.39	1.80	1.65	1.62	0.03
70	121.34	119.25	2.08	1.73	1.70	0.03
75	134.89	132.53	2.36	1.80	1.77	0.03
80	147.67	145.04	2.63	1.85	1.81	0.03
85	159.55	156.66	2.89	1.88	1.84	0.03
90	170.42	167.29	3.14	1.89	1.86	0.03
95	180.23	176.86	3.36	1.90	1.86	0.04
100	188.92	185.35	3.57	1.89	1.85	0.04
105	196.48	192.72	3.76	1.87	1.84	0.04
110	202.91	198.99	3.93	1.84	1.81	0.04
115	208.23	204.16	4.07	1.81	1.78	0.04
120	212.47	208.27	4.20	1.77	1.74	0.03
125	215.67	211.37	4.30	1.73	1.69	0.03
130	217.88	213.49	4.39	1.68	1.64	0.03
135	219.15	214.70	4.45	1.62	1.59	0.03
140	219.54	215.05	4.49	1.57	1.54	0.03
145	219.12	214.60	4.52	1.51	1.48	0.03
150	217.95	213.42	4.53	1.45	1.42	0.03
155	216.10	211.58	4.52	1.39	1.37	0.03
160	213.63	209.12	4.50	1.34	1.31	0.03
165	210.60	206.13	4.47	1.28	1.25	0.03
170	207.07	202.65	4.42	1.22	1.19	0.03
175	203.11	198.75	4.36	1.16	1.14	0.02
180	198.77	194.47	4.29	1.10	1.08	0.02
185	194.10	189.88	4.22	1.05	1.03	0.02
190	189.16	185.03	4.13	1.00	0.97	0.02
195	183.99	179.95	4.04	0.94	0.92	0.02
200	178.64	174.70	3.94	0.89	0.87	0.02

## Development Type 14 - S tl

## Crown Closure Class A

## Utilization 3010

$$\text{Yield} = (a * (\text{Age} - 12)^{(b + (CC * 0.25 - 0.075) * c)}) * \text{EXP}(-a * (\text{Age} - 12))$$

Coefficients:

	Combined	Softwood
a	0.019000	0.019000
b	2.081484	2.050733
c	0.113748	0.116506
CC	1	1

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	0.18	0.17	0.01	0.01	0.01	0.01
20	1.29	1.21	0.08	0.06	0.06	0.00
25	3.25	3.01	0.24	0.13	0.12	0.01
30	5.86	5.37	0.49	0.20	0.18	0.02
35	8.92	8.11	0.81	0.25	0.23	0.02
40	12.27	11.09	1.18	0.31	0.28	0.03
45	15.76	14.17	1.58	0.35	0.31	0.04
50	19.27	17.26	2.01	0.39	0.35	0.04
55	22.72	20.28	2.45	0.41	0.37	0.04
60	26.04	23.16	2.88	0.43	0.39	0.05
65	29.16	25.86	3.30	0.45	0.40	0.05
70	32.05	28.34	3.71	0.46	0.40	0.05
75	34.68	30.59	4.09	0.46	0.41	0.05
80	37.02	32.58	4.44	0.46	0.41	0.06
85	39.08	34.32	4.76	0.46	0.40	0.06
90	40.85	35.80	5.05	0.45	0.40	0.06
95	42.33	37.03	5.30	0.45	0.39	0.06
100	43.52	38.01	5.52	0.44	0.38	0.06
105	44.45	38.75	5.70	0.42	0.37	0.05
110	45.13	39.28	5.85	0.41	0.36	0.05
115	45.56	39.60	5.96	0.40	0.34	0.05
120	45.77	39.72	6.05	0.38	0.33	0.05
125	45.78	39.67	6.10	0.37	0.32	0.05
130	45.59	39.46	6.13	0.35	0.30	0.05
135	45.24	39.11	6.13	0.34	0.29	0.05
140	44.73	38.62	6.11	0.32	0.28	0.04
145	44.09	38.02	6.07	0.30	0.26	0.04
150	43.33	37.32	6.00	0.29	0.25	0.04
155	42.46	36.54	5.92	0.27	0.24	0.04
160	41.50	35.68	5.83	0.26	0.22	0.04
165	40.47	34.76	5.72	0.25	0.21	0.03
170	39.38	33.78	5.59	0.23	0.20	0.03
175	38.23	32.77	5.46	0.22	0.19	0.03
180	37.04	31.72	5.32	0.21	0.18	0.03
185	35.83	30.65	5.17	0.19	0.17	0.03
190	34.59	29.57	5.02	0.18	0.16	0.03
195	33.34	28.48	4.86	0.17	0.15	0.02
200	32.09	27.38	4.70	0.16	0.14	0.02

## Development Type 14 - S tl

## Crown Closure Class B

## Utilization 3010

$$\text{Yield} = (a * (\text{Age} - 12)^b + (CC * 0.25 - 0.075) * c) * \text{EXP}(-a * (\text{Age} - 12))$$

Coefficients:

	Combined	Softwood
a	0.019000	0.019000
b	2.081484	2.050733
c	0.113748	0.116506
CC	2	2

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	0.19	0.18	0.01	0.01	0.01	0.01
20	1.37	1.29	0.08	0.07	0.06	0.00
25	3.50	3.24	0.26	0.14	0.13	0.01
30	6.36	5.84	0.52	0.21	0.19	0.02
35	9.75	8.89	0.86	0.28	0.25	0.02
40	13.49	12.22	1.27	0.34	0.31	0.03
45	17.40	15.69	1.71	0.39	0.35	0.04
50	21.37	19.19	2.18	0.43	0.38	0.04
55	25.29	22.63	2.66	0.46	0.41	0.05
60	29.07	25.92	3.14	0.48	0.43	0.05
65	32.65	29.03	3.62	0.50	0.45	0.06
70	35.97	31.90	4.07	0.51	0.46	0.06
75	39.01	34.51	4.50	0.52	0.46	0.06
80	41.74	36.84	4.90	0.52	0.46	0.06
85	44.15	38.89	5.26	0.52	0.46	0.06
90	46.23	40.64	5.59	0.51	0.45	0.06
95	47.99	42.11	5.88	0.51	0.44	0.06
100	49.43	43.30	6.13	0.49	0.43	0.06
105	50.57	44.22	6.34	0.48	0.42	0.06
110	51.41	44.89	6.52	0.47	0.41	0.06
115	51.98	45.32	6.66	0.45	0.39	0.06
120	52.29	45.53	6.76	0.44	0.38	0.06
125	52.36	45.53	6.83	0.42	0.36	0.05
130	52.22	45.35	6.87	0.40	0.35	0.05
135	51.87	44.99	6.88	0.38	0.33	0.05
140	51.35	44.49	6.86	0.37	0.32	0.05
145	50.67	43.84	6.82	0.35	0.30	0.05
150	49.84	43.08	6.76	0.33	0.29	0.05
155	48.90	42.22	6.68	0.32	0.27	0.04
160	47.84	41.27	6.57	0.30	0.26	0.04
165	46.70	40.24	6.46	0.28	0.24	0.04
170	45.47	39.15	6.32	0.27	0.23	0.04
175	44.19	38.01	6.18	0.25	0.22	0.04
180	42.86	36.83	6.03	0.24	0.20	0.03
185	41.48	35.62	5.86	0.22	0.19	0.03
190	40.08	34.39	5.70	0.21	0.18	0.03
195	38.67	33.15	5.52	0.20	0.17	0.03
200	37.24	31.90	5.34	0.19	0.16	0.03



## Development Type 14 - S tl

## Crown Closure Class C

## Utilization 3010

$$\text{Yield} = (a * (\text{Age} - 12)^{(b + (CC * 0.25 - 0.075) * c)}) * \text{EXP}(-a * (\text{Age} - 12))$$

Coefficients:

	Combined	Softwood
a	0.019000	0.019000
b	2.081484	2.050733
c	0.113748	0.116506
CC	3	3

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	0.19	0.19	0.01	0.01	0.01	0.01
20	1.45	1.37	0.08	0.07	0.07	0.00
25	3.76	3.50	0.27	0.15	0.14	0.01
30	6.91	6.36	0.55	0.23	0.21	0.02
35	10.66	9.74	0.92	0.30	0.28	0.03
40	14.83	13.47	1.36	0.37	0.34	0.03
45	19.22	17.38	1.85	0.43	0.39	0.04
50	23.70	21.34	2.36	0.47	0.43	0.05
55	28.14	25.25	2.90	0.51	0.46	0.05
60	32.45	29.02	3.43	0.54	0.48	0.06
65	36.55	32.59	3.96	0.56	0.50	0.06
70	40.37	35.91	4.47	0.58	0.51	0.06
75	43.89	38.94	4.95	0.59	0.52	0.07
80	47.06	41.66	5.40	0.59	0.52	0.07
85	49.88	44.07	5.81	0.59	0.52	0.07
90	52.33	46.14	6.19	0.58	0.51	0.07
95	54.42	47.90	6.52	0.57	0.50	0.07
100	56.15	49.33	6.81	0.56	0.49	0.07
105	57.53	50.47	7.06	0.55	0.48	0.07
110	58.57	51.31	7.27	0.53	0.47	0.07
115	59.30	51.87	7.43	0.52	0.45	0.06
120	59.74	52.18	7.56	0.50	0.43	0.06
125	59.90	52.25	7.65	0.48	0.42	0.06
130	59.80	52.10	7.70	0.46	0.40	0.06
135	59.48	51.76	7.72	0.44	0.38	0.06
140	58.95	51.24	7.71	0.42	0.37	0.06
145	58.23	50.56	7.67	0.40	0.35	0.05
150	57.34	49.73	7.61	0.38	0.33	0.05
155	56.31	48.79	7.52	0.36	0.31	0.05
160	55.15	47.73	7.41	0.34	0.30	0.05
165	53.88	46.59	7.29	0.33	0.28	0.04
170	52.51	45.37	7.15	0.31	0.27	0.04
175	51.08	44.09	6.99	0.29	0.25	0.04
180	49.58	42.76	6.82	0.28	0.24	0.04
185	48.03	41.39	6.64	0.26	0.22	0.04
190	46.45	39.99	6.46	0.24	0.21	0.03
195	44.84	38.58	6.26	0.23	0.20	0.03
200	43.22	37.15	6.07	0.22	0.19	0.03

## Development Type 14 - S tl

## Crown Closure Class D

## Utilization 3010

$$\text{Yield} = (a * (\text{Age} - 12)^b + (CC * 0.25 - 0.075) * c) * \text{EXP}(-a * (\text{Age} - 12))$$

Coefficients:

	Combined	Softwood
a	0.019000	0.019000
b	2.081484	2.050733
c	0.113748	0.116506
CC	4	4

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	0.20	0.19	0.01	0.01	0.01	0.01
20	1.54	1.45	0.09	0.08	0.07	0.00
25	4.05	3.77	0.28	0.16	0.15	0.01
30	7.50	6.91	0.59	0.25	0.23	0.02
35	11.66	10.67	0.99	0.33	0.30	0.03
40	16.30	14.84	1.46	0.41	0.37	0.04
45	21.23	19.24	1.99	0.47	0.43	0.04
50	26.28	23.72	2.56	0.53	0.47	0.05
55	31.32	28.17	3.15	0.57	0.51	0.06
60	36.23	32.48	3.75	0.60	0.54	0.06
65	40.92	36.58	4.33	0.63	0.56	0.07
70	45.32	40.41	4.90	0.65	0.58	0.07
75	49.38	43.93	5.44	0.66	0.59	0.07
80	53.06	47.11	5.95	0.66	0.59	0.07
85	56.35	49.93	6.42	0.66	0.59	0.08
90	59.23	52.39	6.85	0.66	0.58	0.08
95	61.70	54.48	7.23	0.65	0.57	0.08
100	63.77	56.21	7.56	0.64	0.56	0.08
105	65.44	57.59	7.85	0.62	0.55	0.07
110	66.73	58.64	8.09	0.61	0.53	0.07
115	67.66	59.37	8.29	0.59	0.52	0.07
120	68.24	59.80	8.44	0.57	0.50	0.07
125	68.52	59.96	8.55	0.55	0.48	0.07
130	68.49	59.87	8.62	0.53	0.46	0.07
135	68.20	59.55	8.65	0.51	0.44	0.06
140	67.67	59.02	8.65	0.48	0.42	0.06
145	66.91	58.29	8.62	0.46	0.40	0.06
150	65.96	57.41	8.56	0.44	0.38	0.06
155	64.84	56.37	8.47	0.42	0.36	0.05
160	63.57	55.21	8.35	0.40	0.35	0.05
165	62.16	53.94	8.22	0.38	0.33	0.05
170	60.65	52.58	8.07	0.36	0.31	0.05
175	59.04	51.14	7.90	0.34	0.29	0.05
180	57.35	49.64	7.72	0.32	0.28	0.04
185	55.61	48.09	7.52	0.30	0.26	0.04
190	53.82	46.51	7.32	0.28	0.24	0.04
195	52.00	44.90	7.10	0.27	0.23	0.04
200	50.16	43.27	6.89	0.25	0.22	0.03

## Development Type 21 - S bSjP

## Crown Closure Class A

## Utilization 3010

$$\text{Yield} = (a * (\text{Age} - 12)^b + (CC * 0.25 - 0.075) * c) * \text{EXP}(-a * (\text{Age} - 12))$$

Coefficients:

	Combined	Softwood
a	0.019500	0.019500
b	2.150000	2.146000
c	0.189912	0.185335
CC	1	1

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	0.20	0.20	0.00	0.01	0.01	0.01
20	1.56	1.55	0.02	0.08	0.08	0.00
25	4.09	4.04	0.05	0.16	0.16	0.00
30	7.55	7.45	0.10	0.25	0.25	0.00
35	11.70	11.53	0.17	0.33	0.33	0.00
40	16.31	16.05	0.26	0.41	0.40	0.01
45	21.18	20.82	0.35	0.47	0.46	0.01
50	26.14	25.68	0.45	0.52	0.51	0.01
55	31.05	30.50	0.56	0.56	0.55	0.01
60	35.82	35.16	0.66	0.60	0.59	0.01
65	40.34	39.57	0.76	0.62	0.61	0.01
70	44.55	43.69	0.86	0.64	0.62	0.01
75	48.40	47.45	0.95	0.65	0.63	0.01
80	51.87	50.83	1.04	0.65	0.64	0.01
85	54.94	53.82	1.12	0.65	0.63	0.01
90	57.59	56.40	1.19	0.64	0.63	0.01
95	59.83	58.58	1.26	0.63	0.62	0.01
100	61.67	60.35	1.31	0.62	0.60	0.01
105	63.11	61.75	1.36	0.60	0.59	0.01
110	64.18	62.78	1.40	0.58	0.57	0.01
115	64.90	63.47	1.43	0.56	0.55	0.01
120	65.29	63.84	1.45	0.54	0.53	0.01
125	65.38	63.91	1.47	0.52	0.51	0.01
130	65.18	63.71	1.48	0.50	0.49	0.01
135	64.73	63.26	1.48	0.48	0.47	0.01
140	64.06	62.58	1.47	0.46	0.45	0.01
145	63.18	61.71	1.47	0.44	0.43	0.01
150	62.12	60.66	1.45	0.41	0.40	0.01
155	60.90	59.46	1.43	0.39	0.38	0.01
160	59.55	58.13	1.41	0.37	0.36	0.01
165	58.08	56.69	1.39	0.35	0.34	0.01
170	56.51	55.16	1.36	0.33	0.32	0.01
175	54.87	53.55	1.33	0.31	0.31	0.01
180	53.17	51.88	1.29	0.30	0.29	0.01
185	51.42	50.16	1.26	0.28	0.27	0.01
190	49.64	48.42	1.22	0.26	0.25	0.01
195	47.83	46.65	1.18	0.25	0.24	0.01
200	46.02	44.88	1.14	0.23	0.22	0.01

## Development Type 21 - S bSjP

## Crown Closure Class B

## Utilization 3010

$$\text{Yield} = (a * (\text{Age} - 12)^b + (CC * 0.25 - 0.075) * c) * \text{EXP}(-a * (\text{Age} - 12))$$

Coefficients:

	Combined	Softwood
a	0.019500	0.019500
b	2.150000	2.146000
c	0.189912	0.185335
CC	2	2

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	0.21	0.21	0.00	0.01	0.01	0.01
20	1.73	1.70	0.02	0.09	0.09	0.00
25	4.62	4.55	0.07	0.18	0.18	0.00
30	8.66	8.52	0.15	0.29	0.28	0.00
35	13.58	13.33	0.25	0.39	0.38	0.01
40	19.10	18.73	0.37	0.48	0.47	0.01
45	25.00	24.49	0.51	0.56	0.54	0.01
50	31.06	30.40	0.66	0.62	0.61	0.01
55	37.13	36.30	0.82	0.68	0.66	0.01
60	43.04	42.06	0.98	0.72	0.70	0.02
65	48.70	47.57	1.14	0.75	0.73	0.02
70	54.02	52.73	1.29	0.77	0.75	0.02
75	58.93	57.49	1.43	0.79	0.77	0.02
80	63.38	61.81	1.57	0.79	0.77	0.02
85	67.35	65.66	1.70	0.79	0.77	0.02
90	70.83	69.01	1.81	0.79	0.77	0.02
95	73.80	71.88	1.91	0.78	0.76	0.02
100	76.27	74.27	2.00	0.76	0.74	0.02
105	78.26	76.18	2.08	0.75	0.73	0.02
110	79.79	77.64	2.15	0.73	0.71	0.02
115	80.88	78.68	2.20	0.70	0.68	0.02
120	81.54	79.31	2.24	0.68	0.66	0.02
125	81.83	79.56	2.27	0.65	0.64	0.02
130	81.75	79.47	2.29	0.63	0.61	0.02
135	81.35	79.06	2.29	0.60	0.59	0.02
140	80.65	78.36	2.29	0.58	0.56	0.02
145	79.69	77.40	2.28	0.55	0.53	0.02
150	78.49	76.22	2.27	0.52	0.51	0.02
155	77.08	74.84	2.24	0.50	0.48	0.01
160	75.49	73.28	2.21	0.47	0.46	0.01
165	73.75	71.57	2.17	0.45	0.43	0.01
170	71.87	69.74	2.13	0.42	0.41	0.01
175	69.89	67.80	2.08	0.40	0.39	0.01
180	67.81	65.78	2.03	0.38	0.37	0.01
185	65.67	63.69	1.98	0.35	0.34	0.01
190	63.48	61.55	1.93	0.33	0.32	0.01
195	61.25	59.39	1.87	0.31	0.30	0.01
200	59.01	57.20	1.81	0.30	0.29	0.01

## Development Type 21 - S bSjP

## Crown Closure Class C

## Utilization 3010

$$\text{Yield} = (a * (\text{Age} - 12)^b + (CC * 0.25 - 0.075) * c) * \text{EXP}(-a * (\text{Age} - 12))$$

Coefficients:

	Combined	Softwood
a	0.019500	0.019500
b	2.150000	2.146000
c	0.189912	0.185335
CC	3	3

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	0.22	0.22	0.00	0.01	0.01	0.01
20	1.90	1.88	0.03	0.10	0.09	0.00
25	5.22	5.13	0.09	0.21	0.21	0.00
30	9.94	9.74	0.20	0.33	0.32	0.01
35	15.76	15.41	0.35	0.45	0.44	0.01
40	22.38	21.86	0.52	0.56	0.55	0.01
45	29.51	28.79	0.72	0.66	0.64	0.02
50	36.92	35.98	0.94	0.74	0.72	0.02
55	44.38	43.22	1.17	0.81	0.79	0.02
60	51.73	50.33	1.40	0.86	0.84	0.02
65	58.81	57.17	1.63	0.90	0.88	0.03
70	65.50	63.65	1.86	0.94	0.91	0.03
75	71.74	69.66	2.08	0.96	0.93	0.03
80	77.44	75.16	2.28	0.97	0.94	0.03
85	82.57	80.10	2.47	0.97	0.94	0.03
90	87.10	84.45	2.65	0.97	0.94	0.03
95	91.02	88.22	2.81	0.96	0.93	0.03
100	94.34	91.39	2.95	0.94	0.91	0.03
105	97.06	93.99	3.07	0.92	0.90	0.03
110	99.20	96.02	3.17	0.90	0.87	0.03
115	100.78	97.52	3.26	0.88	0.85	0.03
120	101.84	98.52	3.32	0.85	0.82	0.03
125	102.42	99.04	3.38	0.82	0.79	0.03
130	102.53	99.12	3.41	0.79	0.76	0.03
135	102.23	98.80	3.43	0.76	0.73	0.03
140	101.55	98.11	3.43	0.73	0.70	0.02
145	100.51	97.09	3.43	0.69	0.67	0.02
150	99.17	95.77	3.40	0.66	0.64	0.02
155	97.56	94.19	3.37	0.63	0.61	0.02
160	95.70	92.37	3.33	0.60	0.58	0.02
165	93.64	90.36	3.28	0.57	0.55	0.02
170	91.40	88.18	3.22	0.54	0.52	0.02
175	89.01	85.85	3.16	0.51	0.49	0.02
180	86.49	83.40	3.09	0.48	0.46	0.02
185	83.88	80.87	3.01	0.45	0.44	0.02
190	81.19	78.26	2.93	0.43	0.41	0.02
195	78.44	75.60	2.84	0.40	0.39	0.01
200	75.66	72.90	2.76	0.38	0.36	0.01

## Development Type 21 - S bSjP

## Crown Closure Class D

## Utilization 3010

$$\text{Yield} = (a * (\text{Age} - 12)^b + (CC * 0.25 - 0.075) * c) * \text{EXP}(-a * (\text{Age} - 12))$$

Coefficients:

	Combined	Softwood
a	0.019500	0.019500
b	2.150000	2.146000
c	0.189912	0.185335
CC	4	4

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	0.24	0.23	0.00	0.02	0.02	0.02
20	2.10	2.07	0.04	0.11	0.10	0.00
25	5.90	5.77	0.12	0.24	0.23	0.00
30	11.40	11.13	0.27	0.38	0.37	0.01
35	18.29	17.82	0.47	0.52	0.51	0.01
40	26.21	25.50	0.71	0.66	0.64	0.02
45	34.84	33.86	0.99	0.77	0.75	0.02
50	43.88	42.59	1.29	0.88	0.85	0.03
55	53.06	51.44	1.62	0.96	0.94	0.03
60	62.16	60.21	1.95	1.04	1.00	0.03
65	71.00	68.72	2.28	1.09	1.06	0.04
70	79.43	76.82	2.61	1.13	1.10	0.04
75	87.33	84.40	2.93	1.16	1.13	0.04
80	94.62	91.39	3.23	1.18	1.14	0.04
85	101.22	97.71	3.51	1.19	1.15	0.04
90	107.12	103.34	3.77	1.19	1.15	0.04
95	112.27	108.26	4.01	1.18	1.14	0.04
100	116.68	112.46	4.22	1.17	1.12	0.04
105	120.36	115.95	4.41	1.15	1.10	0.04
110	123.32	118.75	4.57	1.12	1.08	0.04
115	125.59	120.89	4.70	1.09	1.05	0.04
120	127.20	122.39	4.81	1.06	1.02	0.04
125	128.19	123.29	4.89	1.03	0.99	0.04
130	128.60	123.64	4.95	0.99	0.95	0.04
135	128.47	123.48	4.99	0.95	0.91	0.04
140	127.85	122.85	5.01	0.91	0.88	0.04
145	126.78	121.78	5.00	0.87	0.84	0.03
150	125.31	120.33	4.98	0.84	0.80	0.03
155	123.48	118.54	4.94	0.80	0.76	0.03
160	121.33	116.44	4.89	0.76	0.73	0.03
165	118.90	114.08	4.82	0.72	0.69	0.03
170	116.23	111.49	4.75	0.68	0.66	0.03
175	113.36	108.70	4.66	0.65	0.62	0.03
180	110.31	105.75	4.56	0.61	0.59	0.03
185	107.13	102.68	4.45	0.58	0.56	0.02
190	103.83	99.49	4.34	0.55	0.52	0.02
195	100.45	96.24	4.22	0.52	0.49	0.02
200	97.02	92.92	4.09	0.49	0.46	0.02

## Development Type 31 - SH sPtA

## Crown Closure Class A

## Utilization 3010

$$\text{Yield} = (a * (\text{Age} - 12)^b + (CC * 0.25 - 0.075) * c) * \text{EXP}(-a * (\text{Age} - 12))$$

Coefficients:

	Combined	Softwood
a	0.025000	0.019800
b	2.191000	2.052400
c	0.336485	0.315625
CC	1	1

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	0.27	0.19	0.09	0.02	0.01	0.01
20	2.20	1.35	0.85	0.11	0.07	0.04
25	5.79	3.41	2.39	0.23	0.14	0.10
30	10.63	6.13	4.50	0.35	0.20	0.15
35	16.29	9.31	6.98	0.47	0.27	0.20
40	22.38	12.76	9.62	0.56	0.32	0.24
45	28.58	16.34	12.24	0.64	0.36	0.27
50	34.65	19.93	14.72	0.69	0.40	0.29
55	40.38	23.42	16.96	0.73	0.43	0.31
60	45.64	26.75	18.89	0.76	0.45	0.31
65	50.34	29.86	20.48	0.77	0.46	0.32
70	54.42	32.70	21.71	0.78	0.47	0.31
75	57.84	35.26	22.58	0.77	0.47	0.30
80	60.61	37.51	23.10	0.76	0.47	0.29
85	62.75	39.46	23.29	0.74	0.46	0.27
90	64.28	41.09	23.18	0.71	0.46	0.26
95	65.24	42.43	22.81	0.69	0.45	0.24
100	65.67	43.47	22.20	0.66	0.43	0.22
105	65.62	44.24	21.39	0.62	0.42	0.20
110	65.16	44.74	20.41	0.59	0.41	0.19
115	64.31	45.01	19.30	0.56	0.39	0.17
120	63.14	45.05	18.09	0.53	0.38	0.15
125	61.69	44.89	16.81	0.49	0.36	0.13
130	60.02	44.54	15.48	0.46	0.34	0.12
135	58.15	44.03	14.12	0.43	0.33	0.10
140	56.13	43.37	12.75	0.40	0.31	0.09
145	53.99	42.59	11.40	0.37	0.29	0.08
150	51.77	41.69	10.08	0.35	0.28	0.07
155	49.50	40.71	8.79	0.32	0.26	0.06
160	47.19	39.64	7.55	0.29	0.25	0.05
165	44.88	38.51	6.37	0.27	0.23	0.04
170	42.58	37.32	5.26	0.25	0.22	0.03
175	40.30	36.10	4.20	0.23	0.21	0.02
180	38.07	34.85	3.22	0.21	0.19	0.02
185	35.89	33.57	2.31	0.19	0.18	0.01
190	33.77	32.29	1.48	0.18	0.17	0.01
195	31.72	31.01	0.71	0.16	0.16	0.00
200	29.74	29.73	0.01	0.15	0.15	0.00

## Development Type 31 - SH sPtA

## Crown Closure Class B

## Utilization 3010

$$\text{Yield} = (a * (\text{Age} - 12)^b + (CC * 0.25 - 0.075) * c) * \text{EXP}(-a * (\text{Age} - 12))$$

Coefficients:

	Combined	Softwood
a	0.025000	0.019800
b	2.191000	2.052400
c	0.336485	0.315625
CC	2	2

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	0.30	0.21	0.10	0.02	0.01	0.01
20	2.62	1.59	1.03	0.13	0.08	0.05
25	7.19	4.17	3.02	0.29	0.17	0.12
30	13.56	7.70	5.86	0.45	0.26	0.20
35	21.21	11.92	9.29	0.61	0.34	0.27
40	29.62	16.60	13.02	0.74	0.42	0.33
45	38.36	21.54	16.82	0.85	0.48	0.37
50	47.05	26.56	20.50	0.94	0.53	0.41
55	55.41	31.52	23.89	1.01	0.57	0.43
60	63.21	36.31	26.91	1.05	0.61	0.45
65	70.30	40.84	29.46	1.08	0.63	0.45
70	76.57	45.05	31.52	1.09	0.64	0.45
75	81.96	48.89	33.07	1.09	0.65	0.44
80	86.44	52.33	34.11	1.08	0.65	0.43
85	90.02	55.36	34.67	1.06	0.65	0.41
90	92.73	57.95	34.78	1.03	0.64	0.39
95	94.61	60.13	34.48	1.00	0.63	0.36
100	95.70	61.89	33.81	0.96	0.62	0.34
105	96.09	63.26	32.83	0.92	0.60	0.31
110	95.82	64.25	31.57	0.87	0.58	0.29
115	94.97	64.88	30.09	0.83	0.56	0.26
120	93.62	65.18	28.44	0.78	0.54	0.24
125	91.82	65.18	26.64	0.73	0.52	0.21
130	89.65	64.90	24.75	0.69	0.50	0.19
135	87.16	64.36	22.80	0.65	0.48	0.17
140	84.42	63.60	20.81	0.60	0.45	0.15
145	81.47	62.64	18.82	0.56	0.43	0.13
150	78.36	61.51	16.86	0.52	0.41	0.11
155	75.15	60.22	14.93	0.48	0.39	0.10
160	71.85	58.80	13.05	0.45	0.37	0.08
165	68.52	57.27	11.25	0.42	0.35	0.07
170	65.19	55.65	9.54	0.38	0.33	0.06
175	61.87	53.96	7.91	0.35	0.31	0.05
180	58.59	52.21	6.37	0.33	0.29	0.04
185	55.36	50.42	4.94	0.30	0.27	0.03
190	52.22	48.60	3.61	0.27	0.26	0.02
195	49.16	46.77	2.39	0.25	0.24	0.01
200	46.20	44.94	1.27	0.23	0.22	0.01



## Development Type 31 - SH sPtA

## Crown Closure Class C

## Utilization 3010

$$\text{Yield} = (a * (\text{Age} - 12)^b + (CC * 0.25 - 0.075) * c) * \text{EXP}(-a * (\text{Age} - 12))$$

Coefficients:

	Combined	Softwood
a	0.025000	0.019800
b	2.191000	2.052400
c	0.336485	0.315625
CC	3	3

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	0.33	0.22	0.11	0.02	0.01	0.01
20	3.13	1.88	1.25	0.16	0.09	0.06
25	8.92	5.11	3.81	0.36	0.20	0.15
30	17.29	9.67	7.62	0.58	0.32	0.25
35	27.61	15.27	12.34	0.79	0.44	0.35
40	39.21	21.59	17.61	0.98	0.54	0.44
45	51.48	28.38	23.10	1.14	0.63	0.51
50	63.90	35.38	28.51	1.28	0.71	0.57
55	76.03	42.41	33.63	1.38	0.77	0.61
60	87.55	49.28	38.27	1.46	0.82	0.64
65	98.18	55.87	42.31	1.51	0.86	0.65
70	107.75	62.07	45.68	1.54	0.89	0.65
75	116.13	67.80	48.33	1.55	0.90	0.64
80	123.28	73.01	50.27	1.54	0.91	0.63
85	129.15	77.66	51.49	1.52	0.91	0.61
90	133.78	81.73	52.05	1.49	0.91	0.58
95	137.20	85.21	51.99	1.44	0.90	0.55
100	139.48	88.12	51.36	1.39	0.88	0.51
105	140.68	90.46	50.23	1.34	0.86	0.48
110	140.91	92.25	48.66	1.28	0.84	0.44
115	140.26	93.53	46.73	1.22	0.81	0.41
120	138.81	94.32	44.49	1.16	0.79	0.37
125	136.67	94.65	42.02	1.09	0.76	0.34
130	133.92	94.56	39.36	1.03	0.73	0.30
135	130.66	94.09	36.57	0.97	0.70	0.27
140	126.97	93.27	33.70	0.91	0.67	0.24
145	122.93	92.14	30.78	0.85	0.64	0.21
150	118.61	90.74	27.87	0.79	0.60	0.19
155	114.08	89.08	25.00	0.74	0.57	0.16
160	109.40	87.22	22.18	0.68	0.55	0.14
165	104.62	85.18	19.45	0.63	0.52	0.12
170	99.80	82.98	16.82	0.59	0.49	0.10
175	94.96	80.65	14.31	0.54	0.46	0.08
180	90.15	78.23	11.93	0.50	0.43	0.07
185	85.41	75.72	9.69	0.46	0.41	0.05
190	80.75	73.16	7.59	0.42	0.39	0.04
195	76.20	70.55	5.65	0.39	0.36	0.03
200	71.77	67.93	3.85	0.36	0.34	0.02

## Development Type 31 - SH sPtA

## Crown Closure Class D

## Utilization 3010

$$\text{Yield} = (a * (\text{Age} - 12)^{(b + (CC * 0.25 - 0.075) * c)}) * \text{EXP}(-a * (\text{Age} - 12))$$

Coefficients:

	Combined	Softwood
a	0.025000	0.019800
b	2.191000	2.052400
c	0.336485	0.315625
CC	4	4

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	0.36	0.25	0.12	0.02	0.02	0.02
20	3.72	2.21	1.51	0.19	0.11	0.08
25	11.07	6.26	4.81	0.44	0.25	0.19
30	22.06	12.15	9.90	0.74	0.41	0.33
35	35.94	19.56	16.39	1.03	0.56	0.47
40	51.89	28.09	23.80	1.30	0.70	0.60
45	69.08	37.40	31.68	1.54	0.83	0.70
50	86.77	47.15	39.62	1.74	0.94	0.79
55	104.33	57.06	47.27	1.90	1.04	0.86
60	121.25	66.89	54.36	2.02	1.11	0.91
65	137.11	76.42	60.69	2.11	1.18	0.93
70	151.62	85.51	66.11	2.17	1.22	0.94
75	164.56	94.02	70.54	2.19	1.25	0.94
80	175.81	101.85	73.95	2.20	1.27	0.92
85	185.29	108.95	76.34	2.18	1.28	0.90
90	193.00	115.26	77.74	2.14	1.28	0.86
95	198.97	120.77	78.21	2.09	1.27	0.82
100	203.27	125.46	77.81	2.03	1.25	0.78
105	205.99	129.35	76.63	1.96	1.23	0.73
110	207.23	132.46	74.77	1.88	1.20	0.68
115	207.13	134.82	72.31	1.80	1.17	0.63
120	205.81	136.47	69.35	1.72	1.14	0.58
125	203.41	137.44	65.97	1.63	1.10	0.53
130	200.05	137.79	62.26	1.54	1.06	0.48
135	195.86	137.55	58.31	1.45	1.02	0.43
140	190.97	136.78	54.18	1.36	0.98	0.39
145	185.49	135.54	49.95	1.28	0.93	0.34
150	179.53	133.85	45.67	1.20	0.89	0.30
155	173.19	131.79	41.40	1.12	0.85	0.27
160	166.57	129.38	37.18	1.04	0.81	0.23
165	159.74	126.68	33.06	0.97	0.77	0.20
170	152.78	123.72	29.06	0.90	0.73	0.17
175	145.76	120.55	25.21	0.83	0.69	0.14
180	138.73	117.20	21.53	0.77	0.65	0.12
185	131.75	113.71	18.04	0.71	0.61	0.10
190	124.86	110.11	14.76	0.66	0.58	0.08
195	118.10	106.42	11.68	0.61	0.55	0.06
200	111.50	102.68	8.82	0.56	0.51	0.04

## Development Type 32 - SH jPtA

## Crown Closure Class A

## Utilization 3010

$$\text{Yield} = (a * (\text{Age} - 12)^{(b + (CC * 0.25 - 0.075) * c)}) * \text{EXP}(-a * (\text{Age} - 12))$$

Coefficients:

	Combined	Softwood
a	0.022000	0.019000
b	2.158711	2.091712
c	0.299382	0.194589
CC	1	1

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	0.23	0.19	0.05	0.02	0.01	0.01
20	1.83	1.36	0.47	0.09	0.07	0.02
25	4.80	3.46	1.34	0.19	0.14	0.05
30	8.83	6.29	2.54	0.29	0.21	0.08
35	13.60	9.63	3.97	0.39	0.28	0.11
40	18.82	13.31	5.52	0.47	0.33	0.14
45	24.25	17.16	7.09	0.54	0.38	0.16
50	29.68	21.06	8.62	0.59	0.42	0.17
55	34.94	24.91	10.04	0.64	0.45	0.18
60	39.92	28.62	11.31	0.67	0.48	0.19
65	44.52	32.12	12.40	0.68	0.49	0.19
70	48.68	35.38	13.30	0.70	0.51	0.19
75	52.36	38.36	14.00	0.70	0.51	0.19
80	55.54	41.03	14.50	0.69	0.51	0.18
85	58.20	43.39	14.81	0.68	0.51	0.17
90	60.37	45.42	14.94	0.67	0.50	0.17
95	62.04	47.14	14.90	0.65	0.50	0.16
100	63.25	48.54	14.71	0.63	0.49	0.15
105	64.03	49.65	14.38	0.61	0.47	0.14
110	64.40	50.46	13.94	0.59	0.46	0.13
115	64.40	51.01	13.39	0.56	0.44	0.12
120	64.07	51.31	12.76	0.53	0.43	0.11
125	63.44	51.37	12.07	0.51	0.41	0.10
130	62.54	51.22	11.32	0.48	0.39	0.09
135	61.41	50.87	10.54	0.45	0.38	0.08
140	60.08	50.35	9.73	0.43	0.36	0.07
145	58.58	49.67	8.91	0.40	0.34	0.06
150	56.94	48.86	8.08	0.38	0.33	0.05
155	55.18	47.92	7.26	0.36	0.31	0.05
160	53.34	46.88	6.46	0.33	0.29	0.04
165	51.42	45.75	5.67	0.31	0.28	0.03
170	49.46	44.55	4.91	0.29	0.26	0.03
175	47.47	43.28	4.19	0.27	0.25	0.02
180	45.46	41.97	3.49	0.25	0.23	0.02
185	43.46	40.62	2.83	0.23	0.22	0.02
190	41.46	39.25	2.21	0.22	0.21	0.01
195	39.49	37.86	1.63	0.20	0.19	0.01
200	37.55	36.46	1.09	0.19	0.18	0.01

## Development Type 32 - SH jPtA

## Crown Closure Class B

## Utilization 3010

$$\text{Yield} = (a * (\text{Age} - 12)^{(b + (CC * 0.25 - 0.075) * c)}) * \text{EXP}(-a * (\text{Age} - 12))$$

Coefficients:

	Combined	Softwood
a	0.022000	0.019000
b	2.158711	2.091712
c	0.299382	0.194589
CC	2	2

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	0.25	0.20	0.06	0.02	0.01	0.01
20	2.14	1.50	0.64	0.11	0.08	0.03
25	5.82	3.92	1.89	0.23	0.16	0.08
30	10.96	7.24	3.72	0.37	0.24	0.12
35	17.20	11.22	5.98	0.49	0.32	0.17
40	24.16	15.65	8.51	0.60	0.39	0.21
45	31.50	20.34	11.17	0.70	0.45	0.25
50	38.96	25.14	13.83	0.78	0.50	0.28
55	46.30	29.91	16.40	0.84	0.54	0.30
60	53.34	34.55	18.79	0.89	0.58	0.31
65	59.93	38.97	20.96	0.92	0.60	0.32
70	65.97	43.11	22.86	0.94	0.62	0.33
75	71.40	46.93	24.47	0.95	0.63	0.33
80	76.16	50.38	25.78	0.95	0.63	0.32
85	80.24	53.46	26.78	0.94	0.63	0.32
90	83.64	56.15	27.49	0.93	0.62	0.31
95	86.36	58.44	27.92	0.91	0.62	0.29
100	88.43	60.36	28.08	0.88	0.60	0.28
105	89.89	61.89	27.99	0.86	0.59	0.27
110	90.77	63.07	27.69	0.83	0.57	0.25
115	91.11	63.91	27.20	0.79	0.56	0.24
120	90.96	64.43	26.53	0.76	0.54	0.22
125	90.36	64.65	25.72	0.72	0.52	0.21
130	89.37	64.59	24.78	0.69	0.50	0.19
135	88.03	64.29	23.74	0.65	0.48	0.18
140	86.38	63.75	22.63	0.62	0.46	0.16
145	84.47	63.01	21.46	0.58	0.43	0.15
150	82.33	62.09	20.24	0.55	0.41	0.13
155	80.01	61.00	19.00	0.52	0.39	0.12
160	77.53	59.78	17.75	0.48	0.37	0.11
165	74.93	58.44	16.50	0.45	0.35	0.10
170	72.25	56.99	15.26	0.42	0.34	0.09
175	69.50	55.46	14.04	0.40	0.32	0.08
180	66.71	53.85	12.86	0.37	0.30	0.07
185	63.91	52.20	11.71	0.35	0.28	0.06
190	61.10	50.50	10.60	0.32	0.27	0.06
195	58.32	48.78	9.54	0.30	0.25	0.05
200	55.56	47.03	8.53	0.28	0.24	0.04

## Development Type 32 - SH jPtA

## Crown Closure Class C

## Utilization 3010

$$\text{Yield} = (a * (\text{Age} - 12)^{(b + (CC * 0.25 - 0.075) * c)}) * \text{EXP}(-a * (\text{Age} - 12))$$

Coefficients:

	Combined	Softwood
a	0.022000	0.019000
b	2.158711	2.091712
c	0.299382	0.194589
CC	3	3

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	0.28	0.21	0.07	0.02	0.01	0.01
20	2.50	1.66	0.84	0.13	0.08	0.04
25	7.05	4.44	2.60	0.28	0.18	0.10
30	13.61	8.33	5.28	0.45	0.28	0.18
35	21.75	13.07	8.68	0.62	0.37	0.25
40	31.00	18.40	12.60	0.77	0.46	0.31
45	40.93	24.11	16.82	0.91	0.54	0.37
50	51.16	30.00	21.15	1.02	0.60	0.42
55	61.36	35.91	25.45	1.12	0.65	0.46
60	71.26	41.70	29.56	1.19	0.70	0.49
65	80.67	47.27	33.40	1.24	0.73	0.51
70	89.40	52.52	36.88	1.28	0.75	0.53
75	97.36	57.40	39.95	1.30	0.77	0.53
80	104.45	61.86	42.58	1.31	0.77	0.53
85	110.63	65.87	44.76	1.30	0.77	0.53
90	115.88	69.40	46.48	1.29	0.77	0.52
95	120.21	72.46	47.75	1.27	0.76	0.50
100	123.64	75.04	48.59	1.24	0.75	0.49
105	126.19	77.16	49.03	1.20	0.73	0.47
110	127.93	78.83	49.09	1.16	0.72	0.45
115	128.89	80.07	48.81	1.12	0.70	0.42
120	129.13	80.91	48.22	1.08	0.67	0.40
125	128.72	81.37	47.36	1.03	0.65	0.38
130	127.73	81.47	46.26	0.98	0.63	0.36
135	126.20	81.24	44.96	0.93	0.60	0.33
140	124.20	80.72	43.48	0.89	0.58	0.31
145	121.80	79.94	41.87	0.84	0.55	0.29
150	119.05	78.91	40.14	0.79	0.53	0.27
155	115.99	77.66	38.33	0.75	0.50	0.25
160	112.69	76.23	36.46	0.70	0.48	0.23
165	109.19	74.64	34.55	0.66	0.45	0.21
170	105.53	72.90	32.63	0.62	0.43	0.19
175	101.76	71.05	30.71	0.58	0.41	0.18
180	97.90	69.10	28.80	0.54	0.38	0.16
185	93.99	67.07	26.91	0.51	0.36	0.15
190	90.05	64.98	25.07	0.47	0.34	0.13
195	86.13	62.85	23.28	0.44	0.32	0.12
200	82.22	60.68	21.54	0.41	0.30	0.11

## Development Type 32 - SH jPtA

## Crown Closure Class D

## Utilization 3010

$$\text{Yield} = (a * (\text{Age} - 12)^{(b + (CC * 0.25 - 0.075) * c)}) * \text{EXP}(-a * (\text{Age} - 12))$$

Coefficients:

	Combined	Softwood
a	0.022000	0.019000
b	2.158711	2.091712
c	0.299382	0.194589
CC	4	4

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	0.30	0.22	0.08	0.02	0.01	0.01
20	2.92	1.84	1.08	0.15	0.09	0.05
25	8.54	5.04	3.50	0.34	0.20	0.14
30	16.90	9.59	7.31	0.56	0.32	0.24
35	27.50	15.22	12.28	0.79	0.43	0.35
40	39.78	21.64	18.14	0.99	0.54	0.45
45	53.17	28.58	24.59	1.18	0.64	0.55
50	67.16	35.81	31.35	1.34	0.72	0.63
55	81.31	43.12	38.18	1.48	0.78	0.69
60	95.21	50.35	44.87	1.59	0.84	0.75
65	108.58	57.34	51.24	1.67	0.88	0.79
70	121.15	64.00	57.16	1.73	0.91	0.82
75	132.75	70.22	62.53	1.77	0.94	0.83
80	143.23	75.96	67.28	1.79	0.95	0.84
85	152.52	81.15	71.37	1.79	0.95	0.84
90	160.56	85.79	74.77	1.78	0.95	0.83
95	167.33	89.84	77.50	1.76	0.95	0.82
100	172.86	93.31	79.55	1.73	0.93	0.80
105	177.16	96.20	80.96	1.69	0.92	0.77
110	180.30	98.53	81.77	1.64	0.90	0.74
115	182.33	100.33	82.00	1.59	0.87	0.71
120	183.33	101.61	81.72	1.53	0.85	0.68
125	183.37	102.40	80.96	1.47	0.82	0.65
130	182.54	102.75	79.79	1.40	0.79	0.61
135	180.92	102.67	78.24	1.34	0.76	0.58
140	178.59	102.21	76.37	1.28	0.73	0.55
145	175.64	101.40	74.23	1.21	0.70	0.51
150	172.14	100.28	71.86	1.15	0.67	0.48
155	168.17	98.87	69.30	1.08	0.64	0.45
160	163.81	97.21	66.60	1.02	0.61	0.42
165	159.11	95.33	63.78	0.96	0.58	0.39
170	154.15	93.26	60.89	0.91	0.55	0.36
175	148.98	91.03	57.95	0.85	0.52	0.33
180	143.65	88.66	54.99	0.80	0.49	0.31
185	138.22	86.18	52.04	0.75	0.47	0.28
190	132.72	83.61	49.11	0.70	0.44	0.26
195	127.19	80.97	46.22	0.65	0.42	0.24
200	121.68	78.28	43.39	0.61	0.39	0.22

## Development Type 51 - HS tAsP

## Crown Closure Class A

## Utilization 3010

$$\text{Yield} = (a * (\text{Age} - 12)^b + (CC * 0.25 - 0.075) * c) * \text{EXP}(-a * (\text{Age} - 12))$$

Coefficients:

	Combined	Softwood
a	0.022000	0.019000
b	2.259132	1.958000
c	0.223186	0.387606
CC	1	1

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	0.26	0.17	0.09	0.02	0.01	0.01
20	2.20	1.10	1.09	0.11	0.06	0.05
25	6.00	2.68	3.32	0.24	0.11	0.13
30	11.36	4.71	6.65	0.38	0.16	0.22
35	17.87	7.04	10.83	0.51	0.20	0.31
40	25.16	9.54	15.62	0.63	0.24	0.39
45	32.88	12.10	20.78	0.73	0.27	0.46
50	40.74	14.64	26.10	0.81	0.29	0.52
55	48.48	17.10	31.38	0.88	0.31	0.57
60	55.93	19.44	36.49	0.93	0.32	0.61
65	62.91	21.60	41.31	0.97	0.33	0.64
70	69.34	23.58	45.75	0.99	0.34	0.65
75	75.11	25.35	49.76	1.00	0.34	0.66
80	80.20	26.92	53.28	1.00	0.34	0.67
85	84.57	28.26	56.31	0.99	0.33	0.66
90	88.22	29.39	58.83	0.98	0.33	0.65
95	91.16	30.31	60.85	0.96	0.32	0.64
100	93.42	31.03	62.38	0.93	0.31	0.62
105	95.02	31.56	63.46	0.90	0.30	0.60
110	96.01	31.91	64.09	0.87	0.29	0.58
115	96.43	32.10	64.33	0.84	0.28	0.56
120	96.32	32.13	64.19	0.80	0.27	0.53
125	95.75	32.03	63.72	0.77	0.26	0.51
130	94.75	31.79	62.95	0.73	0.24	0.48
135	93.37	31.45	61.92	0.69	0.23	0.46
140	91.67	31.00	60.67	0.65	0.22	0.43
145	89.68	30.47	59.21	0.62	0.21	0.41
150	87.45	29.86	57.59	0.58	0.20	0.38
155	85.02	29.18	55.83	0.55	0.19	0.36
160	82.42	28.45	53.97	0.52	0.18	0.34
165	79.69	27.67	52.02	0.48	0.17	0.32
170	76.87	26.86	50.01	0.45	0.16	0.29
175	73.97	26.02	47.96	0.42	0.15	0.27
180	71.03	25.15	45.88	0.39	0.14	0.25
185	68.07	24.27	43.80	0.37	0.13	0.24
190	65.11	23.39	41.72	0.34	0.12	0.22
195	62.16	22.49	39.66	0.32	0.12	0.20
200	59.24	21.60	37.64	0.30	0.11	0.19

## Development Type 51 - HS tAsP

## Crown Closure Class B

## Utilization 3010

$$\text{Yield} = (a * (\text{Age} - 12)^b + (CC * 0.25 - 0.075) * c) * \text{EXP}(-a * (\text{Age} - 12))$$

Coefficients:

	Combined	Softwood
a	0.022000	0.019000
b	2.259132	1.958000
c	0.223186	0.387606
CC	2	2

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	0.27	0.18	0.09	0.02	0.01	0.01
20	2.47	1.35	1.12	0.12	0.07	0.06
25	6.93	3.44	3.49	0.28	0.14	0.14
30	13.35	6.23	7.11	0.44	0.21	0.24
35	21.29	9.54	11.75	0.61	0.27	0.34
40	30.30	13.17	17.13	0.76	0.33	0.43
45	39.97	16.98	22.99	0.89	0.38	0.51
50	49.90	20.83	29.08	1.00	0.42	0.58
55	59.81	24.62	35.18	1.09	0.45	0.64
60	69.41	28.28	41.13	1.16	0.47	0.69
65	78.52	31.74	46.78	1.21	0.49	0.72
70	86.97	34.95	52.02	1.24	0.50	0.74
75	94.65	37.88	56.77	1.26	0.51	0.76
80	101.49	40.51	60.98	1.27	0.51	0.76
85	107.44	42.83	64.62	1.26	0.50	0.76
90	112.50	44.83	67.67	1.25	0.50	0.75
95	116.65	46.51	70.14	1.23	0.49	0.74
100	119.93	47.89	72.04	1.20	0.48	0.72
105	122.36	48.97	73.39	1.17	0.47	0.70
110	123.99	49.77	74.23	1.13	0.45	0.67
115	124.88	50.30	74.58	1.09	0.44	0.65
120	125.08	50.58	74.50	1.04	0.42	0.62
125	124.65	50.64	74.01	1.00	0.41	0.59
130	123.65	50.48	73.17	0.95	0.39	0.56
135	122.13	50.13	72.00	0.90	0.37	0.53
140	120.17	49.61	70.56	0.86	0.35	0.50
145	117.81	48.94	68.87	0.81	0.34	0.47
150	115.12	48.13	66.99	0.77	0.32	0.45
155	112.14	47.20	64.94	0.72	0.30	0.42
160	108.92	46.17	62.75	0.68	0.29	0.39
165	105.52	45.06	60.46	0.64	0.27	0.37
170	101.96	43.87	58.09	0.60	0.26	0.34
175	98.29	42.62	55.67	0.56	0.24	0.32
180	94.54	41.33	53.21	0.53	0.23	0.30
185	90.75	39.99	50.75	0.49	0.22	0.27
190	86.93	38.64	48.30	0.46	0.20	0.25
195	83.13	37.26	45.86	0.43	0.19	0.24
200	79.34	35.88	43.46	0.40	0.18	0.22



## Development Type 51 - HS tAsP

## Crown Closure Class C

## Utilization 3010

$$\text{Yield} = (a * (\text{Age} - 12)^b + (CC * 0.25 - 0.075) * c) * \text{EXP}(-a * (\text{Age} - 12))$$

Coefficients:

	Combined	Softwood
a	0.022000	0.019000
b	2.259132	1.958000
c	0.223186	0.387606
CC	3	3

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	0.29	0.21	0.09	0.02	0.01	0.01
20	2.77	1.65	1.12	0.14	0.08	0.06
25	7.99	4.41	3.58	0.32	0.18	0.14
30	15.68	8.25	7.43	0.52	0.28	0.25
35	25.36	12.93	12.43	0.72	0.37	0.36
40	36.50	18.19	18.30	0.91	0.45	0.46
45	48.58	23.82	24.75	1.08	0.53	0.55
50	61.13	29.63	31.50	1.22	0.59	0.63
55	73.77	35.45	38.32	1.34	0.64	0.70
60	86.15	41.15	44.99	1.44	0.69	0.75
65	97.99	46.63	51.35	1.51	0.72	0.79
70	109.08	51.80	57.28	1.56	0.74	0.82
75	119.26	56.60	62.67	1.59	0.75	0.84
80	128.43	60.97	67.46	1.61	0.76	0.84
85	136.51	64.91	71.60	1.61	0.76	0.84
90	143.45	68.37	75.08	1.59	0.76	0.83
95	149.27	71.37	77.90	1.57	0.75	0.82
100	153.96	73.90	80.06	1.54	0.74	0.80
105	157.57	75.97	81.60	1.50	0.72	0.78
110	160.14	77.61	82.54	1.46	0.71	0.75
115	161.74	78.81	82.92	1.41	0.69	0.72
120	162.42	79.62	82.80	1.35	0.66	0.69
125	162.27	80.06	82.21	1.30	0.64	0.66
130	161.35	80.15	81.21	1.24	0.62	0.62
135	159.75	79.92	79.83	1.18	0.59	0.59
140	157.53	79.39	78.14	1.13	0.57	0.56
145	154.77	78.61	76.17	1.07	0.54	0.53
150	151.55	77.59	73.96	1.01	0.52	0.49
155	147.92	76.35	71.57	0.95	0.49	0.46
160	143.95	74.94	69.01	0.90	0.47	0.43
165	139.71	73.36	66.35	0.85	0.44	0.40
170	135.24	71.65	63.59	0.80	0.42	0.37
175	130.60	69.82	60.78	0.75	0.40	0.35
180	125.83	67.90	57.93	0.70	0.38	0.32
185	120.98	65.90	55.08	0.65	0.36	0.30
190	116.08	63.84	52.24	0.61	0.34	0.27
195	111.17	61.73	49.43	0.57	0.32	0.25
200	106.27	59.60	46.67	0.53	0.30	0.23

## Development Type 51 - HS tAsP

## Crown Closure Class D

## Utilization 3010

$$\text{Yield} = (a * (\text{Age} - 12)^b + (CC * 0.25 - 0.075) * c) * \text{EXP}(-a * (\text{Age} - 12))$$

Coefficients:

	Combined	Softwood
a	0.022000	0.019000
b	2.259132	1.958000
c	0.223186	0.387606
CC	4	4

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	0.31	0.23	0.08	0.02	0.02	0.02
20	3.11	2.02	1.09	0.16	0.10	0.05
25	9.22	5.65	3.57	0.37	0.23	0.14
30	18.43	10.92	7.51	0.61	0.36	0.25
35	30.21	17.52	12.69	0.86	0.50	0.36
40	43.95	25.12	18.83	1.10	0.63	0.47
45	59.04	33.43	25.61	1.31	0.74	0.57
50	74.89	42.15	32.74	1.50	0.84	0.65
55	91.00	51.04	39.96	1.65	0.93	0.73
60	106.92	59.89	47.03	1.78	1.00	0.78
65	122.29	68.51	53.77	1.88	1.05	0.83
70	136.82	76.77	60.04	1.95	1.10	0.86
75	150.28	84.56	65.73	2.00	1.13	0.88
80	162.52	91.77	70.75	2.03	1.15	0.88
85	173.43	98.37	75.06	2.04	1.16	0.88
90	182.93	104.29	78.64	2.03	1.16	0.87
95	191.00	109.52	81.49	2.01	1.15	0.86
100	197.65	114.05	83.61	1.98	1.14	0.84
105	202.91	117.87	85.04	1.93	1.12	0.81
110	206.83	121.02	85.81	1.88	1.10	0.78
115	209.47	123.49	85.98	1.82	1.07	0.75
120	210.92	125.34	85.58	1.76	1.04	0.71
125	211.25	126.58	84.67	1.69	1.01	0.68
130	210.56	127.25	83.32	1.62	0.98	0.64
135	208.95	127.39	81.56	1.55	0.94	0.60
140	206.51	127.05	79.46	1.48	0.91	0.57
145	203.33	126.26	77.07	1.40	0.87	0.53
150	199.50	125.07	74.44	1.33	0.83	0.50
155	195.11	123.51	71.61	1.26	0.80	0.46
160	190.25	121.62	68.62	1.19	0.76	0.43
165	184.98	119.45	65.53	1.12	0.72	0.40
170	179.38	117.02	62.36	1.06	0.69	0.37
175	173.53	114.38	59.15	0.99	0.65	0.34
180	167.47	111.56	55.92	0.93	0.62	0.31
185	161.28	108.58	52.70	0.87	0.59	0.28
190	154.99	105.47	49.52	0.82	0.56	0.26
195	148.66	102.27	46.39	0.76	0.52	0.24
200	142.33	99.00	43.33	0.71	0.49	0.22

## Development Type 52 - HS tAjP

## Crown Closure Class A

## Utilization 3010

$$\text{Yield} = (a * (\text{Age} - 12)^{(b + (CC * 0.25 - 0.075) * c)}) * \text{EXP}(-a * (\text{Age} - 12))$$

Coefficients:

	Combined	Hardwood
a	0.022000	0.026000
b	2.075191	1.950000
c	0.325666	0.400000
CC	1	1

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	0	0	0	0.00	0.00	0.00
20	1.55	0.15	1.41	0.08	0.01	0.07
25	3.92	0.62	3.30	0.16	0.02	0.13
30	7.03	1.44	5.59	0.23	0.05	0.19
35	10.62	2.57	8.05	0.30	0.07	0.23
40	14.47	3.95	10.52	0.36	0.10	0.26
45	18.40	5.53	12.87	0.41	0.12	0.29
50	22.27	7.24	15.03	0.45	0.14	0.30
55	25.97	9.02	16.94	0.47	0.16	0.31
60	29.41	10.83	18.58	0.49	0.18	0.31
65	32.55	12.61	19.93	0.50	0.19	0.31
70	35.34	14.34	21.00	0.50	0.20	0.30
75	37.76	15.97	21.79	0.50	0.21	0.29
80	39.81	17.48	22.33	0.50	0.22	0.28
85	41.48	18.86	22.63	0.49	0.22	0.27
90	42.80	20.09	22.71	0.48	0.22	0.25
95	43.78	21.16	22.61	0.46	0.22	0.24
100	44.42	22.08	22.34	0.44	0.22	0.22
105	44.77	22.84	21.94	0.43	0.22	0.21
110	44.85	23.44	21.41	0.41	0.21	0.19
115	44.67	23.88	20.79	0.39	0.21	0.18
120	44.28	24.19	20.09	0.37	0.20	0.17
125	43.68	24.35	19.33	0.35	0.19	0.15
130	42.92	24.39	18.53	0.33	0.19	0.14
135	42.00	24.31	17.69	0.31	0.18	0.13
140	40.96	24.13	16.83	0.29	0.17	0.12
145	39.82	23.85	15.97	0.27	0.16	0.11
150	38.59	23.48	15.11	0.26	0.16	0.10
155	37.30	23.04	14.26	0.24	0.15	0.09
160	35.95	22.54	13.42	0.22	0.14	0.08
165	34.57	21.97	12.60	0.21	0.13	0.08
170	33.17	21.36	11.81	0.20	0.13	0.07
175	31.76	20.71	11.04	0.18	0.12	0.06
180	30.34	20.04	10.31	0.17	0.11	0.06
185	28.93	19.33	9.60	0.16	0.10	0.05
190	27.54	18.61	8.93	0.14	0.10	0.05
195	26.18	17.88	8.29	0.13	0.09	0.04
200	24.84	17.15	7.69	0.12	0.09	0.04

## Development Type 52 - HS tAjP

## Crown Closure Class B

## Utilization 3010

$$\text{Yield} = (a * (\text{Age} - 12)^{(b + (CC * 0.25 - 0.075) * c)}) * \text{EXP}(-a * (\text{Age} - 12))$$

Coefficients:

	Combined	Hardwood
a	0.022000	0.026000
b	2.075191	1.950000
c	0.325666	0.400000
CC	2	2

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	0	0	0	0.00	0.00	0.00
20	1.84	0.11	1.73	0.09	0.01	0.09
25	4.83	0.57	4.26	0.19	0.02	0.17
30	8.89	1.43	7.46	0.30	0.05	0.25
35	13.71	2.69	11.02	0.39	0.08	0.31
40	18.98	4.30	14.68	0.47	0.11	0.37
45	24.46	6.20	18.26	0.54	0.14	0.41
50	29.95	8.32	21.63	0.60	0.17	0.43
55	35.27	10.59	24.68	0.64	0.19	0.45
60	40.31	12.94	27.37	0.67	0.22	0.46
65	44.97	15.32	29.65	0.69	0.24	0.46
70	49.18	17.66	31.52	0.70	0.25	0.45
75	52.91	19.93	32.98	0.71	0.27	0.44
80	56.13	22.08	34.05	0.70	0.28	0.43
85	58.83	24.08	34.75	0.69	0.28	0.41
90	61.03	25.91	35.11	0.68	0.29	0.39
95	62.73	27.56	35.17	0.66	0.29	0.37
100	63.96	29.00	34.96	0.64	0.29	0.35
105	64.76	30.24	34.52	0.62	0.29	0.33
110	65.14	31.27	33.87	0.59	0.28	0.31
115	65.15	32.10	33.05	0.57	0.28	0.29
120	64.82	32.74	32.09	0.54	0.27	0.27
125	64.19	33.18	31.01	0.51	0.27	0.25
130	63.29	33.44	29.85	0.49	0.26	0.23
135	62.15	33.53	28.62	0.46	0.25	0.21
140	60.81	33.46	27.35	0.43	0.24	0.20
145	59.30	33.25	26.05	0.41	0.23	0.18
150	57.64	32.91	24.73	0.38	0.22	0.16
155	55.87	32.45	23.42	0.36	0.21	0.15
160	54.01	31.89	22.12	0.34	0.20	0.14
165	52.07	31.23	20.84	0.32	0.19	0.13
170	50.09	30.50	19.59	0.29	0.18	0.12
175	48.08	29.70	18.38	0.27	0.17	0.11
180	46.05	28.84	17.20	0.26	0.16	0.10
185	44.02	27.94	16.08	0.24	0.15	0.09
190	42.00	27.01	15.00	0.22	0.14	0.08
195	40.00	26.04	13.96	0.21	0.13	0.07
200	38.04	25.06	12.98	0.19	0.13	0.06

## Development Type 52 - HS tAjP

## Crown Closure Class C

## Utilization 3010

$$\text{Yield} = (a * (\text{Age} - 12)^{(b + (CC * 0.25 - 0.075) * c)}) * \text{EXP}(-a * (\text{Age} - 12))$$

Coefficients:

	Combined	Hardwood
a	0.022000	0.026000
b	2.075191	1.950000
c	0.325666	0.400000
CC	3	3

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	0	0	0	0.00	0.00	0.00
20	2.18	0.05	2.14	0.11	0.00	0.11
25	5.95	0.44	5.51	0.24	0.02	0.22
30	11.25	1.29	9.96	0.38	0.04	0.33
35	17.70	2.62	15.08	0.51	0.07	0.43
40	24.90	4.41	20.49	0.62	0.11	0.51
45	32.52	6.61	25.91	0.72	0.15	0.58
50	40.27	9.15	31.12	0.81	0.18	0.62
55	47.91	11.96	35.95	0.87	0.22	0.65
60	55.24	14.94	40.30	0.92	0.25	0.67
65	62.13	18.03	44.10	0.96	0.28	0.68
70	68.45	21.15	47.30	0.98	0.30	0.68
75	74.13	24.23	49.90	0.99	0.32	0.67
80	79.13	27.22	51.92	0.99	0.34	0.65
85	83.43	30.06	53.37	0.98	0.35	0.63
90	87.01	32.72	54.28	0.97	0.36	0.60
95	89.89	35.17	54.72	0.95	0.37	0.58
100	92.10	37.39	54.71	0.92	0.37	0.55
105	93.66	39.35	54.31	0.89	0.37	0.52
110	94.62	41.05	53.57	0.86	0.37	0.49
115	95.02	42.48	52.53	0.83	0.37	0.46
120	94.90	43.66	51.25	0.79	0.36	0.43
125	94.32	44.57	49.76	0.75	0.36	0.40
130	93.32	45.23	48.10	0.72	0.35	0.37
135	91.96	45.65	46.31	0.68	0.34	0.34
140	90.27	45.84	44.43	0.64	0.33	0.32
145	88.30	45.82	42.48	0.61	0.32	0.29
150	86.09	45.61	40.48	0.57	0.30	0.27
155	83.69	45.22	38.47	0.54	0.29	0.25
160	81.12	44.67	36.46	0.51	0.28	0.23
165	78.43	43.97	34.46	0.48	0.27	0.21
170	75.64	43.14	32.50	0.44	0.25	0.19
175	72.79	42.20	30.58	0.42	0.24	0.17
180	69.89	41.17	28.72	0.39	0.23	0.16
185	66.97	40.05	26.91	0.36	0.22	0.15
190	64.04	38.87	25.18	0.34	0.20	0.13
195	61.14	37.63	23.51	0.31	0.19	0.12
200	58.27	36.35	21.92	0.29	0.18	0.11

## Development Type 52 - HS tAjP

## Crown Closure Class D

## Utilization 3010

$$\text{Yield} = (a * (\text{Age} - 12)^{(b + (CC * 0.25 - 0.075) * c)}) * \text{EXP}(-a * (\text{Age} - 12))$$

Coefficients:

	Combined	Hardwood
a	0.022000	0.026000
b	2.075191	1.950000
c	0.325666	0.400000
CC	4	4

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	0	0	0	0.00	0.00	0.00
20	2.58	0.00	2.58	0.13	0.00	0.13
25	7.34	0.21	7.12	0.29	0.01	0.28
30	14.24	0.94	13.30	0.47	0.03	0.44
35	22.84	2.21	20.63	0.65	0.06	0.59
40	32.66	4.07	28.59	0.82	0.10	0.71
45	43.23	6.47	36.75	0.96	0.14	0.82
50	54.15	9.38	44.77	1.08	0.19	0.90
55	65.07	12.70	52.37	1.18	0.23	0.95
60	75.71	16.36	59.35	1.26	0.27	0.99
65	85.83	20.24	65.59	1.32	0.31	1.01
70	95.26	24.27	70.99	1.36	0.35	1.01
75	103.87	28.35	75.52	1.38	0.38	1.01
80	111.57	32.40	79.17	1.39	0.41	0.99
85	118.31	36.35	81.96	1.39	0.43	0.96
90	124.05	40.13	83.92	1.38	0.45	0.93
95	128.81	43.69	85.12	1.36	0.46	0.90
100	132.61	47.00	85.61	1.33	0.47	0.86
105	135.46	50.01	85.45	1.29	0.48	0.81
110	137.44	52.71	84.73	1.25	0.48	0.77
115	138.57	55.07	83.51	1.20	0.48	0.73
120	138.94	57.09	81.85	1.16	0.48	0.68
125	138.60	58.77	79.83	1.11	0.47	0.64
130	137.62	60.12	77.50	1.06	0.46	0.60
135	136.06	61.13	74.93	1.01	0.45	0.56
140	134.00	61.82	72.17	0.96	0.44	0.52
145	131.48	62.22	69.27	0.91	0.43	0.48
150	128.58	62.32	66.26	0.86	0.42	0.44
155	125.36	62.17	63.19	0.81	0.40	0.41
160	121.85	61.76	60.09	0.76	0.39	0.38
165	118.13	61.14	56.99	0.72	0.37	0.35
170	114.23	60.31	53.92	0.67	0.35	0.32
175	110.19	59.29	50.90	0.63	0.34	0.29
180	106.06	58.12	47.94	0.59	0.32	0.27
185	101.87	56.81	45.06	0.55	0.31	0.24
190	97.66	55.39	42.27	0.51	0.29	0.22
195	93.44	53.86	39.58	0.48	0.28	0.20
200	89.24	52.24	37.00	0.45	0.26	0.18

## Development Type 71 - H tA

## Crown Closure Class A

## Utilization 3010

$$\text{Yield} = (a * (\text{Age} - 12)^b + (CC * 0.25 - 0.075) * c) * \text{EXP}(-a * (\text{Age} - 12))$$

Coefficients:

	Combined	Hardwood
a	0.028000	0.028000
b	2.089749	2.065981
c	0.400000	0.400000
CC	1	1

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	0	0	0	0.00	0.00	0.00
20	2.00	0.10	1.90	0.10	0.00	0.10
25	4.95	0.29	4.66	0.20	0.01	0.19
30	8.70	0.58	8.12	0.29	0.02	0.27
35	12.84	0.92	11.92	0.37	0.03	0.34
40	17.07	1.30	15.77	0.43	0.03	0.39
45	21.16	1.69	19.47	0.47	0.04	0.43
50	24.95	2.07	22.88	0.50	0.04	0.46
55	28.32	2.42	25.90	0.51	0.04	0.47
60	31.23	2.75	28.48	0.52	0.05	0.47
65	33.63	3.03	30.60	0.52	0.05	0.47
70	35.52	3.27	32.25	0.51	0.05	0.46
75	36.91	3.46	33.45	0.49	0.05	0.45
80	37.85	3.61	34.23	0.47	0.05	0.43
85	38.35	3.72	34.63	0.45	0.04	0.41
90	38.47	3.78	34.68	0.43	0.04	0.39
95	38.25	3.81	34.43	0.40	0.04	0.36
100	37.73	3.81	33.92	0.38	0.04	0.34
105	36.96	3.77	33.18	0.35	0.04	0.32
110	35.98	3.71	32.26	0.33	0.03	0.29
115	34.82	3.63	31.19	0.30	0.03	0.27
120	33.54	3.53	30.01	0.28	0.03	0.25
125	32.15	3.42	28.73	0.26	0.03	0.23
130	30.69	3.29	27.40	0.24	0.03	0.21
135	29.18	3.15	26.03	0.22	0.02	0.19
140	27.65	3.01	24.64	0.20	0.02	0.18
145	26.11	2.87	23.25	0.18	0.02	0.16
150	24.58	2.72	21.87	0.16	0.02	0.15
155	23.08	2.57	20.51	0.15	0.02	0.13
160	21.61	2.42	19.19	0.14	0.02	0.12
165	20.18	2.27	17.91	0.12	0.01	0.11
170	18.81	2.13	16.68	0.11	0.01	0.10
175	17.49	1.99	15.50	0.10	0.01	0.09
180	16.23	1.86	14.37	0.09	0.01	0.08
185	15.03	1.73	13.30	0.08	0.01	0.07
190	13.90	1.61	12.29	0.07	0.01	0.06
195	12.83	1.49	11.33	0.07	0.01	0.06
200	11.82	1.38	10.44	0.06	0.01	0.05

## Development Type 71 - H tA

## Crown Closure Class B

## Utilization 3010

$$\text{Yield} = (a * (\text{Age} - 12)^b + (CC * 0.25 - 0.075) * c) * \text{EXP}(-a * (\text{Age} - 12))$$

Coefficients:

	Combined	Hardwood
a	0.028000	0.028000
b	2.089749	2.065981
c	0.400000	0.400000
CC	2	2

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	0	0	0	0.00	0.00	0.00
20	2.46	0.12	2.34	0.12	0.01	0.12
25	6.40	0.38	6.02	0.26	0.02	0.24
30	11.61	0.77	10.84	0.39	0.03	0.36
35	17.56	1.26	16.30	0.50	0.04	0.47
40	23.82	1.81	22.00	0.60	0.05	0.55
45	30.01	2.39	27.62	0.67	0.05	0.61
50	35.89	2.97	32.92	0.72	0.06	0.66
55	41.26	3.53	37.73	0.75	0.06	0.69
60	45.99	4.04	41.95	0.77	0.07	0.70
65	50.01	4.50	45.51	0.77	0.07	0.70
70	53.31	4.90	48.40	0.76	0.07	0.69
75	55.86	5.24	50.62	0.74	0.07	0.67
80	57.71	5.51	52.21	0.72	0.07	0.65
85	58.90	5.71	53.19	0.69	0.07	0.63
90	59.47	5.85	53.62	0.66	0.07	0.60
95	59.50	5.93	53.56	0.63	0.06	0.56
100	59.03	5.96	53.07	0.59	0.06	0.53
105	58.15	5.94	52.21	0.55	0.06	0.50
110	56.90	5.88	51.03	0.52	0.05	0.46
115	55.36	5.77	49.58	0.48	0.05	0.43
120	53.56	5.64	47.92	0.45	0.05	0.40
125	51.58	5.48	46.10	0.41	0.04	0.37
130	49.45	5.30	44.15	0.38	0.04	0.34
135	47.22	5.10	42.11	0.35	0.04	0.31
140	44.92	4.89	40.02	0.32	0.03	0.29
145	42.58	4.67	37.91	0.29	0.03	0.26
150	40.24	4.45	35.79	0.27	0.03	0.24
155	37.91	4.22	33.69	0.24	0.03	0.22
160	35.62	3.99	31.63	0.22	0.02	0.20
165	33.38	3.76	29.62	0.20	0.02	0.18
170	31.21	3.54	27.67	0.18	0.02	0.16
175	29.11	3.32	25.79	0.17	0.02	0.15
180	27.09	3.11	23.99	0.15	0.02	0.13
185	25.17	2.90	22.27	0.14	0.02	0.12
190	23.34	2.70	20.63	0.12	0.01	0.11
195	21.60	2.52	19.08	0.11	0.01	0.10
200	19.96	2.34	17.62	0.10	0.01	0.09



## Development Type 71 - H tA

## Crown Closure Class C

## Utilization 3010

$$\text{Yield} = (a * (\text{Age} - 12)^b + (CC * 0.25 - 0.075) * c) * \text{EXP}(-a * (\text{Age} - 12))$$

Coefficients:

	Combined	Hardwood
a	0.028000	0.028000
b	2.089749	2.065981
c	0.400000	0.400000
CC	3	3

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	0	0	0	0.00	0.00	0.00
20	3.03	0.15	2.88	0.15	0.01	0.14
25	8.27	0.49	7.78	0.33	0.02	0.31
30	15.50	1.03	14.47	0.52	0.03	0.48
35	24.03	1.73	22.31	0.69	0.05	0.64
40	33.24	2.53	30.70	0.83	0.06	0.77
45	42.58	3.40	39.18	0.95	0.08	0.87
50	51.64	4.28	47.36	1.03	0.09	0.95
55	60.10	5.14	54.96	1.09	0.09	1.00
60	67.73	5.95	61.78	1.13	0.10	1.03
65	74.39	6.70	67.69	1.14	0.10	1.04
70	80.00	7.36	72.64	1.14	0.11	1.04
75	84.54	7.93	76.61	1.13	0.11	1.02
80	88.01	8.40	79.61	1.10	0.10	1.00
85	90.46	8.77	81.69	1.06	0.10	0.96
90	91.94	9.04	82.90	1.02	0.10	0.92
95	92.56	9.23	83.33	0.97	0.10	0.88
100	92.37	9.33	83.05	0.92	0.09	0.83
105	91.49	9.34	82.15	0.87	0.09	0.78
110	90.00	9.29	80.71	0.82	0.08	0.73
115	87.99	9.18	78.81	0.77	0.08	0.69
120	85.55	9.01	76.54	0.71	0.08	0.64
125	82.76	8.80	73.96	0.66	0.07	0.59
130	79.68	8.54	71.14	0.61	0.07	0.55
135	76.40	8.26	68.14	0.57	0.06	0.50
140	72.97	7.95	65.02	0.52	0.06	0.46
145	69.44	7.62	61.82	0.48	0.05	0.43
150	65.86	7.28	58.58	0.44	0.05	0.39
155	62.27	6.93	55.34	0.40	0.04	0.36
160	58.71	6.58	52.14	0.37	0.04	0.33
165	55.20	6.22	48.98	0.33	0.04	0.30
170	51.77	5.87	45.90	0.30	0.03	0.27
175	48.44	5.52	42.92	0.28	0.03	0.25
180	45.23	5.19	40.04	0.25	0.03	0.22
185	42.14	4.86	37.28	0.23	0.03	0.20
190	39.18	4.54	34.64	0.21	0.02	0.18
195	36.36	4.23	32.13	0.19	0.02	0.16
200	33.69	3.94	29.75	0.17	0.02	0.15

## Development Type 71 - H tA

## Crown Closure Class D

## Utilization 3010

$$\text{Yield} = (a * (\text{Age} - 12)^b + (CC * 0.25 - 0.075) * c) * \text{EXP}(-a * (\text{Age} - 12))$$

Coefficients:

	Combined	Hardwood
a	0.028000	0.028000
b	2.089749	2.065981
c	0.400000	0.400000
CC	4	4

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	0	0	0	0.00	0.00	0.00
20	3.73	0.18	3.55	0.19	0.01	0.18
25	10.69	0.63	10.06	0.43	0.03	0.40
30	20.70	1.37	19.32	0.69	0.05	0.64
35	32.88	2.36	30.52	0.94	0.07	0.87
40	46.38	3.53	42.85	1.16	0.09	1.07
45	60.40	4.82	55.58	1.34	0.11	1.24
50	74.29	6.15	68.14	1.49	0.12	1.36
55	87.54	7.49	80.05	1.59	0.14	1.46
60	99.75	8.77	90.98	1.66	0.15	1.52
65	110.65	9.96	100.69	1.70	0.15	1.55
70	120.08	11.05	109.03	1.72	0.16	1.56
75	127.94	12.00	115.94	1.71	0.16	1.55
80	134.21	12.81	121.40	1.68	0.16	1.52
85	138.92	13.47	125.45	1.63	0.16	1.48
90	142.15	13.98	128.16	1.58	0.16	1.42
95	143.98	14.36	129.63	1.52	0.15	1.36
100	144.54	14.59	129.95	1.45	0.15	1.30
105	143.96	14.70	129.25	1.37	0.14	1.23
110	142.35	14.70	127.66	1.29	0.13	1.16
115	139.87	14.59	125.28	1.22	0.13	1.09
120	136.64	14.39	122.25	1.14	0.12	1.02
125	132.77	14.11	118.66	1.06	0.11	0.95
130	128.40	13.76	114.63	0.99	0.11	0.88
135	123.62	13.36	110.26	0.92	0.10	0.82
140	118.54	12.91	105.63	0.85	0.09	0.75
145	113.24	12.43	100.81	0.78	0.09	0.70
150	107.80	11.91	95.88	0.72	0.08	0.64
155	102.29	11.38	90.91	0.66	0.07	0.59
160	96.77	10.84	85.93	0.60	0.07	0.54
165	91.29	10.29	81.00	0.55	0.06	0.49
170	85.90	9.74	76.16	0.51	0.06	0.45
175	80.62	9.19	71.43	0.46	0.05	0.41
180	75.50	8.66	66.84	0.42	0.05	0.37
185	70.55	8.13	62.41	0.38	0.04	0.34
190	65.78	7.62	58.16	0.35	0.04	0.31
195	61.22	7.13	54.09	0.31	0.04	0.28
200	56.87	6.66	50.22	0.28	0.03	0.25

## Development Type 11 - S wS

## Crown Closure Class A

## Utilization 3008

$$\text{Yield} = (a * (\text{Age} - 10)^{(b + (CC * 0.25 - 0.075) * c)}) * \text{EXP}(-a * (\text{Age} - 10))$$

Coefficients:

	Combined	Softwood
a	0.019500	0.019000
b	2.305214	2.279200
c	0.170645	0.170645
CC	1	1

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	0.76	0.71	0.05	0.05	0.05	0.05
20	3.47	3.20	0.27	0.17	0.16	0.01
25	8.11	7.42	0.69	0.32	0.30	0.03
30	14.41	13.12	1.29	0.48	0.44	0.04
35	22.01	19.97	2.04	0.63	0.57	0.06
40	30.56	27.67	2.89	0.76	0.69	0.07
45	39.73	35.92	3.82	0.88	0.80	0.08
50	49.23	44.46	4.77	0.98	0.89	0.10
55	58.79	53.06	5.73	1.07	0.96	0.10
60	68.21	61.55	6.66	1.14	1.03	0.11
65	77.29	69.75	7.55	1.19	1.07	0.12
70	85.91	77.54	8.37	1.23	1.11	0.12
75	93.94	84.83	9.12	1.25	1.13	0.12
80	101.31	91.54	9.78	1.27	1.14	0.12
85	107.97	97.62	10.35	1.27	1.15	0.12
90	113.87	103.03	10.83	1.27	1.14	0.12
95	119.00	107.77	11.22	1.25	1.13	0.12
100	123.35	111.84	11.52	1.23	1.12	0.12
105	126.95	115.22	11.73	1.21	1.10	0.11
110	129.81	117.96	11.86	1.18	1.07	0.11
115	131.96	120.06	11.90	1.15	1.04	0.10
120	133.44	121.56	11.88	1.11	1.01	0.10
125	134.28	122.49	11.79	1.07	0.98	0.09
130	134.53	122.89	11.64	1.03	0.95	0.09
135	134.24	122.80	11.44	0.99	0.91	0.08
140	133.45	122.26	11.19	0.95	0.87	0.08
145	132.21	121.30	10.90	0.91	0.84	0.08
150	130.55	119.97	10.58	0.87	0.80	0.07
155	128.54	118.31	10.23	0.83	0.76	0.07
160	126.20	116.34	9.86	0.79	0.73	0.06
165	123.59	114.12	9.46	0.75	0.69	0.06
170	120.73	111.67	9.06	0.71	0.66	0.05
175	117.68	109.03	8.65	0.67	0.62	0.05
180	114.45	106.23	8.23	0.64	0.59	0.05
185	111.09	103.29	7.80	0.60	0.56	0.04
190	107.62	100.24	7.38	0.57	0.53	0.04
195	104.07	97.11	6.97	0.53	0.50	0.04
200	100.47	93.92	6.56	0.50	0.47	0.03

## Development Type 11 - S wS

## Crown Closure Class B

## Utilization 3008

$$\text{Yield} = (a * (\text{Age} - 10)^{(b + (CC * 0.25 - 0.075) * c)}) * \text{EXP}(-a * (\text{Age} - 10))$$

Coefficients:

	Combined	Softwood
a	0.019500	0.019000
b	2.305214	2.279200
c	0.170645	0.170645
CC	2	2

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	0.81	0.76	0.05	0.05	0.05	0.05
20	3.83	3.53	0.30	0.19	0.18	0.01
25	9.11	8.33	0.77	0.36	0.33	0.03
30	16.37	14.91	1.47	0.55	0.50	0.05
35	25.25	22.91	2.34	0.72	0.65	0.07
40	35.33	31.99	3.34	0.88	0.80	0.08
45	46.24	41.80	4.44	1.03	0.93	0.10
50	57.62	52.03	5.58	1.15	1.04	0.11
55	69.16	62.42	6.74	1.26	1.13	0.12
60	80.59	72.72	7.87	1.34	1.21	0.13
65	91.70	82.75	8.95	1.41	1.27	0.14
70	102.30	92.34	9.97	1.46	1.32	0.14
75	112.25	101.36	10.89	1.50	1.35	0.15
80	121.45	109.72	11.72	1.52	1.37	0.15
85	129.80	117.36	12.45	1.53	1.38	0.15
90	137.27	124.21	13.06	1.53	1.38	0.15
95	143.83	130.27	13.56	1.51	1.37	0.14
100	149.46	135.50	13.96	1.49	1.36	0.14
105	154.17	139.93	14.24	1.47	1.33	0.14
110	157.99	143.56	14.43	1.44	1.31	0.13
115	160.94	146.43	14.52	1.40	1.27	0.13
120	163.07	148.55	14.52	1.36	1.24	0.12
125	164.41	149.97	14.44	1.32	1.20	0.12
130	165.02	150.74	14.28	1.27	1.16	0.11
135	164.95	150.89	14.06	1.22	1.12	0.10
140	164.25	150.47	13.78	1.17	1.07	0.10
145	162.98	149.54	13.44	1.12	1.03	0.09
150	161.19	148.13	13.07	1.07	0.99	0.09
155	158.94	146.29	12.65	1.03	0.94	0.08
160	156.28	144.07	12.21	0.98	0.90	0.08
165	153.26	141.52	11.74	0.93	0.86	0.07
170	149.92	138.67	11.25	0.88	0.82	0.07
175	146.32	135.57	10.75	0.84	0.77	0.06
180	142.49	132.25	10.24	0.79	0.73	0.06
185	138.47	128.75	9.73	0.75	0.70	0.05
190	134.31	125.10	9.21	0.71	0.66	0.05
195	130.03	121.33	8.70	0.67	0.62	0.04
200	125.68	117.48	8.20	0.63	0.59	0.04

## Development Type 11 - S wS

## Crown Closure Class C

## Utilization 3008

$$\text{Yield} = (a * (\text{Age} - 10)^{(b + (CC * 0.25 - 0.075) * c)}) * \text{EXP}(-a * (\text{Age} - 10))$$

Coefficients:

	Combined	Softwood
a	0.019500	0.019000
b	2.305214	2.279200
c	0.170645	0.170645
CC	3	3

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	0.87	0.81	0.06	0.06	0.05	0.05
20	4.22	3.90	0.33	0.21	0.19	0.02
25	10.22	9.35	0.87	0.41	0.37	0.03
30	18.61	16.94	1.67	0.62	0.56	0.06
35	28.97	26.28	2.68	0.83	0.75	0.08
40	40.85	36.98	3.87	1.02	0.92	0.10
45	53.81	48.65	5.17	1.20	1.08	0.11
50	67.44	60.90	6.54	1.35	1.22	0.13
55	81.35	73.43	7.93	1.48	1.34	0.14
60	95.23	85.93	9.30	1.59	1.43	0.15
65	108.80	98.18	10.62	1.67	1.51	0.16
70	121.83	109.96	11.87	1.74	1.57	0.17
75	134.13	121.12	13.02	1.79	1.61	0.17
80	145.58	131.53	14.05	1.82	1.64	0.18
85	156.05	141.09	14.96	1.84	1.66	0.18
90	165.49	149.75	15.74	1.84	1.66	0.17
95	173.84	157.45	16.39	1.83	1.66	0.17
100	181.09	164.18	16.91	1.81	1.64	0.17
105	187.23	169.94	17.30	1.78	1.62	0.16
110	192.29	174.73	17.56	1.75	1.59	0.16
115	196.29	178.58	17.71	1.71	1.55	0.15
120	199.28	181.53	17.74	1.66	1.51	0.15
125	201.30	183.62	17.68	1.61	1.47	0.14
130	202.41	184.89	17.52	1.56	1.42	0.13
135	202.68	185.40	17.27	1.50	1.37	0.13
140	202.16	185.20	16.96	1.44	1.32	0.12
145	200.92	184.34	16.57	1.39	1.27	0.11
150	199.02	182.89	16.13	1.33	1.22	0.11
155	196.54	180.89	15.64	1.27	1.17	0.10
160	193.52	178.41	15.12	1.21	1.12	0.09
165	190.05	175.49	14.55	1.15	1.06	0.09
170	186.16	172.19	13.97	1.10	1.01	0.08
175	181.92	168.56	13.37	1.04	0.96	0.08
180	177.39	164.64	12.75	0.99	0.91	0.07
185	172.61	160.48	12.12	0.93	0.87	0.07
190	167.62	156.12	11.50	0.88	0.82	0.06
195	162.47	151.60	10.87	0.83	0.78	0.06
200	157.21	146.95	10.26	0.79	0.73	0.05

## Development Type 11 - S wS

## Crown Closure Class D

## Utilization 3008

$$\text{Yield} = (a * (\text{Age} - 10)^{(b + (CC * 0.25 - 0.075) * c)}) * \text{EXP}(-a * (\text{Age} - 10))$$

Coefficients:

	Combined	Softwood
a	0.019500	0.019000
b	2.305214	2.279200
c	0.170645	0.170645
CC	4	4

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	0.93	0.87	0.06	0.06	0.06	0.06
20	4.66	4.30	0.36	0.23	0.21	0.02
25	11.48	10.50	0.98	0.46	0.42	0.04
30	21.14	19.25	1.90	0.70	0.64	0.06
35	33.23	30.15	3.08	0.95	0.86	0.09
40	47.23	42.76	4.47	1.18	1.07	0.11
45	62.63	56.61	6.01	1.39	1.26	0.13
50	78.93	71.28	7.65	1.58	1.43	0.15
55	95.70	86.38	9.32	1.74	1.57	0.17
60	112.53	101.54	10.99	1.88	1.69	0.18
65	129.08	116.48	12.60	1.99	1.79	0.19
70	145.08	130.95	14.13	2.07	1.87	0.20
75	160.28	144.73	15.55	2.14	1.93	0.21
80	174.51	157.66	16.84	2.18	1.97	0.21
85	187.62	169.63	17.99	2.21	2.00	0.21
90	199.51	180.53	18.98	2.22	2.01	0.21
95	210.12	190.31	19.81	2.21	2.00	0.21
100	219.42	198.93	20.49	2.19	1.99	0.20
105	227.38	206.38	21.01	2.17	1.97	0.20
110	234.04	212.66	21.38	2.13	1.93	0.19
115	239.40	217.81	21.60	2.08	1.89	0.19
120	243.53	221.84	21.68	2.03	1.85	0.18
125	246.46	224.82	21.64	1.97	1.80	0.17
130	248.28	226.79	21.49	1.91	1.74	0.17
135	249.03	227.81	21.22	1.84	1.69	0.16
140	248.81	227.94	20.87	1.78	1.63	0.15
145	247.68	227.25	20.43	1.71	1.57	0.14
150	245.73	225.81	19.92	1.64	1.51	0.13
155	243.02	223.68	19.34	1.57	1.44	0.12
160	239.65	220.93	18.72	1.50	1.38	0.12
165	235.67	217.62	18.05	1.43	1.32	0.11
170	231.16	213.82	17.35	1.36	1.26	0.10
175	226.20	209.58	16.62	1.29	1.20	0.09
180	220.84	204.97	15.87	1.23	1.14	0.09
185	215.15	200.04	15.11	1.16	1.08	0.08
190	209.19	194.84	14.35	1.10	1.03	0.08
195	203.00	189.41	13.59	1.04	0.97	0.07
200	196.65	183.81	12.83	0.98	0.92	0.06

## Development Type 12 - S bS

## Crown Closure Class A

## Utilization 3008

$$\text{Yield} = (a * (\text{Age} - 10)^{(b + (CC * 0.25 - 0.075) * c)}) * \text{EXP}(-a * (\text{Age} - 10))$$

Coefficients:

	Combined	Softwood
a	0.019130	0.019000
b	2.213302	2.208000
c	0.206606	0.206606
CC	1	1

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	0.65	0.64	0.01	0.04	0.04	0.04
20	2.81	2.76	0.05	0.14	0.14	0.00
25	6.35	6.23	0.12	0.25	0.25	0.00
30	11.02	10.80	0.22	0.37	0.36	0.01
35	16.54	16.21	0.34	0.47	0.46	0.01
40	22.66	22.19	0.47	0.57	0.55	0.01
45	29.12	28.52	0.61	0.65	0.63	0.01
50	35.74	34.99	0.75	0.71	0.70	0.01
55	42.33	41.45	0.89	0.77	0.75	0.02
60	48.76	47.74	1.02	0.81	0.80	0.02
65	54.91	53.77	1.14	0.84	0.83	0.02
70	60.69	59.44	1.24	0.87	0.85	0.02
75	66.03	64.69	1.34	0.88	0.86	0.02
80	70.90	69.48	1.42	0.89	0.87	0.02
85	75.25	73.76	1.49	0.89	0.87	0.02
90	79.07	77.53	1.54	0.88	0.86	0.02
95	82.35	80.78	1.58	0.87	0.85	0.02
100	85.11	83.51	1.60	0.85	0.84	0.02
105	87.35	85.74	1.61	0.83	0.82	0.02
110	89.09	87.48	1.61	0.81	0.80	0.01
115	90.35	88.76	1.60	0.79	0.77	0.01
120	91.17	89.59	1.57	0.76	0.75	0.01
125	91.57	90.02	1.54	0.73	0.72	0.01
130	91.57	90.07	1.51	0.70	0.69	0.01
135	91.22	89.76	1.46	0.68	0.66	0.01
140	90.55	89.14	1.41	0.65	0.64	0.01
145	89.58	88.22	1.36	0.62	0.61	0.01
150	88.35	87.05	1.30	0.59	0.58	0.01
155	86.88	85.65	1.24	0.56	0.55	0.01
160	85.22	84.04	1.17	0.53	0.53	0.01
165	83.37	82.26	1.11	0.51	0.50	0.01
170	81.37	80.33	1.04	0.48	0.47	0.01
175	79.25	78.27	0.98	0.45	0.45	0.01
180	77.02	76.11	0.91	0.43	0.42	0.01
185	74.71	73.87	0.85	0.40	0.40	0.00
190	72.34	71.56	0.78	0.38	0.38	0.00
195	69.92	69.20	0.72	0.36	0.35	0.00
200	67.47	66.81	0.66	0.34	0.33	0.00

## Development Type 12 - S bS

## Crown Closure Class B

## Utilization 3008

$$\text{Yield} = (a * (\text{Age} - 10)^{(b + (CC * 0.25 - 0.075) * c)}) * \text{EXP}(-a * (\text{Age} - 10))$$

Coefficients:

	Combined	Softwood
a	0.019130	0.019000
b	2.213302	2.208000
c	0.206606	0.206606
CC	2	2

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	0.71	0.70	0.01	0.05	0.05	0.05
20	3.16	3.10	0.06	0.16	0.16	0.00
25	7.30	7.16	0.14	0.29	0.29	0.01
30	12.86	12.61	0.26	0.43	0.42	0.01
35	19.54	19.14	0.40	0.56	0.55	0.01
40	27.01	26.45	0.56	0.68	0.66	0.01
45	34.99	34.26	0.73	0.78	0.76	0.02
50	43.24	42.34	0.91	0.86	0.85	0.02
55	51.53	50.45	1.08	0.94	0.92	0.02
60	59.68	58.44	1.24	0.99	0.97	0.02
65	67.54	66.14	1.40	1.04	1.02	0.02
70	74.98	73.44	1.54	1.07	1.05	0.02
75	81.92	80.26	1.66	1.09	1.07	0.02
80	88.29	86.52	1.77	1.10	1.08	0.02
85	94.04	92.19	1.86	1.11	1.08	0.02
90	99.15	97.22	1.93	1.10	1.08	0.02
95	103.59	101.61	1.98	1.09	1.07	0.02
100	107.38	105.36	2.02	1.07	1.05	0.02
105	110.51	108.47	2.04	1.05	1.03	0.02
110	113.01	110.97	2.04	1.03	1.01	0.02
115	114.91	112.88	2.03	1.00	0.98	0.02
120	116.22	114.21	2.01	0.97	0.95	0.02
125	117.00	115.02	1.97	0.94	0.92	0.02
130	117.26	115.34	1.93	0.90	0.89	0.01
135	117.06	115.19	1.87	0.87	0.85	0.01
140	116.43	114.62	1.81	0.83	0.82	0.01
145	115.41	113.66	1.75	0.80	0.78	0.01
150	114.04	112.36	1.67	0.76	0.75	0.01
155	112.35	110.75	1.60	0.72	0.71	0.01
160	110.39	108.87	1.52	0.69	0.68	0.01
165	108.18	106.74	1.44	0.66	0.65	0.01
170	105.76	104.41	1.35	0.62	0.61	0.01
175	103.17	101.90	1.27	0.59	0.58	0.01
180	100.42	99.23	1.19	0.56	0.55	0.01
185	97.56	96.45	1.11	0.53	0.52	0.01
190	94.60	93.57	1.03	0.50	0.49	0.01
195	91.56	90.61	0.95	0.47	0.46	0.00
200	88.48	87.61	0.87	0.44	0.44	0.00



## Development Type 12 - S bS

## Crown Closure Class C

## Utilization 3008

$$\text{Yield} = (a * (\text{Age} - 10)^{(b + (\text{CC} * 0.25 - 0.075) * c)}) * \text{EXP}(-a * (\text{Age} - 10))$$

Coefficients:

	Combined	Softwood
a	0.019130	0.019000
b	2.213302	2.208000
c	0.206606	0.206606
CC	3	3

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	0.77	0.76	0.01	0.05	0.05	0.05
20	3.56	3.50	0.06	0.18	0.17	0.00
25	8.40	8.24	0.16	0.34	0.33	0.01
30	15.02	14.72	0.30	0.50	0.49	0.01
35	23.07	22.60	0.47	0.66	0.65	0.01
40	32.20	31.53	0.67	0.80	0.79	0.02
45	42.05	41.17	0.88	0.93	0.91	0.02
50	52.32	51.22	1.10	1.05	1.02	0.02
55	62.73	61.42	1.31	1.14	1.12	0.02
60	73.04	71.52	1.52	1.22	1.19	0.03
65	83.07	81.35	1.72	1.28	1.25	0.03
70	92.64	90.74	1.90	1.32	1.30	0.03
75	101.63	99.57	2.06	1.36	1.33	0.03
80	109.96	107.75	2.20	1.37	1.35	0.03
85	117.54	115.22	2.32	1.38	1.36	0.03
90	124.33	121.91	2.42	1.38	1.35	0.03
95	130.31	127.82	2.49	1.37	1.35	0.03
100	135.47	132.93	2.54	1.35	1.33	0.03
105	139.82	137.24	2.58	1.33	1.31	0.02
110	143.36	140.77	2.59	1.30	1.28	0.02
115	146.13	143.55	2.58	1.27	1.25	0.02
120	148.16	145.60	2.56	1.23	1.21	0.02
125	149.49	146.97	2.52	1.20	1.18	0.02
130	150.16	147.69	2.47	1.16	1.14	0.02
135	150.22	147.81	2.41	1.11	1.09	0.02
140	149.71	147.38	2.33	1.07	1.05	0.02
145	148.69	146.44	2.25	1.03	1.01	0.02
150	147.20	145.04	2.16	0.98	0.97	0.01
155	145.28	143.22	2.07	0.94	0.92	0.01
160	142.99	141.03	1.97	0.89	0.88	0.01
165	140.37	138.51	1.86	0.85	0.84	0.01
170	137.46	135.70	1.76	0.81	0.80	0.01
175	134.30	132.65	1.66	0.77	0.76	0.01
180	130.93	129.38	1.55	0.73	0.72	0.01
185	127.39	125.94	1.45	0.69	0.68	0.01
190	123.70	122.36	1.34	0.65	0.64	0.01
195	119.90	118.66	1.24	0.61	0.61	0.01
200	116.02	114.88	1.14	0.58	0.57	0.01

## Development Type 12 - S bS

## Crown Closure Class D

## Utilization 3008

$$\text{Yield} = (a * (\text{Age} - 10)^{(b + (CC * 0.25 - 0.075) * c)}) * \text{EXP}(-a * (\text{Age} - 10))$$

Coefficients:

	Combined	Softwood
a	0.019130	0.019000
b	2.213302	2.208000
c	0.206606	0.206606
CC	4	4

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	0.83	0.82	0.01	0.06	0.05	0.05
20	4.01	3.94	0.07	0.20	0.20	0.00
25	9.66	9.47	0.18	0.39	0.38	0.01
30	17.53	17.18	0.35	0.58	0.57	0.01
35	27.24	26.69	0.56	0.78	0.76	0.02
40	38.38	37.58	0.80	0.96	0.94	0.02
45	50.53	49.47	1.06	1.12	1.10	0.02
50	63.30	61.97	1.33	1.27	1.24	0.03
55	76.36	74.76	1.60	1.39	1.36	0.03
60	89.40	87.54	1.86	1.49	1.46	0.03
65	102.17	100.05	2.11	1.57	1.54	0.03
70	114.46	112.11	2.35	1.64	1.60	0.03
75	126.09	123.53	2.56	1.68	1.65	0.03
80	136.94	134.20	2.74	1.71	1.68	0.03
85	146.90	144.00	2.90	1.73	1.69	0.03
90	155.91	152.88	3.03	1.73	1.70	0.03
95	163.92	160.79	3.14	1.73	1.69	0.03
100	170.92	167.71	3.21	1.71	1.68	0.03
105	176.89	173.63	3.26	1.68	1.65	0.03
110	181.86	178.57	3.28	1.65	1.62	0.03
115	185.84	182.55	3.28	1.62	1.59	0.03
120	188.87	185.61	3.26	1.57	1.55	0.03
125	191.01	187.79	3.22	1.53	1.50	0.03
130	192.29	189.12	3.16	1.48	1.45	0.02
135	192.77	189.68	3.09	1.43	1.41	0.02
140	192.51	189.51	3.00	1.38	1.35	0.02
145	191.57	188.67	2.90	1.32	1.30	0.02
150	190.00	187.21	2.79	1.27	1.25	0.02
155	187.87	185.20	2.67	1.21	1.19	0.02
160	185.23	182.68	2.55	1.16	1.14	0.02
165	182.14	179.72	2.42	1.10	1.09	0.01
170	178.66	176.37	2.29	1.05	1.04	0.01
175	174.83	172.68	2.15	1.00	0.99	0.01
180	170.71	168.68	2.02	0.95	0.94	0.01
185	166.33	164.45	1.89	0.90	0.89	0.01
190	161.75	160.00	1.75	0.85	0.84	0.01
195	157.01	155.38	1.62	0.81	0.80	0.01
200	152.13	150.64	1.50	0.76	0.75	0.01

## Development Type 13 - S jP

## Crown Closure Class A

## Utilization 3008

$$\text{Yield} = (a * (\text{Age} - 10)^{(b + (CC * 0.25 - 0.075) * c)}) * \text{EXP}(-a * (\text{Age} - 10))$$

Coefficients:

	Combined	Softwood
a	0.019113	0.019000
b	2.080000	2.072200
c	0.400000	0.400000
CC	1	1

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	0.55	0.54	0.01	0.04	0.04	0.04
20	2.23	2.18	0.05	0.11	0.11	0.00
25	4.85	4.73	0.12	0.19	0.19	0.00
30	8.18	7.96	0.22	0.27	0.27	0.01
35	12.01	11.67	0.33	0.34	0.33	0.01
40	16.15	15.69	0.46	0.40	0.39	0.01
45	20.44	19.84	0.60	0.45	0.44	0.01
50	24.76	24.02	0.74	0.50	0.48	0.01
55	28.99	28.12	0.87	0.53	0.51	0.02
60	33.04	32.04	1.00	0.55	0.53	0.02
65	36.86	35.74	1.12	0.57	0.55	0.02
70	40.39	39.16	1.24	0.58	0.56	0.02
75	43.61	42.27	1.34	0.58	0.56	0.02
80	46.48	45.05	1.43	0.58	0.56	0.02
85	49.00	47.49	1.50	0.58	0.56	0.02
90	51.16	49.59	1.56	0.57	0.55	0.02
95	52.97	51.35	1.62	0.56	0.54	0.02
100	54.44	52.78	1.65	0.54	0.53	0.02
105	55.57	53.89	1.68	0.53	0.51	0.02
110	56.40	54.70	1.70	0.51	0.50	0.02
115	56.93	55.22	1.70	0.50	0.48	0.01
120	57.18	55.48	1.70	0.48	0.46	0.01
125	57.18	55.49	1.69	0.46	0.44	0.01
130	56.95	55.28	1.67	0.44	0.43	0.01
135	56.51	54.87	1.64	0.42	0.41	0.01
140	55.87	54.27	1.61	0.40	0.39	0.01
145	55.07	53.50	1.57	0.38	0.37	0.01
150	54.13	52.60	1.53	0.36	0.35	0.01
155	53.05	51.56	1.48	0.34	0.33	0.01
160	51.86	50.42	1.43	0.32	0.32	0.01
165	50.57	49.19	1.38	0.31	0.30	0.01
170	49.21	47.88	1.33	0.29	0.28	0.01
175	47.79	46.51	1.28	0.27	0.27	0.01
180	46.31	45.09	1.22	0.26	0.25	0.01
185	44.80	43.63	1.17	0.24	0.24	0.01
190	43.25	42.14	1.11	0.23	0.22	0.01
195	41.70	40.64	1.06	0.21	0.21	0.01
200	40.13	39.13	1.01	0.20	0.20	0.01

## Development Type 13 - S jP

## Crown Closure Class B

## Utilization 3008

$$\text{Yield} = (a * (\text{Age} - 10)^{(b + (CC * 0.25 - 0.075) * c)}) * \text{EXP}(-a * (\text{Age} - 10))$$

Coefficients:

	Combined	Softwood
a	0.019113	0.019000
b	2.080000	2.072200
c	0.400000	0.400000
CC	2	2

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	0.65	0.64	0.01	0.04	0.04	0.04
20	2.81	2.74	0.06	0.14	0.14	0.00
25	6.35	6.19	0.16	0.25	0.25	0.01
30	11.03	10.74	0.29	0.37	0.36	0.01
35	16.56	16.10	0.46	0.47	0.46	0.01
40	22.69	22.04	0.65	0.57	0.55	0.02
45	29.17	28.32	0.85	0.65	0.63	0.02
50	35.80	34.74	1.06	0.72	0.69	0.02
55	42.42	41.14	1.28	0.77	0.75	0.02
60	48.86	47.38	1.48	0.81	0.79	0.02
65	55.03	53.35	1.68	0.85	0.82	0.03
70	60.83	58.97	1.86	0.87	0.84	0.03
75	66.20	64.17	2.03	0.88	0.86	0.03
80	71.08	68.90	2.18	0.89	0.86	0.03
85	75.45	73.14	2.31	0.89	0.86	0.03
90	79.29	76.87	2.43	0.88	0.85	0.03
95	82.60	80.08	2.52	0.87	0.84	0.03
100	85.37	82.78	2.59	0.85	0.83	0.03
105	87.63	84.98	2.65	0.83	0.81	0.03
110	89.38	86.70	2.69	0.81	0.79	0.02
115	90.66	87.95	2.71	0.79	0.76	0.02
120	91.49	88.77	2.72	0.76	0.74	0.02
125	91.90	89.19	2.71	0.74	0.71	0.02
130	91.92	89.23	2.69	0.71	0.69	0.02
135	91.58	88.92	2.66	0.68	0.66	0.02
140	90.91	88.29	2.62	0.65	0.63	0.02
145	89.95	87.38	2.56	0.62	0.60	0.02
150	88.72	86.21	2.50	0.59	0.57	0.02
155	87.26	84.82	2.44	0.56	0.55	0.02
160	85.59	83.22	2.37	0.53	0.52	0.01
165	83.75	81.46	2.29	0.51	0.49	0.01
170	81.75	79.54	2.21	0.48	0.47	0.01
175	79.62	77.50	2.13	0.45	0.44	0.01
180	77.40	75.35	2.04	0.43	0.42	0.01
185	75.08	73.12	1.96	0.41	0.40	0.01
190	72.70	70.83	1.87	0.38	0.37	0.01
195	70.28	68.50	1.78	0.36	0.35	0.01
200	67.82	66.13	1.70	0.34	0.33	0.01

## Development Type 13 - S jP

## Crown Closure Class C

## Utilization 3008

$$\text{Yield} = (a * (\text{Age} - 10)^{(b + (CC * 0.25 - 0.075) * c)}) * \text{EXP}(-a * (\text{Age} - 10))$$

Coefficients:

	Combined	Softwood
a	0.019113	0.019000
b	2.080000	2.072200
c	0.400000	0.400000
CC	3	3

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	0.76	0.75	0.01	0.05	0.05	0.05
20	3.53	3.45	0.08	0.18	0.17	0.00
25	8.33	8.12	0.21	0.33	0.32	0.01
30	14.88	14.49	0.40	0.50	0.48	0.01
35	22.85	22.22	0.64	0.65	0.63	0.02
40	31.88	30.97	0.91	0.80	0.77	0.02
45	41.63	40.41	1.22	0.93	0.90	0.03
50	51.78	50.24	1.54	1.04	1.00	0.03
55	62.07	60.20	1.87	1.13	1.09	0.03
60	72.26	70.07	2.19	1.20	1.17	0.04
65	82.16	79.65	2.51	1.26	1.23	0.04
70	91.61	88.81	2.80	1.31	1.27	0.04
75	100.49	97.41	3.08	1.34	1.30	0.04
80	108.71	105.37	3.33	1.36	1.32	0.04
85	116.19	112.63	3.56	1.37	1.33	0.04
90	122.90	119.14	3.76	1.37	1.32	0.04
95	128.80	124.87	3.93	1.36	1.31	0.04
100	133.89	129.82	4.07	1.34	1.30	0.04
105	138.17	133.99	4.18	1.32	1.28	0.04
110	141.66	137.40	4.26	1.29	1.25	0.04
115	144.39	140.08	4.32	1.26	1.22	0.04
120	146.39	142.05	4.35	1.22	1.18	0.04
125	147.70	143.35	4.36	1.18	1.15	0.03
130	148.36	144.02	4.34	1.14	1.11	0.03
135	148.42	144.11	4.31	1.10	1.07	0.03
140	147.91	143.66	4.26	1.06	1.03	0.03
145	146.90	142.71	4.19	1.01	0.98	0.03
150	145.42	141.32	4.11	0.97	0.94	0.03
155	143.53	139.52	4.01	0.93	0.90	0.03
160	141.27	137.36	3.91	0.88	0.86	0.02
165	138.67	134.88	3.79	0.84	0.82	0.02
170	135.80	132.13	3.67	0.80	0.78	0.02
175	132.68	129.13	3.55	0.76	0.74	0.02
180	129.35	125.93	3.42	0.72	0.70	0.02
185	125.85	122.57	3.28	0.68	0.66	0.02
190	122.20	119.06	3.14	0.64	0.63	0.02
195	118.45	115.45	3.01	0.61	0.59	0.02
200	114.62	111.75	2.87	0.57	0.56	0.01

## Development Type 13 - S jP

## Crown Closure Class D

## Utilization 3008

$$\text{Yield} = (a * (\text{Age} - 10)^{(b + (CC * 0.25 - 0.075) * c)}) * \text{EXP}(-a * (\text{Age} - 10))$$

Coefficients:

	Combined	Softwood
a	0.019113	0.019000
b	2.080000	2.072200
c	0.400000	0.400000
CC	4	4

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	0.90	0.88	0.02	0.06	0.06	0.06
20	4.45	4.35	0.10	0.22	0.22	0.01
25	10.92	10.65	0.27	0.44	0.43	0.01
30	20.08	19.55	0.54	0.67	0.65	0.02
35	31.53	30.66	0.88	0.90	0.88	0.03
40	44.80	43.51	1.28	1.12	1.09	0.03
45	59.40	57.66	1.74	1.32	1.28	0.04
50	74.88	72.65	2.23	1.50	1.45	0.04
55	90.82	88.09	2.73	1.65	1.60	0.05
60	106.85	103.61	3.24	1.78	1.73	0.05
65	122.65	118.91	3.74	1.89	1.83	0.06
70	137.96	133.74	4.22	1.97	1.91	0.06
75	152.55	147.88	4.68	2.03	1.97	0.06
80	166.25	161.15	5.10	2.08	2.01	0.06
85	178.93	173.44	5.48	2.11	2.04	0.06
90	190.48	184.65	5.83	2.12	2.05	0.06
95	200.84	194.71	6.12	2.11	2.05	0.06
100	209.97	203.59	6.38	2.10	2.04	0.06
105	217.86	211.28	6.59	2.07	2.01	0.06
110	224.52	217.77	6.75	2.04	1.98	0.06
115	229.97	223.09	6.88	2.00	1.94	0.06
120	234.24	227.28	6.96	1.95	1.89	0.06
125	237.39	230.39	7.00	1.90	1.84	0.06
130	239.46	232.45	7.01	1.84	1.79	0.05
135	240.53	233.55	6.98	1.78	1.73	0.05
140	240.66	233.73	6.92	1.72	1.67	0.05
145	239.91	233.07	6.84	1.65	1.61	0.05
150	238.36	231.63	6.73	1.59	1.54	0.04
155	236.09	229.49	6.60	1.52	1.48	0.04
160	233.15	226.71	6.45	1.46	1.42	0.04
165	229.63	223.35	6.28	1.39	1.35	0.04
170	225.58	219.48	6.10	1.33	1.29	0.04
175	221.08	215.17	5.91	1.26	1.23	0.03
180	216.18	210.47	5.71	1.20	1.17	0.03
185	210.93	205.43	5.50	1.14	1.11	0.03
190	205.41	200.12	5.29	1.08	1.05	0.03
195	199.65	194.58	5.07	1.02	1.00	0.03
200	193.70	188.85	4.85	0.97	0.94	0.02

## Development Type 14 - S tL

## Crown Closure Class A

## Utilization 3008

$$\text{Yield} = (a * (\text{Age} - 10)^{(b + (CC * 0.25 - 0.075) * c)}) * \text{EXP}(-a * (\text{Age} - 10))$$

Coefficients:

	Combined	Softwood
a	0.019000	0.019000
b	2.105883	2.071438
c	0.132300	0.138455
CC	1	1

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	0.53	0.50	0.03	0.04	0.03	0.03
20	2.11	1.96	0.16	0.11	0.10	0.01
25	4.56	4.17	0.39	0.18	0.17	0.02
30	7.65	6.92	0.73	0.25	0.23	0.02
35	11.19	10.05	1.14	0.32	0.29	0.03
40	15.00	13.39	1.61	0.37	0.33	0.04
45	18.94	16.82	2.12	0.42	0.37	0.05
50	22.88	20.23	2.65	0.46	0.40	0.05
55	26.74	23.55	3.19	0.49	0.43	0.06
60	30.43	26.71	3.72	0.51	0.45	0.06
65	33.90	29.66	4.24	0.52	0.46	0.07
70	37.10	32.36	4.74	0.53	0.46	0.07
75	40.01	34.81	5.20	0.53	0.46	0.07
80	42.60	36.97	5.63	0.53	0.46	0.07
85	44.87	38.85	6.02	0.53	0.46	0.07
90	46.81	40.45	6.37	0.52	0.45	0.07
95	48.44	41.76	6.67	0.51	0.44	0.07
100	49.75	42.81	6.94	0.50	0.43	0.07
105	50.76	43.60	7.16	0.48	0.42	0.07
110	51.48	44.15	7.33	0.47	0.40	0.07
115	51.94	44.47	7.47	0.45	0.39	0.06
120	52.15	44.58	7.57	0.43	0.37	0.06
125	52.13	44.50	7.63	0.42	0.36	0.06
130	51.91	44.24	7.66	0.40	0.34	0.06
135	51.49	43.83	7.66	0.38	0.32	0.06
140	50.90	43.27	7.63	0.36	0.31	0.05
145	50.16	42.59	7.57	0.35	0.29	0.05
150	49.28	41.79	7.49	0.33	0.28	0.05
155	48.29	40.91	7.39	0.31	0.26	0.05
160	47.21	39.94	7.27	0.30	0.25	0.05
165	46.03	38.90	7.13	0.28	0.24	0.04
170	44.79	37.81	6.98	0.26	0.22	0.04
175	43.49	36.67	6.81	0.25	0.21	0.04
180	42.14	35.50	6.64	0.23	0.20	0.04
185	40.76	34.31	6.45	0.22	0.19	0.03
190	39.36	33.10	6.26	0.21	0.17	0.03
195	37.94	31.87	6.07	0.19	0.16	0.03
200	36.52	30.65	5.87	0.18	0.15	0.03

## Development Type 14 - S tL

## Crown Closure Class B

## Utilization 3008

$$\text{Yield} = (a * (\text{Age} - 10)^{(b + (CC * 0.25 - 0.075) * c)}) * \text{EXP}(-a * (\text{Age} - 10))$$

Coefficients:

	Combined	Softwood
a	0.019000	0.019000
b	2.105883	2.071438
c	0.132300	0.138455
CC	2	2

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	0.56	0.53	0.03	0.04	0.04	0.04
20	2.28	2.12	0.16	0.11	0.11	0.01
25	4.99	4.57	0.41	0.20	0.18	0.02
30	8.45	7.68	0.77	0.28	0.26	0.03
35	12.44	11.23	1.21	0.36	0.32	0.03
40	16.78	15.06	1.72	0.42	0.38	0.04
45	21.30	19.02	2.28	0.47	0.42	0.05
50	25.85	22.99	2.86	0.52	0.46	0.06
55	30.33	26.87	3.46	0.55	0.49	0.06
60	34.64	30.58	4.06	0.58	0.51	0.07
65	38.71	34.07	4.63	0.60	0.52	0.07
70	42.48	37.29	5.19	0.61	0.53	0.07
75	45.93	40.22	5.71	0.61	0.54	0.08
80	49.03	42.83	6.20	0.61	0.54	0.08
85	51.76	45.11	6.65	0.61	0.53	0.08
90	54.11	47.07	7.04	0.60	0.52	0.08
95	56.10	48.70	7.40	0.59	0.51	0.08
100	57.73	50.03	7.70	0.58	0.50	0.08
105	59.01	51.05	7.96	0.56	0.49	0.08
110	59.95	51.78	8.17	0.55	0.47	0.07
115	60.59	52.24	8.34	0.53	0.45	0.07
120	60.92	52.46	8.47	0.51	0.44	0.07
125	60.99	52.44	8.55	0.49	0.42	0.07
130	60.81	52.22	8.59	0.47	0.40	0.07
135	60.40	51.80	8.60	0.45	0.38	0.06
140	59.79	51.21	8.58	0.43	0.37	0.06
145	58.99	50.47	8.53	0.41	0.35	0.06
150	58.04	49.59	8.45	0.39	0.33	0.06
155	56.94	48.60	8.34	0.37	0.31	0.05
160	55.71	47.50	8.21	0.35	0.30	0.05
165	54.39	46.32	8.07	0.33	0.28	0.05
170	52.97	45.07	7.90	0.31	0.27	0.05
175	51.49	43.76	7.72	0.29	0.25	0.04
180	49.94	42.41	7.53	0.28	0.24	0.04
185	48.35	41.02	7.33	0.26	0.22	0.04
190	46.73	39.61	7.12	0.25	0.21	0.04
195	45.09	38.19	6.90	0.23	0.20	0.04
200	43.44	36.76	6.68	0.22	0.18	0.03



## Development Type 14 - S tL

## Crown Closure Class C

## Utilization 3008

$$\text{Yield} = (a * (\text{Age} - 10)^{(b + (CC * 0.25 - 0.075) * c)}) * \text{EXP}(-a * (\text{Age} - 10))$$

Coefficients:

	Combined	Softwood
a	0.019000	0.019000
b	2.105883	2.071438
c	0.132300	0.138455
CC	3	3

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	0.59	0.56	0.03	0.04	0.04	0.04
20	2.46	2.30	0.17	0.12	0.11	0.01
25	5.45	5.02	0.43	0.22	0.20	0.02
30	9.33	8.52	0.81	0.31	0.28	0.03
35	13.84	12.56	1.29	0.40	0.36	0.04
40	18.78	16.94	1.84	0.47	0.42	0.05
45	23.96	21.51	2.45	0.53	0.48	0.05
50	29.21	26.12	3.09	0.58	0.52	0.06
55	34.40	30.65	3.75	0.63	0.56	0.07
60	39.42	35.02	4.41	0.66	0.58	0.07
65	44.19	39.14	5.05	0.68	0.60	0.08
70	48.64	42.97	5.67	0.69	0.61	0.08
75	52.73	46.47	6.26	0.70	0.62	0.08
80	56.43	49.61	6.81	0.71	0.62	0.09
85	59.70	52.38	7.32	0.70	0.62	0.09
90	62.55	54.78	7.78	0.70	0.61	0.09
95	64.98	56.80	8.18	0.68	0.60	0.09
100	66.99	58.46	8.54	0.67	0.58	0.09
105	68.60	59.76	8.84	0.65	0.57	0.08
110	69.82	60.73	9.09	0.63	0.55	0.08
115	70.67	61.38	9.29	0.61	0.53	0.08
120	71.17	61.73	9.45	0.59	0.51	0.08
125	71.36	61.80	9.55	0.57	0.49	0.08
130	71.24	61.63	9.62	0.55	0.47	0.07
135	70.86	61.22	9.64	0.52	0.45	0.07
140	70.23	60.61	9.63	0.50	0.43	0.07
145	69.38	59.80	9.58	0.48	0.41	0.07
150	68.34	58.84	9.50	0.46	0.39	0.06
155	67.12	57.73	9.39	0.43	0.37	0.06
160	65.76	56.50	9.26	0.41	0.35	0.06
165	64.26	55.16	9.10	0.39	0.33	0.06
170	62.65	53.73	8.93	0.37	0.32	0.05
175	60.96	52.22	8.73	0.35	0.30	0.05
180	59.19	50.66	8.53	0.33	0.28	0.05
185	57.36	49.05	8.31	0.31	0.27	0.04
190	55.49	47.41	8.08	0.29	0.25	0.04
195	53.59	45.75	7.84	0.27	0.23	0.04
200	51.67	44.08	7.59	0.26	0.22	0.04

## Development Type 14 - S tL

## Crown Closure Class D

## Utilization 3008

$$\text{Yield} = (a * (\text{Age} - 10)^{(b + (CC * 0.25 - 0.075) * c)}) * \text{EXP}(-a * (\text{Age} - 10))$$

Coefficients:

	Combined	Softwood
a	0.019000	0.019000
b	2.105883	2.071438
c	0.132300	0.138455
CC	4	4

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	0.62	0.60	0.03	0.04	0.04	0.04
20	2.66	2.49	0.17	0.13	0.12	0.01
25	5.97	5.52	0.45	0.24	0.22	0.02
30	10.30	9.45	0.85	0.34	0.31	0.03
35	15.40	14.04	1.36	0.44	0.40	0.04
40	21.02	19.06	1.96	0.53	0.48	0.05
45	26.95	24.33	2.62	0.60	0.54	0.06
50	33.00	29.68	3.32	0.66	0.59	0.07
55	39.01	34.97	4.04	0.71	0.64	0.07
60	44.87	40.09	4.77	0.75	0.67	0.08
65	50.45	44.96	5.49	0.78	0.69	0.08
70	55.70	49.51	6.19	0.80	0.71	0.09
75	60.54	53.69	6.85	0.81	0.72	0.09
80	64.94	57.47	7.47	0.81	0.72	0.09
85	68.87	60.83	8.04	0.81	0.72	0.09
90	72.31	63.75	8.56	0.80	0.71	0.10
95	75.27	66.24	9.03	0.79	0.70	0.10
100	77.74	68.31	9.43	0.78	0.68	0.09
105	79.75	69.96	9.79	0.76	0.67	0.09
110	81.30	71.22	10.08	0.74	0.65	0.09
115	82.43	72.10	10.32	0.72	0.63	0.09
120	83.14	72.63	10.51	0.69	0.61	0.09
125	83.48	72.84	10.65	0.67	0.58	0.09
130	83.47	72.73	10.73	0.64	0.56	0.08
135	83.13	72.36	10.78	0.62	0.54	0.08
140	82.50	71.73	10.77	0.59	0.51	0.08
145	81.61	70.87	10.73	0.56	0.49	0.07
150	80.48	69.82	10.66	0.54	0.47	0.07
155	79.13	68.58	10.55	0.51	0.44	0.07
160	77.61	67.20	10.41	0.49	0.42	0.07
165	75.93	65.68	10.25	0.46	0.40	0.06
170	74.11	64.04	10.06	0.44	0.38	0.06
175	72.17	62.32	9.85	0.41	0.36	0.06
180	70.15	60.52	9.63	0.39	0.34	0.05
185	68.05	58.66	9.39	0.37	0.32	0.05
190	65.89	56.75	9.14	0.35	0.30	0.05
195	63.69	54.81	8.88	0.33	0.28	0.05
200	61.46	52.86	8.61	0.31	0.26	0.04

## Development Type 21 - S bSjP

## Crown Closure Class A

## Utilization 3008

$$\text{Yield} = (a * (\text{Age} - 10)^{(b + (\text{CC} * 0.25 - 0.075) * c)}) * \text{EXP}(-a * (\text{Age} - 10))$$

Coefficients:

	Combined	Softwood
a	0.019500	0.019500
b	2.215731	2.209937
c	0.189912	0.185335
CC	1	1

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	0.66	0.65	0.01	0.04	0.04	0.04
20	2.85	2.80	0.04	0.14	0.14	0.00
25	6.43	6.31	0.11	0.26	0.25	0.00
30	11.13	10.92	0.22	0.37	0.36	0.01
35	16.68	16.33	0.35	0.48	0.47	0.01
40	22.80	22.30	0.51	0.57	0.56	0.01
45	29.25	28.58	0.68	0.65	0.64	0.02
50	35.83	34.97	0.86	0.72	0.70	0.02
55	42.36	41.31	1.05	0.77	0.75	0.02
60	48.70	47.46	1.24	0.81	0.79	0.02
65	54.74	53.31	1.43	0.84	0.82	0.02
70	60.38	58.77	1.61	0.86	0.84	0.02
75	65.58	63.80	1.78	0.87	0.85	0.02
80	70.27	68.33	1.94	0.88	0.85	0.02
85	74.44	72.35	2.09	0.88	0.85	0.02
90	78.08	75.85	2.22	0.87	0.84	0.02
95	81.17	78.83	2.34	0.85	0.83	0.02
100	83.73	81.28	2.45	0.84	0.81	0.02
105	85.77	83.23	2.54	0.82	0.79	0.02
110	87.32	84.70	2.61	0.79	0.77	0.02
115	88.39	85.72	2.67	0.77	0.75	0.02
120	89.02	86.30	2.72	0.74	0.72	0.02
125	89.24	86.49	2.75	0.71	0.69	0.02
130	89.08	86.31	2.77	0.69	0.66	0.02
135	88.58	85.80	2.78	0.66	0.64	0.02
140	87.76	84.99	2.77	0.63	0.61	0.02
145	86.66	83.90	2.76	0.60	0.58	0.02
150	85.31	82.57	2.73	0.57	0.55	0.02
155	83.74	81.03	2.70	0.54	0.52	0.02
160	81.97	79.31	2.66	0.51	0.50	0.02
165	80.05	77.43	2.62	0.49	0.47	0.02
170	77.99	75.42	2.57	0.46	0.44	0.02
175	75.81	73.30	2.51	0.43	0.42	0.01
180	73.54	71.10	2.45	0.41	0.39	0.01
185	71.21	68.82	2.38	0.38	0.37	0.01
190	68.82	66.50	2.32	0.36	0.35	0.01
195	66.39	64.14	2.25	0.34	0.33	0.01
200	63.95	61.77	2.17	0.32	0.31	0.01

## Development Type 21 - S bSjP

## Crown Closure Class B

## Utilization 3008

$$\text{Yield} = (a * (\text{Age} - 10)^{(b + (CC * 0.25 - 0.075) * c)}) * \text{EXP}(-a * (\text{Age} - 10))$$

Coefficients:

	Combined	Softwood
a	0.019500	0.019500
b	2.215731	2.209937
c	0.189912	0.185335
CC	2	2

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	0.71	0.70	0.01	0.05	0.05	0.05
20	3.18	3.12	0.06	0.16	0.16	0.00
25	7.31	7.16	0.15	0.29	0.29	0.01
30	12.84	12.54	0.29	0.43	0.42	0.01
35	19.44	18.96	0.48	0.56	0.54	0.01
40	26.80	26.10	0.70	0.67	0.65	0.02
45	34.63	33.69	0.94	0.77	0.75	0.02
50	42.69	41.49	1.20	0.85	0.83	0.02
55	50.75	49.28	1.47	0.92	0.90	0.03
60	58.64	56.89	1.75	0.98	0.95	0.03
65	66.21	64.18	2.02	1.02	0.99	0.03
70	73.34	71.05	2.29	1.05	1.02	0.03
75	79.95	77.41	2.54	1.07	1.03	0.03
80	85.98	83.20	2.78	1.07	1.04	0.03
85	91.38	88.38	3.00	1.08	1.04	0.04
90	96.13	92.93	3.21	1.07	1.03	0.04
95	100.23	96.84	3.39	1.06	1.02	0.04
100	103.67	100.12	3.55	1.04	1.00	0.04
105	106.47	102.79	3.69	1.01	0.98	0.04
110	108.65	104.85	3.80	0.99	0.95	0.03
115	110.25	106.35	3.90	0.96	0.92	0.03
120	111.28	107.30	3.97	0.93	0.89	0.03
125	111.79	107.76	4.03	0.89	0.86	0.03
130	111.82	107.75	4.07	0.86	0.83	0.03
135	111.40	107.31	4.09	0.83	0.79	0.03
140	110.57	106.49	4.09	0.79	0.76	0.03
145	109.38	105.31	4.07	0.75	0.73	0.03
150	107.86	103.82	4.05	0.72	0.69	0.03
155	106.05	102.05	4.01	0.68	0.66	0.03
160	103.99	100.04	3.95	0.65	0.63	0.02
165	101.71	97.81	3.89	0.62	0.59	0.02
170	99.24	95.41	3.82	0.58	0.56	0.02
175	96.61	92.87	3.74	0.55	0.53	0.02
180	93.85	90.20	3.66	0.52	0.50	0.02
185	90.99	87.43	3.57	0.49	0.47	0.02
190	88.06	84.59	3.47	0.46	0.45	0.02
195	85.06	81.70	3.37	0.44	0.42	0.02
200	82.04	78.77	3.26	0.41	0.39	0.02

## Development Type 21 - S bSjP

## Crown Closure Class C

## Utilization 3008

$$\text{Yield} = (a * (\text{Age} - 10)^{(b + (\text{CC} * 0.25 - 0.075) * c)}) * \text{EXP}(-a * (\text{Age} - 10))$$

Coefficients:

	Combined	Softwood
a	0.019500	0.019500
b	2.215731	2.209937
c	0.189912	0.185335
CC	3	3

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	0.77	0.76	0.01	0.05	0.05	0.05
20	3.54	3.47	0.07	0.18	0.17	0.00
25	8.31	8.11	0.20	0.33	0.32	0.01
30	14.80	14.41	0.39	0.49	0.48	0.01
35	22.65	22.01	0.64	0.65	0.63	0.02
40	31.49	30.56	0.94	0.79	0.76	0.02
45	41.00	39.73	1.27	0.91	0.88	0.03
50	50.86	49.22	1.64	1.02	0.98	0.03
55	60.81	58.78	2.02	1.11	1.07	0.04
60	70.61	68.20	2.41	1.18	1.14	0.04
65	80.08	77.28	2.80	1.23	1.19	0.04
70	89.08	85.89	3.18	1.27	1.23	0.05
75	97.47	93.93	3.55	1.30	1.25	0.05
80	105.19	101.30	3.90	1.31	1.27	0.05
85	112.17	107.95	4.22	1.32	1.27	0.05
90	118.37	113.85	4.52	1.32	1.26	0.05
95	123.76	118.98	4.79	1.30	1.25	0.05
100	128.36	123.33	5.03	1.28	1.23	0.05
105	132.17	126.93	5.24	1.26	1.21	0.05
110	135.21	129.79	5.42	1.23	1.18	0.05
115	137.51	131.94	5.57	1.20	1.15	0.05
120	139.10	133.41	5.69	1.16	1.11	0.05
125	140.04	134.26	5.78	1.12	1.07	0.05
130	140.35	134.51	5.84	1.08	1.03	0.04
135	140.10	134.22	5.88	1.04	0.99	0.04
140	139.32	133.43	5.90	1.00	0.95	0.04
145	138.07	132.18	5.89	0.95	0.91	0.04
150	136.38	130.53	5.86	0.91	0.87	0.04
155	134.32	128.51	5.81	0.87	0.83	0.04
160	131.92	126.18	5.74	0.82	0.79	0.04
165	129.22	123.56	5.66	0.78	0.75	0.03
170	126.28	120.71	5.57	0.74	0.71	0.03
175	123.11	117.65	5.46	0.70	0.67	0.03
180	119.77	114.43	5.34	0.67	0.64	0.03
185	116.28	111.07	5.21	0.63	0.60	0.03
190	112.68	107.60	5.08	0.59	0.57	0.03
195	108.99	104.05	4.94	0.56	0.53	0.03
200	105.24	100.45	4.79	0.53	0.50	0.02

## Development Type 21 - S bSjP

## Crown Closure Class D

## Utilization 3008

$$\text{Yield} = (a * (\text{Age} - 10)^{(b + (CC * 0.25 - 0.075) * c)}) * \text{EXP}(-a * (\text{Age} - 10))$$

Coefficients:

	Combined	Softwood
a	0.019500	0.019500
b	2.215731	2.209937
c	0.189912	0.185335
CC	4	4

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	0.83	0.82	0.01	0.06	0.05	0.05
20	3.95	3.86	0.09	0.20	0.19	0.00
25	9.45	9.20	0.25	0.38	0.37	0.01
30	17.06	16.55	0.50	0.57	0.55	0.02
35	26.38	25.55	0.84	0.75	0.73	0.02
40	37.01	35.77	1.24	0.93	0.89	0.03
45	48.54	46.84	1.70	1.08	1.04	0.04
50	60.60	58.40	2.20	1.21	1.17	0.04
55	72.85	70.12	2.73	1.32	1.27	0.05
60	85.02	81.75	3.27	1.42	1.36	0.05
65	96.86	93.05	3.81	1.49	1.43	0.06
70	108.19	103.84	4.35	1.55	1.48	0.06
75	118.84	113.97	4.87	1.58	1.52	0.06
80	128.70	123.34	5.37	1.61	1.54	0.07
85	137.69	131.86	5.83	1.62	1.55	0.07
90	145.74	139.48	6.26	1.62	1.55	0.07
95	152.83	146.17	6.66	1.61	1.54	0.07
100	158.94	151.92	7.01	1.59	1.52	0.07
105	164.07	156.75	7.32	1.56	1.49	0.07
110	168.25	160.66	7.59	1.53	1.46	0.07
115	171.51	163.69	7.82	1.49	1.42	0.07
120	173.88	165.88	8.01	1.45	1.38	0.07
125	175.42	167.27	8.15	1.40	1.34	0.07
130	176.17	167.92	8.26	1.36	1.29	0.06
135	176.19	167.87	8.33	1.31	1.24	0.06
140	175.54	167.18	8.36	1.25	1.19	0.06
145	174.27	165.91	8.36	1.20	1.14	0.06
150	172.45	164.11	8.34	1.15	1.09	0.06
155	170.12	161.84	8.28	1.10	1.04	0.05
160	167.35	159.15	8.20	1.05	0.99	0.05
165	164.19	156.09	8.10	1.00	0.95	0.05
170	160.68	152.71	7.97	0.95	0.90	0.05
175	156.89	149.06	7.83	0.90	0.85	0.04
180	152.84	145.17	7.67	0.85	0.81	0.04
185	148.60	141.10	7.50	0.80	0.76	0.04
190	144.18	136.87	7.32	0.76	0.72	0.04
195	139.65	132.53	7.12	0.72	0.68	0.04
200	135.02	128.10	6.92	0.68	0.64	0.03

## Development Type 31 - SH sPtA

## Crown Closure Class A

## Utilization 3008

$$\text{Yield} = (a * (\text{Age} - 10)^{(b + (CC * 0.25 - 0.075) * c)}) * \text{EXP}(-a * (\text{Age} - 10))$$

Coefficients:

	Combined	Softwood
a	0.025000	0.019800
b	2.222160	2.073000
c	0.319876	0.309618
CC	1	1

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	0.86	0.55	0.31	0.06	0.04	0.04
20	3.69	2.18	1.52	0.18	0.11	0.08
25	8.21	4.67	3.54	0.33	0.19	0.14
30	13.95	7.80	6.15	0.47	0.26	0.21
35	20.47	11.36	9.11	0.58	0.32	0.26
40	27.37	15.16	12.21	0.68	0.38	0.31
45	34.32	19.06	15.25	0.76	0.42	0.34
50	41.05	22.94	18.12	0.82	0.46	0.36
55	47.38	26.69	20.69	0.86	0.49	0.38
60	53.16	30.25	22.91	0.89	0.50	0.38
65	58.29	33.56	24.73	0.90	0.52	0.38
70	62.72	36.57	26.14	0.90	0.52	0.37
75	66.42	39.28	27.14	0.89	0.52	0.36
80	69.39	41.65	27.74	0.87	0.52	0.35
85	71.66	43.69	27.98	0.84	0.51	0.33
90	73.26	45.39	27.87	0.81	0.50	0.31
95	74.22	46.77	27.45	0.78	0.49	0.29
100	74.61	47.84	26.77	0.75	0.48	0.27
105	74.48	48.61	25.87	0.71	0.46	0.25
110	73.87	49.11	24.77	0.67	0.45	0.23
115	72.86	49.34	23.52	0.63	0.43	0.20
120	71.48	49.34	22.14	0.60	0.41	0.18
125	69.81	49.12	20.69	0.56	0.39	0.17
130	67.88	48.71	19.17	0.52	0.37	0.15
135	65.74	48.12	17.62	0.49	0.36	0.13
140	63.44	47.37	16.06	0.45	0.34	0.11
145	61.01	46.49	14.51	0.42	0.32	0.10
150	58.49	45.50	12.99	0.39	0.30	0.09
155	55.91	44.40	11.51	0.36	0.29	0.07
160	53.31	43.23	10.08	0.33	0.27	0.06
165	50.69	41.98	8.71	0.31	0.25	0.05
170	48.09	40.68	7.41	0.28	0.24	0.04
175	45.52	39.34	6.18	0.26	0.22	0.04
180	43.00	37.97	5.03	0.24	0.21	0.03
185	40.54	36.58	3.96	0.22	0.20	0.02
190	38.15	35.17	2.97	0.20	0.19	0.02
195	35.83	33.77	2.06	0.18	0.17	0.01
200	33.60	32.37	1.23	0.17	0.16	0.01

## Development Type 31 - SH sPtA

## Crown Closure Class B

## Utilization 3008

$$\text{Yield} = (a * (\text{Age} - 10)^{(b + (CC * 0.25 - 0.075) * c)}) * \text{EXP}(-a * (\text{Age} - 10))$$

Coefficients:

	Combined	Softwood
a	0.025000	0.019800
b	2.222160	2.073000
c	0.319876	0.309618
CC	2	2

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	0.98	0.62	0.36	0.07	0.04	0.04
20	4.44	2.60	1.84	0.22	0.13	0.09
25	10.20	5.76	4.44	0.41	0.23	0.18
30	17.73	9.84	7.89	0.59	0.33	0.26
35	26.48	14.57	11.91	0.76	0.42	0.34
40	35.93	19.73	16.20	0.90	0.49	0.40
45	45.60	25.10	20.50	1.01	0.56	0.46
50	55.14	30.52	24.62	1.10	0.61	0.49
55	64.24	35.84	28.40	1.17	0.65	0.52
60	72.68	40.95	31.73	1.21	0.68	0.53
65	80.31	45.76	34.54	1.24	0.70	0.53
70	87.01	50.21	36.80	1.24	0.72	0.53
75	92.74	54.26	38.48	1.24	0.72	0.51
80	97.47	57.86	39.60	1.22	0.72	0.50
85	101.21	61.02	40.19	1.19	0.72	0.47
90	104.00	63.72	40.28	1.16	0.71	0.45
95	105.89	65.97	39.92	1.11	0.69	0.42
100	106.93	67.77	39.16	1.07	0.68	0.39
105	107.20	69.15	38.04	1.02	0.66	0.36
110	106.76	70.14	36.63	0.97	0.64	0.33
115	105.71	70.74	34.97	0.92	0.62	0.30
120	104.10	70.99	33.11	0.87	0.59	0.28
125	102.02	70.92	31.10	0.82	0.57	0.25
130	99.54	70.55	28.98	0.77	0.54	0.22
135	96.72	69.92	26.80	0.72	0.52	0.20
140	93.62	69.05	24.57	0.67	0.49	0.18
145	90.31	67.97	22.35	0.62	0.47	0.15
150	86.84	66.70	20.14	0.58	0.44	0.13
155	83.25	65.27	17.97	0.54	0.42	0.12
160	79.58	63.71	15.87	0.50	0.40	0.10
165	75.87	62.03	13.84	0.46	0.38	0.08
170	72.16	60.26	11.91	0.42	0.35	0.07
175	68.48	58.41	10.07	0.39	0.33	0.06
180	64.84	56.50	8.34	0.36	0.31	0.05
185	61.27	54.55	6.72	0.33	0.29	0.04
190	57.78	52.58	5.21	0.30	0.28	0.03
195	54.40	50.59	3.81	0.28	0.26	0.02
200	51.12	48.59	2.53	0.26	0.24	0.01



## Development Type 31 - SH sPtA

## Crown Closure Class C

## Utilization 3008

$$\text{Yield} = (a * (\text{Age} - 10)^{(b + (CC * 0.25 - 0.075) * c)}) * \text{EXP}(-a * (\text{Age} - 10))$$

Coefficients:

	Combined	Softwood
a	0.025000	0.019800
b	2.222160	2.073000
c	0.319876	0.309618
CC	3	3

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	1.12	0.71	0.41	0.07	0.05	0.05
20	5.34	3.11	2.23	0.27	0.16	0.11
25	12.66	7.10	5.56	0.51	0.28	0.22
30	22.53	12.41	10.13	0.75	0.41	0.34
35	34.26	18.70	15.56	0.98	0.53	0.44
40	47.16	25.67	21.49	1.18	0.64	0.54
45	60.60	33.06	27.55	1.35	0.73	0.61
50	74.06	40.61	33.45	1.48	0.81	0.67
55	87.10	48.12	38.98	1.58	0.87	0.71
60	99.38	55.43	43.95	1.66	0.92	0.73
65	110.64	62.40	48.24	1.70	0.96	0.74
70	120.72	68.94	51.78	1.72	0.98	0.74
75	129.49	74.95	54.54	1.73	1.00	0.73
80	136.90	80.40	56.51	1.71	1.00	0.71
85	142.95	85.23	57.71	1.68	1.00	0.68
90	147.65	89.45	58.20	1.64	0.99	0.65
95	151.06	93.04	58.02	1.59	0.98	0.61
100	153.24	96.01	57.23	1.53	0.96	0.57
105	154.29	98.38	55.91	1.47	0.94	0.53
110	154.30	100.17	54.12	1.40	0.91	0.49
115	153.37	101.42	51.95	1.33	0.88	0.45
120	151.60	102.14	49.46	1.26	0.85	0.41
125	149.10	102.39	46.71	1.19	0.82	0.37
130	145.97	102.20	43.77	1.12	0.79	0.34
135	142.30	101.61	40.69	1.05	0.75	0.30
140	138.18	100.65	37.53	0.99	0.72	0.27
145	133.69	99.36	34.34	0.92	0.69	0.24
150	128.92	97.78	31.14	0.86	0.65	0.21
155	123.94	95.95	27.99	0.80	0.62	0.18
160	118.80	93.89	24.91	0.74	0.59	0.16
165	113.57	91.65	21.91	0.69	0.56	0.13
170	108.29	89.25	19.04	0.64	0.52	0.11
175	103.01	86.72	16.29	0.59	0.50	0.09
180	97.77	84.08	13.69	0.54	0.47	0.08
185	92.60	81.36	11.23	0.50	0.44	0.06
190	87.53	78.59	8.94	0.46	0.41	0.05
195	82.58	75.77	6.81	0.42	0.39	0.03
200	77.77	72.94	4.83	0.39	0.36	0.02

## Development Type 31 - SH sPtA

## Crown Closure Class D

## Utilization 3008

$$\text{Yield} = (a * (\text{Age} - 10)^{(b + (CC * 0.25 - 0.075) * c)}) * \text{EXP}(-a * (\text{Age} - 10))$$

Coefficients:

	Combined	Softwood
a	0.025000	0.019800
b	2.222160	2.073000
c	0.319876	0.309618
CC	4	4

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	1.27	0.80	0.47	0.08	0.05	0.05
20	6.42	3.72	2.70	0.32	0.19	0.14
25	15.72	8.76	6.96	0.63	0.35	0.28
30	28.63	15.64	12.99	0.95	0.52	0.43
35	44.32	23.99	20.33	1.27	0.69	0.58
40	61.90	33.40	28.49	1.55	0.84	0.71
45	80.53	43.53	37.00	1.79	0.97	0.82
50	99.47	54.03	45.45	1.99	1.08	0.91
55	118.09	64.61	53.48	2.15	1.17	0.97
60	135.88	75.03	60.85	2.26	1.25	1.01
65	152.44	85.10	67.34	2.35	1.31	1.04
70	167.48	94.64	72.84	2.39	1.35	1.04
75	180.80	103.54	77.26	2.41	1.38	1.03
80	192.29	111.70	80.59	2.40	1.40	1.01
85	201.90	119.06	82.84	2.38	1.40	0.97
90	209.61	125.57	84.04	2.33	1.40	0.93
95	215.49	131.22	84.27	2.27	1.38	0.89
100	219.61	136.01	83.59	2.20	1.36	0.84
105	222.07	139.96	82.11	2.11	1.33	0.78
110	223.00	143.07	79.92	2.03	1.30	0.73
115	222.52	145.40	77.12	1.93	1.26	0.67
120	220.78	146.97	73.81	1.84	1.22	0.62
125	217.91	147.84	70.07	1.74	1.18	0.56
130	214.06	148.05	66.01	1.65	1.14	0.51
135	209.36	147.65	61.71	1.55	1.09	0.46
140	203.93	146.70	57.24	1.46	1.05	0.41
145	197.91	145.24	52.67	1.36	1.00	0.36
150	191.41	143.34	48.07	1.28	0.96	0.32
155	184.52	141.04	43.48	1.19	0.91	0.28
160	177.35	138.38	38.97	1.11	0.86	0.24
165	169.98	135.42	34.56	1.03	0.82	0.21
170	162.49	132.19	30.30	0.96	0.78	0.18
175	154.95	128.75	26.20	0.89	0.74	0.15
180	147.42	125.12	22.30	0.82	0.70	0.12
185	139.95	121.35	18.60	0.76	0.66	0.10
190	132.58	117.47	15.12	0.70	0.62	0.08
195	125.36	113.50	11.86	0.64	0.58	0.06
200	118.32	109.48	8.84	0.59	0.55	0.04

## Development Type 32 - SH jPtA

## Crown Closure Class A

## Utilization 3008

$$\text{Yield} = (a * (\text{Age} - 10)^{(b + (CC * 0.25 - 0.075) * c)}) * \text{EXP}(-a * (\text{Age} - 10))$$

Coefficients:

	Combined	Softwood
a	0.022000	0.019000
b	2.182039	2.101394
c	0.284352	0.190909
CC	1	1

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	0.72	0.54	0.18	0.05	0.04	0.04
20	3.01	2.14	0.87	0.15	0.11	0.04
25	6.67	4.63	2.04	0.27	0.19	0.08
30	11.35	7.78	3.57	0.38	0.26	0.12
35	16.73	11.40	5.33	0.48	0.33	0.15
40	22.51	15.30	7.22	0.56	0.38	0.18
45	28.45	19.33	9.12	0.63	0.43	0.20
50	34.33	23.38	10.96	0.69	0.47	0.22
55	40.00	27.33	12.67	0.73	0.50	0.23
60	45.34	31.13	14.21	0.76	0.52	0.24
65	50.24	34.69	15.55	0.77	0.53	0.24
70	54.66	37.99	16.67	0.78	0.54	0.24
75	58.54	40.98	17.56	0.78	0.55	0.23
80	61.87	43.66	18.22	0.77	0.55	0.23
85	64.65	46.00	18.65	0.76	0.54	0.22
90	66.89	48.01	18.88	0.74	0.53	0.21
95	68.61	49.69	18.91	0.72	0.52	0.20
100	69.82	51.05	18.77	0.70	0.51	0.19
105	70.57	52.11	18.46	0.67	0.50	0.18
110	70.89	52.87	18.02	0.64	0.48	0.16
115	70.81	53.36	17.45	0.62	0.46	0.15
120	70.37	53.59	16.79	0.59	0.45	0.14
125	69.62	53.58	16.04	0.56	0.43	0.13
130	68.58	53.36	15.22	0.53	0.41	0.12
135	67.30	52.94	14.36	0.50	0.39	0.11
140	65.80	52.35	13.45	0.47	0.37	0.10
145	64.13	51.60	12.53	0.44	0.36	0.09
150	62.31	50.71	11.60	0.42	0.34	0.08
155	60.36	49.70	10.66	0.39	0.32	0.07
160	58.32	48.59	9.74	0.36	0.30	0.06
165	56.22	47.39	8.83	0.34	0.29	0.05
170	54.06	46.12	7.94	0.32	0.27	0.05
175	51.87	44.78	7.09	0.30	0.26	0.04
180	49.67	43.41	6.26	0.28	0.24	0.03
185	47.47	41.99	5.48	0.26	0.23	0.03
190	45.28	40.55	4.73	0.24	0.21	0.02
195	43.12	39.10	4.02	0.22	0.20	0.02
200	41.00	37.64	3.36	0.21	0.19	0.02

## Development Type 32 - SH jPtA

## Crown Closure Class B

## Utilization 3008

$$\text{Yield} = (a * (\text{Age} - 10)^{(b + (CC * 0.25 - 0.075) * c)}) * \text{EXP}(-a * (\text{Age} - 10))$$

Coefficients:

	Combined	Softwood
a	0.022000	0.019000
b	2.182039	2.101394
c	0.284352	0.190909
CC	2	2

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	0.80	0.58	0.22	0.05	0.04	0.04
20	3.55	2.39	1.15	0.18	0.12	0.06
25	8.08	5.27	2.81	0.32	0.21	0.11
30	14.04	8.98	5.06	0.47	0.30	0.17
35	21.03	13.29	7.74	0.60	0.38	0.22
40	28.67	17.99	10.68	0.72	0.45	0.27
45	36.63	22.90	13.73	0.81	0.51	0.31
50	44.63	27.88	16.75	0.89	0.56	0.34
55	52.44	32.78	19.66	0.95	0.60	0.36
60	59.87	37.52	22.36	1.00	0.63	0.37
65	66.80	42.01	24.80	1.03	0.65	0.38
70	73.12	46.19	26.93	1.04	0.66	0.38
75	78.76	50.02	28.74	1.05	0.67	0.38
80	83.69	53.47	30.22	1.05	0.67	0.38
85	87.88	56.53	31.35	1.03	0.67	0.37
90	91.34	59.18	32.16	1.01	0.66	0.36
95	94.09	61.43	32.66	0.99	0.65	0.34
100	96.14	63.29	32.86	0.96	0.63	0.33
105	97.55	64.76	32.79	0.93	0.62	0.31
110	98.35	65.86	32.48	0.89	0.60	0.30
115	98.58	66.63	31.95	0.86	0.58	0.28
120	98.29	67.06	31.23	0.82	0.56	0.26
125	97.55	67.20	30.35	0.78	0.54	0.24
130	96.38	67.06	29.33	0.74	0.52	0.23
135	94.86	66.66	28.19	0.70	0.49	0.21
140	93.01	66.04	26.97	0.66	0.47	0.19
145	90.88	65.21	25.68	0.63	0.45	0.18
150	88.53	64.20	24.33	0.59	0.43	0.16
155	85.98	63.03	22.96	0.55	0.41	0.15
160	83.28	61.72	21.57	0.52	0.39	0.13
165	80.46	60.29	20.17	0.49	0.37	0.12
170	77.54	58.76	18.79	0.46	0.35	0.11
175	74.57	57.14	17.42	0.43	0.33	0.10
180	71.55	55.46	16.09	0.40	0.31	0.09
185	68.53	53.73	14.80	0.37	0.29	0.08
190	65.50	51.96	13.54	0.34	0.27	0.07
195	62.50	50.16	12.34	0.32	0.26	0.06
200	59.54	48.35	11.19	0.30	0.24	0.06

## Development Type 32 - SH jPtA

## Crown Closure Class C

## Utilization 3008

$$\text{Yield} = (a * (\text{Age} - 10)^{(b + (CC * 0.25 - 0.075) * c)}) * \text{EXP}(-a * (\text{Age} - 10))$$

Coefficients:

	Combined	Softwood
a	0.022000	0.019000
b	2.182039	2.101394
c	0.284352	0.190909
CC	3	3

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	0.90	0.63	0.27	0.06	0.04	0.04
20	4.18	2.67	1.51	0.21	0.13	0.08
25	9.80	6.00	3.80	0.39	0.24	0.15
30	17.38	10.36	7.02	0.58	0.35	0.23
35	26.44	15.50	10.94	0.76	0.44	0.31
40	36.51	21.16	15.35	0.91	0.53	0.38
45	47.16	27.14	20.02	1.05	0.60	0.44
50	58.01	33.24	24.77	1.16	0.66	0.50
55	68.73	39.31	29.42	1.25	0.71	0.53
60	79.07	45.22	33.85	1.32	0.75	0.56
65	88.82	50.86	37.96	1.37	0.78	0.58
70	97.82	56.16	41.67	1.40	0.80	0.60
75	105.97	61.05	44.93	1.41	0.81	0.60
80	113.20	65.49	47.70	1.41	0.82	0.60
85	119.45	69.46	49.99	1.41	0.82	0.59
90	124.73	72.95	51.78	1.39	0.81	0.58
95	129.03	75.94	53.09	1.36	0.80	0.56
100	132.39	78.45	53.94	1.32	0.78	0.54
105	134.84	80.48	54.36	1.28	0.77	0.52
110	136.44	82.06	54.38	1.24	0.75	0.49
115	137.23	83.20	54.04	1.19	0.72	0.47
120	137.29	83.93	53.37	1.14	0.70	0.44
125	136.68	84.28	52.40	1.09	0.67	0.42
130	135.46	84.27	51.19	1.04	0.65	0.39
135	133.70	83.94	49.76	0.99	0.62	0.37
140	131.46	83.31	48.15	0.94	0.60	0.34
145	128.80	82.41	46.39	0.89	0.57	0.32
150	125.79	81.27	44.52	0.84	0.54	0.30
155	122.48	79.92	42.55	0.79	0.52	0.27
160	118.92	78.39	40.53	0.74	0.49	0.25
165	115.15	76.69	38.46	0.70	0.46	0.23
170	111.23	74.86	36.37	0.65	0.44	0.21
175	107.20	72.91	34.29	0.61	0.42	0.20
180	103.09	70.87	32.22	0.57	0.39	0.18
185	98.93	68.75	30.18	0.53	0.37	0.16
190	94.75	66.57	28.18	0.50	0.35	0.15
195	90.59	64.36	26.23	0.46	0.33	0.13
200	86.45	62.11	24.34	0.43	0.31	0.12

## Development Type 32 - SH jPtA

## Crown Closure Class D

## Utilization 3008

$$\text{Yield} = (a * (\text{Age} - 10)^{(b + (CC * 0.25 - 0.075) * c)}) * \text{EXP}(-a * (\text{Age} - 10))$$

Coefficients:

	Combined	Softwood
a	0.022000	0.019000
b	2.182039	2.101394
c	0.284352	0.190909
CC	4	4

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	1.01	0.68	0.33	0.07	0.05	0.05
20	4.92	2.98	1.94	0.25	0.15	0.10
25	11.88	6.82	5.05	0.48	0.27	0.20
30	21.50	11.95	9.55	0.72	0.40	0.32
35	33.24	18.07	15.17	0.95	0.52	0.43
40	46.50	24.89	21.61	1.16	0.62	0.54
45	60.72	32.16	28.56	1.35	0.71	0.63
50	75.40	39.64	35.76	1.51	0.79	0.72
55	90.09	47.14	42.95	1.64	0.86	0.78
60	104.42	54.50	49.92	1.74	0.91	0.83
65	118.09	61.58	56.51	1.82	0.95	0.87
70	130.87	68.27	62.60	1.87	0.98	0.89
75	142.58	74.51	68.08	1.90	0.99	0.91
80	153.11	80.21	72.89	1.91	1.00	0.91
85	162.36	85.36	77.00	1.91	1.00	0.91
90	170.31	89.92	80.40	1.89	1.00	0.89
95	176.95	93.88	83.07	1.86	0.99	0.87
100	182.29	97.24	85.05	1.82	0.97	0.85
105	186.38	100.02	86.37	1.78	0.95	0.82
110	189.28	102.23	87.05	1.72	0.93	0.79
115	191.05	103.89	87.16	1.66	0.90	0.76
120	191.76	105.04	86.73	1.60	0.88	0.72
125	191.51	105.70	85.82	1.53	0.85	0.69
130	190.38	105.90	84.48	1.46	0.81	0.65
135	188.45	105.69	82.76	1.40	0.78	0.61
140	185.81	105.09	80.72	1.33	0.75	0.58
145	182.55	104.15	78.40	1.26	0.72	0.54
150	178.74	102.89	75.85	1.19	0.69	0.51
155	174.47	101.35	73.11	1.13	0.65	0.47
160	169.80	99.57	70.23	1.06	0.62	0.44
165	164.81	97.57	67.24	1.00	0.59	0.41
170	159.56	95.38	64.18	0.94	0.56	0.38
175	154.11	93.03	61.08	0.88	0.53	0.35
180	148.51	90.55	57.96	0.83	0.50	0.32
185	142.81	87.97	54.84	0.77	0.48	0.30
190	137.06	85.30	51.76	0.72	0.45	0.27
195	131.29	82.56	48.72	0.67	0.42	0.25
200	125.54	79.78	45.75	0.63	0.40	0.23

## Development Type 51 - HS tAsP

## Crown Closure Class A

## Utilization 3008

$$\text{Yield} = (a * (\text{Age} - 10)^{(b + (CC * 0.25 - 0.075) * c)}) * \text{EXP}(-a * (\text{Age} - 10))$$

Coefficients:

	Combined	Softwood
a	0.022000	0.019000
b	2.268058	1.978569
c	0.240228	0.387606
CC	1	1

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	0.81	0.47	0.35	0.05	0.03	0.03
20	3.61	1.75	1.86	0.18	0.09	0.09
25	8.24	3.65	4.60	0.33	0.15	0.18
30	14.35	5.97	8.38	0.48	0.20	0.28
35	21.52	8.57	12.95	0.61	0.24	0.37
40	29.38	11.32	18.06	0.73	0.28	0.45
45	37.58	14.12	23.46	0.84	0.31	0.52
50	45.83	16.87	28.96	0.92	0.34	0.58
55	53.90	19.52	34.37	0.98	0.35	0.62
60	61.59	22.03	39.56	1.03	0.37	0.66
65	68.76	24.34	44.42	1.06	0.37	0.68
70	75.31	26.45	48.86	1.08	0.38	0.70
75	81.17	28.34	52.83	1.08	0.38	0.70
80	86.29	29.99	56.30	1.08	0.37	0.70
85	90.66	31.41	59.25	1.07	0.37	0.70
90	94.27	32.59	61.68	1.05	0.36	0.69
95	97.15	33.55	63.60	1.02	0.35	0.67
100	99.31	34.30	65.02	0.99	0.34	0.65
105	100.80	34.84	65.97	0.96	0.33	0.63
110	101.66	35.19	66.48	0.92	0.32	0.60
115	101.94	35.36	66.58	0.89	0.31	0.58
120	101.68	35.37	66.32	0.85	0.29	0.55
125	100.94	35.22	65.72	0.81	0.28	0.53
130	99.77	34.95	64.82	0.77	0.27	0.50
135	98.22	34.55	63.67	0.73	0.26	0.47
140	96.33	34.04	62.29	0.69	0.24	0.44
145	94.16	33.44	60.71	0.65	0.23	0.42
150	91.74	32.76	58.98	0.61	0.22	0.39
155	89.12	32.01	57.11	0.57	0.21	0.37
160	86.34	31.20	55.14	0.54	0.20	0.34
165	83.44	30.34	53.09	0.51	0.18	0.32
170	80.43	29.44	50.99	0.47	0.17	0.30
175	77.36	28.52	48.85	0.44	0.16	0.28
180	74.25	27.57	46.69	0.41	0.15	0.26
185	71.13	26.60	44.53	0.38	0.14	0.24
190	68.00	25.62	42.38	0.36	0.13	0.22
195	64.90	24.65	40.25	0.33	0.13	0.21
200	61.83	23.67	38.16	0.31	0.12	0.19

## Development Type 51 - HS tAsP

## Crown Closure Class B

## Utilization 3008

$$\text{Yield} = (a * (\text{Age} - 10)^{(b + (CC * 0.25 - 0.075) * c)}) * \text{EXP}(-a * (\text{Age} - 10))$$

Coefficients:

	Combined	Softwood
a	0.022000	0.019000
b	2.268058	1.978569
c	0.240228	0.387606
CC	2	2

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	0.89	0.54	0.35	0.06	0.04	0.04
20	4.14	2.19	1.95	0.21	0.11	0.10
25	9.70	4.74	4.96	0.39	0.19	0.20
30	17.18	7.98	9.19	0.57	0.27	0.31
35	26.12	11.71	14.40	0.75	0.33	0.41
40	36.04	15.74	20.30	0.90	0.39	0.51
45	46.53	19.92	26.60	1.03	0.44	0.59
50	57.20	24.12	33.08	1.14	0.48	0.66
55	67.74	28.23	39.51	1.23	0.51	0.72
60	77.90	32.18	45.72	1.30	0.54	0.76
65	87.47	35.90	51.57	1.35	0.55	0.79
70	96.30	39.33	56.97	1.38	0.56	0.81
75	104.30	42.46	61.83	1.39	0.57	0.82
80	111.37	45.26	66.11	1.39	0.57	0.83
85	117.50	47.72	69.78	1.38	0.56	0.82
90	122.65	49.83	72.82	1.36	0.55	0.81
95	126.86	51.61	75.25	1.34	0.54	0.79
100	130.13	53.04	77.09	1.30	0.53	0.77
105	132.51	54.16	78.35	1.26	0.52	0.75
110	134.06	54.98	79.08	1.22	0.50	0.72
115	134.81	55.51	79.31	1.17	0.48	0.69
120	134.85	55.77	79.08	1.12	0.46	0.66
125	134.22	55.78	78.44	1.07	0.45	0.63
130	133.00	55.57	77.43	1.02	0.43	0.60
135	131.25	55.16	76.10	0.97	0.41	0.56
140	129.04	54.56	74.48	0.92	0.39	0.53
145	126.41	53.79	72.62	0.87	0.37	0.50
150	123.44	52.88	70.55	0.82	0.35	0.47
155	120.17	51.85	68.32	0.78	0.33	0.44
160	116.66	50.70	65.96	0.73	0.32	0.41
165	112.95	49.46	63.49	0.68	0.30	0.38
170	109.10	48.15	60.95	0.64	0.28	0.36
175	105.13	46.77	58.36	0.60	0.27	0.33
180	101.08	45.34	55.74	0.56	0.25	0.31
185	96.99	43.88	53.12	0.52	0.24	0.29
190	92.89	42.38	50.50	0.49	0.22	0.27
195	88.80	40.87	47.92	0.46	0.21	0.25
200	84.74	39.36	45.38	0.42	0.20	0.23



## Development Type 51 - HS tAsP

## Crown Closure Class C

## Utilization 3008

$$\text{Yield} = (a * (\text{Age} - 10)^{(b + (CC * 0.25 - 0.075) * c)}) * \text{EXP}(-a * (\text{Age} - 10))$$

Coefficients:

	Combined	Softwood
a	0.022000	0.019000
b	2.268058	1.978569
c	0.240228	0.387606
CC	3	3

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	0.98	0.64	0.35	0.07	0.04	0.04
20	4.75	2.73	2.02	0.24	0.14	0.10
25	11.41	6.16	5.25	0.46	0.25	0.21
30	20.56	10.67	9.89	0.69	0.36	0.33
35	31.68	16.00	15.68	0.91	0.46	0.45
40	44.21	21.89	22.32	1.11	0.55	0.56
45	57.60	28.12	29.48	1.28	0.62	0.66
50	71.38	34.48	36.90	1.43	0.69	0.74
55	85.14	40.83	44.31	1.55	0.74	0.81
60	98.53	47.01	51.51	1.64	0.78	0.86
65	111.27	52.93	58.34	1.71	0.81	0.90
70	123.15	58.49	64.66	1.76	0.84	0.92
75	134.01	63.63	70.38	1.79	0.85	0.94
80	143.74	68.32	75.43	1.80	0.85	0.94
85	152.28	72.51	79.77	1.79	0.85	0.94
90	159.58	76.20	83.38	1.77	0.85	0.93
95	165.65	79.37	86.28	1.74	0.84	0.91
100	170.51	82.04	88.47	1.71	0.82	0.88
105	174.19	84.21	89.99	1.66	0.80	0.86
110	176.77	85.90	90.86	1.61	0.78	0.83
115	178.29	87.14	91.15	1.55	0.76	0.79
120	178.83	87.95	90.89	1.49	0.73	0.76
125	178.48	88.35	90.13	1.43	0.71	0.72
130	177.31	88.38	88.93	1.36	0.68	0.68
135	175.41	88.07	87.34	1.30	0.65	0.65
140	172.85	87.44	85.41	1.23	0.62	0.61
145	169.72	86.53	83.19	1.17	0.60	0.57
150	166.09	85.37	80.72	1.11	0.57	0.54
155	162.03	83.98	78.05	1.05	0.54	0.50
160	157.62	82.39	75.23	0.99	0.51	0.47
165	152.91	80.64	72.28	0.93	0.49	0.44
170	147.97	78.74	69.24	0.87	0.46	0.41
175	142.85	76.71	66.14	0.82	0.44	0.38
180	137.60	74.58	63.02	0.76	0.41	0.35
185	132.27	72.37	59.89	0.71	0.39	0.32
190	126.88	70.10	56.78	0.67	0.37	0.30
195	121.49	67.78	53.71	0.62	0.35	0.28
200	116.12	65.44	50.69	0.58	0.33	0.25

## Development Type 51 - HS tAsP

## Crown Closure Class D

## Utilization 3008

$$\text{Yield} = (a * (\text{Age} - 10)^{(b + (CC * 0.25 - 0.075) * c)}) * \text{EXP}(-a * (\text{Age} - 10))$$

Coefficients:

	Combined	Softwood
a	0.022000	0.019000
b	2.268058	1.978569
c	0.240228	0.387606
CC	4	4

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	1.08	0.74	0.34	0.07	0.05	0.05
20	5.46	3.41	2.04	0.27	0.17	0.10
25	13.42	8.01	5.41	0.54	0.32	0.22
30	24.62	14.27	10.35	0.82	0.48	0.34
35	38.44	21.86	16.58	1.10	0.62	0.47
40	54.23	30.44	23.79	1.36	0.76	0.59
45	71.31	39.68	31.63	1.58	0.88	0.70
50	89.08	49.30	39.78	1.78	0.99	0.80
55	107.01	59.04	47.97	1.95	1.07	0.87
60	124.62	68.68	55.94	2.08	1.14	0.93
65	141.55	78.04	63.50	2.18	1.20	0.98
70	157.48	86.97	70.51	2.25	1.24	1.01
75	172.20	95.36	76.84	2.30	1.27	1.02
80	185.52	103.12	82.41	2.32	1.29	1.03
85	197.35	110.18	87.17	2.32	1.30	1.03
90	207.62	116.51	91.11	2.31	1.29	1.01
95	216.30	122.07	94.23	2.28	1.28	0.99
100	223.41	126.88	96.54	2.23	1.27	0.97
105	228.99	130.92	98.07	2.18	1.25	0.93
110	233.08	134.22	98.87	2.12	1.22	0.90
115	235.78	136.79	98.99	2.05	1.19	0.86
120	237.16	138.68	98.48	1.98	1.16	0.82
125	237.33	139.92	97.41	1.90	1.12	0.78
130	236.38	140.55	95.83	1.82	1.08	0.74
135	234.41	140.61	93.81	1.74	1.04	0.69
140	231.54	140.14	91.40	1.65	1.00	0.65
145	227.86	139.19	88.67	1.57	0.96	0.61
150	223.48	137.80	85.67	1.49	0.92	0.57
155	218.48	136.02	82.46	1.41	0.88	0.53
160	212.96	133.90	79.07	1.33	0.84	0.49
165	207.01	131.46	75.55	1.25	0.80	0.46
170	200.70	128.75	71.95	1.18	0.76	0.42
175	194.12	125.81	68.30	1.11	0.72	0.39
180	187.32	122.68	64.64	1.04	0.68	0.36
185	180.37	119.38	60.98	0.97	0.65	0.33
190	173.32	115.95	57.37	0.91	0.61	0.30
195	166.23	112.42	53.82	0.85	0.58	0.28
200	159.14	108.80	50.34	0.80	0.54	0.25

## Development Type 52 - HS tAjP

## Crown Closure Class A

## Utilization 3008

$$\text{Yield} = (a * (\text{Age} - 10)^{(b + (CC * 0.25 - 0.075) * c)}) * \text{EXP}(-a * (\text{Age} - 10))$$

Coefficients:

	Combined	Hardwood
a	0.022000	0.026000
b	2.082731	1.988000
c	0.368084	0.400000
CC	1	1

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	0.62	0.00	0.63	0.04	0.00	0.00
20	2.48	0.19	2.29	0.12	0.01	0.11
25	5.30	0.67	4.63	0.21	0.03	0.19
30	8.81	1.45	7.36	0.29	0.05	0.25
35	12.74	2.51	10.22	0.36	0.07	0.29
40	16.88	3.81	13.07	0.42	0.10	0.33
45	21.06	5.30	15.76	0.47	0.12	0.35
50	25.12	6.91	18.21	0.50	0.14	0.36
55	28.98	8.61	20.38	0.53	0.16	0.37
60	32.56	10.33	22.23	0.54	0.17	0.37
65	35.79	12.04	23.75	0.55	0.19	0.37
70	38.65	13.71	24.94	0.55	0.20	0.36
75	41.11	15.29	25.82	0.55	0.20	0.34
80	43.18	16.77	26.41	0.54	0.21	0.33
85	44.86	18.13	26.73	0.53	0.21	0.31
90	46.16	19.36	26.80	0.51	0.22	0.30
95	47.10	20.44	26.66	0.50	0.22	0.28
100	47.70	21.37	26.34	0.48	0.21	0.26
105	48.00	22.15	25.85	0.46	0.21	0.25
110	48.00	22.78	25.22	0.44	0.21	0.23
115	47.75	23.26	24.49	0.42	0.20	0.21
120	47.27	23.61	23.66	0.39	0.20	0.20
125	46.59	23.82	22.77	0.37	0.19	0.18
130	45.73	23.91	21.82	0.35	0.18	0.17
135	44.72	23.88	20.84	0.33	0.18	0.15
140	43.58	23.74	19.84	0.31	0.17	0.14
145	42.34	23.51	18.83	0.29	0.16	0.13
150	41.01	23.19	17.82	0.27	0.15	0.12
155	39.61	22.79	16.82	0.26	0.15	0.11
160	38.16	22.33	15.84	0.24	0.14	0.10
165	36.68	21.81	14.88	0.22	0.13	0.09
170	35.18	21.23	13.94	0.21	0.12	0.08
175	33.67	20.62	13.04	0.19	0.12	0.07
180	32.16	19.98	12.18	0.18	0.11	0.07
185	30.66	19.30	11.35	0.17	0.10	0.06
190	29.18	18.61	10.56	0.15	0.10	0.06
195	27.72	17.91	9.81	0.14	0.09	0.05
200	26.30	17.19	9.10	0.13	0.09	0.05

## Development Type 52 - HS tAjP

## Crown Closure Class B

## Utilization 3008

$$\text{Yield} = (a * (\text{Age} - 10)^{(b + (CC * 0.25 - 0.075) * c)}) * \text{EXP}(-a * (\text{Age} - 10))$$

Coefficients:

	Combined	Hardwood
a	0.022000	0.026000
b	2.082731	1.988000
c	0.368084	0.400000
CC	2	2

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	0.72	-0.01	0.74	0.05	0.00	0.00
20	3.06	0.18	2.88	0.15	0.01	0.14
25	6.80	0.73	6.08	0.27	0.03	0.24
30	11.60	1.68	9.93	0.39	0.06	0.33
35	17.13	3.02	14.11	0.49	0.09	0.40
40	23.08	4.72	18.36	0.58	0.12	0.46
45	29.20	6.72	22.48	0.65	0.15	0.50
50	35.28	8.94	26.34	0.71	0.18	0.53
55	41.14	11.32	29.82	0.75	0.21	0.54
60	46.66	13.80	32.87	0.78	0.23	0.55
65	51.75	16.30	35.45	0.80	0.25	0.55
70	56.33	18.77	37.56	0.80	0.27	0.54
75	60.37	21.17	39.20	0.80	0.28	0.52
80	63.84	23.45	40.39	0.80	0.29	0.50
85	66.74	25.58	41.16	0.79	0.30	0.48
90	69.09	27.54	41.54	0.77	0.31	0.46
95	70.89	29.31	41.58	0.75	0.31	0.44
100	72.18	30.87	41.30	0.72	0.31	0.41
105	72.98	32.22	40.76	0.70	0.31	0.39
110	73.33	33.36	39.98	0.67	0.30	0.36
115	73.28	34.28	39.00	0.64	0.30	0.34
120	72.85	34.99	37.86	0.61	0.29	0.32
125	72.09	35.50	36.59	0.58	0.28	0.29
130	71.04	35.82	35.22	0.55	0.28	0.27
135	69.73	35.95	33.78	0.52	0.27	0.25
140	68.20	35.92	32.28	0.49	0.26	0.23
145	66.49	35.74	30.75	0.46	0.25	0.21
150	64.62	35.41	29.21	0.43	0.24	0.19
155	62.62	34.95	27.66	0.40	0.23	0.18
160	60.52	34.38	26.14	0.38	0.21	0.16
165	58.34	33.71	24.63	0.35	0.20	0.15
170	56.12	32.95	23.16	0.33	0.19	0.14
175	53.86	32.12	21.74	0.31	0.18	0.12
180	51.58	31.23	20.36	0.29	0.17	0.11
185	49.31	30.28	19.03	0.27	0.16	0.10
190	47.05	29.29	17.76	0.25	0.15	0.09
195	44.81	28.27	16.54	0.23	0.14	0.08
200	42.62	27.23	15.39	0.21	0.14	0.08

## Development Type 52 - HS tAjP

## Crown Closure Class C

## Utilization 3008

$$\text{Yield} = (a * (\text{Age} - 10)^{(b + (CC * 0.25 - 0.075) * c)}) * \text{EXP}(-a * (\text{Age} - 10))$$

Coefficients:

	Combined	Hardwood
a	0.022000	0.026000
b	2.082731	1.988000
c	0.368084	0.400000
CC	3	3

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	0.84	-0.02	0.86	0.06	0.00	0.00
20	3.78	0.15	3.63	0.19	0.01	0.18
25	8.73	0.76	7.97	0.35	0.03	0.32
30	15.29	1.89	13.39	0.51	0.06	0.45
35	23.04	3.57	19.46	0.66	0.10	0.56
40	31.57	5.77	25.80	0.79	0.14	0.64
45	40.51	8.42	32.08	0.90	0.19	0.71
50	49.54	11.45	38.09	0.99	0.23	0.76
55	58.40	14.77	43.63	1.06	0.27	0.79
60	66.88	18.28	48.60	1.11	0.30	0.81
65	74.82	21.90	52.93	1.15	0.34	0.81
70	82.10	25.54	56.56	1.17	0.36	0.81
75	88.64	29.13	59.51	1.18	0.39	0.79
80	94.38	32.61	61.77	1.18	0.41	0.77
85	99.30	35.92	63.39	1.17	0.42	0.75
90	103.40	39.01	64.39	1.15	0.43	0.72
95	106.69	41.86	64.84	1.12	0.44	0.68
100	109.20	44.43	64.77	1.09	0.44	0.65
105	110.97	46.70	64.26	1.06	0.44	0.61
110	112.03	48.68	63.36	1.02	0.44	0.58
115	112.45	50.34	62.11	0.98	0.44	0.54
120	112.28	51.70	60.58	0.94	0.43	0.50
125	111.57	52.75	58.82	0.89	0.42	0.47
130	110.37	53.51	56.85	0.85	0.41	0.44
135	108.74	54.00	54.74	0.81	0.40	0.41
140	106.74	54.22	52.52	0.76	0.39	0.38
145	104.42	54.20	50.22	0.72	0.37	0.35
150	101.82	53.94	47.87	0.68	0.36	0.32
155	98.99	53.48	45.50	0.64	0.35	0.29
160	95.97	52.83	43.14	0.60	0.33	0.27
165	92.80	52.01	40.79	0.56	0.32	0.25
170	89.52	51.04	38.48	0.53	0.30	0.23
175	86.16	49.94	36.22	0.49	0.29	0.21
180	82.75	48.73	34.02	0.46	0.27	0.19
185	79.31	47.42	31.89	0.43	0.26	0.17
190	75.87	46.03	29.85	0.40	0.24	0.16
195	72.45	44.57	27.88	0.37	0.23	0.14
200	69.07	43.07	26.00	0.35	0.22	0.13

## Development Type 52 - HS tAjP

## Crown Closure Class D

## Utilization 3008

$$\text{Yield} = (a * (\text{Age} - 10)^{(b + (CC * 0.25 - 0.075) * c)}) * \text{EXP}(-a * (\text{Age} - 10))$$

Coefficients:

	Combined	Hardwood
a	0.022000	0.026000
b	2.082731	1.988000
c	0.368084	0.400000
CC	4	4

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	0.97	-0.04	1.02	0.06	0.00	0.00
20	4.68	0.11	4.57	0.23	0.01	0.23
25	11.19	0.75	10.44	0.45	0.03	0.42
30	20.14	2.07	18.07	0.67	0.07	0.60
35	30.98	4.12	26.85	0.89	0.12	0.77
40	43.17	6.92	36.25	1.08	0.17	0.91
45	56.18	10.40	45.78	1.25	0.23	1.02
50	69.56	14.49	55.08	1.39	0.29	1.10
55	82.90	19.05	63.84	1.51	0.35	1.16
60	95.86	23.99	71.87	1.60	0.40	1.20
65	108.19	29.18	79.01	1.66	0.45	1.22
70	119.67	34.49	85.18	1.71	0.49	1.22
75	130.15	39.81	90.34	1.74	0.53	1.20
80	139.53	45.06	94.47	1.74	0.56	1.18
85	147.74	50.13	97.61	1.74	0.59	1.15
90	154.76	54.96	99.80	1.72	0.61	1.11
95	160.57	59.47	101.10	1.69	0.63	1.06
100	165.22	63.63	101.58	1.65	0.64	1.02
105	168.73	67.40	101.33	1.61	0.64	0.97
110	171.16	70.74	100.42	1.56	0.64	0.91
115	172.57	73.64	98.93	1.50	0.64	0.86
120	173.04	76.10	96.94	1.44	0.63	0.81
125	172.65	78.12	94.53	1.38	0.62	0.76
130	171.46	79.70	91.77	1.32	0.61	0.71
135	169.58	80.85	88.72	1.26	0.60	0.66
140	167.06	81.60	85.45	1.19	0.58	0.61
145	163.99	81.97	82.02	1.13	0.57	0.57
150	160.44	81.97	78.47	1.07	0.55	0.52
155	156.48	81.63	74.85	1.01	0.53	0.48
160	152.19	80.99	71.19	0.95	0.51	0.44
165	147.61	80.07	67.54	0.89	0.49	0.41
170	142.81	78.89	63.92	0.84	0.46	0.38
175	137.84	77.49	60.35	0.79	0.44	0.34
180	132.74	75.88	56.86	0.74	0.42	0.32
185	127.57	74.11	53.46	0.69	0.40	0.29
190	122.35	72.19	50.17	0.64	0.38	0.26
195	117.13	70.14	46.99	0.60	0.36	0.24
200	111.94	68.00	43.94	0.56	0.34	0.22

## Development Type 71 - H tA

## Crown Closure Class A

## Utilization 3008

$$\text{Yield} = (a * (\text{Age} - 10)^{(b + (CC * 0.25 - 0.075) * c)}) * \text{EXP}(-a * (\text{Age} - 10))$$

Coefficients:

	Combined	Hardwood
a	0.028000	0.028000
b	2.122253	2.100646
c	0.400000	0.400000
CC	1	1

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	0.83	0.03	0.80	0.06	0.00	0.00
20	3.29	0.16	3.13	0.16	0.01	0.16
25	6.97	0.40	6.57	0.28	0.02	0.26
30	11.38	0.71	10.67	0.38	0.02	0.36
35	16.14	1.08	15.05	0.46	0.03	0.43
40	20.92	1.48	19.44	0.52	0.04	0.49
45	25.50	1.89	23.61	0.57	0.04	0.52
50	29.71	2.28	27.43	0.59	0.05	0.55
55	33.44	2.64	30.80	0.61	0.05	0.56
60	36.62	2.97	33.65	0.61	0.05	0.56
65	39.23	3.25	35.98	0.60	0.05	0.55
70	41.28	3.49	37.78	0.59	0.05	0.54
75	42.77	3.69	39.08	0.57	0.05	0.52
80	43.74	3.84	39.90	0.55	0.05	0.50
85	44.23	3.94	40.29	0.52	0.05	0.47
90	44.30	4.00	40.30	0.49	0.04	0.45
95	43.99	4.03	39.96	0.46	0.04	0.42
100	43.34	4.02	39.33	0.43	0.04	0.39
105	42.42	3.98	38.45	0.40	0.04	0.37
110	41.27	3.91	37.36	0.38	0.04	0.34
115	39.93	3.82	36.11	0.35	0.03	0.31
120	38.44	3.71	34.73	0.32	0.03	0.29
125	36.84	3.59	33.25	0.29	0.03	0.27
130	35.16	3.45	31.70	0.27	0.03	0.24
135	33.43	3.31	30.11	0.25	0.02	0.22
140	31.67	3.16	28.51	0.23	0.02	0.20
145	29.91	3.01	26.90	0.21	0.02	0.19
150	28.16	2.85	25.31	0.19	0.02	0.17
155	26.44	2.70	23.74	0.17	0.02	0.15
160	24.75	2.54	22.21	0.15	0.02	0.14
165	23.12	2.39	20.74	0.14	0.01	0.13
170	21.55	2.24	19.31	0.13	0.01	0.11
175	20.04	2.09	17.95	0.11	0.01	0.10
180	18.60	1.95	16.65	0.10	0.01	0.09
185	17.24	1.82	15.42	0.09	0.01	0.08
190	15.94	1.69	14.25	0.08	0.01	0.07
195	14.71	1.57	13.14	0.08	0.01	0.07
200	13.56	1.45	12.11	0.07	0.01	0.06

## Development Type 71 - H tA

## Crown Closure Class B

## Utilization 3008

$$\text{Yield} = (a * (\text{Age} - 10)^{(b + (CC * 0.25 - 0.075) * c)}) * \text{EXP}(-a * (\text{Age} - 10))$$

Coefficients:

	Combined	Hardwood
a	0.028000	0.028000
b	2.122253	2.100646
c	0.400000	0.400000
CC	2	2

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	0.97	0.03	0.94	0.06	0.00	0.00
20	4.15	0.20	3.95	0.21	0.01	0.20
25	9.13	0.52	8.61	0.37	0.02	0.34
30	15.35	0.96	14.39	0.51	0.03	0.48
35	22.26	1.50	20.77	0.64	0.04	0.59
40	29.40	2.08	27.31	0.73	0.05	0.68
45	36.39	2.69	33.70	0.81	0.06	0.75
50	42.96	3.29	39.67	0.86	0.07	0.79
55	48.92	3.86	45.06	0.89	0.07	0.82
60	54.15	4.39	49.76	0.90	0.07	0.83
65	58.57	4.86	53.71	0.90	0.07	0.83
70	62.16	5.26	56.90	0.89	0.08	0.81
75	64.92	5.60	59.32	0.87	0.07	0.79
80	66.89	5.87	61.02	0.84	0.07	0.76
85	68.12	6.07	62.05	0.80	0.07	0.73
90	68.66	6.20	62.46	0.76	0.07	0.69
95	68.59	6.28	62.31	0.72	0.07	0.66
100	67.98	6.30	61.68	0.68	0.06	0.62
105	66.89	6.27	60.62	0.64	0.06	0.58
110	65.41	6.20	59.21	0.59	0.06	0.54
115	63.59	6.08	57.51	0.55	0.05	0.50
120	61.51	5.94	55.57	0.51	0.05	0.46
125	59.21	5.77	53.44	0.47	0.05	0.43
130	56.75	5.58	51.17	0.44	0.04	0.39
135	54.17	5.37	48.81	0.40	0.04	0.36
140	51.53	5.14	46.38	0.37	0.04	0.33
145	48.84	4.91	43.93	0.34	0.03	0.30
150	46.15	4.67	41.48	0.31	0.03	0.28
155	43.48	4.43	39.05	0.28	0.03	0.25
160	40.86	4.19	36.67	0.26	0.03	0.23
165	38.29	3.95	34.34	0.23	0.02	0.21
170	35.80	3.72	32.08	0.21	0.02	0.19
175	33.40	3.49	29.91	0.19	0.02	0.17
180	31.09	3.27	27.83	0.17	0.02	0.15
185	28.89	3.05	25.84	0.16	0.02	0.14
190	26.79	2.84	23.95	0.14	0.01	0.13
195	24.80	2.65	22.15	0.13	0.01	0.11
200	22.92	2.46	20.46	0.11	0.01	0.10



## Development Type 71 - H tA

## Crown Closure Class C

## Utilization 3008

$$\text{Yield} = (a * (\text{Age} - 10)^{(b + (CC * 0.25 - 0.075) * c)}) * \text{EXP}(-a * (\text{Age} - 10))$$

Coefficients:

	Combined	Hardwood
a	0.028000	0.028000
b	2.122253	2.100646
c	0.400000	0.400000
CC	3	3

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	1.14	0.04	1.11	0.08	0.00	0.00
20	5.22	0.25	4.97	0.26	0.01	0.25
25	11.97	0.68	11.29	0.48	0.03	0.45
30	20.72	1.30	19.42	0.69	0.04	0.65
35	30.72	2.06	28.65	0.88	0.06	0.82
40	41.30	2.93	38.38	1.03	0.07	0.96
45	51.92	3.84	48.08	1.15	0.09	1.07
50	62.13	4.76	57.37	1.24	0.10	1.15
55	71.59	5.65	65.94	1.30	0.10	1.20
60	80.08	6.49	73.59	1.33	0.11	1.23
65	87.44	7.25	80.19	1.35	0.11	1.23
70	93.61	7.93	85.69	1.34	0.11	1.22
75	98.56	8.50	90.06	1.31	0.11	1.20
80	102.30	8.97	93.33	1.28	0.11	1.17
85	104.90	9.34	95.55	1.23	0.11	1.12
90	106.42	9.61	96.80	1.18	0.11	1.08
95	106.95	9.79	97.16	1.13	0.10	1.02
100	106.60	9.88	96.73	1.07	0.10	0.97
105	105.47	9.88	95.59	1.00	0.09	0.91
110	103.67	9.82	93.85	0.94	0.09	0.85
115	101.28	9.69	91.59	0.88	0.08	0.80
120	98.41	9.50	88.91	0.82	0.08	0.74
125	95.16	9.27	85.88	0.76	0.07	0.69
130	91.59	9.00	82.59	0.70	0.07	0.64
135	87.79	8.70	79.10	0.65	0.06	0.59
140	83.83	8.37	75.46	0.60	0.06	0.54
145	79.77	8.02	71.75	0.55	0.06	0.49
150	75.65	7.66	67.99	0.50	0.05	0.45
155	71.53	7.29	64.23	0.46	0.05	0.41
160	67.43	6.92	60.51	0.42	0.04	0.38
165	63.41	6.55	56.86	0.38	0.04	0.34
170	59.47	6.18	53.30	0.35	0.04	0.31
175	55.65	5.81	49.84	0.32	0.03	0.28
180	51.97	5.46	46.51	0.29	0.03	0.26
185	48.42	5.11	43.31	0.26	0.03	0.23
190	45.03	4.78	40.25	0.24	0.03	0.21
195	41.80	4.46	37.34	0.21	0.02	0.19
200	38.73	4.15	34.58	0.19	0.02	0.17

## Development Type 71 - H tA

## Crown Closure Class D

## Utilization 3008

$$\text{Yield} = (a * (\text{Age} - 10)^{(b + (CC * 0.25 - 0.075) * c)}) * \text{EXP}(-a * (\text{Age} - 10))$$

Coefficients:

	Combined	Hardwood
a	0.028000	0.028000
b	2.122253	2.100646
c	0.400000	0.400000
CC	4	4

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	1.34	0.05	1.30	0.09	0.00	0.00
20	6.57	0.32	6.25	0.33	0.02	0.31
25	15.70	0.89	14.81	0.63	0.04	0.59
30	27.95	1.75	26.20	0.93	0.06	0.87
35	42.38	2.85	39.53	1.21	0.08	1.13
40	58.04	4.11	53.93	1.45	0.10	1.35
45	74.09	5.48	68.61	1.65	0.12	1.52
50	89.84	6.88	82.96	1.80	0.14	1.66
55	104.75	8.27	96.48	1.90	0.15	1.75
60	118.42	9.60	108.82	1.97	0.16	1.81
65	130.55	10.83	119.72	2.01	0.17	1.84
70	140.98	11.94	129.04	2.01	0.17	1.84
75	149.62	12.90	136.71	1.99	0.17	1.82
80	156.46	13.72	142.73	1.96	0.17	1.78
85	161.53	14.39	147.15	1.90	0.17	1.73
90	164.94	14.90	150.04	1.83	0.17	1.67
95	166.78	15.26	151.51	1.76	0.16	1.59
100	167.19	15.49	151.70	1.67	0.15	1.52
105	166.31	15.58	150.73	1.58	0.15	1.44
110	164.30	15.56	148.74	1.49	0.14	1.35
115	161.30	15.43	145.87	1.40	0.13	1.27
120	157.47	15.21	142.26	1.31	0.13	1.19
125	152.94	14.90	138.03	1.22	0.12	1.10
130	147.83	14.53	133.31	1.14	0.11	1.03
135	142.28	14.10	128.19	1.05	0.10	0.95
140	136.40	13.62	122.78	0.97	0.10	0.88
145	130.27	13.10	117.17	0.90	0.09	0.81
150	124.00	12.56	111.44	0.83	0.08	0.74
155	117.65	11.99	105.66	0.76	0.08	0.68
160	111.30	11.42	99.88	0.70	0.07	0.62
165	105.00	10.84	94.16	0.64	0.07	0.57
170	98.80	10.26	88.54	0.58	0.06	0.52
175	92.74	9.69	83.05	0.53	0.06	0.47
180	86.85	9.12	77.73	0.48	0.05	0.43
185	81.16	8.57	72.59	0.44	0.05	0.39
190	75.69	8.03	67.65	0.40	0.04	0.36
195	70.45	7.51	62.93	0.36	0.04	0.32
200	65.45	7.02	58.44	0.33	0.04	0.29

## Development Type 11 - S wS

## Crown Closure Class A

## Utilization 3005

$$\text{Yield} = (a * (\text{Age} - 8)^b + (CC * 0.25 - 0.075) * c) * \text{EXP}(-a * (\text{Age} - 8))$$

Coefficients:

	Combined	Softwood
a	0.019500	0.019000
b	2.319800	2.294000
c	0.170645	0.170645
CC	1	1

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	1.65	1.53	0.12	0.11	0.10	0.10
20	5.30	4.87	0.43	0.26	0.24	0.02
25	10.89	9.95	0.94	0.44	0.40	0.04
30	18.11	16.47	1.64	0.60	0.55	0.05
35	26.58	24.11	2.47	0.76	0.69	0.07
40	35.94	32.54	3.40	0.90	0.81	0.09
45	45.86	41.47	4.39	1.02	0.92	0.10
50	56.03	50.63	5.40	1.12	1.01	0.11
55	66.20	59.79	6.41	1.20	1.09	0.12
60	76.15	68.77	7.38	1.27	1.15	0.12
65	85.71	77.42	8.29	1.32	1.19	0.13
70	94.73	85.59	9.14	1.35	1.22	0.13
75	103.11	93.21	9.90	1.37	1.24	0.13
80	110.76	100.19	10.57	1.38	1.25	0.13
85	117.64	106.49	11.15	1.38	1.25	0.13
90	123.71	112.09	11.62	1.37	1.25	0.13
95	128.96	116.96	12.00	1.36	1.23	0.13
100	133.40	121.11	12.29	1.33	1.21	0.12
105	137.03	124.55	12.48	1.31	1.19	0.12
110	139.88	127.29	12.59	1.27	1.16	0.11
115	141.99	129.37	12.61	1.23	1.12	0.11
120	143.39	130.82	12.57	1.19	1.09	0.10
125	144.12	131.67	12.45	1.15	1.05	0.10
130	144.24	131.97	12.27	1.11	1.02	0.09
135	143.79	131.75	12.04	1.07	0.98	0.09
140	142.82	131.06	11.76	1.02	0.94	0.08
145	141.38	129.94	11.44	0.98	0.90	0.08
150	139.52	128.43	11.09	0.93	0.86	0.07
155	137.28	126.57	10.71	0.89	0.82	0.07
160	134.70	124.40	10.31	0.84	0.78	0.06
165	131.85	121.96	9.88	0.80	0.74	0.06
170	128.74	119.29	9.45	0.76	0.70	0.06
175	125.43	116.42	9.01	0.72	0.67	0.05
180	121.94	113.38	8.56	0.68	0.63	0.05
185	118.32	110.21	8.11	0.64	0.60	0.04
190	114.59	106.92	7.67	0.60	0.56	0.04
195	110.78	103.55	7.22	0.57	0.53	0.04
200	106.91	100.12	6.79	0.53	0.50	0.03

## Development Type 11 - S wS

## Crown Closure Class B

## Utilization 3005

$$\text{Yield} = (a * (\text{Age} - 8)^b + (CC * 0.25 - 0.075) * c) * \text{EXP}(-a * (\text{Age} - 8))$$

Coefficients:

	Combined	Softwood
a	0.019500	0.019000
b	2.319800	2.294000
c	0.170645	0.170645
CC	2	2

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	1.79	1.66	0.13	0.12	0.11	0.11
20	5.89	5.42	0.48	0.29	0.27	0.02
25	12.29	11.23	1.06	0.49	0.45	0.04
30	20.66	18.80	1.87	0.69	0.63	0.06
35	30.60	27.75	2.84	0.87	0.79	0.08
40	41.67	37.73	3.94	1.04	0.94	0.10
45	53.50	48.38	5.12	1.19	1.08	0.11
50	65.72	59.38	6.34	1.31	1.19	0.13
55	78.02	70.47	7.55	1.42	1.28	0.14
60	90.14	81.40	8.73	1.50	1.36	0.15
65	101.84	91.99	9.86	1.57	1.42	0.15
70	112.97	102.07	10.90	1.61	1.46	0.16
75	123.37	111.52	11.85	1.64	1.49	0.16
80	132.93	120.24	12.69	1.66	1.50	0.16
85	141.59	128.18	13.42	1.67	1.51	0.16
90	149.30	135.27	14.03	1.66	1.50	0.16
95	156.03	141.51	14.52	1.64	1.49	0.15
100	161.78	146.88	14.90	1.62	1.47	0.15
105	166.56	151.39	15.17	1.59	1.44	0.14
110	170.39	155.06	15.33	1.55	1.41	0.14
115	173.31	157.91	15.40	1.51	1.37	0.13
120	175.36	159.99	15.37	1.46	1.33	0.13
125	176.59	161.34	15.25	1.41	1.29	0.12
130	177.05	161.99	15.06	1.36	1.25	0.12
135	176.80	162.00	14.81	1.31	1.20	0.11
140	175.90	161.41	14.49	1.26	1.15	0.10
145	174.40	160.28	14.12	1.20	1.11	0.10
150	172.36	158.66	13.70	1.15	1.06	0.09
155	169.85	156.60	13.25	1.10	1.01	0.09
160	166.90	154.13	12.77	1.04	0.96	0.08
165	163.59	151.32	12.26	0.99	0.92	0.07
170	159.95	148.21	11.74	0.94	0.87	0.07
175	156.03	144.83	11.20	0.89	0.83	0.06
180	151.89	141.23	10.66	0.84	0.78	0.06
185	147.55	137.44	10.12	0.80	0.74	0.05
190	143.07	133.50	9.57	0.75	0.70	0.05
195	138.47	129.44	9.03	0.71	0.66	0.05
200	133.79	125.30	8.50	0.67	0.63	0.04

## Development Type 11 - S wS

## Crown Closure Class C

## Utilization 3005

$$\text{Yield} = (a * (\text{Age} - 8)^b + (CC * 0.25 - 0.075) * c) * \text{EXP}(-a * (\text{Age} - 8))$$

Coefficients:

	Combined	Softwood
a	0.019500	0.019000
b	2.319800	2.294000
c	0.170645	0.170645
CC	3	3

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	1.94	1.81	0.14	0.13	0.12	0.12
20	6.55	6.02	0.53	0.33	0.30	0.03
25	13.87	12.67	1.20	0.55	0.51	0.05
30	23.58	21.45	2.13	0.79	0.71	0.07
35	35.22	31.94	3.27	1.01	0.91	0.09
40	48.31	43.74	4.57	1.21	1.09	0.11
45	62.41	56.43	5.97	1.39	1.25	0.13
50	77.08	69.65	7.43	1.54	1.39	0.15
55	91.95	83.05	8.90	1.67	1.51	0.16
60	106.69	96.35	10.34	1.78	1.61	0.17
65	121.02	109.31	11.71	1.86	1.68	0.18
70	134.72	121.72	13.00	1.92	1.74	0.19
75	147.60	133.43	14.17	1.97	1.78	0.19
80	159.54	144.31	15.23	1.99	1.80	0.19
85	170.42	154.27	16.15	2.00	1.81	0.19
90	180.18	163.25	16.93	2.00	1.81	0.19
95	188.78	171.21	17.57	1.99	1.80	0.18
100	196.20	178.13	18.07	1.96	1.78	0.18
105	202.45	184.01	18.44	1.93	1.75	0.18
110	207.56	188.88	18.68	1.89	1.72	0.17
115	211.54	192.75	18.79	1.84	1.68	0.16
120	214.46	195.67	18.79	1.79	1.63	0.16
125	216.37	197.68	18.69	1.73	1.58	0.15
130	217.32	198.83	18.49	1.67	1.53	0.14
135	217.39	199.18	18.20	1.61	1.48	0.13
140	216.63	198.79	17.84	1.55	1.42	0.13
145	215.13	197.72	17.41	1.48	1.36	0.12
150	212.94	196.02	16.93	1.42	1.31	0.11
155	210.14	193.75	16.39	1.36	1.25	0.11
160	206.80	190.98	15.82	1.29	1.19	0.10
165	202.97	187.75	15.22	1.23	1.14	0.09
170	198.72	184.13	14.59	1.17	1.08	0.09
175	194.11	180.17	13.94	1.11	1.03	0.08
180	189.19	175.91	13.28	1.05	0.98	0.07
185	184.01	171.40	12.62	0.99	0.93	0.07
190	178.63	166.68	11.95	0.94	0.88	0.06
195	173.09	161.81	11.29	0.89	0.83	0.06
200	167.43	156.80	10.63	0.84	0.78	0.05

## Development Type 11 - S wS

## Crown Closure Class D

## Utilization 3005

$$\text{Yield} = (a * (\text{Age} - 8)^b + (CC * 0.25 - 0.075) * c) * \text{EXP}(-a * (\text{Age} - 8))$$

Coefficients:

	Combined	Softwood
a	0.019500	0.019000
b	2.319800	2.294000
c	0.170645	0.170645
CC	4	4

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	2.11	1.96	0.15	0.14	0.13	0.13
20	7.28	6.69	0.59	0.36	0.33	0.03
25	15.66	14.30	1.36	0.63	0.57	0.05
30	26.90	24.47	2.43	0.90	0.82	0.08
35	40.53	36.77	3.77	1.16	1.05	0.11
40	56.01	50.71	5.30	1.40	1.27	0.13
45	72.80	65.83	6.97	1.62	1.46	0.15
50	90.40	81.69	8.72	1.81	1.63	0.17
55	108.36	97.87	10.49	1.97	1.78	0.19
60	126.27	114.04	12.24	2.10	1.90	0.20
65	143.80	129.88	13.92	2.21	2.00	0.21
70	160.65	145.15	15.50	2.30	2.07	0.22
75	176.60	159.64	16.96	2.35	2.13	0.23
80	191.47	173.19	18.28	2.39	2.16	0.23
85	205.12	185.68	19.44	2.41	2.18	0.23
90	217.45	197.02	20.43	2.42	2.19	0.23
95	228.40	207.14	21.26	2.40	2.18	0.22
100	237.95	216.03	21.92	2.38	2.16	0.22
105	246.09	223.67	22.41	2.34	2.13	0.21
110	252.83	230.08	22.75	2.30	2.09	0.21
115	258.21	235.27	22.94	2.25	2.05	0.20
120	262.29	239.30	22.98	2.19	1.99	0.19
125	265.11	242.21	22.90	2.12	1.94	0.18
130	266.75	244.06	22.70	2.05	1.88	0.17
135	267.29	244.91	22.38	1.98	1.81	0.17
140	266.81	244.83	21.97	1.91	1.75	0.16
145	265.37	243.89	21.48	1.83	1.68	0.15
150	263.08	242.16	20.91	1.75	1.61	0.14
155	260.00	239.72	20.28	1.68	1.55	0.13
160	256.23	236.62	19.60	1.60	1.48	0.12
165	251.83	232.95	18.88	1.53	1.41	0.11
170	246.89	228.76	18.12	1.45	1.35	0.11
175	241.47	224.13	17.34	1.38	1.28	0.10
180	235.65	219.11	16.54	1.31	1.22	0.09
185	229.48	213.75	15.73	1.24	1.16	0.09
190	223.04	208.12	14.92	1.17	1.10	0.08
195	216.37	202.26	14.11	1.11	1.04	0.07
200	209.53	196.22	13.31	1.05	0.98	0.07

## Development Type 12 - S bS

## Crown Closure Class A

## Utilization 3005

$$\text{Yield} = (a * (\text{Age} - 8)^b + (CC * 0.25 - 0.075) * c) * \text{EXP}(-a * (\text{Age} - 8))$$

Coefficients:

	Combined	Softwood
a	0.019500	0.019370
b	2.225429	2.219000
c	0.239901	0.239901
CC	1	1

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	1.40	1.38	0.03	0.09	0.09	0.09
20	4.32	4.23	0.09	0.22	0.21	0.00
25	8.63	8.44	0.19	0.35	0.34	0.01
30	14.05	13.72	0.33	0.47	0.46	0.01
35	20.27	19.78	0.49	0.58	0.57	0.01
40	27.03	26.37	0.66	0.68	0.66	0.02
45	34.08	33.23	0.84	0.76	0.74	0.02
50	41.20	40.17	1.03	0.82	0.80	0.02
55	48.23	47.03	1.21	0.88	0.86	0.02
60	55.02	53.65	1.38	0.92	0.89	0.02
65	61.46	59.93	1.53	0.95	0.92	0.02
70	67.46	65.79	1.68	0.96	0.94	0.02
75	72.96	71.16	1.80	0.97	0.95	0.02
80	77.92	76.00	1.91	0.97	0.95	0.02
85	82.30	80.30	2.00	0.97	0.94	0.02
90	86.10	84.03	2.07	0.96	0.93	0.02
95	89.32	87.19	2.13	0.94	0.92	0.02
100	91.97	89.80	2.16	0.92	0.90	0.02
105	94.06	91.87	2.18	0.90	0.87	0.02
110	95.62	93.43	2.19	0.87	0.85	0.02
115	96.68	94.50	2.18	0.84	0.82	0.02
120	97.26	95.10	2.16	0.81	0.79	0.02
125	97.41	95.29	2.13	0.78	0.76	0.02
130	97.16	95.07	2.09	0.75	0.73	0.02
135	96.54	94.50	2.04	0.72	0.70	0.02
140	95.58	93.60	1.98	0.68	0.67	0.01
145	94.33	92.41	1.91	0.65	0.64	0.01
150	92.81	90.96	1.85	0.62	0.61	0.01
155	91.06	89.29	1.77	0.59	0.58	0.01
160	89.11	87.41	1.70	0.56	0.55	0.01
165	86.99	85.37	1.62	0.53	0.52	0.01
170	84.72	83.18	1.54	0.50	0.49	0.01
175	82.33	80.87	1.46	0.47	0.46	0.01
180	79.85	78.47	1.38	0.44	0.44	0.01
185	77.29	75.99	1.30	0.42	0.41	0.01
190	74.69	73.46	1.22	0.39	0.39	0.01
195	72.04	70.90	1.14	0.37	0.36	0.01
200	69.38	68.31	1.07	0.35	0.34	0.01

## Development Type 12 - S bS

## Crown Closure Class B

## Utilization 3005

$$\text{Yield} = (a * (\text{Age} - 8)^b + (CC * 0.25 - 0.075) * c) * \text{EXP}(-a * (\text{Age} - 8))$$

Coefficients:

	Combined	Softwood
a	0.019500	0.019370
b	2.225429	2.219000
c	0.239901	0.239901
CC	2	2

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	1.58	1.55	0.03	0.11	0.10	0.10
20	5.01	4.91	0.10	0.25	0.25	0.01
25	10.23	10.00	0.23	0.41	0.40	0.01
30	16.91	16.51	0.40	0.56	0.55	0.01
35	24.70	24.11	0.59	0.71	0.69	0.02
40	33.27	32.46	0.82	0.83	0.81	0.02
45	42.32	41.27	1.05	0.94	0.92	0.02
50	51.56	50.27	1.29	1.03	1.01	0.03
55	60.76	59.24	1.52	1.10	1.08	0.03
60	69.74	67.99	1.74	1.16	1.13	0.03
65	78.33	76.37	1.95	1.21	1.17	0.03
70	86.41	84.26	2.15	1.23	1.20	0.03
75	93.89	91.57	2.32	1.25	1.22	0.03
80	100.70	98.23	2.47	1.26	1.23	0.03
85	106.79	104.20	2.60	1.26	1.23	0.03
90	112.15	109.45	2.70	1.25	1.22	0.03
95	116.75	113.97	2.78	1.23	1.20	0.03
100	120.62	117.78	2.84	1.21	1.18	0.03
105	123.75	120.88	2.87	1.18	1.15	0.03
110	126.19	123.30	2.89	1.15	1.12	0.03
115	127.95	125.06	2.89	1.11	1.09	0.03
120	129.08	126.21	2.87	1.08	1.05	0.02
125	129.62	126.78	2.83	1.04	1.01	0.02
130	129.60	126.82	2.78	1.00	0.98	0.02
135	129.08	126.36	2.72	0.96	0.94	0.02
140	128.10	125.45	2.65	0.92	0.90	0.02
145	126.70	124.13	2.57	0.87	0.86	0.02
150	124.93	122.45	2.48	0.83	0.82	0.02
155	122.83	120.44	2.39	0.79	0.78	0.02
160	120.44	118.15	2.29	0.75	0.74	0.01
165	117.80	115.61	2.19	0.71	0.70	0.01
170	114.95	112.86	2.09	0.68	0.66	0.01
175	111.91	109.93	1.98	0.64	0.63	0.01
180	108.73	106.85	1.88	0.60	0.59	0.01
185	105.43	103.66	1.77	0.57	0.56	0.01
190	102.04	100.37	1.67	0.54	0.53	0.01
195	98.59	97.02	1.57	0.51	0.50	0.01
200	95.10	93.63	1.47	0.48	0.47	0.01



## Development Type 12 - S bS

## Crown Closure Class C

## Utilization 3005

$$\text{Yield} = (a * (\text{Age} - 8)^b + (CC * 0.25 - 0.075) * c) * \text{EXP}(-a * (\text{Age} - 8))$$

Coefficients:

	Combined	Softwood
a	0.019500	0.019370
b	2.225429	2.219000
c	0.239901	0.239901
CC	3	3

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	1.77	1.74	0.03	0.12	0.12	0.12
20	5.82	5.70	0.12	0.29	0.28	0.01
25	12.12	11.85	0.27	0.48	0.47	0.01
30	20.35	19.87	0.48	0.68	0.66	0.02
35	30.10	29.38	0.72	0.86	0.84	0.02
40	40.96	39.96	1.00	1.02	1.00	0.03
45	52.55	51.25	1.30	1.17	1.14	0.03
50	64.51	62.90	1.61	1.29	1.26	0.03
55	76.54	74.63	1.91	1.39	1.36	0.03
60	88.39	86.17	2.21	1.47	1.44	0.04
65	99.82	97.33	2.49	1.54	1.50	0.04
70	110.68	107.93	2.75	1.58	1.54	0.04
75	120.82	117.83	2.98	1.61	1.57	0.04
80	130.14	126.95	3.19	1.63	1.59	0.04
85	138.57	135.20	3.37	1.63	1.59	0.04
90	146.07	142.56	3.52	1.62	1.58	0.04
95	152.61	148.98	3.63	1.61	1.57	0.04
100	158.19	154.47	3.72	1.58	1.54	0.04
105	162.82	159.04	3.78	1.55	1.51	0.04
110	166.52	162.71	3.81	1.51	1.48	0.03
115	169.34	165.52	3.82	1.47	1.44	0.03
120	171.30	167.50	3.81	1.43	1.40	0.03
125	172.46	168.70	3.77	1.38	1.35	0.03
130	172.88	169.17	3.71	1.33	1.30	0.03
135	172.60	168.96	3.64	1.28	1.25	0.03
140	171.69	168.13	3.55	1.23	1.20	0.03
145	170.19	166.74	3.45	1.17	1.15	0.02
150	168.18	164.83	3.34	1.12	1.10	0.02
155	165.69	162.47	3.23	1.07	1.05	0.02
160	162.79	159.69	3.10	1.02	1.00	0.02
165	159.53	156.56	2.97	0.97	0.95	0.02
170	155.96	153.13	2.83	0.92	0.90	0.02
175	152.12	149.42	2.70	0.87	0.85	0.02
180	148.06	145.50	2.56	0.82	0.81	0.01
185	143.81	141.39	2.42	0.78	0.76	0.01
190	139.42	137.14	2.28	0.73	0.72	0.01
195	134.92	132.78	2.14	0.69	0.68	0.01
200	130.35	128.34	2.01	0.65	0.64	0.01

## Development Type 12 - S bS

## Crown Closure Class D

## Utilization 3005

$$\text{Yield} = (a * (\text{Age} - 8)^b + (CC * 0.25 - 0.075) * c) * \text{EXP}(-a * (\text{Age} - 8))$$

Coefficients:

	Combined	Softwood
a	0.019500	0.019370
b	2.225429	2.219000
c	0.239901	0.239901
CC	4	4

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	1.99	1.95	0.04	0.13	0.13	0.13
20	6.75	6.61	0.14	0.34	0.33	0.01
25	14.37	14.05	0.32	0.57	0.56	0.01
30	24.50	23.92	0.57	0.82	0.80	0.02
35	36.68	35.80	0.88	1.05	1.02	0.03
40	50.42	49.19	1.24	1.26	1.23	0.03
45	65.25	63.64	1.62	1.45	1.41	0.04
50	80.72	78.71	2.01	1.61	1.57	0.04
55	96.43	94.01	2.41	1.75	1.71	0.04
60	112.02	109.22	2.80	1.87	1.82	0.05
65	127.21	124.04	3.17	1.96	1.91	0.05
70	141.76	138.24	3.52	2.03	1.97	0.05
75	155.47	151.63	3.84	2.07	2.02	0.05
80	168.19	164.07	4.12	2.10	2.05	0.05
85	179.81	175.44	4.37	2.12	2.06	0.05
90	190.26	185.68	4.58	2.11	2.06	0.05
95	199.49	194.74	4.75	2.10	2.05	0.05
100	207.47	202.59	4.88	2.07	2.03	0.05
105	214.22	209.25	4.97	2.04	1.99	0.05
110	219.76	214.73	5.03	2.00	1.95	0.05
115	224.11	219.06	5.06	1.95	1.90	0.04
120	227.33	222.28	5.05	1.89	1.85	0.04
125	229.48	224.46	5.01	1.84	1.80	0.04
130	230.61	225.65	4.95	1.77	1.74	0.04
135	230.79	225.92	4.87	1.71	1.67	0.04
140	230.10	225.34	4.76	1.64	1.61	0.03
145	228.61	223.97	4.64	1.58	1.54	0.03
150	226.39	221.88	4.50	1.51	1.48	0.03
155	223.50	219.15	4.35	1.44	1.41	0.03
160	220.04	215.85	4.19	1.38	1.35	0.03
165	216.05	212.03	4.02	1.31	1.29	0.02
170	211.61	207.76	3.84	1.24	1.22	0.02
175	206.77	203.11	3.66	1.18	1.16	0.02
180	201.61	198.12	3.48	1.12	1.10	0.02
185	196.16	192.86	3.30	1.06	1.04	0.02
190	190.49	187.38	3.11	1.00	0.99	0.02
195	184.65	181.71	2.93	0.95	0.93	0.02
200	178.67	175.91	2.75	0.89	0.88	0.01

## Development Type 13 - S jP

## Crown Closure Class A

## Utilization 3005

$$\text{Yield} = (a * (\text{Age} - 8)^{(b + (CC * 0.25 - 0.075) * c)}) * \text{EXP}(-a * (\text{Age} - 8))$$

Coefficients:

	Combined	Softwood
a	0.019500	0.019400
b	2.097359	2.089500
c	0.400000	0.400000
CC	1	1

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	1.15	1.13	0.02	0.08	0.08	0.08
20	3.37	3.29	0.08	0.17	0.16	0.00
25	6.50	6.33	0.16	0.26	0.25	0.01
30	10.31	10.03	0.28	0.34	0.33	0.01
35	14.58	14.17	0.41	0.42	0.40	0.01
40	19.11	18.56	0.55	0.48	0.46	0.01
45	23.74	23.05	0.70	0.53	0.51	0.02
50	28.35	27.50	0.85	0.57	0.55	0.02
55	32.81	31.82	0.99	0.60	0.58	0.02
60	37.06	35.92	1.13	0.62	0.60	0.02
65	41.01	39.75	1.26	0.63	0.61	0.02
70	44.64	43.26	1.38	0.64	0.62	0.02
75	47.91	46.42	1.48	0.64	0.62	0.02
80	50.79	49.21	1.58	0.63	0.62	0.02
85	53.29	51.63	1.66	0.63	0.61	0.02
90	55.40	53.68	1.72	0.62	0.60	0.02
95	57.13	55.36	1.77	0.60	0.58	0.02
100	58.50	56.69	1.81	0.58	0.57	0.02
105	59.51	57.67	1.84	0.57	0.55	0.02
110	60.20	58.34	1.85	0.55	0.53	0.02
115	60.57	58.71	1.86	0.53	0.51	0.02
120	60.66	58.81	1.85	0.51	0.49	0.02
125	60.49	58.65	1.84	0.48	0.47	0.01
130	60.08	58.26	1.82	0.46	0.45	0.01
135	59.46	57.67	1.79	0.44	0.43	0.01
140	58.64	56.89	1.75	0.42	0.41	0.01
145	57.66	55.95	1.71	0.40	0.39	0.01
150	56.53	54.86	1.66	0.38	0.37	0.01
155	55.27	53.65	1.62	0.36	0.35	0.01
160	53.90	52.34	1.56	0.34	0.33	0.01
165	52.45	50.94	1.51	0.32	0.31	0.01
170	50.92	49.47	1.45	0.30	0.29	0.01
175	49.34	47.94	1.39	0.28	0.27	0.01
180	47.71	46.37	1.34	0.27	0.26	0.01
185	46.05	44.77	1.28	0.25	0.24	0.01
190	44.37	43.15	1.22	0.23	0.23	0.01
195	42.69	41.53	1.16	0.22	0.21	0.01
200	41.00	39.90	1.10	0.20	0.20	0.01

## Development Type 13 - S jP

## Crown Closure Class B

## Utilization 3005

$$\text{Yield} = (a * (\text{Age} - 8)^{(b + (CC * 0.25 - 0.075) * c)}) * \text{EXP}(-a * (\text{Age} - 8))$$

Coefficients:

	Combined	Softwood
a	0.019500	0.019400
b	2.097359	2.089500
c	0.400000	0.400000
CC	2	2

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	1.40	1.38	0.03	0.09	0.09	0.09
20	4.32	4.22	0.10	0.22	0.21	0.01
25	8.63	8.41	0.22	0.35	0.34	0.01
30	14.04	13.67	0.38	0.47	0.46	0.01
35	20.27	19.70	0.57	0.58	0.56	0.02
40	27.02	26.25	0.78	0.68	0.66	0.02
45	34.07	33.07	1.00	0.76	0.73	0.02
50	41.19	39.96	1.23	0.82	0.80	0.02
55	48.22	46.76	1.46	0.88	0.85	0.03
60	55.01	53.33	1.68	0.92	0.89	0.03
65	61.45	59.56	1.89	0.95	0.92	0.03
70	67.45	65.36	2.08	0.96	0.93	0.03
75	72.95	70.68	2.26	0.97	0.94	0.03
80	77.90	75.48	2.42	0.97	0.94	0.03
85	82.28	79.72	2.56	0.97	0.94	0.03
90	86.08	83.40	2.68	0.96	0.93	0.03
95	89.30	86.53	2.77	0.94	0.91	0.03
100	91.94	89.09	2.85	0.92	0.89	0.03
105	94.04	91.13	2.91	0.90	0.87	0.03
110	95.60	92.65	2.94	0.87	0.84	0.03
115	96.65	93.69	2.97	0.84	0.81	0.03
120	97.24	94.27	2.97	0.81	0.79	0.02
125	97.39	94.43	2.96	0.78	0.76	0.02
130	97.13	94.20	2.94	0.75	0.72	0.02
135	96.51	93.61	2.90	0.71	0.69	0.02
140	95.56	92.70	2.85	0.68	0.66	0.02
145	94.30	91.51	2.80	0.65	0.63	0.02
150	92.79	90.05	2.73	0.62	0.60	0.02
155	91.04	88.38	2.66	0.59	0.57	0.02
160	89.09	86.50	2.58	0.56	0.54	0.02
165	86.96	84.46	2.50	0.53	0.51	0.02
170	84.70	82.28	2.41	0.50	0.48	0.01
175	82.31	79.98	2.33	0.47	0.46	0.01
180	79.83	77.59	2.23	0.44	0.43	0.01
185	77.27	75.13	2.14	0.42	0.41	0.01
190	74.66	72.61	2.05	0.39	0.38	0.01
195	72.02	70.06	1.96	0.37	0.36	0.01
200	69.36	67.49	1.87	0.35	0.34	0.01

## Development Type 13 - S jP

## Crown Closure Class C

## Utilization 3005

$$\text{Yield} = (a * (\text{Age} - 8)^{(b + (CC * 0.25 - 0.075) * c)}) * \text{EXP}(-a * (\text{Age} - 8))$$

Coefficients:

	Combined	Softwood
a	0.019500	0.019400
b	2.097359	2.089500
c	0.400000	0.400000
CC	3	3

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	1.70	1.67	0.03	0.11	0.11	0.11
20	5.54	5.41	0.13	0.28	0.27	0.01
25	11.45	11.16	0.29	0.46	0.45	0.01
30	19.13	18.62	0.51	0.64	0.62	0.02
35	28.18	27.39	0.79	0.81	0.78	0.02
40	38.22	37.12	1.10	0.96	0.93	0.03
45	48.89	47.45	1.44	1.09	1.05	0.03
50	59.86	58.08	1.79	1.20	1.16	0.04
55	70.87	68.73	2.14	1.29	1.25	0.04
60	81.67	79.18	2.49	1.36	1.32	0.04
65	92.07	89.24	2.83	1.42	1.37	0.04
70	101.91	98.76	3.15	1.46	1.41	0.04
75	111.07	107.63	3.44	1.48	1.44	0.05
80	119.47	115.76	3.71	1.49	1.45	0.05
85	127.04	123.09	3.95	1.49	1.45	0.05
90	133.75	129.59	4.16	1.49	1.44	0.05
95	139.57	135.24	4.33	1.47	1.42	0.05
100	144.51	140.03	4.48	1.45	1.40	0.04
105	148.58	143.99	4.59	1.42	1.37	0.04
110	151.81	147.13	4.68	1.38	1.34	0.04
115	154.23	149.49	4.73	1.34	1.30	0.04
120	155.87	151.11	4.76	1.30	1.26	0.04
125	156.79	152.03	4.77	1.25	1.22	0.04
130	157.04	152.29	4.75	1.21	1.17	0.04
135	156.66	151.95	4.71	1.16	1.13	0.03
140	155.71	151.06	4.65	1.11	1.08	0.03
145	154.24	149.67	4.57	1.06	1.03	0.03
150	152.30	147.82	4.48	1.02	0.99	0.03
155	149.95	145.57	4.38	0.97	0.94	0.03
160	147.23	142.96	4.27	0.92	0.89	0.03
165	144.19	140.04	4.15	0.87	0.85	0.03
170	140.87	136.85	4.02	0.83	0.81	0.02
175	137.32	133.44	3.88	0.78	0.76	0.02
180	133.57	129.83	3.74	0.74	0.72	0.02
185	129.67	126.07	3.60	0.70	0.68	0.02
190	125.64	122.19	3.45	0.66	0.64	0.02
195	121.52	118.22	3.30	0.62	0.61	0.02
200	117.34	114.18	3.16	0.59	0.57	0.02

## Development Type 13 - S jP

## Crown Closure Class D

## Utilization 3005

$$\text{Yield} = (a * (\text{Age} - 8)^{(b + (CC * 0.25 - 0.075) * c)}) * \text{EXP}(-a * (\text{Age} - 8))$$

Coefficients:

	Combined	Softwood
a	0.019500	0.019400
b	2.097359	2.089500
c	0.400000	0.400000
CC	4	4

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	2.07	2.03	0.04	0.14	0.14	0.14
20	7.10	6.93	0.16	0.35	0.35	0.01
25	15.21	14.82	0.39	0.61	0.59	0.02
30	26.06	25.36	0.70	0.87	0.85	0.02
35	39.18	38.09	1.09	1.12	1.09	0.03
40	54.05	52.49	1.55	1.35	1.31	0.04
45	70.15	68.09	2.06	1.56	1.51	0.05
50	86.99	84.40	2.60	1.74	1.69	0.05
55	104.15	101.00	3.15	1.89	1.84	0.06
60	121.24	117.54	3.70	2.02	1.96	0.06
65	137.94	133.70	4.24	2.12	2.06	0.07
70	153.97	149.22	4.76	2.20	2.13	0.07
75	169.13	163.88	5.24	2.26	2.19	0.07
80	183.23	177.54	5.69	2.29	2.22	0.07
85	196.15	190.05	6.10	2.31	2.24	0.07
90	207.81	201.35	6.46	2.31	2.24	0.07
95	218.14	211.37	6.77	2.30	2.22	0.07
100	227.13	220.09	7.04	2.27	2.20	0.07
105	234.77	227.52	7.26	2.24	2.17	0.07
110	241.08	233.65	7.43	2.19	2.12	0.07
115	246.09	238.54	7.55	2.14	2.07	0.07
120	249.86	242.22	7.63	2.08	2.02	0.06
125	252.43	244.76	7.67	2.02	1.96	0.06
130	253.89	246.22	7.68	1.95	1.89	0.06
135	254.30	246.66	7.64	1.88	1.83	0.06
140	253.73	246.16	7.58	1.81	1.76	0.05
145	252.27	244.79	7.48	1.74	1.69	0.05
150	250.00	242.64	7.36	1.67	1.62	0.05
155	246.99	239.77	7.22	1.59	1.55	0.05
160	243.32	236.26	7.06	1.52	1.48	0.04
165	239.06	232.19	6.87	1.45	1.41	0.04
170	234.30	227.62	6.68	1.38	1.34	0.04
175	229.08	222.61	6.47	1.31	1.27	0.04
180	223.49	217.24	6.26	1.24	1.21	0.03
185	217.58	211.55	6.03	1.18	1.14	0.03
190	211.41	205.61	5.80	1.11	1.08	0.03
195	205.04	199.46	5.57	1.05	1.02	0.03
200	198.50	193.16	5.34	0.99	0.97	0.03

## Development Type 14 - S tl

## Crown Closure Class A

## Utilization 3005

$$\text{Yield} = (a * (\text{Age} - 8)^b + (CC * 0.25 - 0.075) * c) * \text{EXP}(-a * (\text{Age} - 8))$$

Coefficients:

	Combined	Softwood
a	0.019000	0.019000
b	2.114924	2.079947
c	0.153635	0.161202
CC	1	1

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	1.07	1.01	0.07	0.07	0.07	0.07
20	3.10	2.85	0.25	0.15	0.14	0.01
25	5.94	5.40	0.54	0.24	0.22	0.02
30	9.38	8.46	0.93	0.31	0.28	0.03
35	13.23	11.84	1.39	0.38	0.34	0.04
40	17.32	15.41	1.91	0.43	0.39	0.05
45	21.49	19.03	2.46	0.48	0.42	0.05
50	25.64	22.61	3.03	0.51	0.45	0.06
55	29.66	26.06	3.61	0.54	0.47	0.07
60	33.50	29.33	4.17	0.56	0.49	0.07
65	37.08	32.36	4.72	0.57	0.50	0.07
70	40.38	35.14	5.24	0.58	0.50	0.07
75	43.35	37.63	5.72	0.58	0.50	0.08
80	45.99	39.83	6.17	0.57	0.50	0.08
85	48.29	41.73	6.57	0.57	0.49	0.08
90	50.25	43.33	6.93	0.56	0.48	0.08
95	51.87	44.64	7.24	0.55	0.47	0.08
100	53.17	45.66	7.51	0.53	0.46	0.08
105	54.15	46.43	7.73	0.52	0.44	0.07
110	54.84	46.94	7.90	0.50	0.43	0.07
115	55.26	47.22	8.04	0.48	0.41	0.07
120	55.41	47.28	8.14	0.46	0.39	0.07
125	55.33	47.14	8.19	0.44	0.38	0.07
130	55.04	46.82	8.22	0.42	0.36	0.06
135	54.54	46.34	8.20	0.40	0.34	0.06
140	53.88	45.71	8.16	0.38	0.33	0.06
145	53.06	44.96	8.10	0.37	0.31	0.06
150	52.10	44.10	8.00	0.35	0.29	0.05
155	51.02	43.13	7.89	0.33	0.28	0.05
160	49.84	42.09	7.75	0.31	0.26	0.05
165	48.58	40.98	7.60	0.29	0.25	0.05
170	47.25	39.81	7.43	0.28	0.23	0.04
175	45.85	38.60	7.25	0.26	0.22	0.04
180	44.42	37.35	7.06	0.25	0.21	0.04
185	42.95	36.08	6.87	0.23	0.20	0.04
190	41.46	34.80	6.66	0.22	0.18	0.04
195	39.95	33.50	6.45	0.20	0.17	0.03
200	38.45	32.21	6.23	0.19	0.16	0.03

## Development Type 14 - S tl

## Crown Closure Class B

## Utilization 3005

$$\text{Yield} = (a * (\text{Age} - 8)^b + (CC * 0.25 - 0.075) * c) * \text{EXP}(-a * (\text{Age} - 8))$$

Coefficients:

	Combined	Softwood
a	0.019000	0.019000
b	2.114924	2.079947
c	0.153635	0.161202
CC	2	2

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	1.16	1.09	0.07	0.08	0.07	0.07
20	3.41	3.15	0.26	0.17	0.16	0.01
25	6.62	6.05	0.57	0.26	0.24	0.02
30	10.57	9.58	0.99	0.35	0.32	0.03
35	15.02	13.53	1.49	0.43	0.39	0.04
40	19.78	17.72	2.06	0.49	0.44	0.05
45	24.69	22.01	2.67	0.55	0.49	0.06
50	29.60	26.28	3.31	0.59	0.53	0.07
55	34.39	30.43	3.96	0.63	0.55	0.07
60	38.99	34.39	4.60	0.65	0.57	0.08
65	43.31	38.09	5.22	0.67	0.59	0.08
70	47.31	41.50	5.81	0.68	0.59	0.08
75	50.95	44.58	6.37	0.68	0.59	0.08
80	54.20	47.32	6.88	0.68	0.59	0.09
85	57.06	49.71	7.35	0.67	0.58	0.09
90	59.52	51.75	7.77	0.66	0.57	0.09
95	61.58	53.44	8.14	0.65	0.56	0.09
100	63.25	54.79	8.46	0.63	0.55	0.08
105	64.56	55.83	8.73	0.61	0.53	0.08
110	65.51	56.56	8.95	0.60	0.51	0.08
115	66.12	57.00	9.12	0.57	0.50	0.08
120	66.42	57.18	9.24	0.55	0.48	0.08
125	66.44	57.11	9.33	0.53	0.46	0.07
130	66.19	56.82	9.37	0.51	0.44	0.07
135	65.70	56.33	9.37	0.49	0.42	0.07
140	64.99	55.66	9.34	0.46	0.40	0.07
145	64.09	54.82	9.27	0.44	0.38	0.06
150	63.02	53.84	9.18	0.42	0.36	0.06
155	61.80	52.74	9.06	0.40	0.34	0.06
160	60.45	51.54	8.92	0.38	0.32	0.06
165	58.99	50.24	8.75	0.36	0.30	0.05
170	57.44	48.87	8.57	0.34	0.29	0.05
175	55.81	47.44	8.37	0.32	0.27	0.05
180	54.13	45.96	8.16	0.30	0.26	0.05
185	52.40	44.45	7.94	0.28	0.24	0.04
190	50.63	42.92	7.71	0.27	0.23	0.04
195	48.84	41.37	7.48	0.25	0.21	0.04
200	47.05	39.81	7.24	0.24	0.20	0.04



## Development Type 14 - S tl

## Crown Closure Class C

## Utilization 3005

$$\text{Yield} = (a * (\text{Age} - 8)^b + (CC * 0.25 - 0.075) * c) * \text{EXP}(-a * (\text{Age} - 8))$$

Coefficients:

	Combined	Softwood
a	0.019000	0.019000
b	2.114924	2.079947
c	0.153635	0.161202
CC	3	3

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	1.25	1.18	0.07	0.08	0.08	0.08
20	3.75	3.48	0.27	0.19	0.17	0.01
25	7.39	6.79	0.60	0.30	0.27	0.02
30	11.90	10.85	1.05	0.40	0.36	0.03
35	17.05	15.45	1.60	0.49	0.44	0.05
40	22.60	20.38	2.22	0.56	0.51	0.06
45	28.36	25.46	2.90	0.63	0.57	0.06
50	34.16	30.56	3.61	0.68	0.61	0.07
55	39.87	35.54	4.33	0.72	0.65	0.08
60	45.38	40.33	5.05	0.76	0.67	0.08
65	50.59	44.83	5.75	0.78	0.69	0.09
70	55.44	49.01	6.43	0.79	0.70	0.09
75	59.88	52.81	7.07	0.80	0.70	0.09
80	63.88	56.22	7.66	0.80	0.70	0.10
85	67.42	59.22	8.20	0.79	0.70	0.10
90	70.50	61.80	8.69	0.78	0.69	0.10
95	73.10	63.97	9.13	0.77	0.67	0.10
100	75.25	65.75	9.51	0.75	0.66	0.10
105	76.96	67.13	9.83	0.73	0.64	0.09
110	78.24	68.14	10.09	0.71	0.62	0.09
115	79.12	68.81	10.31	0.69	0.60	0.09
120	79.62	69.15	10.47	0.66	0.58	0.09
125	79.77	69.20	10.58	0.64	0.55	0.08
130	79.60	68.96	10.64	0.61	0.53	0.08
135	79.13	68.47	10.66	0.59	0.51	0.08
140	78.40	67.76	10.64	0.56	0.48	0.08
145	77.42	66.84	10.58	0.53	0.46	0.07
150	76.23	65.75	10.49	0.51	0.44	0.07
155	74.86	64.49	10.37	0.48	0.42	0.07
160	73.32	63.10	10.22	0.46	0.39	0.06
165	71.64	61.60	10.04	0.43	0.37	0.06
170	69.84	59.99	9.85	0.41	0.35	0.06
175	67.94	58.31	9.63	0.39	0.33	0.06
180	65.96	56.56	9.40	0.37	0.31	0.05
185	63.92	54.76	9.16	0.35	0.30	0.05
190	61.83	52.93	8.90	0.33	0.28	0.05
195	59.71	51.08	8.64	0.31	0.26	0.04
200	57.58	49.21	8.37	0.29	0.25	0.04

## Development Type 14 - S tl

## Crown Closure Class D

## Utilization 3005

$$\text{Yield} = (a * (\text{Age} - 8)^b + (CC * 0.25 - 0.075) * c) * \text{EXP}(-a * (\text{Age} - 8))$$

Coefficients:

	Combined	Softwood
a	0.019000	0.019000
b	2.114924	2.079947
c	0.153635	0.161202
CC	4	4

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	1.34	1.27	0.07	0.09	0.08	0.08
20	4.13	3.85	0.28	0.21	0.19	0.01
25	8.23	7.61	0.63	0.33	0.30	0.03
30	13.40	12.29	1.11	0.45	0.41	0.04
35	19.35	17.64	1.70	0.55	0.50	0.05
40	25.82	23.43	2.39	0.65	0.59	0.06
45	32.58	29.45	3.13	0.72	0.65	0.07
50	39.44	35.52	3.92	0.79	0.71	0.08
55	46.23	41.51	4.72	0.84	0.75	0.09
60	52.81	47.29	5.53	0.88	0.79	0.09
65	59.09	52.77	6.32	0.91	0.81	0.10
70	64.96	57.88	7.08	0.93	0.83	0.10
75	70.37	62.56	7.81	0.94	0.83	0.10
80	75.28	66.79	8.49	0.94	0.83	0.11
85	79.66	70.55	9.12	0.94	0.83	0.11
90	83.50	73.81	9.68	0.93	0.82	0.11
95	86.78	76.59	10.19	0.91	0.81	0.11
100	89.53	78.89	10.64	0.90	0.79	0.11
105	91.74	80.72	11.02	0.87	0.77	0.10
110	93.45	82.11	11.34	0.85	0.75	0.10
115	94.67	83.07	11.60	0.82	0.72	0.10
120	95.44	83.64	11.80	0.80	0.70	0.10
125	95.78	83.83	11.95	0.77	0.67	0.10
130	95.73	83.69	12.04	0.74	0.64	0.09
135	95.32	83.23	12.08	0.71	0.62	0.09
140	94.57	82.49	12.08	0.68	0.59	0.09
145	93.53	81.50	12.03	0.65	0.56	0.08
150	92.22	80.28	11.94	0.61	0.54	0.08
155	90.67	78.86	11.82	0.58	0.51	0.08
160	88.92	77.26	11.66	0.56	0.48	0.07
165	86.99	75.52	11.48	0.53	0.46	0.07
170	84.91	73.64	11.26	0.50	0.43	0.07
175	82.70	71.66	11.03	0.47	0.41	0.06
180	80.38	69.60	10.78	0.45	0.39	0.06
185	77.98	67.47	10.51	0.42	0.36	0.06
190	75.51	65.28	10.23	0.40	0.34	0.05
195	73.00	63.06	9.94	0.37	0.32	0.05
200	70.46	60.82	9.64	0.35	0.30	0.05

## Development Type 21 - S bSjP

## Crown Closure Class A

## Utilization 3005

$$\text{Yield} = (a * (\text{Age} - 8)^b + (CC * 0.25 - 0.075) * c) * \text{EXP}(-a * (\text{Age} - 8))$$

Coefficients:

	Combined	Softwood
a	0.019500	0.019500
b	2.270000	2.266000
c	0.189912	0.185335
CC	1	1

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	1.50	1.49	0.01	0.10	0.10	0.10
20	4.72	4.66	0.06	0.24	0.23	0.00
25	9.55	9.42	0.13	0.38	0.38	0.01
30	15.69	15.46	0.23	0.52	0.52	0.01
35	22.81	22.45	0.36	0.65	0.64	0.01
40	30.60	30.10	0.50	0.77	0.75	0.01
45	38.78	38.12	0.67	0.86	0.85	0.01
50	47.11	46.27	0.84	0.94	0.93	0.02
55	55.37	54.35	1.01	1.01	0.99	0.02
60	63.39	62.20	1.19	1.06	1.04	0.02
65	71.04	69.68	1.37	1.09	1.07	0.02
70	78.21	76.68	1.53	1.12	1.10	0.02
75	84.82	83.13	1.70	1.13	1.11	0.02
80	90.82	88.97	1.85	1.14	1.11	0.02
85	96.16	94.17	1.98	1.13	1.11	0.02
90	100.82	98.71	2.11	1.12	1.10	0.02
95	104.81	102.59	2.22	1.10	1.08	0.02
100	108.14	105.81	2.32	1.08	1.06	0.02
105	110.81	108.40	2.41	1.06	1.03	0.02
110	112.85	110.37	2.48	1.03	1.00	0.02
115	114.29	111.76	2.54	0.99	0.97	0.02
120	115.18	112.60	2.58	0.96	0.94	0.02
125	115.53	112.92	2.61	0.92	0.90	0.02
130	115.40	112.77	2.63	0.89	0.87	0.02
135	114.83	112.19	2.64	0.85	0.83	0.02
140	113.85	111.21	2.64	0.81	0.79	0.02
145	112.51	109.88	2.63	0.78	0.76	0.02
150	110.84	108.23	2.61	0.74	0.72	0.02
155	108.89	106.31	2.58	0.70	0.69	0.02
160	106.68	104.14	2.54	0.67	0.65	0.02
165	104.26	101.76	2.50	0.63	0.62	0.02
170	101.66	99.20	2.45	0.60	0.58	0.01
175	98.90	96.50	2.40	0.57	0.55	0.01
180	96.02	93.68	2.34	0.53	0.52	0.01
185	93.04	90.76	2.28	0.50	0.49	0.01
190	89.99	87.77	2.22	0.47	0.46	0.01
195	86.89	84.73	2.15	0.45	0.43	0.01
200	83.76	81.67	2.09	0.42	0.41	0.01

## Development Type 21 - S bSjP

## Crown Closure Class B

## Utilization 3005

$$\text{Yield} = (a * (\text{Age} - 8)^b + (CC * 0.25 - 0.075) * c) * \text{EXP}(-a * (\text{Age} - 8))$$

Coefficients:

	Combined	Softwood
a	0.019500	0.019500
b	2.270000	2.266000
c	0.189912	0.185335
CC	2	2

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	1.65	1.63	0.02	0.11	0.11	0.11
20	5.31	5.23	0.08	0.27	0.26	0.00
25	10.93	10.74	0.18	0.44	0.43	0.01
30	18.17	17.84	0.33	0.61	0.59	0.01
35	26.67	26.16	0.52	0.76	0.75	0.01
40	36.08	35.34	0.74	0.90	0.88	0.02
45	46.03	45.06	0.98	1.02	1.00	0.02
50	56.25	55.02	1.24	1.13	1.10	0.02
55	66.47	64.97	1.50	1.21	1.18	0.03
60	76.47	74.69	1.78	1.27	1.24	0.03
65	86.07	84.03	2.04	1.32	1.29	0.03
70	95.14	92.84	2.31	1.36	1.33	0.03
75	103.56	101.01	2.56	1.38	1.35	0.03
80	111.26	108.47	2.79	1.39	1.36	0.03
85	118.18	115.17	3.01	1.39	1.35	0.04
90	124.29	121.07	3.21	1.38	1.35	0.04
95	129.57	126.18	3.39	1.36	1.33	0.04
100	134.03	130.48	3.56	1.34	1.30	0.04
105	137.69	133.99	3.69	1.31	1.28	0.04
110	140.56	136.75	3.81	1.28	1.24	0.03
115	142.68	138.78	3.91	1.24	1.21	0.03
120	144.10	140.11	3.99	1.20	1.17	0.03
125	144.84	140.80	4.04	1.16	1.13	0.03
130	144.97	140.89	4.08	1.12	1.08	0.03
135	144.52	140.42	4.10	1.07	1.04	0.03
140	143.56	139.45	4.11	1.03	1.00	0.03
145	142.11	138.02	4.10	0.98	0.95	0.03
150	140.24	136.17	4.07	0.93	0.91	0.03
155	138.00	133.96	4.03	0.89	0.86	0.03
160	135.42	131.43	3.98	0.85	0.82	0.02
165	132.55	128.62	3.93	0.80	0.78	0.02
170	129.43	125.57	3.86	0.76	0.74	0.02
175	126.10	122.32	3.78	0.72	0.70	0.02
180	122.60	118.91	3.70	0.68	0.66	0.02
185	118.96	115.36	3.60	0.64	0.62	0.02
190	115.21	111.70	3.51	0.61	0.59	0.02
195	111.38	107.97	3.41	0.57	0.55	0.02
200	107.50	104.19	3.31	0.54	0.52	0.02

## Development Type 21 - S bSjP

## Crown Closure Class C

## Utilization 3005

$$\text{Yield} = (a * (\text{Age} - 8)^{(b + (CC * 0.25 - 0.075) * c)}) * \text{EXP}(-a * (\text{Age} - 8))$$

Coefficients:

	Combined	Softwood
a	0.019500	0.019500
b	2.270000	2.266000
c	0.189912	0.185335
CC	3	3

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	1.81	1.78	0.02	0.12	0.12	0.12
20	5.98	5.87	0.10	0.30	0.29	0.01
25	12.50	12.25	0.25	0.50	0.49	0.01
30	21.04	20.59	0.46	0.70	0.69	0.02
35	31.19	30.47	0.72	0.89	0.87	0.02
40	42.53	41.50	1.03	1.06	1.04	0.03
45	54.64	53.26	1.38	1.21	1.18	0.03
50	67.18	65.42	1.76	1.34	1.31	0.04
55	79.80	77.65	2.15	1.45	1.41	0.04
60	92.25	89.70	2.55	1.54	1.50	0.04
65	104.29	101.34	2.95	1.60	1.56	0.05
70	115.74	112.40	3.34	1.65	1.61	0.05
75	126.45	122.73	3.71	1.69	1.64	0.05
80	136.31	132.24	4.07	1.70	1.65	0.05
85	145.25	140.84	4.40	1.71	1.66	0.05
90	153.21	148.50	4.71	1.70	1.65	0.05
95	160.17	155.18	4.99	1.69	1.63	0.05
100	166.13	160.89	5.24	1.66	1.61	0.05
105	171.09	165.63	5.46	1.63	1.58	0.05
110	175.08	169.43	5.65	1.59	1.54	0.05
115	178.13	172.32	5.80	1.55	1.50	0.05
120	180.28	174.35	5.93	1.50	1.45	0.05
125	181.59	175.56	6.03	1.45	1.40	0.05
130	182.11	176.01	6.10	1.40	1.35	0.05
135	181.90	175.76	6.14	1.35	1.30	0.05
140	181.01	174.85	6.16	1.29	1.25	0.04
145	179.51	173.35	6.15	1.24	1.20	0.04
150	177.45	171.32	6.13	1.18	1.14	0.04
155	174.89	168.81	6.08	1.13	1.09	0.04
160	171.89	165.88	6.01	1.07	1.04	0.04
165	168.51	162.58	5.93	1.02	0.99	0.04
170	164.79	158.95	5.84	0.97	0.94	0.03
175	160.79	155.06	5.73	0.92	0.89	0.03
180	156.54	150.93	5.61	0.87	0.84	0.03
185	152.10	146.62	5.48	0.82	0.79	0.03
190	147.50	142.16	5.34	0.78	0.75	0.03
195	142.79	137.59	5.20	0.73	0.71	0.03
200	137.98	132.94	5.05	0.69	0.66	0.03

## Development Type 21 - S bSjP

## Crown Closure Class D

## Utilization 3005

$$\text{Yield} = (a * (\text{Age} - 8)^b + (CC * 0.25 - 0.075) * c) * \text{EXP}(-a * (\text{Age} - 8))$$

Coefficients:

	Combined	Softwood
a	0.019500	0.019500
b	2.270000	2.266000
c	0.189912	0.185335
CC	4	4

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	1.98	1.95	0.03	0.13	0.13	0.13
20	6.73	6.59	0.14	0.34	0.33	0.01
25	14.30	13.97	0.33	0.57	0.56	0.01
30	24.37	23.76	0.61	0.81	0.79	0.02
35	36.48	35.50	0.98	1.04	1.01	0.03
40	50.13	48.72	1.41	1.25	1.22	0.04
45	64.86	62.96	1.90	1.44	1.40	0.04
50	80.22	77.79	2.43	1.60	1.56	0.05
55	95.81	92.82	2.99	1.74	1.69	0.05
60	111.28	107.72	3.56	1.85	1.80	0.06
65	126.36	122.22	4.14	1.94	1.88	0.06
70	140.79	136.09	4.70	2.01	1.94	0.07
75	154.38	149.13	5.25	2.06	1.99	0.07
80	167.00	161.22	5.78	2.09	2.02	0.07
85	178.51	172.24	6.27	2.10	2.03	0.07
90	188.87	182.14	6.73	2.10	2.02	0.07
95	198.00	190.86	7.15	2.08	2.01	0.08
100	205.91	198.39	7.53	2.06	1.98	0.08
105	212.59	204.74	7.86	2.02	1.95	0.07
110	218.07	209.92	8.15	1.98	1.91	0.07
115	222.37	213.98	8.39	1.93	1.86	0.07
120	225.55	216.96	8.59	1.88	1.81	0.07
125	227.66	218.91	8.75	1.82	1.75	0.07
130	228.77	219.89	8.87	1.76	1.69	0.07
135	228.93	219.98	8.95	1.70	1.63	0.07
140	228.23	219.24	8.99	1.63	1.57	0.06
145	226.74	217.74	9.00	1.56	1.50	0.06
150	224.52	215.54	8.98	1.50	1.44	0.06
155	221.65	212.73	8.92	1.43	1.37	0.06
160	218.20	209.36	8.84	1.36	1.31	0.06
165	214.23	205.50	8.74	1.30	1.25	0.05
170	209.82	201.21	8.61	1.23	1.18	0.05
175	205.01	196.55	8.46	1.17	1.12	0.05
180	199.88	191.59	8.29	1.11	1.06	0.05
185	194.48	186.36	8.11	1.05	1.01	0.04
190	188.85	180.93	7.92	0.99	0.95	0.04
195	183.04	175.33	7.72	0.94	0.90	0.04
200	177.11	169.60	7.50	0.89	0.85	0.04

## Development Type 31 - SH sPtA

## Crown Closure Class A

## Utilization 3005

$$\text{Yield} = (a * (\text{Age} - 8)^b + (CC * 0.25 - 0.075) * c) * \text{EXP}(-a * (\text{Age} - 8))$$

Coefficients:

	Combined	Softwood
a	0.025000	0.019800
b	2.244000	2.094000
c	0.304370	0.293188
CC	1	1

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	1.83	1.12	0.71	0.12	0.07	0.07
20	5.58	3.23	2.36	0.28	0.16	0.12
25	10.97	6.17	4.80	0.44	0.25	0.19
30	17.50	9.71	7.78	0.58	0.32	0.26
35	24.72	13.65	11.07	0.71	0.39	0.32
40	32.23	17.80	14.42	0.81	0.45	0.36
45	39.70	22.02	17.68	0.88	0.49	0.39
50	46.88	26.17	20.70	0.94	0.52	0.41
55	53.57	30.18	23.39	0.97	0.55	0.43
60	59.63	33.95	25.68	0.99	0.57	0.43
65	64.98	37.45	27.53	1.00	0.58	0.42
70	69.56	40.62	28.94	0.99	0.58	0.41
75	73.36	43.45	29.91	0.98	0.58	0.40
80	76.38	45.93	30.45	0.95	0.57	0.38
85	78.65	48.04	30.60	0.93	0.57	0.36
90	80.20	49.80	30.40	0.89	0.55	0.34
95	81.08	51.22	29.87	0.85	0.54	0.31
100	81.36	52.30	29.06	0.81	0.52	0.29
105	81.08	53.06	28.02	0.77	0.51	0.27
110	80.31	53.53	26.78	0.73	0.49	0.24
115	79.11	53.73	25.38	0.69	0.47	0.22
120	77.54	53.68	23.86	0.65	0.45	0.20
125	75.65	53.39	22.26	0.61	0.43	0.18
130	73.50	52.90	20.59	0.57	0.41	0.16
135	71.13	52.23	18.90	0.53	0.39	0.14
140	68.59	51.39	17.20	0.49	0.37	0.12
145	65.93	50.41	15.52	0.45	0.35	0.11
150	63.18	49.31	13.87	0.42	0.33	0.09
155	60.37	48.10	12.27	0.39	0.31	0.08
160	57.53	46.81	10.72	0.36	0.29	0.07
165	54.69	45.45	9.24	0.33	0.28	0.06
170	51.87	44.03	7.84	0.31	0.26	0.05
175	49.08	42.56	6.52	0.28	0.24	0.04
180	46.35	41.07	5.28	0.26	0.23	0.03
185	43.69	39.56	4.13	0.24	0.21	0.02
190	41.10	38.04	3.07	0.22	0.20	0.02
195	38.60	36.51	2.09	0.20	0.19	0.01
200	36.20	35.00	1.20	0.18	0.17	0.01

## Development Type 31 - SH sPtA

## Crown Closure Class B

## Utilization 3005

$$\text{Yield} = (a * (\text{Age} - 8)^b + (CC * 0.25 - 0.075) * c) * \text{EXP}(-a * (\text{Age} - 8))$$

Coefficients:

	Combined	Softwood
a	0.025000	0.019800
b	2.244000	2.094000
c	0.304370	0.293188
CC	2	2

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	2.13	1.29	0.83	0.14	0.09	0.09
20	6.74	3.87	2.87	0.34	0.19	0.14
25	13.60	7.59	6.01	0.54	0.30	0.24
30	22.14	12.18	9.95	0.74	0.41	0.33
35	31.76	17.38	14.38	0.91	0.50	0.41
40	41.95	22.95	19.00	1.05	0.57	0.48
45	52.25	28.69	23.56	1.16	0.64	0.52
50	62.30	34.42	27.88	1.25	0.69	0.56
55	71.80	40.02	31.78	1.31	0.73	0.58
60	80.55	45.36	35.19	1.34	0.76	0.59
65	88.39	50.36	38.02	1.36	0.77	0.58
70	95.23	54.97	40.26	1.36	0.79	0.58
75	101.02	59.14	41.89	1.35	0.79	0.56
80	105.76	62.84	42.92	1.32	0.79	0.54
85	109.46	66.06	43.40	1.29	0.78	0.51
90	112.15	68.79	43.36	1.25	0.76	0.48
95	113.90	71.05	42.85	1.20	0.75	0.45
100	114.77	72.85	41.92	1.15	0.73	0.42
105	114.84	74.20	40.64	1.09	0.71	0.39
110	114.19	75.14	39.05	1.04	0.68	0.35
115	112.89	75.68	37.21	0.98	0.66	0.32
120	111.03	75.85	35.18	0.93	0.63	0.29
125	108.69	75.69	32.99	0.87	0.61	0.26
130	105.93	75.23	30.70	0.81	0.58	0.24
135	102.83	74.49	28.34	0.76	0.55	0.21
140	99.46	73.50	25.96	0.71	0.53	0.19
145	95.87	72.30	23.57	0.66	0.50	0.16
150	92.12	70.91	21.21	0.61	0.47	0.14
155	88.25	69.35	18.91	0.57	0.45	0.12
160	84.32	67.65	16.67	0.53	0.42	0.10
165	80.35	65.83	14.52	0.49	0.40	0.09
170	76.39	63.92	12.46	0.45	0.38	0.07
175	72.45	61.94	10.52	0.41	0.35	0.06
180	68.58	59.89	8.68	0.38	0.33	0.05
185	64.78	57.81	6.97	0.35	0.31	0.04
190	61.07	55.70	5.38	0.32	0.29	0.03
195	57.48	53.58	3.90	0.29	0.27	0.02
200	54.00	51.45	2.55	0.27	0.26	0.01



## Development Type 31 - SH sPtA

## Crown Closure Class C

## Utilization 3005

$$\text{Yield} = (a * (\text{Age} - 8)^b + (CC * 0.25 - 0.075) * c) * \text{EXP}(-a * (\text{Age} - 8))$$

Coefficients:

	Combined	Softwood
a	0.025000	0.019800
b	2.244000	2.094000
c	0.304370	0.293188
CC	3	3

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	2.47	1.49	0.98	0.16	0.10	0.10
20	8.15	4.64	3.50	0.41	0.23	0.18
25	16.88	9.34	7.53	0.68	0.37	0.30
30	28.01	15.28	12.73	0.93	0.51	0.42
35	40.82	22.13	18.68	1.17	0.63	0.53
40	54.61	29.59	25.02	1.37	0.74	0.63
45	68.78	37.38	31.40	1.53	0.83	0.70
50	82.79	45.27	37.52	1.66	0.91	0.75
55	96.24	53.06	43.18	1.75	0.96	0.79
60	108.80	60.59	48.20	1.81	1.01	0.80
65	120.23	67.73	52.49	1.85	1.04	0.81
70	130.36	74.39	55.97	1.86	1.06	0.80
75	139.12	80.48	58.63	1.85	1.07	0.78
80	146.44	85.97	60.47	1.83	1.07	0.76
85	152.33	90.82	61.51	1.79	1.07	0.72
90	156.83	95.02	61.81	1.74	1.06	0.69
95	159.99	98.57	61.43	1.68	1.04	0.65
100	161.91	101.48	60.43	1.62	1.01	0.60
105	162.66	103.76	58.89	1.55	0.99	0.56
110	162.35	105.46	56.89	1.48	0.96	0.52
115	161.09	106.59	54.50	1.40	0.93	0.47
120	158.99	107.20	51.79	1.32	0.89	0.43
125	156.15	107.31	48.84	1.25	0.86	0.39
130	152.68	106.98	45.69	1.17	0.82	0.35
135	148.67	106.24	42.42	1.10	0.79	0.31
140	144.21	105.13	39.08	1.03	0.75	0.28
145	139.40	103.69	35.71	0.96	0.72	0.25
150	134.31	101.96	32.35	0.90	0.68	0.22
155	129.02	99.97	29.04	0.83	0.64	0.19
160	123.58	97.77	25.81	0.77	0.61	0.16
165	118.05	95.37	22.69	0.72	0.58	0.14
170	112.50	92.81	19.68	0.66	0.55	0.12
175	106.95	90.13	16.82	0.61	0.52	0.10
180	101.46	87.35	14.11	0.56	0.49	0.08
185	96.05	84.48	11.56	0.52	0.46	0.06
190	90.75	81.56	9.18	0.48	0.43	0.05
195	85.58	78.61	6.97	0.44	0.40	0.04
200	80.57	75.64	4.93	0.40	0.38	0.02

## Development Type 31 - SH sPtA

## Crown Closure Class D

## Utilization 3005

$$\text{Yield} = (a * (\text{Age} - 8)^b + (CC * 0.25 - 0.075) * c) * \text{EXP}(-a * (\text{Age} - 8))$$

Coefficients:

	Combined	Softwood
a	0.025000	0.019800
b	2.244000	2.094000
c	0.304370	0.293188
CC	4	4

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	2.86	1.72	1.14	0.19	0.11	0.11
20	9.84	5.57	4.27	0.49	0.28	0.21
25	20.94	11.50	9.44	0.84	0.46	0.38
30	35.43	19.17	16.27	1.18	0.64	0.54
35	52.45	28.18	24.27	1.50	0.81	0.69
40	71.09	38.15	32.94	1.78	0.95	0.82
45	90.53	48.71	41.82	2.01	1.08	0.93
50	110.03	59.54	50.49	2.20	1.19	1.01
55	129.00	70.36	58.64	2.35	1.28	1.07
60	146.96	80.95	66.01	2.45	1.35	1.10
65	163.53	91.10	72.43	2.52	1.40	1.11
70	178.46	100.67	77.79	2.55	1.44	1.11
75	191.57	109.54	82.03	2.55	1.46	1.09
80	202.76	117.62	85.14	2.53	1.47	1.06
85	212.00	124.87	87.13	2.49	1.47	1.03
90	219.31	131.25	88.06	2.44	1.46	0.98
95	224.74	136.74	88.00	2.37	1.44	0.93
100	228.40	141.35	87.05	2.28	1.41	0.87
105	230.38	145.10	85.28	2.19	1.38	0.81
110	230.83	148.01	82.82	2.10	1.35	0.75
115	229.88	150.13	79.75	2.00	1.31	0.69
120	227.67	151.49	76.18	1.90	1.26	0.63
125	224.35	152.14	72.20	1.79	1.22	0.58
130	220.05	152.14	67.92	1.69	1.17	0.52
135	214.93	151.53	63.40	1.59	1.12	0.47
140	209.11	150.37	58.73	1.49	1.07	0.42
145	202.70	148.72	53.98	1.40	1.03	0.37
150	195.83	146.62	49.21	1.31	0.98	0.33
155	188.61	144.13	44.48	1.22	0.93	0.29
160	181.12	141.29	39.83	1.13	0.88	0.25
165	173.45	138.15	35.30	1.05	0.84	0.21
170	165.68	134.76	30.92	0.97	0.79	0.18
175	157.88	131.16	26.72	0.90	0.75	0.15
180	150.10	127.38	22.72	0.83	0.71	0.13
185	142.41	123.46	18.95	0.77	0.67	0.10
190	134.84	119.44	15.39	0.71	0.63	0.08
195	127.42	115.35	12.08	0.65	0.59	0.06
200	120.20	111.20	9.00	0.60	0.56	0.04

## Development Type 32 - SH jPtA

## Crown Closure Class A

## Utilization 3005

$$\text{Yield} = (a * (\text{Age} - 8)^b + (CC * 0.25 - 0.075) * c) * \text{EXP}(-a * (\text{Age} - 8))$$

Coefficients:

	Combined	Softwood
a	0.022000	0.019000
b	2.210000	2.110000
c	0.262057	0.186097
CC	1	1

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	1.52	1.08	0.44	0.10	0.07	0.07
20	4.59	3.10	1.49	0.23	0.16	0.07
25	9.03	5.95	3.08	0.36	0.24	0.12
30	14.47	9.41	5.07	0.48	0.31	0.17
35	20.58	13.27	7.31	0.59	0.38	0.21
40	27.04	17.36	9.68	0.68	0.43	0.24
45	33.62	21.55	12.07	0.75	0.48	0.27
50	40.08	25.71	14.37	0.80	0.51	0.29
55	46.28	29.75	16.53	0.84	0.54	0.30
60	52.08	33.60	18.48	0.87	0.56	0.31
65	57.39	37.20	20.19	0.88	0.57	0.31
70	62.15	40.50	21.65	0.89	0.58	0.31
75	66.32	43.49	22.83	0.88	0.58	0.30
80	69.88	46.14	23.74	0.87	0.58	0.30
85	72.84	48.45	24.39	0.86	0.57	0.29
90	75.21	50.42	24.79	0.84	0.56	0.28
95	77.00	52.05	24.95	0.81	0.55	0.26
100	78.24	53.35	24.89	0.78	0.53	0.25
105	78.98	54.34	24.64	0.75	0.52	0.23
110	79.25	55.04	24.21	0.72	0.50	0.22
115	79.09	55.45	23.63	0.69	0.48	0.21
120	78.54	55.61	22.93	0.65	0.46	0.19
125	77.64	55.53	22.11	0.62	0.44	0.18
130	76.44	55.24	21.20	0.59	0.42	0.16
135	74.97	54.74	20.23	0.56	0.41	0.15
140	73.27	54.08	19.20	0.52	0.39	0.14
145	71.38	53.25	18.13	0.49	0.37	0.13
150	69.33	52.29	17.04	0.46	0.35	0.11
155	67.16	51.21	15.94	0.43	0.33	0.10
160	64.87	50.03	14.84	0.41	0.31	0.09
165	62.52	48.77	13.75	0.38	0.30	0.08
170	60.11	47.43	12.68	0.35	0.28	0.07
175	57.67	46.03	11.64	0.33	0.26	0.07
180	55.22	44.59	10.63	0.31	0.25	0.06
185	52.77	43.12	9.65	0.29	0.23	0.05
190	50.34	41.62	8.72	0.26	0.22	0.05
195	47.94	40.11	7.83	0.25	0.21	0.04
200	45.58	38.60	6.98	0.23	0.19	0.03

## Development Type 32 - SH jPtA

## Crown Closure Class B

## Utilization 3005

$$\text{Yield} = (a * (\text{Age} - 8)^b + (CC * 0.25 - 0.075) * c) * \text{EXP}(-a * (\text{Age} - 8))$$

Coefficients:

	Combined	Softwood
a	0.022000	0.019000
b	2.210000	2.110000
c	0.262057	0.186097
CC	2	2

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	1.73	1.18	0.55	0.12	0.08	0.08
20	5.41	3.48	1.92	0.27	0.17	0.10
25	10.87	6.79	4.08	0.43	0.27	0.16
30	17.72	10.86	6.86	0.59	0.36	0.23
35	25.54	15.46	10.07	0.73	0.44	0.29
40	33.94	20.40	13.54	0.85	0.51	0.34
45	42.59	25.49	17.10	0.95	0.57	0.38
50	51.20	30.59	20.61	1.02	0.61	0.41
55	59.56	35.59	23.97	1.08	0.65	0.44
60	67.46	40.38	27.09	1.12	0.67	0.45
65	74.79	44.89	29.90	1.15	0.69	0.46
70	81.44	49.08	32.37	1.16	0.70	0.46
75	87.35	52.89	34.47	1.16	0.71	0.46
80	92.48	56.30	36.18	1.16	0.70	0.45
85	96.82	59.30	37.52	1.14	0.70	0.44
90	100.38	61.89	38.48	1.12	0.69	0.43
95	103.17	64.07	39.10	1.09	0.67	0.41
100	105.22	65.84	39.38	1.05	0.66	0.39
105	106.58	67.23	39.35	1.02	0.64	0.37
110	107.29	68.25	39.05	0.98	0.62	0.35
115	107.41	68.92	38.49	0.93	0.60	0.33
120	106.99	69.26	37.72	0.89	0.58	0.31
125	106.07	69.31	36.76	0.85	0.55	0.29
130	104.71	69.07	35.64	0.81	0.53	0.27
135	102.97	68.58	34.39	0.76	0.51	0.25
140	100.90	67.87	33.03	0.72	0.48	0.24
145	98.53	66.95	31.58	0.68	0.46	0.22
150	95.93	65.85	30.08	0.64	0.44	0.20
155	93.13	64.60	28.53	0.60	0.42	0.18
160	90.16	63.21	26.95	0.56	0.40	0.17
165	87.07	61.70	25.37	0.53	0.37	0.15
170	83.89	60.09	23.80	0.49	0.35	0.14
175	80.65	58.41	22.24	0.46	0.33	0.13
180	77.37	56.66	20.71	0.43	0.31	0.12
185	74.07	54.86	19.22	0.40	0.30	0.10
190	70.79	53.02	17.77	0.37	0.28	0.09
195	67.54	51.17	16.37	0.35	0.26	0.08
200	64.32	49.29	15.03	0.32	0.25	0.08

## Development Type 32 - SH jPtA

## Crown Closure Class C

## Utilization 3005

$$\text{Yield} = (a * (\text{Age} - 8)^b + (CC * 0.25 - 0.075) * c) * \text{EXP}(-a * (\text{Age} - 8))$$

Coefficients:

	Combined	Softwood
a	0.022000	0.019000
b	2.210000	2.110000
c	0.262057	0.186097
CC	3	3

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	1.96	1.29	0.67	0.13	0.09	0.09
20	6.36	3.91	2.45	0.32	0.20	0.12
25	13.09	7.75	5.34	0.52	0.31	0.21
30	21.70	12.54	9.16	0.72	0.42	0.31
35	31.69	18.03	13.66	0.91	0.52	0.39
40	42.59	23.97	18.62	1.06	0.60	0.47
45	53.95	30.15	23.80	1.20	0.67	0.53
50	65.41	36.40	29.01	1.31	0.73	0.58
55	76.64	42.57	34.07	1.39	0.77	0.62
60	87.40	48.53	38.87	1.46	0.81	0.65
65	97.48	54.18	43.29	1.50	0.83	0.67
70	106.73	59.46	47.27	1.52	0.85	0.68
75	115.06	64.31	50.74	1.53	0.86	0.68
80	122.39	68.69	53.70	1.53	0.86	0.67
85	128.70	72.59	56.11	1.51	0.85	0.66
90	133.97	75.98	58.00	1.49	0.84	0.64
95	138.23	78.87	59.36	1.46	0.83	0.62
100	141.50	81.26	60.24	1.41	0.81	0.60
105	143.83	83.18	60.65	1.37	0.79	0.58
110	145.27	84.63	60.63	1.32	0.77	0.55
115	145.88	85.66	60.23	1.27	0.74	0.52
120	145.74	86.27	59.47	1.21	0.72	0.50
125	144.90	86.49	58.41	1.16	0.69	0.47
130	143.44	86.37	57.08	1.10	0.66	0.44
135	141.43	85.92	55.51	1.05	0.64	0.41
140	138.93	85.18	53.75	0.99	0.61	0.38
145	136.01	84.17	51.84	0.94	0.58	0.36
150	132.73	82.93	49.80	0.88	0.55	0.33
155	129.14	81.48	47.66	0.83	0.53	0.31
160	125.30	79.85	45.45	0.78	0.50	0.28
165	121.27	78.06	43.20	0.73	0.47	0.26
170	117.07	76.14	40.93	0.69	0.45	0.24
175	112.77	74.11	38.66	0.64	0.42	0.22
180	108.40	71.99	36.41	0.60	0.40	0.20
185	103.98	69.80	34.18	0.56	0.38	0.18
190	99.55	67.55	32.00	0.52	0.36	0.17
195	95.14	65.26	29.88	0.49	0.33	0.15
200	90.77	62.96	27.82	0.45	0.31	0.14

## Development Type 32 - SH jPtA

## Crown Closure Class D

## Utilization 3005

$$\text{Yield} = (a * (\text{Age} - 8)^b + (CC * 0.25 - 0.075) * c) * \text{EXP}(-a * (\text{Age} - 8))$$

Coefficients:

	Combined	Softwood
a	0.022000	0.019000
b	2.210000	2.110000
c	0.262057	0.186097
CC	4	4

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	2.23	1.41	0.82	0.15	0.09	0.09
20	7.49	4.39	3.10	0.37	0.22	0.15
25	15.76	8.84	6.92	0.63	0.35	0.28
30	26.57	14.48	12.09	0.89	0.48	0.40
35	39.33	21.02	18.32	1.12	0.60	0.52
40	53.45	28.16	25.28	1.34	0.70	0.63
45	68.35	35.67	32.69	1.52	0.79	0.73
50	83.56	43.32	40.24	1.67	0.87	0.80
55	98.63	50.92	47.71	1.79	0.93	0.87
60	113.22	58.32	54.90	1.89	0.97	0.91
65	127.04	65.40	61.64	1.95	1.01	0.95
70	139.87	72.05	67.81	2.00	1.03	0.97
75	151.55	78.21	73.34	2.02	1.04	0.98
80	161.97	83.82	78.15	2.02	1.05	0.98
85	171.07	88.84	82.22	2.01	1.05	0.97
90	178.81	93.26	85.55	1.99	1.04	0.95
95	185.21	97.08	88.13	1.95	1.02	0.93
100	190.29	100.29	90.00	1.90	1.00	0.90
105	194.09	102.91	91.18	1.85	0.98	0.87
110	196.68	104.95	91.73	1.79	0.95	0.83
115	198.13	106.46	91.68	1.72	0.93	0.80
120	198.53	107.44	91.09	1.65	0.90	0.76
125	197.96	107.95	90.01	1.58	0.86	0.72
130	196.50	108.00	88.50	1.51	0.83	0.68
135	194.26	107.64	86.62	1.44	0.80	0.64
140	191.31	106.90	84.40	1.37	0.76	0.60
145	187.74	105.82	81.92	1.29	0.73	0.56
150	183.64	104.44	79.20	1.22	0.70	0.53
155	179.08	102.78	76.31	1.16	0.66	0.49
160	174.14	100.88	73.27	1.09	0.63	0.46
165	168.89	98.77	70.12	1.02	0.60	0.42
170	163.39	96.48	66.91	0.96	0.57	0.39
175	157.70	94.03	63.66	0.90	0.54	0.36
180	151.87	91.47	60.40	0.84	0.51	0.34
185	145.95	88.80	57.15	0.79	0.48	0.31
190	140.00	86.05	53.94	0.74	0.45	0.28
195	134.03	83.25	50.78	0.69	0.43	0.26
200	128.10	80.40	47.70	0.64	0.40	0.24

## Development Type 51 - HS tAsP

## Crown Closure Class A

## Utilization 3005

$$\text{Yield} = (a * (\text{Age} - 8)^b + (CC * 0.25 - 0.075) * c) * \text{EXP}(-a * (\text{Age} - 8))$$

Coefficients:

	Combined	Softwood
a	0.022000	0.019000
b	2.283000	1.996000
c	0.230315	0.372204
CC	1	1

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	1.73	0.92	0.82	0.12	0.06	0.06
20	5.43	2.54	2.90	0.27	0.13	0.14
25	10.93	4.73	6.20	0.44	0.19	0.25
30	17.83	7.31	10.51	0.59	0.24	0.35
35	25.70	10.14	15.56	0.73	0.29	0.44
40	34.17	13.09	21.07	0.85	0.33	0.53
45	42.89	16.06	26.83	0.95	0.36	0.60
50	51.57	18.96	32.61	1.03	0.38	0.65
55	60.00	21.74	38.26	1.09	0.40	0.70
60	67.98	24.35	43.63	1.13	0.41	0.73
65	75.38	26.76	48.62	1.16	0.41	0.75
70	82.10	28.94	53.15	1.17	0.41	0.76
75	88.06	30.88	57.18	1.17	0.41	0.76
80	93.25	32.57	60.68	1.17	0.41	0.76
85	97.64	34.02	63.62	1.15	0.40	0.75
90	101.23	35.22	66.02	1.12	0.39	0.73
95	104.06	36.18	67.88	1.10	0.38	0.71
100	106.14	36.92	69.22	1.06	0.37	0.69
105	107.53	37.44	70.08	1.02	0.36	0.67
110	108.26	37.76	70.49	0.98	0.34	0.64
115	108.39	37.90	70.48	0.94	0.33	0.61
120	107.96	37.87	70.09	0.90	0.32	0.58
125	107.05	37.68	69.37	0.86	0.30	0.55
130	105.69	37.35	68.33	0.81	0.29	0.53
135	103.94	36.90	67.04	0.77	0.27	0.50
140	101.85	36.34	65.52	0.73	0.26	0.47
145	99.47	35.67	63.80	0.69	0.25	0.44
150	96.85	34.93	61.92	0.65	0.23	0.41
155	94.03	34.11	59.92	0.61	0.22	0.39
160	91.04	33.23	57.81	0.57	0.21	0.36
165	87.93	32.31	55.62	0.53	0.20	0.34
170	84.72	31.34	53.38	0.50	0.18	0.31
175	81.45	30.34	51.10	0.47	0.17	0.29
180	78.14	29.32	48.82	0.43	0.16	0.27
185	74.82	28.29	46.53	0.40	0.15	0.25
190	71.51	27.24	44.26	0.38	0.14	0.23
195	68.22	26.20	42.02	0.35	0.13	0.22
200	64.98	25.16	39.82	0.32	0.13	0.20

## Development Type 51 - HS tAsP

## Crown Closure Class B

## Utilization 3005

$$\text{Yield} = (a * (\text{Age} - 8)^b + (CC * 0.25 - 0.075) * c) * \text{EXP}(-a * (\text{Age} - 8))$$

Coefficients:

	Combined	Softwood
a	0.022000	0.019000
b	2.283000	1.996000
c	0.230315	0.372204
CC	2	2

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	1.94	1.10	0.84	0.13	0.07	0.07
20	6.27	3.20	3.07	0.31	0.16	0.15
25	12.87	6.15	6.72	0.51	0.25	0.27
30	21.30	9.75	11.55	0.71	0.33	0.38
35	31.07	13.78	17.29	0.89	0.39	0.49
40	41.71	18.07	23.64	1.04	0.45	0.59
45	52.80	22.47	30.33	1.17	0.50	0.67
50	63.96	26.85	37.11	1.28	0.54	0.74
55	74.89	31.11	43.78	1.36	0.57	0.80
60	85.35	35.18	50.17	1.42	0.59	0.84
65	95.14	38.98	56.15	1.46	0.60	0.86
70	104.12	42.49	61.63	1.49	0.61	0.88
75	112.19	45.67	66.52	1.50	0.61	0.89
80	119.29	48.49	70.79	1.49	0.61	0.88
85	125.38	50.96	74.42	1.48	0.60	0.88
90	130.47	53.07	77.41	1.45	0.59	0.86
95	134.57	54.82	79.75	1.42	0.58	0.84
100	137.71	56.23	81.48	1.38	0.56	0.81
105	139.93	57.31	82.62	1.33	0.55	0.79
110	141.29	58.08	83.21	1.28	0.53	0.76
115	141.85	58.55	83.30	1.23	0.51	0.72
120	141.67	58.75	82.92	1.18	0.49	0.69
125	140.82	58.69	82.13	1.13	0.47	0.66
130	139.37	58.41	80.96	1.07	0.45	0.62
135	137.38	57.91	79.46	1.02	0.43	0.59
140	134.92	57.23	77.68	0.96	0.41	0.55
145	132.05	56.39	75.66	0.91	0.39	0.52
150	128.84	55.39	73.44	0.86	0.37	0.49
155	125.33	54.27	71.06	0.81	0.35	0.46
160	121.58	53.04	68.54	0.76	0.33	0.43
165	117.64	51.72	65.92	0.71	0.31	0.40
170	113.55	50.32	63.24	0.67	0.30	0.37
175	109.36	48.85	60.51	0.62	0.28	0.35
180	105.10	47.34	57.76	0.58	0.26	0.32
185	100.80	45.79	55.01	0.54	0.25	0.30
190	96.49	44.22	52.27	0.51	0.23	0.28
195	92.20	42.63	49.57	0.47	0.22	0.25
200	87.95	41.03	46.92	0.44	0.21	0.23



## Development Type 51 - HS tAsP

## Crown Closure Class C

## Utilization 3005

$$\text{Yield} = (a * (\text{Age} - 8)^b + (CC * 0.25 - 0.075) * c) * \text{EXP}(-a * (\text{Age} - 8))$$

Coefficients:

	Combined	Softwood
a	0.022000	0.019000
b	2.283000	1.996000
c	0.230315	0.372204
CC	3	3

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	2.17	1.32	0.85	0.14	0.09	0.09
20	7.23	4.03	3.21	0.36	0.20	0.16
25	15.15	8.01	7.14	0.61	0.32	0.29
30	25.45	13.00	12.45	0.85	0.43	0.41
35	37.56	18.73	18.83	1.07	0.54	0.54
40	50.93	24.95	25.97	1.27	0.62	0.65
45	65.00	31.45	33.55	1.44	0.70	0.75
50	79.32	38.02	41.30	1.59	0.76	0.83
55	93.48	44.52	48.96	1.70	0.81	0.89
60	107.15	50.81	56.34	1.79	0.85	0.94
65	120.08	56.79	63.28	1.85	0.87	0.97
70	132.05	62.39	69.66	1.89	0.89	1.00
75	142.92	67.53	75.38	1.91	0.90	1.01
80	152.59	72.19	80.40	1.91	0.90	1.00
85	161.01	76.34	84.67	1.89	0.90	1.00
90	168.16	79.97	88.19	1.87	0.89	0.98
95	174.03	83.07	90.97	1.83	0.87	0.96
100	178.66	85.65	93.02	1.79	0.86	0.93
105	182.10	87.72	94.38	1.73	0.84	0.90
110	184.40	89.31	95.09	1.68	0.81	0.86
115	185.64	90.44	95.20	1.61	0.79	0.83
120	185.89	91.13	94.76	1.55	0.76	0.79
125	185.24	91.42	93.83	1.48	0.73	0.75
130	183.78	91.33	92.45	1.41	0.70	0.71
135	181.57	90.90	90.68	1.34	0.67	0.67
140	178.72	90.15	88.57	1.28	0.64	0.63
145	175.30	89.13	86.17	1.21	0.61	0.59
150	171.38	87.85	83.53	1.14	0.59	0.56
155	167.05	86.35	80.70	1.08	0.56	0.52
160	162.36	84.65	77.71	1.01	0.53	0.49
165	157.39	82.79	74.61	0.95	0.50	0.45
170	152.20	80.78	71.42	0.90	0.48	0.42
175	146.84	78.65	68.19	0.84	0.45	0.39
180	141.35	76.43	64.93	0.79	0.42	0.36
185	135.79	74.12	61.67	0.73	0.40	0.33
190	130.20	71.76	58.44	0.69	0.38	0.31
195	124.61	69.35	55.25	0.64	0.36	0.28
200	119.04	66.92	52.12	0.60	0.33	0.26

## Development Type 51 - HS tAsP

## Crown Closure Class D

## Utilization 3005

$$\text{Yield} = (a * (\text{Age} - 8)^b + (CC * 0.25 - 0.075) * c) * \text{EXP}(-a * (\text{Age} - 8))$$

Coefficients:

	Combined	Softwood
a	0.022000	0.019000
b	2.283000	1.996000
c	0.230315	0.372204
CC	4	4

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	2.43	1.58	0.85	0.16	0.11	0.11
20	8.35	5.07	3.27	0.42	0.25	0.16
25	17.83	10.43	7.41	0.71	0.42	0.30
30	30.41	17.33	13.07	1.01	0.58	0.44
35	45.41	25.45	19.96	1.30	0.73	0.57
40	62.17	34.45	27.72	1.55	0.86	0.69
45	80.02	44.00	36.02	1.78	0.98	0.80
50	98.36	53.83	44.53	1.97	1.08	0.89
55	116.68	63.70	52.98	2.12	1.16	0.96
60	134.53	73.39	61.14	2.24	1.22	1.02
65	151.55	82.73	68.82	2.33	1.27	1.06
70	167.47	91.59	75.87	2.39	1.31	1.08
75	182.07	99.87	82.20	2.43	1.33	1.10
80	195.20	107.48	87.72	2.44	1.34	1.10
85	206.77	114.37	92.40	2.43	1.35	1.09
90	216.73	120.50	96.22	2.41	1.34	1.07
95	225.06	125.86	99.20	2.37	1.32	1.04
100	231.80	130.45	101.35	2.32	1.30	1.01
105	236.98	134.27	102.71	2.26	1.28	0.98
110	240.67	137.34	103.33	2.19	1.25	0.94
115	242.95	139.69	103.26	2.11	1.21	0.90
120	243.92	141.36	102.56	2.03	1.18	0.85
125	243.68	142.39	101.30	1.95	1.14	0.81
130	242.34	142.80	99.53	1.86	1.10	0.77
135	239.99	142.66	97.32	1.78	1.06	0.72
140	236.74	142.00	94.74	1.69	1.01	0.68
145	232.70	140.87	91.83	1.60	0.97	0.63
150	227.98	139.32	88.66	1.52	0.93	0.59
155	222.65	137.38	85.27	1.44	0.89	0.55
160	216.83	135.10	81.73	1.36	0.84	0.51
165	210.58	132.52	78.06	1.28	0.80	0.47
170	204.00	129.69	74.32	1.20	0.76	0.44
175	197.16	126.63	70.53	1.13	0.72	0.40
180	190.12	123.38	66.73	1.06	0.69	0.37
185	182.94	119.99	62.96	0.99	0.65	0.34
190	175.69	116.46	59.23	0.92	0.61	0.31
195	168.40	112.84	55.56	0.86	0.58	0.28
200	161.13	109.15	51.98	0.81	0.55	0.26

## Development Type 52 - HS tAjP

## Crown Closure Class A

## Utilization 3005

$$\text{Yield} = (a * (\text{Age} - 8)^b + (CC * 0.25 - 0.075) * c) * \text{EXP}(-a * (\text{Age} - 8))$$

Coefficients:

	Combined	Hardwood
a	0.022000	0.026000
b	2.092000	2.002262
c	0.368084	0.400000
CC	1	1

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	0	0	0	0.00	0.00	0.00
20	3.59	0.31	3.28	0.18	0.02	0.16
25	6.81	0.89	5.93	0.27	0.04	0.24
30	10.64	1.76	8.88	0.35	0.06	0.30
35	14.83	2.91	11.92	0.42	0.08	0.34
40	19.16	4.28	14.88	0.48	0.11	0.37
45	23.47	5.82	17.66	0.52	0.13	0.39
50	27.64	7.48	20.16	0.55	0.15	0.40
55	31.56	9.21	22.35	0.57	0.17	0.41
60	35.16	10.96	24.20	0.59	0.18	0.40
65	38.39	12.69	25.70	0.59	0.20	0.40
70	41.23	14.36	26.87	0.59	0.21	0.38
75	43.66	15.95	27.70	0.58	0.21	0.37
80	45.68	17.44	28.24	0.57	0.22	0.35
85	47.29	18.79	28.50	0.56	0.22	0.34
90	48.52	20.01	28.51	0.54	0.22	0.32
95	49.38	21.08	28.30	0.52	0.22	0.30
100	49.91	22.00	27.90	0.50	0.22	0.28
105	50.11	22.77	27.34	0.48	0.22	0.26
110	50.03	23.39	26.64	0.45	0.21	0.24
115	49.69	23.86	25.83	0.43	0.21	0.22
120	49.12	24.19	24.94	0.41	0.20	0.21
125	48.35	24.38	23.97	0.39	0.20	0.19
130	47.41	24.45	22.95	0.36	0.19	0.18
135	46.31	24.40	21.91	0.34	0.18	0.16
140	45.09	24.25	20.84	0.32	0.17	0.15
145	43.76	24.00	19.76	0.30	0.17	0.14
150	42.36	23.66	18.69	0.28	0.16	0.12
155	40.88	23.25	17.63	0.26	0.15	0.11
160	39.36	22.77	16.60	0.25	0.14	0.10
165	37.81	22.23	15.58	0.23	0.13	0.09
170	36.24	21.64	14.60	0.21	0.13	0.09
175	34.67	21.01	13.66	0.20	0.12	0.08
180	33.10	20.35	12.75	0.18	0.11	0.07
185	31.54	19.66	11.88	0.17	0.11	0.06
190	30.00	18.95	11.05	0.16	0.10	0.06
195	28.49	18.23	10.26	0.15	0.09	0.05
200	27.02	17.50	9.52	0.14	0.09	0.05

## Development Type 52 - HS tAjP

## Crown Closure Class B

## Utilization 3005

$$\text{Yield} = (a * (\text{Age} - 8)^b + (CC * 0.25 - 0.075) * c) * \text{EXP}(-a * (\text{Age} - 8))$$

Coefficients:

	Combined	Hardwood
a	0.022000	0.026000
b	2.092000	2.002262
c	0.368084	0.400000
CC	2	2

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	0	0	0	0.00	0.00	0.00
20	4.51	0.31	4.20	0.23	0.02	0.21
25	8.84	0.97	7.87	0.35	0.04	0.31
30	14.14	2.05	12.10	0.47	0.07	0.40
35	20.08	3.51	16.57	0.57	0.10	0.47
40	26.36	5.31	21.05	0.66	0.13	0.53
45	32.73	7.39	25.34	0.73	0.16	0.56
50	38.99	9.69	29.30	0.78	0.19	0.59
55	44.97	12.13	32.85	0.82	0.22	0.60
60	50.57	14.65	35.93	0.84	0.24	0.60
65	55.69	17.18	38.51	0.86	0.26	0.59
70	60.27	19.68	40.59	0.86	0.28	0.58
75	64.28	22.10	42.18	0.86	0.29	0.56
80	67.70	24.39	43.31	0.85	0.30	0.54
85	70.53	26.53	44.00	0.83	0.31	0.52
90	72.79	28.49	44.30	0.81	0.32	0.49
95	74.48	30.25	44.23	0.78	0.32	0.47
100	75.66	31.81	43.85	0.76	0.32	0.44
105	76.34	33.14	43.20	0.73	0.32	0.41
110	76.57	34.26	42.31	0.70	0.31	0.38
115	76.39	35.17	41.22	0.66	0.31	0.36
120	75.83	35.86	39.97	0.63	0.30	0.33
125	74.94	36.35	38.59	0.60	0.29	0.31
130	73.76	36.65	37.11	0.57	0.28	0.29
135	72.32	36.76	35.56	0.54	0.27	0.26
140	70.67	36.71	33.96	0.50	0.26	0.24
145	68.82	36.50	32.32	0.47	0.25	0.22
150	66.83	36.15	30.68	0.45	0.24	0.20
155	64.71	35.67	29.05	0.42	0.23	0.19
160	62.50	35.07	27.43	0.39	0.22	0.17
165	60.22	34.38	25.84	0.36	0.21	0.16
170	57.88	33.60	24.29	0.34	0.20	0.14
175	55.52	32.74	22.78	0.32	0.19	0.13
180	53.15	31.82	21.33	0.30	0.18	0.12
185	50.78	30.85	19.93	0.27	0.17	0.11
190	48.43	29.84	18.59	0.25	0.16	0.10
195	46.11	28.80	17.32	0.24	0.15	0.09
200	43.83	27.73	16.10	0.22	0.14	0.08

## Development Type 52 - HS tAjP

## Crown Closure Class C

## Utilization 3005

$$\text{Yield} = (a * (\text{Age} - 8)^b + (CC * 0.25 - 0.075) * c) * \text{EXP}(-a * (\text{Age} - 8))$$

Coefficients:

	Combined	Hardwood
a	0.022000	0.026000
b	2.092000	2.002262
c	0.368084	0.400000
CC	3	3

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	0	0	0	0.00	0.00	0.00
20	5.67	0.28	5.39	0.28	0.01	0.27
25	11.48	1.03	10.45	0.46	0.04	0.42
30	18.80	2.32	16.48	0.63	0.08	0.55
35	27.20	4.15	23.04	0.78	0.12	0.66
40	36.26	6.49	29.77	0.91	0.16	0.74
45	45.63	9.27	36.35	1.01	0.21	0.81
50	54.99	12.41	42.58	1.10	0.25	0.85
55	64.10	15.82	48.27	1.17	0.29	0.88
60	72.75	19.41	53.34	1.21	0.32	0.89
65	80.79	23.09	57.70	1.24	0.36	0.89
70	88.12	26.79	61.33	1.26	0.38	0.88
75	94.65	30.42	64.23	1.26	0.41	0.86
80	100.35	33.92	66.42	1.25	0.42	0.83
85	105.19	37.25	67.94	1.24	0.44	0.80
90	109.18	40.36	68.82	1.21	0.45	0.76
95	112.34	43.21	69.13	1.18	0.45	0.73
100	114.70	45.78	68.93	1.15	0.46	0.69
105	116.30	48.05	68.26	1.11	0.46	0.65
110	117.19	50.01	67.19	1.07	0.45	0.61
115	117.43	51.66	65.77	1.02	0.45	0.57
120	117.06	52.99	64.07	0.98	0.44	0.53
125	116.16	54.03	62.13	0.93	0.43	0.50
130	114.77	54.77	60.00	0.88	0.42	0.46
135	112.94	55.22	57.72	0.84	0.41	0.43
140	110.75	55.42	55.33	0.79	0.40	0.40
145	108.23	55.36	52.87	0.75	0.38	0.36
150	105.44	55.08	50.36	0.70	0.37	0.34
155	102.43	54.59	47.84	0.66	0.35	0.31
160	99.23	53.90	45.33	0.62	0.34	0.28
165	95.89	53.05	42.84	0.58	0.32	0.26
170	92.44	52.05	40.39	0.54	0.31	0.24
175	88.92	50.91	38.01	0.51	0.29	0.22
180	85.35	49.66	35.69	0.47	0.28	0.20
185	81.76	48.32	33.45	0.44	0.26	0.18
190	78.18	46.89	31.29	0.41	0.25	0.16
195	74.62	45.41	29.22	0.38	0.23	0.15
200	71.11	43.87	27.24	0.36	0.22	0.14

## Development Type 52 - HS tAjP

## Crown Closure Class D

## Utilization 3005

$$\text{Yield} = (a * (\text{Age} - 8)^b + (CC * 0.25 - 0.075) * c) * \text{EXP}(-a * (\text{Age} - 8))$$

Coefficients:

	Combined	Hardwood
a	0.022000	0.026000
b	2.092000	2.002262
c	0.368084	0.400000
CC	4	4

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	0	0	0	0.00	0.00	0.00
20	7.13	0.21	6.91	0.36	0.01	0.35
25	14.89	1.03	13.87	0.60	0.04	0.55
30	24.98	2.54	22.45	0.83	0.08	0.75
35	36.83	4.79	32.04	1.05	0.14	0.92
40	49.88	7.78	42.10	1.25	0.19	1.05
45	63.61	11.45	52.16	1.41	0.25	1.16
50	77.56	15.69	61.87	1.55	0.31	1.24
55	91.35	20.40	70.94	1.66	0.37	1.29
60	104.65	25.47	79.18	1.74	0.42	1.32
65	117.20	30.76	86.45	1.80	0.47	1.33
70	128.82	36.16	92.66	1.84	0.52	1.32
75	139.37	41.56	97.80	1.86	0.55	1.30
80	148.74	46.87	101.87	1.86	0.59	1.27
85	156.88	51.98	104.90	1.85	0.61	1.23
90	163.78	56.85	106.94	1.82	0.63	1.19
95	169.44	61.39	108.06	1.78	0.65	1.14
100	173.89	65.56	108.33	1.74	0.66	1.08
105	177.18	69.33	107.85	1.69	0.66	1.03
110	179.37	72.67	106.70	1.63	0.66	0.97
115	180.52	75.57	104.95	1.57	0.66	0.91
120	180.72	78.01	102.70	1.51	0.65	0.86
125	180.04	80.01	100.03	1.44	0.64	0.80
130	178.57	81.56	97.00	1.37	0.63	0.75
135	176.38	82.69	93.69	1.31	0.61	0.69
140	173.57	83.41	90.16	1.24	0.60	0.64
145	170.21	83.74	86.47	1.17	0.58	0.60
150	166.37	83.70	82.67	1.11	0.56	0.55
155	162.13	83.33	78.80	1.05	0.54	0.51
160	157.55	82.64	74.91	0.98	0.52	0.47
165	152.70	81.67	71.03	0.93	0.49	0.43
170	147.64	80.45	67.19	0.87	0.47	0.40
175	142.41	79.00	63.41	0.81	0.45	0.36
180	137.06	77.35	59.71	0.76	0.43	0.33
185	131.65	75.53	56.12	0.71	0.41	0.30
190	126.21	73.56	52.65	0.66	0.39	0.28
195	120.76	71.47	49.30	0.62	0.37	0.25
200	115.36	69.27	46.09	0.58	0.35	0.23

## Development Type 71 - H tA

## Crown Closure Class A

## Utilization 3005

$$\text{Yield} = (a * (\text{Age} - 8)^b + (CC * 0.25 - 0.075) * c) * \text{EXP}(-a * (\text{Age} - 8))$$

Coefficients:

	Combined	Hardwood
a	0.028000	0.028000
b	2.136172	2.115106
c	0.400000	0.400000
CC	1	1

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	0	0	0	0.00	0.00	0.00
20	4.81	0.25	4.56	0.24	0.01	0.23
25	9.02	0.52	8.49	0.36	0.02	0.34
30	13.84	0.87	12.97	0.46	0.03	0.43
35	18.91	1.27	17.64	0.54	0.04	0.50
40	23.91	1.68	22.23	0.60	0.04	0.56
45	28.64	2.10	26.54	0.64	0.05	0.59
50	32.93	2.49	30.44	0.66	0.05	0.61
55	36.69	2.86	33.83	0.67	0.05	0.62
60	39.87	3.18	36.68	0.66	0.05	0.61
65	42.44	3.47	38.98	0.65	0.05	0.60
70	44.42	3.70	40.72	0.63	0.05	0.58
75	45.82	3.88	41.94	0.61	0.05	0.56
80	46.69	4.02	42.67	0.58	0.05	0.53
85	47.07	4.12	42.95	0.55	0.05	0.51
90	47.01	4.17	42.85	0.52	0.05	0.48
95	46.57	4.18	42.39	0.49	0.04	0.45
100	45.80	4.16	41.64	0.46	0.04	0.42
105	44.75	4.11	40.64	0.43	0.04	0.39
110	43.46	4.03	39.43	0.40	0.04	0.36
115	41.99	3.94	38.06	0.37	0.03	0.33
120	40.38	3.82	36.56	0.34	0.03	0.30
125	38.65	3.69	34.96	0.31	0.03	0.28
130	36.85	3.55	33.31	0.28	0.03	0.26
135	35.01	3.40	31.61	0.26	0.03	0.23
140	33.14	3.24	29.90	0.24	0.02	0.21
145	31.27	3.08	28.19	0.22	0.02	0.19
150	29.43	2.92	26.51	0.20	0.02	0.18
155	27.61	2.76	24.86	0.18	0.02	0.16
160	25.84	2.60	23.25	0.16	0.02	0.15
165	24.13	2.44	21.69	0.15	0.01	0.13
170	22.48	2.28	20.19	0.13	0.01	0.12
175	20.90	2.14	18.76	0.12	0.01	0.11
180	19.39	1.99	17.40	0.11	0.01	0.10
185	17.96	1.85	16.10	0.10	0.01	0.09
190	16.60	1.72	14.88	0.09	0.01	0.08
195	15.32	1.60	13.72	0.08	0.01	0.07
200	14.12	1.48	12.64	0.07	0.01	0.06

## Development Type 71 - H tA

## Crown Closure Class B

## Utilization 3005

$$\text{Yield} = (a * (\text{Age} - 8)^b + (CC * 0.25 - 0.075) * c) * \text{EXP}(-a * (\text{Age} - 8))$$

Coefficients:

	Combined	Hardwood
a	0.028000	0.028000
b	2.136172	2.115106
c	0.400000	0.400000
CC	2	2

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	0	0	0	0.00	0.00	0.00
20	6.17	0.31	5.85	0.31	0.02	0.29
25	11.97	0.69	11.28	0.48	0.03	0.45
30	18.86	1.19	17.67	0.63	0.04	0.59
35	26.29	1.76	24.53	0.75	0.05	0.70
40	33.82	2.38	31.44	0.85	0.06	0.79
45	41.09	3.01	38.08	0.91	0.07	0.85
50	47.85	3.62	44.23	0.96	0.07	0.88
55	53.92	4.20	49.72	0.98	0.08	0.90
60	59.19	4.73	54.46	0.99	0.08	0.91
65	63.59	5.19	58.40	0.98	0.08	0.90
70	67.11	5.59	61.52	0.96	0.08	0.88
75	69.77	5.91	63.86	0.93	0.08	0.85
80	71.61	6.17	65.44	0.90	0.08	0.82
85	72.68	6.36	66.32	0.86	0.07	0.78
90	73.05	6.48	66.57	0.81	0.07	0.74
95	72.79	6.54	66.26	0.77	0.07	0.70
100	71.99	6.54	65.45	0.72	0.07	0.65
105	70.71	6.50	64.21	0.67	0.06	0.61
110	69.02	6.41	62.61	0.63	0.06	0.57
115	67.01	6.28	60.73	0.58	0.05	0.53
120	64.72	6.12	58.60	0.54	0.05	0.49
125	62.23	5.94	56.29	0.50	0.05	0.45
130	59.58	5.73	53.85	0.46	0.04	0.41
135	56.83	5.51	51.31	0.42	0.04	0.38
140	54.00	5.28	48.72	0.39	0.04	0.35
145	51.15	5.04	46.11	0.35	0.03	0.32
150	48.30	4.79	43.51	0.32	0.03	0.29
155	45.48	4.54	40.94	0.29	0.03	0.26
160	42.71	4.29	38.42	0.27	0.03	0.24
165	40.01	4.04	35.96	0.24	0.02	0.22
170	37.39	3.80	33.59	0.22	0.02	0.20
175	34.86	3.56	31.30	0.20	0.02	0.18
180	32.44	3.33	29.11	0.18	0.02	0.16
185	30.13	3.11	27.02	0.16	0.02	0.15
190	27.93	2.90	25.03	0.15	0.02	0.13
195	25.85	2.70	23.15	0.13	0.01	0.12
200	23.88	2.50	21.38	0.12	0.01	0.11



## Development Type 71 - H tA

## Crown Closure Class C

## Utilization 3005

$$\text{Yield} = (a * (\text{Age} - 8)^b + (CC * 0.25 - 0.075) * c) * \text{EXP}(-a * (\text{Age} - 8))$$

Coefficients:

	Combined	Hardwood
a	0.028000	0.028000
b	2.136172	2.115106
c	0.400000	0.400000
CC	3	3

Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	0	0	0	0.00	0.00	0.00
20	7.91	0.40	7.50	0.40	0.02	0.38
25	15.89	0.92	14.97	0.64	0.04	0.60
30	25.69	1.62	24.07	0.86	0.05	0.80
35	36.55	2.45	34.10	1.04	0.07	0.97
40	47.83	3.37	44.46	1.20	0.08	1.11
45	58.96	4.32	54.65	1.31	0.10	1.21
50	69.54	5.27	64.28	1.39	0.11	1.29
55	79.25	6.17	73.07	1.44	0.11	1.33
60	87.87	7.02	80.85	1.46	0.12	1.35
65	95.27	7.78	87.49	1.47	0.12	1.35
70	101.40	8.44	92.95	1.45	0.12	1.33
75	106.24	9.01	97.23	1.42	0.12	1.30
80	109.82	9.46	100.36	1.37	0.12	1.25
85	112.21	9.81	102.40	1.32	0.12	1.20
90	113.50	10.06	103.43	1.26	0.11	1.15
95	113.77	10.22	103.56	1.20	0.11	1.09
100	113.14	10.28	102.86	1.13	0.10	1.03
105	111.72	10.26	101.46	1.06	0.10	0.97
110	109.61	10.18	99.43	1.00	0.09	0.90
115	106.92	10.02	96.90	0.93	0.09	0.84
120	103.75	9.82	93.93	0.86	0.08	0.78
125	100.19	9.56	90.63	0.80	0.08	0.73
130	96.33	9.27	87.06	0.74	0.07	0.67
135	92.24	8.95	83.29	0.68	0.07	0.62
140	88.00	8.60	79.40	0.63	0.06	0.57
145	83.66	8.24	75.42	0.58	0.06	0.52
150	79.28	7.86	71.42	0.53	0.05	0.48
155	74.91	7.48	67.43	0.48	0.05	0.44
160	70.58	7.09	63.49	0.44	0.04	0.40
165	66.33	6.70	59.63	0.40	0.04	0.36
170	62.18	6.32	55.86	0.37	0.04	0.33
175	58.16	5.94	52.22	0.33	0.03	0.30
180	54.28	5.58	48.70	0.30	0.03	0.27
185	50.56	5.22	45.34	0.27	0.03	0.25
190	47.00	4.88	42.12	0.25	0.03	0.22
195	43.61	4.55	39.06	0.22	0.02	0.20
200	40.40	4.24	36.17	0.20	0.02	0.18

## Development Type 71 - H tA

## Crown Closure Class D

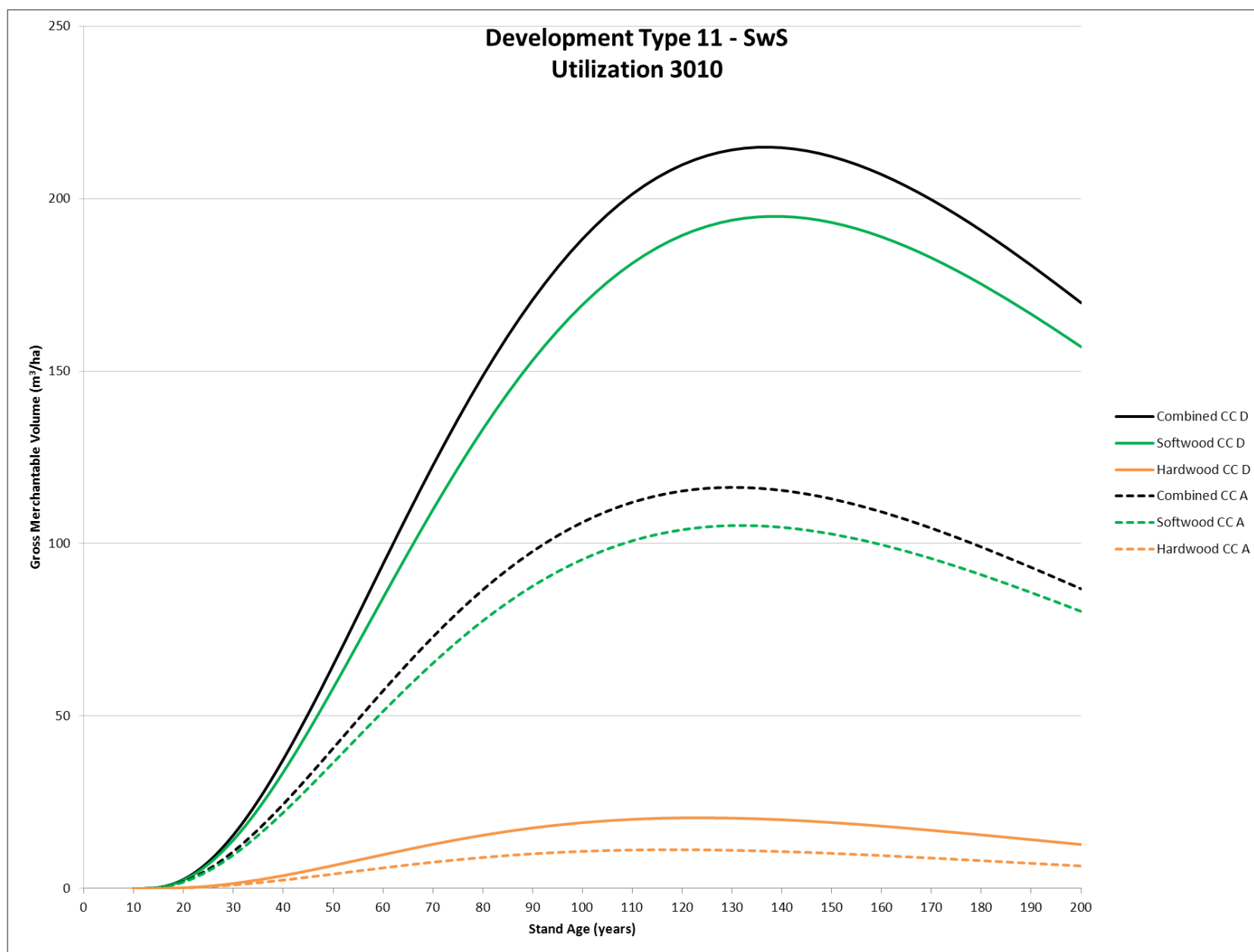
## Utilization 3005

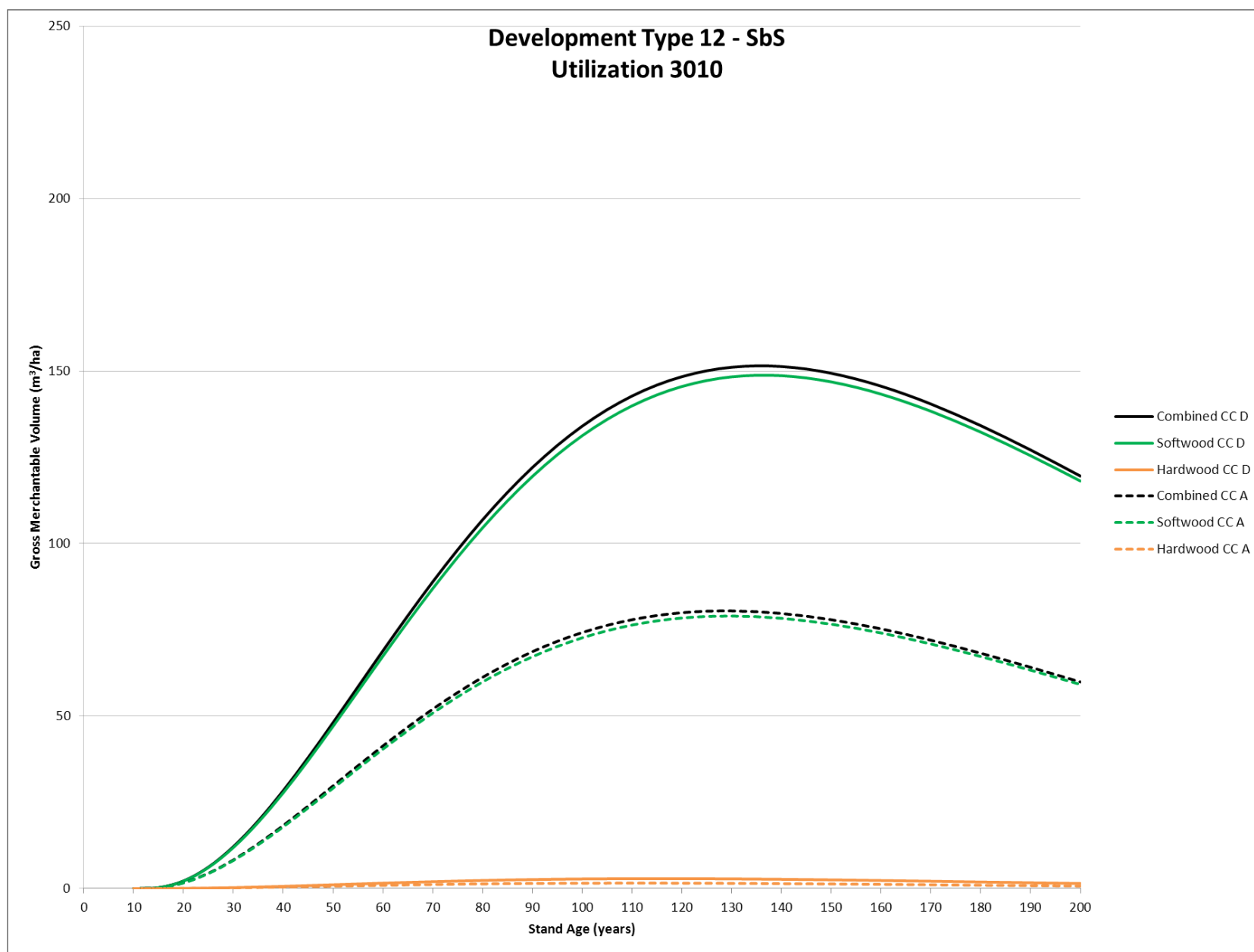
$$\text{Yield} = (a * (\text{Age} - 8)^b + (CC * 0.25 - 0.075) * c) * \text{EXP}(-a * (\text{Age} - 8))$$

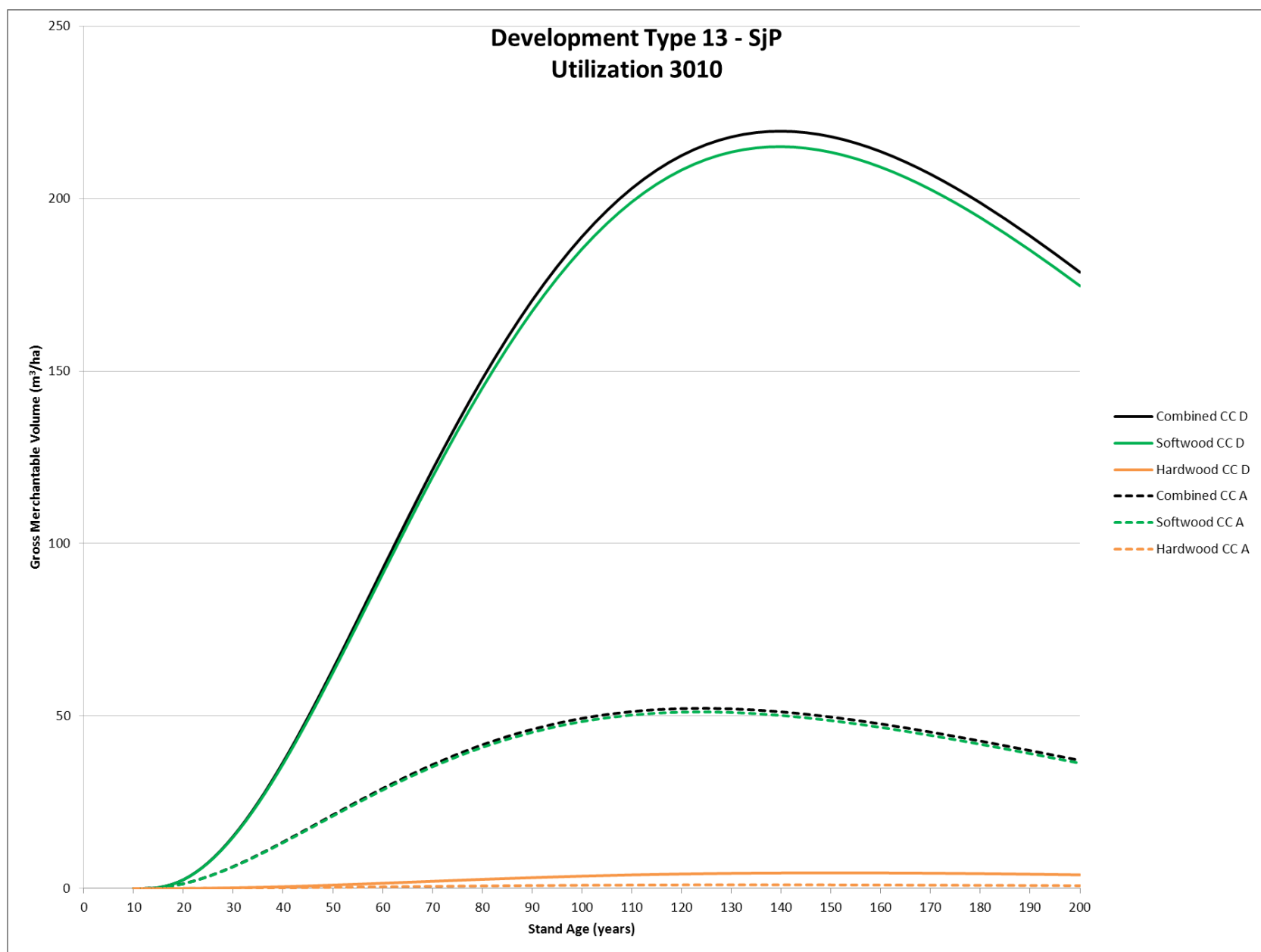
Coefficients:

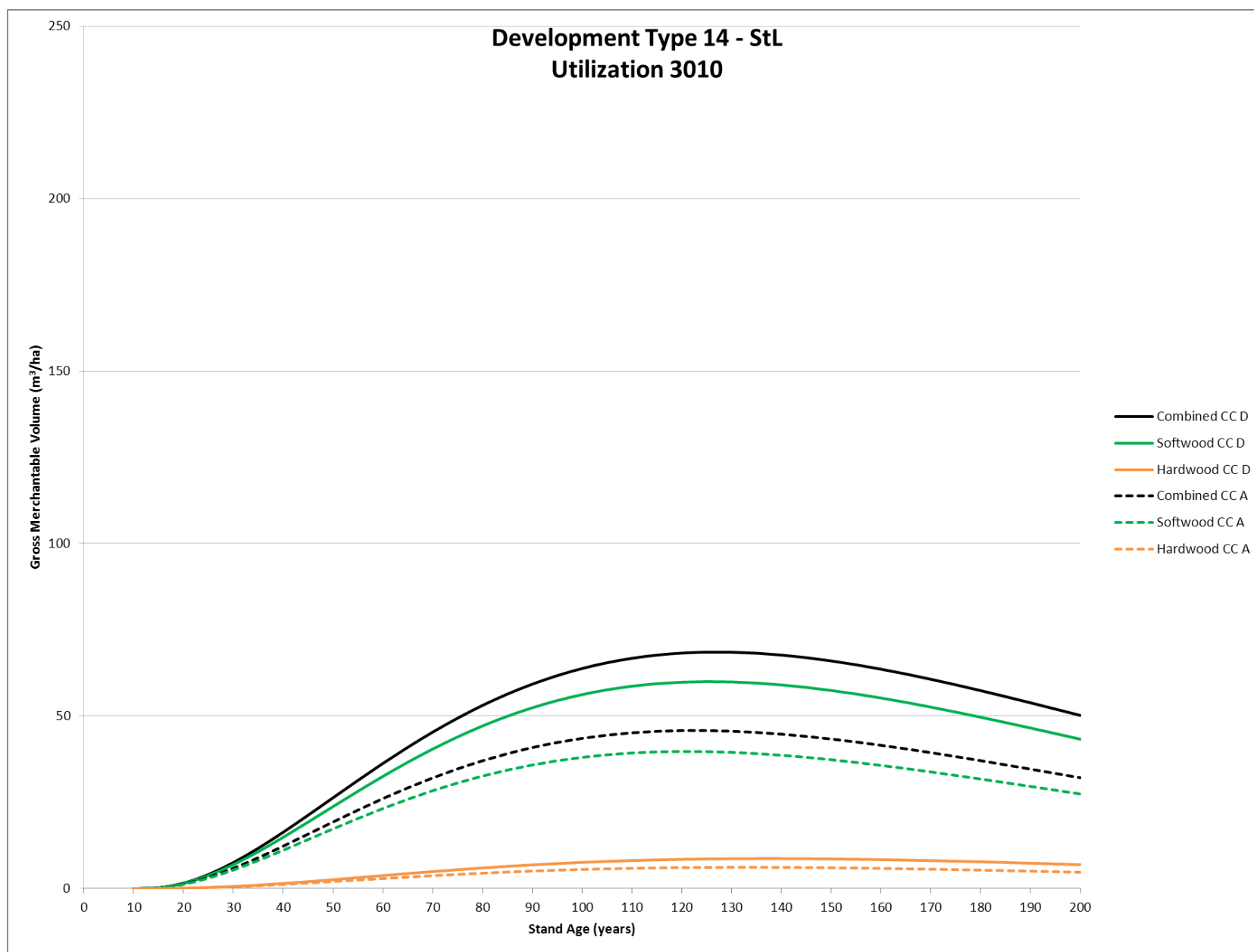
	Combined	Hardwood
a	0.028000	0.028000
b	2.136172	2.115106
c	0.400000	0.400000
CC	4	4

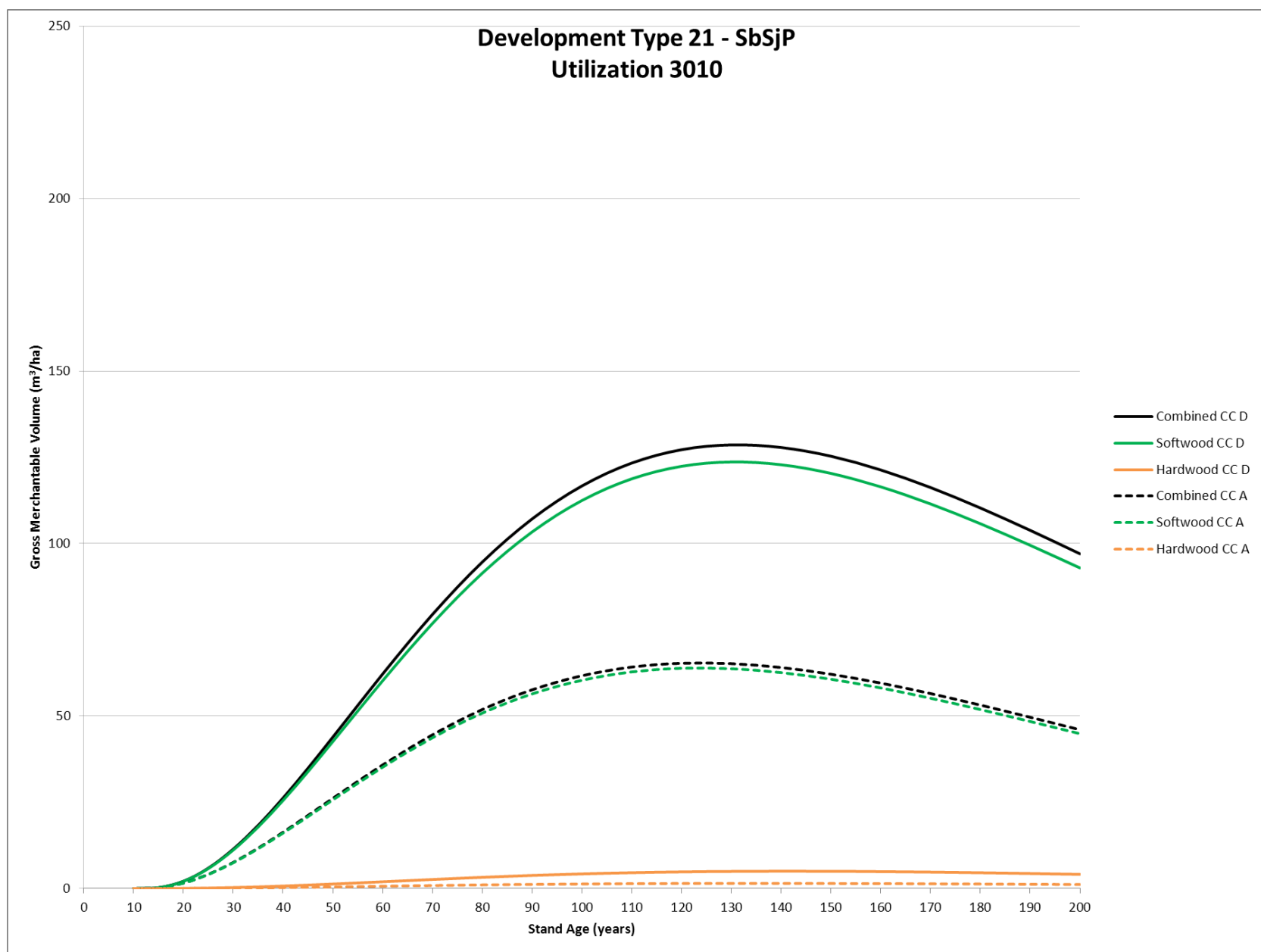
Age Class (years)	Combined Yield (m3/ha)	Softwood Yield (m3/ha)	Hardwood Yield (m3/ha)	Combined MAI (m3/ha/yr)	Softwood MAI (m3/ha/yr)	Hardwood MAI (m3/ha/yr)
0	0	0	0	0	0	0
5	0	0	0	0	0	0
10	0	0	0	0	0	0
15	0	0	0	0.00	0.00	0.00
20	10.14	0.52	9.62	0.51	0.03	0.48
25	21.09	1.22	19.87	0.84	0.05	0.79
30	34.99	2.21	32.79	1.17	0.07	1.09
35	50.82	3.41	47.42	1.45	0.10	1.35
40	67.64	4.76	62.88	1.69	0.12	1.57
45	84.61	6.20	78.41	1.88	0.14	1.74
50	101.06	7.65	93.41	2.02	0.15	1.87
55	116.46	9.07	107.39	2.12	0.16	1.95
60	130.44	10.42	120.03	2.17	0.17	2.00
65	142.74	11.65	131.09	2.20	0.18	2.02
70	153.20	12.76	140.44	2.19	0.18	2.01
75	161.76	13.71	148.05	2.16	0.18	1.97
80	168.43	14.51	153.92	2.11	0.18	1.92
85	173.26	15.15	158.11	2.04	0.18	1.86
90	176.35	15.63	160.71	1.96	0.17	1.79
95	177.82	15.97	161.86	1.87	0.17	1.70
100	177.83	16.16	161.67	1.78	0.16	1.62
105	176.52	16.22	160.31	1.68	0.15	1.53
110	174.06	16.16	157.91	1.58	0.15	1.44
115	170.61	15.99	154.61	1.48	0.14	1.34
120	166.30	15.74	150.57	1.39	0.13	1.25
125	161.30	15.40	145.90	1.29	0.12	1.17
130	155.73	14.99	140.74	1.20	0.12	1.08
135	149.73	14.53	135.20	1.11	0.11	1.00
140	143.39	14.02	129.38	1.02	0.10	0.92
145	136.83	13.47	123.36	0.94	0.09	0.85
150	130.14	12.90	117.24	0.87	0.09	0.78
155	123.39	12.31	111.07	0.80	0.08	0.72
160	116.65	11.71	104.93	0.73	0.07	0.66
165	109.98	11.11	98.86	0.67	0.07	0.60
170	103.42	10.51	92.91	0.61	0.06	0.55
175	97.03	9.92	87.11	0.55	0.06	0.50
180	90.83	9.33	81.49	0.50	0.05	0.45
185	84.84	8.76	76.08	0.46	0.05	0.41
190	79.09	8.21	70.88	0.42	0.04	0.37
195	73.59	7.68	65.91	0.38	0.04	0.34
200	68.35	7.17	61.18	0.34	0.04	0.31

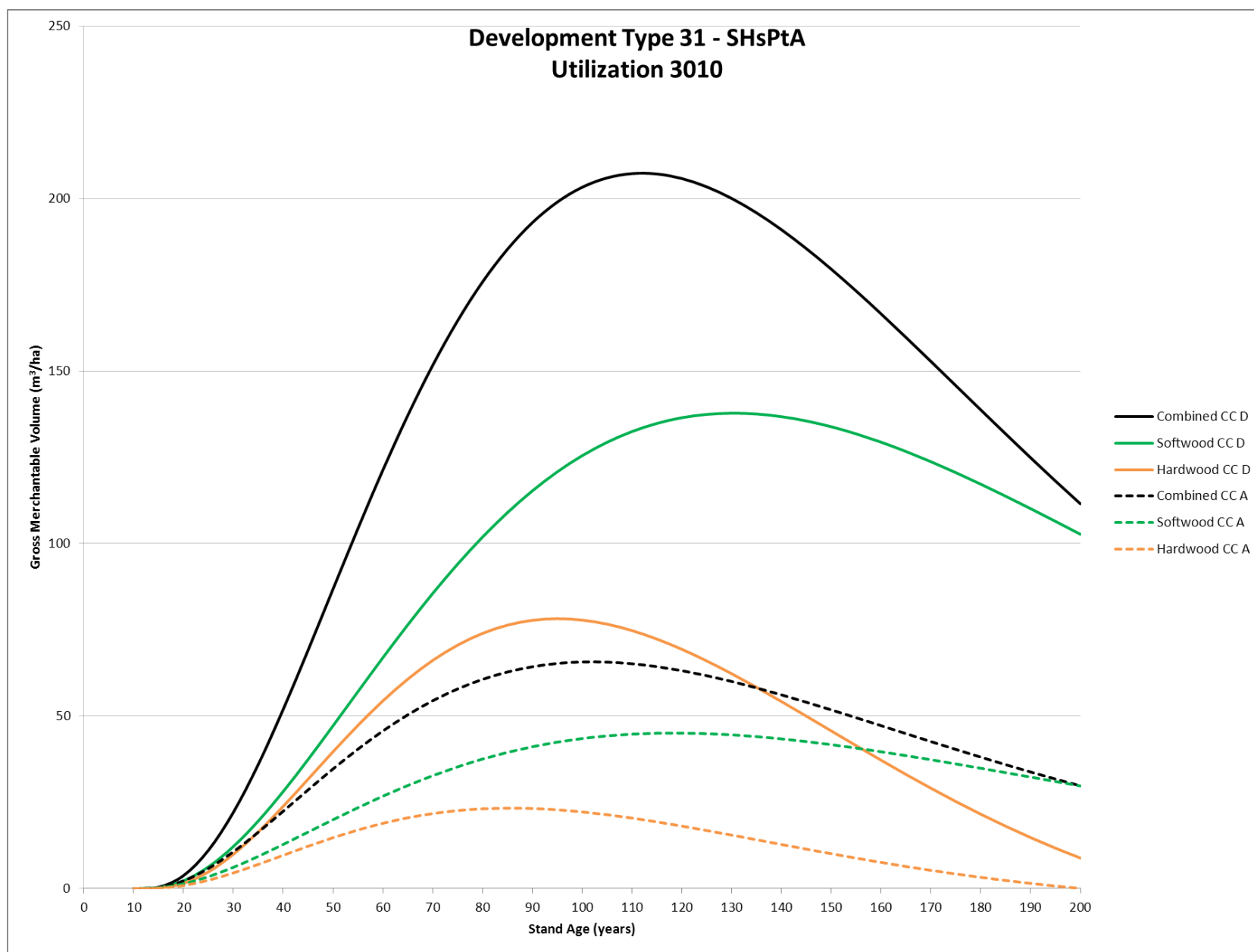




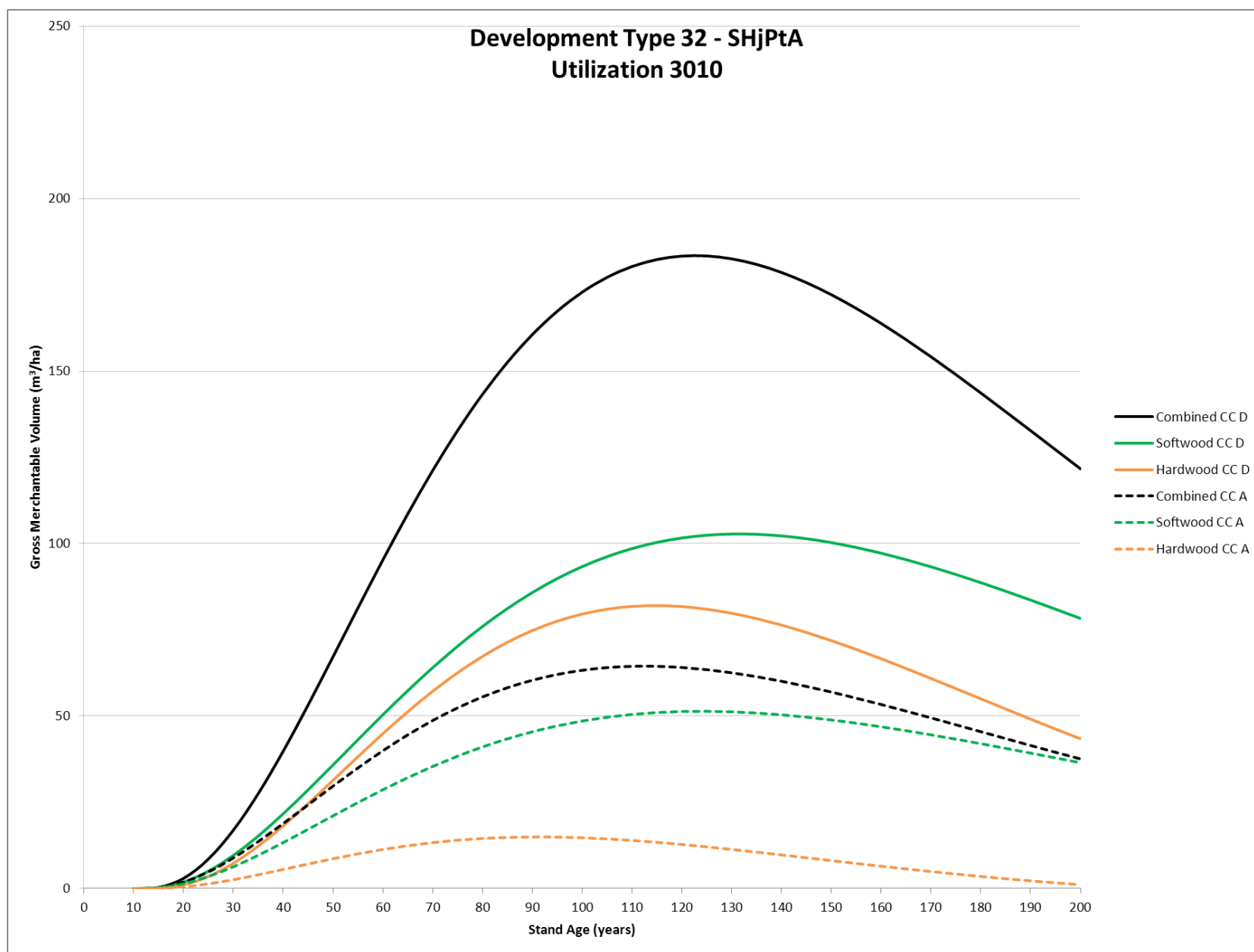


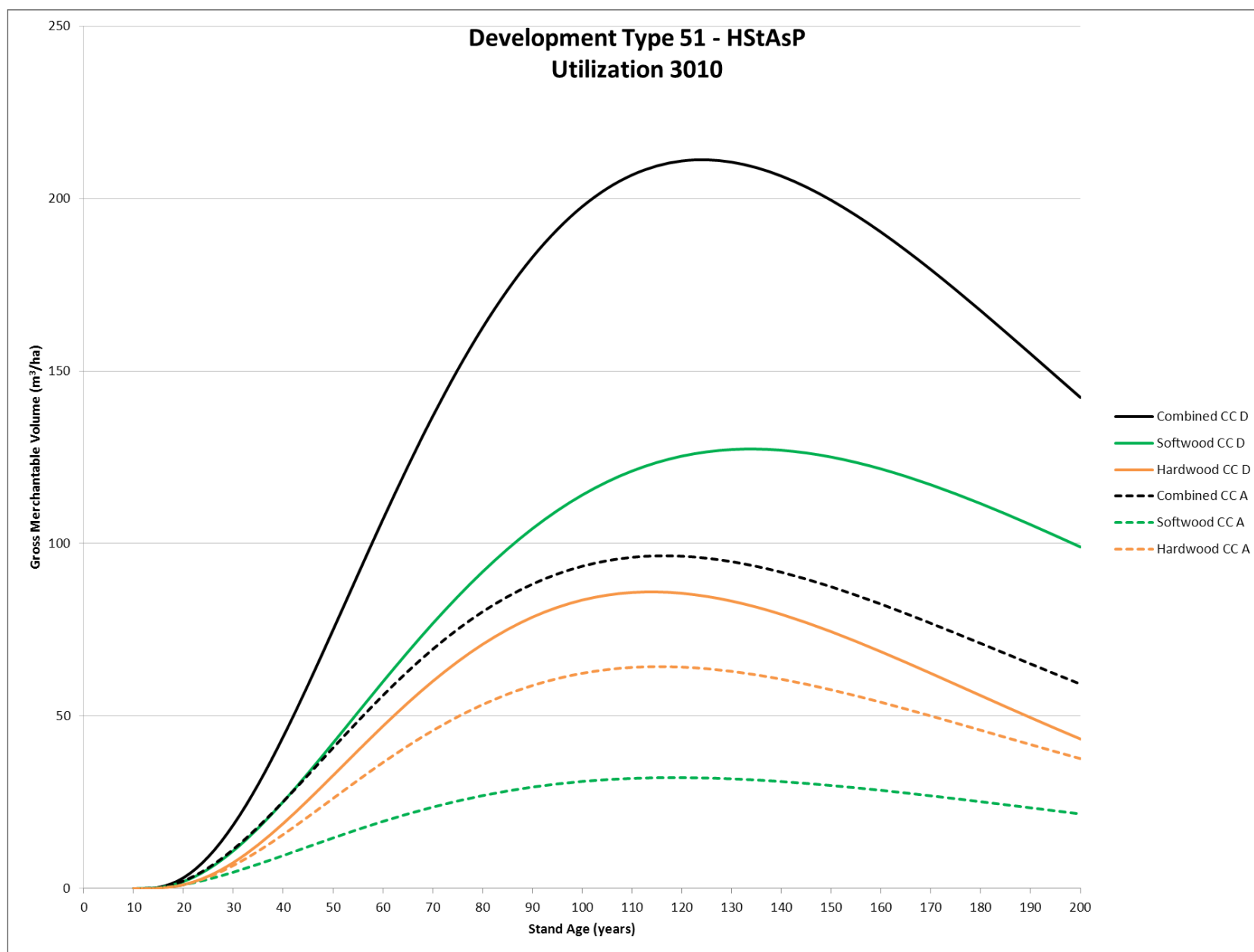


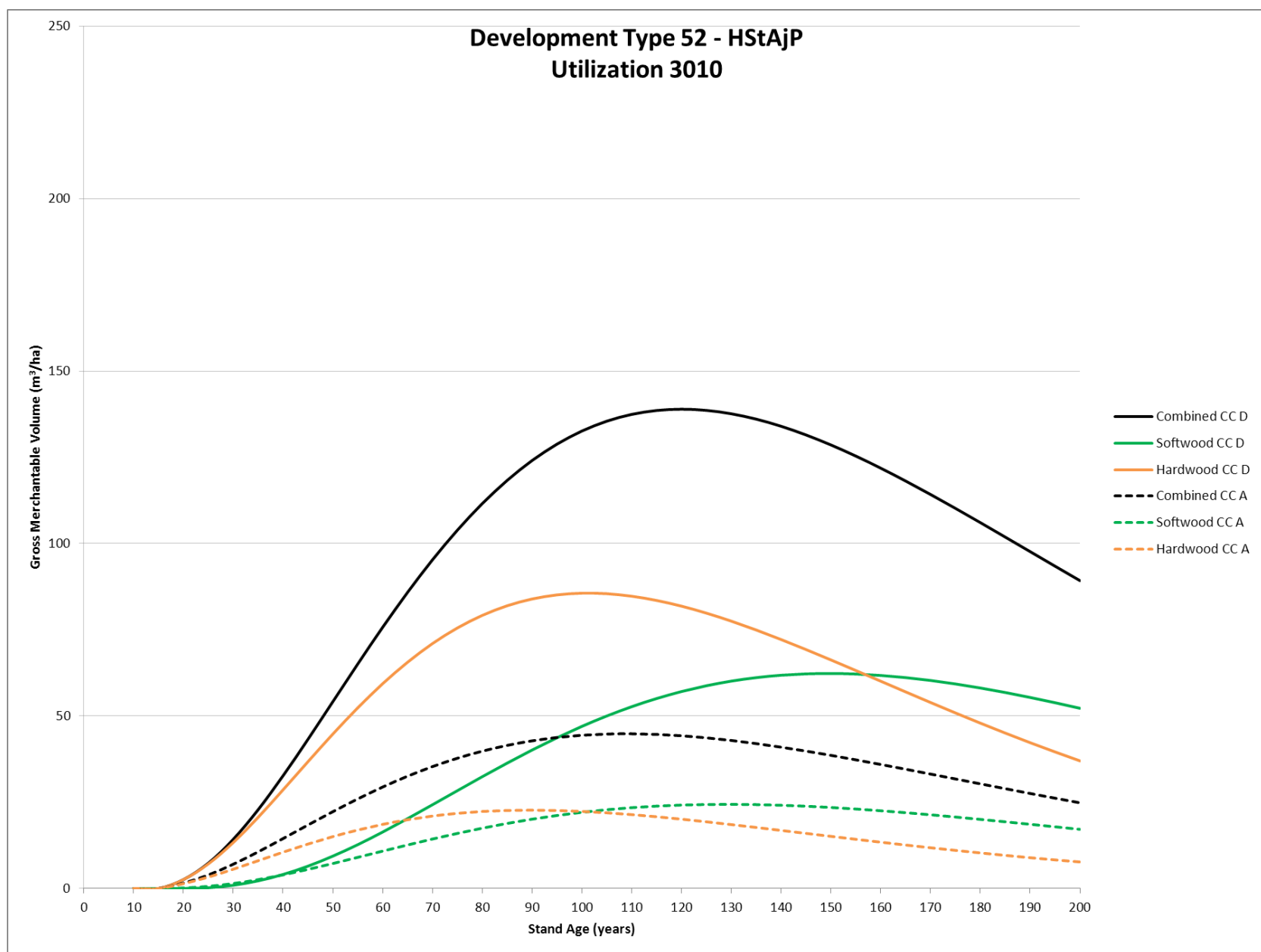


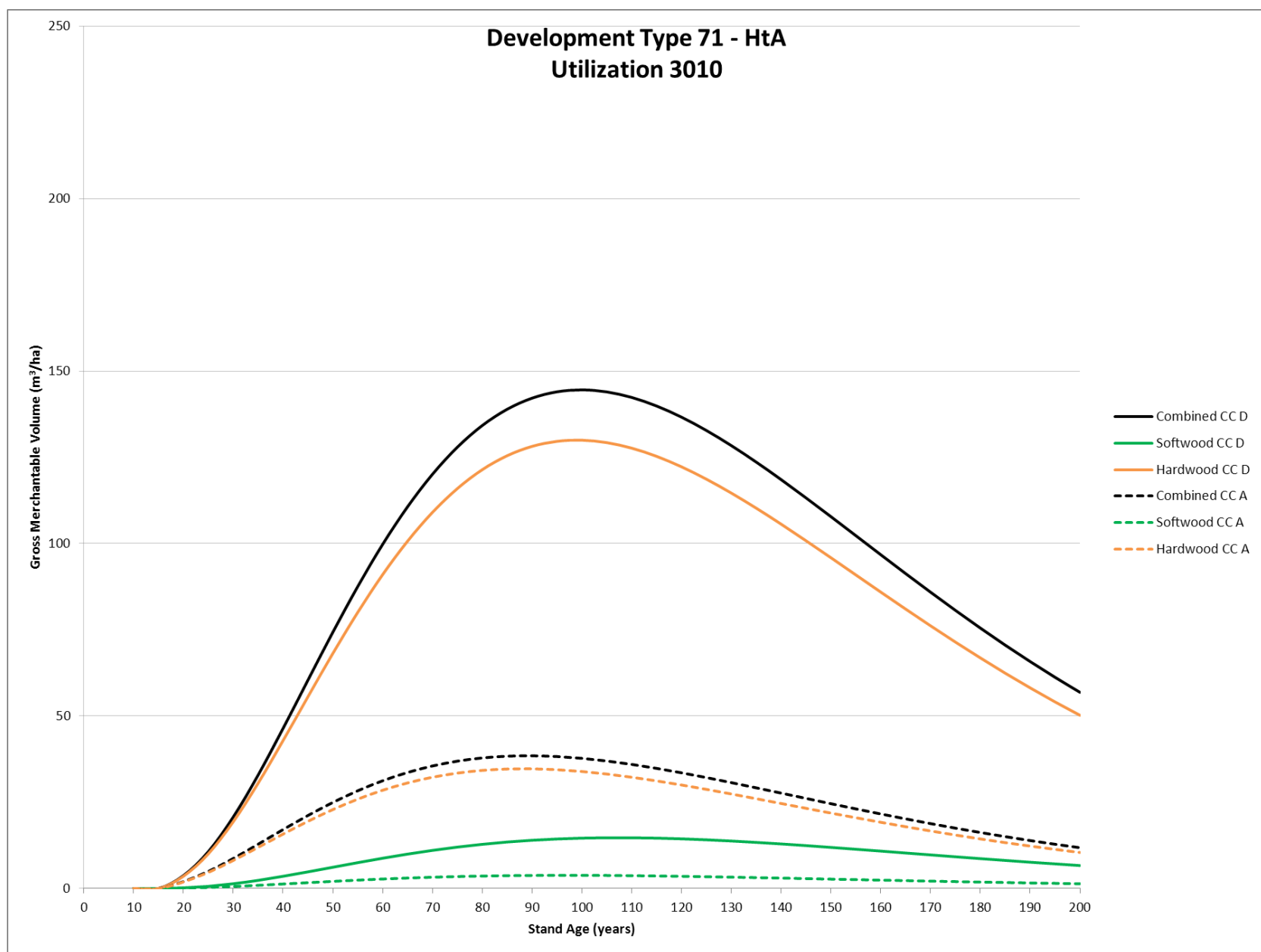


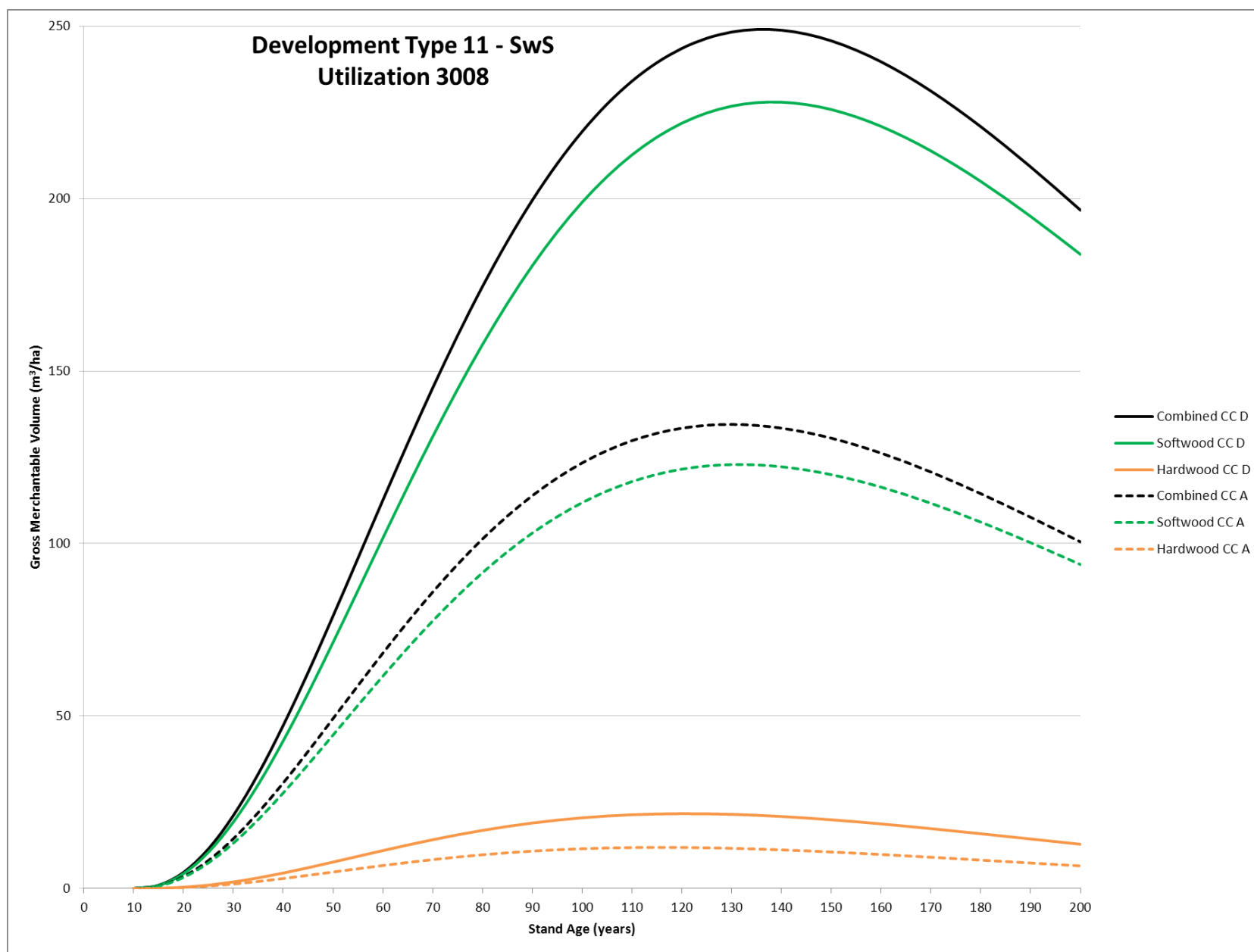


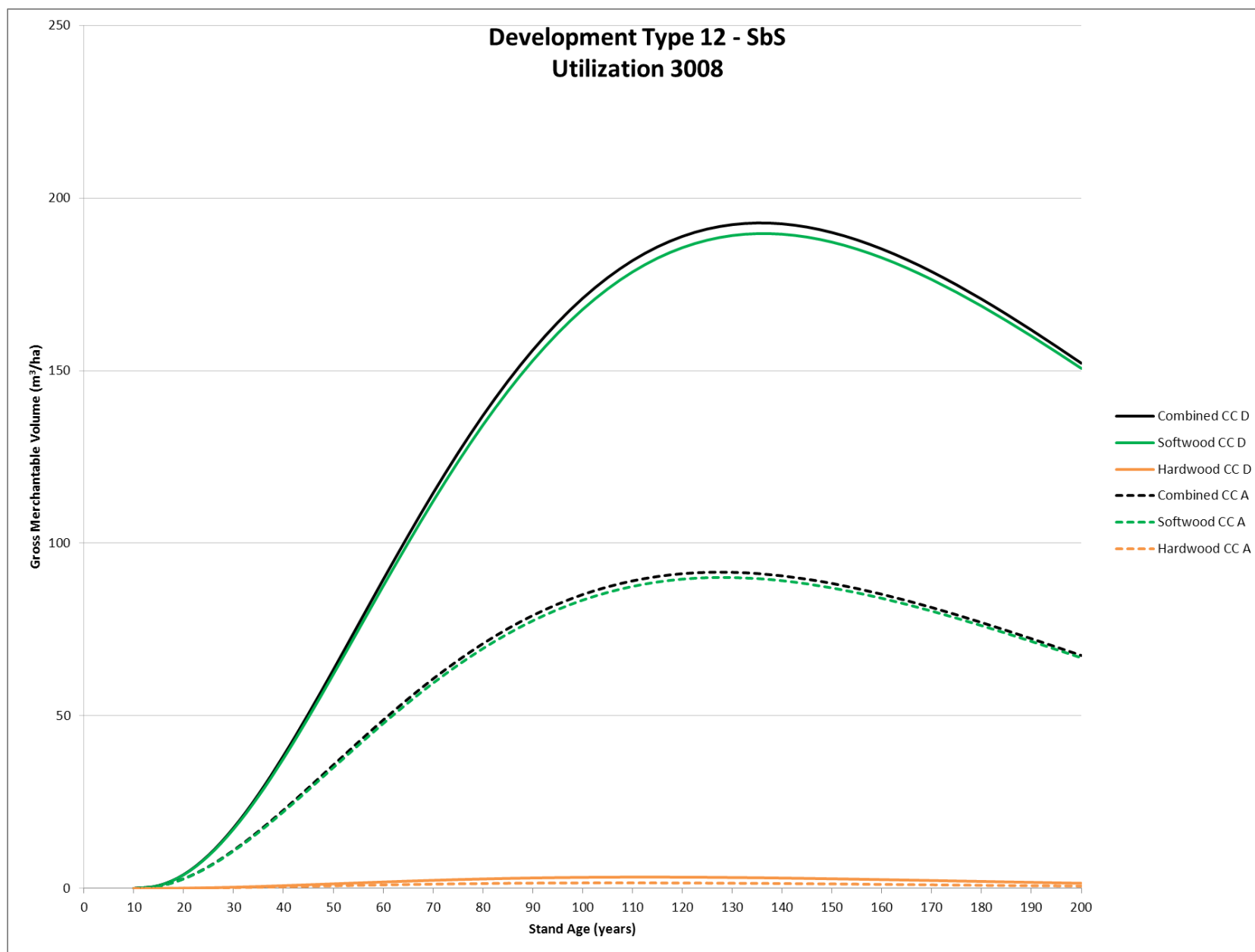


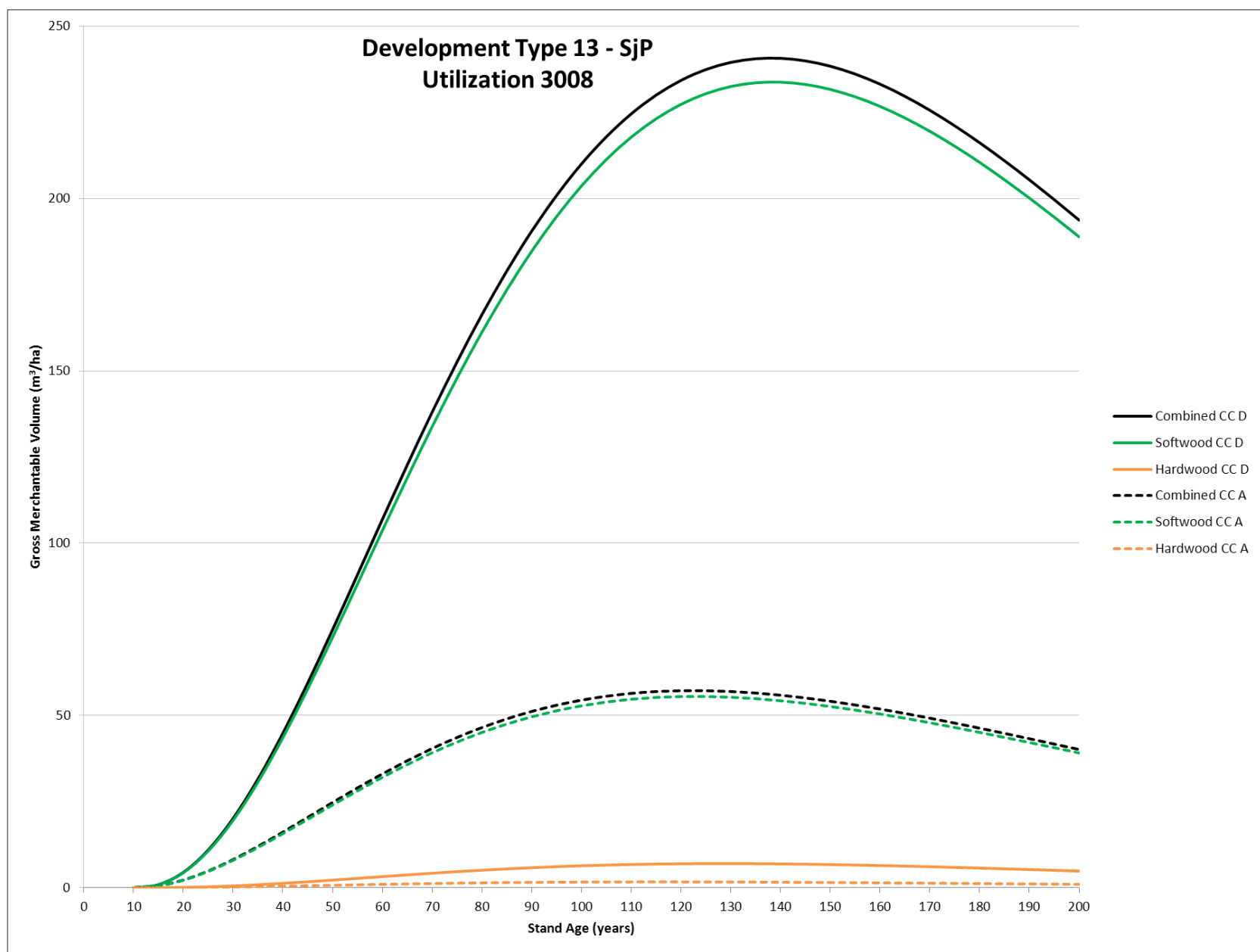


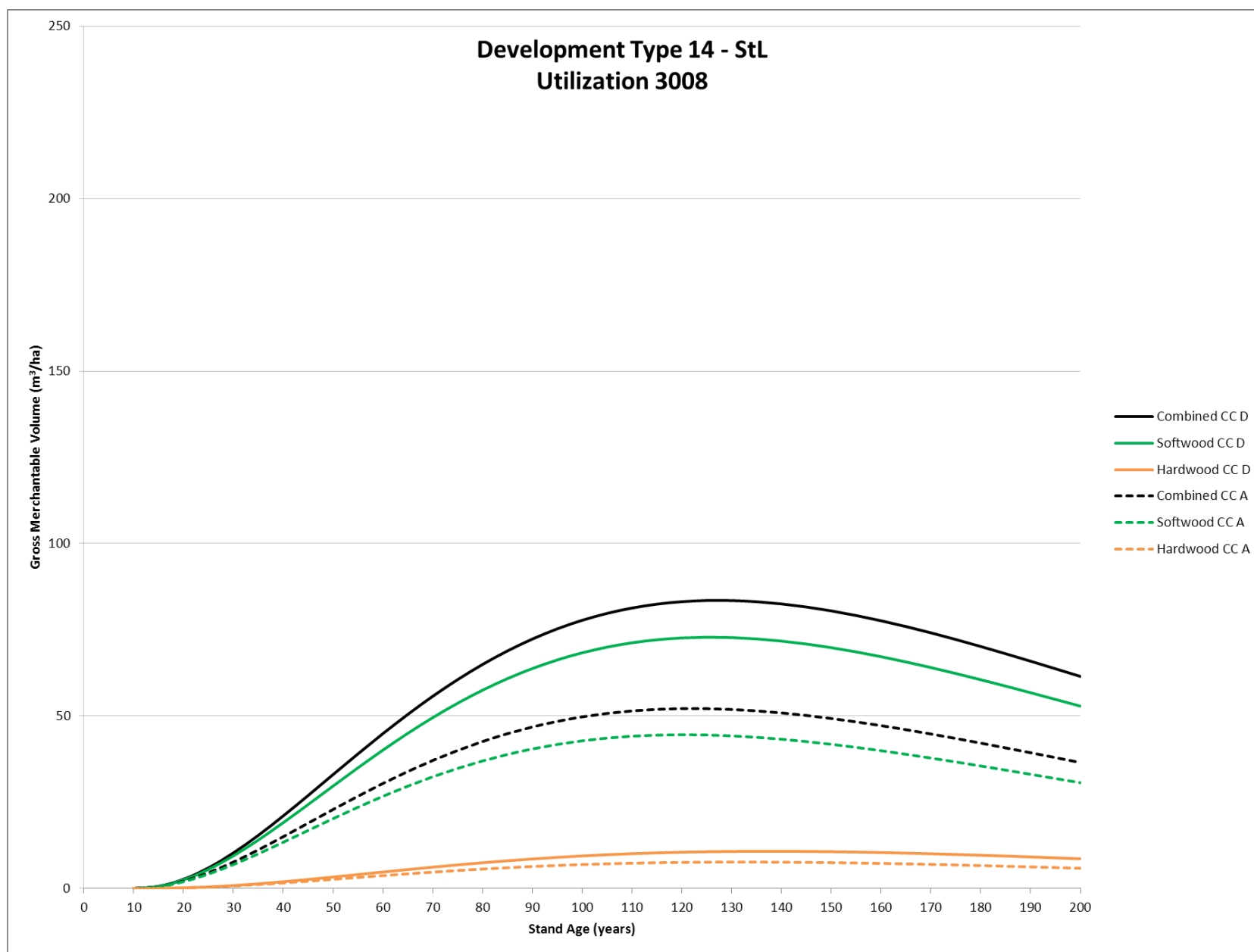




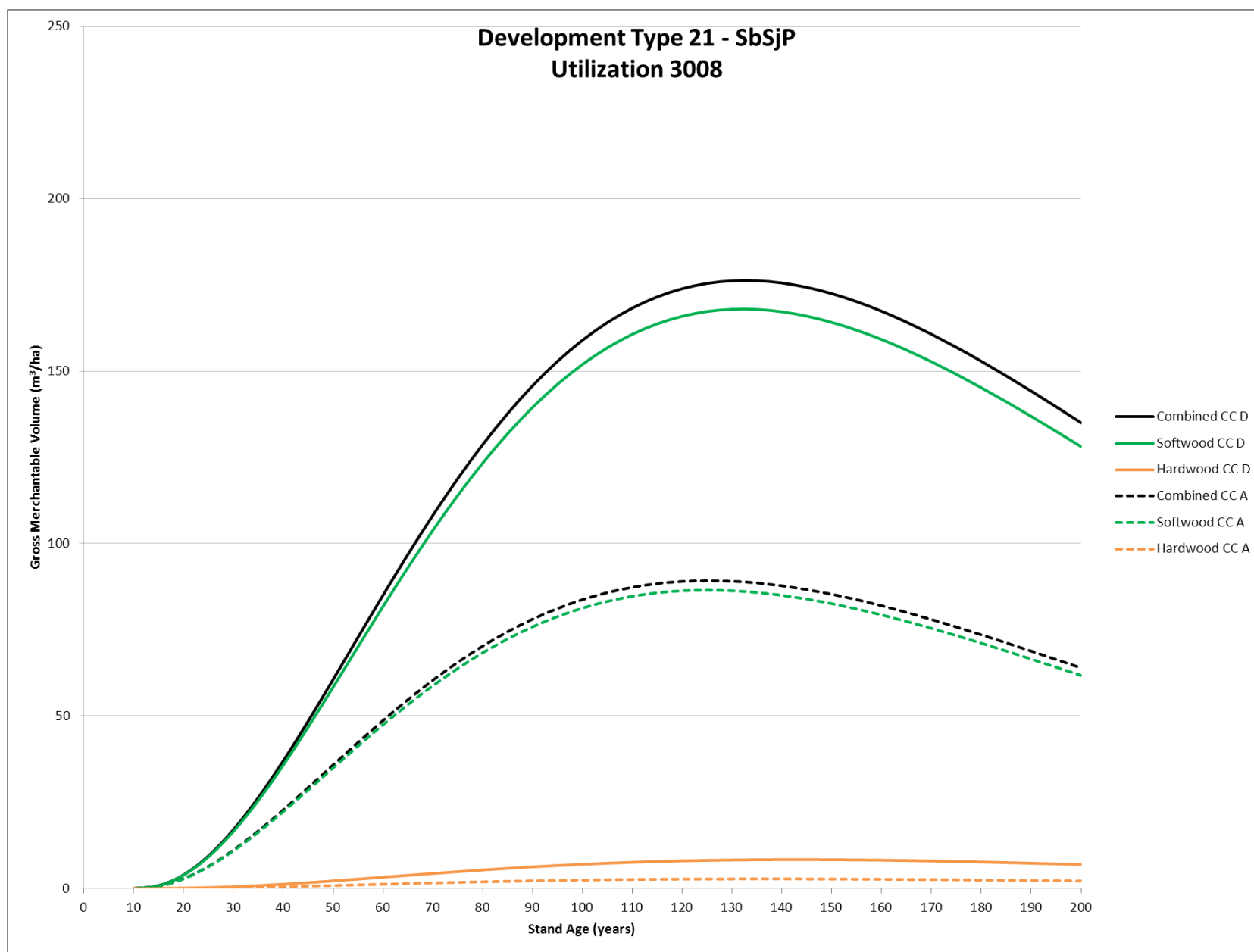


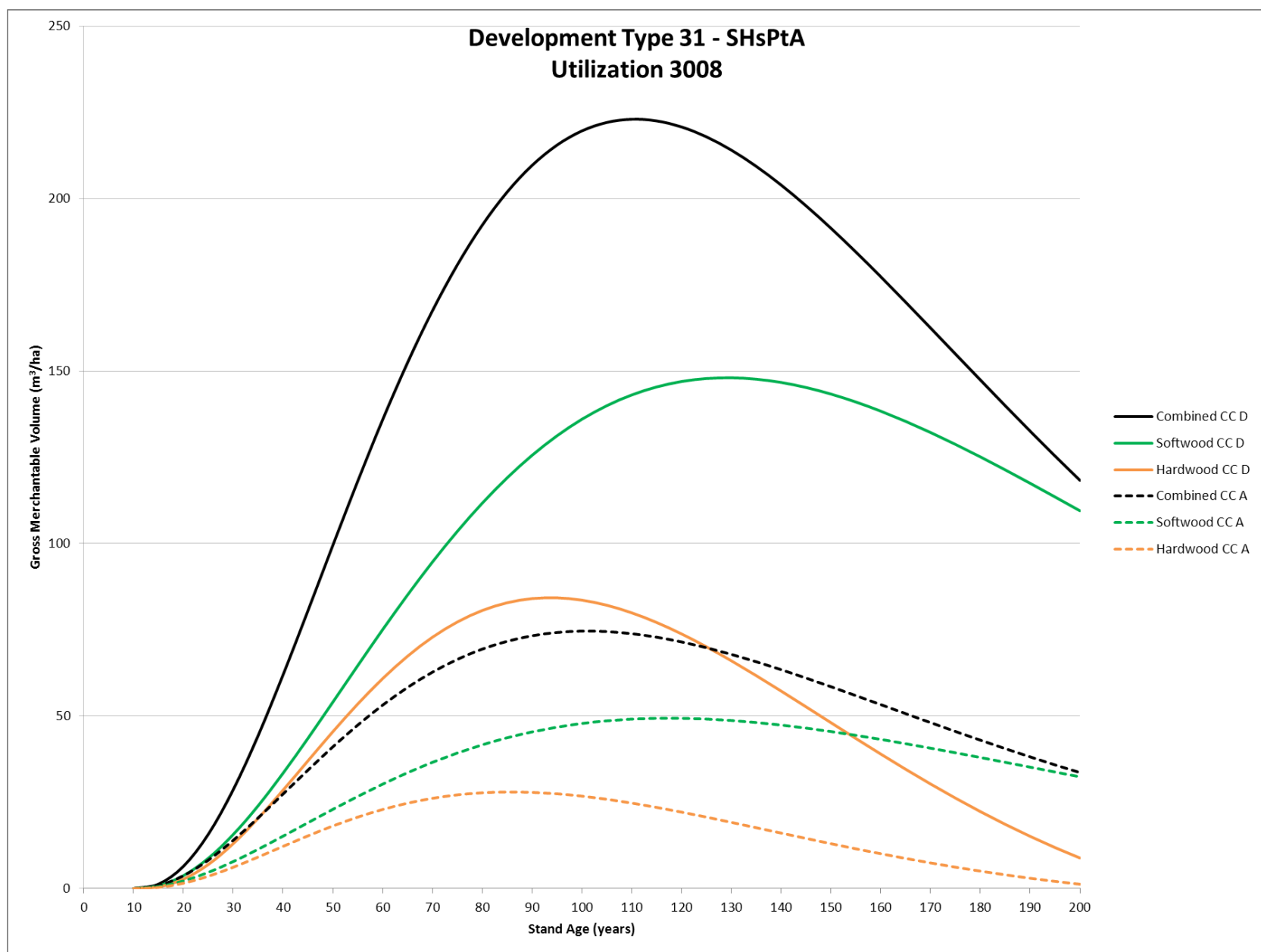


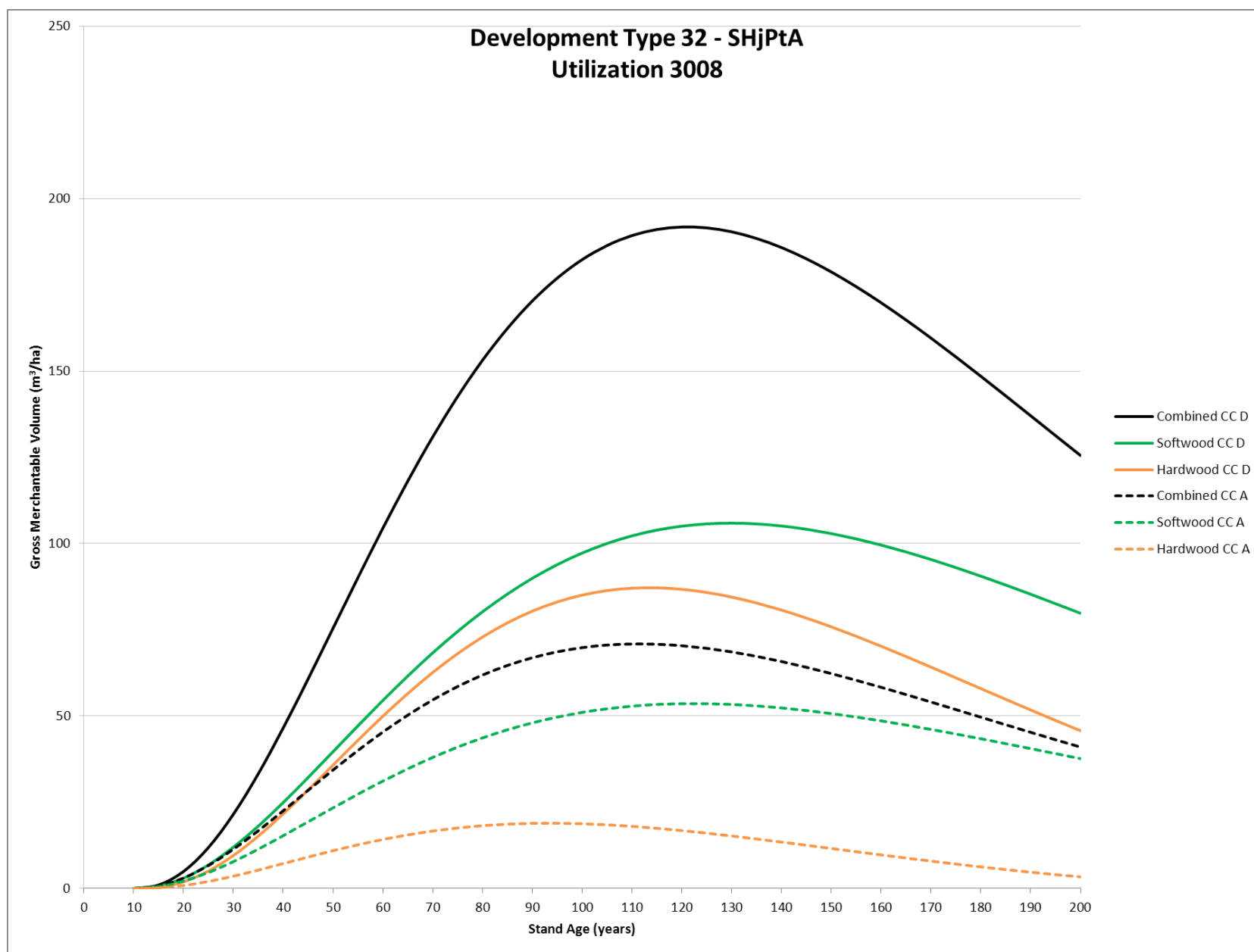


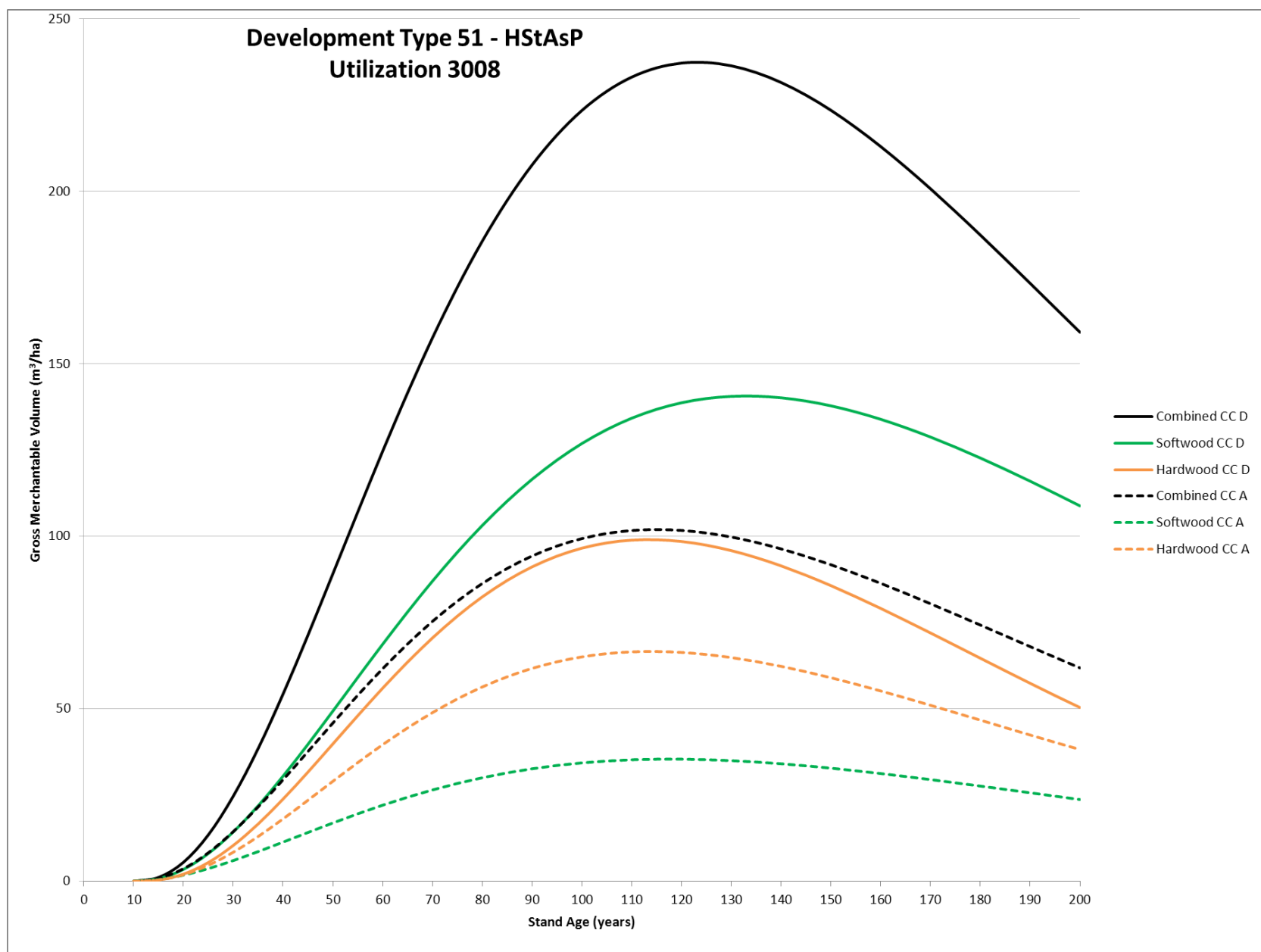


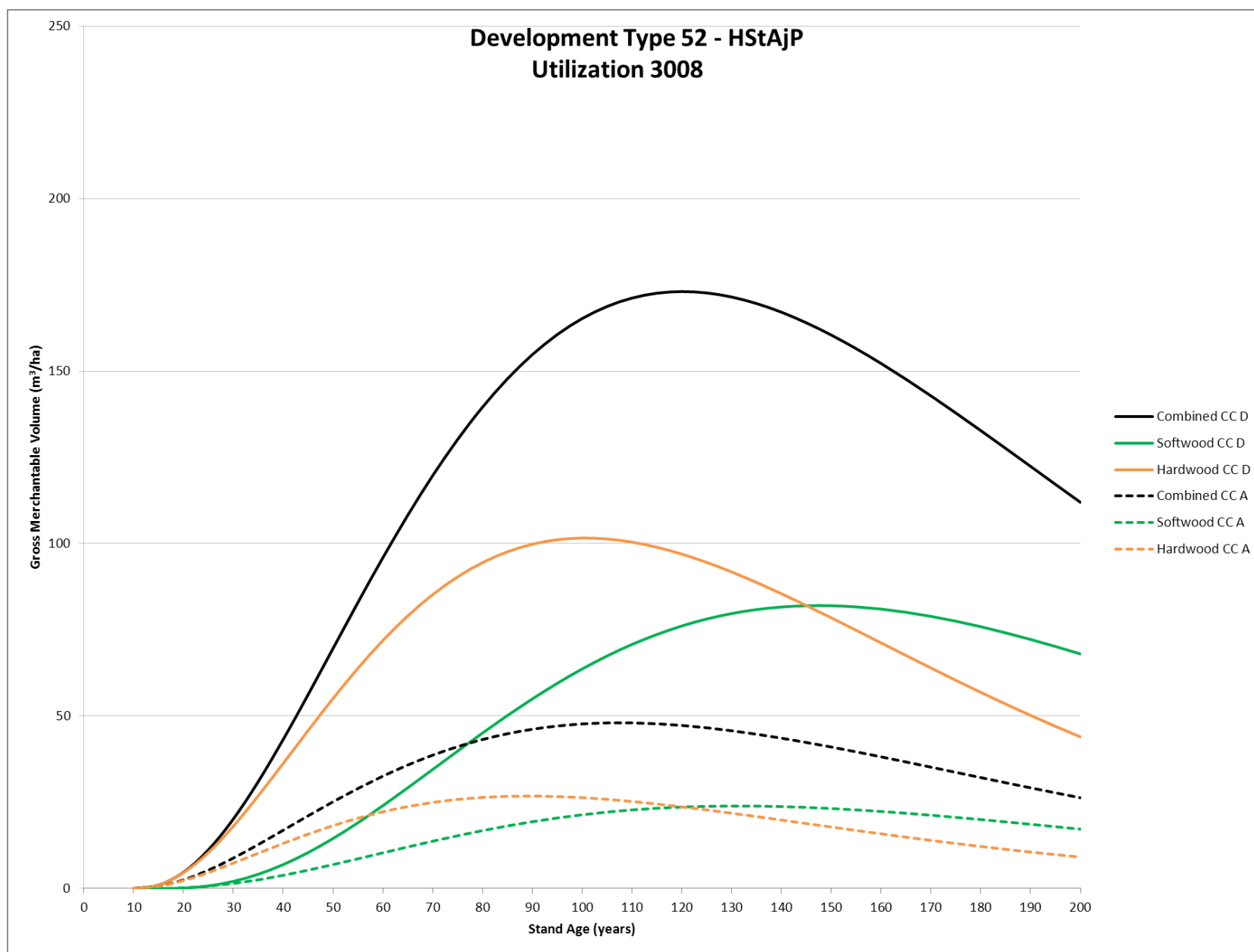


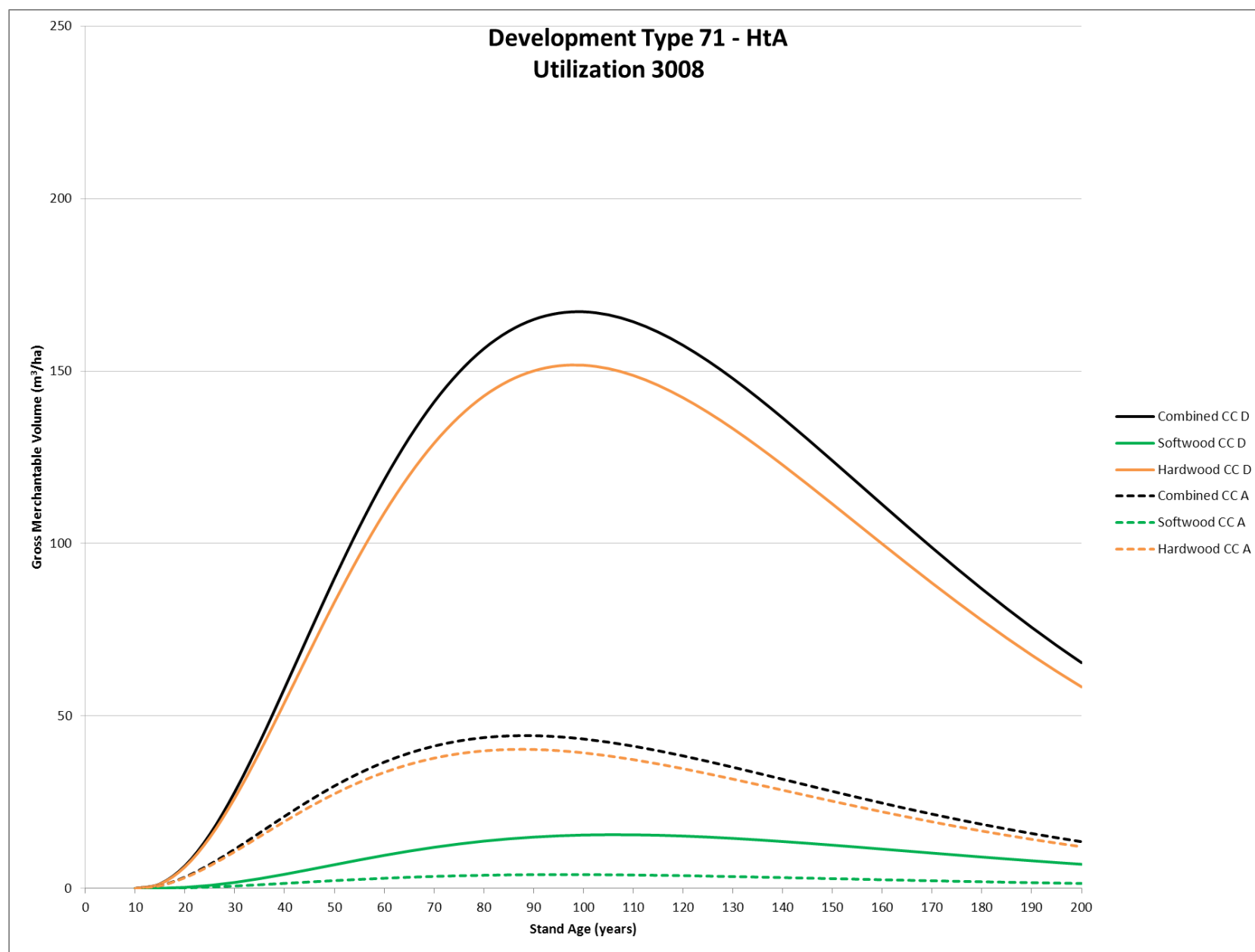




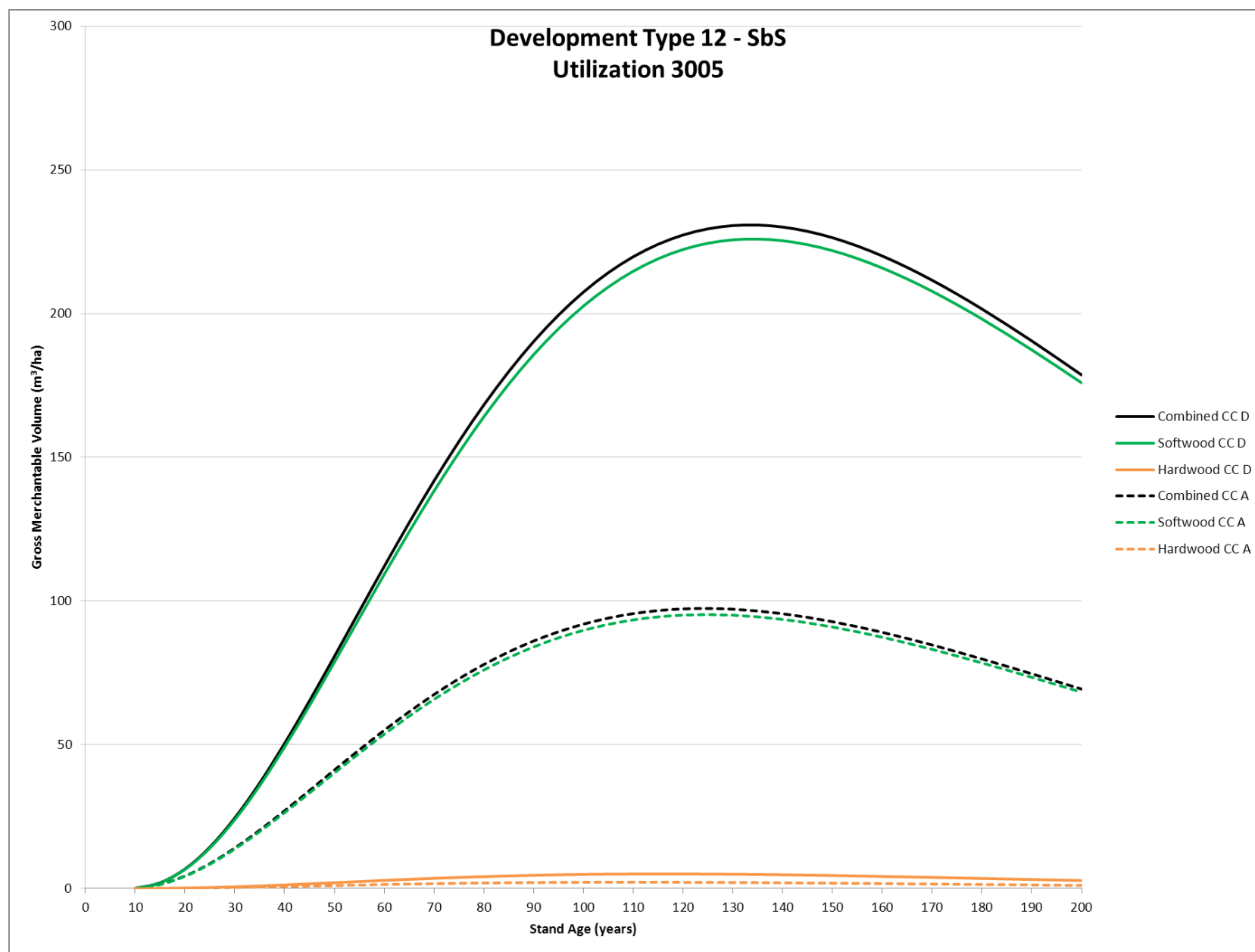




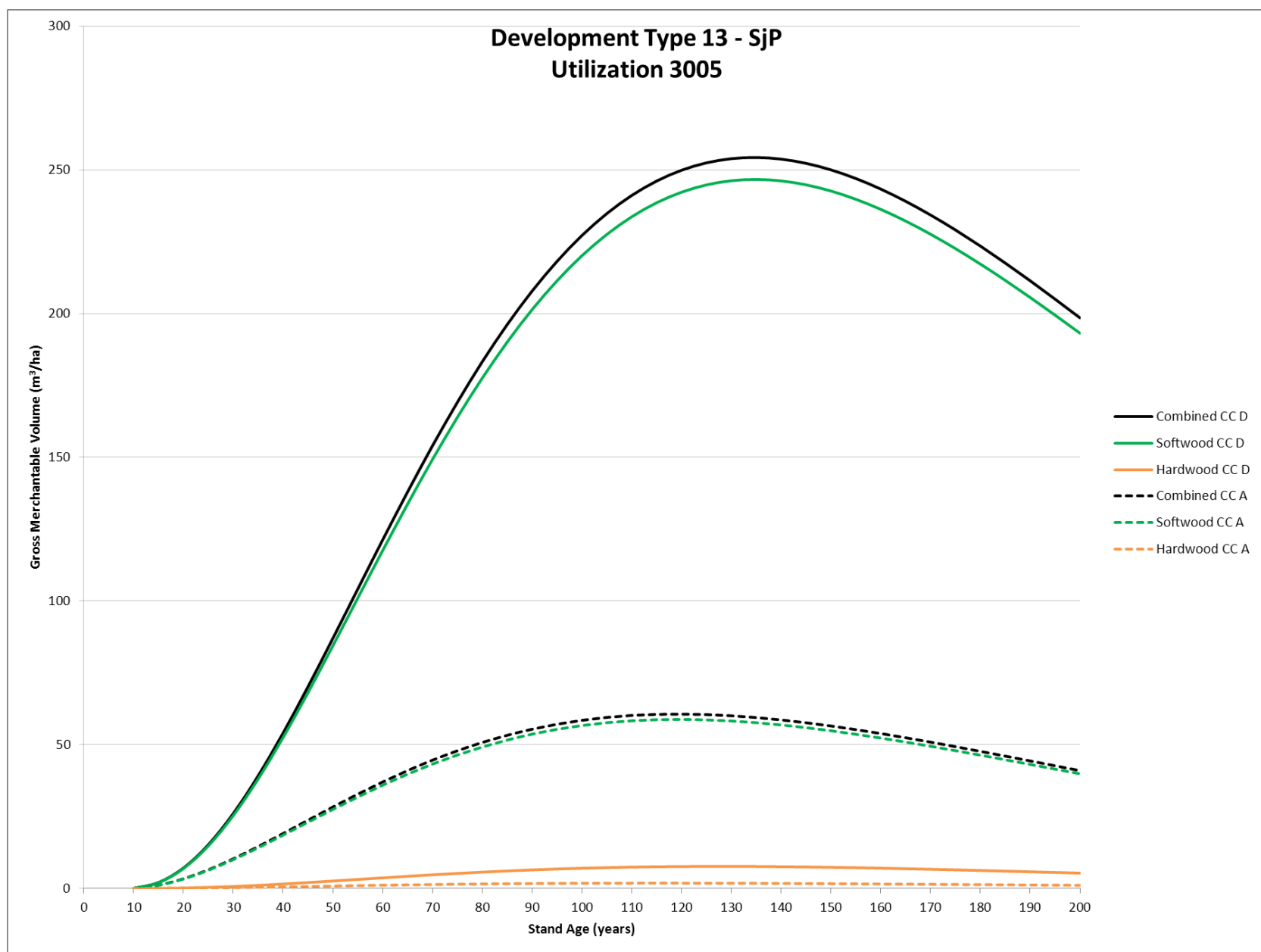


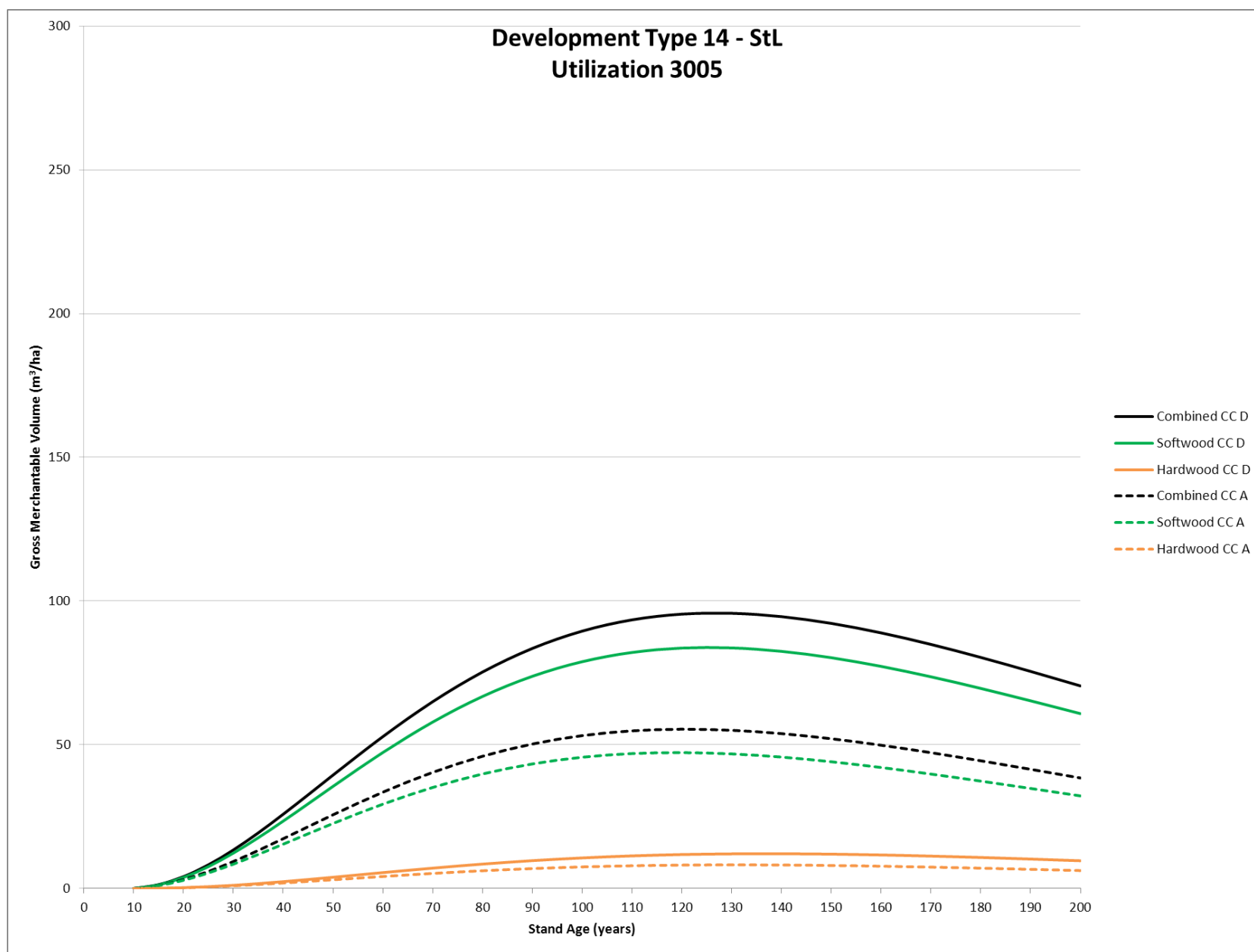


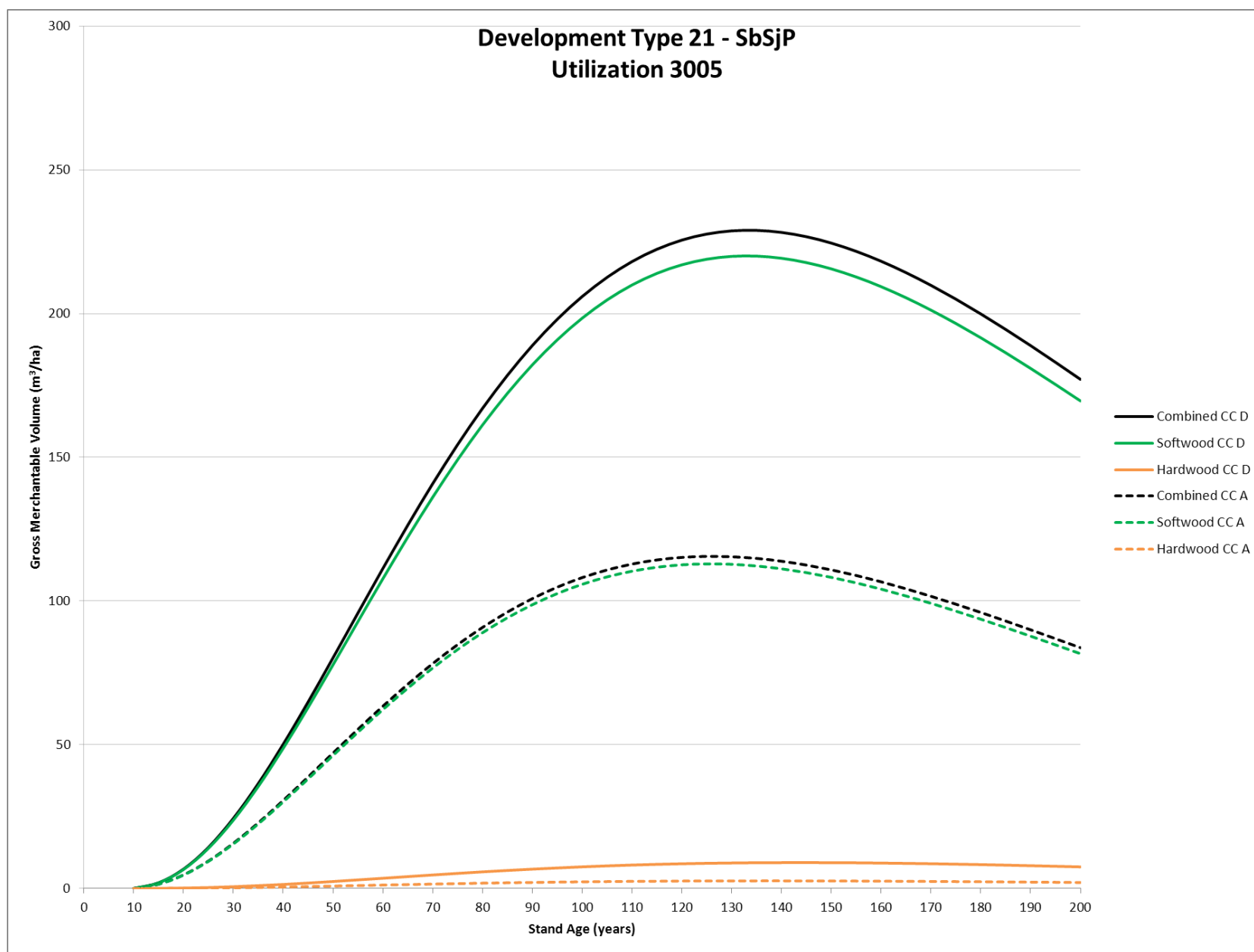


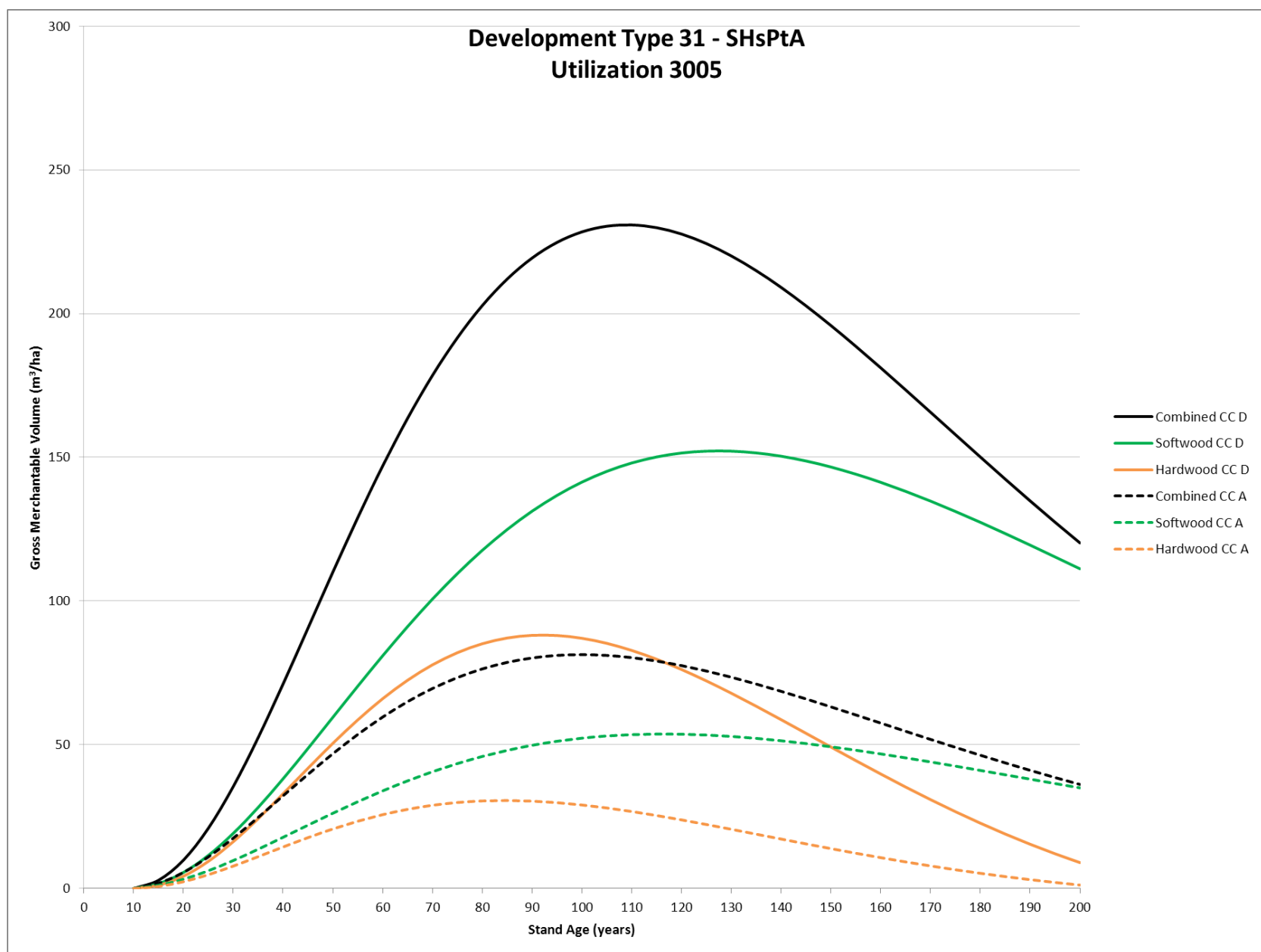


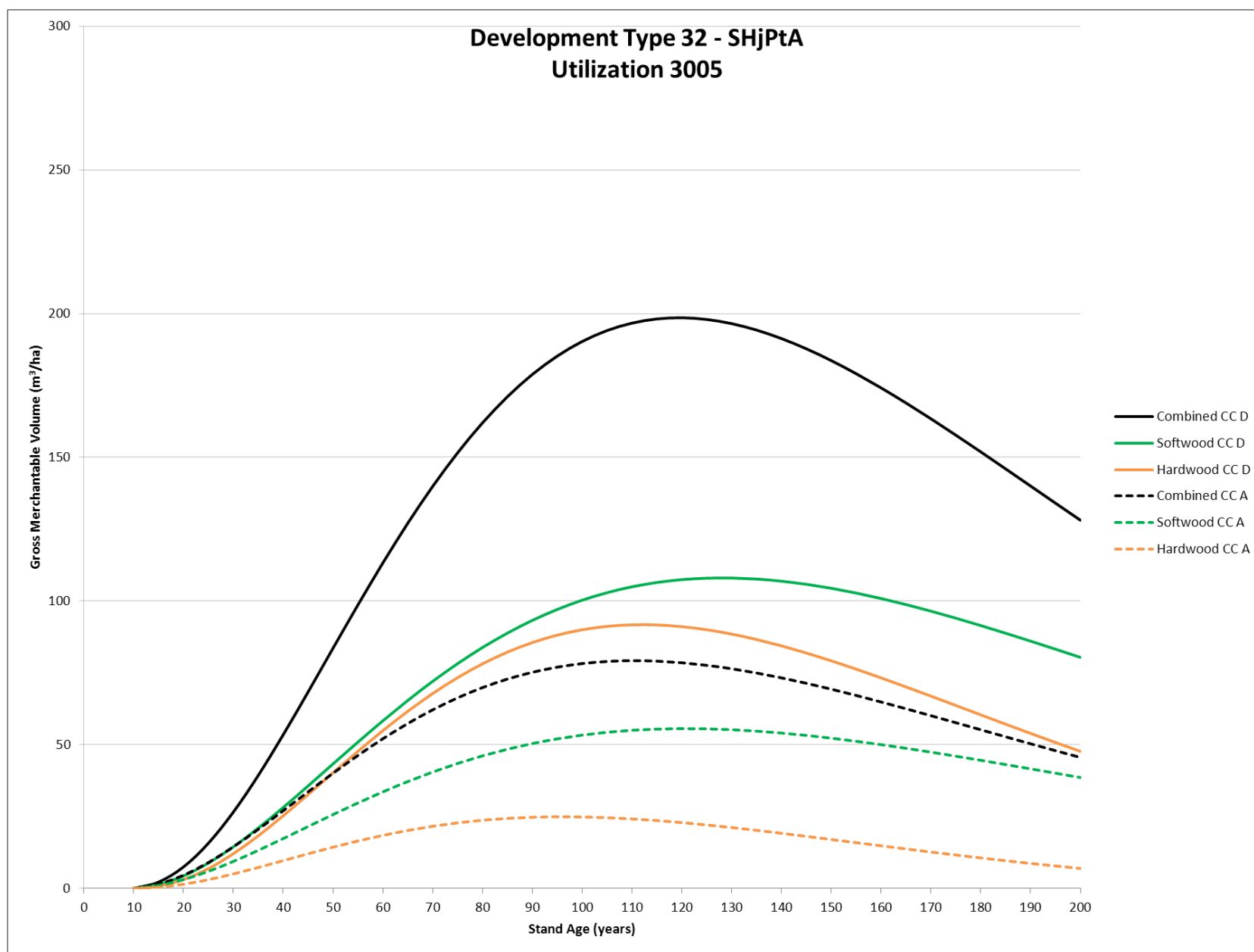


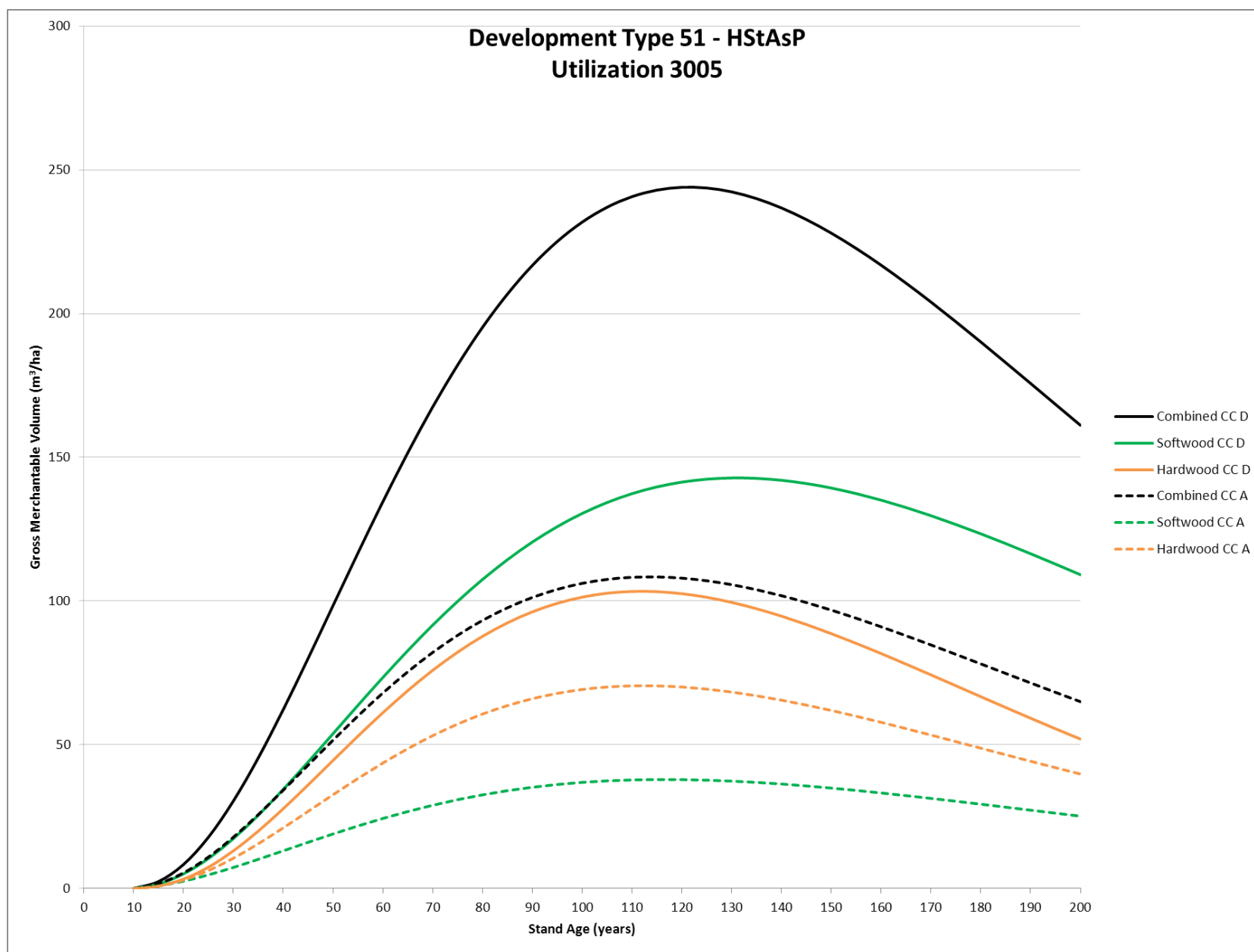


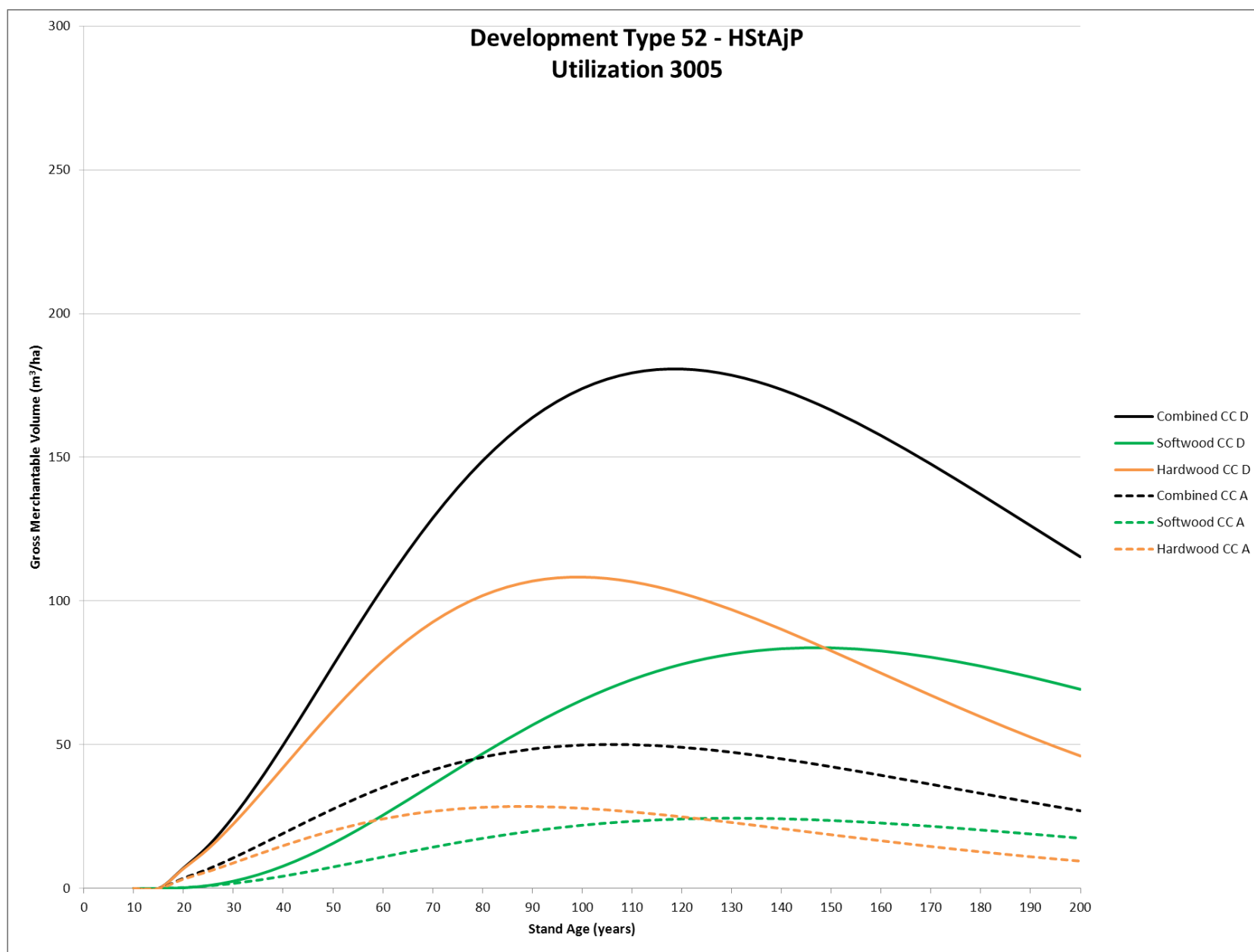


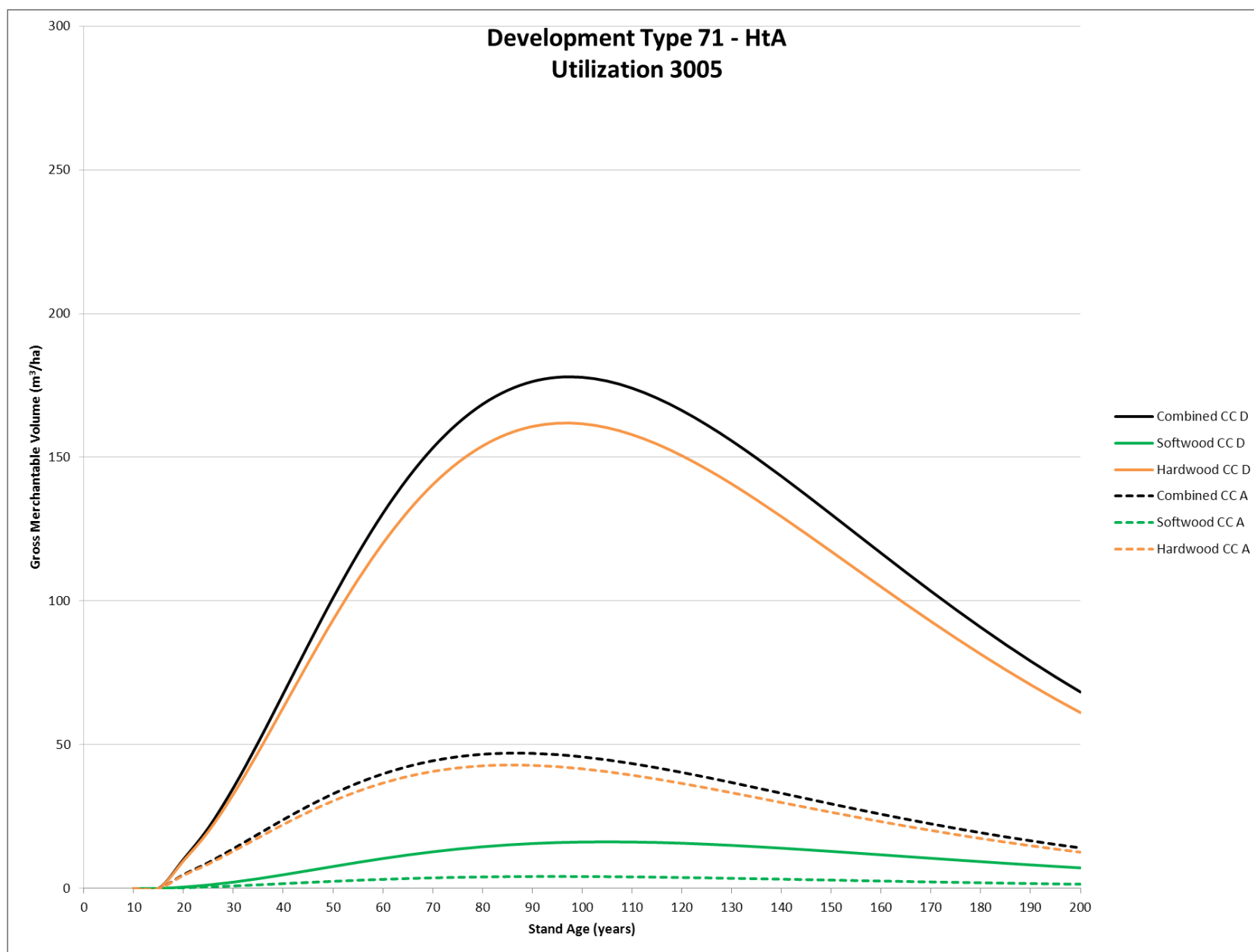




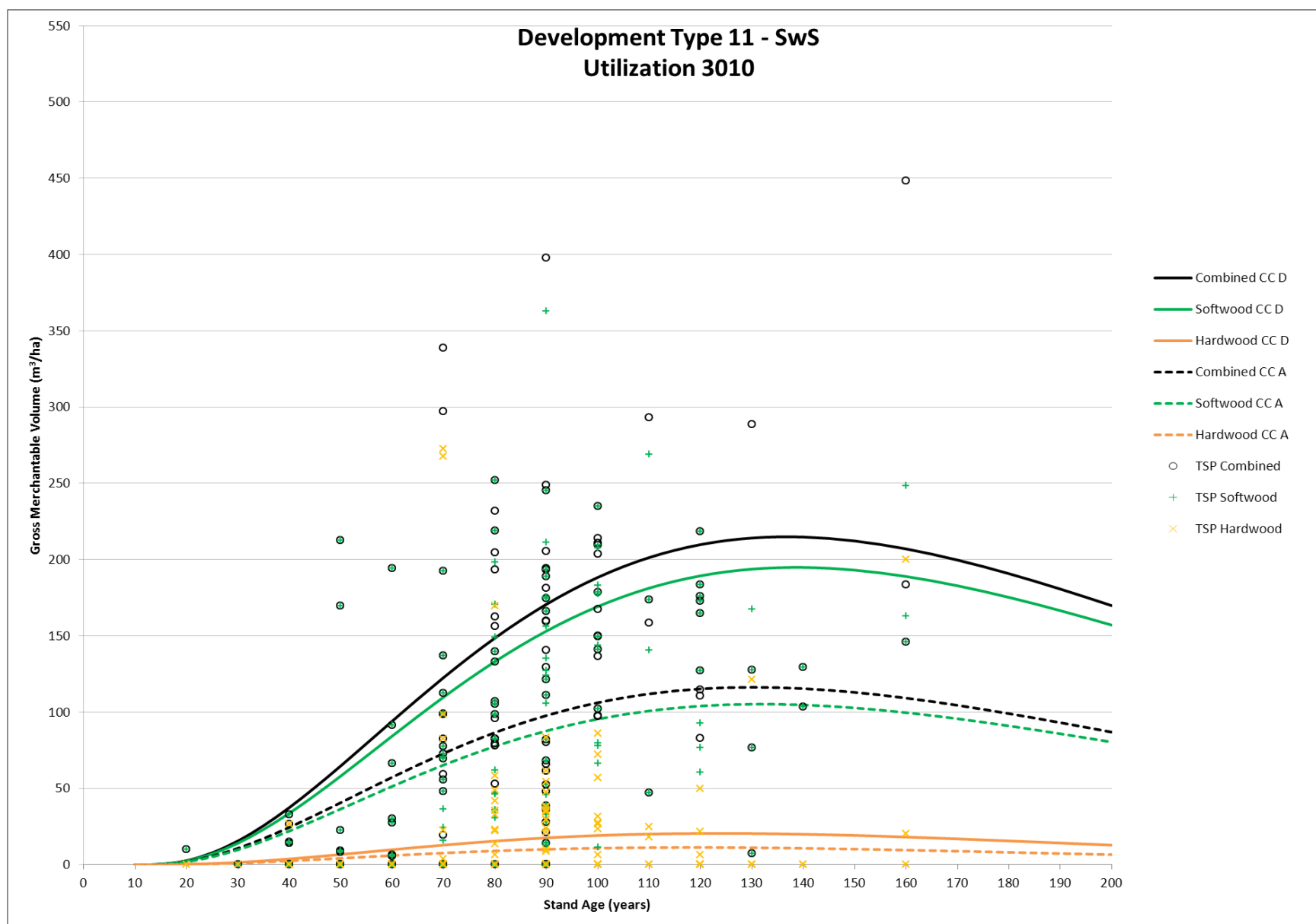


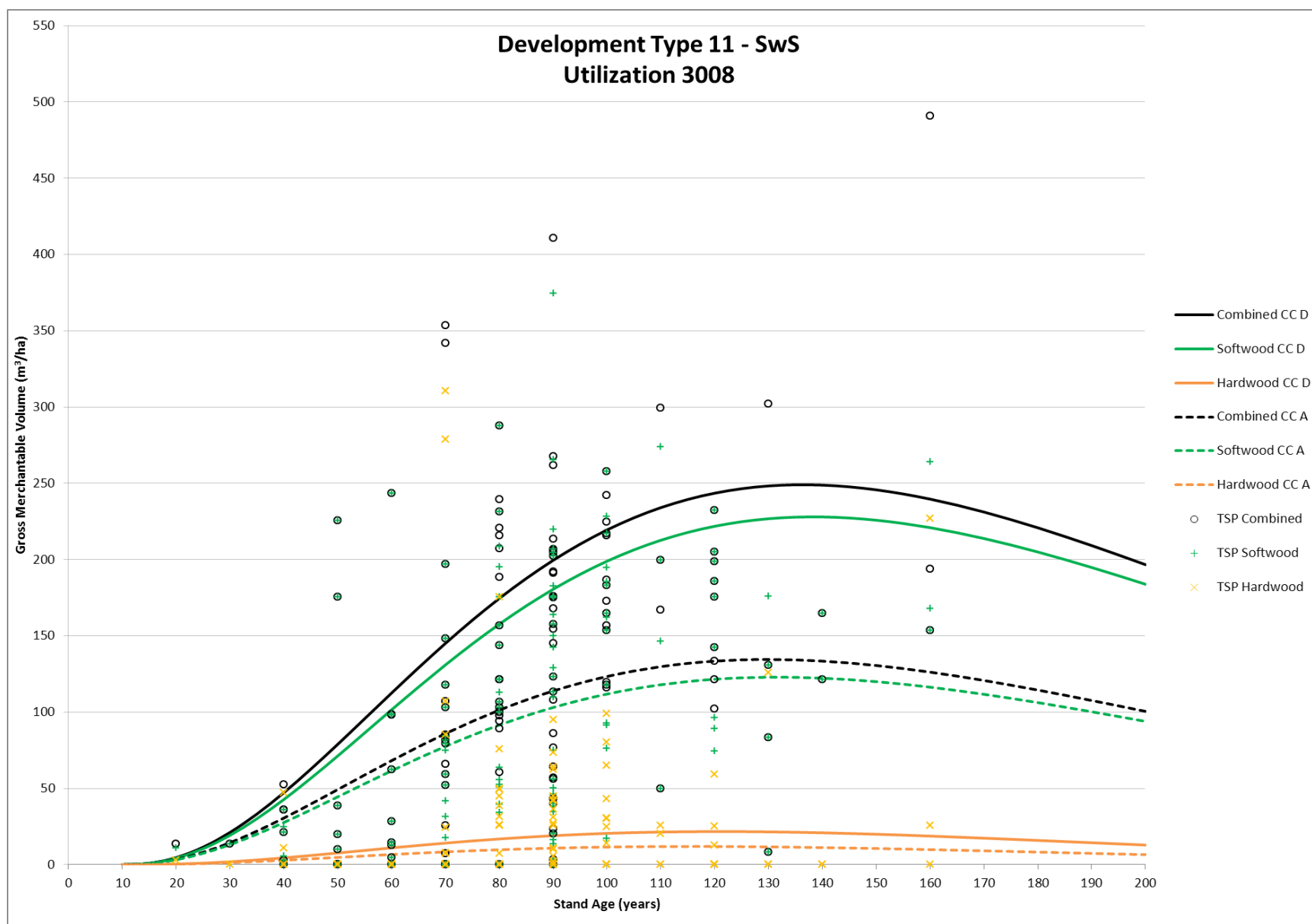


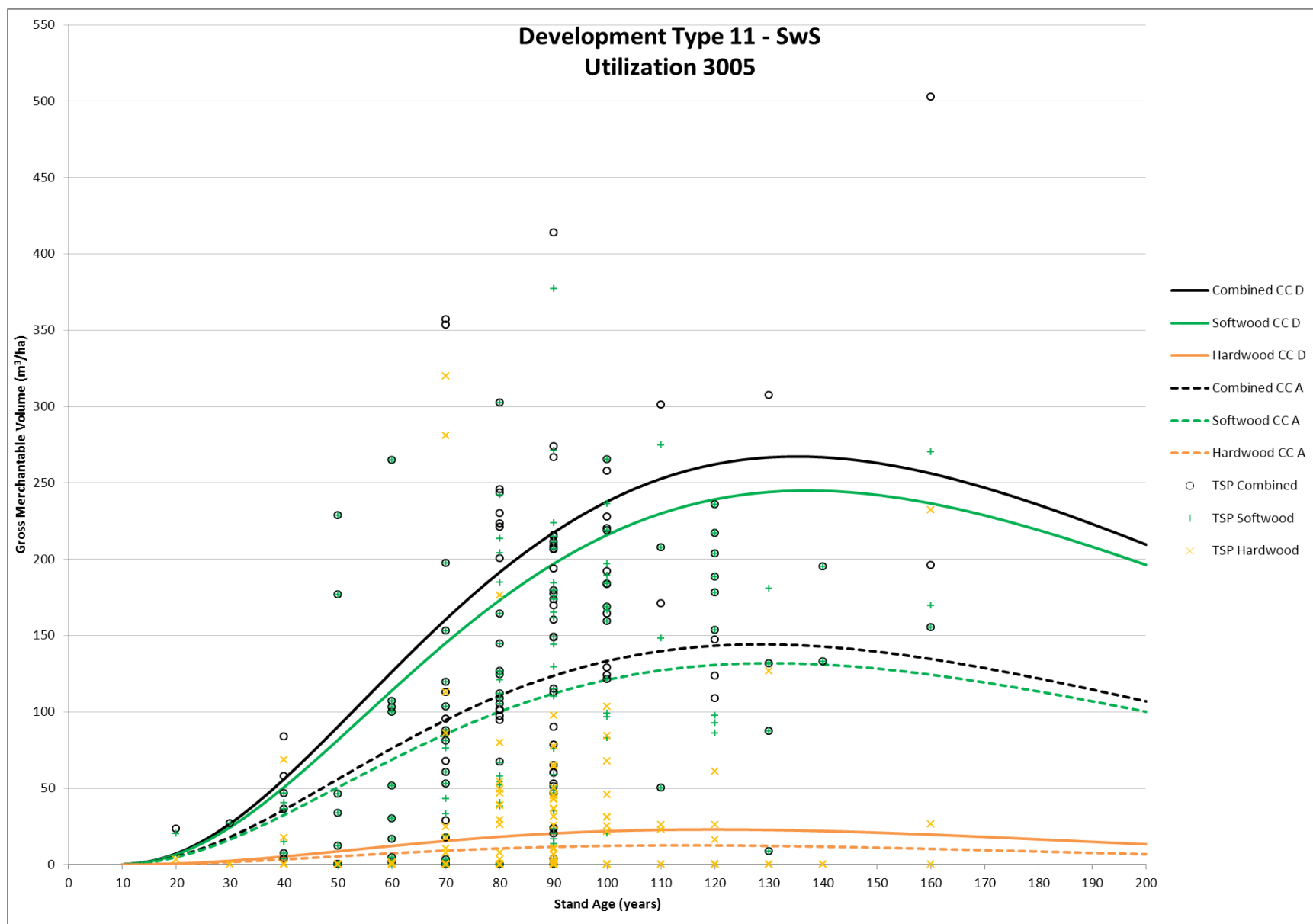


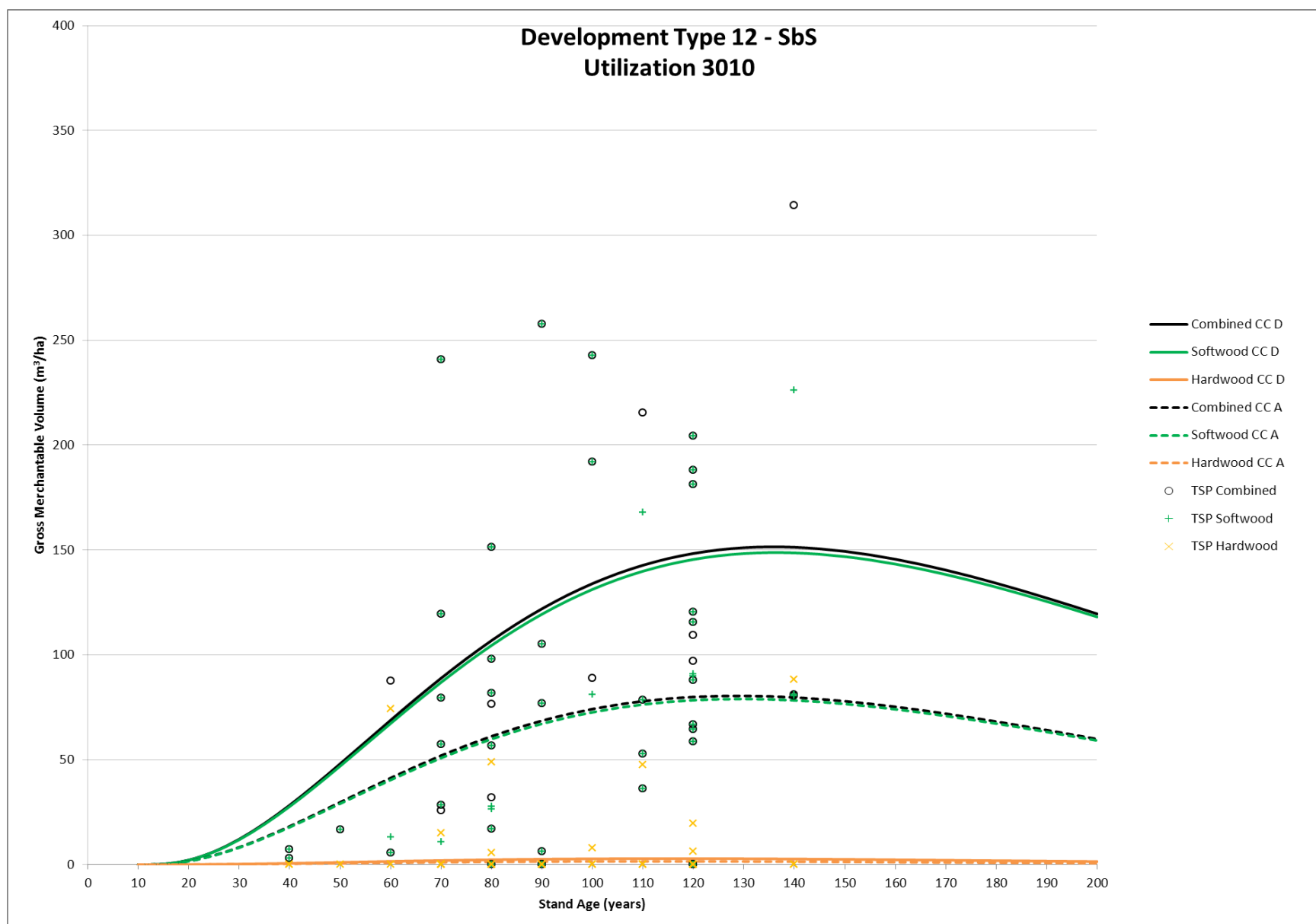


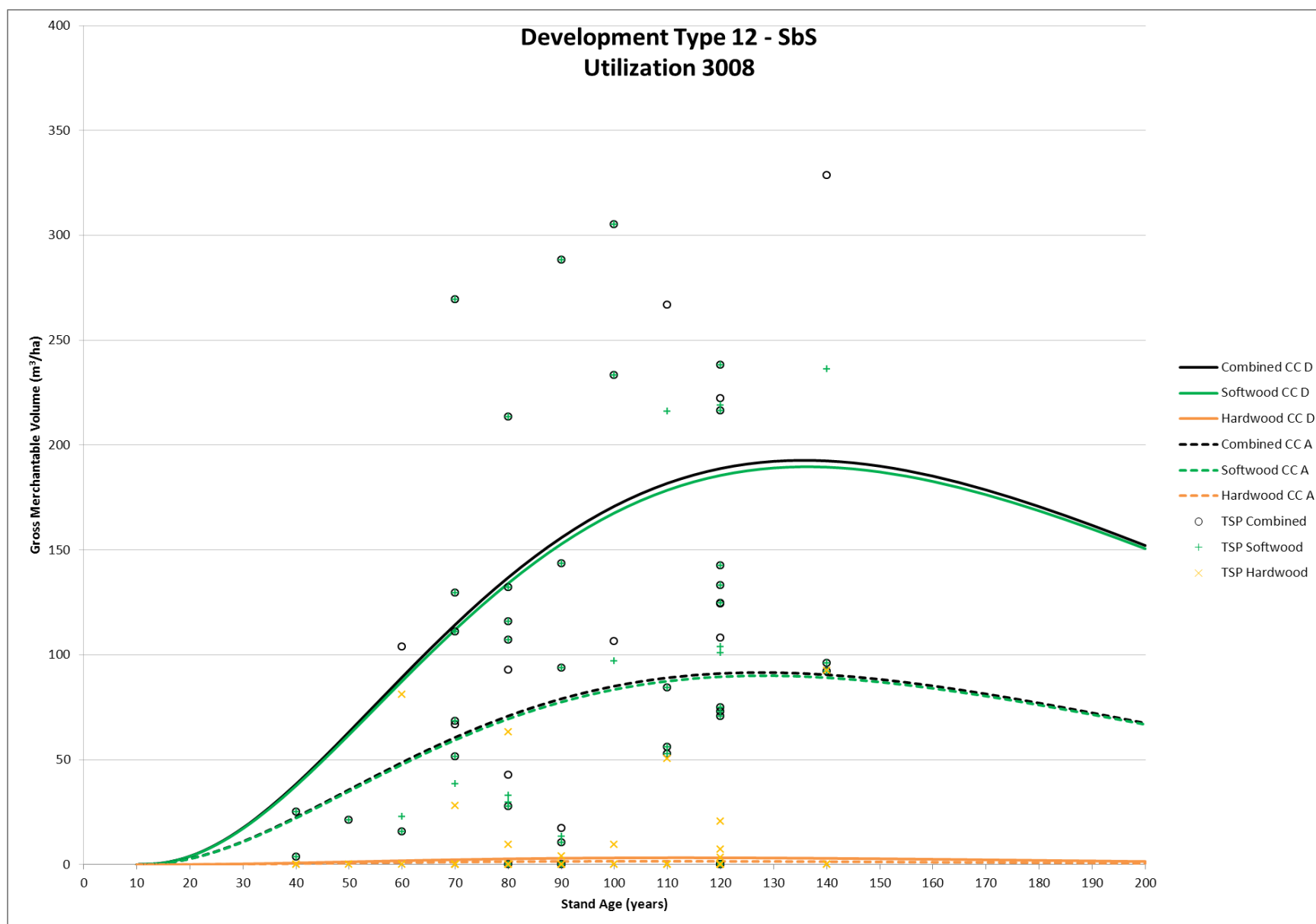


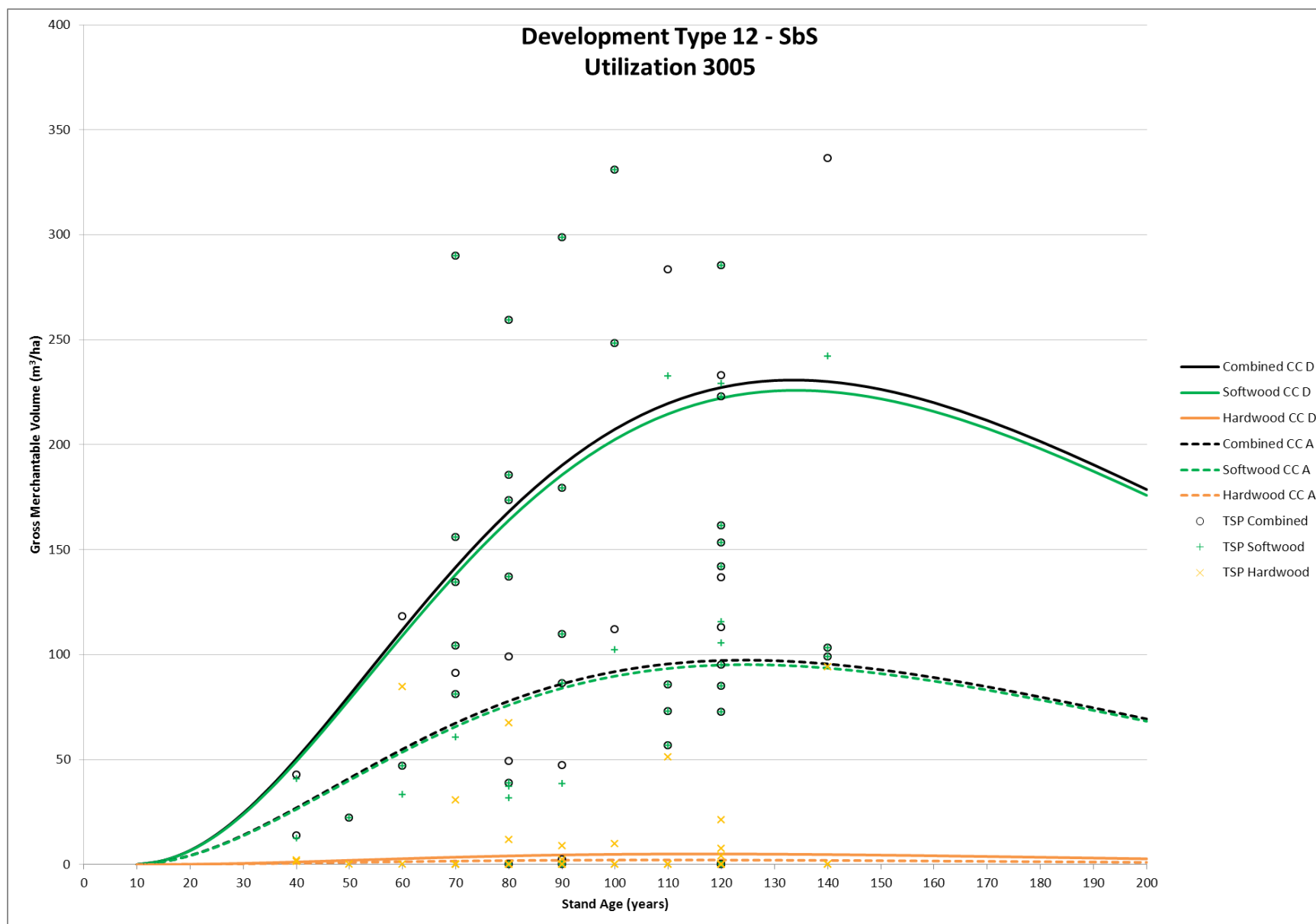


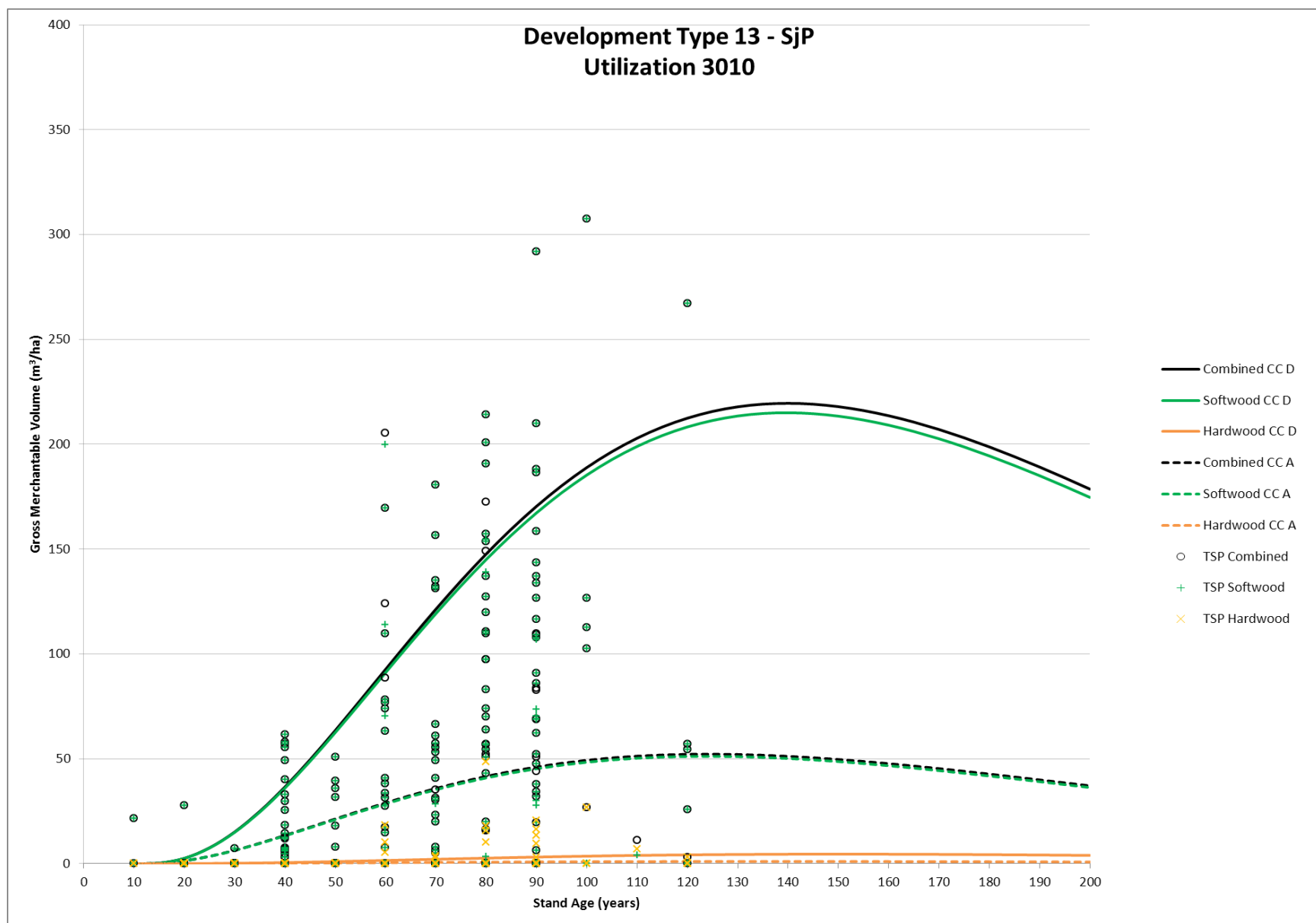


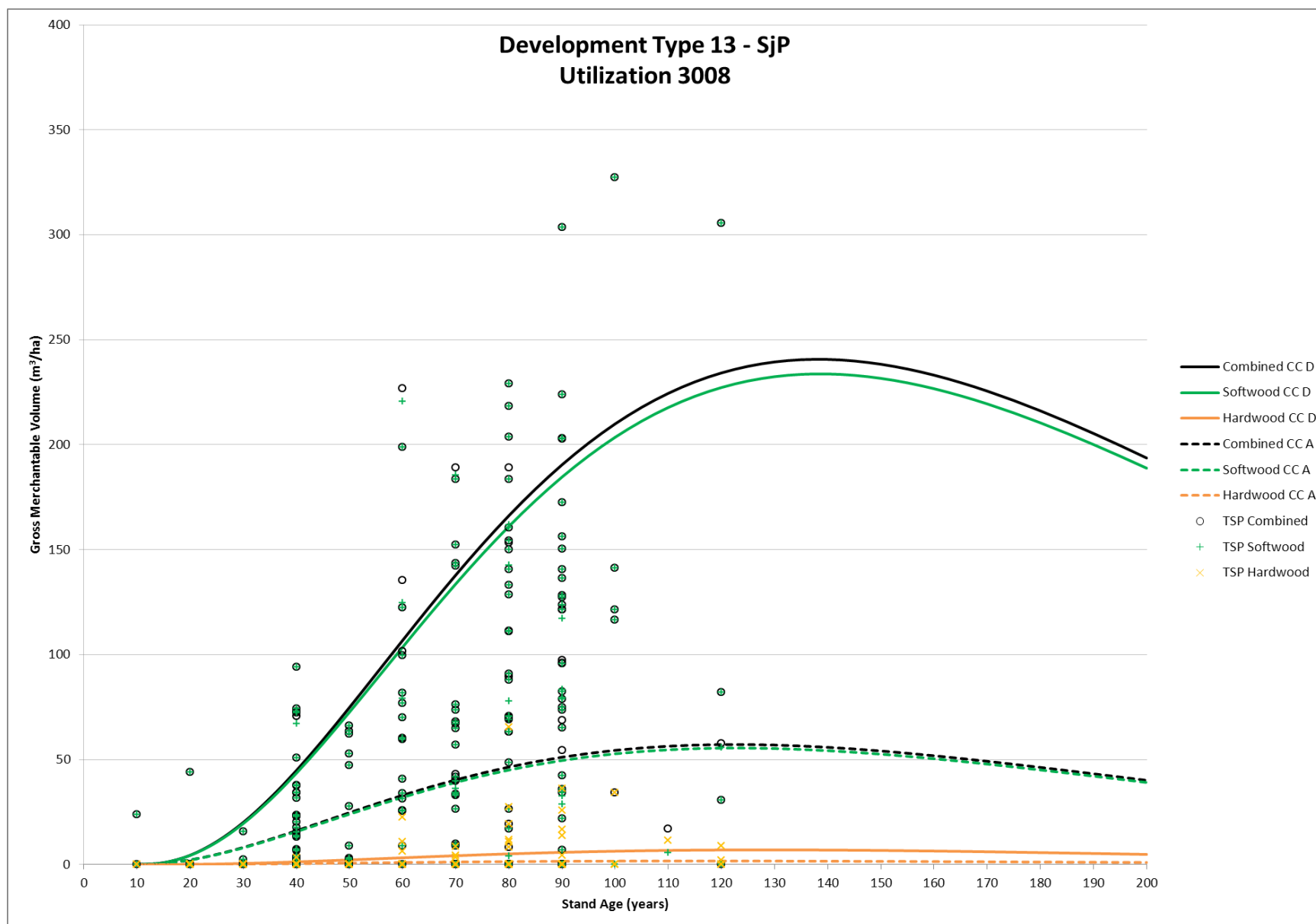




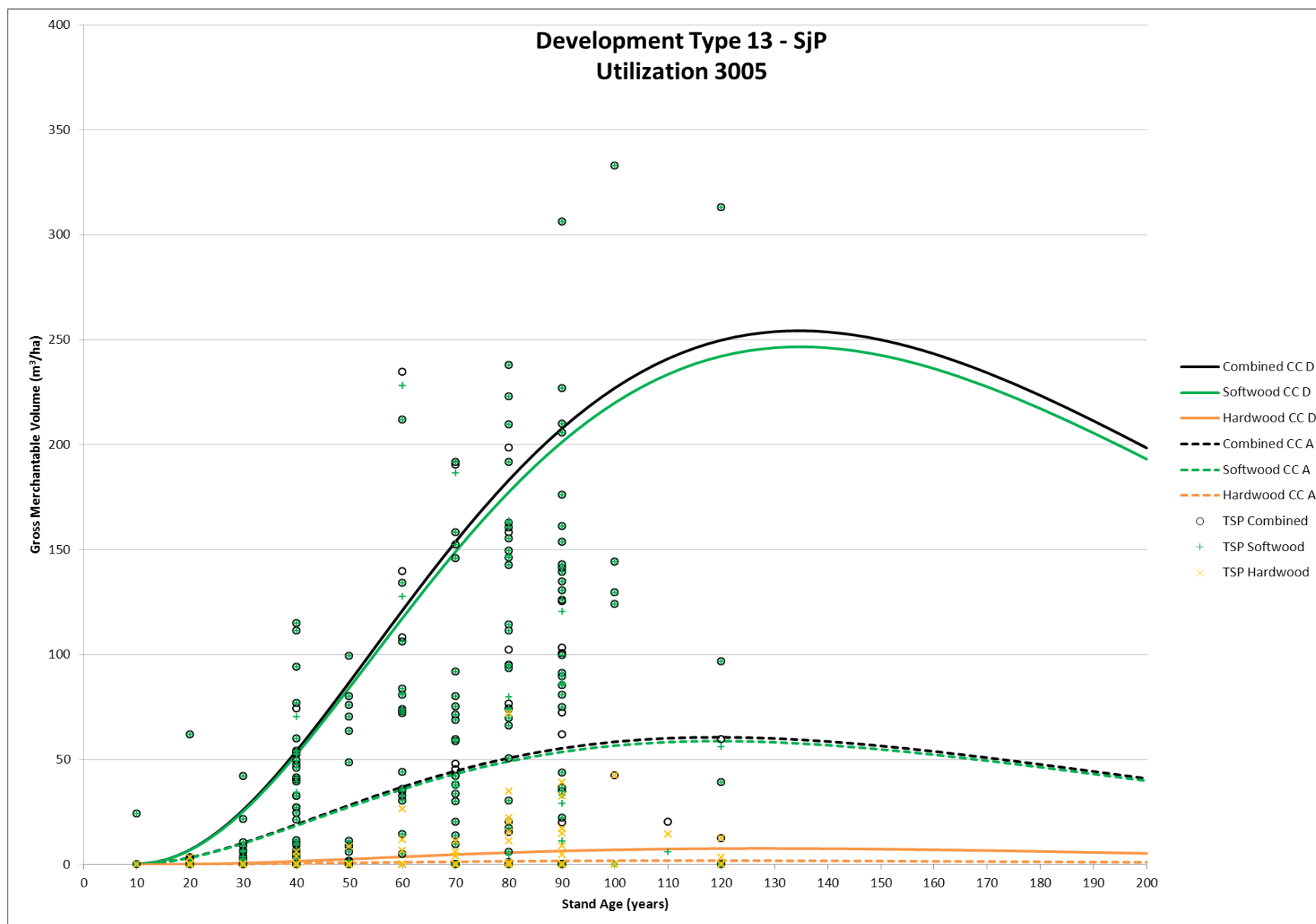


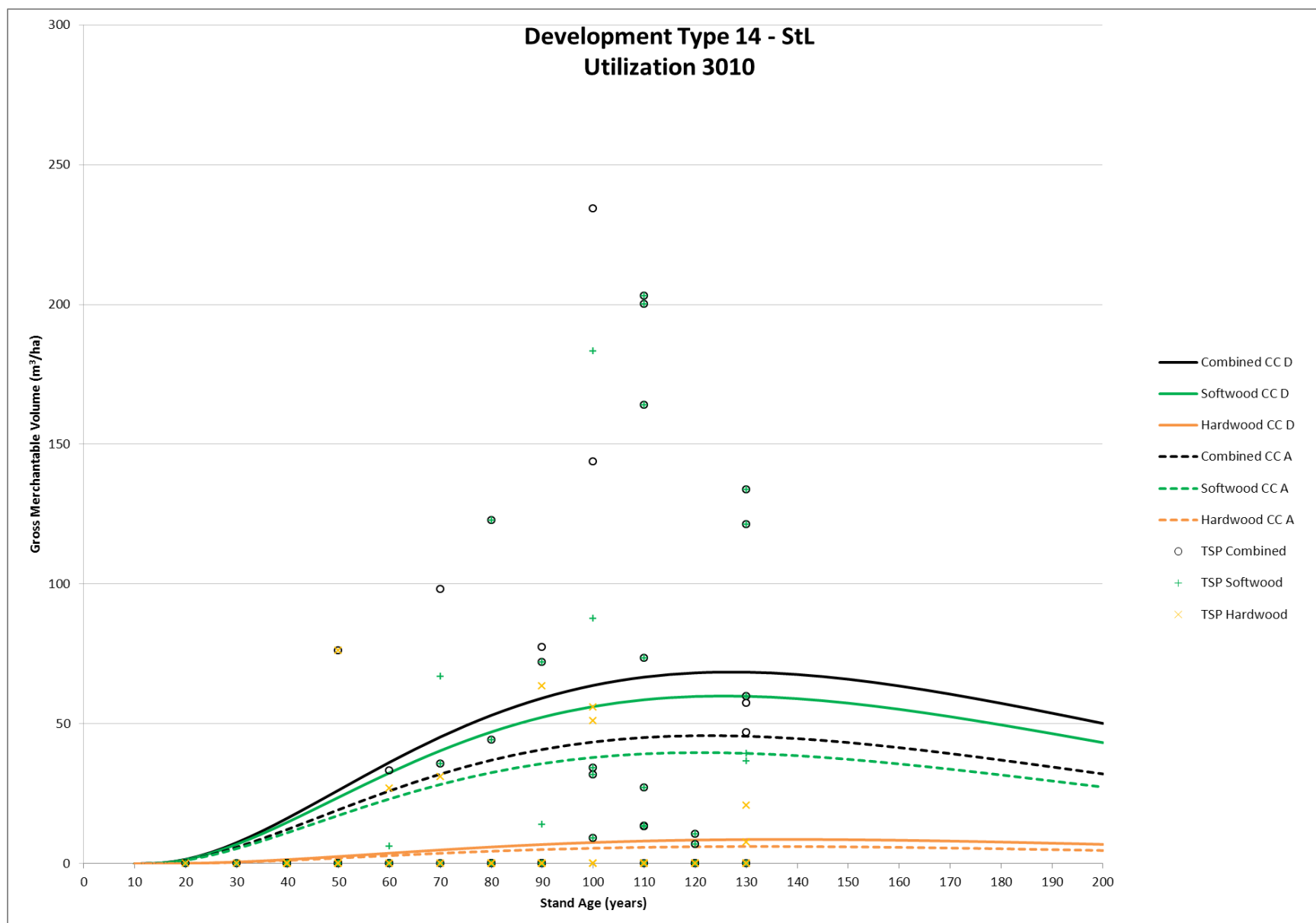


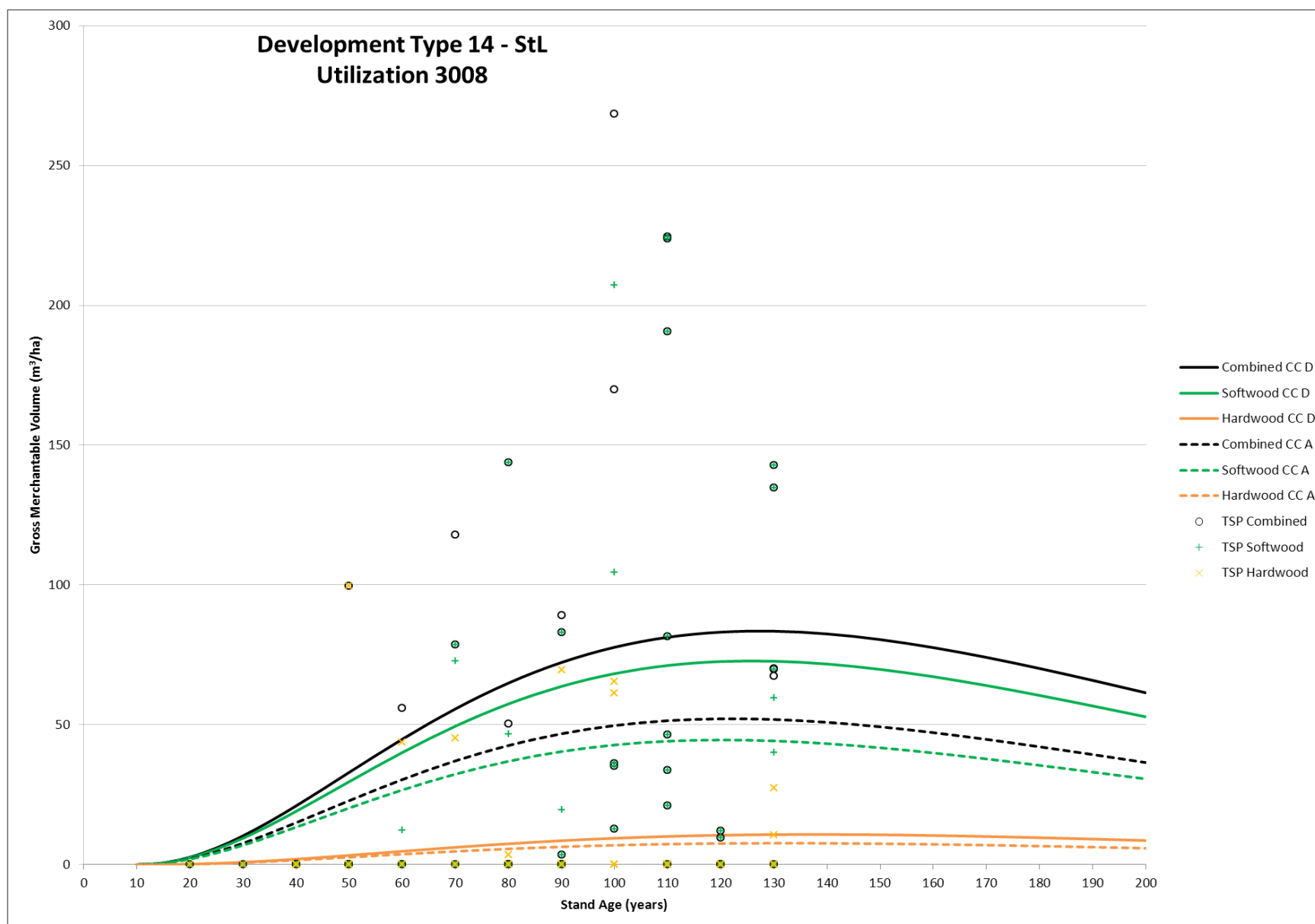


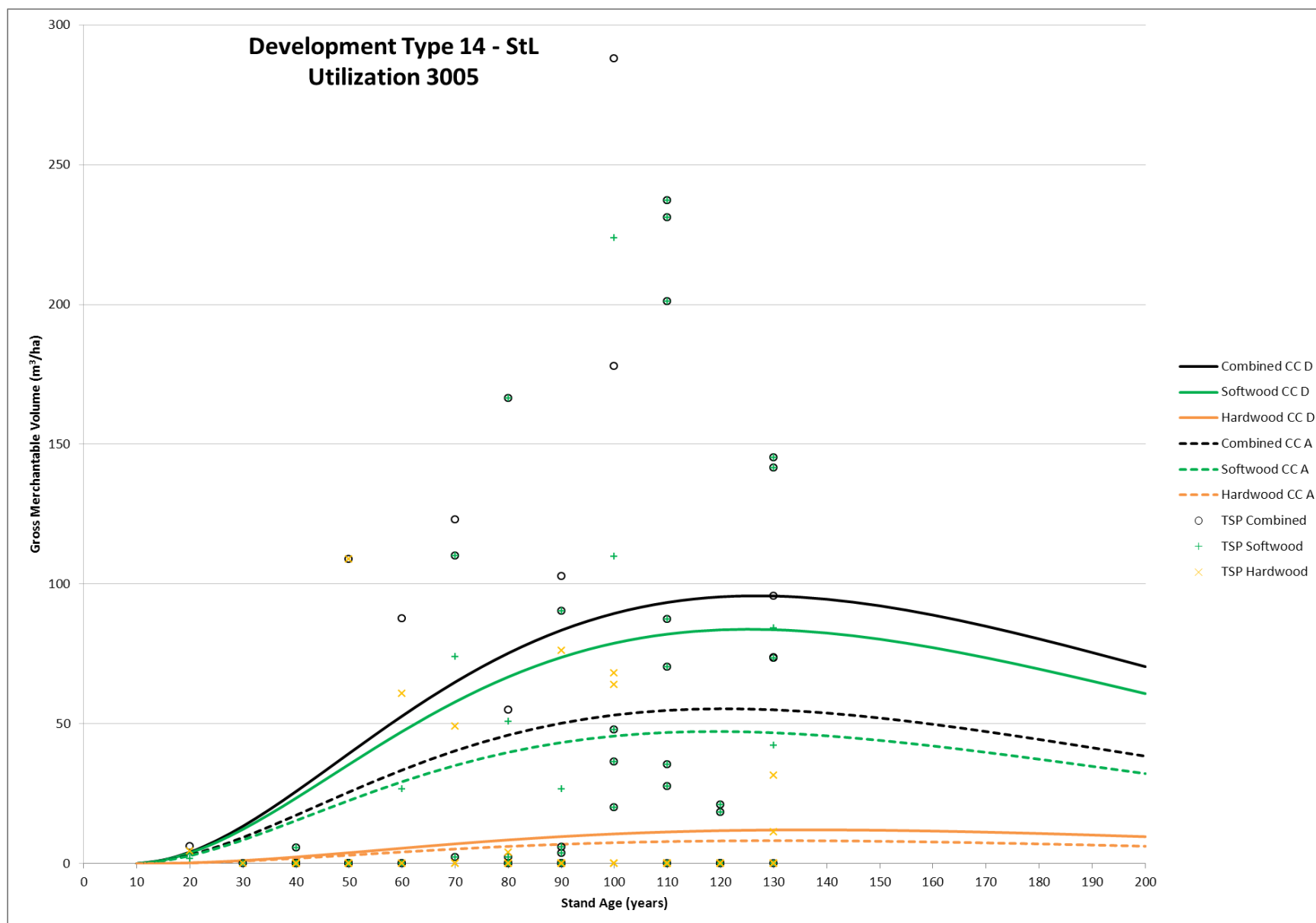


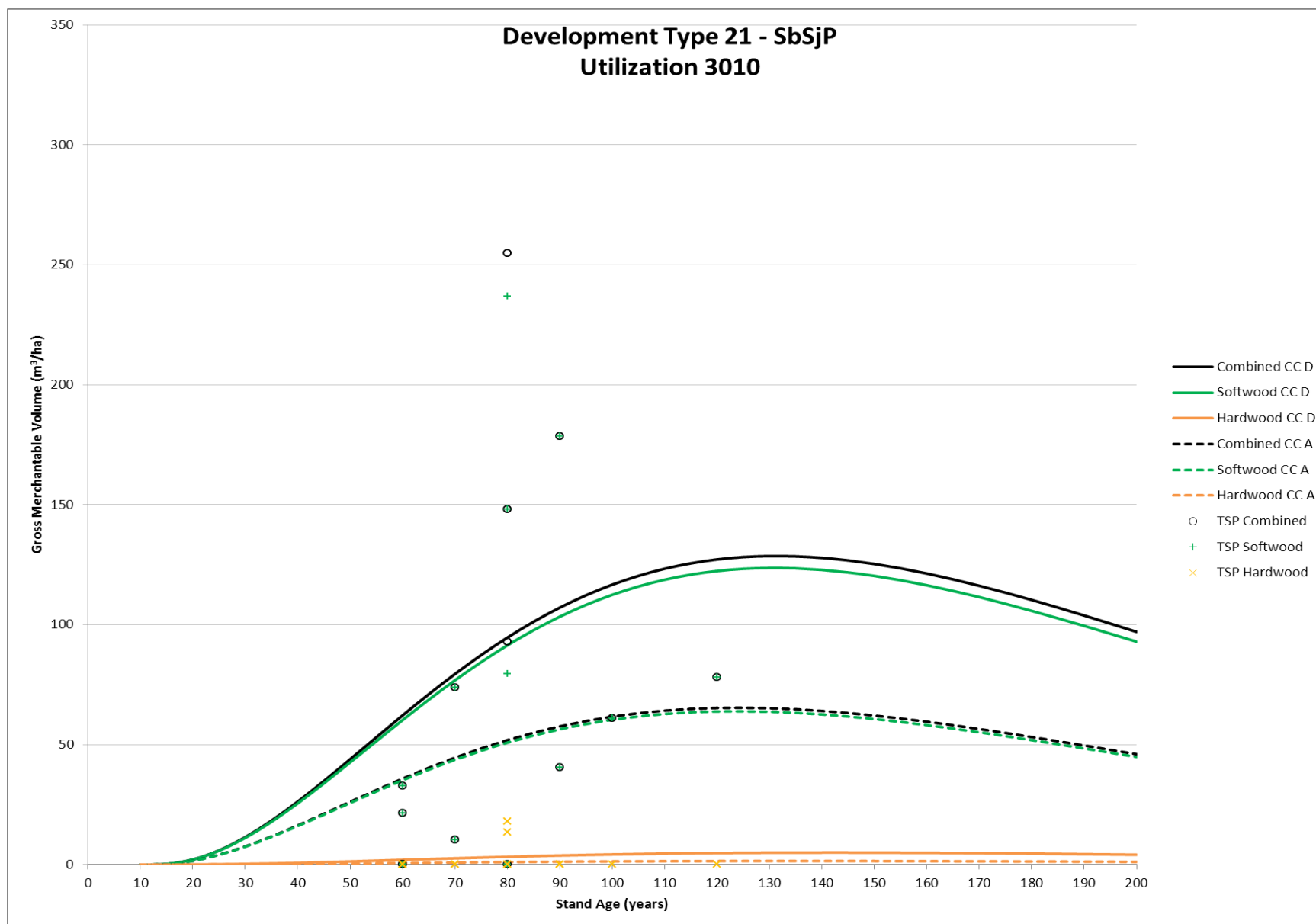


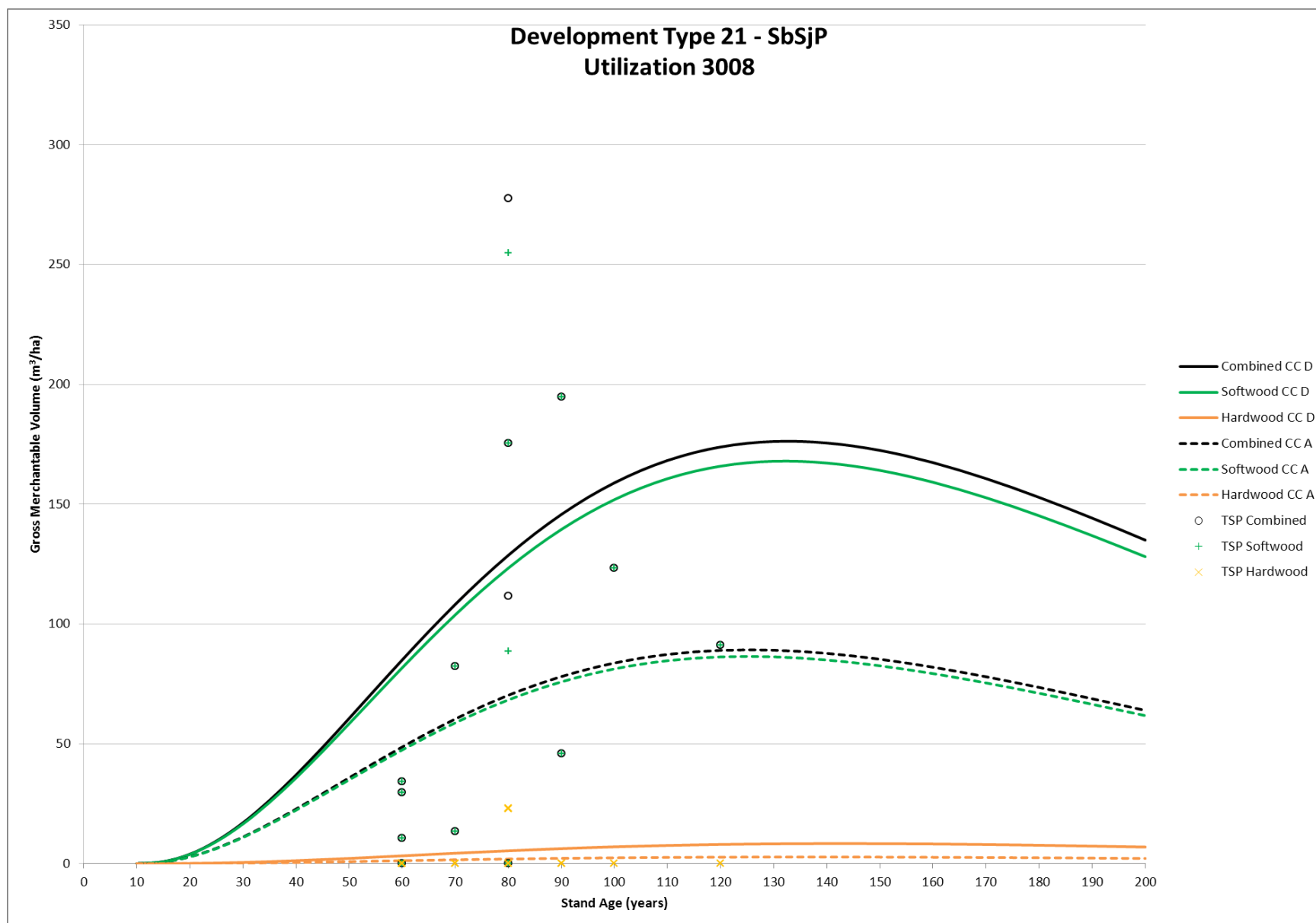


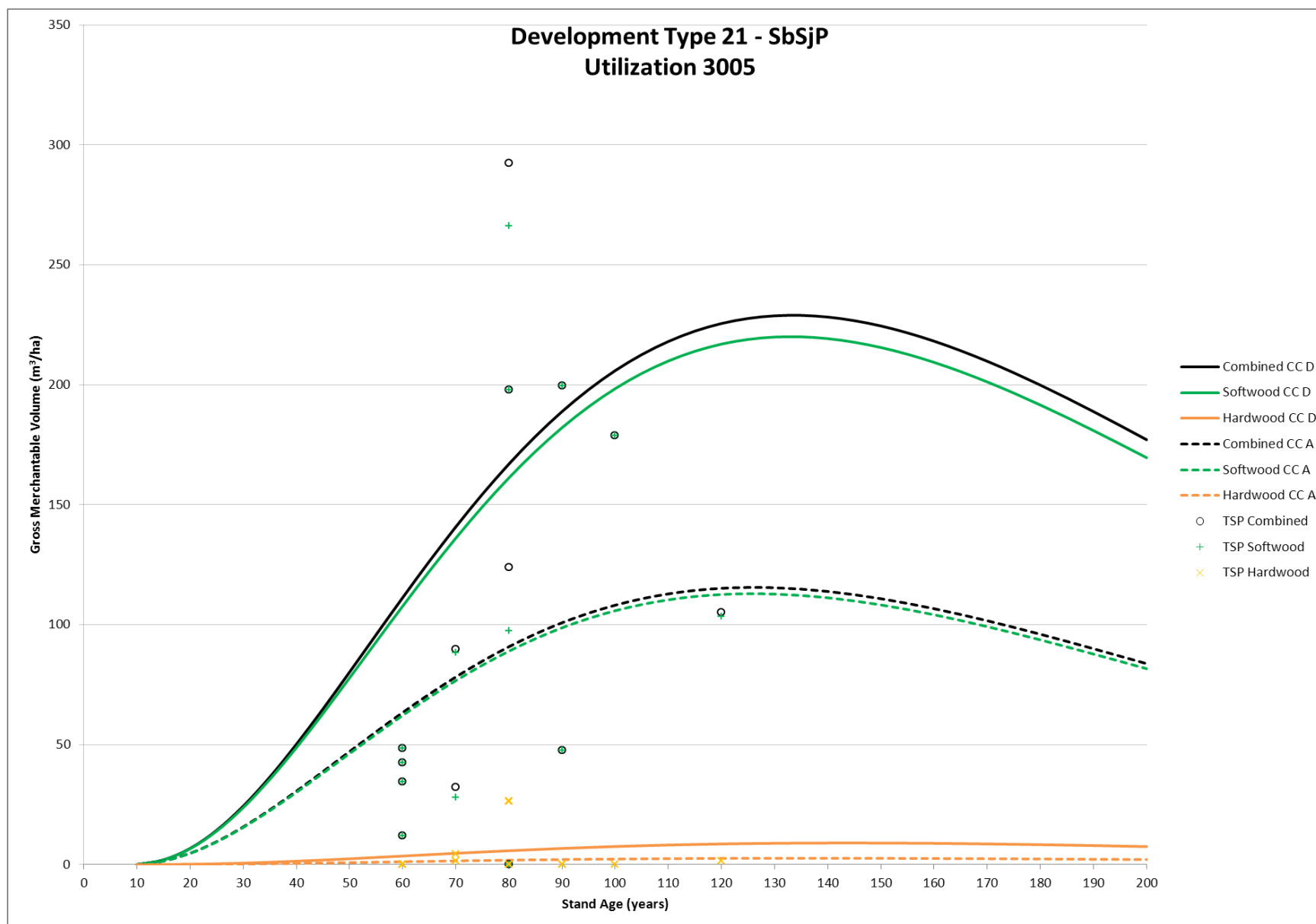


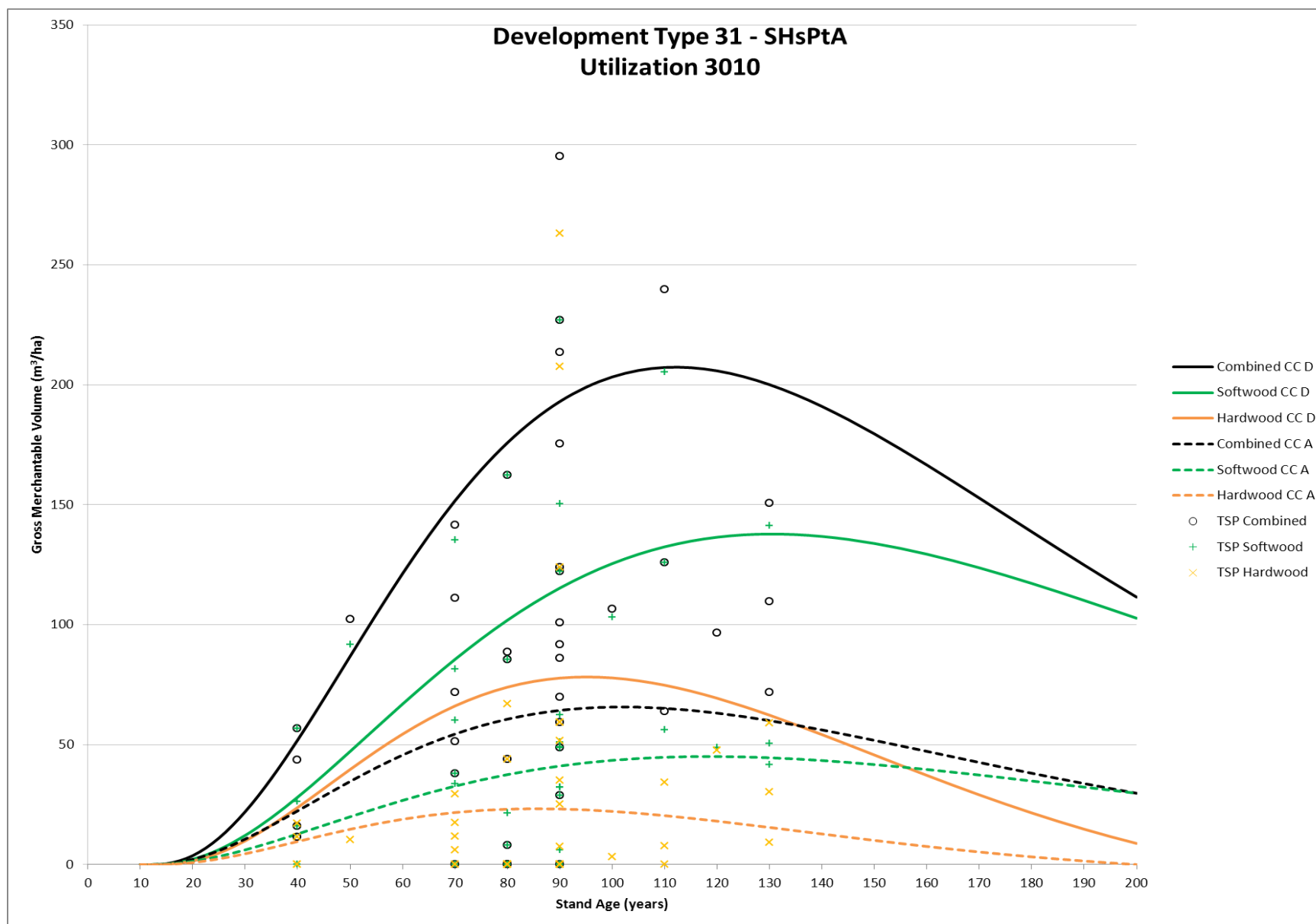




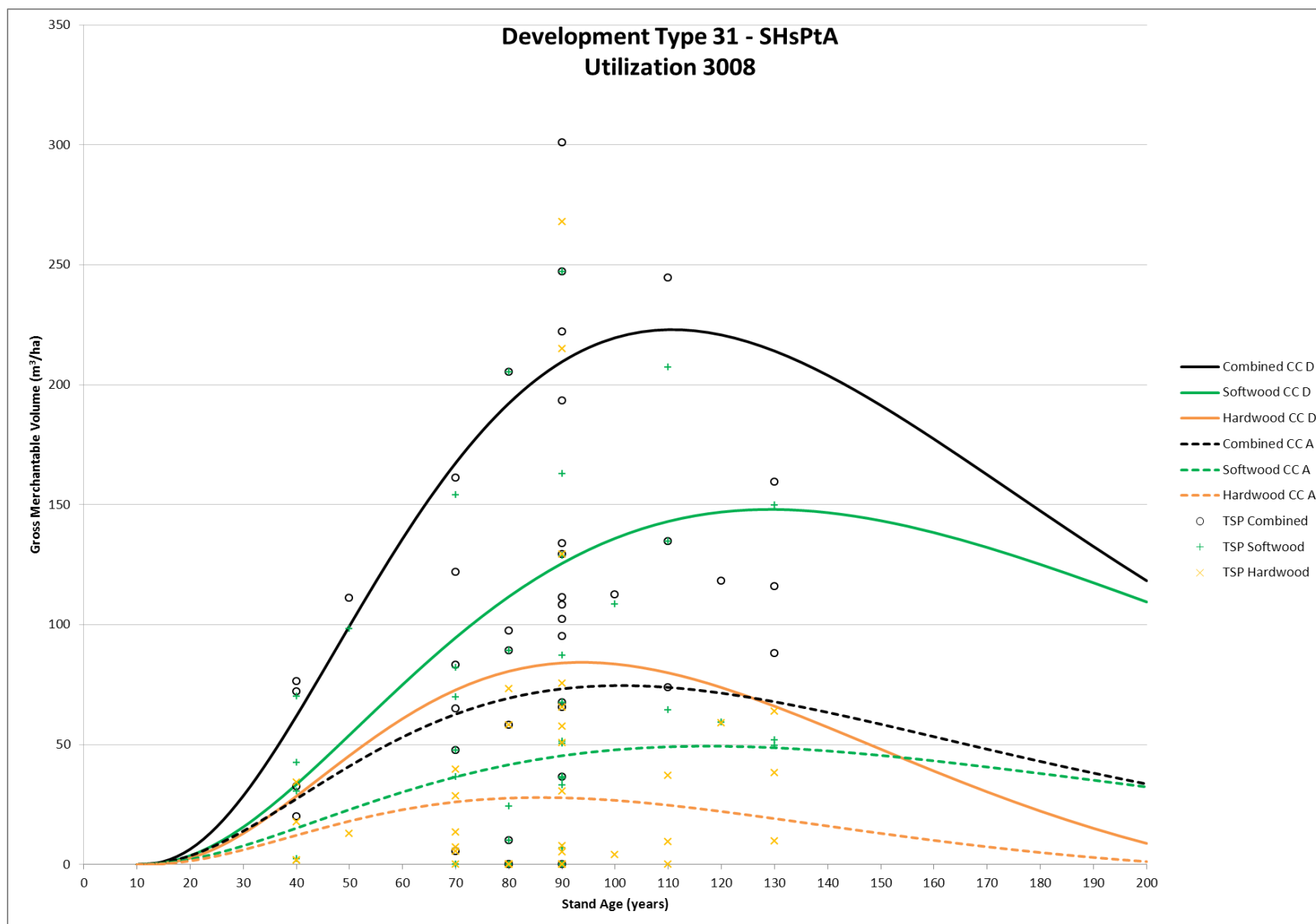


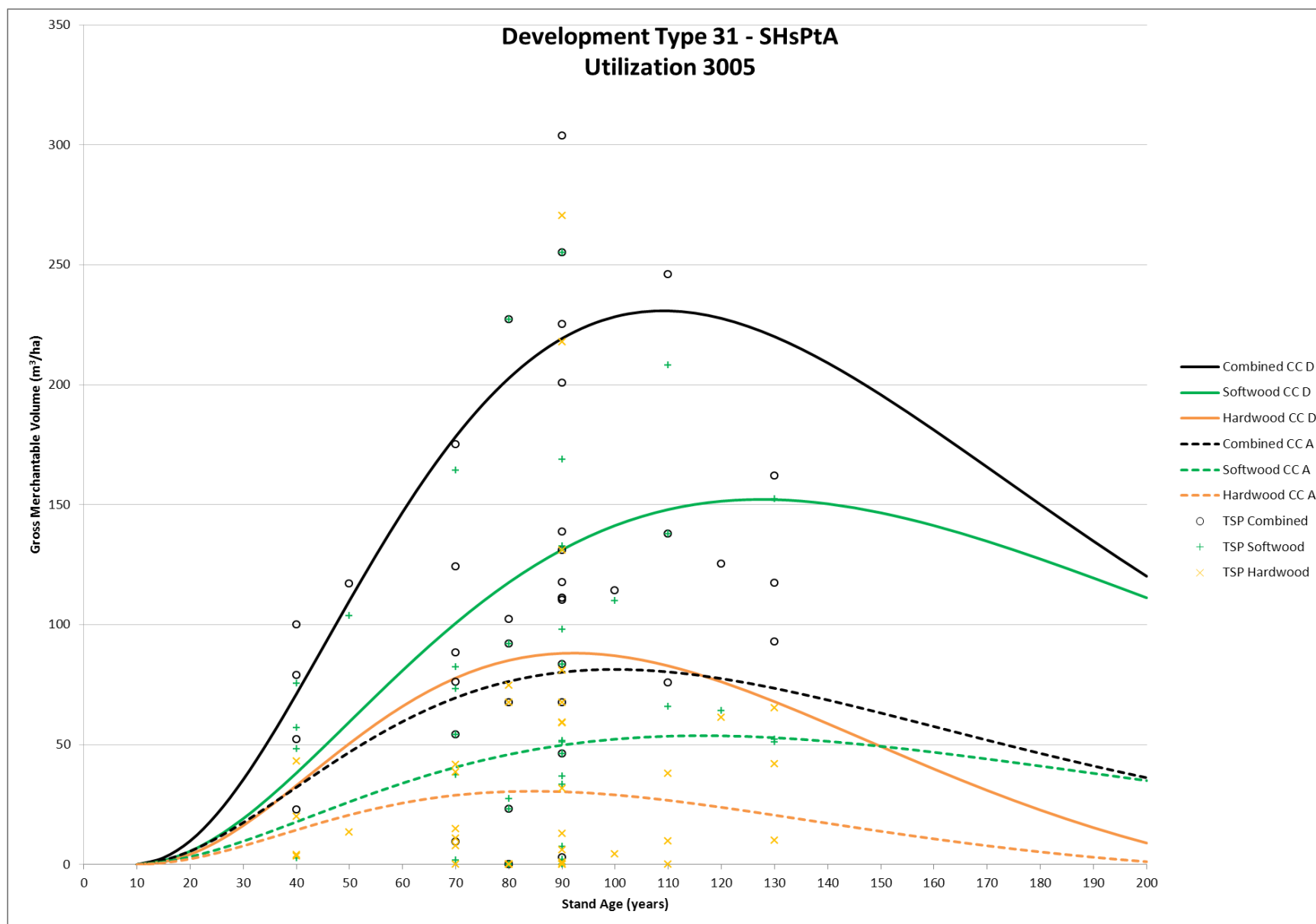


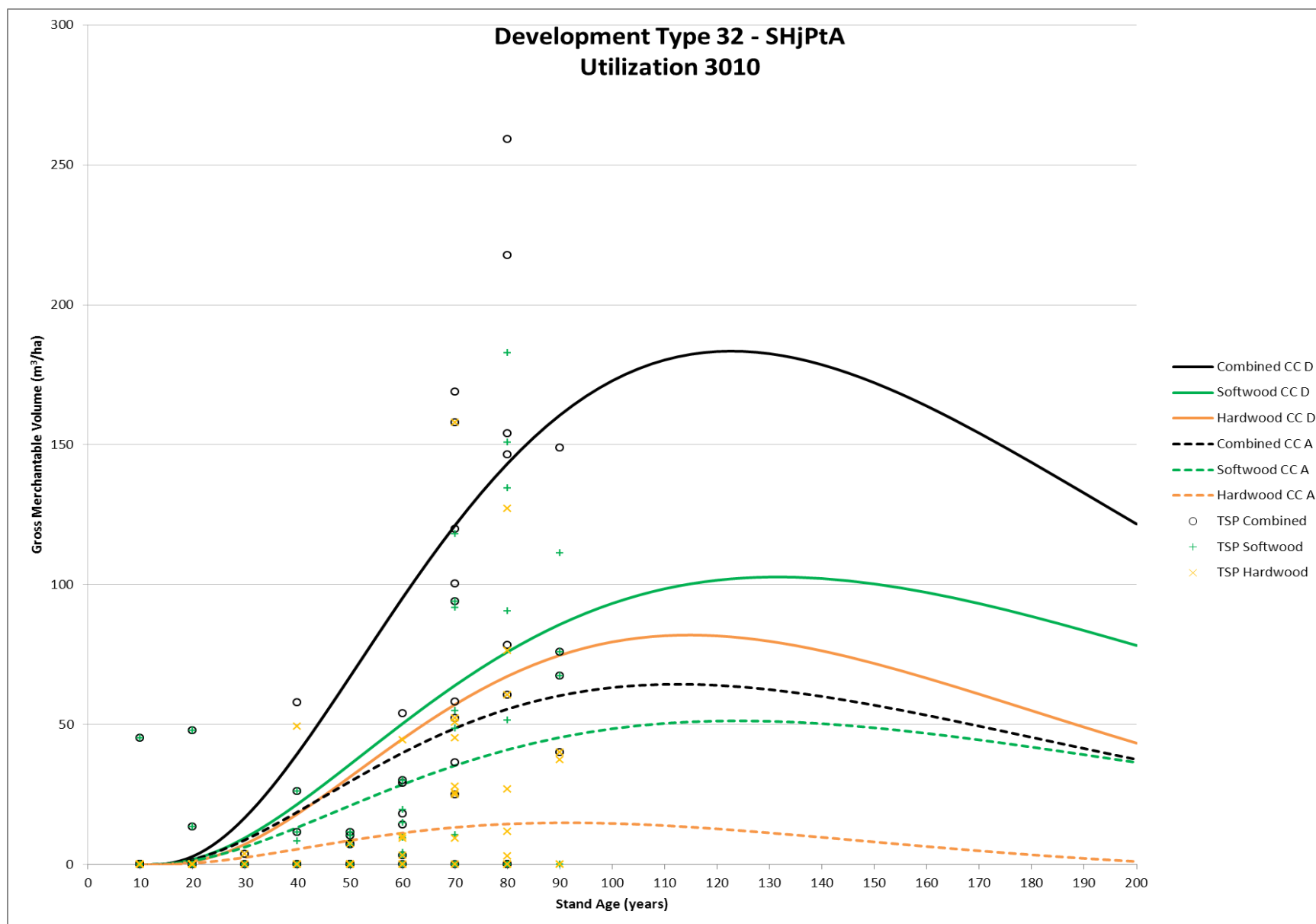


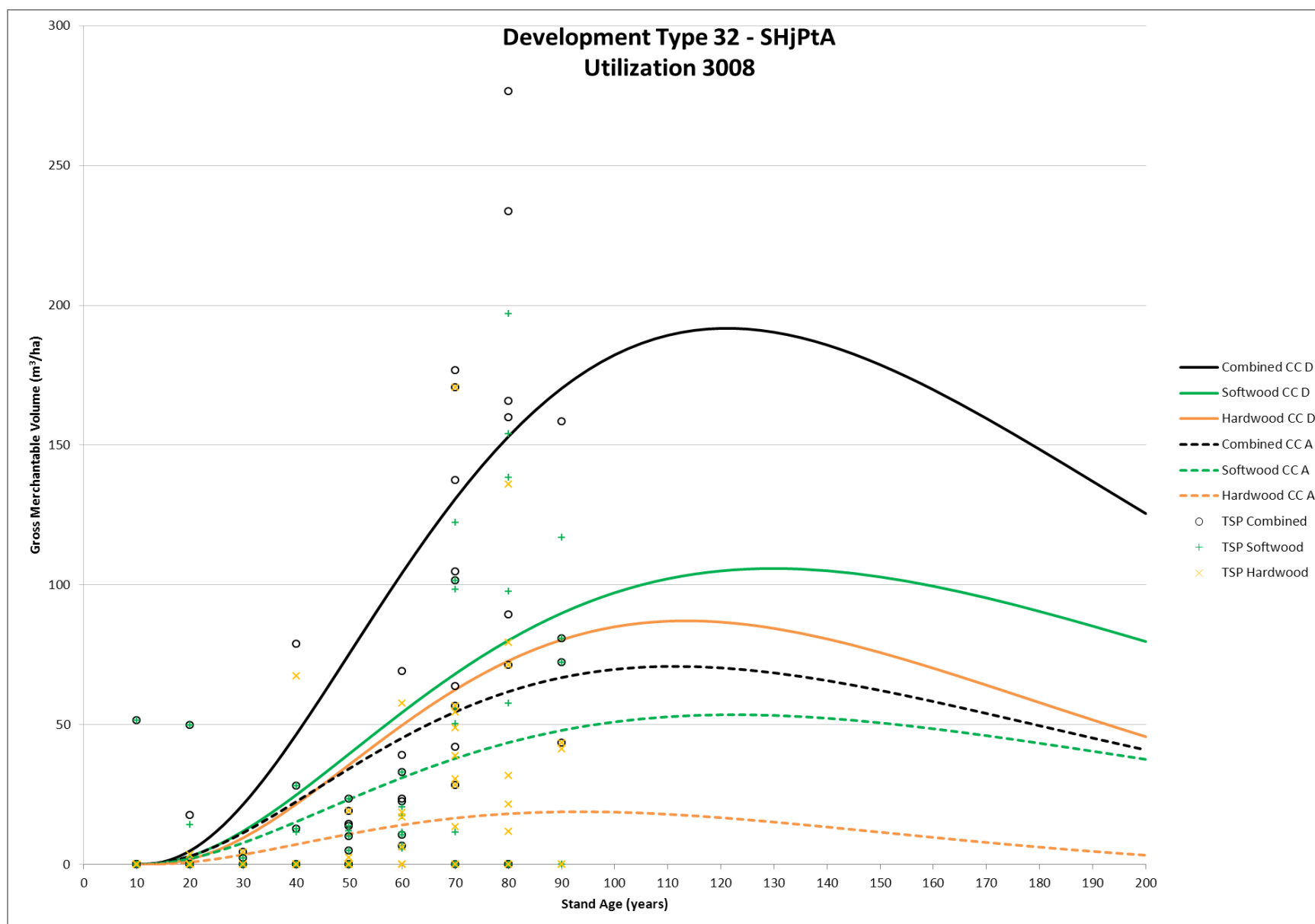


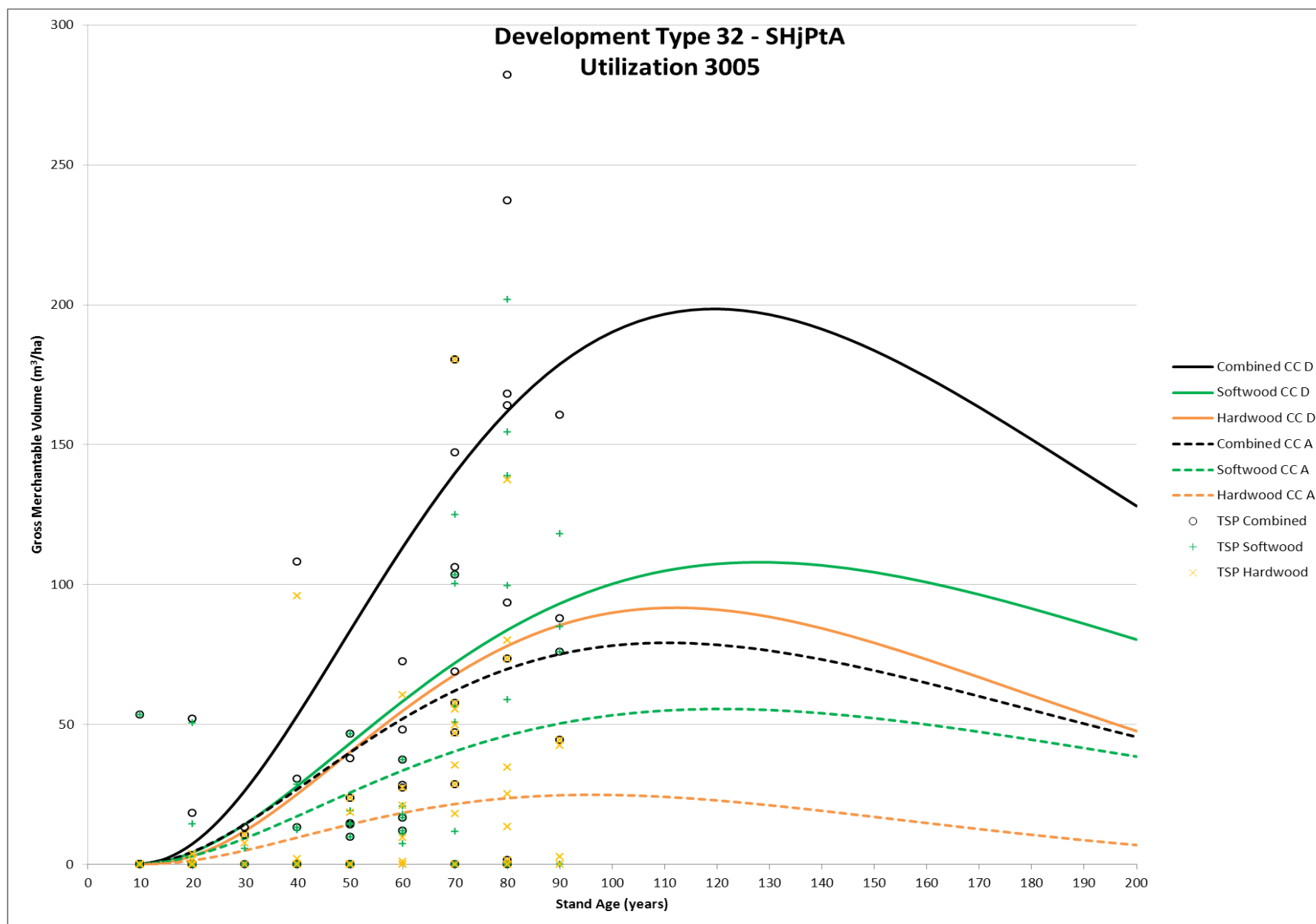


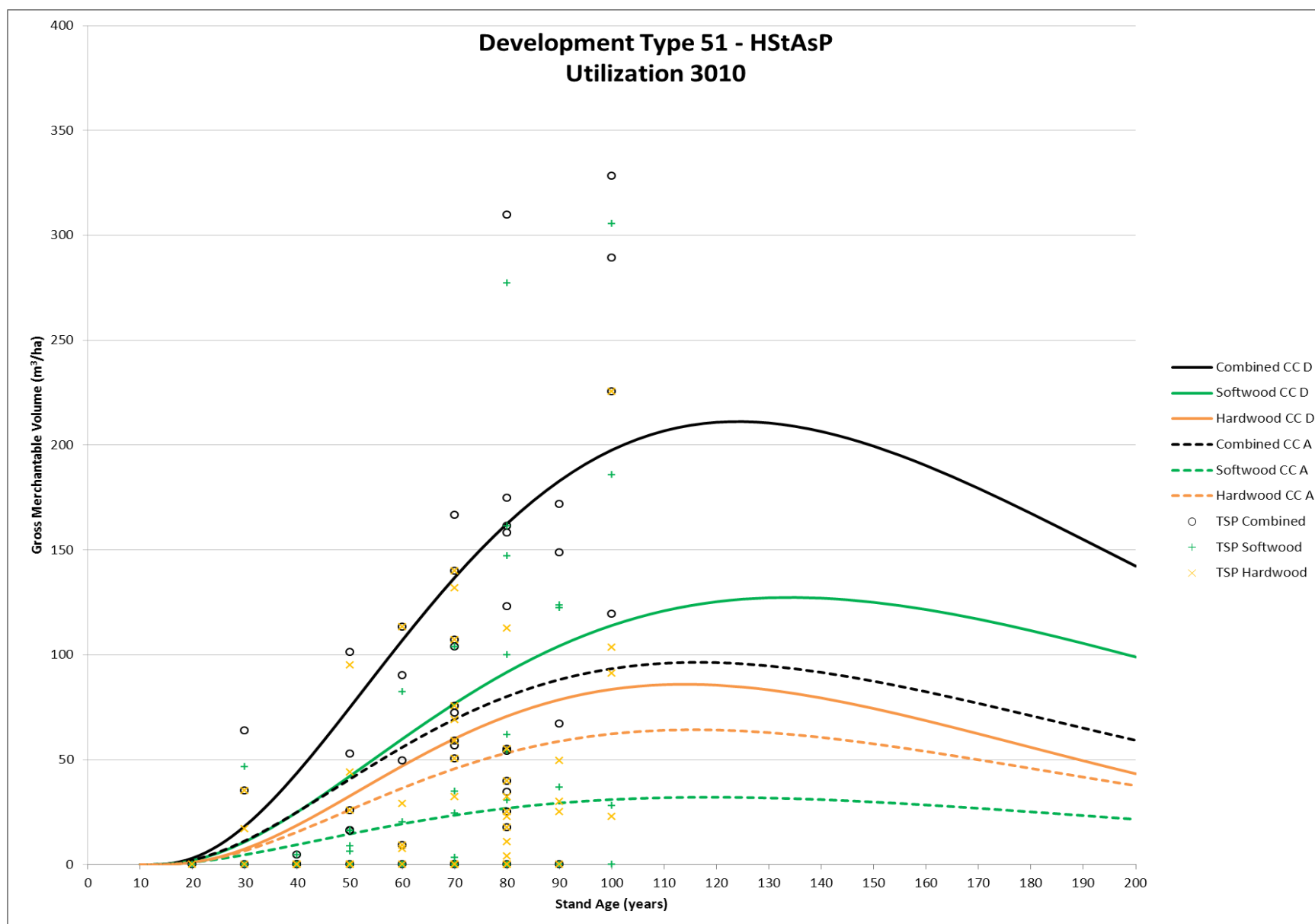


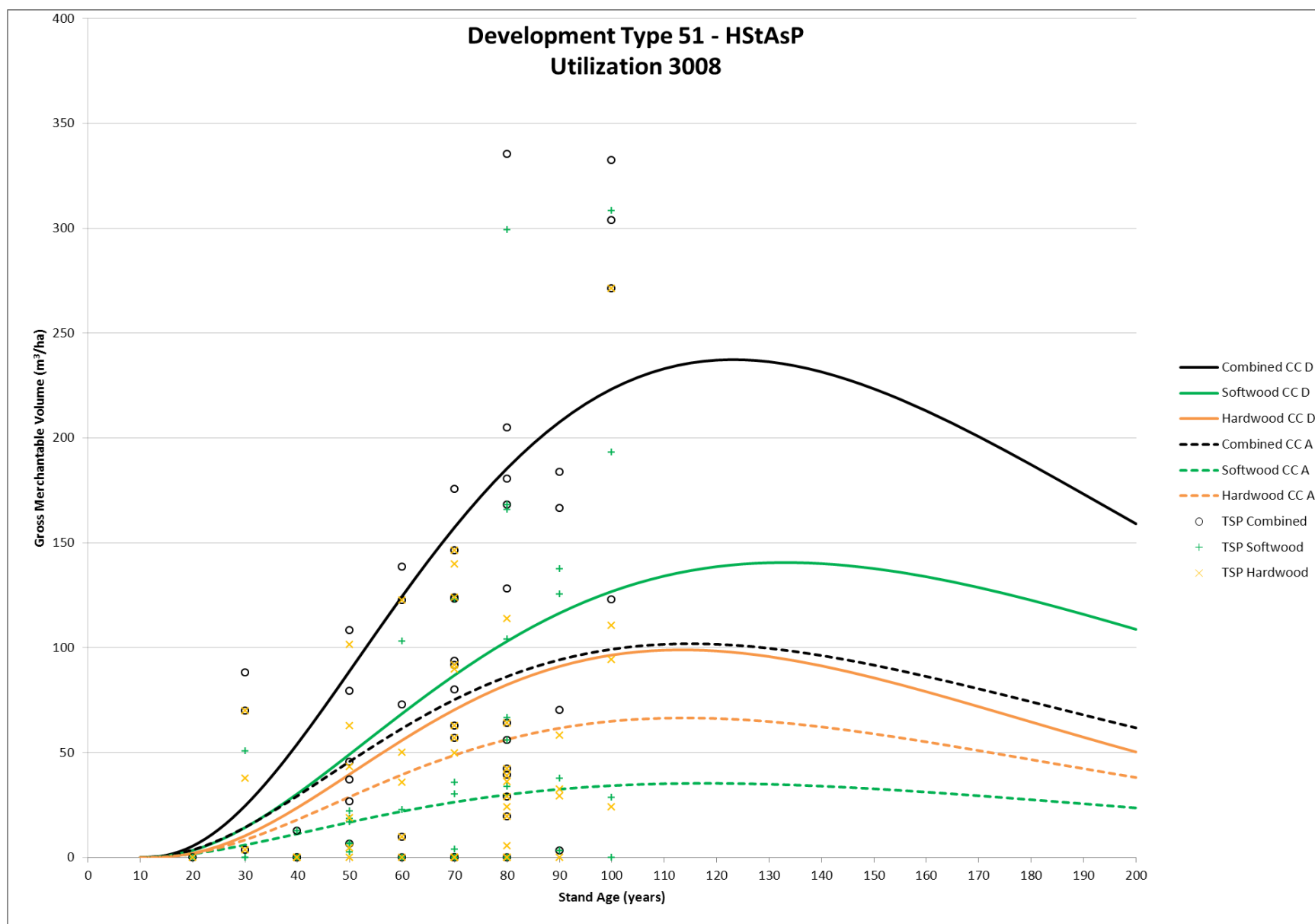


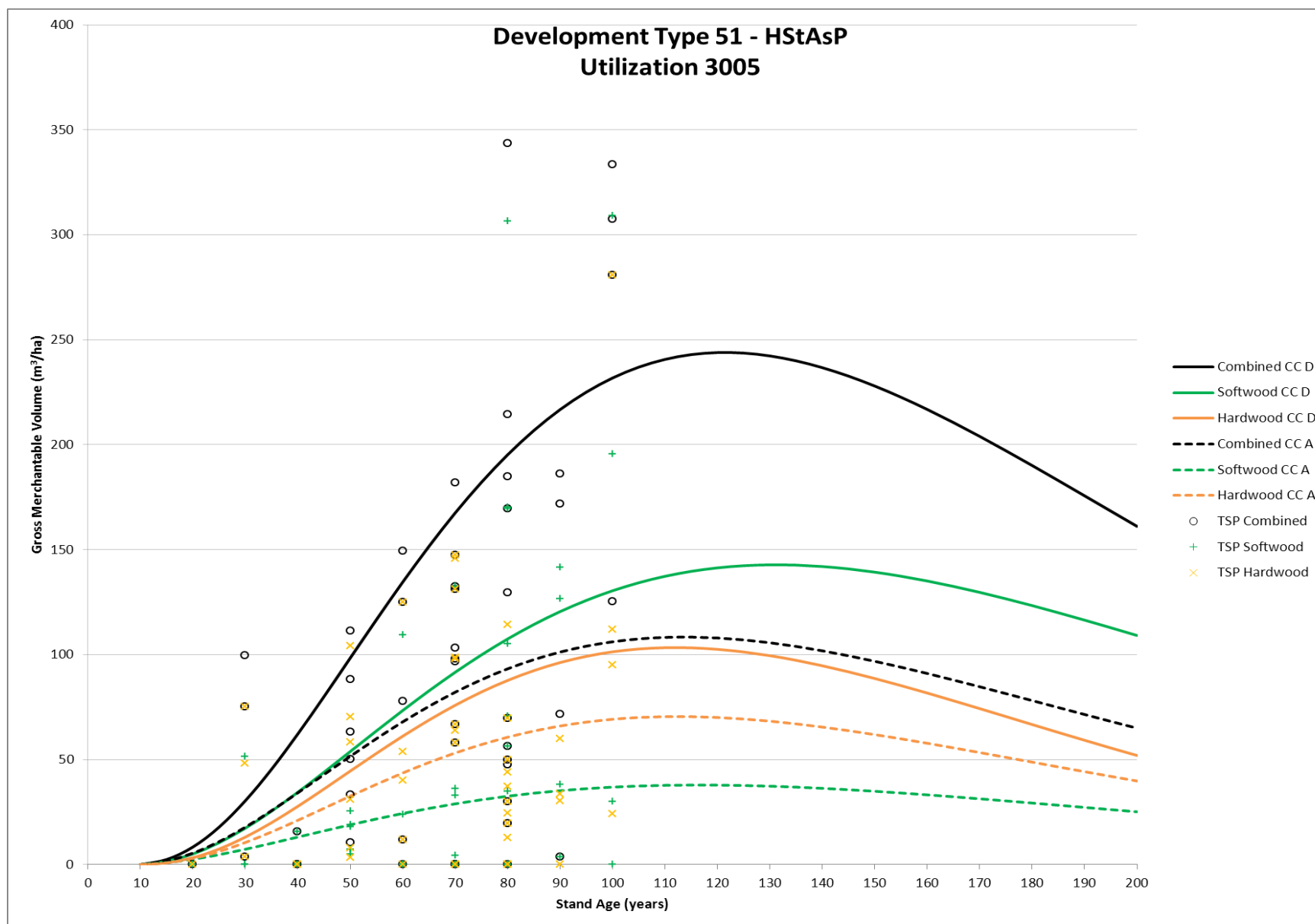




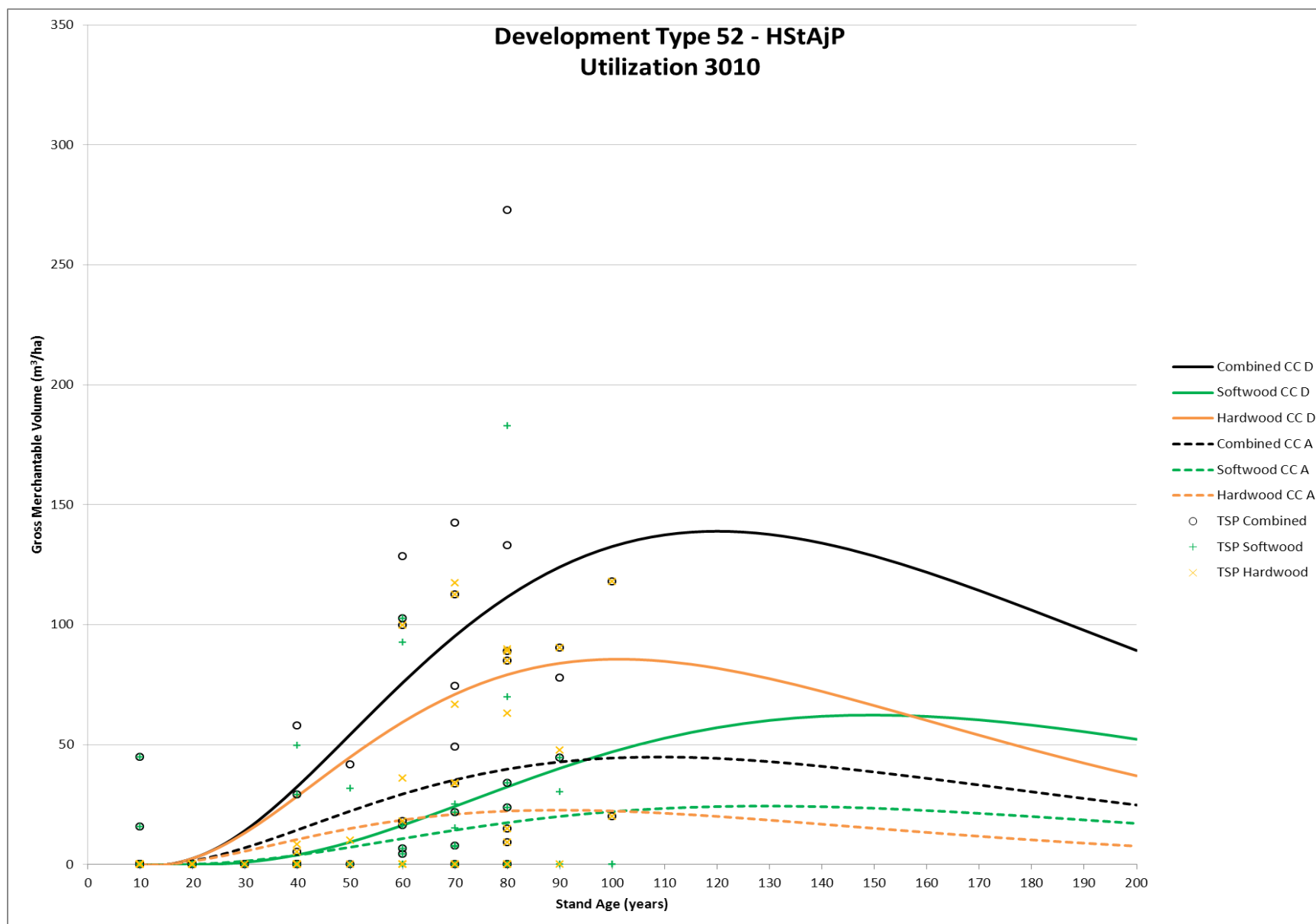


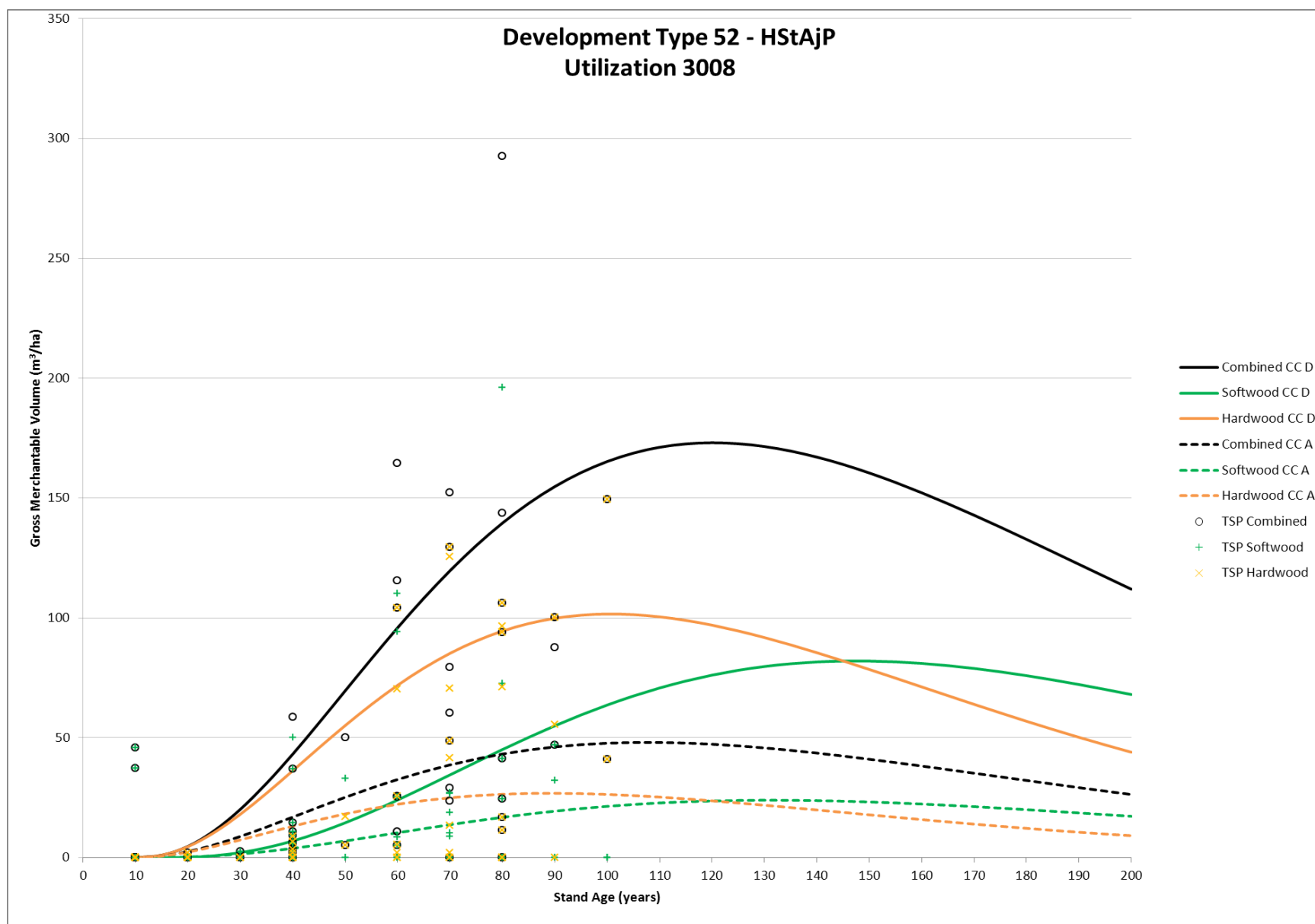


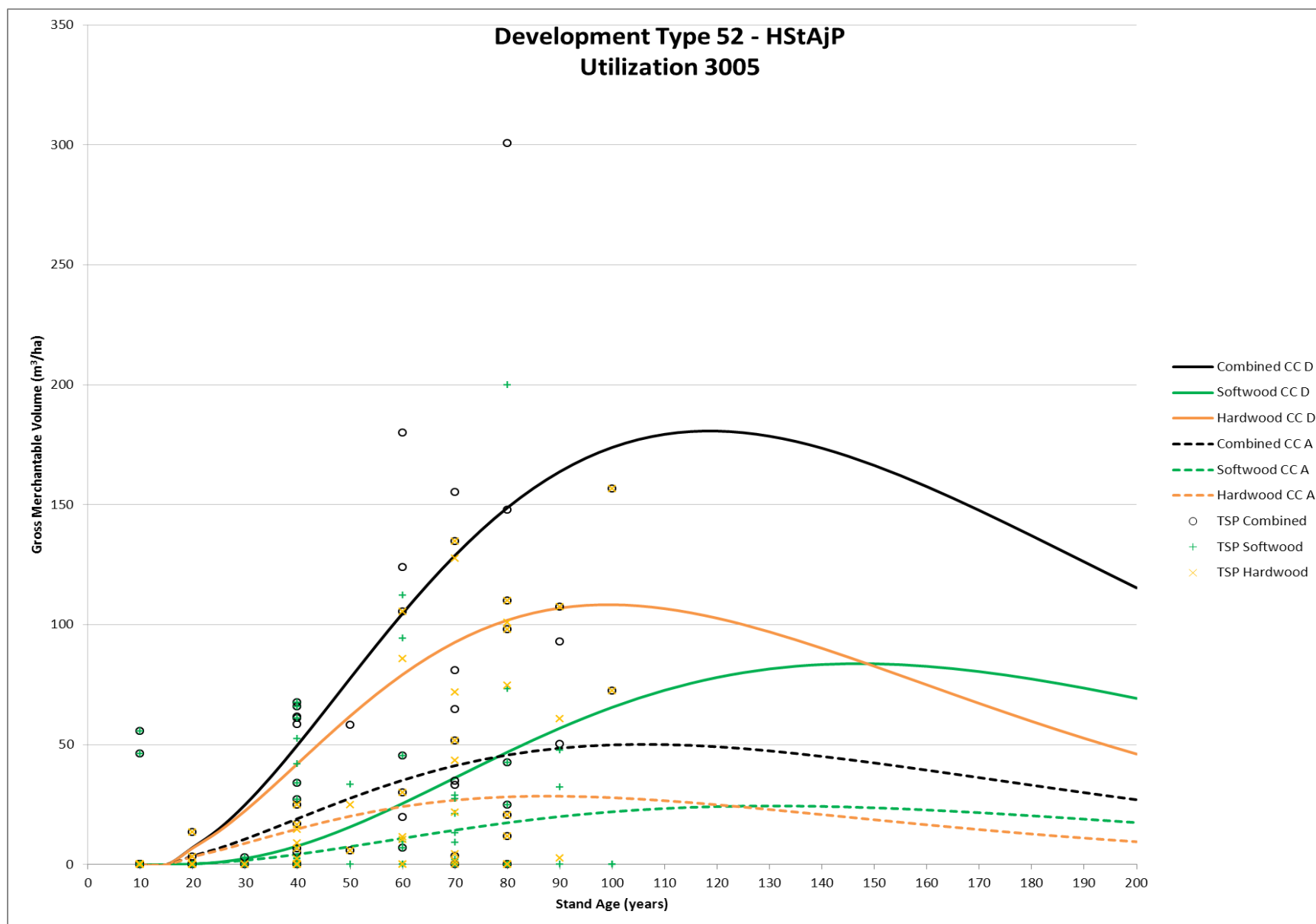


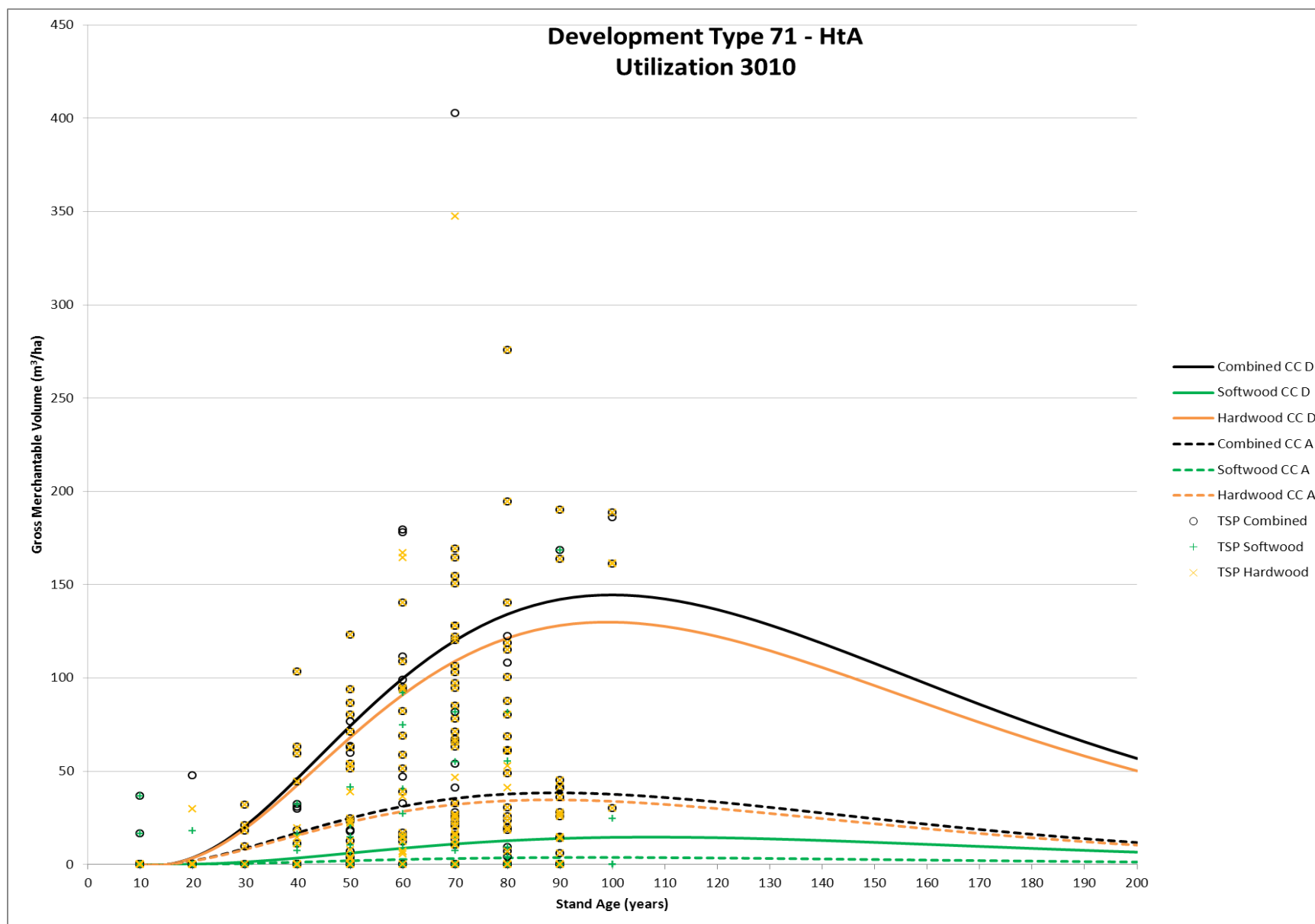


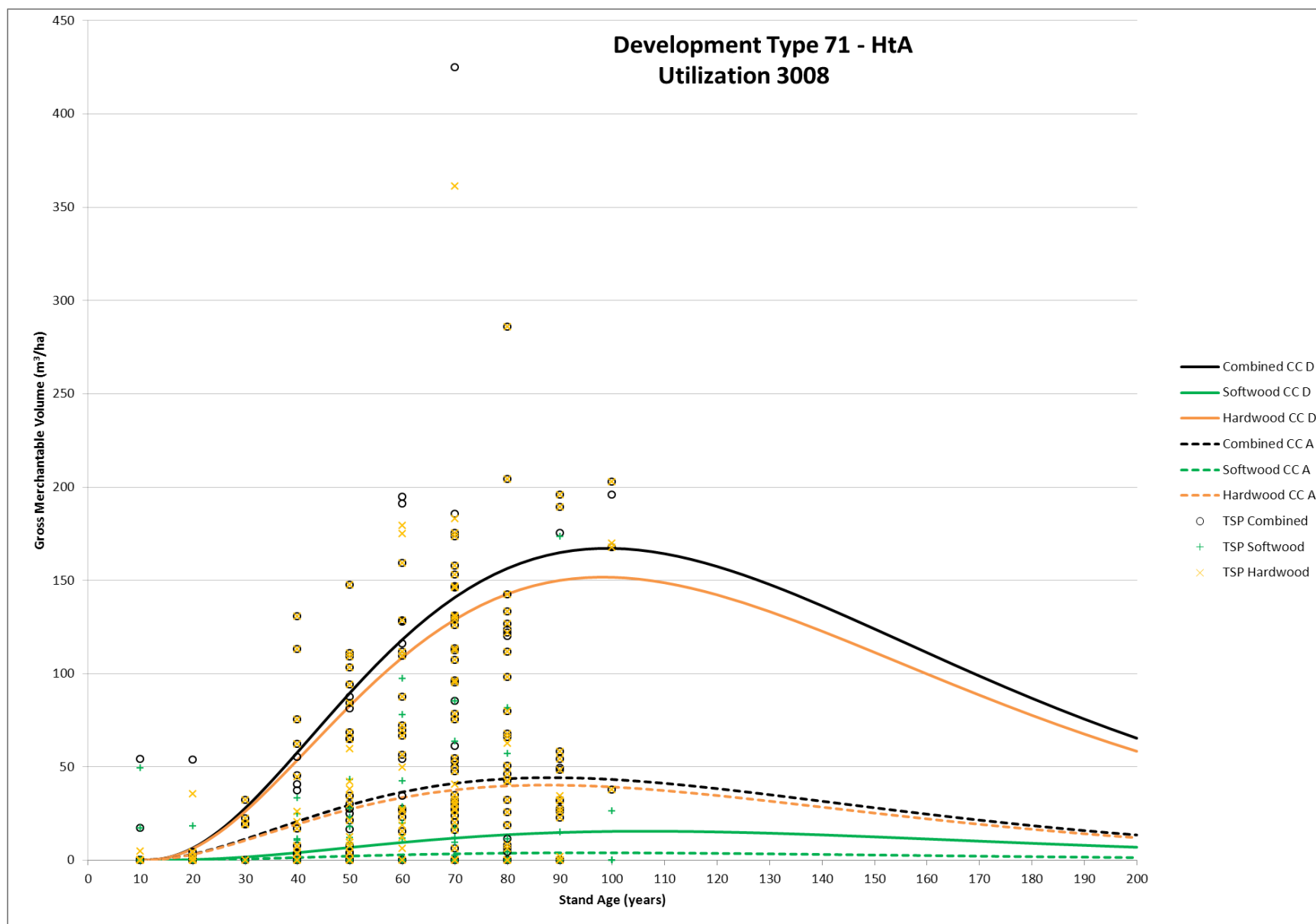


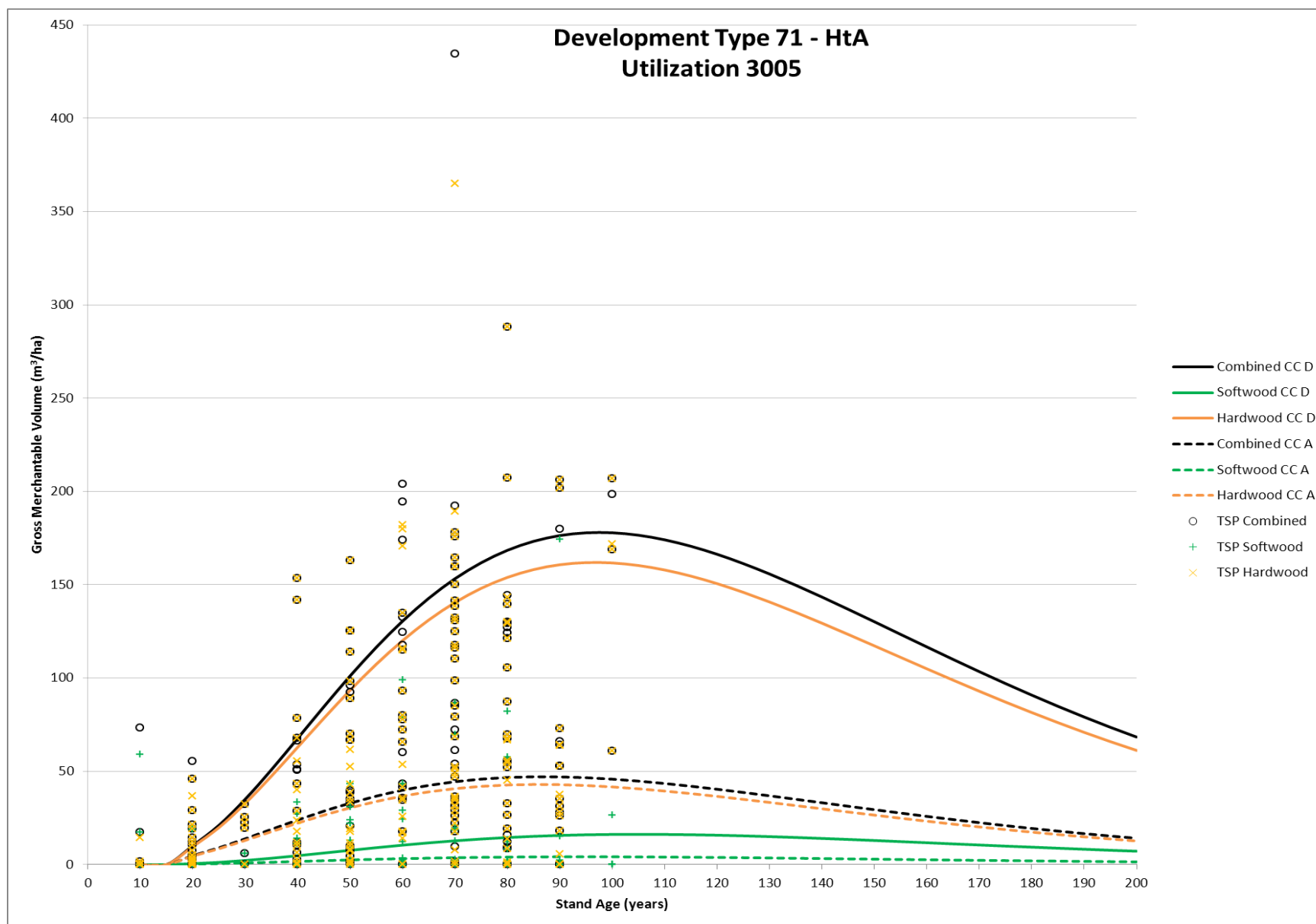












# Chapter 2

## Island Forests FMP Volume II:

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## Silviculture Ground Rules



Ministry of Environment  
October 2014

Table 1. Silviculture Treatments

<b>Treatment Reference No.</b>	<b>Disturbance Event</b>	<b>Silviculture System</b>	<b>Site preparation Method</b>	<b>Regeneration Type</b>	<b>Tending</b>
1	Harvest	Clearcut with retention	N/A	LFN <sup>1</sup>	None
2	Harvest	Clearcut with retention	Drag scarification	LFN	None
3	Harvest	Clearcut with retention	Drag scarification	Plant	None
4	Harvest	Clearcut with retention	SIP <sup>2</sup>	Plant	None
5	Harvest	Clearcut with retention	None	Plant	None

<sup>1</sup> Leave for natural

<sup>2</sup> Site preparation



Table 2. Silviculture Ground Rules

Provincial Forest Type	Treatment	S	SH	HS	H	Total	Treatment %
WSF	3	80	15	5		100	10
WSF	4	80	15	5		100	30
WSF	5	80	15	5		100	60
BSL	2	100				100	5
BSL	4	90	5	5		100	60
BSL	5	70	30			100	35
JLP	2	95	3	2		100	15
JLP	3	95	3	2		100	20
JLP	4	96	2	2		100	25
JLP	5	96	2	2		100	40
BSL	1	100				100	100
BSJ	2	90	10			100	10
BSJ	3	90	10			100	10
BSJ	4	90	10			100	50
BSJ	5	90	10			100	30
SMW	4	10	75	13	2	100	60
SMW	5	10	75	13	2	100	40
PMW	2	5	75	15	5	100	5
PMW	3	5	70	20	5	100	20
PMW	4	25	53	17	5	100	40
PMW	5	5	67	23	5	100	35
HSM	4		20	60	20	100	45
HSM	5		20	60	20	100	55
HPM	2		20	70	10	100	10
HPM	3		25	75		100	40
HPM	5		25	75		100	50
TAB	1			0	100	100	100

# Chapter 3

## Island Forests FMP Volume II: Values, Objectives, Indicators & Targets



Ministry of Environment  
March 2017

Criterion	Element	Value	Objective	Indicator	Target	Reporting Format	Reporting Frequency	Assessment Cycle
1.0 Biological Diversity	1.1 Ecosystem Diversity	1.1.1 Natural Range of Variation (NRV)	1.1.1.1 Conservation of the biological diversity of Saskatchewan's forests	1. <a href="#">Age class distribution of the Island Forests</a> Page 3-12	Assuming major disturbances remain below the re-planning threshold, the projected age class distribution at year 20 is illustrated in Figure 1.2.	Graph GIS file	5 year	10 year
				2. <a href="#">Area of old and very old forest by cover species group and management unit</a> Page 3-14	Maintain or recruit a minimum of 15% old or very old seral stage of the Managed Forest Landbase in each management unit by species group with 5% component of very old as a long-term average over the 200-year planning horizon for both management units of the Island Forests (East and West).	Table Map GIS file of Reserve Areas	With tactical plan or revisions	10 year
				3. <a href="#">Size class distribution of harvest events</a> Page 3-16	10% of the area harvested will be in events <50ha, 80 % of the area harvested will be in events ranging between 50 and 500 hectares. 10% of the events will be larger than 500 ha.	Table GIS file	Annual	10 year
				4. <a href="#">Area of tree retention after harvest</a> Page 3-18	The retention area of live representative tree residuals for each harvest event shall be a minimum of 9% of the total harvested area. Retention will be calculated over the harvest event duration, unless otherwise exempted by the Forest	Table Imagery Map GIS file	Annual	5 year

Criterion	Element	Value	Objective	Indicator	Target	Reporting Format	Reporting Frequency	Assessment Cycle
					Service for forest health reasons. Tree retention can be composed of Insular retention with single tree, clump residuals and island residuals or of proximal retention including peninsular or non-peninsular retention. Full descriptions and a diagram of each retention type are included within Section 1-35 Natural Forest Patterns of the 2017 draft Forest Management Plan Standard.			
				5. <a href="#">The softwood component in hardwood stands is maintained</a> Page 3-19	The white spruce component in H cover species group is maintained and consistent with NRV, SGR, modeling assumptions and the Regeneration Assessment Standard.	Table Surveys Silviculture Treatments	Annual	5 year
				6. <a href="#">Relative abundance of Cover Species Groups (CSG) is forecasted to be maintained at the next rotation</a> Page 3-21	Post-harvest area at the rotation age is proportionately established to pre-harvest cover species group (CSG). Current distribution of the CSG is provided as baseline in Figure 6.1.	Table FTG Surveys GIS file	Annual	5 year

Criterion	Element	Value	Objective	Indicator	Target	Reporting Format	Reporting Frequency	Assessment Cycle
	1.2 Species Diversity	1.2.1 Quantity & Quality of Forest Habitat	1.2.1.1 Maintain habitat for identified forest dwelling species	7. <a href="#">Current habitat availability for identified forest-dwelling species vs. predicted future supply (as determined through forest estate modeling)</a> Page 3-23	The long-term average of the predicted habitat levels (Figures 7.1 – 7.3) shall be maintained.	GIS file	Annual	5 year
1.0 Biological Diversity	1.3 Genetic Diversity	1.3.1 Natural Genetic Diversity	1.3.1.1 No loss of natural tree genetic diversity through forest management activities	8. <a href="#">Seedlings are from wild or improved seed sources in accordance with the Saskatchewan Environmental Code</a> Page 3-25	Seedlings planted in the Island Forests shall be from wild or improved seed lots. A minimum of 10% wild seed sources shall be planted on each harvested area.	Table	Annual	5 year
2.0 Ecosystem Condition & Productivity	2.1 The stability, resilience and rates of biological production in forest ecosystem	2.1.1 Natural Ecosystem Processes	2.1.1.1 Maintain the stability, resilience and rates of biological production in forest ecosystem	9. <a href="#">Post-harvest areas are successfully regenerated</a> Page 3-26	Post-harvest areas assessed as Free To Grow (FTG) are consistent with the SGRs and the Forest Regeneration Assessment Standard.	Table/ GIS file	Annual	5 year
				10. <a href="#">Change in the managed forest landbase in the Island Forests through balancing permanent</a>	Less than or equal to 2% of the net forest area converted to other landuses as a result of forest management activities over a rotation period. Other landuses include permanent roads,	Table/ GIS file	Annual	5 year

Criterion	Element	Value	Objective	Indicator	Target	Reporting Format	Reporting Frequency	Assessment Cycle
				<a href="#">removals of productive landbase (e.g. roads, gravel pits) against area returned to the productive landbase (e.g. reclamation, reforestation)</a> Page 3-27	gravel pits etc.			
				11. <a href="#">Net area disturbed by stand replacing natural events (fire, insect, disease and wind) over the planning period</a> Page 3-29	A net area impacted by stand replacing natural disturbances (such as fire, insect and disease) is within 10% over the planning period. A new planning process shall be initiated when such impact exceeds the provided threshold during the planning period.	Table/ GIS file	Annual	Annual
				12. <a href="#">Proportion of a natural disturbance event retained un-salvaged</a> Page 3-30	A single contiguous area covering a minimum of 20% of the natural disturbance event shall be identified and reserved from all harvesting activities. Where the opportunity exists, this area reserved from harvest will be: <ul style="list-style-type: none"> <li>• free of roads, trails and skid trails, and</li> <li>• of merchantable sized timber representing burn</li> </ul>	Table/ GIS file	Annual	5 year

Criterion	Element	Value	Objective	Indicator	Target	Reporting Format	Reporting Frequency	Assessment Cycle
					codes 1, 2 and 3 (1 = green, 2 = root burnt, 3 = some trunk scorch) All salvage harvest blocks shall retain residuals retention as detailed in indicator 4, unless exempted for forest health reasons.			
2.0 Ecosystem Condition & Productivity	2.1 The stability, resilience and rates of biological production in forest ecosystem	2.1.1 Natural Ecosystem Processes	2.1.1.1 Maintain the stability, resilience and rates of biological production in forest ecosystem	13. <a href="#">Yield curve suitability: measured by actual harvest volume (m<sup>3</sup>/ha) compared to predicted volume</a> Page 3-31	The actual harvest volume, broken down by softwood and hardwood, shall be within 15% of the volume estimates predicted volume by yield curves.	Table	5 year	5 year
				14. <a href="#">The utilization assumptions specified in the yield curves are consistent with the implemented utilization specifications</a> Page 3-32	Operators shall meet the current utilization specifications unless otherwise approved	Table	Annual	5 year
				15. <a href="#">Operational adherence to the Tactical Plan</a> Page 3-33	85% of the harvested area on the licence within the term of the plan will fall within the delineated spatial boundaries of the tactical plan. Harvest events adhere to the delineated spatial	Table/ GIS file	Annual	5 year

Criterion	Element	Value	Objective	Indicator	Target	Reporting Format	Reporting Frequency	Assessment Cycle
					boundaries of the tactical plan as close as possible.			
3.0 Soil & Water	3.1 Quantity and Quality of Soil and Water	3.1.1 Minimise loss of quantity or quality of soil and water	3.1.1.1 Maintain and/or enhance the quantity and quality of soil and water	16. <a href="#">Harvesting activities are in compliance with the terms of their licence, approved operating plan, the Saskatchewan Environmental Code and Standards, and applicable federal and provincial legislation.</a> Page 3-34	The licensee shall ensure that harvest blocks, road construction and reclamation and riparian areas comply with authorizations, the code and legislation.	Table/ Self- Inspection/ Reports	Annual	5 year
3.0 Soil & Water	3.1 Quantity and Quality of Soil and Water	3.1.1 Minimise loss of quantity or quality of soil and water	3.1.1.1 Maintain and/or enhance the quantity and quality of soil and water	17. <a href="#">Crossings are in compliance with the terms of their licence, approved operating plan, the Saskatchewan Environmental Code and Standards, and applicable federal and provincial legislation.</a> Page 3-35	a. The licensee shall ensure that watercourse and wetland crossing installations and removals comply with authorizations, the code and legislation. b. The licensee is responsible for developing, maintaining and following standard work procedures and/or protocols to ensure inspection, monitoring, reporting and maintenance of	Table/ Self- Inspection/ Reports	Annual	5 year



Criterion	Element	Value	Objective	Indicator	Target	Reporting Format	Reporting Frequency	Assessment Cycle
					watercourse and wetland crossings comply with authorizations, the code and legislation.			
4.0 Role in Global Ecological Cycle	4.1 Carbon Cycle	4.1.1 Productive Landbase	4.1.1.1 Mitigate the impact of the forest and forest activities on the productive landbase	18. <a href="#">Event Duration</a> Page 3-36	All harvest events created will be completed within 10 years or less (expressed annually and cumulatively as percent of event completed by area).	Table/ GIS file	Annual	5 year
5.0 Economic & Social Benefits	5.1 Economic Benefits	5.1.1 Sustainable economic benefits over FMP planning period	5.1.1.1 Maximize the economic benefits without compromising the productive capacity of forest ecosystem	19 a. <a href="#">Utilization of Harvest Volume Schedule (HVS)</a> Page 3-37	Percentage of the approved HVS (hardwood, softwood and pulp) utilized in each 5-year period (expressed annually and cumulatively) is consistent with the terms of their licence, approved FMP and operating plan.	Table	Annual	5 year
	5.2 Social Benefits	5.2.1 Human life and property are protected from wildfire	5.2.1.1 Minimize injury, loss and damage caused by wildfire	19b. <a href="#">Harvest plans completed that are designed to lower wildfire risks to communities</a> Page 3-38	FireSmart harvest areas identified in the Tactical Plan and the Volume III Wildfire Management Strategy will be harvested based on the identified priority.	Table/ Map	Annual	5 year
	5.2 Distribution of Benefits	5.2.1 Fair Distribution of Benefits	5.2.1.1 To ensure that other forest uses are addressed	20. <a href="#">Stakeholder &amp; Public Engagement</a> Page 3-39	At a minimum, annually meet with the Public Advisory Group and the public to discuss forest management operations and implementation of the Forest	Report/ Table/ Minutes	Annual	Annual

Criterion	Element	Value	Objective	Indicator	Target	Reporting Format	Reporting Frequency	Assessment Cycle
					Management Plan and subsequent annual operations plans.			
				21. <a href="#">Spatially identified non-timber resources and forest use activities</a> Page 3-40	On-going maintenance and update of 100% of all known locations of recreation and non-timber resource activity locations into the Island Forests Non-Timber Forest Values spatial dataset, which is to be maintained in the ministry's central SDE database.	Digital Map	Annual	Annual
	5.3 Sustainability of Benefits	5.3.1 No Loss of Benefits	5.3.1.1 Maintain or enhance benefits	22. <a href="#">Harvest operations are proportionally distributed across the FMA</a> Page 3-41	Area targets by cover species grouping and management unit (MU) for each 5-year period are achieved.	Table/ Map/ GIS file	Annual	5 year
6.0 Society's Responsibility	6.1 Aboriginal & Treaty Rights	6.1.1 Aboriginal & Treaty Rights are respected in regard to planning and implementing forestry activities	6.1.1.1 To ensure that Aboriginal & Treaty Rights are respected while planning and implementing forestry activities	23. <a href="#">First Nation &amp; Métis Consultation &amp; Engagement</a> Page 3-42	On an annual basis, ensure that efforts to involve 100% of the First Nation & Métis communities within the vicinity of the Island Forests are conducted. This will involve the opportunity to provide input and technical review of operational and forest management plans and participate in advisory group processes.	Report/ Table/ Minutes	Annual	Annual

Criterion	Element	Value	Objective	Indicator	Target	Reporting Format	Reporting Frequency	Assessment Cycle
	6.2 Aboriginal Traditional Land Use and Forest Based Ecological Knowledge	6.2.1 Protection of aboriginal traditional land use and forest based ecological knowledge	6.2.1.1 To avoid impacting culturally important sites	24. <a href="#">Spatial identification and operational protection of known culturally significant Heritage and Aboriginal sites</a> Page 3-43	On an annual basis, acquire and input into the ministry's central SDE GIS database, 100% of all known locations of cultural, heritage or traditional Aboriginal sites in the Island Forests and develop operating plans that protect these known sites of heritage, cultural and Aboriginal forest values.	Map	Annual	5 year
			6.2.1.2 To protect forest based traditional ecological knowledge of the Aboriginal communities	25. <a href="#">Incorporation of Aboriginal traditional ecological knowledge into the planning process</a> Page 3-44	Document Aboriginal traditional knowledge in a consultation record or a spatial TLU dataset as the information is made available through consultation and engagement.	Minutes/ DTC Record	Annual	5 year
	6.3 Forest Community Well-being & Resilience	6.3.1 Sustainable Forest Communities	6.3.1.1 To contribute to the resiliency of communities	26. <a href="#">The Government and operators' involvement in contributing the well-being of the communities associated with the Island Forests</a> Page 3-45	Document the contribution of government/operators to the communities in their well-being and resilience (e. g., educational opportunities/workshops, summer student and apprenticeships, etc.).	Report	Annual	5 year

Criterion	Element	Value	Objective	Indicator	Target	Reporting Format	Reporting Frequency	Assessment Cycle
6.0 Society's Responsibility	6.4 Fair and Effective Decision Making	6.4.1 Involvement of Stakeholders in FMP Development and Implementation	6.4.1.1 Improve the engagement and information sharing of stakeholders in FMP development and implementation	27. <a href="#">Stakeholder engagement</a> Page 3-46	Public Advisory Group (PAG) of Island Forests meets twice a year and engages itself in implementation of the FMP and development of the next FMP	Report/ Table/ Minutes	Annual	Annual

## Criterion 1 – Biological Diversity

### Element 1.1 – Ecosystem Diversity

#### Value 1.1.1 – Natural Range of Variation (NRV)

#### Objective 1.1.1.1 – Conservation of the biological diversity of Saskatchewan's forests

#### Indicator # 1 Age class distribution of the Island Forests

##### Current Status

Figure 1.1 displays current age class distribution of the Island Forests. This figure shows the majority of stands falling into the immature to a mature age classes with very little falling into the very old age class.

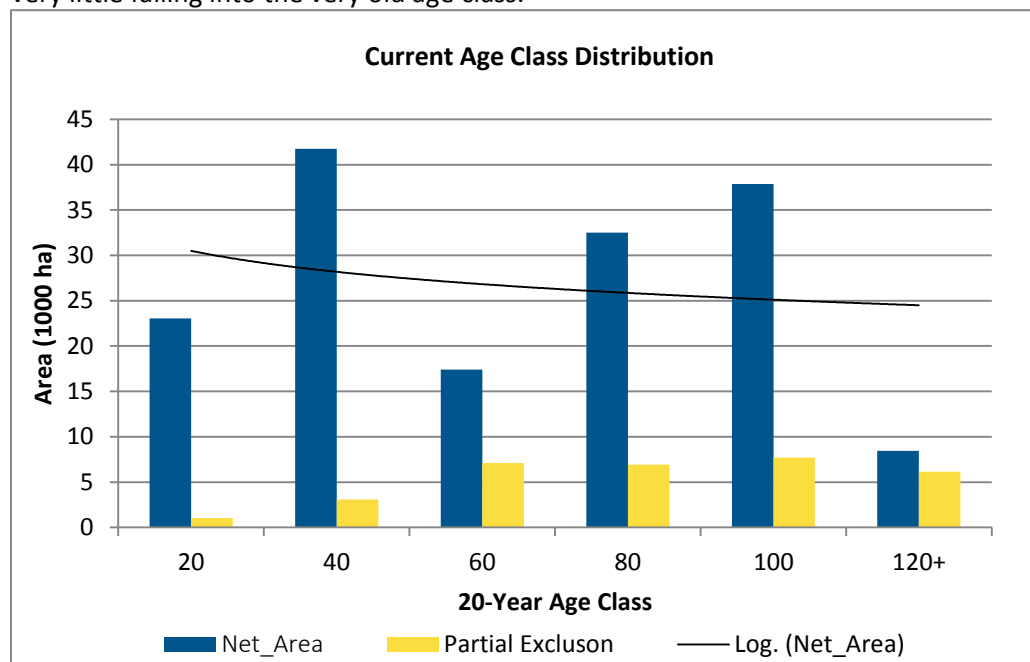
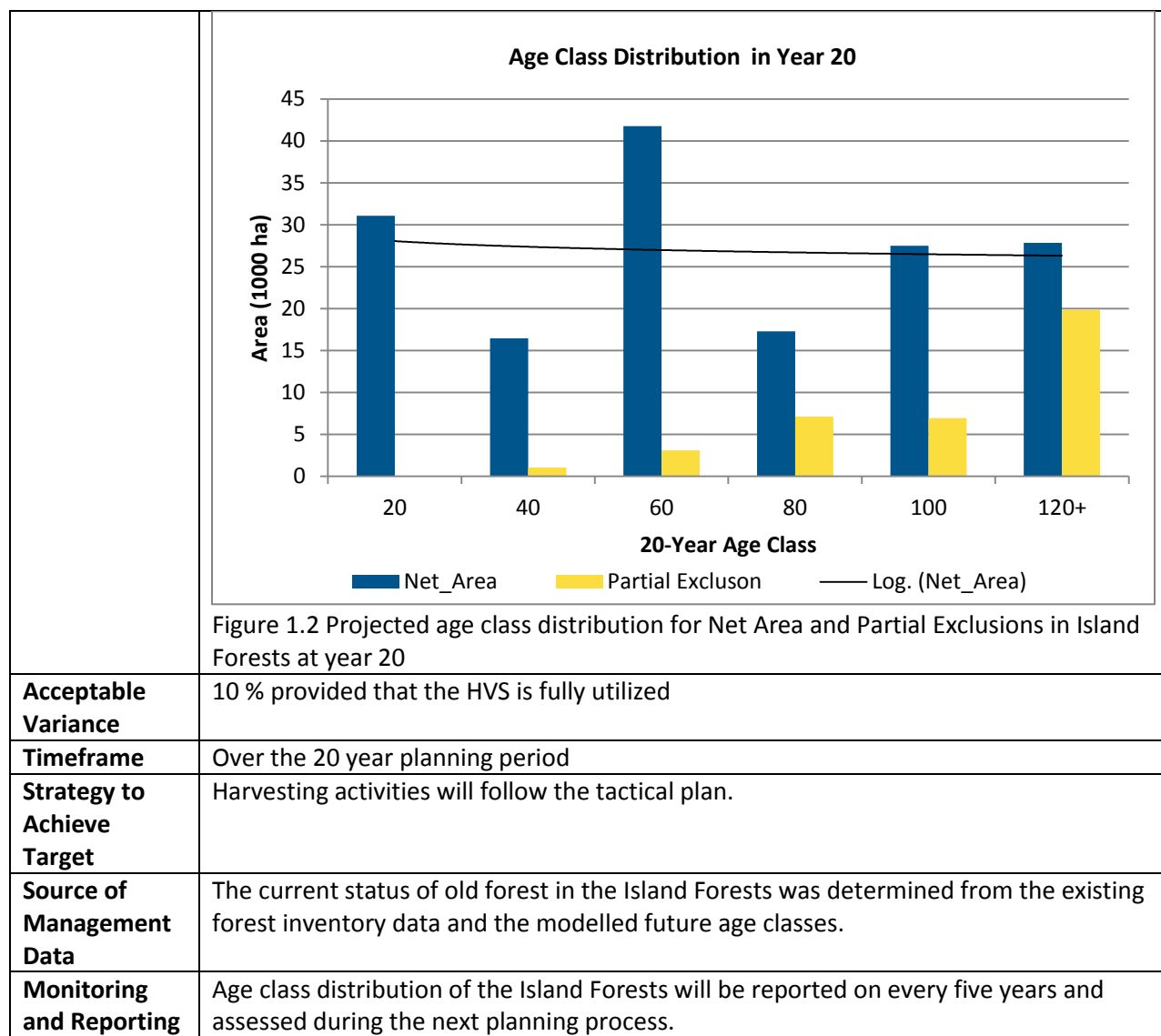


Figure 1.1 Current age class distribution for Net Area and Partial Exclusions in Island Forests

##### Target

Assuming major disturbances remain below the re-planning threshold, the projected age class distribution at year 20 is illustrated in Figure 1.2.



## Criterion 1 – Biological Diversity

### Element 1.1 – Ecosystem Diversity

#### Value 1.1.1 – Natural Range of Variation (NRV)

#### Objective 1.1.1.1 – Conservation of the biological diversity of Saskatchewan's forests

#### Indicator # 2 Area of old and very old forest by cover species group and management unit:

1. SwS (100 > old < 120, very old ≥ 120)
2. SbS (100 > old < 120, very old ≥ 120)
3. SjP (90 > old < 110, very old ≥ 110)
4. HS or SH (90 > old < 110, very old ≥ 110)
5. H (90 > old < 110, very old ≥ 110)

<b>Current Status</b>	<p>To date, old forest targets have not been applied to the Island Forests. The current status for the area of Old Forest and Very Old Forest are shown for each Development Type in Table 2.1.</p> <p>Table 2.1 Island Forests Old Forest Current Status</p> <table border="1"> <thead> <tr> <th rowspan="2">Management Unit</th><th rowspan="2">Species Group<sup>1</sup></th><th rowspan="2">Total Area (ha)</th><th colspan="2">Current Area in Old &amp; Very Old Forest Seral Stage</th><th colspan="2">Current Area in Very Old Forest Seral Stage</th></tr> <tr> <th>ha</th><th>%</th><th>ha</th><th>%</th></tr> </thead> <tbody> <tr> <td>West</td><td>SwS</td><td>3,681.56</td><td>874.3</td><td>23.7</td><td>348.9</td><td>9.5</td></tr> <tr> <td>West</td><td>SbS</td><td>6,424.24</td><td>2,073.9</td><td>32.3</td><td>750.4</td><td>11.7</td></tr> <tr> <td>West</td><td>SjP</td><td>29,259.49</td><td>5,464.6</td><td>18.7</td><td>42.2</td><td>0.1</td></tr> <tr> <td>West</td><td>HS or SH</td><td>8,270.79</td><td>1,005.0</td><td>12.2</td><td>98.5</td><td>1.2</td></tr> <tr> <td>West</td><td>H</td><td>26,617.87</td><td>1,917.6</td><td>7.2</td><td>37.0</td><td>0.1</td></tr> <tr> <td>East</td><td>SwS</td><td>5,480.75</td><td>2,095.2</td><td>38.2</td><td>637.7</td><td>11.6</td></tr> <tr> <td>East</td><td>SbS</td><td>15,462.24</td><td>5,359.4</td><td>34.7</td><td>2,887.0</td><td>18.7</td></tr> <tr> <td>East</td><td>SjP</td><td>43,371.93</td><td>5,048.0</td><td>11.6</td><td>716.3</td><td>1.7</td></tr> <tr> <td>East</td><td>HS or SH</td><td>17,011.44</td><td>1,903.3</td><td>11.2</td><td>426.9</td><td>2.5</td></tr> <tr> <td>East</td><td>H</td><td>37,372.37</td><td>3,377.1</td><td>9.0</td><td>71.9</td><td>0.2</td></tr> </tbody> </table>						Management Unit	Species Group <sup>1</sup>	Total Area (ha)	Current Area in Old & Very Old Forest Seral Stage		Current Area in Very Old Forest Seral Stage		ha	%	ha	%	West	SwS	3,681.56	874.3	23.7	348.9	9.5	West	SbS	6,424.24	2,073.9	32.3	750.4	11.7	West	SjP	29,259.49	5,464.6	18.7	42.2	0.1	West	HS or SH	8,270.79	1,005.0	12.2	98.5	1.2	West	H	26,617.87	1,917.6	7.2	37.0	0.1	East	SwS	5,480.75	2,095.2	38.2	637.7	11.6	East	SbS	15,462.24	5,359.4	34.7	2,887.0	18.7	East	SjP	43,371.93	5,048.0	11.6	716.3	1.7	East	HS or SH	17,011.44	1,903.3	11.2	426.9	2.5	East	H	37,372.37	3,377.1	9.0	71.9	0.2
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<b>Target</b>	<p>Maintain or recruit a minimum of 15% old or very old seral stage of the Managed Forest Landbase in each management unit by species group with 5% component of very old as a long-term average over the 200-year planning horizon for both management units of the Island Forests (East and West).</p>																																																																																						
<b>Acceptable Variance</b>	<p>Current levels of old and very forest for many cover species groups do not achieve the 15% old and very old forest area target outlined within the Forest Management Plan Standard. For this reason, no variance is proposed at this time.</p>																																																																																						
<b>Timeframe</b>	<p>Over the planning horizon</p>																																																																																						
<b>Strategy to Achieve Target</b>	<p>Amount and location of old and very old forest will be spatially identified within the Island Forests tactical plan. The model identifies and blocks the areas that need to be excluded from harvest activities over time until targets are achieved. This strategy will be communicated to operators throughout the planning process and implemented at time of harvest.</p>																																																																																						

<b>Source of Management Data</b>	The current status of old forest in the Island Forests was determined from the existing forest inventory data.
<b>Monitoring and Reporting</b>	Any updates to the initially identified area will be reported in annual report. Assessment of this target will be completed while re-planning the FMP or revising the tactical plan.

<sup>1</sup> *Species Group Descriptions:*

<b>Species Group</b>	<b>Description</b>
H	Hardwood stands
HS or SH	Mixedwood stands (hardwood dominant or softwood dominant)
SjP	Jack Pine leading softwood stands
SbS	Black Spruce leading softwood stands
SwS	White Spruce/Balsam Fir leading softwood stands



## Criterion 1 – Biological Diversity

### Element 1.1 – Ecosystem Diversity

#### Value 1.1.1 – Natural Range of Variation (NRV)

#### Objective 1.1.1.1 – Conservation of the biological diversity of Saskatchewan's Forests

#### Indicator # 3 Size class distribution of harvest events

Current Status	Recent harvest event history (2004 – 2016) shows the most common harvest events are between 25 and 500 hectares, with few large events and many small (Table 3.1). Harvest event size is influenced by factors such as stand size, harvest allocation and operator capacity. Usually one operator harvests in a given area/block, limiting opportunities for larger events and heavily influencing smaller events.						
	Table 3.1 Number of harvest events by size class distribution (2004 – 2016 harvest)						
	Harvest Event Area (ha)	Standard Size Classes	< 500		≥ 500 < 1,000	≥ 1,000	
		Operational Size Classes	≥ 1 < 25	≥25 < 500	≥ 500		
	# of Events		53	47	1	0	
	Area (ha)		550.5	4809.3	795.8	0	
	Area Distribution (%)		9	78	13	0	
	When fires burn in the Island Forests they have been very large. Of the eighteen fires that have burned since 1946, ten have been greater than 1,000 hectares and only three have been less than 25 hectares (Table 3.2). The fire data included in the summary contains total fire event areas that were completely within or partially within the Island Forests area.						
	Table 3.2 Number of fire events by size class distribution (1946-2016 fire history)						
	Fire Area (ha)	Standard Size Classes	< 500			≥ 500 < 1,000	≥ 1,000
Operational Size Classes		<1	≥ 1 < 25	≥25 < 500	≥ 500		
# of Fires		1	2	5	0	10	
Area (ha)		0.8	28.0	937.7	0	97,230.3	
Area Distribution (%)		0	0	1	0	99	
Target	10% of the area harvested will be in events <50ha, 80 % of the area harvested will be in events ranging between 50 and 500 hectares. 10% of the events will be larger than 500 ha.						
Acceptable Variance	The current FMP Standard identifies event size classes larger than 1500 ha. Due to limited size of the harvestable landbase, current impact of natural disturbance in the last ten years, lack of hardwood user and the intense public use of Island Forests, this plan proposes a lower event size class distribution than the Standard.						
Timeframe	Over the 10 year FMP term						
Strategy to Achieve Target	Forest estate modeling, forest inventories and tactical planning will spatially determine harvest events that satisfy both forest inventory and management considerations. This will provide further detail to delineate harvest events that fit within the target event size ranges.						

	To reduce creating many small harvest events, operators may need to work in the same or adjacent blocks. To increase the event sizes, agglomeration of harvest will be encouraged. It will help to achieve the larger harvest sizes of greater than 1000 ha.
<b>Source of Management Data</b>	Island Forest SFVI, TFM actual harvest and Ministry of Environment spatial fire records.
<b>Monitoring and Reporting</b>	Harvest event sizes reported every year with annual report and assessment carried out every ten years

## Criterion 1 – Biological Diversity

### Element 1.1 – Ecosystem Diversity

#### Value 1.1.1 – Natural Range of Variation (NRV)

#### Objective 1.1.1.1 – Conservation of the biological diversity of Saskatchewan's Forest

##### Indicator #4 Area of tree retention after harvest

<b>Current Status</b>	<p>Current harvest practices follow the independent forest operation standards which require that merchantable live tree retention shall be 3% of the harvest volume. However, this standard has only been applied in the Island Forests commencing in the 2010-11 operating year and has a lot of challenge, especially for independent operators. Also, most areas harvested within the Island Forests are jack pine and have been sanitized to control the spread of dwarf mistletoe, so the requirement for residuals is usually waived by the Area Forester.</p> <p>However, many small operators within the Island Forests have left a component of matrix retention within harvest blocks due to current markets.</p>
<b>Target</b>	<p>The retention area of live representative tree residuals for each harvest event shall be a minimum of 9% of the total harvested area. Retention will be calculated over the harvest event duration, unless otherwise exempted by the Forest Service for forest health reasons. Tree retention can be composed of Insular retention with single tree, clump residuals and island residuals or of proximal retention including peninsular or non-peninsular retention. Full descriptions and a diagram of each retention type are included within Section 1-35 Natural Forest Patterns of the 2017 draft Forest Management Plan Standard.</p>
<b>Acceptable Variance</b>	None
<b>Timeframe</b>	Throughout the 10 year FMP term
<b>Strategy to Achieve Target</b>	<p>Harvest events will be planned through the tactical plan generated by the forest estate model. Islands will be planned through the operating plan process prior to harvest. Retention requirements will be communicated to operators and implemented at the time of harvest.</p>
<b>Source of Management Data</b>	<p>The Island Forests SFVI is the primary source of management data, along with the tactical plan generated through forest estate modeling. Field reconnaissance and local knowledge will also help govern where tree retention remains on the landscape.</p>
<b>Monitoring and Reporting</b>	<p>Analysis for amount and location of tree retention is incorporated into the forest estate model. This information will be reported, in tabular form by amount and management unit, in the annual report. GIS will be used to measure retention. Achievement of target will be assessed every five years.</p>

## Criterion 1 – Biological Diversity

### Element 1.1 – Ecosystem Diversity

#### Value 1.1.1 – Natural Range of Variation (NRV)

#### Objective 1.1.1.1 – Conservation of the biological diversity of Saskatchewan's forests

#### Indicator # 5 The softwood component in hardwood stands is maintained (i. e., white spruce component in the hardwood stands)

<b>Current Status</b>	<p>Historical records demonstrate the importance of white spruce to the forest industry in Saskatchewan. The preference for white spruce as a raw material for lumber and pulp manufacture, and the significant silviculture challenges inherent in its regeneration have caused the species to decline in dominance in the southern boreal forest. While current practice requires regeneration of harvested species to an acceptable level, this has not necessarily been the case in past decades. The propensity of the hardwood (H) component often present in the white spruce stands to dominate where silviculture efforts are minimal or absent is a significant factor affecting the successful renewal of this species. The domination of hardwood is primarily due to the ability of trembling aspen and balsam poplar to regenerate by suckering from mature root systems allowing them to easily out-compete natural or planted conifer tree seedlings and become winners in the new stands.</p> <p>Although having a cover of 75% or higher of hardwood could be defined as a pure hardwood stand, it may still have up to 25% white spruce stands. Data is limited on the proportion of white spruce component in pure hardwood stands which presents a challenge in maintaining that proportion in post-harvest stands.</p>
<b>Target</b>	The white spruce component in H cover species group is maintained and consistent with NRV, Silviculture Ground Rules (SGR), modeling assumptions and the Regeneration Assessment Standard.
<b>Acceptable Variance</b>	The target acceptable level of variance is any level of increase and a reduction of no more than 10% area with a plan approved by the provincial Silviculture Expert.
<b>Timeframe</b>	Throughout the 10 year FMP term
<b>Strategy to Achieve Target</b>	The strategy includes the continued harvest and regeneration of the white spruce in H cover species group (CSG). A strategy that involves not harvesting white spruce in H cover species group will only temporarily maintain its prominence on the landscape. Mature and over-mature stands of this species will break-up and convert to other CSG over the next couple of decades if not actively managed. The strategy to achieve the target will involve exclusively planting white spruce on suitable areas of harvested H cover species group. The silviculture treatment objective to achieve the target is to concentrate white spruce renewal on areas essentially devoid of competing deciduous species. In addition, white spruce will be planted in the decking areas and reclaimed road to maintain its proportion at the landscape level.
<b>Source of Management Data</b>	SFVI data is the source of the current levels of white spruce forest on the Island Forests East and West management units. Area identified as white spruce in H cover species group in pre-harvest silviculture prescription will be compared to the area regenerated to white spruce in regeneration survey results.

<b>Monitoring and Reporting</b>	<p>By the time the new planning period is approaching its end, regeneration survey results for the current period and for the first couple of years of the new planning period will be available. The results of these surveys will be compared with the proportion of white spruce area within H cover species group identified in the pre-harvest silviculture prescription or the modeling assumption document and will be reported on in Volume 1 of the future FMP. On an annual basis, area planted to white spruce on H sites will be used to provide a running estimate of efforts to achieve the target. Regeneration surveys that identify areas regenerating to white spruce will also be reported.</p> <p>Achievement of target will be assessed every five years.</p>
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## Criterion 1 – Biological Diversity

### Element 1.1 – Ecosystem Diversity

#### Value 1.1.1 – Natural Range of Variation (NRV)

#### Objective 1.1.1.1 – Conservation of the biological diversity of Saskatchewan's forests

#### Indicator # 6 Relative abundance of Cover Species Group (CSG) is forecasted to be maintained at the next rotation

<b>Current Status</b>	<p>Spruce and jack pine dominated mixedwoods are perceived to be diminishing in extent in the southern boreal forest of the province. The significant silviculture challenges inherent in its regeneration have caused these forest types to decline in dominance in the southern boreal forest. While current practice requires regeneration of harvested species to an acceptable level, this has not necessarily been the case for these forest types in past decades. The propensity of the hardwood component, often present in the mixed wood stands, to dominate where silviculture efforts are minimal or absent is a significant factor affecting the successful renewal of this type. The domination of hardwood is primarily due to the ability of trembling aspen and balsam poplar to regenerate by suckering from mature root systems allowing them to easily out-compete natural or planted conifer tree seedlings and become dominant in the new stands.</p> <p>Quantitatively, jack pine (S) stands cover 48% of the Island Forests area followed by trembling aspen (H) with 33% (Figure 6.1).</p> <div> <table border="1"> <caption>Data for Figure 6.1: Area by Cover Species Group</caption> <thead> <tr> <th>Cover Species Group</th> <th>Area (%)</th> </tr> </thead> <tbody> <tr> <td>H</td> <td>33%</td> </tr> <tr> <td>HS</td> <td>8%</td> </tr> <tr> <td>S</td> <td>48%</td> </tr> <tr> <td>SH</td> <td>6%</td> </tr> <tr> <td>Tamarack</td> <td>6%</td> </tr> </tbody> </table> </div> <p>Figure 6.1 Current relative abundance of different cover species group in Island Forests</p>	Cover Species Group	Area (%)	H	33%	HS	8%	S	48%	SH	6%	Tamarack	6%
Cover Species Group	Area (%)												
H	33%												
HS	8%												
S	48%												
SH	6%												
Tamarack	6%												
<b>Target</b>	<p>Post-harvest area at the rotation age is proportionately established to pre-harvest cover species group (CSG). Current distribution of the CSG is provided as baseline in Figure 6.1.</p>												
<b>Acceptable Variance</b>	<p>The target acceptable level of variance is any level of increase or a reduction of no more than 10% with a plan approved by the provincial Silviculture Expert.</p>												
<b>Timeframe</b>	<p>Throughout the 10 year FMP Term</p>												

<b>Strategy to Achieve Target</b>	The strategy includes the continued harvest of the different hardwood, softwood and mixedwood stands. Based on current harvesting trends, significant harvest is not expected in the next FMP planning period. A temporary strategy that involves not harvesting these development types <sup>2</sup> will not have a great effect on its prominence on the landscape, but will allow more area to move into the old and very old seral stages. However, mature and over-mature stands of these development types will break-up and convert to other development types over the next couple of decades if not actively managed. The strategy to achieve the target will involve the planting of white spruce on suitable components of harvested SJP, SbSJP, SbS, SHjPtA, SHsPtA and SwS development types where aspen is expected to encroach on area previously stocked to conifer but where the white spruce is expected to have reasonable vigour and survival potential. On these development types, this approach will typically involve planting exclusively to white spruce due to its greater tolerance to competition from trembling aspen and other species than jack pine. Because the area regenerated to white spruce will exceed that harvested from the SHjPtA and SHsPtA development type landbase, the area of regenerated softwood-dominated mixedwood forest will have a high probability of increasing or at least being maintained.
<b>Source of Management Data</b>	SFVI data was the source of the current levels of white spruce-dominated provincial forest in both management units. Area harvested in the SHjPtA and SHsPtA development types (using depletion records) will be compared to the area regenerated to the SHjPtA and SHsPtA development types (using regeneration survey results).
<b>Monitoring and Reporting</b>	By the time the new planning period is approaching its end, regeneration survey results for the current period and for the first couple of years of the new planning period will be available. The results of these surveys will be compared with the area of different development types before harvest and will be reported on in Volume 1 of the future FMP. On an annual basis, area planted to pure white spruce on conifer-dominated mixedwood sites will be used to provide a running estimate of efforts to achieve the target. Regeneration surveys that identify areas regenerating to the SHjPtA and SHsPtA development types will also be reported. The area of SHjPtA and SHsPtA development types harvested will also be measured and reported on an annual basis. Assessment of the regeneration status of the harvested areas will be done every five years.

<sup>2</sup> Development Type Descriptions

<b>Development Type</b>	<b>Description</b>
HbP	Hardwood stands dominated by balsam poplar
HStAjP	Mixedwood stands dominated by aspen with jack pine as minor component
HStAwS	Mixedwood stands dominated by aspen with spruce/fir/tamarack as minor
HtA	Hardwood stands dominated by trembling aspen
SbS	Softwood stands dominated by black spruce
SbSjP	Softwood stands dominated by a combination of black spruce with jack pine
SHjPtA	Mixedwood stands dominated by jack pine
SHsPtA	Mixedwood stands dominated by spruce/fir
SjP	Softwood stands dominated by jack pine
StL*	Softwood stands dominated by tamarack (Tamarack content ≥30%)
SwS	Softwood stands dominated by white spruce

## Criterion 1 – Conservation of Biological Diversity

### Element 1.2 – Species Diversity

#### Value 1.2.1 - Quantity and Quality of Forest Habitat

#### Objective 1.2.1.1 – Maintain habitat for identified forest dwelling species

**Indicator # 7 Current habitat availability for identified forest dwelling species vs. predicted future supply (as determined through forest estate modeling). The following species were selected to track long-term habitat supply within the Island Forests**

1. Canada Warbler– species at risk federally, recommended provincially
2. Fisher – species of economic importance
3. Moose – species of traditional use and sport hunting importance

#### Current Status

The current predicted habitat supply has been generated for each of the three indicator species selected for the purpose of wildlife habitat management in this FMP. Figure 7.1 to 7.3 present the amount of current and future habitat supply predicted for fisher, moose and Canada Warbler respectively, in the Island Forests through the forest estate modeling process.

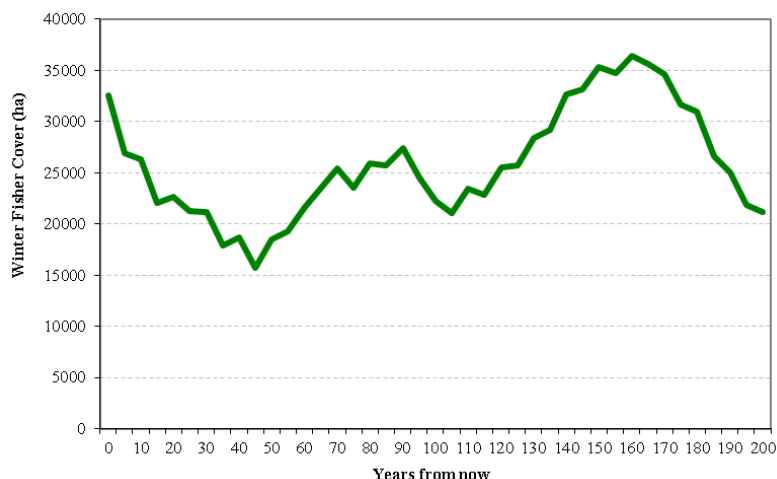


Figure 7.1 Winter cover for Fisher for the selected management strategy (SMS)



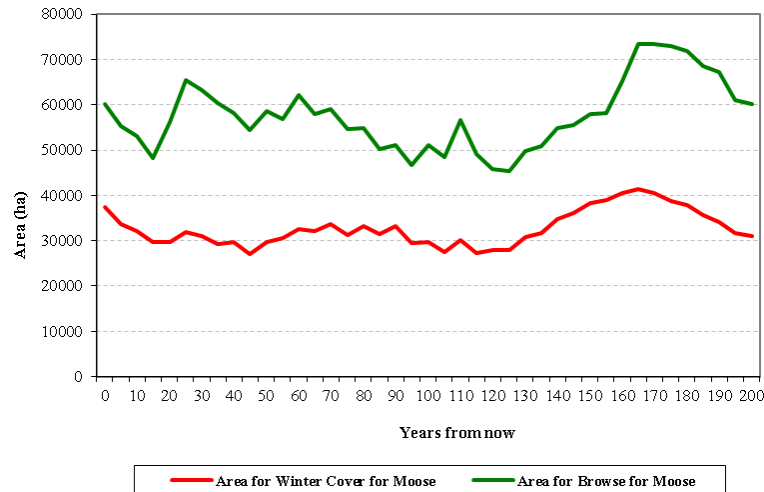


Figure 7.2 Moose habitat for the selected management strategy (SMS)

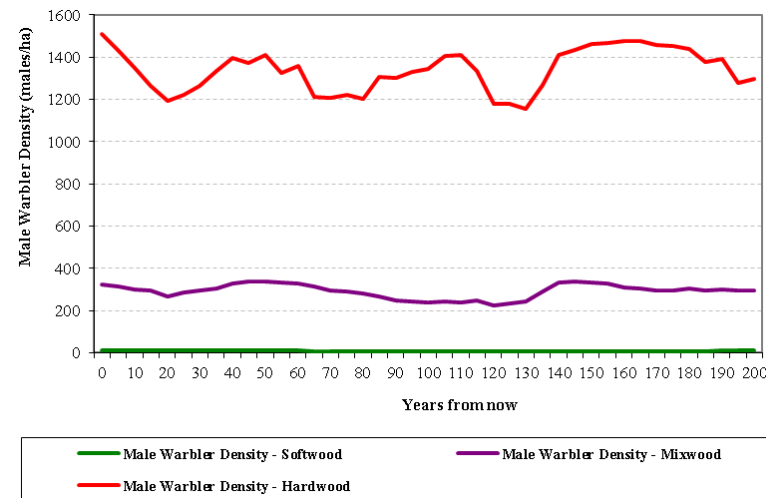


Figure 7.3 Male Warbler density for the selected management strategy (SMS)

Definitions of habitat (supply and quality) were determined through discussions with the ministry's Fish & Wildlife Branch, along with Environment Canada.

<b>Target</b>	The long-term average of the predicted habitat levels (Figures 7.1 – 7.3) shall be maintained.
<b>Acceptable Variance</b>	15% of target level for each species. Area for Moose/Fisher and Species/Ha for Warbler
<b>Timeframe</b>	Over the 10 year FMP term
<b>Strategy to Achieve Target</b>	The strategy to achieve the target is to undertake forest estate modeling and then follow the indicators and targets set for NFP in this plan. Establishing a survey of Canada Warbler density at five year intervals could also aid in verifying target achievement.
<b>Source of Management Data</b>	The SFVI provides the basis for the planning inventory which will be used in the forest estate model. Definitions of habitat suitability were prepared by wildlife ecologists familiar with the habitat needs of the three indicator species. Canada Warbler density data provided by Environment Canada.
<b>Monitoring and Reporting</b>	Reporting every year with annual report and assessment every five years.

<b>Criterion 1 – Biological Diversity</b>
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<b>Element 1.3 – Genetic Diversity</b>
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<b>Value 1.3.1 – Natural Genetic Diversity</b>
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<b>Objective 1.3.1.1 – No loss of natural tree genetic diversity through forest management activities</b>
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<b>Indicator #8 Seedlings are from wild or improved seed sources in accordance with the Saskatchewan Environmental Code</b>
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<b>Current Status</b>	No seedlings planted since 2002 have been from improved seedlots. Improved seedlots are seed orchard stock that is a result of cross pollination of two dominant trees native to the Saskatchewan commercial forests.
<b>Target:</b>	Seedlings planted in the Island Forests shall be from wild or improved seed lots. A minimum of 10% wild seed sources shall be planted on each harvested area.
<b>Acceptable Variance</b>	There will be a 5% variance on this target.
<b>Timeframe</b>	Throughout 10 year FMP term
<b>Strategy to Achieve Target</b>	Mixing wild seed with improved seed at the nursery during seeding production will be the primary strategy to achieve the target. No seedlings from genetically modified seed sources will be introduced.
<b>Source of Management Data</b>	Silviculture SDE Database, Annual Silviculture Plan
<b>Monitoring and Reporting</b>	Reported annually within the annual report and assessed every five years.

<b>Criterion 2 – Ecosystem Condition &amp; Productivity</b>
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**Element 2.1 – The stability, resilience and rates of biological production in forest ecosystem**

**Value 2.1.1 – Natural Ecosystem Processes**

**Objective 2.1.1.1 – Maintain the stability, resilience and rates of biological production in forest ecosystems**

<b>Indicator # 9 Post-harvest areas are successfully regenerated</b>	
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<b>Current Status</b>	Post 2002 harvest areas are currently regenerated to the limit of the Island Forests Forest Management Fund. Regeneration assessments of 2004-2015 harvest areas show about 33% Not Sufficiently Regenerated (NSR) area. Many NSR areas have resulted from harvest areas within mistletoe infected jack pine where the seed source is diminished or within fire salvage areas that were hit with a second fire or where natural regeneration was not successful.
<b>Target</b>	Post-harvest areas assessed as Free To Grow (FTG) are consistent with the SGRs and the Forest Regeneration Assessment Standard.
<b>Acceptable Variance</b>	No harvest blocks surveyed in a given year can have NSR at establishment or FTG surveys. For all existing NSR blocks, a plan will be developed and approved by the provincial Silviculture Expert to bring those blocks to SR category.
<b>Timeframe</b>	Establishment surveys will be conducted between 4 to 7 years post-harvest. Free to Grow surveys between 8 and 14 years post-harvest (as per Regeneration Assessment standard).
<b>Strategy to Achieve Target:</b>	<ul style="list-style-type: none"> <li>• Sufficient renewal funding</li> <li>• Open communication between SRC, Area Forester, Inspecting Officers and Independent Operators</li> <li>• Ongoing monitoring of harvest areas and renewal activities</li> <li>• Balance harvest levels against renewal success (SR)</li> </ul>
<b>Source of Management Data</b>	Island Forests SFVI, Silviculture SDE Database
<b>Monitoring and Reporting</b>	Reported annually within the annual report and assessed every five years.

## Criterion 2 – Ecosystem Condition & Productivity

### Element 2.1 - The stability, resilience and rates of biological production in forest ecosystems

#### Value 2.1.1 - Natural Ecosystem Processes

#### Objective 2.1.1.1 - Maintain the stability, resilience and rates of biological production in forest ecosystems

#### Indicator # 10 Change in managed forest landbase in the Island Forests through balancing permanent removals of productive landbase (e.g. roads, gravel pits) against area returned to the productive landbase (e.g. reclamation, reforestation)

<b>Current Status</b>	<p>Road reclamation and construction has been minimal in the recent past. Most in-block roads have been reclaimed since 2003 and many abandoned roads and trails have been either reclaimed or have road closures put in place through Ministry programs. The current area taken up by forestry roads is just over 1% of the Island Forests Area (Table 10.1). There is no record of all-season roads reclamation taken place over the past 10 years.</p> <p>Table 10.1 Island Forests Area Currently in Forestry Roads</p> <table><tr><th>Road Class</th><th>Total road length (km)</th><th>Estimated Net road width (m)</th><th>Estimated Area (m<sup>2</sup>)</th><th>Estimate Area (ha)</th></tr><tr><td>1</td><td>89.291</td><td>10</td><td>892,910</td><td>89.3</td></tr><tr><td>2</td><td>140.137</td><td>8</td><td>1,121,096</td><td>112.1</td></tr><tr><td>3 (Inter-block)</td><td>2,952.34</td><td>7</td><td>20,673,401</td><td>2,067.3</td></tr><tr><td>Total</td><td>Forest Area</td><td>228,773 ha</td><td></td><td>2,268.7</td></tr><tr><td></td><td>Forests less designated areas</td><td>223,897 ha</td><td>% area in road (class 1, 2, &amp; interblock 3)</td><td>1.0</td></tr></table>					Road Class	Total road length (km)	Estimated Net road width (m)	Estimated Area (m <sup>2</sup> )	Estimate Area (ha)	1	89.291	10	892,910	89.3	2	140.137	8	1,121,096	112.1	3 (Inter-block)	2,952.34	7	20,673,401	2,067.3	Total	Forest Area	228,773 ha		2,268.7		Forests less designated areas	223,897 ha	% area in road (class 1, 2, & interblock 3)	1.0
Road Class	Total road length (km)	Estimated Net road width (m)	Estimated Area (m <sup>2</sup> )	Estimate Area (ha)																															
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	Forests less designated areas	223,897 ha	% area in road (class 1, 2, & interblock 3)	1.0																															
<b>Target</b>	Less than or equal to 2% of the net forest area converted to other landuses as a result of forest management activities over a rotation period. Other landuses include permanent roads, gravel pits etc.																																		
<b>Acceptable Variance</b>	A variance of 5% of the target is acceptable																																		
<b>Timeframe</b>	Throughout the 20 year planning period																																		
<b>Strategy to Achieve Target</b>	Where possible, plan with other forest users and forecast for future road requirements to help maintain a small network of roads that would serve all forest users and still be within target. Maintain communication with other Ministry of Environment Lands staff for landuse plan updates or road closure planning. A regressive approach (furthest block first) to reclamation and decommissioning will be essential to maintaining levels below 2%. Many small operators currently favour construction of class 3 in-block roads which are reclaimed within 2 years following harvest as per the Independent Forest Operation Standards. Future guidance to be provided through the Linear Corridor Standard currently under development.																																		

<b>Source of Management Data</b>	Current data was provided by SRC from its spatial roads database. Future data will be obtained through the submission of annual reports in the form of GIS files. These files will be added to the provincial database for future calculations. Saskatchewan Forestry Road Network (SRFN) Geodatabase on eGIS
<b>Monitoring and Reporting</b>	Monitoring will take place each year through annual reporting requirement and assessment will be every five years

<b>Criterion 2 – Ecosystem Condition &amp; Productivity</b>
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**Element 2.1 – The stability, resilience and rates of biological production in forest ecosystem**

**Value 2.1.1 – Natural Ecosystem Processes**

**Objective 2.1.1.1 – Maintain the stability, resilience and rates of biological production in forest ecosystems**

<b>Indicator # 11 Net area disturbed by stand replacing natural events (fire, insect, disease and wind) over the planning period</b>
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<b>Current Status</b>	The Island Forests have been subjected to a number of large wildfires. Some of these fires have threatened land owners in the areas. Approximately 79,780 ha of Island Forests were disturbed by different natural disturbance agents (such as fire, blowdown, insect and disease) over the period of 2006-2016. It is roughly an annual disturbance of 2%. It should be noted that not all these disturbances were stand replacing disturbances.
<b>Target</b>	A net area impacted by stand replacing natural disturbances (such as fire, insect and disease) is within 10% over the planning period. A new planning process shall be initiated when such impact exceeds the provided threshold during the planning period.
<b>Acceptable Variance</b>	No variation allowed
<b>Timeframe</b>	Over the 20 year planning period
<b>Strategy to Achieve Target</b>	Update of the inventory in an annual basis after receiving data on disturbances such as by fire, insect and disease. A calculation of the cumulative impact area over the year will also be maintained.
<b>Source of Management Data</b>	Island Forests SFVI and spatial fire and other disturbance records.
<b>Monitoring and Reporting</b>	Reported and assessed annually

## Criterion 2 – Ecosystem Condition & Productivity

### Element 2.1 – The stability, resilience and rates of biological production in forest ecosystem

#### Value 2.1.1 – Natural Ecosystem Processes

#### Objective 2.1.1.1 – Maintain the stability, resilience and rates of biological production in forest ecosystems

#### Indicator # 12 Proportion of a natural disturbance event retained un-salvaged

<b>Current Status</b>	Salvage harvesting for fire, wind, insect and disease disturbances have been a common occurrence within the Island Forests over the last decade. Due to the lower harvesting levels and short recovery time periods, every event included a proportion of un-salvaged area. Current harvest practices also follow the Independent Forest Operation Standards which has required a proportion of unsalvaged area be maintained within harvest block retention with the exception of dwarf mistletoe operations.
<b>Target</b>	<p>A single contiguous area covering at least 20% of the natural disturbance event shall be identified and reserved from all harvesting activities. Where the opportunity exists, this area reserved from all harvesting activities, such that the area reserves from harvest shall be:</p> <ul style="list-style-type: none"> <li>• free of roads, trails and skid trails, and</li> <li>• be composed of tree species representative of merchantable sized timber representing burn codes 1, 2 and 3 (1 = green, 2 = root burnt, 3 = some trunk scorch)</li> </ul> <p>All salvage harvest blocks shall maintain retention as detailed in indicator #4, unless exempted for forest health reasons.</p>
<b>Acceptable Variance</b>	None unless exempted for forest health reasons
<b>Timeframe</b>	Within 2 years of the event initiation date, unless otherwise approved in operating plans.
<b>Strategy to Achieve Target</b>	Areas where crown fire has not sanitized dwarf mistletoe on jack pine will be harvested first. Reserve areas, islands and matrix will be planned prior to commencement of harvesting activities. Clumps and individual tree retention requirements will be communicated to operators and implemented at the time of harvest. Retention trees will be representative of the pre-disturbance forest composition.
<b>Source of Management Data</b>	Island Forests SFVI and spatial fire database
<b>Monitoring and Reporting</b>	Reported annually within the annual report and assessed every five years.

<b>Criterion 2 - Ecosystem Condition &amp; Productivity</b>
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**Element 2.1 -The stability, resilience and rates of biological production in forest ecosystems**

**Value 2.1.1 - Natural Ecosystem Processes**

**Objective 2.1.1.1 Maintain the stability, resilience and rates of biological production in forest ecosystems**

**Indicator # 13 Yield curve suitability: measured by actual harvest volume (m<sup>3</sup>/ha) compared to predicted volume**

<b>Current Status</b>	Currently scaled volumes are compared to inventory predicted volumes to ensure completeness of actual harvest data submission on an annual basis.
<b>Target</b>	The actual harvest volume, broken down by softwood and hardwood, shall be within 15% of the volume estimates predicted by yield curves.
<b>Acceptable Variance</b>	15% for the discrepancy between the actual harvest volumes measured with the scaling reconciliation and the predicted harvest volumes by the yield curves
<b>Timeframe</b>	5 years
<b>Strategy to Achieve Target</b>	Follow the Scaling Standard for collection of actual harvest volumes. To follow the procedure of mapping the harvest, knowledgeable GIS technologists are required for generating accurate spatial harvest depletion boundaries based on either GPS or satellite imageries, which are to be spatially overlain with the planning inventory.
<b>Source of Management Data</b>	Planning inventory, yield curves, and spatial harvest boundaries, and results of scaled and reconciled delivered harvested volume
<b>Monitoring and Reporting</b>	This target will be assessed and reported on a five year basis



<b>Criterion 2 - Ecosystem Condition &amp; Productivity</b>
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**Element 2.1 -The stability, resilience and rates of biological production in forest ecosystems**

**Value 2.1.1 - Natural Ecosystem Processes**

**Objective 2.1.1.1 - Maintain the stability, resilience and rates of biological production in forest ecosystems**

**Indicator # 14 The utilization assumptions specified in the yield curves are consistent with the implemented utilization specifications**

<b>Current Status</b>	Currently, the operators harvest with a 10cm top utilization for Softwood Sawlogs and for Hardwood. Although currently not being requested, there is an 8cm utilization available for the softwood pulp volume.
<b>Target</b>	Operators shall meet the current utilization specifications unless otherwise approved
<b>Acceptable Variance</b>	None
<b>Timeframe</b>	Over the 20 year planning period
<b>Strategy to Achieve Target</b>	Utilization targets will be communicated to operators.
<b>Source of Management Data</b>	Harvesting Permits and yield curves and results of scaled and reconciled delivered harvested volume.
<b>Monitoring and Reporting</b>	This target will be reported annually within the annual report and assessed every five years

<b>Criterion 2 – Ecosystem Condition &amp; Productivity</b>
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**Element 2.1 – The stability, resilience and rates of biological production in forest ecosystems**

**Value 2.1.1 – Natural Ecosystem Processes**

**Objective 2.1.1.1 – Maintain the stability, resilience and rates of biological production in forest ecosystems**

<b>Indicator #15 Operational adherence to the Tactical Plan</b>	
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<b>Current Status</b>	Over the past few years, operating plans in Island Forests have adhered to the existing tactical plan or focused on salvage operations.
<b>Target</b>	85% of the harvested area on the licence within the term of the plan will fall within the delineated spatial boundaries of the tactical plan. Harvest events adhere to the delineated spatial boundaries of the tactical plan as close as possible.
<b>Acceptable Variance</b>	Within the five year assessment cycle, the variance of actual vs. planned harvest should not exceed 15%.
<b>Timeframe</b>	Over the 10 year FMP term
<b>Strategy to Achieve Target</b>	Creation of a planned and actual harvest layers for the Island Forests within the Ministry's centralized (SDE) spatial database. These harvest layers will be spatially assessed against the Island Forests SFVI.
<b>Source of Management Data</b>	Planned harvest blocks will be provided to the Inventory and Planning Unit by the Island Forests planner in an ESRI compatible spatial format. Actual harvest blocks will be obtained from the Ministry's annual satellite imagery depletion update program. The SFVI inventory will be maintained by the Inventory and Planning Unit within the Ministry's centralized (SDE) spatial database.
<b>Monitoring and Reporting</b>	Monitored annually, assessed on a five year cycle.

<b>Criterion 3 – Soil &amp; Water</b>
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<b>Element 3.1 – Quantity and Quality of Soil and Water</b>
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<b>Value 3.1.1 - Minimize loss of quantity and quality of soil and water</b>
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<b>Objective 3.1.1.1 - Maintain and/or enhance the quantity and quality of soil and water</b>
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<b>Indicator # 16 Harvesting activities are in compliance with the terms of their licence, approved operating plan, the Saskatchewan Environmental Code and Standards, and applicable federal and provincial legislation</b>
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<b>Current Status</b>	Soil disturbance in harvest blocks is highly related to road construction, use, reclamation and riparian area management. While roads are necessary within the forests, soil management objectives include decreasing the amount of disturbance to soils and water from the road network. Riparian Management Areas (RMAs) are explicit in the Independent Forest Operator Standards with specific riparian reservation distances from various bodies of water.
<b>Target</b>	The licensee shall ensure that harvest blocks, road construction and reclamation and riparian areas comply with authorizations, the code and legislation.
<b>Acceptable Variance</b>	Soil disturbance shall not exceed 5% of the harvest block area. Any variance to riparian management areas will require prior approval from the Forest Service.
<b>Timeframe</b>	Annually over the 20 year planning period
<b>Strategy to Achieve Target</b>	By limiting the variance to the target, soil disturbance in the Island Forests will be kept below provincial target. When harvesting activity is present it will be necessary to have annual sampling of harvest blocks to ensure compliance rates with proper road closures.
<b>Source of Management Data</b>	Activities are currently inspected and reported within the RFO process (Report on Forest Operations) by the Forest Service Inspecting Officer. Any non-compliance with soil disturbance and riparian management is tracking and reported within this process.
<b>Monitoring and Reporting</b>	Monitored and reported annually, assessed on a five year basis

<b>Criterion 3 – Soil &amp; Water</b>
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<b>Element 3.1 –Quantity and Quality of Soil and Water</b>
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<b>Value 3.1.1 – Minimize loss of quantity and quality of soil and water</b>
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<b>Objective 3.1.1.1 – Maintain and/or enhance the quantity and quality of soil and water</b>
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<b>Indicator # 17 Crossings are in compliance with the terms of their licence, approved operating plan, the Saskatchewan Environmental Code and Standards, and applicable federal and provincial legislation</b>
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<b>Current Status</b>	Current harvest practices follow the Independent Forest Operator Standards. This standard requires operators to design, install and maintain the crossings and ensure the compliance with operating plan, habitat protection permit and other legislations of the provincial and federal governments.
<b>Target</b>	<ul style="list-style-type: none"> <li>a. The licensee shall ensure that watercourse and wetland crossing installations and removals comply with authorizations, the code and legislation.</li> <li>b. The licensee is responsible for developing, maintaining and following standard work procedures and/or protocols to ensure inspection, monitoring, reporting and maintenance of watercourse and wetland crossings comply with authorizations, the code and legislation.</li> </ul>
<b>Acceptable Variance</b>	At least 95% of the time, an inspection report shall indicate the compliance of the activities to the related standards and procedures. Where the target is not met, a remediation plan shall be prepared by the operator and submitted to the Forest Service for approval.
<b>Timeframe</b>	Annually over the 20 year planning period
<b>Strategy to Achieve Target</b>	Inspecting Officers will complete a 100% survey of all crossings to the Independent Forest Operation Standard with the expectation that operators will be in compliance. Where there is non-compliance, operators will be tasked to prepare and submit a remediation plan to the Forest Service for approval. Implementation of the approved remediation plan will be at the cost of the operator. Failure to do so will jeopardize future timber allocations. Operators have the procedure in place for the inspection, monitoring, reporting and maintenance of watercourse and wetland crossings.
<b>Source of Management Data</b>	Inspecting Officer's reports and Annual Reports
<b>Monitoring and Reporting</b>	Inspected and reported annually, assessed on a five year basis

<b>Criterion 4 - Role in Global Ecological Cycles</b>
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<b>Element 4.1 - Carbon Cycle</b>
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<b>Value 4.1.1 - Productive Landbase</b>
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<b>Objective 4.1.1.1 - Mitigate the impact of the forest and forest activities on the productive landbase</b>
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<b>Indicator # 18 Event duration</b>
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<b>Current Status</b>	Currently, operators need to get approval of their operating plan every year and complete the harvest, road reclamation and renewal within the time specified in the operating plan. They would like to have an approval for multiyear events to minimize administrative involvement and increase the harvest event sizes.
<b>Target</b>	All harvest events created will be completed within 10 years or less (expressed annually and cumulatively as percent of event completed by area).
<b>Acceptable Variance</b>	The Forest Service encourages the operators to complete the event and renewal at the shortest possible time.
<b>Timeframe</b>	Over the 10 year FMP term
<b>Strategy to Achieve Target</b>	The strategy to achieve the target is to encourage operators to complete the event at the shortest time possible, reclaim the road and renew the area. A regular monitoring of the open events will also facilitate the completion of those events in time.
<b>Source of Management Data</b>	Data submission, event plans and annual reports
<b>Monitoring and Reporting</b>	Reported annually and assessed every five years

## Criterion 5 - Economic & Social Benefits

### Element 5.1 - Economic Benefits

#### Value 5.1.1 - Sustainable Economic Benefits over FMP Planning Period

##### Objective 5.1.1.1 - Maximize the economic benefits without compromising the productive capacity of the forest ecosystem

#### Indicator # 19a Utilization of Harvest Volume Schedule (HVS)

**Current Status** Since 2011, operating plans have followed the HVS developed for this FMP which has been now been updated to 66,600m<sup>3</sup>/year for softwoods and 60,374m<sup>3</sup>/year for hardwoods. Approved HVS still remains much higher than the current harvested volumes. Figure 19.1 shows the softwood and hardwood total HVS compared to the actual harvest volumes within the Island Forests for the past ten years. On a ten-year average, the actual harvest of softwoods is 42,211m<sup>3</sup>/year, while the actual harvest of hardwoods is only 1,058m<sup>3</sup>/year.

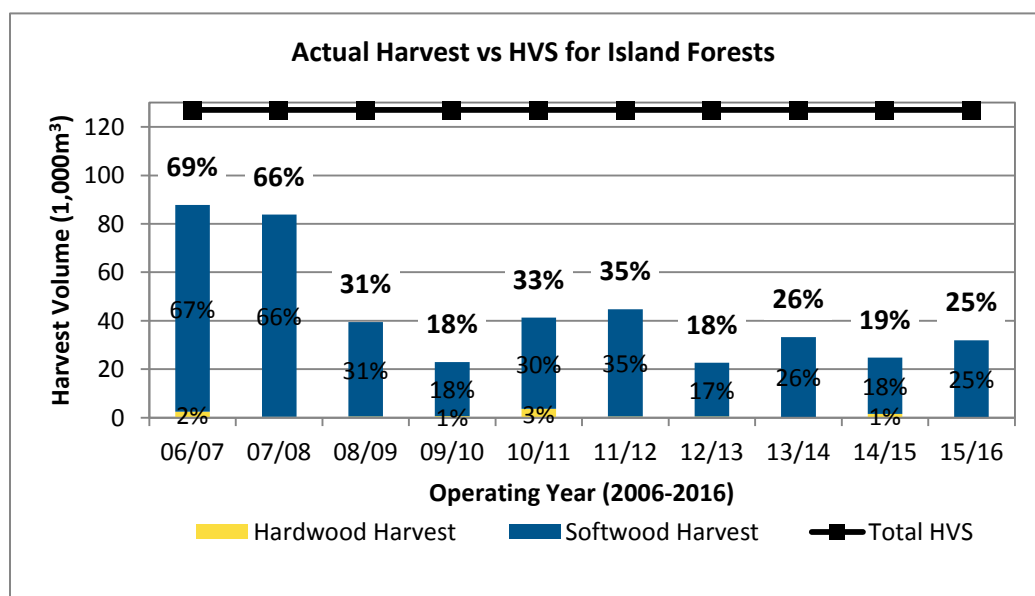


Figure 19.1 Historic actual harvest volumes vs. HVS

<b>Target</b>	Percentage of the approved HVS (hardwood, softwood and pulp) utilized in each 5-year period (expressed annually and cumulatively) is consistent with the terms of their licence, approved FMP and operating plan.
<b>Acceptable Variance</b>	No variance is allowed for actual five-year softwood and hardwood harvest volumes.
<b>Timeframe</b>	Over the 10 year FMP Term
<b>Strategy to Achieve Target</b>	Island Forests Planner will ensure that approved operating plans do not exceed the defined HVS.
<b>Source of Management Data</b>	The reported results of the volumes actually harvested, reconciled on an annual basis.
<b>Monitoring and Reporting</b>	The target shall be reported annually and assessed on a five year basis.

<b>Criterion 5 - Economic &amp; Social Benefits</b>
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<b>Element 5.2 - Social Benefits</b>
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<b>Value 5.2.1 - Human life and property are protected from wildfire</b>
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<b>Objective 5.2.1.1 – Minimize injury, loss and damage caused by wildfire</b>
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<b>Indicator # 19b Harvest plans completed that are designed to lower wildfire risks to communities</b>
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<b>Current Status</b>	The planning team has identified two areas where harvesting can create a fuel break to reduce wildfire risk to two key facilities within the Nisbet Forest. Harvesting operations to create a fire break around the Prince Albert Satellite Station commenced in February 2017. The other area to be targeted for a future date is a fuel break around the Prince Albert Landfill site.
<b>Target</b>	FireSmart harvest areas identified in the Tactical Plan and the Volume III Wildfire Management Strategy will be harvested based on the identified priority.
<b>Acceptable Variance</b>	Economic feasibility and the merchantability are key criteria when determining harvest areas. Operators will not be expected to harvest areas that do not meet these criteria.
<b>Timeframe</b>	Over the 20 year planning period
<b>Strategy to Achieve Target</b>	The tactical plan will be reviewed with Wildfire Management Branch to identify and prioritize harvest areas adjacent to communities where a moderate to high wildfire risk exists.
<b>Source of Management Data</b>	Tactical Plan, Wildfire Management Branch Fire & Fuel Data
<b>Monitoring and Reporting</b>	The target shall be reported annually and assessed on a five year basis.

<b>Criterion 5 –Economic &amp; Social Benefits</b>
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<b>Element 5.2 - Distribution of Benefits</b>
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<b>Value 5.2.1 - Fair Distribution of Benefits</b>
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<b>Objective 5.2.1.1 - To ensure that other forest uses are addressed</b>
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<b>Indicator # 20 Stakeholders &amp; public engagement</b>	
<b>Current Status</b>	PAG was established in Fall of 2016. The first PAG meeting took place on October 25, 2016. Three meetings have been scheduled for FMP development. Community open houses will be scheduled upon completion of the Volume III document. Annually, public information sessions are held in several communities to engage the stakeholders to review the Annual Operating Plan.
<b>Target</b>	At a minimum, annually meet with the Public Advisory Group and the public to discuss forest management operations and implementation of the Forest Management Plan and subsequent annual operations plans.
<b>Acceptable Variance</b>	None
<b>Timeframe</b>	Annual
<b>Strategy to Achieve Target</b>	Annual Public open house sessions to be held in the communities of Prince Albert, Choiceland and Melfort to engage stakeholders on the annual operation plan. Meeting notices will be circulated through PAG members, Nisbet Landuse Implementation Team members and advertisements in local newspapers two weeks before the meetings, posted on community bulletin boards and emailed to Municipal offices. Hold 2 meetings with the PAG annually.
<b>Source of Management Data</b>	Annual report. PAG Terms of Reference will identify the meeting schedule.
<b>Monitoring and Reporting</b>	Annually



## Criterion 5 – Economic & Social Benefits

### Element 5.2 – Distribution of Benefits

#### Value 5.2.1 – Fair Distribution of Benefits

#### Objective 5.2.1.1 – To ensure other forest uses are addressed

#### Indicator #21 Spatially identified non-timber resources and forest use activities

<b>Current Status</b>	The Island Forests are home to many activities including cross-country skiing, cycling, hiking, snowmobiling, hunting, fishing, and bird watching. They are also used for various economic activities such as timber harvesting, mushroom harvesting, mineral exploration and grazing. There are third party inventories on a few of these activities with groups such as, the Nordic Ski Club, the PA Ski Club, and the Saskatchewan Snowmobile Association which maintain maps of their trails in the Nisbet Forest. However, there are many other activities in the Island Forests which are not accounted for. In 2011, the Ministry commenced compiling an inventory of such forest uses in the Island Forests Special Places Map.
<b>Target</b>	On-going maintenance and update of 100% of all known locations of recreation and non-timber resource activity locations into the Island Forests Non-Timber Forest Values spatial dataset, which is to be maintained in the ministry's central SDE database.
<b>Acceptable Variance</b>	The ministry will capture and update all spatial defined non-timber resources/activities within the Island Forests with a spatial accuracy (variance) of 1 km.
<b>Timeframe</b>	Data updates, correction and maintenance of the dataset will be an on-going activity.
<b>Strategy to Achieve Target</b>	In order to continuously accumulate information on the forest activities, contribution from the SRC, local forest users and advisory boards will be requested. Creation of a forestry directive identifying a data manager, potential data sources, update process, and timeframes in accordance with those identified in the FMP.
<b>Source of Management Data</b>	Currently, much of the data is spatially referenced in only a tabular format, on paper maps or through several dispersed ESRI shapefiles. As of April 1, 2017 the ministry centralized (SDE) spatial database will be the sole source of data. Performance can be measured through comparison of new tabular data available through Lands branch as well as through comparison of related databases maintained on the Geospatial Branch (GSB) SDE instance.
<b>Monitoring and Reporting</b>	Annually

## Criterion 5 – Economic & Social Benefits

### Element 5.3 – Sustainability of Benefits

#### Value 5.3.1 – No Loss of Benefits

#### Objective 5.3.1.1 – Maintain or enhance benefits

#### Indicator # 22 Harvest operations are proportionally distributed across the Island Forests

Current Status	Previous to the current tactical plan, harvesting operations occurred where independent operators identified historical operating areas or where fire or blowdown salvage was identified. Since 2015, harvesting operations have occurred within the identified tactical plan areas.				
Target	Area targets by cover species grouping and management unit (MU) for each 5-year period are achieved.				
	Table 22.1 Area distribution by period of harvest and species group within the tactical plan				
	Cover Group	Period 1 (Years 1-5) Area (ha)	Period 2 (Years 6-10) Area (ha)	Period 3 (Years 11-15) Area (ha)	Period 4 (Years 16-20) Area (ha)
	SwS	262	203	202	396
	SbS	402	288	381	554
	SjP	1,753	1,903	1,531	1,016
	HS or SH	281	450	326	616
	H	1,902	2,139	1,714	1,965
Acceptable Variance	10% by species group and management unit (area)				
Timeframe	Over the 20 year planning period				
Strategy to Achieve Target	Adhere to tactical plan. Complete annual review of cumulative harvest volumes by management unit during operating plan review and approval to ensure targets are not exceeded. If targets are met within one management unit, operators will be redirected into another unit.				
Source of Management Data	Planning inventory, tactical plan, data submission and scaled data				
Monitoring and Reporting	Annually reported and assessed every five years				

<b>Criterion 6 –Society’s Responsibility</b>
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**Element 6.1 – Aboriginal & Treaty Rights**

**Value 6.1.1 - Aboriginal & Treaty rights are respected in regard to planning and implementing forestry activities**

**Objective 6.1.1.1 - To ensure that Aboriginal & Treaty rights are respected while planning and implementing forest activities**

<b>Indicator # 23 First Nation &amp; Métis Consultation &amp; Engagement</b>	
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<b>Current Status</b>	First Nation & Métis communities within the Island Forests vicinity or communities that are known to access this area are being involved in ongoing discussions, review of operational and forest management plans and advisory group processes.
<b>Target</b>	On an annual basis, ensure that efforts to involve 100% of the First Nation & Métis communities within the vicinity of the Island Forests are conducted. This will involve the opportunity to provide input and technical review of operational and forest management plans and participate in advisory group processes.
<b>Acceptable Variance</b>	None
<b>Timeframe</b>	Throughout 10 year FMP term
<b>Strategy to Achieve Target</b>	Consultation in adherence to the Government of Saskatchewan First Nation and Métis Consultation Policy Framework (CPF) June 2010. Engage local First Nations and Métis within ongoing Public Advisory Group activities and meetings.
<b>Source of Management Data</b>	Forest Service maintained consultation logs and the Government of Saskatchewan’s Duty to Consult SharePoint Site. Support may also be requested from Lands and Consultation Branch, Ministry of Government Relations and the Aboriginal Affairs Unit.
<b>Monitoring and Reporting</b>	Annual Report

<b>Criterion 6 –Society’s Responsibility</b>
--

**Element 6.2 – Aboriginal Traditional Land Use and Forest Based Ecological Knowledge**

**Value 6.2.1 - Protection of Aboriginal traditional land use and forest based ecological knowledge**

**Objective 6.2.1.1 - To avoid impacting culturally important sites**

<b>Indicator # 24 Spatial identification and operational protection of known culturally significant Heritage and Aboriginal sites in the Island Forests</b>
---

<b>Current Status</b>	The Ministry’s Island Forests Special Places Map and the Island Forests Heritage Sites Map.
<b>Target</b>	On an annual basis, acquire and input into the ministry’s central SDE GIS database, 100% of all known locations of cultural, heritage or traditional Aboriginal sites in the Island Forests and develop operating plans that protect these known sites of heritage, cultural and Aboriginal forest values.
<b>Acceptable Variance</b>	The ministry will capture and update all spatial defined locations of cultural, heritage or traditional Aboriginal sites within the Island Forests with spatial accuracy (variance) of 1 km.
<b>Timeframe</b>	Data updates, correction and maintenance of the dataset will be an on-going activity.
<b>Strategy to Achieve Target</b>	Ongoing identification of sites will be completed through the Duty to Consult process from local Aboriginal communities, and soliciting input from the SRC, and advisory boards. Screening and assessment of harvest and silviculture operating plans by Heritage Branch.  Creation of a forestry directive identifying a data manager, potential data sources, update process, and timeframes in accordance with those identified in the FMP and operating plans.
<b>Source of Management Data</b>	Ministry centralized (SDE) spatial database
<b>Monitoring and Reporting</b>	Reported on annually within the annual report and assessed every five years

<b>Criterion 6 –Society’s Responsibility</b>
--

**Element 6.2 – Aboriginal Traditional Land Use and Forest Based Ecological Knowledge**

**Value 6.2.1 - Protection of Aboriginal traditional land use and forest based ecological knowledge**

**Objective 6.2.1.1 - To protect forest based traditional ecological knowledge of the Aboriginal communities**

**Indicator # 25 Incorporation of Aboriginal traditional ecological knowledge into the planning process**

<b>Current Status</b>	In March of 2014, work was completed by Saskatchewan Research Council (SRC) compiling the existing Traditional Use (TLU) data from five of the Island Forests First Nations (Beardy’s Okemasis, James Smith, Muskoday, One Arrow, and Wahpeton). SRC stores the database on behalf of the First Nations but has not completed any updates since 2014. Data share agreements have not allowed for Ministry access to the data and will need to be updated so the information can be incorporated into future planning and consultation.
<b>Target</b>	Document aboriginal traditional knowledge in a consultation record or a spatial TLU dataset as the information is made available through consultation and engagement.
<b>Acceptable Variance</b>	None
<b>Timeframe</b>	Over the 20 year planning period
<b>Strategy to Achieve Target</b>	Engage aboriginal communities while operation planning and implementing the FMP
<b>Source of Management Data</b>	Meeting minutes and records of aboriginal engagement in planning and implementation of the FMP
<b>Monitoring and Reporting</b>	Reported annually with the annual report and assessed every five years. Due to the sensitive and confidential nature of traditional use, some information may not be shared or documented in a very general nature in the annual report.

<b>Criterion 6 –Society’s Responsibility</b>
--

**Element 6.3 – Forest Community Well-being & Resilience**
**Value 6.3.1 - Sustainable Forest Communities**
**Objective 6.3.1.1 - To contribute to the resiliency of communities**

<b>Indicator # 26 The Government and operators’ involvement in contributing the well-being of the communities associated with the Island Forests</b>
--

<b>Current Status</b>	Operators are all members of the communities within vicinity to the Island Forests. As community members, benefits received from harvest operations are distributed into the local communities through goods and services utilized.
<b>Target</b>	Document the contribution of government/operators to the communities in their well-being and resilience (e. g., educational opportunities/workshops, summer student and apprenticeships, etc.).
<b>Acceptable Variance</b>	None
<b>Timeframe</b>	Over the 10 year FMP Term
<b>Strategy to Achieve Target</b>	The MIT will work with the PAG and other government branches to identify opportunities for community and post-secondary educational workshops or involvement with existing community events that could enable the public to get more information on current forestry practices.
<b>Source of Management Data</b>	Annual report
<b>Monitoring and Reporting</b>	Annually

<b>Criterion 6 –Society’s Responsibility</b>
--

<b>Element 6.4 – Fair and Effective Decision Making</b>
---

<b>Value 6.4.1 - Involvement of Stakeholders in FMP Development and Implementation</b>
--

<b>Objective 6.4.1.1 - Improve the engagement and information sharing of stakeholders in FMP development and implementation</b>
---

<b>Indicator # 27 Stakeholder engagement</b>
--

<b>Current Status</b>	In 2016, the Island Forests PAG was formed during the development of the Island Forests FMP. The group will meet three times during FMP development and will continue to meet during FMP implementation and development of the next FMP.
<b>Target</b>	Public Advisory Group (PAG) of Island Forests meets two times a year and engages itself in implementation of the FMP and development of the next FMP
<b>Acceptable Variance</b>	None
<b>Timeframe</b>	Throughout the 10 year FMP Term
<b>Strategy to Achieve Target</b>	PAG meetings will occur at a minimum of twice per year. PAG members will represent multiple stakeholders or interest groups as per the selection criteria in the PAG Terms of Reference. PAG members will be encouraged to participate in discussions via meetings, conference calls or follow-up emails/phone calls. A summary of discussions will be documented within the communications form as per the IF FMP Public Engagement Plan. PAG members will also be encouraged to participate in local events that promote forestry education to the broader public.
<b>Source of Management Data</b>	Annual report, PAG Terms of Reference, Island Forests 2017-2037 Forest Management Plan Public Engagement Plan
<b>Monitoring and Reporting</b>	Annually

## Chapter 4

# Island Forests Timber Supply Area

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[Subject]

October 2016

Project [1272-3]

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## 1 Introduction

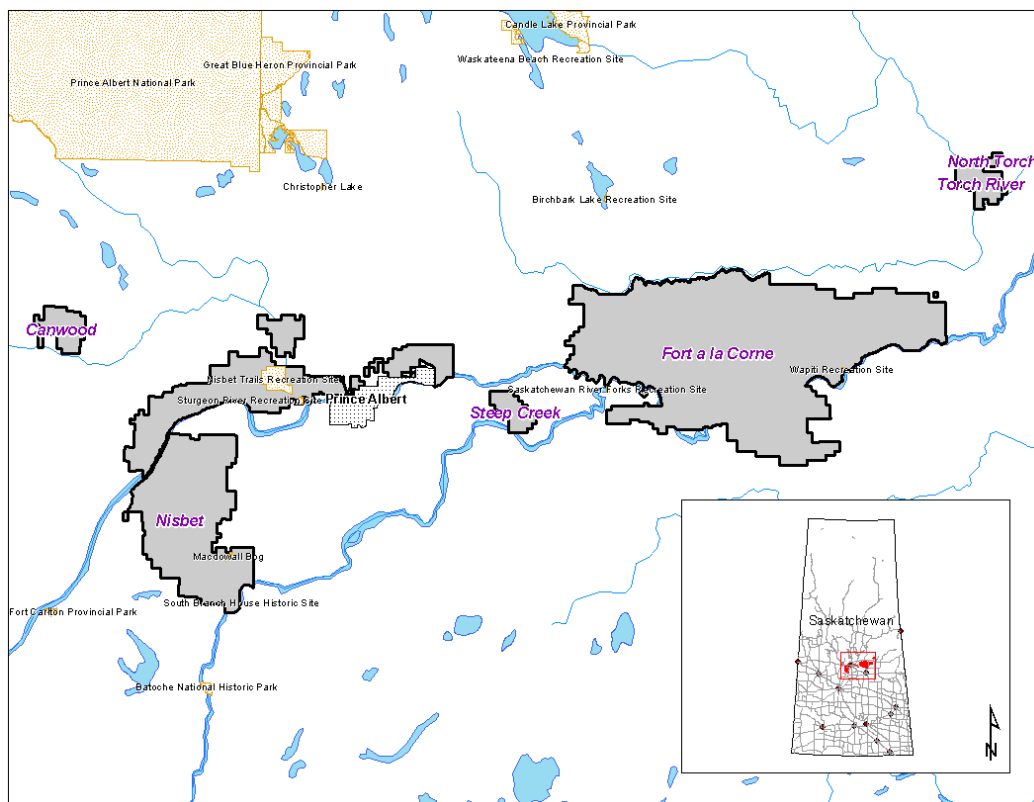
This document outlines the information and assumptions that are proposed to be used in the forest estate modeling for the Island Forests (IF) Area in order to develop a 20-year Forest Management Plan (FMP). The Forest Service, Saskatchewan Ministry of Environment, is responsible for completing this task.

The FMP will ultimately provide strategic-planning direction for the forest management in the IF area and the forest estate modeling work will assist to explore potential management strategies and associated sustainable rates of harvest over a 200-year planning horizon. The forest estate modeling will also provide a 20-year tactical plan for showing where to harvest during the FMP implementation term.

Information on the detailed requirements for forest estate modeling can be found in the draft Forest Management Planning Standard Document (FMPD) produced by the Forest Service, the Saskatchewan Ministry of Environment.

### 1.1 Study Area

The Island Forests encompass more than 226,000 hectares of Crown forest land located in north-central Saskatchewan around the city of Prince Albert. Because of their proximity to communities, these forests are used for many values, including timber. The Island Forests is comprised of several parcels of land that include Nisbet, Fort-a-la-Corne, Canwood, Torch River, North Torch River, and Steep Creek. Figure 1 shows the geographic location of the Island Forests relative to the province of Saskatchewan,



**Figure 1 Location and extent of Island Forests Timber Supply Area**

## 2 *Thematic Data*

### 2.1 Data Sources

The spatial datasets showing the planning inventory and the 20-year tactical plan were provided by the Forest Service. The procedure for generating the planning inventory is described in Appendix A. The use of these data layers is described in more detail in subsequent sections.

**Table 1** *Data sources*

Data Description	Feature Name	Data Source	Vintage
<b>Inventories</b>			
Forest Planning Inventory	IFP_PLN_2015	Gov. of Sask.	October 2015
Tactical Plan	IF_Tactical_2015	Gov. of Sask.	October 2015

### 3 Land Base Definition

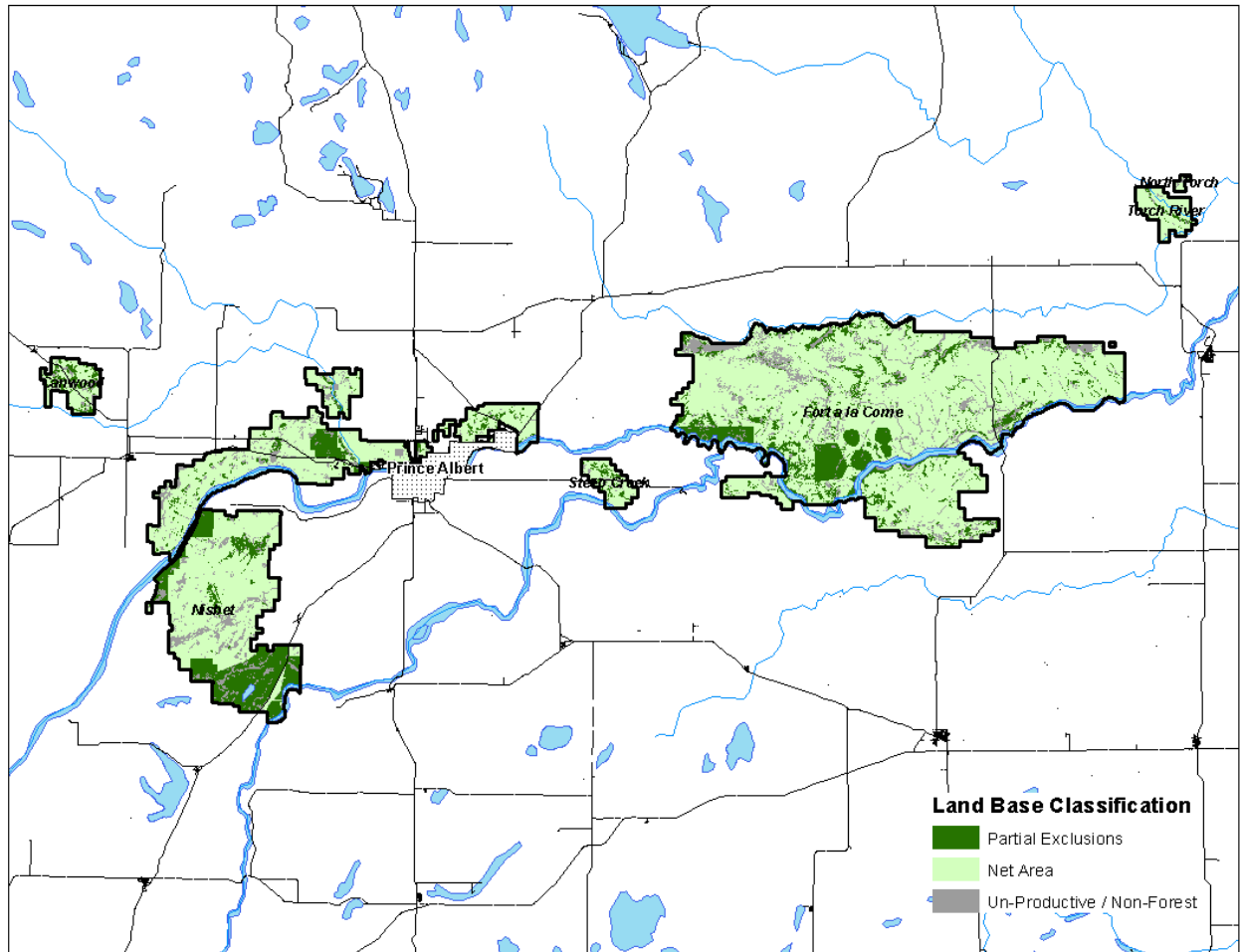
This section describes the assumptions used to support landbase definitions. Five key landbase definitions are made:

1. **Total Area:** the gross area within the legal and geographic extents of the Island Forests boundaries.
2. **Permanent Exclusions** – Include non-forest, unproductive, water, and designated/protected lands
3. **Managed Forest Land Base (MFLB):** the subset of the productive forest land base (PFLB) that is allowed to contribute toward meeting both timber and non-timber values. It consists of all Partial Exclusion areas and the Net landbase as defined in the FMPD Appendix 6, section 13.2.4 (2007 version).
4. **Partial Exclusions** – Forested areas within the Managed Forest Land Base where harvest is not expected to occur for specified reasons.
5. **Net Area:** the subset of the MFLB that contributes to the timber supply.

The land base summary is shown in Table 2 and Figure 2. Other descriptive statistics of the land base are detailed in Section 4. Further detail and discussion of how the landbase was determined is included in Appendix A.

**Table 2 Land Base Area Netdown Summary**

Description	Area (ha)	Percent of Total Area	Percent of Forested Area
<b>Island Forests Total</b>	<b>226,269</b>	<b>100%</b>	
less:			
Unproductive	23,413	10%	
Water	1,683	1%	
First Nations Reserves, Private land, etc.	8,221	4%	
<b>Managed Forest Land Base</b>	<b>192,953</b>	<b>85%</b>	<b>100%</b>
Less:			
Representative Area Network	11,521	5%	6%
Proposed Representative Area Network	3,698	2%	2%
Mistletoe	3,211	1%	2%
Steep Slopes	1,057	0%	1%
Riparian	1,968	1%	1%
Tamarack	10,506	5%	5%
<b>Net Area</b>	<b>160,992</b>	<b>71%</b>	<b>83%</b>

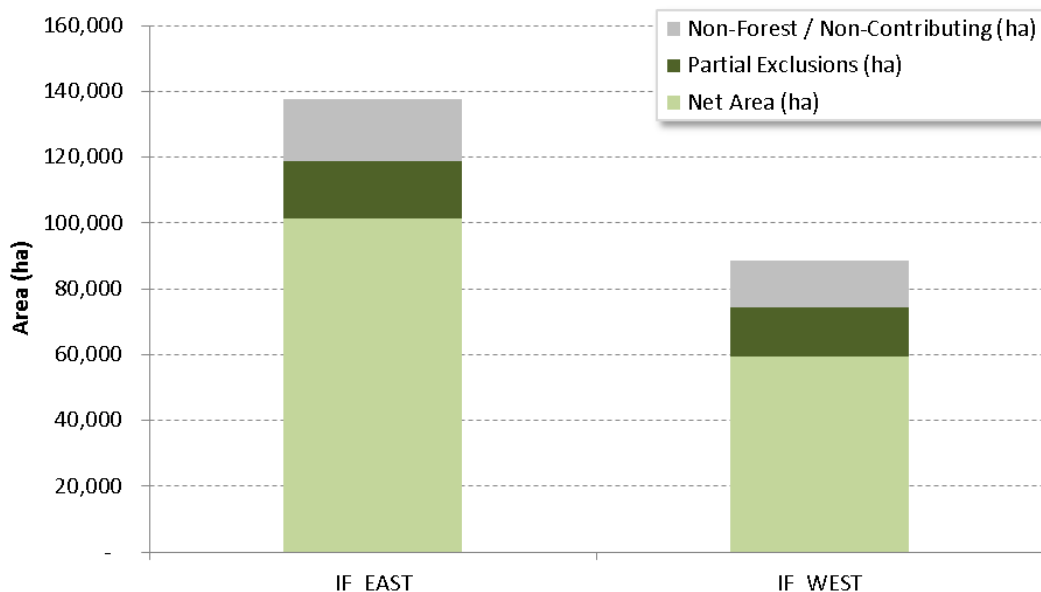


**Figure 2 Land Base Classification for the Island Forests Timber Supply Area**

#### **4 Land Base Statistics**

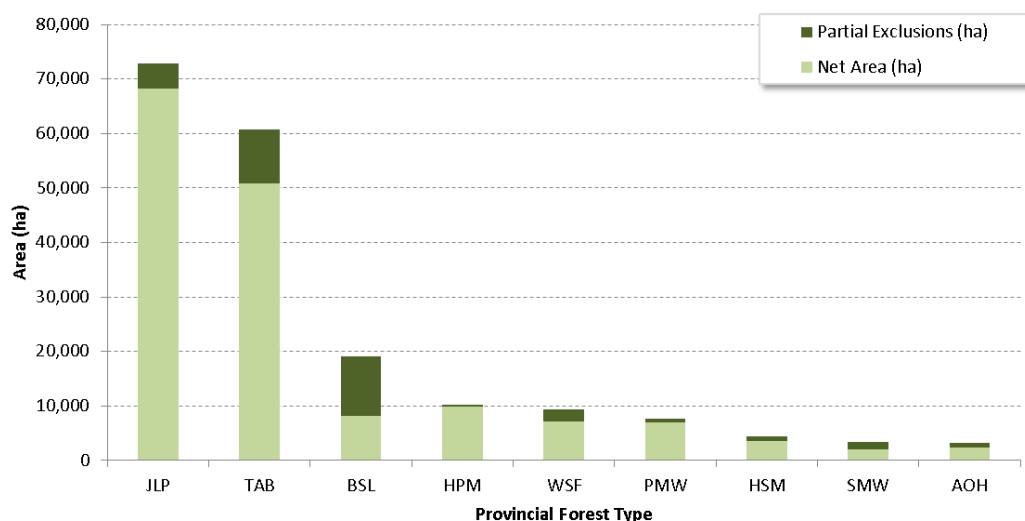
This section of the document describes the current state of this Timber Supply Area (TSA) and provides descriptions and statistical information useful for understanding timber supply analysis results.

Approximately 89% of the total area of the Island Forests is considered productive forest (Table 2, and the other 11% of the land base is considered non-productive (e.g. water bodies, flooded lands, pastures, and muskeg). Within the MFLB, once forested exclusions are removed, approximately 80% is considered net area available for timber harvesting (represents 71% of the total Island Forests area) (Figure 3).



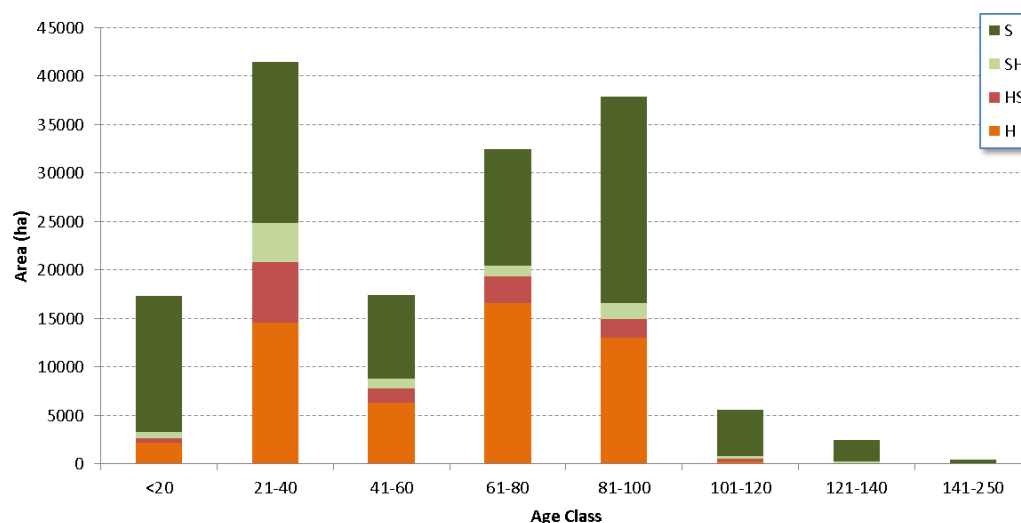
**Figure 3 Land base classification by Management Unit**

Within the net area, approximately 53% is softwood stands, of which 43% is jack pine dominated (JLP) Provincial Forest Type (PFT), 5% black spruce and tamarack dominated (BSL), 4% white spruce or balsam fire dominated (WSF), 33% is Hardwood dominated (TAB/AOH), and 14% is mixed-wood stands such as trembling aspen with jack pine (HPM), hardwood with Spruce, balsam fir or tamarack (HSM), Jack pine with trembling aspen (PMW), and white spruce with trembling aspen (SMW) (Figure 4).



**Figure 4 Provincial Forest Types in the managed forest land base**

Figure 5 shows the current age class distribution of the net area by cover species group (CSG). Clearly, the age classes are not evenly distributed. The majority of the net area falls into three age classes, i.e., 21-40, 61-80 and 81-100, and there is a small amount of area that is older than 100 years. Also, the net area is dominated by cover species groups Softwoods(S) or Hardwoods(H) in each age class (Figure 5). Detailed statistics for areas within each combination of management unit, species group and seral stage are included in Appendix C of this document.



**Figure 5** Current age class distribution of the Net Land base by Cover Species Group

## 5 Forest Development

### 5.1 Yield Curves and Development Types

The yield curves for the Island Forests were compiled in 2012 with 962 temporary sample plots established in 2007 and 2008. Forest stands were stratified based on similar species and developmental characteristics referred to as development type (DT), and crown closure. Yields curves were created for each development type and crown closure combination at 3 utilization specifications; a 10 cm top diameter inside bark (tdib), a 8 cm tdib, and a 5 cm tdib. [Table 3](#) shows descriptions of the development types while [Table 4](#) shows the net area by development type. All yield curves include all commercial species including tL and wB which are sometimes included from product mixes. Development StL, whose tamarack content is more than or equal to 30%, is removed from the net area.

**Table 3** Development Type descriptions

Development Type	Description
HbP	Hardwood stands dominated by balsam poplar
HStAjP	Mixedwood stands dominated by aspen with jack pine as minor component
HStAwS	Mixedwood stands dominated by aspen with spruce/fir/tamarack as minor component
HtA	Hardwood stands dominated by trembling aspen
SbS	Softwood stands dominated by black spruce
SbSjP	Softwood stands dominated by a combination of black spruce with jack pine
SHjPtA	Mixedwood stands dominated by jack pine
SHjPtA	Mixedwood stands dominated by spruce/fir
SjP	Softwood stands dominated by jack pine
StL*	Softwood stands dominated by tamarack (Tamarack content $\geq 30\%$ )
SwS	Softwood stands dominated by white spruce



**Table 4 Net Area by Development Type**

Provincial Forest Type	Net Area (ha)
HbP	2,325
HStAjP	9,737
HStAwS	3,465
HtA	51,011
SbS	8,106
SbSjP	2,012
SHjPtA	7,194
SHjPtA	2,061
SjP	68,022
StL*	0
SwS	7,059
<b>Total</b>	<b>160,992</b>

### 5.1.1 Cull Reduction & Sawlog Downgrade

Since cull factors were not used in the compiling process for yield curves of the Island Forests, the cull factors for Survey Zone C50<sup>1</sup> were used to adjust all the yield curves with the softwood and hardwood species defined in Table 5. Cull factors only account for rot, not for other defects such as sweep/bend/breakage, etc. Sawlog downgrade factors are applied for converting low quality sawlogs into pulp volume. These cull and downgrade factors were applied to the yields provided by the Forest Service. The yield curves adjusted with sawlog downgrade and cull reduction factors can be found in appendix F.

**Table 5 Sawlog Downgrade and Cull Reduction Factors**

DT	Sawlog Downgrade	Softwood Species used to assign Cull Factor	Softwood C-50 Cull Factor	Hardwood Species used to assign Cull Factor	Hardwood C-50 Cull Factor
S wS	0.15	wS	0.9988	tA	0.9335
S bS	0.15	bS	0.9895	tA	0.9335
S jP	0.3	jP	0.9963	tA	0.9335
S bSjP	0.3	jP	0.9963	tA	0.9335
SH jPtA	0.15	wS	0.9988	tA	0.9335
SH jPtA	0.3	jP	0.9963	tA	0.9335
HS tAwS	0.15	wS	0.9988	tA	0.9335
HS tAjP	0.3	jP	0.9963	tA	0.9335
H tA	0.15	wS	0.9988	tA	0.9335
H bP	0.15	wS	0.9988	bP	0.8494

---

1. With ecodistrict as reference, the commercial forest area in Saskatchewan was classified into different survey zones that, at a landscape level, reflect the relationship among forest vegetation, soil and climate characteristics.

## 5.2 Addressing Blowdown

Areas classified as high severity blowdown were treated as a stand replacing event and the year of origin for those areas was set to the year of disturbance. Half of the areas classified with moderate severity were treated the same way. For the remaining 50% of areas classified as moderate severity and for all areas classified as low severity, the density<sup>2</sup> was reduced by one class. After harvesting, the density of the regenerating stand will be reset to their original values. If a stand was treated as a stand replacing event, it was assigned a regeneration delay between 4 and 45 years

## 6 Forest Management Assumptions

### 6.1 Silviculture Systems and Regeneration Assumptions

Clear-cut with retention is the current management practice, which is the only harvest system to be modelled. However, there are 5 possible combinations of silvicultural treatment options (STO – Combination of harvest, site prep treatment, and Regeneration Practice) after harvesting (Table 6).

**Table 6 Stand Treatment Options and their respective Silviculture Systems, Site Preparation Methods, and Regeneration Methods**

Stand Treatment Option (STO)	Silviculture System	Site Preparation Method	Regeneration Type
S1	Clearcut w/retention	N/A	Leave for natural
S2	Clearcut w/retention	Drag scarification	Leave for natural
S3	Clearcut w/retention	Drag scarification	Plant
S4	Clearcut w/retention	Mechanical Site Prep (SIP)	Plant
S5	Clearcut w/retention	None	Plant

### 6.2 Operability windows

Operability windows are defined by a combination of minimum harvest age criteria (Table 7) and a minimum merchantable volume of 60m<sup>3</sup>/ha. This volume criteria means that some stand yield curves never reach 60m<sup>3</sup>/ha, which will result in an effective reduction to the Net Area. Full details of how the minimum harvest volume criterion affects operability windows for each of the three utilization specifications are described in Appendix D. Further details on how these criteria impact the Net Area are described in Section 8 – Long Run Sustainable Yield.

**Table 7 Minimum Harvest Age by Development Type**

Development Type	Minimum Harvest Age (MHA)
SbS	90
SjP	70
SwS	90
SbSjP	90
HtA	60

<sup>2</sup> The stand density in the SFVI inventory is classified into 4 classes, i.e. A, B, C, and D based on the crown closure of a stand. The crown closure ranges for A, B, C, and D densities are 6 to 30%, 31 to 55%, 56 to 80%, and > 80% respectively.

Development Type	Minimum Harvest Age (MHA)
HbP	60
SHjPtA	90
SHjPtA	70
HStAjP	70
HStAjP	80
StL	N/A

### 6.3 Transition Rules

Table 8 shows the transition rules defined in response to the application of the stand treatment options described in Section 6.1.

For blowdown affected stands whose density was reduced by one class, their future stands are assigned with their original density.

For this project, it was assumed that 2% of Net Area gets converted to permanent road for the first rotation, and 9% of the harvested area is converted to insular retention for all rotations based on the Natural Forest Pattern (NFP) standard.

**Table 8 Transition Matrix for the first rotation and subsequent rotations**

First Stand Rotation					Subsequent Stand Rotations				
Existing DT	Treatment	Treatment Percent	Future DT	Transition Percent	Future DT	Treatment	Treatment Percent	Future DT	Transition Percent
S wS	S3	10	S wS	71	S wS	S3	10	S wS	72
			SH jPtA	13				SH jPtA	14
			HS tAjP	5				HS tAjP	5
			Road	2				Ins. Ret.	9
			Ins. Reten.	9				S wS	72
	S4	30	S wS	71		S4	30	SH jPtA	14
			SH jPtA	13				HS tAjP	5
			HS tAjP	5				Ins. Ret.	9
			Road	2		S5	60	S wS	72
			Insular Ret.	9				SH jPtA	14
	S5	60	S wS	71				HS tAjP	5
			SH jPtA	13				Ins. Ret.	9
			HS tAjP	5	S bS	S2	5	S bS	91
			Road	2				Ins. Ret.	9
			Insular Ret.	9		S4	60	S bS	81
S bS	S2	5	S bS	89				SH jPtA	5
			Road	2				HS tAjP	5
			Insular Ret.	9				Ins. Ret.	9
			S bS	81		S5	35	S bS	64
	S4	60	SH jPtA	4				SH jPtA	27
			HS tAjP	4				Ins. Ret.	9
			Road	2	S jP	S2	15	S jP	86
			Insular Ret.	9				SH jPtA	3
	S5	35	S bS	62				HS tAjP	2
			SH jPtA	27				Ins. Ret.	9
			Road	2		S3	20	S jP	86
			Insular Ret.	9				SH jPtA	3
S jP	S2	15	S jP	71				HS tAjP	2

First Stand Rotation						
Existing DT	Treatment	Treatment Percent	Future DT	Transition Percent		
			SH jPtA	13		
			HS tAjP	5		
			Road	2		
			Insular Ret.	9		
	S3	20	S jP	71		
			SH jPtA	13		
			HS tAjP	5		
			Road	2		
			Insular Ret.	9		
			S4	25	S jP	71
					SH jPtA	13
					HS tAjP	5
	Road	2				
			Insular Ret.	9		
			S5	40	S jP	71
					SH jPtA	13
					HS tAjP	5
	Road	2				
			Insular Ret.	9		
			S tL	S1	100	S tL
Road			2			
Insular Ret.			9			
S bSjP	S2	10	S bSjP	80		
			SH jPtA	9		
			Road	2		
			Insular Ret.	9		
	S3	10	S bSjP	80		
			SH jPtA	9		
			Road	2		
			Insular Ret.	9		
	S4	50	S bSjP	80		
			SH jPtA	9		
			Road	2		
			Insular Ret.	9		
	S5	30	S bSjP	80		
			SH jPtA	9		
			Road	2		
			Insular Ret.	9		
SH jPtA	S4	60	S wS	9		
			SH jPtA	67		
			HS tAjP	11		
			H tA	2		
			Road	2		
			Insular Ret.	9		
			S5	40	S wS	9
					SH jPtA	67
			HS tAjP	11		

Subsequent Stand Rotations						
Future DT	Treatment	Treatment Percent	Future DT	Transition Percent		
	S4	25	Ins. Ret.	9		
			S jP	87		
			SH jPtA	2		
			HS tAjP	2		
			Ins. Ret.	9		
			S5	40	S jP	87
	SH jPtA	2				
	HS tAjP	2				
	Ins. Ret.	9				
	S tL	S1	100	S tL	91	
Ins. Ret.				9		
S bSjP				S2	10	S bSjP
	SH jPtA	9				
	Ins. Ret.	9				
	S3	10	S bSjP			82
			SH jPtA	9		
			Ins. Ret.	9		
	S4	50	S bSjP	82		
			SH jPtA	9		
			Ins. Ret.	9		
S5	30	S bSjP	82			
		SH jPtA	9			
		Ins. Ret.	9			
SH jPtA	S2	60	S wS	5		
			SH jPtA	67		
			HS tAjP	14		
			H tA	5		
			Ins. Ret.	9		
			S3	40	S jP	5
					SH jPtA	67
	HS tAjP	14				
	SH jPtA	S2	5	H tA	5	
				Ins. Ret.	9	
S jP				5		
SH jPtA				67		
HS tAjP				14		
H tA				5		
Ins. Ret.				9		
S3	20	S jP	5			
		SH jPtA	63			
		HS tAjP	18			
		H tA	5			
		Ins. Ret.	9			
		S4	40	S jP	23	
				SH jPtA	48	
				HS tAjP	15	
H tA	5					

First Stand Rotation				
Existing DT	Treatment	Treatment Percent	Future DT	Transition Percent
SH jPtA	S2	5	H tA	2
			Road	2
			Insular Ret.	9
			S jP	4
			SH jPtA	67
			HS tAjP	14
			H tA	4
			Road	2
			Insular Ret.	9
	S3	20	S jP	4
			SH jPtA	63
			HS tAjP	18
			H tA	4
			Road	2
			Insular Ret.	9
	S4	40	S jP	22
			SH jPtA	48
			HS tAjP	15
			H tA	4
			Road	2
			Insular Ret.	9
	S5	35	S jP	4
			SH jPtA	60
			HS tAjP	21
			H tA	4
			Road	2
			Insular Ret.	9
HS tAjP	S4	45	SH jPtA	17
			HS tAjP	55
			H tA	17
			Road	2
			Insular Ret.	9
	S5	55	SH jPtA	17
			HS tAjP	55
			H tA	17
			Road	2
			Insular Ret.	9
HS tAjP	S2	10	SH jPtA	17
			HS tAjP	63
			H tA	9
			Road	2
			Insular Ret.	9
	S3	40	SH jPtA	22
			HS tAjP	67
			Road	2
	S5	50	SH jPtA	22

Subsequent Stand Rotations				
Future DT	Treatment	Treatment Percent	Future DT	Transition Percent
	S5	35	Ins. Ret.	9
			S jP	5
			SH jPtA	60
			HS tAjP	21
			H tA	5
			Ins. Ret.	9
HS tAjP	S4	45	SH jPtA	18
			HS tAjP	55
			H tA	18
			Ins. Ret.	9
	S5	55	SH jPtA	18
			HS tAjP	55
			H tA	18
HS tAjP	S2	10	SH jPtA	18
			HS tAjP	64
			H tA	9
			Ins. Ret.	9
	S3	40	SH jPtA	23
			HS tAjP	68
			Ins. Ret.	9
H tA	S1	100	SH jPtA	23
			HS tAjP	68
			Ins. Ret.	9
H bPA	S1	100	H tA	91
			Ins. Ret.	9
			H bP	91
			Ins. Ret.	9

First Stand Rotation					Subsequent Stand Rotations				
Existing DT	Treatment	Treatment Percent	Future DT	Transition Percent	Future DT	Treatment	Treatment Percent	Future DT	Transition Percent
			HS tAjP	67					
			Road	2					
			Insular Ret.	9					
H tA	S1	100	H tA	89					
			Road	2					
			Insular Ret.	9					
H bP	S1	100	H bP	89					
			Road	2					
			Insular Ret.	9					

#### 6.4 Successional pathways and break-up ages

Stand break up ages are defined in Table 9. If stands reach their break up age they are assumed to undergo succession and their ages are set to 0 and they succeed to their original DT. If a stand is assigned as insular retention and undergoes natural succession, the harvest restriction of its regenerated stand is removed and it becomes available for harvest once it becomes merchantable.

**Table 9 Lifespan by Development Type**

Development Type	Lifespan ( years)
SbS	180
SJP	140
SwS	170
StL	160
SbSjP	180
SJPBS	180
HtA	140
HbP	140
SHjPtA	170
SHjPtA	140
HStAjP	170
HStAjP	140

## 7 Management Objectives and Targets

This section of the document describes the range of non-timber management objectives that occur within the Island Forests and how they will be addressed in the timber supply model. The most common method of modeling non-timber management objectives is through the application of forest cover requirements.

Forest cover requirements can; (1) limit disturbance in an area by limiting the amount of forest that can be younger than a specific age, and (2) maintain specific stand types on the land base by ensuring that at least a specified amount of forest older than a certain age is retained at all times.

Forest cover requirements from several different resource objectives can occur in a common area and result in overlapping constraints within the productive area (e.g. visual constraints and old growth retention). Each requirement is evaluated independently to ensure that the harvesting of a specific stand does not violate any forest cover requirements.

### 7.1 Wildlife Habitat

Table 10 illustrates the moose and fisher habitat criteria by development types and age range. The density table for Canada warbler's habitat is attached in Appendix B. The suitable development type SwS uses the U\_spruce density curve, HtA and HbP use the HWD density curve and the remaining suitable development types use the MWD density curves. These are not explicitly managed for but the suitable area is reported over time.

**Table 10 Wildlife habitat Criteria**

Species	Habitats	Development Type (DT)	Age (year)
Fisher	Winter cover	SbS, SwS, StL, SbSjP, SHjPtA, HStAwS, HStAjP	50 - 120
Moose	Winter cover	SbS, SwS, StL, SbSjP, SHjPtA, HStAwS, HStAjP	>50
	Browse	SHjPtA, SHjPtA, HStAwS, HStAjP, HtA, HbP	<= 20
Canada Warbler		SwS, HtA, HbP, SHjPtA, SHjPtA, HStAjP, HStAwS	all

### 7.2 Management Units

Island Forests parcel were grouped into two management units, i.e. IF\_EAST and IF\_WEST, for establishing landscape level event size, old seral retention requirements, and interior forest targets. IF\_EAST includes Fort a la Corne, Torch River and North Torch, and IF\_WEST includes Nisbet, Canwood and Steep Creek (Figure 6).



**Figure 6 Island Forests Management Units**

### 7.3 Natural Forest Patterns - Old and Very Old Forest Requirements

Based on the requirement of the Natural Forest Pattern standard, a minimum of 15% of the MFLB area by species group and management unit is to be old or very old at all times. A minimum of 5% of the MFLB by species group and management unit is to be very old forest at all times. Table 11 shows the species group classification for the IF and the old and very old seral stage definition is shown in Table 12.

Where targets are not met initially, harvesting can still occur as long as sufficient area is reserved to meet the targets as soon as possible.

**Table 11 Species Group classification**

Species Group	Description	PFTs included
H	Hardwood stands	AOH, TAB
HS-SH	Mixedwood stands	HPM, HSM, SMW, PMW
S(JLP)	Jack Pine leading softwood stands	JLP
S(BSJ-BSL)	Black Spruce leading softwood stands	BSJ, BSL
S(WSF)	White Spruce/Balsam Fir leading softwood stands	WSF

**Table 12 Seral Stage Definitions**

Cover Species Group	Young	Immature	Mature	Old	Very Old
H and HS (Hardwoods)	0 – 20	21 – 70	71 – 90	91 – 110	> 110
jP leading stands	0 – 20	21 – 70	71 – 90	91 – 110	> 110
S and SH (Softwoods not jP)	0 – 20	21 – 80	81 – 100	101 – 120	> 120

### 7.4 Insular Retention

An average of 9% harvested area is to be maintained in the form of clumps, single trees and islands at the cutblock level. The retained areas will undergo succession patterns according to its stand type and can contribute towards old and very old seral retention requirements.

### 7.5 Visual Management

No visually sensitive areas have been identified.

### 7.6 Harvest Volume Periodic Variation

A maximum 20% periodic variation in harvest volume from each of the three species groups listed below are to be applied:

- Spruce and mixed wood with spruce components
- Jack pine and mixed wood with jack pine components
- Hardwoods (trembling aspen and balsam poplar)

### 7.7 Harvest Distribution

Harvest flows are to be monitored separately for each management unit (IF\_EAST & IF\_WEST) to ensure harvest distribution is balanced between the two management units over the 200 year planning horizon.



7.8 Operable Growing Stock

Two targets are placed on the operable growing stock:

- 1. Operable growing stock for both Softwood and Hardwood is maintained to be at least 15 years of the HVS volume.
- 2. Non-declining operable growing stock in the last 50 years

8

Woodstock™

A wide variety of input parameters and management assumptions must be identified prior to modeling harvest schedules with Woodstock™. These were specified in order to reflect both the biological processes of the forest and the current realities of operational forest management practices. A detailed description of input parameters and management assumptions are provided below.

8.1 Basic modeling Parameters

The timber supply is to be modelled over 200 year planning horizon using 40-five year periods.

8.2 Lifespan Section

The lifespan identifies the maximum age of a development type before it was assumed to die or it is replaced by future stands. The lifespans used in this model are based on those found in Section 6.4, Table 9. Stands that are not harvested are subject to mortality after reaching the lifespan age in both the harvestable and non-harvestable land base. Those stands that undergo a senescence stage are assumed, for the purposes of modeling, to return to the natural stratum and are assigned an age of zero. This is automatically done in Woodstock under a transition named ‘\_DEATH’.

Regeneration lags are only applied to those stands that were impacted by the stand-replacing 2011 blowdown event, and only for the first rotation. The delay time for these areas is as follows:

THEME8	Normal	None
(Regen. Delay)	RD_5	Regen delay: 5 years
	RD_10	Regen delay: 10 years
	RD_15	Regen delay: 15 years
	RD_20	Regen delay: 20 years
	RD_45	Regen delay: 45 years

8.3 Landscape Section

The landscape section defines the strata variables (called Themes) used in the Island Forests TSA. There were **nine** themes identified as detailed below. The symbol “\*AGGREGATE” refers to Woodstock syntax and it is used to aggregate any of the parameters within a Theme into a group with a different name. This section shows the name of the aggregation after the \*AGGREGATE syntax followed by a descriptor comment after a semicolon and the theme parameters that compose the respective group in the following line.

Each theme has a code (column 1) and a descriptor (column 2) to define each individual parameter. The area of each individual parameter and its respective percentage relative to the total area of 226837 ha is also presented for each Theme in column 3 and 4, respectively.

### 8.3.1 Theme1 – Land Use

Theme1 indicates land use, as defined by actual land base classification, were aggregated for Island Forests modeling based on the provincial data sets.

Theme1	Theme1 Description	Area (ha)	Percent of Total (%)
HWY11_ROW	Right of way	39	0.02%
IR	Indian Reserve	1914	0.84%
Leased_Parcels	Leased Partial	301	0.13%
Parks	Parks	1830	0.81%
PRA	Proposed Ran	3865	1.70%
Provfor	Provincial Forests	164049	72.32%
RAN	RAN area	13119	5.78%
Sensitive	Sensitive Area	36871	16.25%
Shoregold	Shore Gold Area	4555	2.01%
TLE	Treaty Land Entitlement	295	0.13%
Rd	Operational Harvest Road	- Model generated	

\*AGGREGATE prod ; Productive area for timber harvesting

Provfor

Sensitive

\*AGGREGATE HL ; Area for Habitat

IR ; Exclusion - Indian Reserve

Leased\_Parcels ; Exclusion - Leased Partial

Parks ; Exclusion - Parks

PRA ; Non-timber - Proposed Ran

Provfor ; Timber - Provincial Forests

RAN ; Non-timber - RAN area

Sensitive ; Timber - Sensitive area

Shoregold ; Exclusion - Shore Gold Area

TLE ; Exclusion - Treaty Land Entitlement

### 8.3.2 Theme2 – Net Down

Theme 2 holds net down areas within the land base.

Theme2	Theme2 Description	Area (ha)	Percent of Total (%)
Net_AREA	Timer production	161390	71.1%
Riparian	Non-timber	2811	1.2%
Steep_Slope	Non-timber	1766	0.8%

Theme2	Theme2 Description	Area (ha)	Percent of Total (%)
Unproductive	Exclusion	23413	10.3%
Other	Exclusion	8194	3.6%
Mistletoe	Exclusion	3211	1.4%
Tamarack	Non-timber	10506	4.6%
RAN_Area	Non-timber	13863	6.1%
Water	Exclusion	1683	0.7%

\*AGGREGATE NA ; Net Area for Timber Production

Net\_AREA

\*AGGREGATE UN ; Unproductive area

Unproductive

### 8.3.3 Theme3 – Development Type

Theme 3 shows the development types used in the model to associate polygons to their corresponding yield curves.

Theme3	Theme3 Description	Area (ha)	Percent of Total (%)
SwS	Species group wS	9584	4.2%
SbS	Species group bS	8789	3.9%
SJP	Species group jP	77313	34.1%
STL	Species group bS	11251	5.0%
SBSJP	Growth type bS	2103	0.9%
SHJPTA	Species group Mixed	3245	1.4%
SHJPTA	Species group Mixed	8217	3.6%
HSTAJP	Species group Mixed	10500	4.6%
HStAwS	Species group Mixed	4523	2.0%
HTA	Species group HW	63002	27.8%
HBP	Species group HW	3214	1.4%
NULL	No Tree Cover	25095	11.1%

\*AGGREGATE SPCOMP ; Spruce Species Groups

SwS SbS SHJPTA HStAwS

\*AGGREGATE JPCOMP ; Jack Pine Species Groups

SJP SBSJP SHJPTA HSTAJP

\*AGGREGATE HWCOMP ; Hardwood Species Groups

HTA HBP

\*AGGREGATE CUTDT ; Development types which can be harvested

SbS SJP SwS SBSJP HtA HbP SHjPtA SHjPtA HStAjP

\*AGGREGATE ST1 ; Development types available for Silviculture Option 1  
HTA STL

\*AGGREGATE ST2 ; Development types available for Silviculture Option 2  
SBS SJP SBSJP SHJPTA HSTAJP

\*AGGREGATE ST3 ; Development types available for Silviculture Option 3  
SWS SJP SBSJP SHJPTA HSTAJP

\*AGGREGATE ST4 ; Development types available for Silviculture Option 4  
SWS SBS SJP SBSJP SHJPTASHJPTA

\*AGGREGATE ST5 ; Development types available for Silviculture Option 5  
SWS SBS SJP HSTAJP SBSJP SHJPTA SHJPTA

\*AGGREGATE F1 ; Stands eligible for Fisher Habitat  
SbS SwS StL SbSjP SHjPtA HStAwS HStAjP

\*AGGREGATE M1 ; Stands eligible for Moose Habitat - Winter Cover  
SbS SwS StL SbSjP SHjPtA HStAwS HStAjP

\*AGGREGATE M2 ; Stands eligible for Moose Habitat - Browse  
SHjPtA SHjPtA HStAwS HStAjP HtA HbP

\*AGGREGATE W1 ; Stands eligible for Warbler - Softwood  
SwS

\*AGGREGATE W2 ; Stands eligible for Warbler - Mixedwood  
SHjPtA HStAjP HStAwS

\*AGGREGATE W3 ; Stands eligible for Warbler - Hardwood  
HtA HbP

#### 8.3.4 Theme4 – Density

Theme 4 indicates density class.

Theme4	Theme4 Description	Area (ha)	Percent of Total (%)
1	A density	50801	22.4%
2	B density	65200	28.7%

Theme4	Theme4 Description	Area (ha)	Percent of Total (%)
3	C density	86064	37.9%
4	D density	2641	1.2%
0	N/A	22131	9.8%

### 8.3.5 Theme5 – Management Units

Theme 5 indicates the different islands of forests that make up the Island Forests TSA and were used to aggregate into management units.

Theme5	Management Unit	Area (ha)	Percent of Total (%)
Canwood	IF_WEST	5076	2.2%
Fort_a_la_Corne	IF_EAST	132888	58.6%
Nisbet	IF_WEST	80074	35.3%
North_Torch	IF_EAST	395	0.2%
Steep_Creek	IF_WEST	3586	1.6%
Torch_River	IF_EAST	4819	2.1%

\*AGGREGATE IF\_EAST

Canwood Nisbet Steep\_Creek

\*AGGREGATE IF\_WEST

Fort\_a\_la\_Corne North\_Torch Torch\_River

### 8.3.6 Theme6 – Silviculture Treatments

Theme 6 indicates the value of the forest based on silviculture transitioning. By default, all stands are assigned a current value of 0. However; if a stand is harvested, the value is set to 1 indicating a “future” value and is used as a flag to indicate that 9% of the stand is held as insular retention.

Theme6	Theme6 Description	Area (ha)	Percent of Total (%)
0	Current Value	226837	100%
1	Future Value	Model Generated	
2	Insular Retention		

### 8.3.7 Theme7 – Renewal Method

Theme 7 indicates the renewal method for the stand. This is similar to Theme 6 but includes road generation as well; in the first rotation 2% of each stand that is harvested transitions to road and stays that way for the entire length of the planning horizon.

Theme7	Theme7 Description	Area (ha)	Percent of Total (%)
Natural	Current Value	226837	100%

Theme7	Theme7 Description	Area (ha)	Percent of Total (%)
Man	Managed	Model Generated	
Road1	Road		
Insular	Insular Retention		

\*AGGREGATE IN ; Insular Retention

Insular

\*AGGREGATE NAT ; Natural Stand

Natural

### 8.3.8 Theme8 – Regeneration Delay

Theme 8 indicates the regeneration delay for that stand due to blowdown disturbance.

Theme8	Theme8 Description	Area (ha)	Percent of Total (%)
Normal	Normal	217993	96.1%
RD_10	10 Years	2187	1.0%
RD_15	15 Years	3494	1.5%
RD_20	20 Years	1912	0.8%
RD_45	45 Years	329	0.1%
RD_5	5 Years	922	0.4%

### 8.3.9 Theme9 – Future Densities

Theme 9 indicates when a stand will change its density after the first rotation hence yield curve, once acted upon. Not all stands will change densities in the future.

Theme9	Theme9 Description	Area (ha)	Percent of Total (%)
Null	Null	25095	11.1%
B	Future density B	3939	1.7%
C	Future density C	8973	4.0%
D	Future density D	467	0.2%
Density_N	None	188362	83.0%

## 8.4 Optimize Section

The timber supply objective is to maximize the sum of primary coniferous and deciduous harvest volumes over the next 200 years.

A secondary objective is to produce an even flow for coniferous and deciduous harvest volumes for the first 20 years, then allowing for a 20% variance from Year 25 to 200. Also, the model must not allow the coniferous and deciduous operable growing stock to decline from year 150 to 200.

Constraints to the objective function include the maintenance of old seral conditions as outlined in Section 7.3. Transition regimes are also controlled in this section.

8.5 Harvesting Transitions

Harvesting and silviculture actions are represented by Silviculture Treatment option (STO) 1 to STO 5 within the model. After an action happens the model produces an output (e.g., harvest volume) and the stand regenerates with an age of zero following the corresponding transition described in Table 8 (Section 6.3). Table 6 shows how each of the Silviculture Treatment Options are represented for the model.

The transition area for the STOs are set up for first rotation (including parts of the harvested stand being set aside for insular retention and road construction) and future rotations which are similar to the first rotation transition minus the area set aside for future road construction.

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9 Scenarios

A total of 14 scenarios are planned to be performed with the model: 1 No harvest scenario, 4 unconstrained baseline scenarios that explore impacts of utilization levels, 1 selected management Scenario (SMS), and 8 sensitivity scenarios performed against the SMS. [Table 13](#) on the following page shows provided a summary of the scenarios and highlights the variables that change with each scenario.

**Table 13 Planned Scenarios**

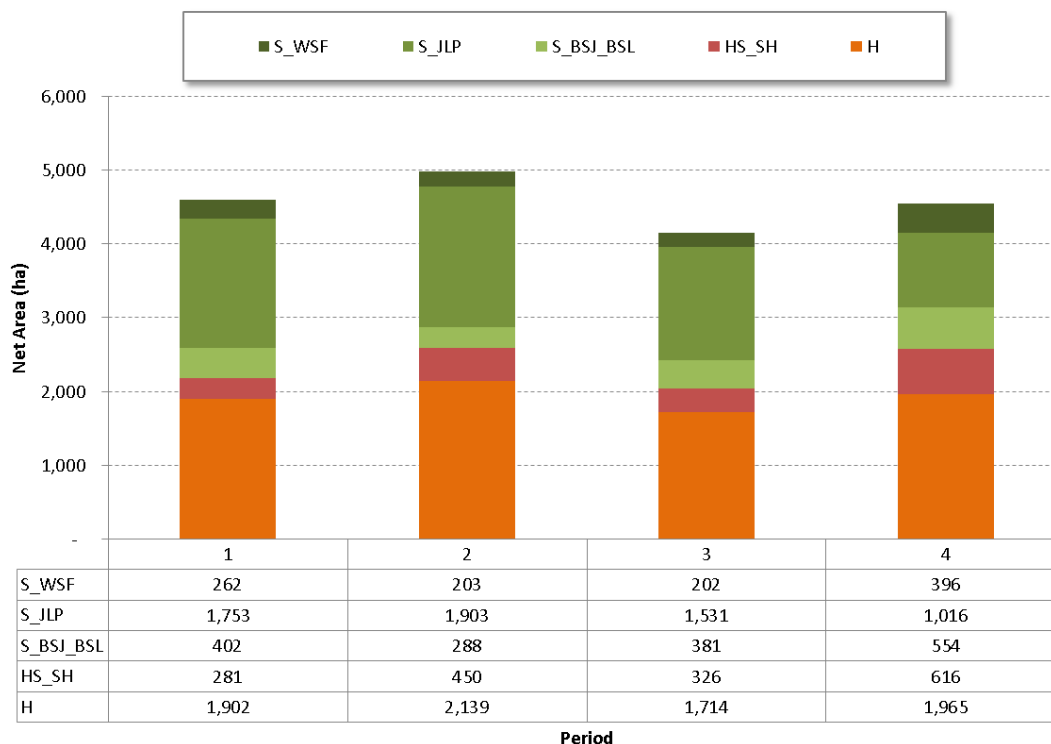
Scenario #	Category	Description	Utilization	Optimize	Operable Growing Stock	Harvest Species Distribution	Management Unit Distribution	Old and Very Old Seral	Stand Level Retention	Wildlife Habitat
1	No Harvest	No Harvest	N/A	N/A	tracking only	tracking only	tracking only	tracking only	9%	tracking only
2	Base Line / Unconstrained	Softwood 8cm/Hardwood 10cm	Softwood 8cm/Hardwood 10cm	Max even flow volume over 200 years	NDY for SW/HW for last 50 years	tracking only	tracking only	tracking only	9%	tracking only
3	Base Line / Unconstrained	10 cm	10 cm	Max even flow volume over 200 years	NDY for last 50 years	tracking only	tracking only	tracking only	9%	tracking only
4	Base Line / Unconstrained	8 cm	8 cm	Max even flow volume over 200 years	NDY for last 50 years	tracking only	tracking only	tracking only	9%	tracking only
5	Base Line / Unconstrained	5 cm	5 cm	Max even flow volume over 200 years	NDY for last 50 years	tracking only	tracking only	tracking only	9%	tracking only
6	Selected Management Strategy	Selected Management Strategy	TBD by Ministry of Environment based on results of Base line scenarios	Max Even flow for 20 years then 20% variation for remaining 180 years	NDY for last 50 years, >=15 years operable for Hw and Sw	20 % for variance for Spruce, Jack Pine, and Hardwood	Monitor and Control if necessary	15% Old/very old, 5% Very old	9%	tracking only
7	Sensitivity	MHA +10 years & min. 70m <sup>3</sup> /ha	TBD	Max Even flow for 20 years then 20% variation for remaining 180 years	NDY for last 50 years, >=15 years operable for Hw and Sw	20 % for variance for Spruce, Jack Pine, and Hardwood	Maintain controls from SMS	15% Old/very old, 5% Very old	9%	tracking only
8	Sensitivity	MHA -10 years & min. 50 m <sup>3</sup> /ya	TBD	Max Even flow for 20 years then 20% variation for remaining 180 years	NDY for last 50 years, >=15 years operable for Hw and Sw	20 % for variance for Spruce, Jack Pine, and Hardwood	Maintain controls from SMS	15% Old/very old, 5% Very old	9%	tracking only



Scenario #	Category	Description	Utilization	Optimize	Operable Growing Stock	Harvest Species Distribution	Management Unit Distribution	Old and Very Old Seral	Stand Level Retention	Wildlife Habitat
9	Sensitivity	Harvest eligibility determined based on Max. MAI only (both MHA & Min. volume criteria removed)	TBD	Max Even flow for 20 years then 20% variation for remaining 180 years	NDY for last 50 years, >=15 years operable for Hw and Sw	20 % for variance for Spruce, Jack Pine, and Hardwood	Maintain controls from SMS	15% Old/very old, 5% Very old	9%	tracking only
10	Sensitivity	Yields +10%	TBD	Max Even flow for 20 years then 20% variation for remaining 180 years	NDY for last 50 years, >=15 years operable for Hw and Sw	20 % for variance for Spruce, Jack Pine, and Hardwood	Maintain controls from SMS	15% Old/very old, 5% Very old	9%	tracking only
11	Sensitivity	Yields -10%	TBD	Max Even flow for 20 years then 20% variation for remaining 180 years	NDY for last 50 years, >=15 years operable for Hw and Sw	20 % for variance for Spruce, Jack Pine, and Hardwood	Maintain controls from SMS	15% Old/very old, 5% Very old	9%	tracking only
12	Sensitivity	Increase Yields for Managed Stands Only by 10%	TBD	Max Even flow for 20 years then 20% variation for remaining 180 years	NDY for last 50 years, >=15 years operable for Hw and Sw	20 % for variance for Spruce, Jack Pine, and Hardwood	Maintain controls from SMS	15% Old/very old, 5% Very old	9%	tracking only
13	Sensitivity	Maintain species harvest at max 10% variation	TBD	Max Even flow for 20 years then 20% variation for remaining 180 years	NDY for last 50 years, >=15 years operable for Hw and Sw	10 % for variance for Spruce, Jack Pine, and Hardwood	Maintain controls from SMS	15% Old/very old, 5% Very old	9%	tracking only
14	Sensitivity	Maintain species harvest at max 30% variation	TBD	Max Even flow for 20 years then 20% variation for remaining 180 years	NDY for last 50 years, >=15 years operable for Hw and Sw	30 % for variance for Spruce, Jack Pine, and Hardwood	Maintain controls from SMS	15% Old/very old, 5% Very old	9%	tracking only

## 10 Tactical Plan

The Forest Service provided tactical plan harvest unit polygons for periods 1 through 4 (next 20 years). Figure 7 describes general statistics of the areas selected for harvest.

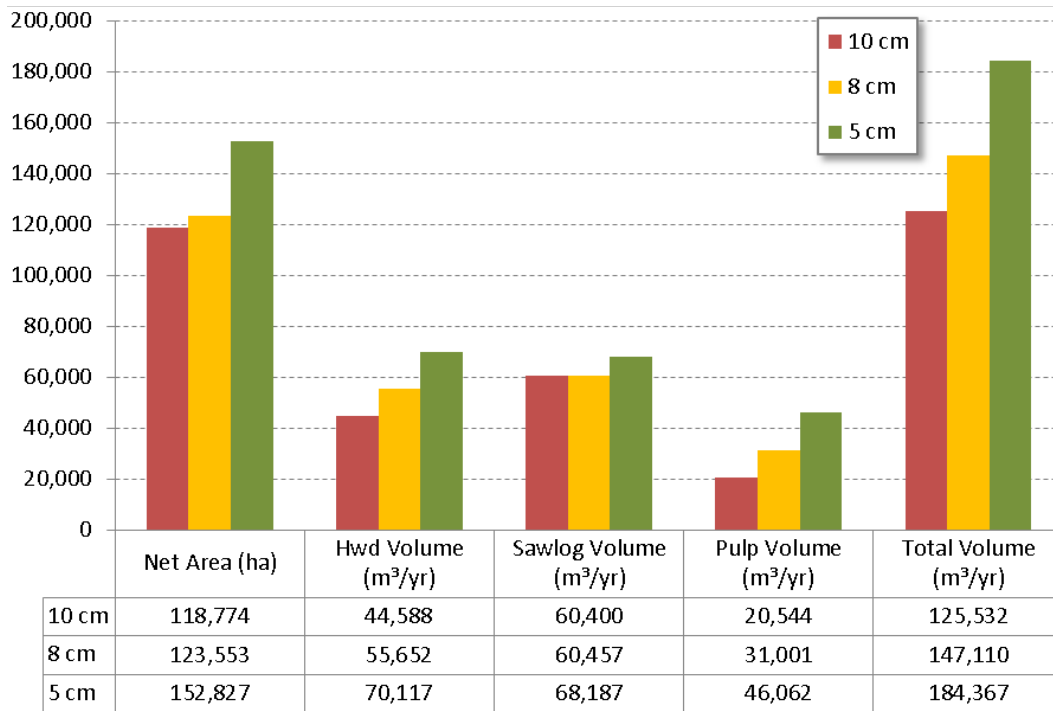


**Figure 7 Area distribution by period of harvest and species group of the tactical plan provided by the forest service**

## 11 Long Run Sustainable Yield (LRSY) Calculation

The LRSY was calculated by determining the maximum Mean Annual Increment of each yield group and multiplying by the net area within each Yield Group. For hardwood stands, the reference year was based on maximum hardwood Culmination Mean Annual Increment (CMAI), for mixed-wood stands, the reference year was based on the total CMAI, and softwood stands used the softwood MAI for the reference year.

LRSY calculations were conducted for each utilization standard that yields were compiled for - net of Cull reductions and with sawlog downgrade assumptions applied - so that LRSY could be reported by product. Details of the LRSY calculations are shown in Tables 14, 15 and 16. When the minimum merchantability cut off of 60 m<sup>3</sup>/ha is considered, there are some yield strata that never reach the minimum criteria (differs between utilizations) thus effectively reducing the Net Area by 42,218 ha (26%), 37,439 ha (23%), and 8,165 ha (5%) for the 10, 8, and 5cm utilizations, respectively.



**Figure 8 Summary of LRSY calculations for 10, 8, and 5 cm utilizations considering merchantability**

**Table 14 LRSY Calculated with Island Forest Area Yield Curves and Utilization Standards – 10 cm Utilization**

Development Type	Density Class	CMAI Age	Swd MAI (m³/ha/yr)	Hwd MAI (m³/ha/yr)	Net Area (ha)	Hwd Volume (m³/yr)	Sawlog Volume (m³/yr)	Pulp Volume (m³/yr)	Total Volume (m³/yr)
HStAjP	1	70	0.204	0.280	3,386	948	484	207	1,639
HStAjP	2	75	0.265	0.410	4,278	1,756	793	340	2,888
HStAjP	3	80	0.339	0.606	2,056	1,246	488	209	1,942
HStAjP	4	80	0.404	0.924	17	16	5	2	23
HStAwS	1	80	0.336	0.622	679	422	194	34	650
HStAwS	2	80	0.506	0.712	1,332	948	573	101	1,622
HStAwS	3	85	0.763	0.786	1,433	1,127	929	164	2,220
HStAwS	4	85	1.156	0.824	21	17	20	4	41
HtA	1	60	0.046	0.443	4,779	2,118	186	33	2,336
HtA	2	65	0.069	0.654	13,385	8,748	787	139	9,674
HtA	3	65	0.103	0.972	31,540	30,662	2,760	487	33,909
HtA	4	70	0.158	1.454	1,307	1,900	175	31	2,106
SbS	1	85	0.742	0.015	538	8	339	60	407
SbS	2	85	0.896	0.019	830	15	633	112	760
SbS	3	90	1.084	0.022	6,460	143	5,951	1,050	7,144
SbS	4	90	1.313	0.027	279	7	311	55	373
SbSjP	1	80	0.633	0.012	248	3	110	47	160
SbSjP	2	80	0.770	0.018	593	11	320	137	468
SbSjP	3	85	0.939	0.027	1,031	28	678	290	996
SbSjP	4	85	1.145	0.039	140	5	112	48	166
SHjPtA	1	75	0.510	0.174	3,748	653	1,337	573	2,563
SHjPtA	2	80	0.627	0.301	2,594	780	1,139	488	2,408
SHjPtA	3	80	0.770	0.497	839	417	452	194	1,063
SHjPtA	4	85	0.951	0.784	13	10	9	4	23
SHjPtA	1	70	0.467	0.290	319	92	127	22	241
SHjPtA	2	70	0.643	0.420	846	356	463	82	900
SHjPtA	3	75	0.903	0.602	869	523	667	118	1,308
SHjPtA	4	80	1.272	0.863	26	23	28	5	56
SjP	1	80	0.509	0.009	20,668	179	7,369	3,158	10,707
SjP	2	85	0.778	0.013	20,395	274	11,114	4,763	16,151
SjP	3	90	1.198	0.021	26,849	564	22,513	9,648	32,725
SjP	4	95	1.855	0.033	110	4	142	61	207
SwS	1	85	0.974	0.105	547	57	453	80	591
SwS	2	90	1.172	0.126	1,987	249	1,979	349	2,578
SwS	3	90	1.411	0.151	4,441	671	5,326	940	6,937
SwS	4	95	1.700	0.181	83	15	120	21	157
HbP	1	60	0.046	0.443	986	437	38	7	482
HbP	2	65	0.069	0.654	520	340	31	5	376
HbP	3	65	0.103	0.972	798	776	70	12	858
HbP	4	70	0.158	1.454	21	30	3	0	34
*Red Bold Yield Groups never reach 60m³/ha				Total	160,992	56,581	69,226	24,081	149,889
					118,774	44,588	60,400	20,544	125,532

**Table15 LRSY Calculated with Island Forests Area Yield Curves and Utilization Standards–8cm Utilization**

Development Type	Density Class	CMA I Age	Swd MAI (m³/ha/yr)	Hwd MAI (m³/ha/yr)	Net Area (ha)	Hwd Volume (m³/yr)	Sawlog Volume (m³/yr)	Pulp Volume (m³/yr)	Total Volume (m³/yr)
HStAjP	1	70	0.195	0.333	3,386	1,126	484	177	1,787
HStAjP	2	75	0.281	0.488	4,278	2,087	793	410	3,290
HStAjP	3	75	0.387	0.741	2,056	1,523	463	332	2,318
HStAjP	4	80	0.561	1.102	17	19	5	5	28
HStAwS	1	75	0.377	0.658	679	446	195	61	703
HStAwS	2	80	0.565	0.771	1,332	1,028	573	180	1,780
HStAwS	3	80	0.853	0.880	1,433	1,261	927	295	2,484
HStAwS	4	85	1.295	0.957	21	20	20	6	46
HtA	1	60	0.049	0.524	4,779	2,502	186	50	2,738
HtA	2	60	0.073	0.774	13,385	10,363	766	212	11,340
HtA	3	65	0.111	1.152	31,540	36,325	2,760	754	39,839
HtA	4	70	0.170	1.721	1,307	2,249	175	47	2,471
SbS	1	80	0.859	0.017	538	9	338	124	471
SbS	2	85	1.073	0.020	830	17	633	258	908
SbS	3	85	1.341	0.025	6,460	165	5,945	2,719	8,829
SbS	4	90	1.681	0.031	279	9	311	157	477
SbSjP	1	80	0.851	0.023	248	6	110	101	216
SbSjP	2	80	1.036	0.032	593	19	320	295	634
SbSjP	3	85	1.265	0.046	1,031	48	678	627	1,353
SbSjP	4	85	1.546	0.064	140	9	112	104	225
SHjPtA	1	70	0.541	0.222	3,748	833	1,321	705	2,860
SHjPtA	2	75	0.664	0.358	2,594	928	1,132	592	2,651
SHjPtA	3	80	0.816	0.557	839	467	452	232	1,151
SHjPtA	4	80	0.999	0.851	13	11	9	5	25
SHjPtA	1	65	0.516	0.355	319	113	125	40	278
SHjPtA	2	70	0.716	0.491	846	415	463	144	1,022
SHjPtA	3	75	0.998	0.679	869	590	667	201	1,458
SHjPtA	4	75	1.379	0.962	26	25	28	8	62
SjP	1	75	0.562	0.017	20,668	344	7,349	4,256	11,950
SjP	2	80	0.858	0.025	20,395	520	11,089	6,411	18,020
SjP	3	85	1.320	0.039	26,849	1,052	22,470	12,974	36,497
SjP	4	90	2.044	0.061	110	7	142	82	231
SwS	1	85	1.147	0.114	547	62	453	175	690
SwS	2	85	1.379	0.137	1,987	272	1,976	765	3,012
SwS	3	90	1.662	0.163	4,441	725	5,326	2,055	8,106
SwS	4	90	2.004	0.197	83	16	120	47	183
HbP	1	60	0.049	0.524	986	516	38	10	565
HbP	2	60	0.073	0.774	520	402	30	8	440
HbP	3	65	0.111	1.152	798	919	70	19	1,008
HbP	4	70	0.170	1.721	21	36	3	1	40
*RedBoldYieldGroupsneverreach60m³/ha				Total	160,992	67,486	69,055	35,646	172,187
				Merch.Total	123,553	55,652	60,457	31,001	147,110

**Table16 LRSY Calculated with Island Forests Area Yield Curves and Utilization Standards–5cm Utilization**

Development Type	Density Class	CMAI Age	Swd MAI (m³/ha/yr)	Hwd MAI (m³/ha/yr)	Net Area (ha)	Hwd Volume (m³/yr)	Sawlog Volume (m³/yr)	Pulp Volume (m³/yr)	Total Volume (m³/yr)
HStAjP	1	65	0.194	0.369	3,386	1,250	458	200	1,908
HStAjP	2	70	0.280	0.541	4,278	2,316	753	445	3,514
HStAjP	3	75	0.404	0.799	2,056	1,644	463	368	2,474
HStAjP	4	80	0.584	1.189	17	20	5	5	30
HStAwS	1	75	0.411	0.712	679	483	195	84	762
HStAwS	2	75	0.608	0.828	1,332	1,103	571	239	1,913
HStAwS	3	80	0.901	0.938	1,433	1,345	927	364	2,636
HStAwS	4	80	1.342	1.024	21	21	20	8	49
HtA	1	55	0.052	0.574	4,779	2,745	179	69	2,993
HtA	2	60	0.079	0.847	13,385	11,341	766	287	12,394
HtA	3	60	0.117	1.258	31,540	39,675	2,657	1,026	43,358
HtA	4	65	0.179	1.883	1,307	2,460	170	64	2,694
SbS	1	80	0.940	0.022	538	12	338	167	517
SbS	2	80	1.215	0.029	830	24	629	380	1,033
SbS	3	85	1.574	0.037	6,460	239	5,945	4,222	10,406
SbS	4	85	2.042	0.048	279	13	310	259	583
SbSjP	1	80	1.108	0.022	248	5	110	165	280
SbSjP	2	80	1.351	0.033	593	19	320	482	821
SbSjP	3	85	1.651	0.048	1,031	50	678	1,025	1,753
SbSjP	4	85	2.019	0.069	140	10	112	170	292
SHjPtA	1	70	0.576	0.289	3,748	1,082	1,321	839	3,243
SHjPtA	2	75	0.703	0.429	2,594	1,113	1,132	690	2,935
SHjPtA	3	75	0.854	0.632	839	530	448	269	1,246
SHjPtA	4	80	1.044	0.912	13	12	9	5	26
SHjPtA	1	65	0.575	0.395	319	126	125	59	310
SHjPtA	2	70	0.784	0.537	846	454	463	201	1,118
SHjPtA	3	70	1.061	0.746	869	649	654	268	1,571
SHjPtA	4	75	1.459	1.021	26	27	28	10	65
SjP	1	75	0.617	0.018	20,668	382	7,349	5,396	13,127
SjP	2	80	0.940	0.028	20,395	576	11,089	8,082	19,746
SjP	3	85	1.443	0.043	26,849	1,165	22,470	16,267	39,902
SjP	4	90	2.229	0.067	110	7	142	102	252
SwS	1	85	1.251	0.122	547	67	453	232	752
SwS	2	85	1.506	0.147	1,987	293	1,976	1,017	3,286
SwS	3	85	1.813	0.177	4,441	788	5,303	2,748	8,839
SwS	4	90	2.186	0.212	83	18	120	62	200
HbP	1	55	0.052	0.574	986	566	37	14	617
Hbp	2	60	0.079	0.847	520	440	30	11	481
HbP	3	60	0.117	1.258	798	1,004	67	26	1,097
HbP	4	65	0.179	1.883	21	39	3	1	43
*Red Bold Yield Groups never reach 60m³/ha				Total	160,99	74,112	68,824	46,332	189,268
				Merch.Total	152,82	70,117	68,187	46,062	184,367

## Appendix A – Planning Inventory

### The Planning Inventory Generation for the Island Forests

#### 1. Introduction

The forest estate modelling requires forest inventory as model input. This inventory is called the planning inventory which is a composite resulted from spatially incorporating various data layers into the Saskatchewan Forest Vegetation Inventory (SFVI). The procedure of generating the planning inventory for the Island Forests is described in this document.

#### 2. Saskatchewan Forest Vegetation Inventory (SFVI)

The SFVI for the Island Forests, which serves as a basis for generating the planning inventory, was generated in 2006 and 2007 based on the aerial photography dated in 2004 at a scale of 1:30,000.

Since there are three tree layers in the SFVI defined in the SFVI standard, they are required to be projected into one layer with the crown closure and the height of each layer as weighting factors in order to be used for the model input. The detailed projection procedure is described in Appendix 5 of the Forest Management Planning Document (2007).

The major tree species recorded in the SFVI database for the IF include White Spruce (wS), Black Spruce (bS), Jack Pine (jP), Tamarack (tL), Trembling Aspen (tA), and Balsam Poplar (bP).

Based on the tree species composition, the forested stands (i.e. the tree crown closure  $\geq 6\%$ ) were classified into 11 development types (DT) listed in Table 1.

Table 1 List of the development type and code with description

DT	Code	Description
SwS	11	White spruce dominated softwood stand
SbS	12	Black dominated softwood stand
SjP	13	Jack pine dominated softwood stand
StL	14	Tamarack dominated softwood stand with the tamarack contents $\geq 30\%$
SbSjP	21	Black spruce and jack pine dominated softwood stand
SHjPtA	31	Spruce dominated mixed wood stand
SHjPtA	32	Jack pine dominated mixed wood stand
HStAjP	51	Hardwood dominated mixed wood stand with conifer species wS, bS, and tL
HStAjP	52	Hardwood dominated mixed wood stand with conifer species jP
HtA	71	Trembling aspen dominated hardwood stand
HbP	73	Balsam poplar dominated hardwood stand

### 3. Generation of Forest Planning Inventory

The projected one-tree layer SFVI dataset for the project area was used as a basis for generating the planning inventory. The procedure of generating the planning inventory requires updating the inventory and a netdown of the land base.

#### 3.1 Updating the inventory

The SFVI inventory requires updating in order to reflect the current status described as follows:

- Disturbances. Disturbed areas by fire, blowdown and forest harvesting since 2004, in which the aerial photography was taken, were spatially incorporated into the SFVI. The year of origin for such areas was set to the year of disturbance. The disturbed areas were assumed to restore to the original stands with the same species cover type and density as recorded in the SFVI. The blowdown event that occurred in June, 2012 was treated as a special case. The blowdown area was classified into three severity classes, namely, High, Moderate, and Low. The attributes of each affected stand were updated by the following rules:
  - 1) For stands falling into the high blowdown severity class, it was assumed the windstorm caused the stand replacement just as fire or clearcut harvesting events. As a result, their year of origin (YOO) was set to 2012.
  - 2) For stands which are in low severity class, the density of such stands was reduced by one class if the density class<sup>3</sup> is B, C or D in the inventory, i.e. changing from density D to C, C to B, and B to A. Other attributes, such as age and species composition, remained unchanged. No updates were conducted for the A density stands with low blowdown severity;
  - 3) For stands with moderate blowdown severity, 50% of stands, on an area basis, were treated as high blowdown severity, and 50% as low blowdown severity. Stands in moderate severity class were randomly selected for determining the update treatment.
- Recently disturbed forest land. Some timber productive forest stands were interpreted as meadow on the aerial photos because they were newly disturbed either by fire or harvest and had no tree cover when the aerial photography was taken. Since such stands didn't have tree cover information, they were interpreted as non-productive land in the SFVI. Two approaches were applied to retrieving the productive status of those newly disturbed areas. The first approach was to use the silvicultural (tree planting) records for the harvested area. Specifically, the planted tree species was referred for determining the tree species attribute, and the density was set to "C", and the stand year of origin was set to the planting year. The second approach was to use the UTM inventory to determining the attributes of the burned stands by assuming the same tree cover and density on the same spots restored after fire or harvesting, and the

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<sup>3</sup> The stand density in the SFVI inventory is classified into 4 classes, i.e. A, B, C, and D based on the crown closure of a stand. The crown closure of the A density stand ranges from 6% to 30%, and the crown closure range is from 31% to 55% for the B density stands, from 56% to 80% for the C density stand. The crown closure of the D density is > 80%.



stand year of origin was set to the year of disturbance. In total, about 7,000 ha of the disturbed areas were updated using these two approaches.

- Stand age. The year of 2015 was used as the base year for calculating the age of stands using the following equation:

$$\text{Age} = 2015 - \text{Year of Origin (YOO)}$$

### 3.2 Netdown process

In performing a netdown of the landbase the following four exclusion types were used in the development of the planning inventory:

- Permanent exclusion refers to designated areas which do not contribute any values in the forest estate modelling analysis;
- Partial exclusion was assigned to areas that did not contribute to timber supply, but can be modeled for non-timber values such as old forest targets;
- Other areas such as areas unproductive stands, water, were designated not applicable (N/A).

The spatial GIS datasets were acquired from various sources for the netdown process to be described in this section, and the data source for such datasets was from the provincial ArcGIS Spatial Database Engine (SDE) database other than specified.

#### 1) Permanent exclusion

The permanent exclusion areas are to be described as follows,

- a. Indian Reserve. There are three sites of Indian reserve which are within or partially overlapped with the Island Forests boundary. These sites are Cumberland Indian reserve (IRNO. 100A), James Smith Indian Reserve (IRNO. 100), and One Arrow Indian Reserve (IRNO. 95-1J);
- b. Treaty Land Entitlement (TLE). The spatial data showing the Treaty Land Entitlement was provided by the Geomatics Branch, which consisted of Muskosay First Nation and Peter Ballantyne Cree Nation;
- c. Proposed diamond mining site. Shore Gold Inc. has a proposed diamond mine site within the Fort a la Corne provincial forest, which was treated as a permanent exclusion in the planning inventory. The spatial boundary of this site was generated by the Forest Service by scanning and digitizing the boundary based on the map provided by Shore Gold Inc.;
- d. Rights of way. Due to the construction of the divided highway on Highway 11, a section of forest land along the existing highway was designated as rights of way. The spatial data showing this section was provided by the Saskatchewan Ministry of Transportation and it was incorporated in the planning inventory as permanent exclusion;

- e. Parks. There are three provincial recreation sites within the Island Forests, namely Sturgeon river recreation site, Wapiti recreation site, and Nisbet trails recreation site
- f. Other areas. Other areas to be excluded from the wood supply analysis land base include leased partials.

### 3) Partial exclusion areas

The partial exclusion areas are described as follows,

- 1) Riparian areas. Riparian areas were generated by buffering the water body and streams with a certain width in order to mitigate the impact of forest operations on fish habitat, visual quality, etc. In theory, the buffer width should be determined by the fish bearing capacity. Since the data showing fish bearing within the project area was not available, the criteria of determining the buffer width were set as follows:
  - 30 meters for lakes or rivers which are  $\leq 5$  ha;
  - 90 meters for lakes or rivers which are  $> 5$  ha; and
  - 15 m for other linear streams.
- 2) Dwarf mistletoe area. Stands which were heavily infested by dwarf mistletoe, with severity class 3, 4, or 5, were identified and treated as the partial exclusion;
- 3) Steep slope Area. Stands located on a slope greater than 30% were excluded from the netdown land base; and
- 4) Tamarack area. Stands whose tamarack content is greater than and equal to 30% were classified as development type StL and were treated as partial exclusion.
- 5) The proposed Representative Area Network (RAN)
 

There are four sites of proposed RAN area within the Island Forests, and there is one site called riparian protected area, which was treated as the proposed RAN area.

The netdown process started from spatially incorporating all the exclusion layers described above into the planning inventory, and then excluding the areas by following the procedure described in Figure 1, which shows there are two steps for netting down the land base. In the first step, the land base is separated into productive, unproductive, and water areas. In the second step, the productive area is further divided into permanent exclusion, partial exclusion, and net-area.

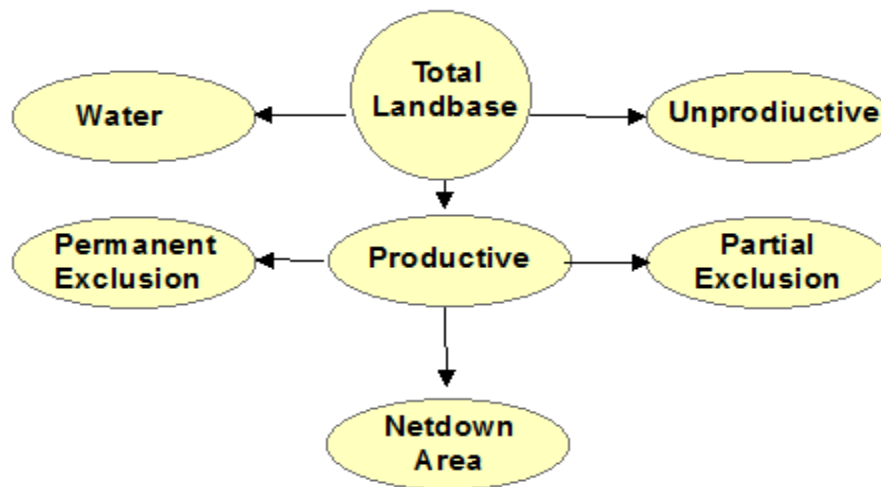


Figure 9 The procedure of the net-down process

Table 17 shows the results of netdown process for the Island Forests. The netdown area which contributes to the timber supply is 160,992 ha and represents about 71% of the total land base.

**Table 17 The result of the net-down process**

Category	Land Use	Area (ha)	% of Total
Non-productive	Unproductive	23,413	10.35%
	Water	1,683	0.74%
<b>Sub Total</b>		25,096	
Permanent Exclusion	HWY11_ROW	39	0.02%
	Indian Reserve	1,804	0.80%
	Leased Parcels	146	0.06%
	Shore Gold	4,314	1.91%
	TLE	244	0.11%
	Parks	1,674	0.74%
<b>Sub Total</b>		8,221	
Partial Exclusion	RAN	11,521	5.09%
	Proposed RAN	3,698	1.63%
	Mistletoe	3,211	1.42%
	Riparian	1,968	0.87%
	Steep Slope (> 30%)	1,057	0.47%
	Tamarack	10,506	4.64%
<b>Sub Total</b>		31,961	
<b>Net_area</b>		160,992	71.16%
<b>Grand Total</b>		226,270	100%

### *Appendix B - Canada Warbler Density Table*

Canada Warbler Density (males/ha)			
	Species group		
Age	HWD	MWD	U_Spruce
5	0.026378	0.015821968	0.000146
10	0.026378	0.015821968	0.000146
15	0.022252	0.013354829	0.000837
20	0.02182	0.011792318	0.001516
25	0.024149	0.010951539	0.002193
30	0.028407	0.010670456	0.002882
35	0.033856	0.010807896	0.003594
40	0.039859	0.01124355	0.004342
45	0.045879	0.011877971	0.005136
50	0.051476	0.012632576	0.00599
55	0.056308	0.013449644	0.006915
60	0.060132	0.014292317	0.007923
65	0.062804	0.015144601	0.009026
70	0.064279	0.016011363	0.010236
75	0.06461	0.016918334	0.011565
80	0.063949	0.017912109	0.013026
85	0.062546	0.019060143	0.014629
90	0.06075	0.020450757	0.016388
95	0.059007	0.022193133	0.018313
100	0.057865	0.024417317	0.020418
105	0.057968	0.027274218	0.022713
110	0.06006	0.030935606	0.025212
115	0.064981	0.035594117	0.027925
120	0.073673	0.041463247	0.030866
125	0.087174	0.048777356	0.034045
130	0.106622	0.057791668	0.037476
135	0.133254	0.068782268	0.041169
140	0.168404	0.082046106	0.045137
145	0.213505	0.097900994	0.049392
150	0.27009	0.116685605	0.053946
155	0.27009	0.116685605	0.053946
160	0.27009	0.116685605	0.053946
165	0.27009	0.116685605	0.053946
170	0.27009	0.116685605	0.053946
175	0.27009	0.116685605	0.053946
180	0.27009	0.116685605	0.053946
185	0.27009	0.116685605	0.053946
190	0.27009	0.116685605	0.053946
195	0.27009	0.116685605	0.053946
200	0.27009	0.116685605	0.053946

### Appendix C - Transition Rule Matrix

Previous Development Type	PFT	Treatment	S	SH	HS	H	Total	Treatment % *
S wS	WSF	3	80	15	5		100	10
S wS	WSF	4	80	15	5		100	30
S wS	WSF	5	80	15	5		100	58
S bS	BSL	2	100				100	5
S bS	BSL	4	90	5	5		100	58
S bS	BSL	5	70	30			100	35
S jP	JLP	2	95	3	2		100	15
S jP	JLP	3	95	3	2		100	20
S jP	JLP	4	96	2	2		100	25
S jP	JLP	5	96	2	2		100	38
S tL	BSL	1	100				100	98
S bSjP	BSJ	2	90	10			100	10
S bSjP	BSJ	3	90	10			100	10
S bSjP	BSJ	4	90	10			100	48
S bSjP	BSJ	5	90	10			100	30
SH jPtA	SMW	4	10	75	13	2	100	58
SH jPtA	SMW	5	10	75	13	2	100	40
SH jPtA	PMW	2	5	75	15	5	100	5
SH jPtA	PMW	3	5	70	20	5	100	20
SH jPtA	PMW	4	25	53	17	5	100	38
SH jPtA	PMW	5	5	67	23	5	100	35
HS tAjP	HSM	4		20	60	20	100	45
HS tAjP	HSM	5		20	60	20	100	53
HS tAjP	HPM	2		20	70	10	100	10
HS tAjP	HPM	3		25	75		100	40
HS tAjP	HPM	5		25	75		100	48
H tA	TAB	1			0	100	100	98

\* There is 2% of harvested area transitioning to permanent road for each PFT

### Appendix D – Area summary by species group and seral stage, management unit

Management Unit	Species Group	MFLB (Ha)	Net Area (Ha)	Young			Immature			Mature			Old			Very Old			Old Seral Requirements		
				MFLB (Ha)	Net Area (Ha)	% of Total MFLB	MFLB (Ha)	Net Area (Ha)	% of Total MFLB	MFLB (Ha)	Net Area (Ha)	% of Total MFLB	MFLB (Ha)	Net Area (Ha)	% of Total MFLB	MFLB (Ha)	Net Area (Ha)	% of Total MFLB	Old Requirement	Very Old Requirement	Old+Very Old Requirement
IF_EAST	H	38,278	33,215	1,860	1785	5%	18,815	17,071	49%	14,162	11,721	37%	3,435	2,634	9%	1,785	8,926	5%	3,828	1,914	5,742
	HS_SH	17,683	15,929	970	953	5%	11,644	10,595	66%	3,817	3,422	22%	1,048	771	6%	953	1,052	5%	1,768	884	2,653
	S_BSL_BSL	15,570	7,714	1,268	1161	8%	3,991	1,698	26%	4,945	2,843	32%	2,476	955	16%	1,161	706	7%	1,557	778	2,335
	S_JLP	45,970	40,357	9,222	8926	20%	27,206	22,684	59%	7,911	7,197	17%	1,276	1,194	3%	8,926	438	19%	4,597	2,299	6,896
	S_WSF	5,548	4,307	1,064	1052	19%	635	415	11%	1,710	1,369	31%	1,501	892	27%	1,052	650	19%	555	277	832
	<b>IF_WEST Subtotal</b>	<b>123,049</b>	<b>101,522</b>	<b>13,006</b>	<b>11796</b>	<b>11%</b>	<b>8,892</b>	<b>7,840</b>	<b>7%</b>	<b>970</b>	<b>921</b>	<b>1%</b>	<b>970</b>	<b>40</b>	<b>1%</b>	<b>8,025</b>	<b>7,068</b>	<b>7%</b>	<b>12,305</b>	<b>6,152</b>	<b>18,457</b>
IF_WEST	H	27,851	20,120	808	706	3%	13,363	8,997	48%	11,729	8,726	42%	1,950	1,691	7%	0	0	0%	2,785	1,393	4,178
	HS_SH	8,738	6,528	481	438	6%	5,558	4,358	64%	2,108	1,383	24%	511	295	6%	79	54	1%	874	437	1,311
	S_BSL_BSL	6,574	2,404	1,105	650	17%	1,778	253	27%	1,527	725	23%	1,383	462	21%	780	313	12%	657	329	986
	S_JLP	30,933	27,665	8,025	7068	26%	13,006	11,796	42%	8,892	7,840	29%	970	921	3%	40	40	0%	3,093	1,547	4,640
	S_WSF	4,028	2,752	317	306	8%	743	508	18%	2,020	1,316	50%	587	307	15%	361	315	9%	403	201	604
	<b>IF_WEST Subtotal</b>	<b>78,125</b>	<b>59,470</b>	<b>10,737</b>	<b>9,169</b>	<b>14%</b>	<b>34,449</b>	<b>25,912</b>	<b>44%</b>	<b>26,276</b>	<b>19,990</b>	<b>34%</b>	<b>5,403</b>	<b>3,677</b>	<b>7%</b>	<b>1,260</b>	<b>722</b>	<b>2%</b>	<b>7,812</b>	<b>3,906</b>	<b>11,719</b>
<b>Grand Total</b>		<b>201,174</b>	<b>160,992</b>	<b>23,742</b>	<b>20,964</b>	<b>12%</b>	<b>43,341</b>	<b>33,751</b>	<b>22%</b>	<b>27,246</b>	<b>20,912</b>	<b>14%</b>	<b>6,373</b>	<b>3,717</b>	<b>3%</b>	<b>9,286</b>	<b>7,791</b>	<b>5%</b>	<b>20,117</b>	<b>10,059</b>	<b>30,176</b>

### *Appendix E – Effective Operability Windows by Development Type – Density and Utilization*

Development Type	Density	10cm Utilization		8cm Utilization		5cm Utilization	
		Effective MHA	Maximum Harvest Age*	Effective MHA	Maximum Harvest Age*	Effective MHA	Maximum Harvest Age*
HbP	1	Max<60m <sup>3</sup>	Max<60m <sup>3</sup>	Max<60m <sup>3</sup>	Max<60m <sup>3</sup>	Max<60m <sup>3</sup>	Max<60m <sup>3</sup>
HbP	2	Max<60m <sup>3</sup>	Max<60m <sup>3</sup>	Max<60m <sup>3</sup>	Max<60m <sup>3</sup>	75	105
HbP	3	65	145	60	155	60	160
HbP	4	60	185	60	195	60	195
HStAjP	1	Max<60m <sup>3</sup>	Max<60m <sup>3</sup>	Max<60m <sup>3</sup>	Max<60m <sup>3</sup>	Max<60m <sup>3</sup>	Max<60m <sup>3</sup>
HStAjP	2	95	135	80	155	75	160
HStAjP	3	70	190	70	200	70	200
HStAjP	4	70	200	70	200	70	200
HStAwS	1	80	190	80	195	80	200
HStAwS	2	80	200	80	200	80	200
HStAwS	3	80	200	80	200	80	200
HStAwS	4	80	200	80	200	80	200
HtA	1	Max<60m <sup>3</sup>	Max<60m <sup>3</sup>	Max<60m <sup>3</sup>	Max<60m <sup>3</sup>	Max<60m <sup>3</sup>	Max<60m <sup>3</sup>
HtA	2	Max<60m <sup>3</sup>	Max<60m <sup>3</sup>	75	110	70	120
HtA	3	60	150	60	160	60	165
HtA	4	60	190	60	200	60	200
SbS	1	90	195	90	200	90	200
SbS	2	90	200	90	200	90	200
SbS	3	90	200	90	200	90	200
SbS	4	90	200	90	200	90	200
SbSjP	1	100	155	90	200	90	200
SbSjP	2	90	195	90	200	90	200
SbSjP	3	90	200	90	200	90	200
SbSjP	4	90	200	90	200	90	200
SHjPtA	1	95	135	80	150	70	165
SHjPtA	2	70	190	70	195	70	200
SHjPtA	3	70	200	70	200	70	200
SHjPtA	4	70	200	70	200	70	200
SHjPtA	1	90	125	90	140	90	150
SHjPtA	2	90	175	90	185	90	190
SHjPtA	3	90	200	90	200	90	200
SHjPtA	4	90	200	90	200	90	200
SjP	1	Max<60m <sup>3</sup>	Max<60m <sup>3</sup>	Max<60m <sup>3</sup>	Max<60m <sup>3</sup>	115	125
SjP	2	80	200	70	200	70	200
SjP	3	70	200	70	200	70	200
SjP	4	70	200	70	200	70	200
StL	1	Max<60m <sup>3</sup>	Max<60m <sup>3</sup>	Max<60m <sup>3</sup>	Max<60m <sup>3</sup>	Max<60m <sup>3</sup>	Max<60m <sup>3</sup>
StL	2	Max<60m <sup>3</sup>	Max<60m <sup>3</sup>	Max<60m <sup>3</sup>	Max<60m <sup>3</sup>	95	155
StL	3	Max<60m <sup>3</sup>	Max<60m <sup>3</sup>	90	170	80	190
StL	4	95	165	80	200	80	200
SwS	1	90	200	90	200	90	200
SwS	2	90	200	90	200	90	200
SwS	3	90	200	90	200	90	200
SwS	4	90	200	90	200	90	200

\* In some cases successional breakup occurs prior to maximum operability age

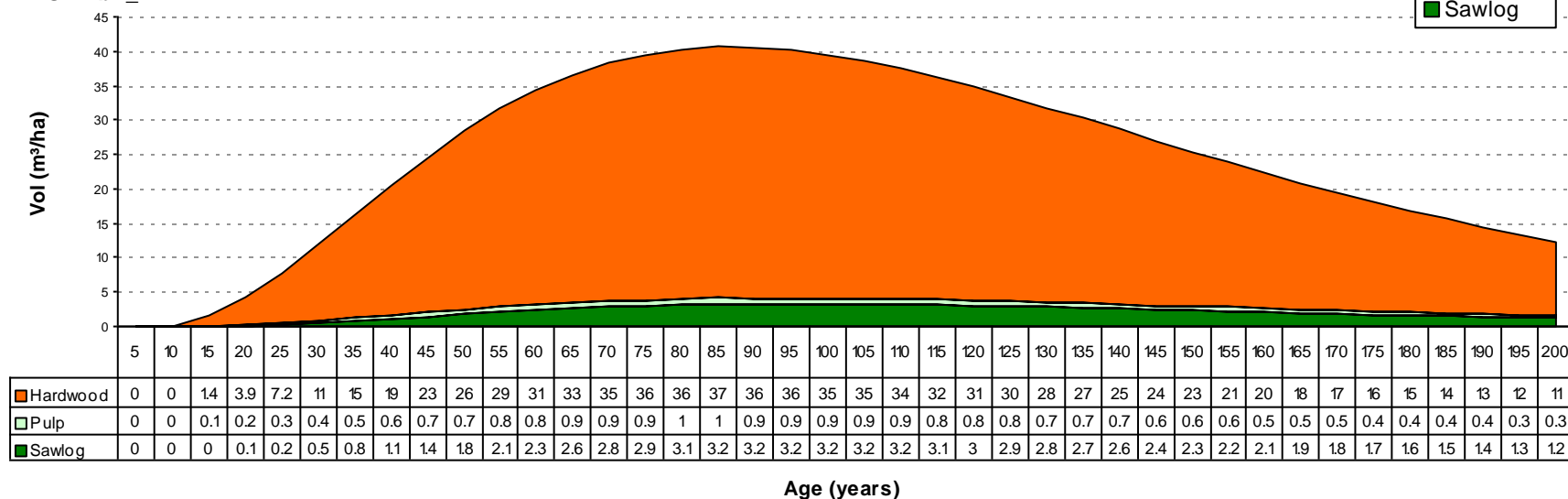
*Appendix F – Yield Curves*

(Subsequent Pages)



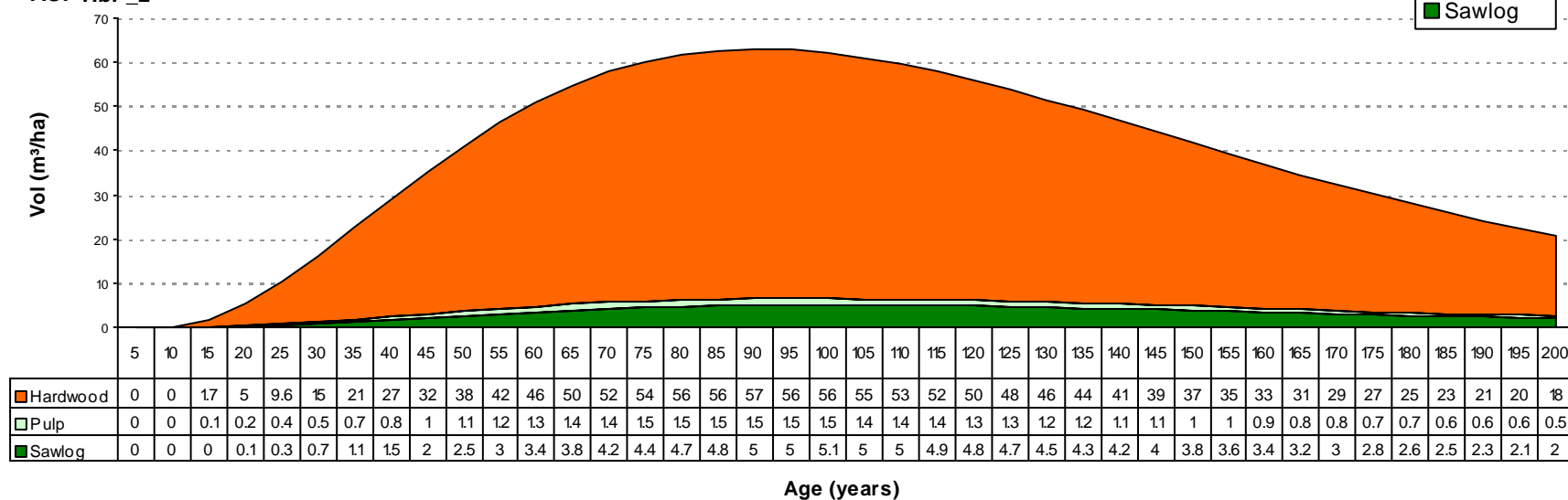
Yields at 5cm Utilization Standard

AU: HbP\_1



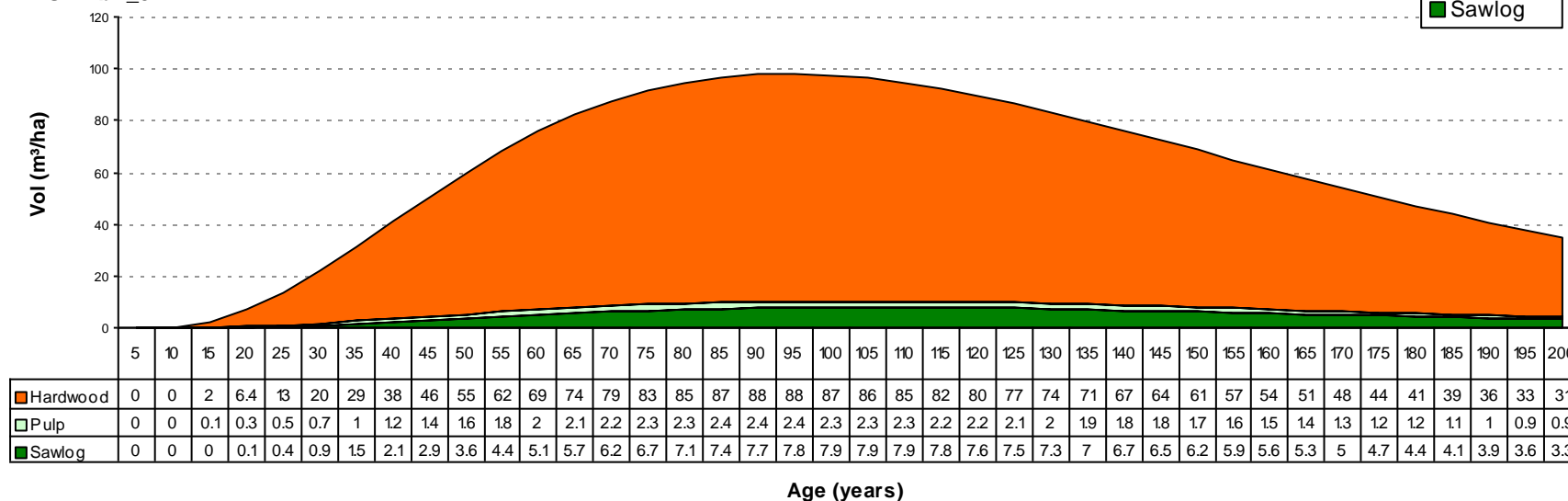
Yields at 5cm Utilization Standard

AU: HbP\_2



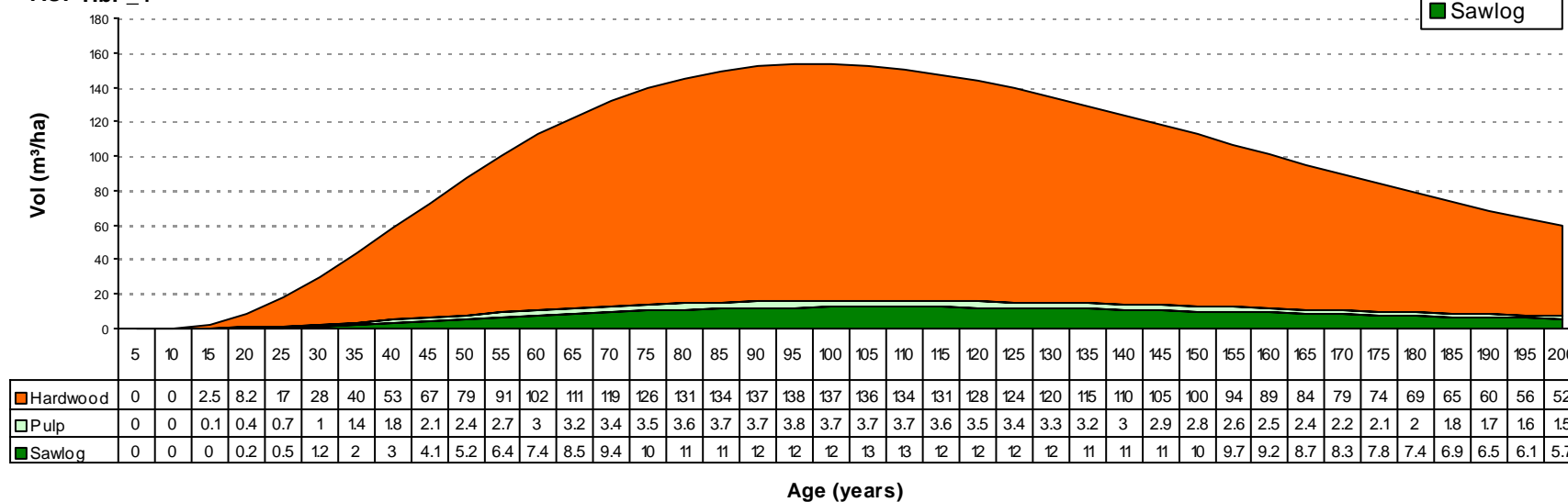
## Yields at 5cm Utilization Standard

## AU: HbP\_3



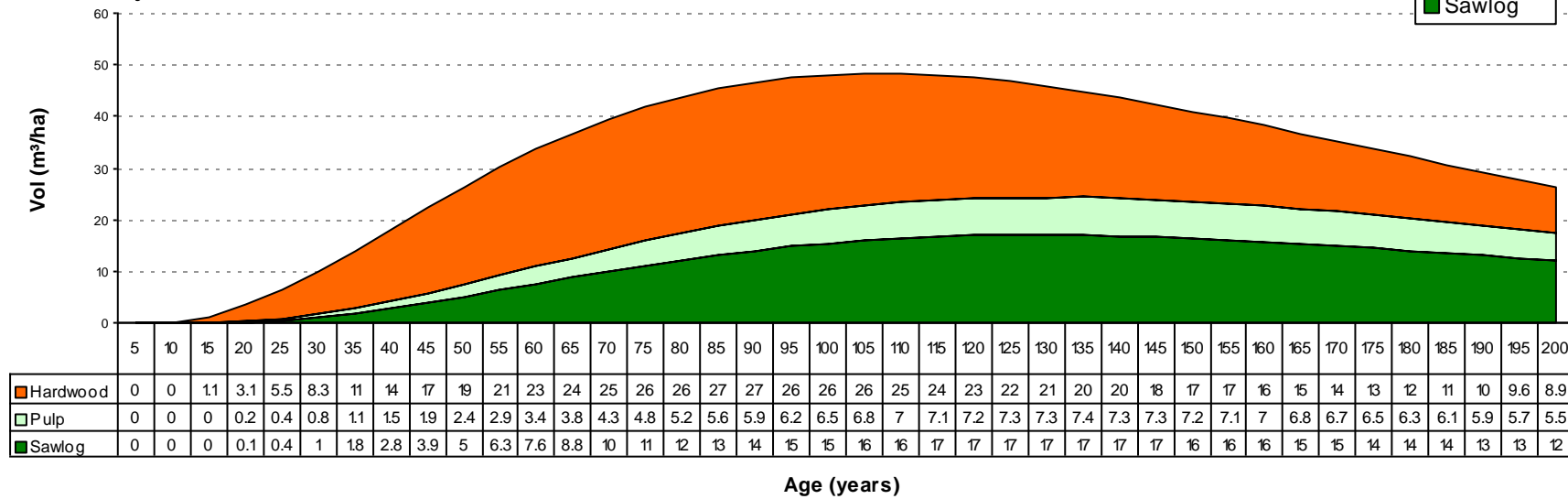
## Yields at 5cm Utilization Standard

## AU: HbP\_4



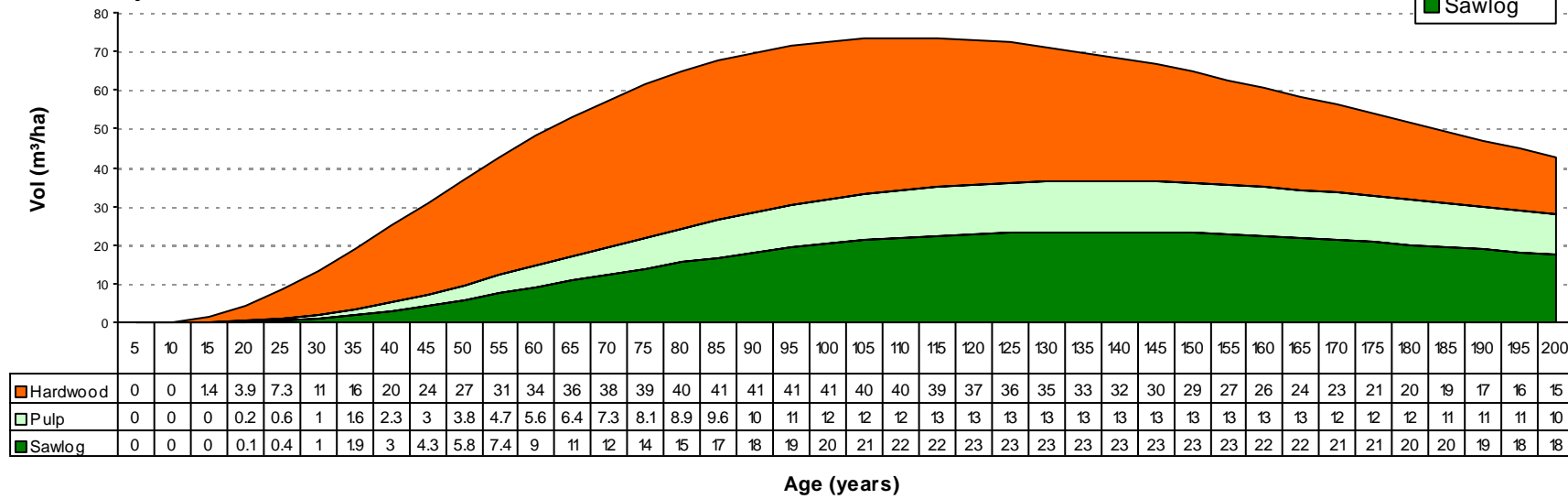
Yields at 5cm Utilization Standard

AU: HStAjP\_1



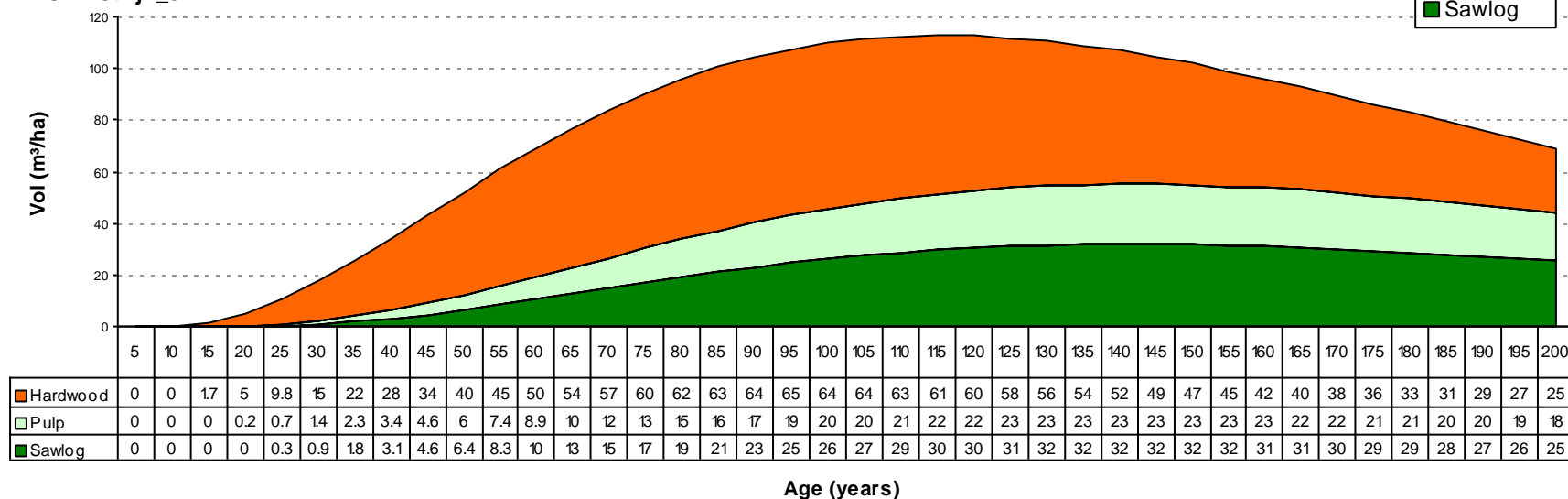
Yields at 5cm Utilization Standard

AU: HStAjP\_2



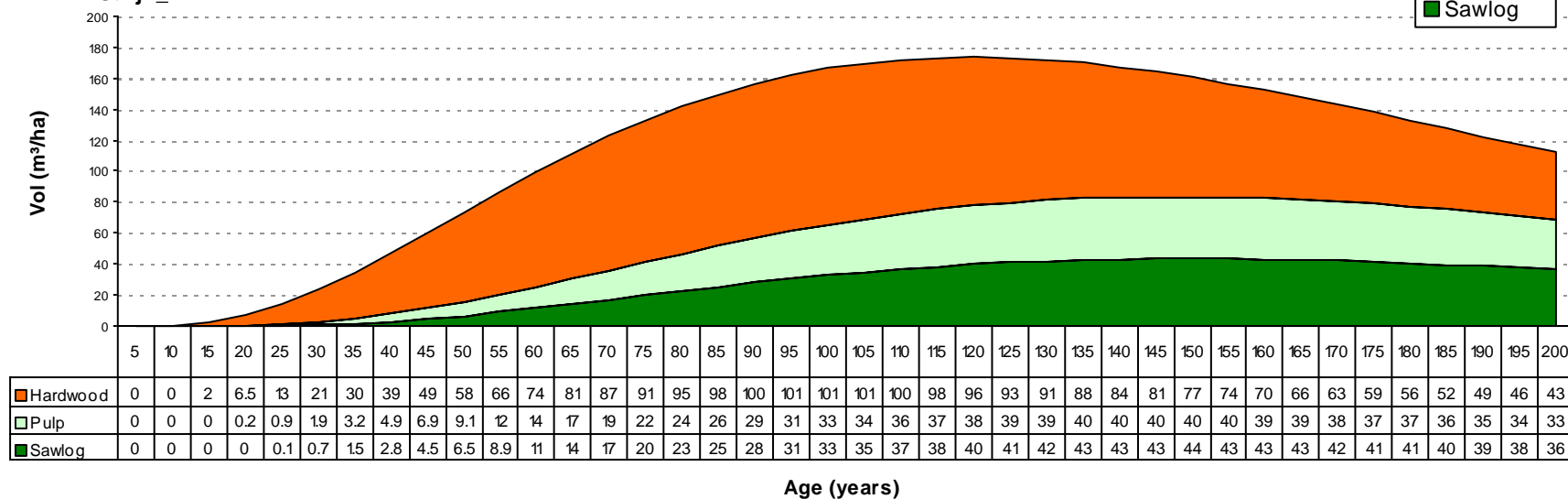
## Yields at 5cm Utilization Standard

## AU: HStAjP\_3



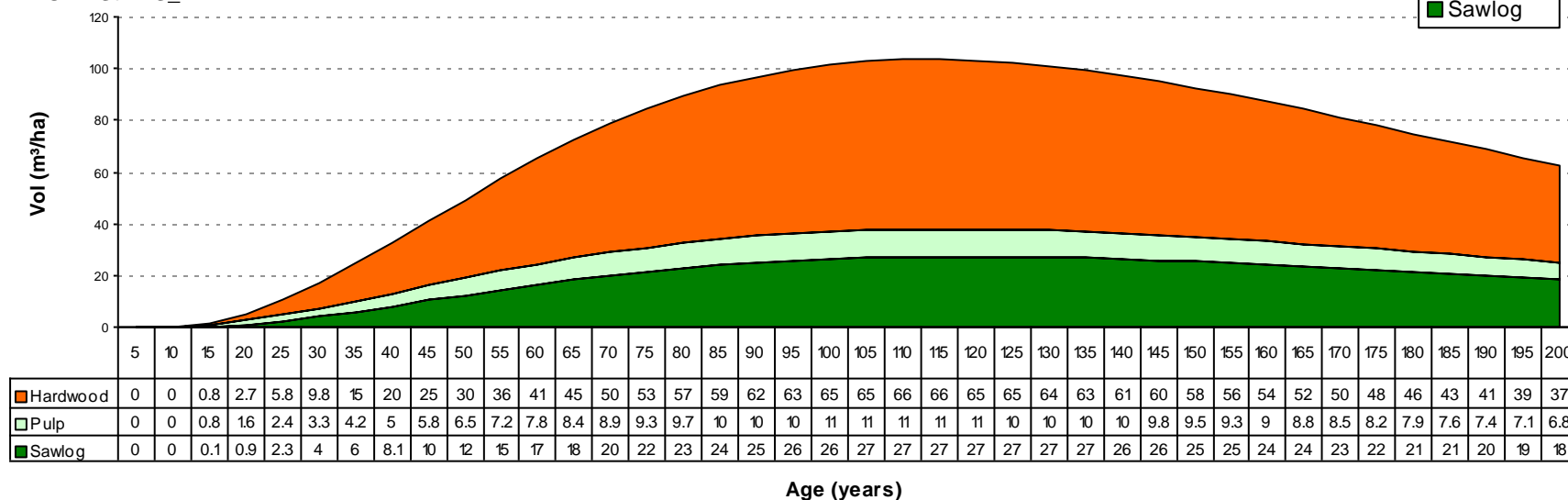
## Yields at 5cm Utilization Standard

## AU: HStAjP\_4



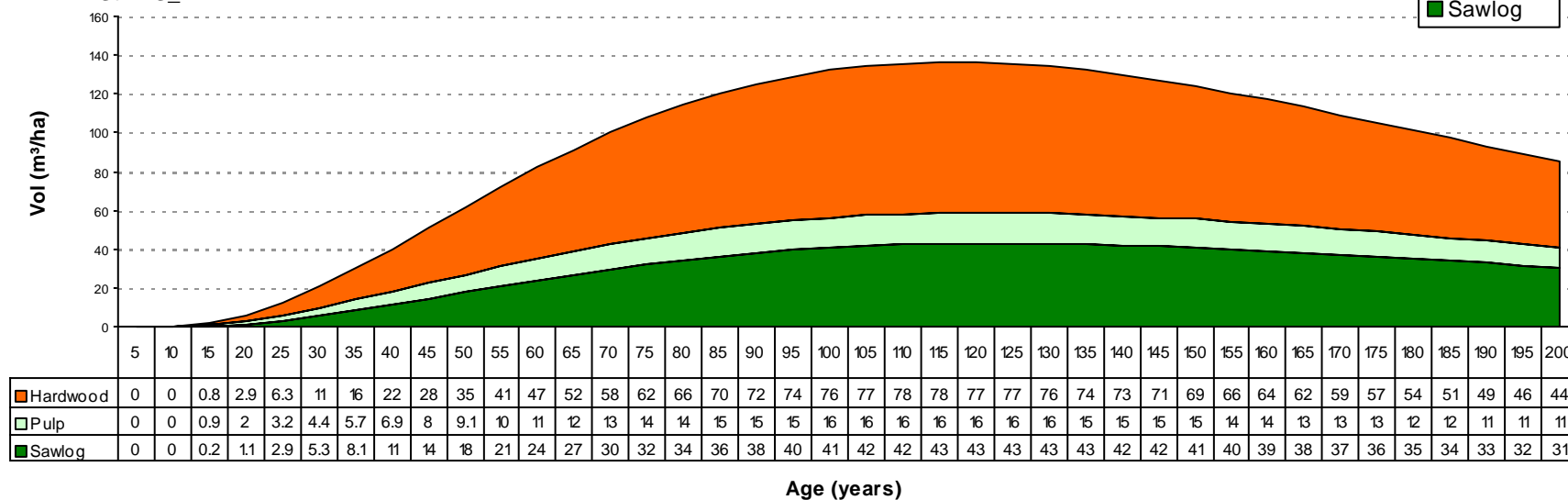
Yields at 5cm Utilization Standard

AU: HStAwS\_1



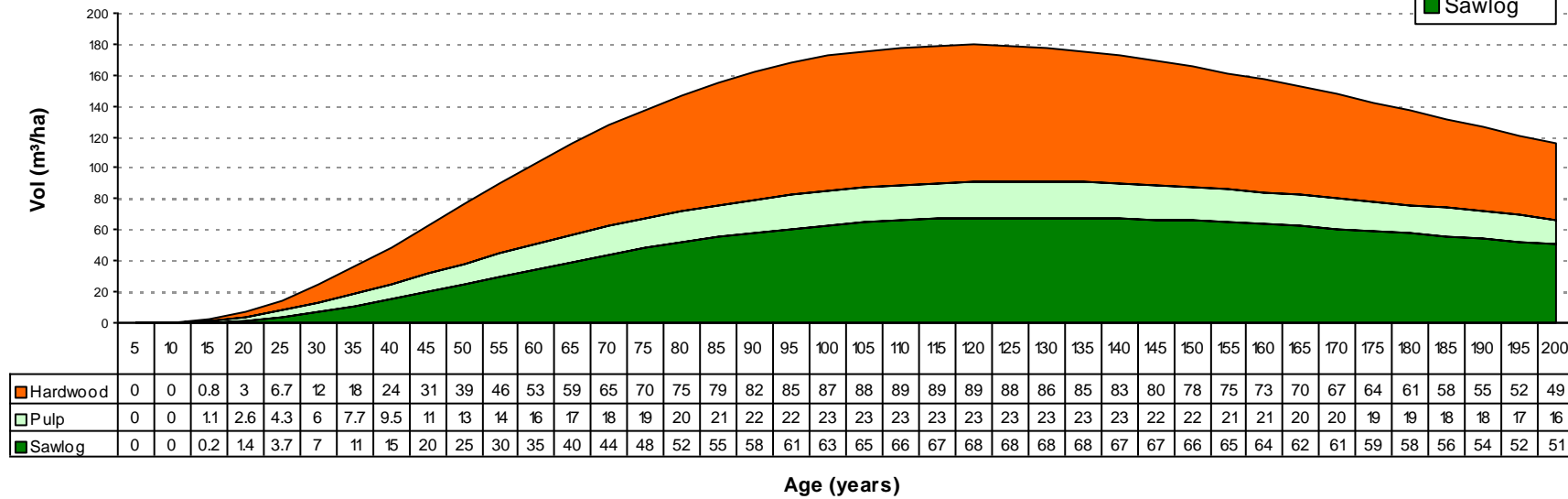
Yields at 5cm Utilization Standard

AU: HStAwS\_2



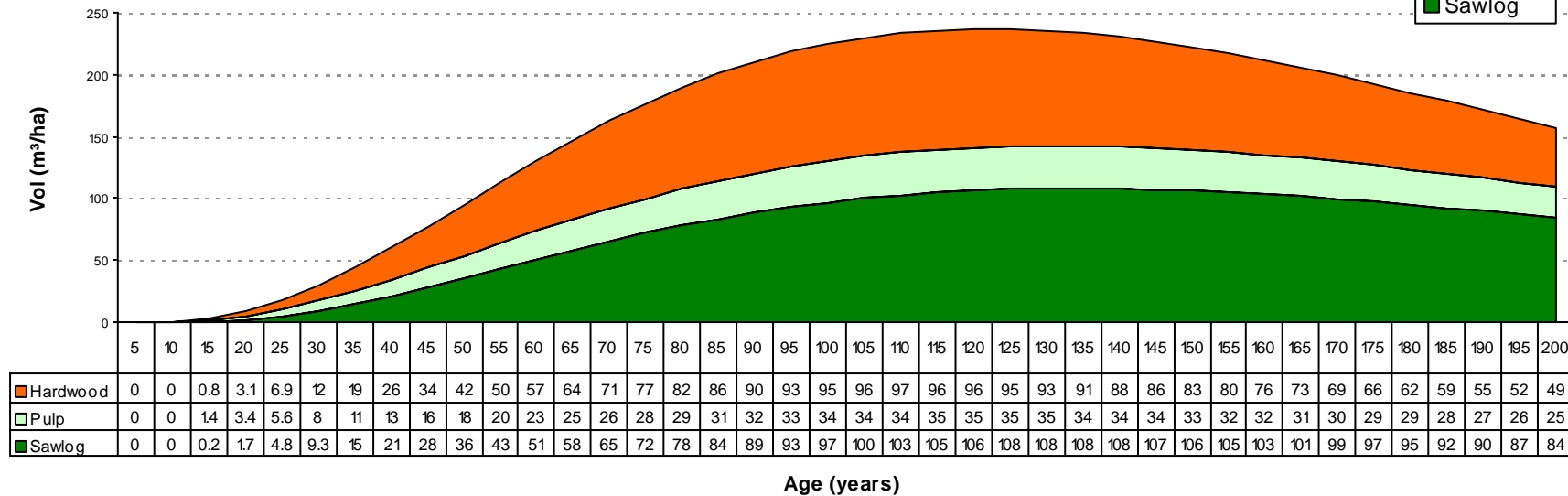
Yields at 5cm Utilization Standard

AU: HStAwS\_3



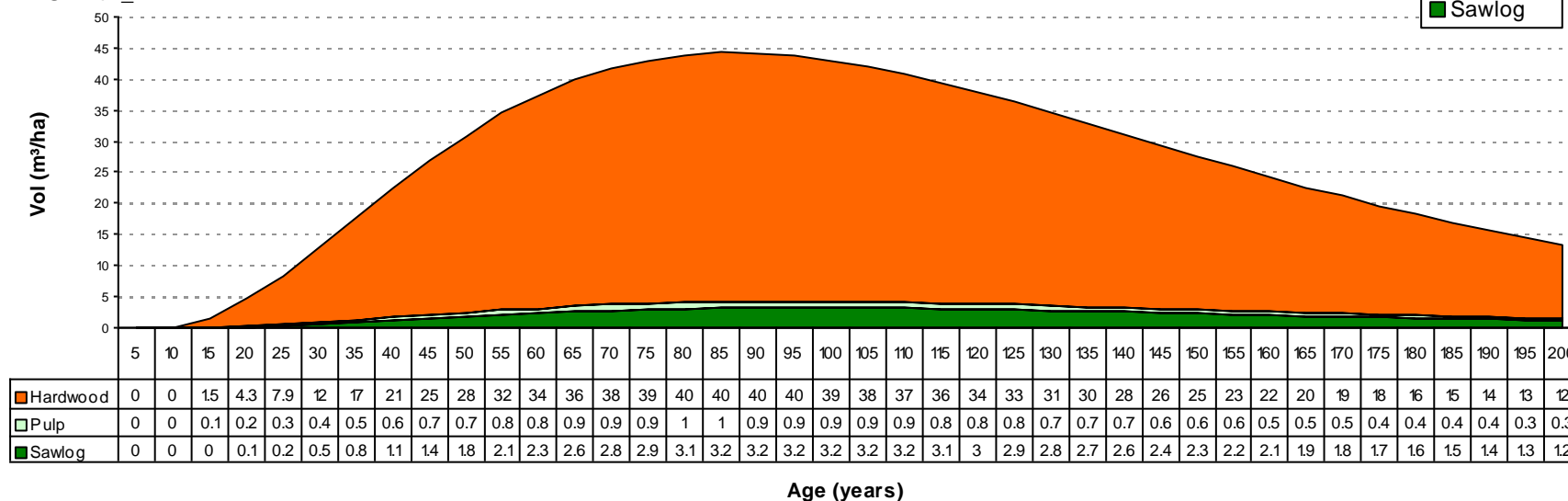
Yields at 5cm Utilization Standard

AU: HStAwS\_4



## Yields at 5cm Utilization Standard

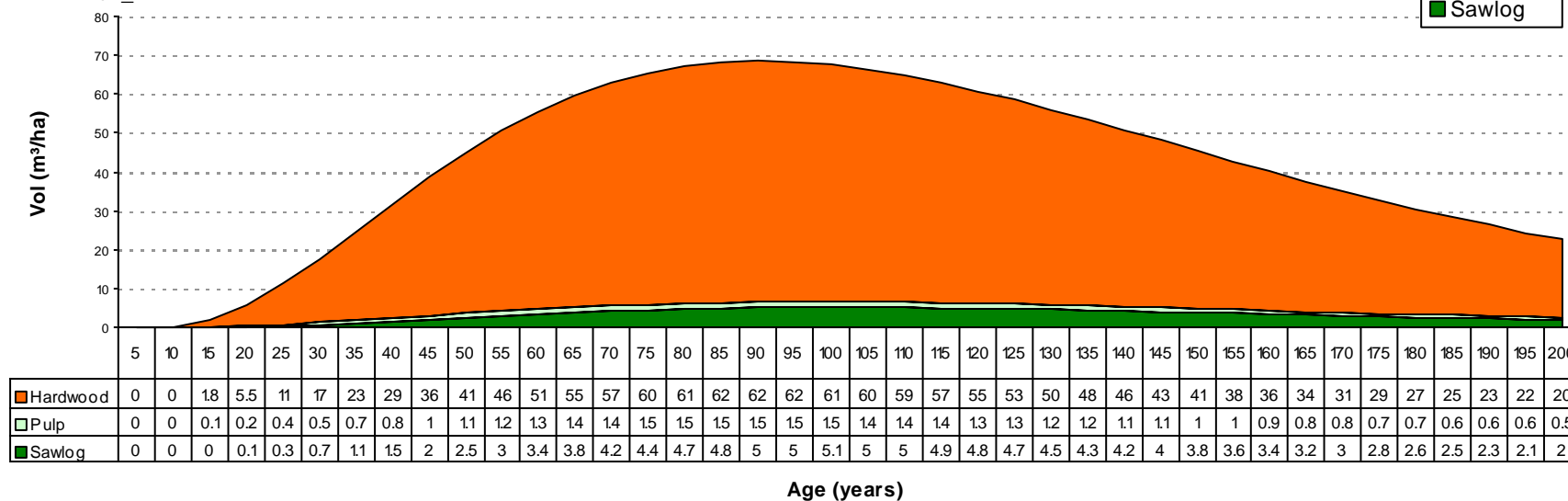
AU: HtA\_1



Age (years)

## Yields at 5cm Utilization Standard

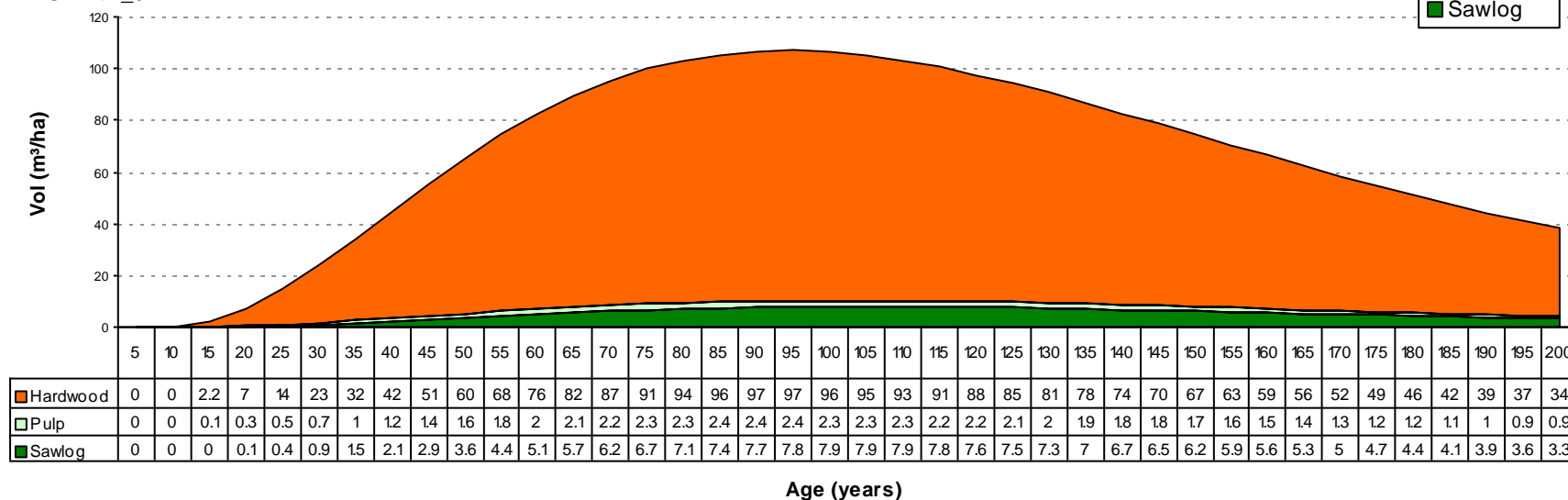
AU: HtA\_2



Age (years)

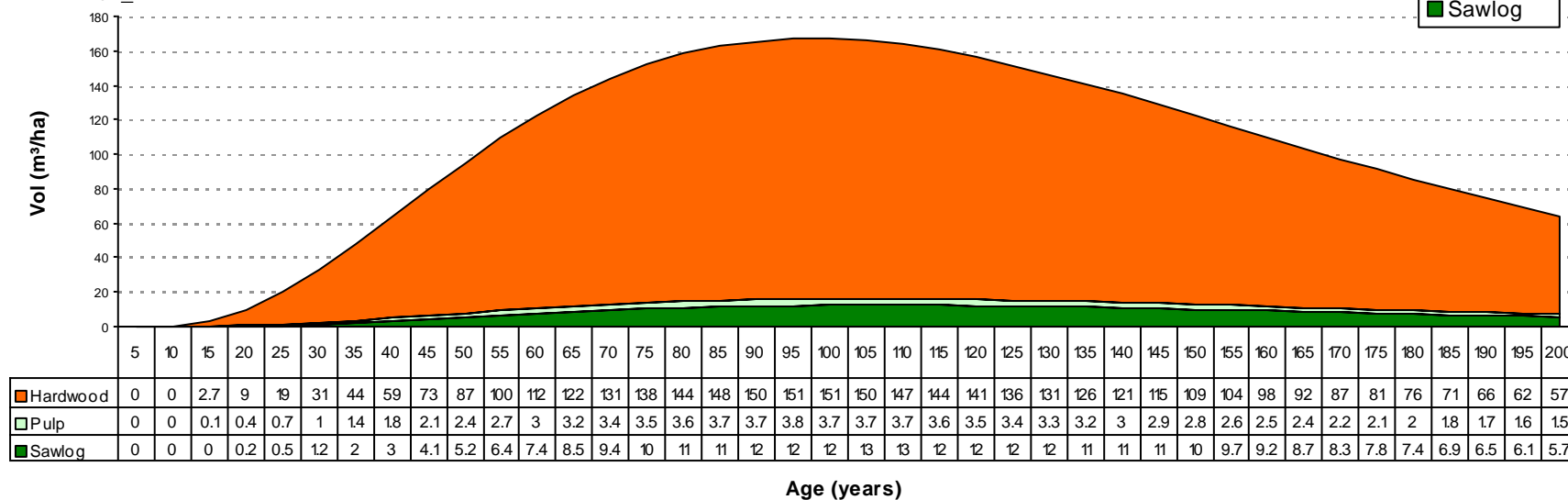
## Yields at 5cm Utilization Standard

AU: HtA\_3



## Yields at 5cm Utilization Standard

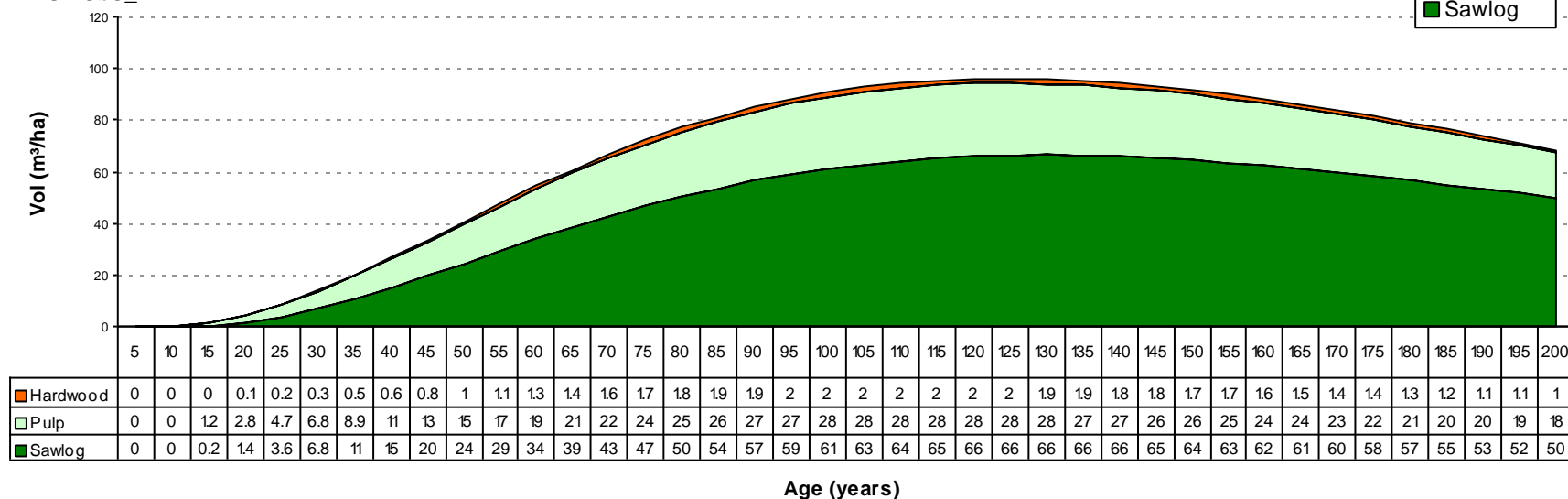
AU: HtA\_4





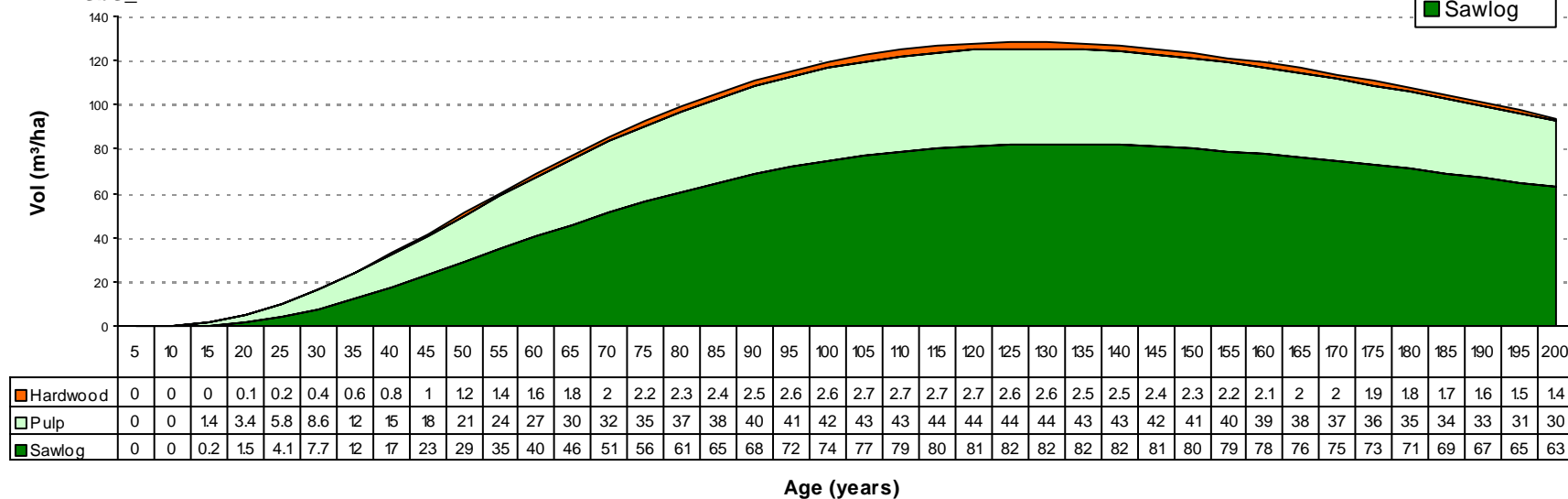
Yields at 5cm Utilization Standard

AU: SbS\_1



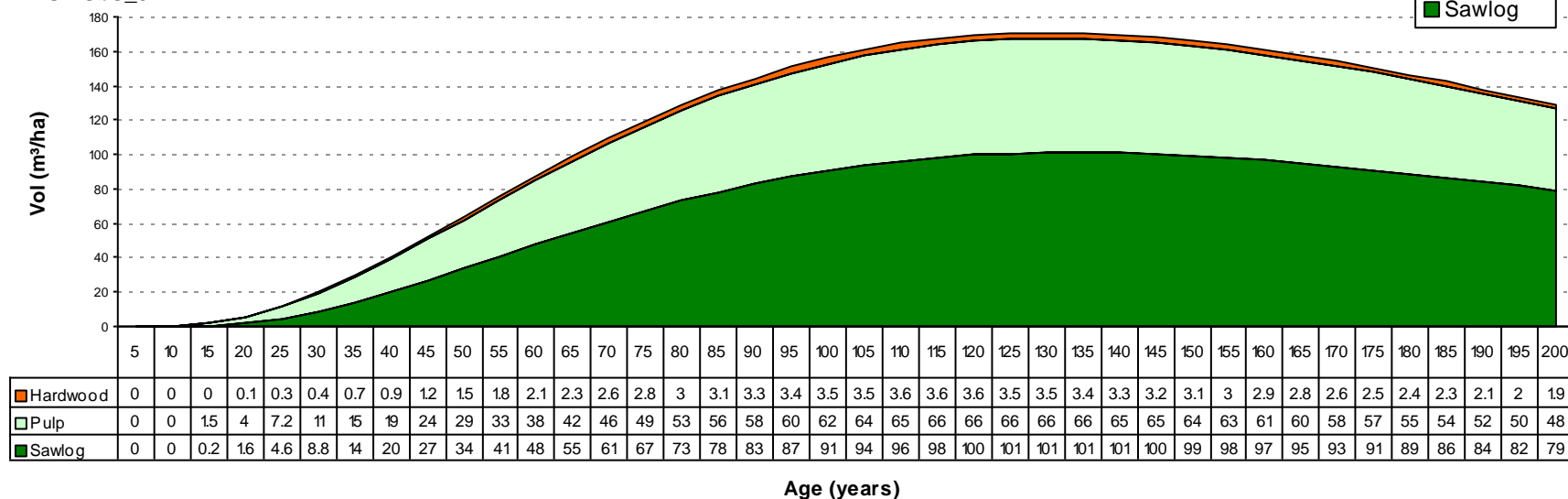
Yields at 5cm Utilization Standard

AU: SbS\_2



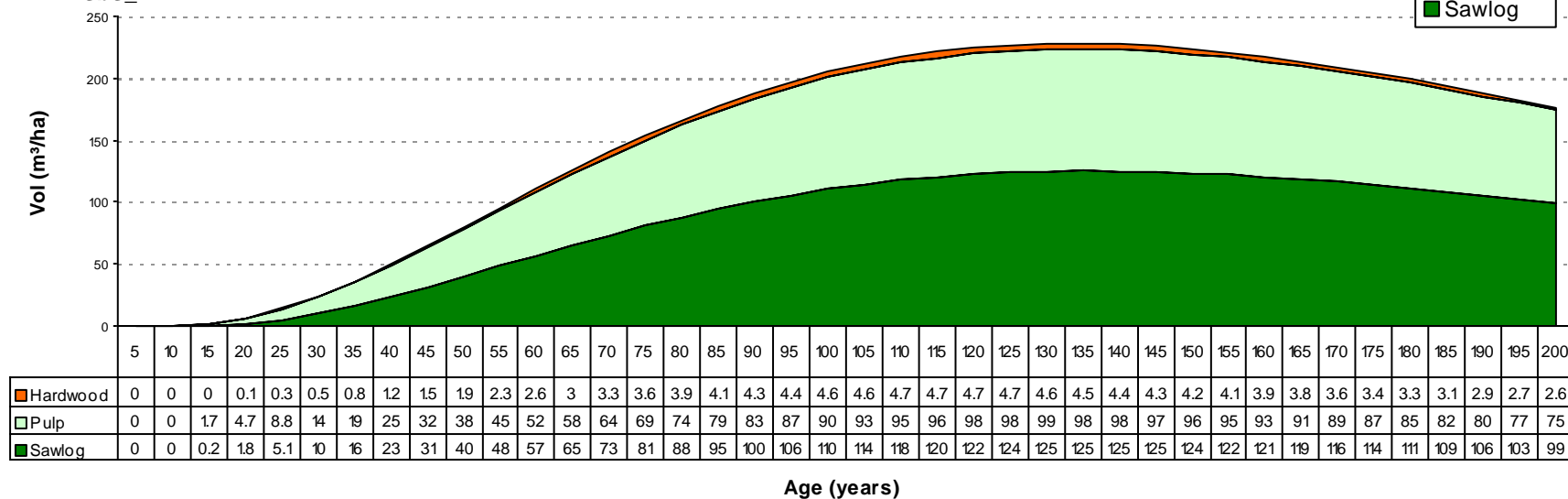
Yields at 5cm Utilization Standard

AU: SbS\_3



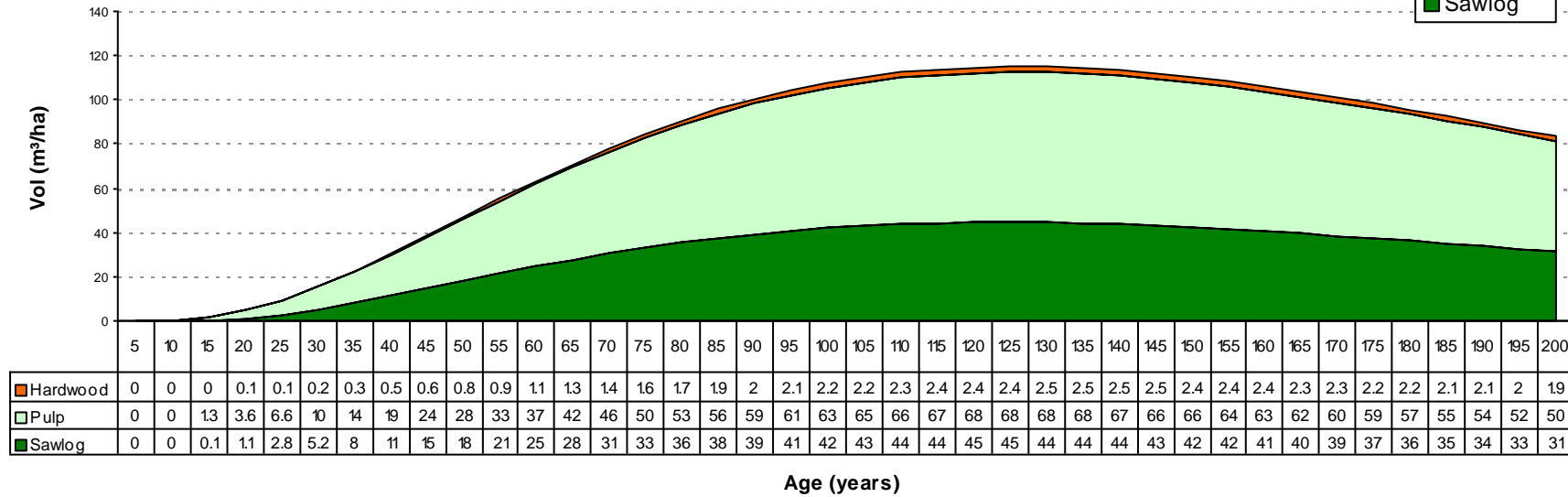
Yields at 5cm Utilization Standard

AU: SbS\_4



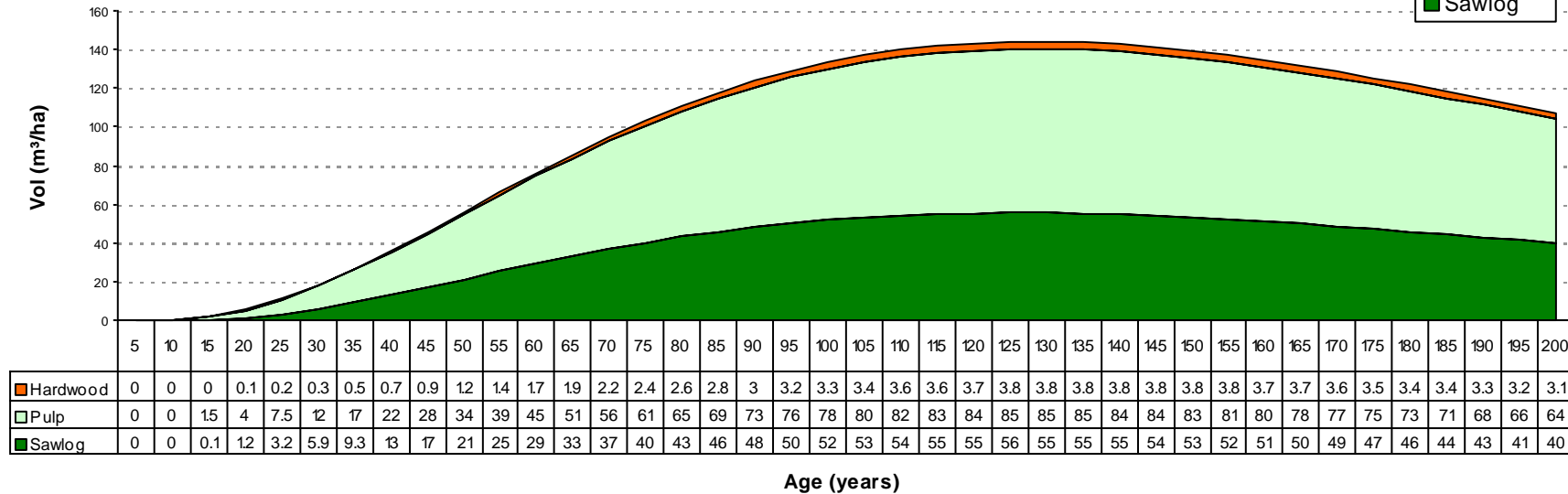
## Yields at 5cm Utilization Standard

AU: SbSjP\_1



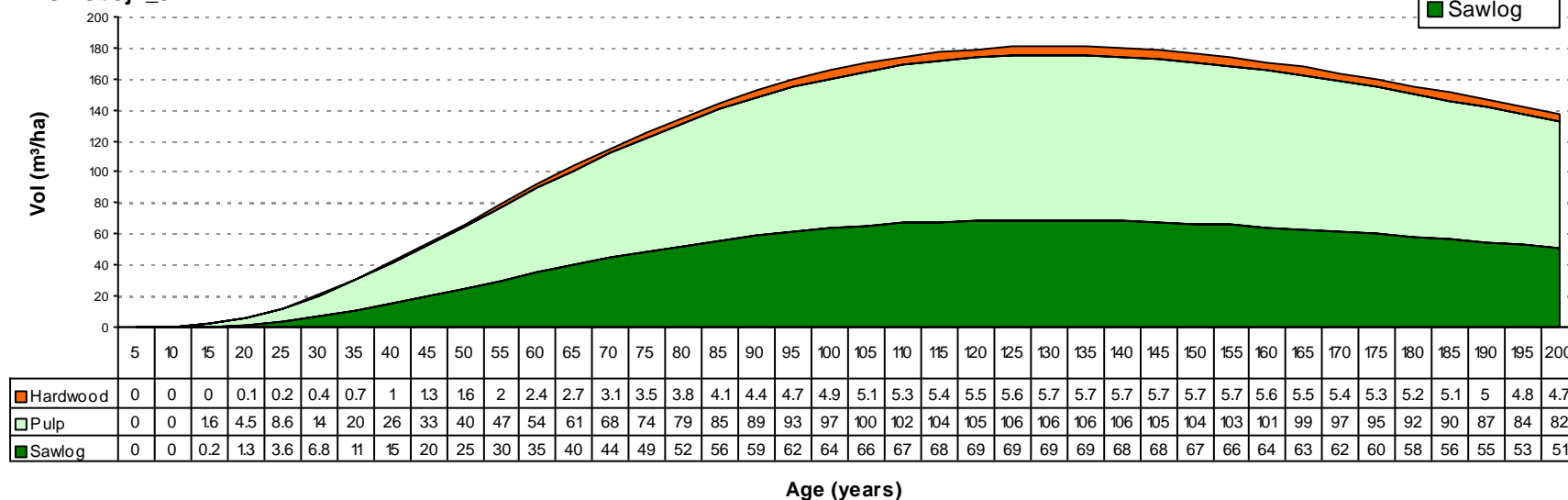
## Yields at 5cm Utilization Standard

AU: SbSjP\_2



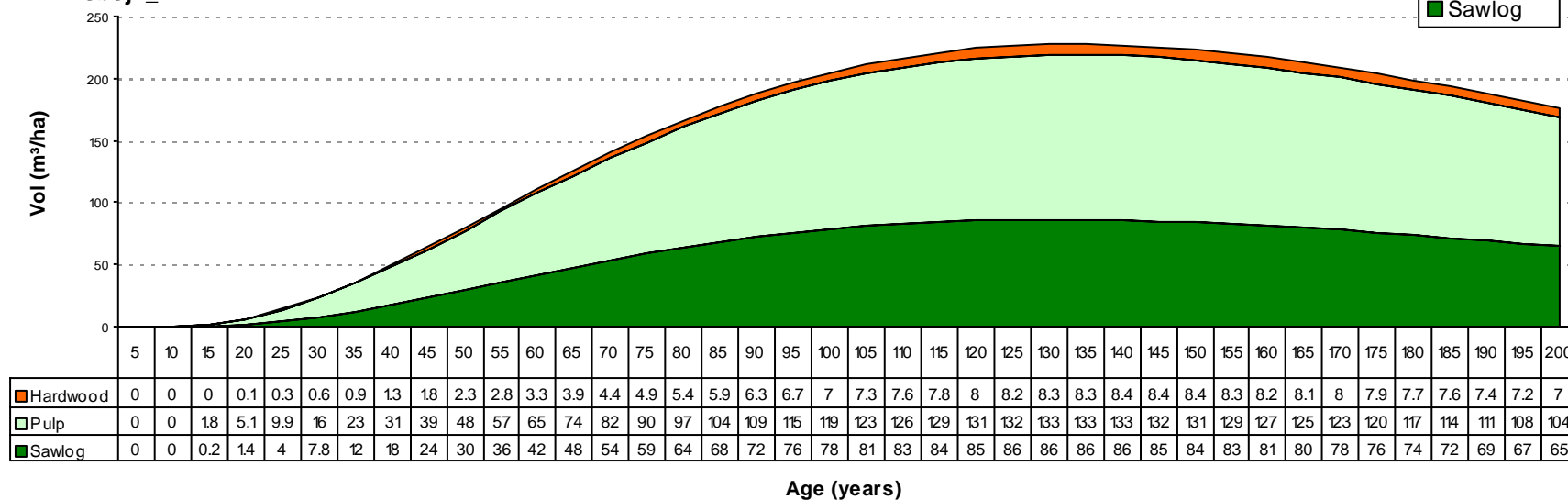
Yields at 5cm Utilization Standard

AU: SbSjP\_3



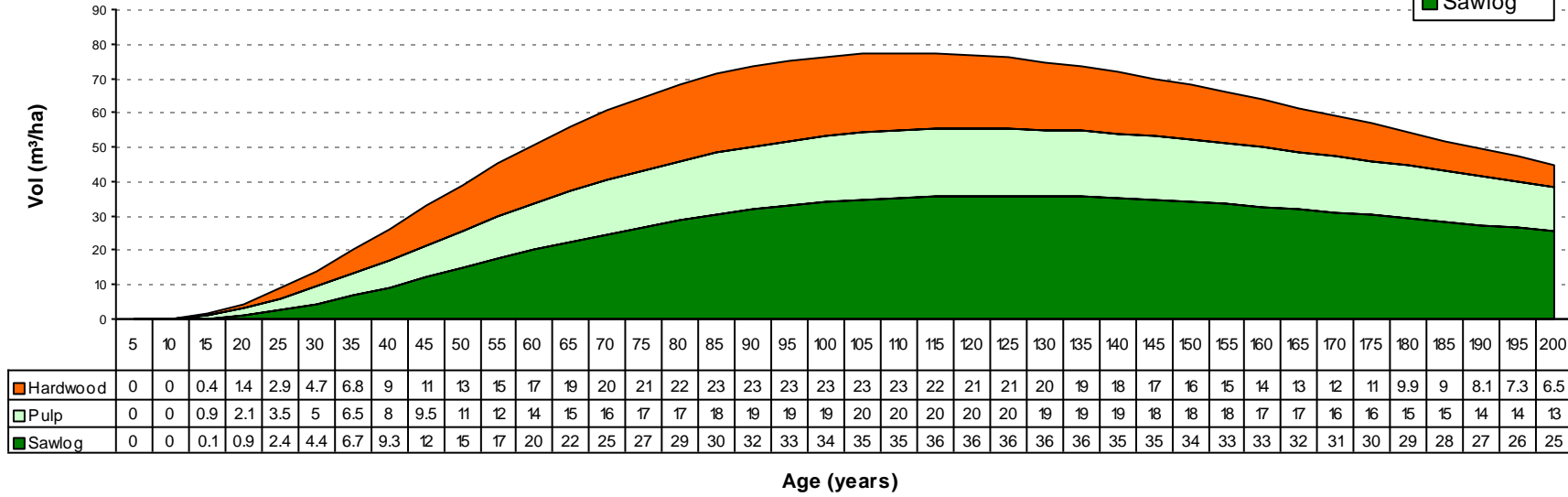
Yields at 5cm Utilization Standard

AU: SbSjP\_4



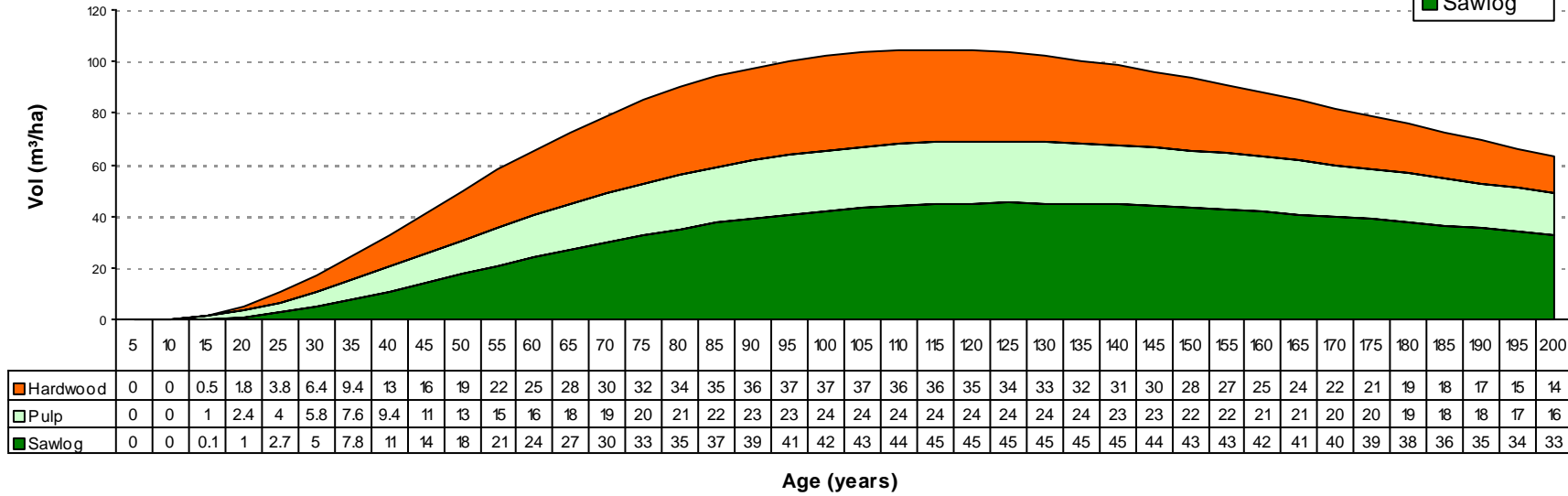
Yields at 5cm Utilization Standard

AU: SHjPtA\_1



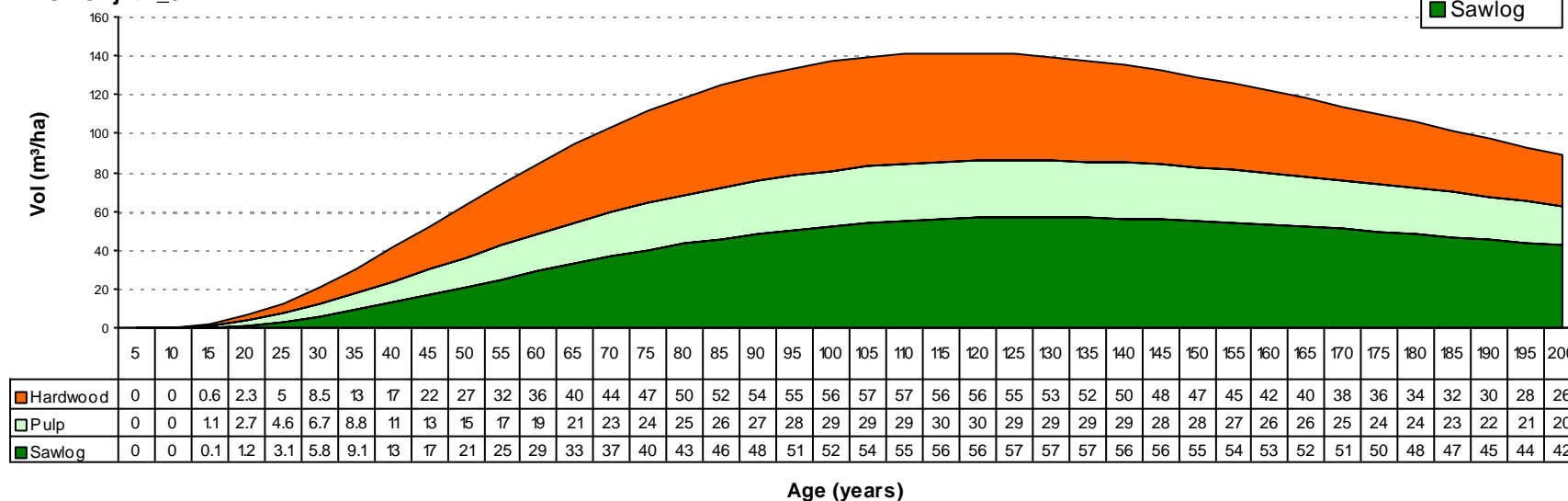
Yields at 5cm Utilization Standard

AU: SHjPtA\_2



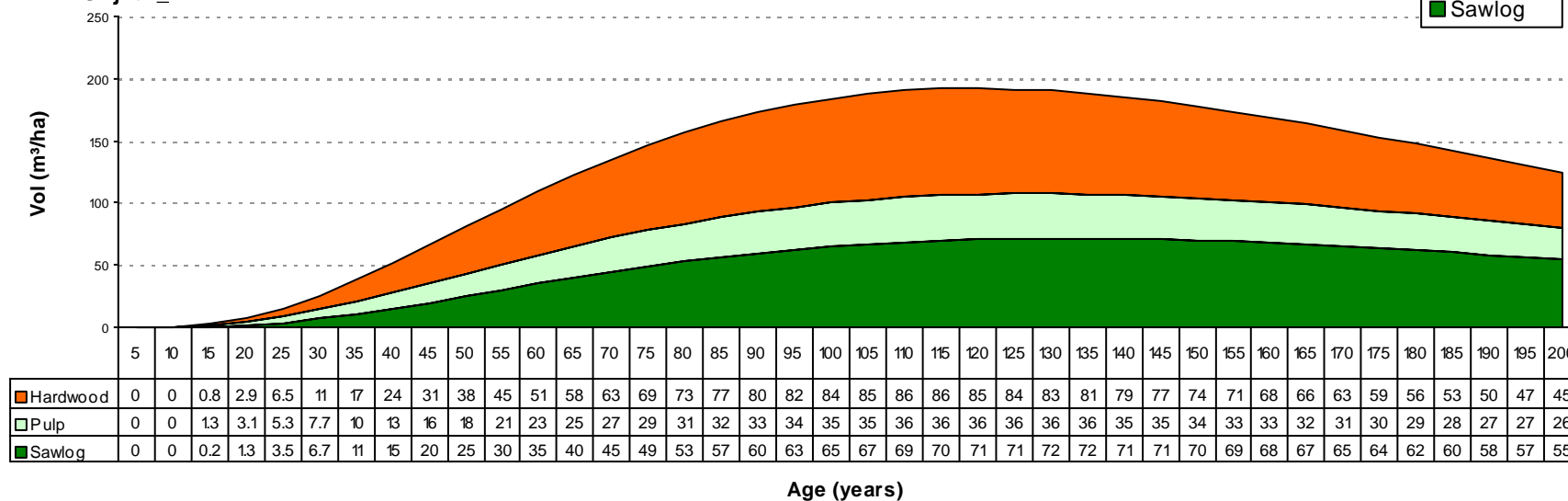
Yields at 5cm Utilization Standard

AU: SHjPtA\_3



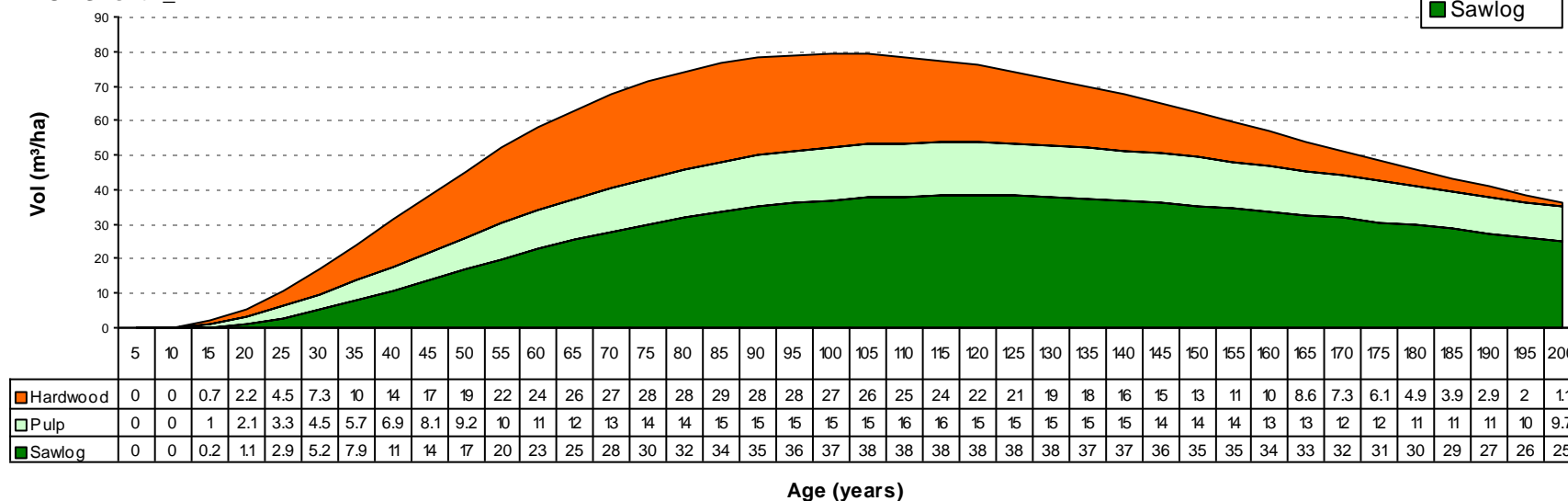
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AU: SHjPtA\_4



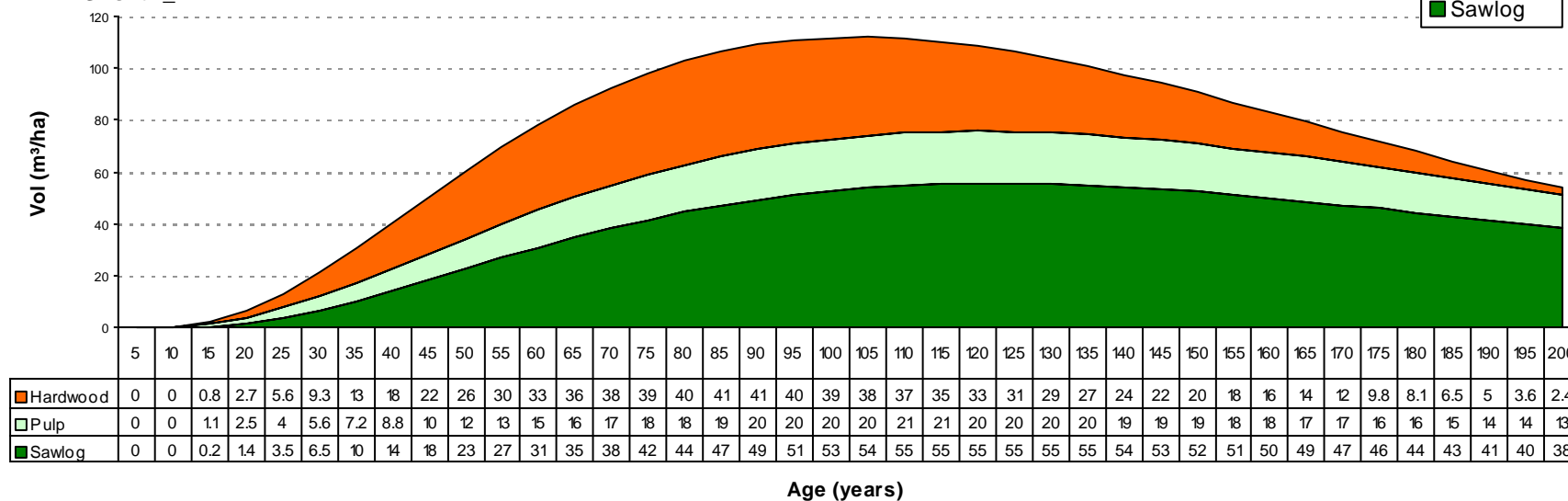
Yields at 5cm Utilization Standard

AU: SHsPtA\_1



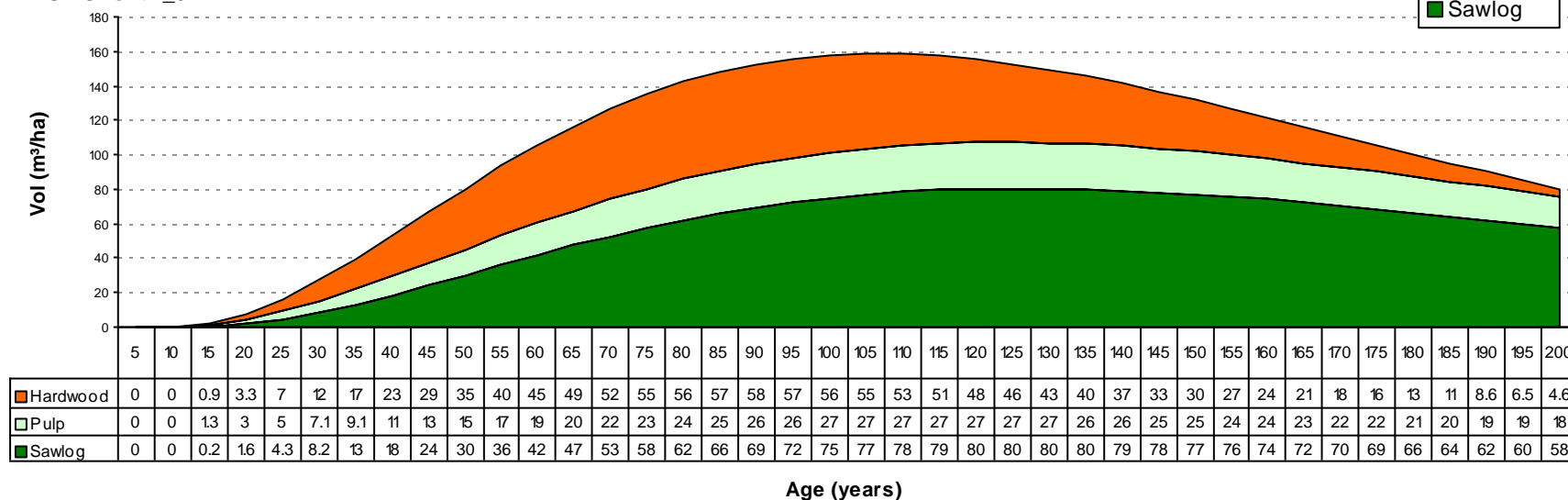
Yields at 5cm Utilization Standard

AU: SHsPtA\_2



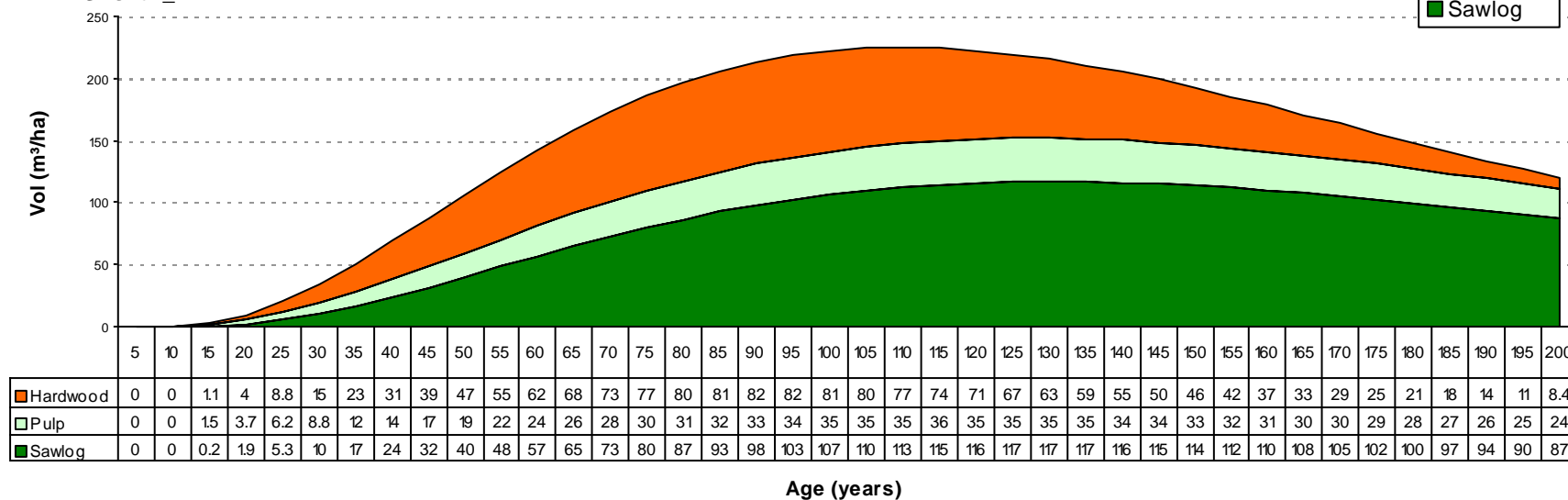
Yields at 5cm Utilization Standard

AU: SHsPtA\_3



Yields at 5cm Utilization Standard

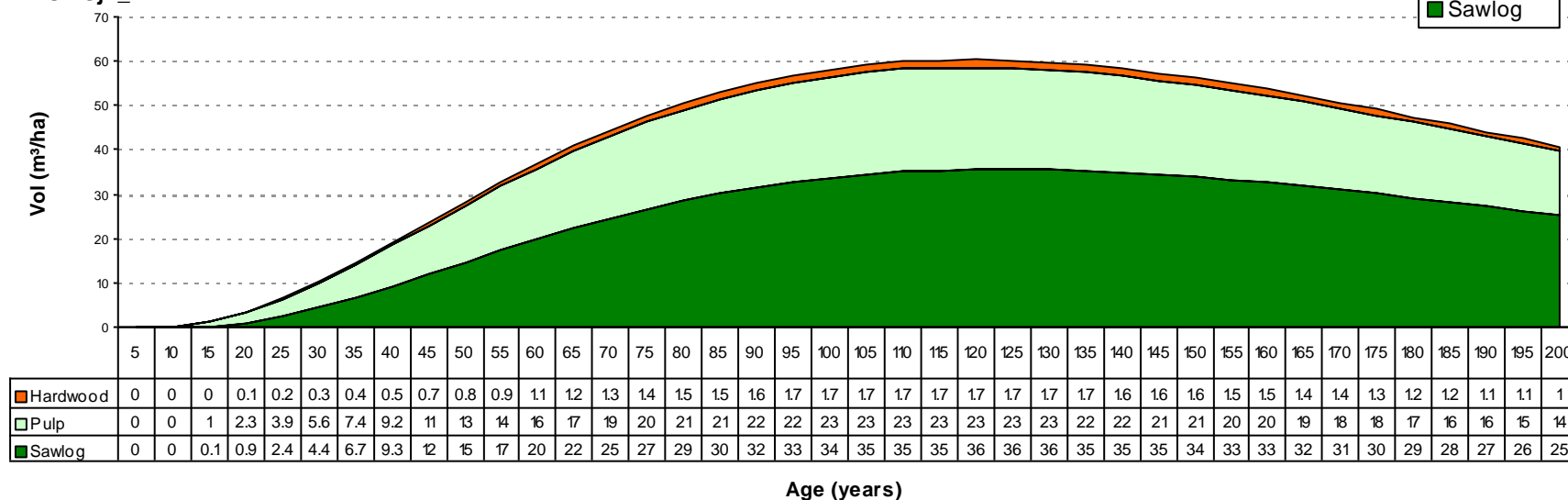
AU: SHsPtA\_4





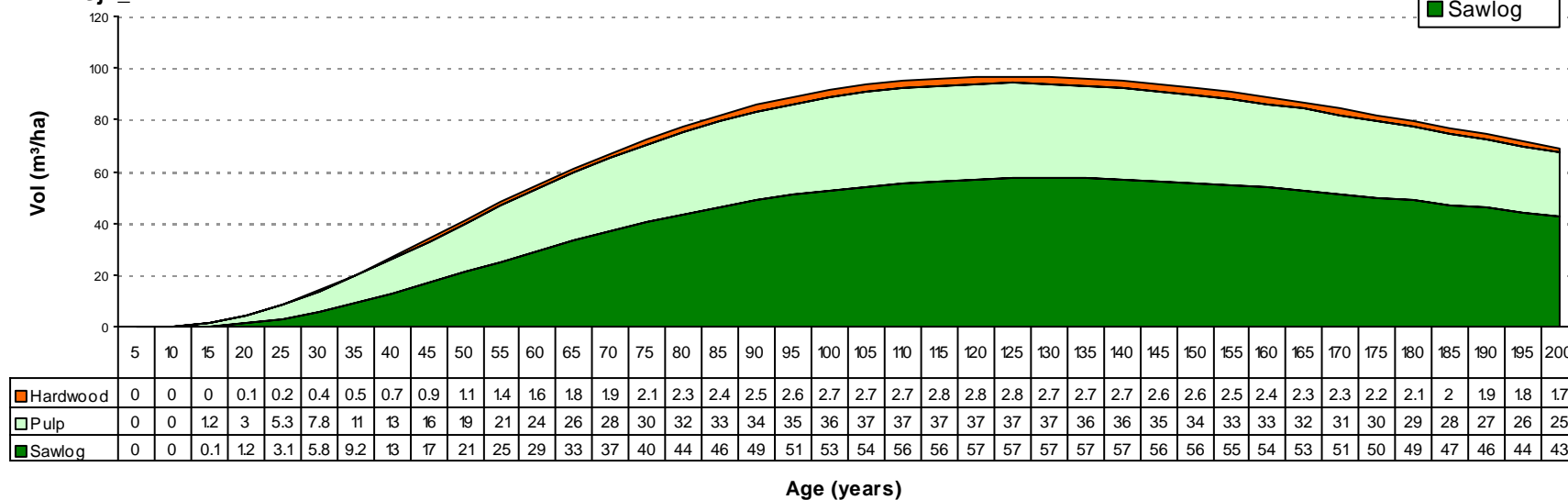
## Yields at 5cm Utilization Standard

AU: SJP\_1



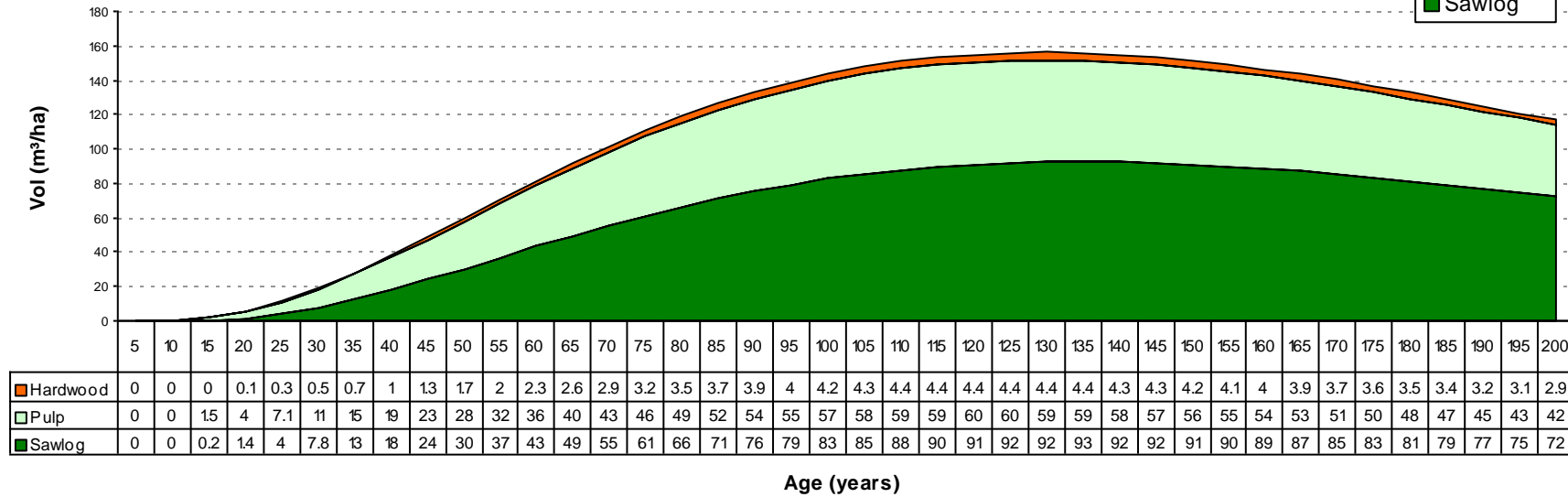
## Yields at 5cm Utilization Standard

AU: SJP\_2



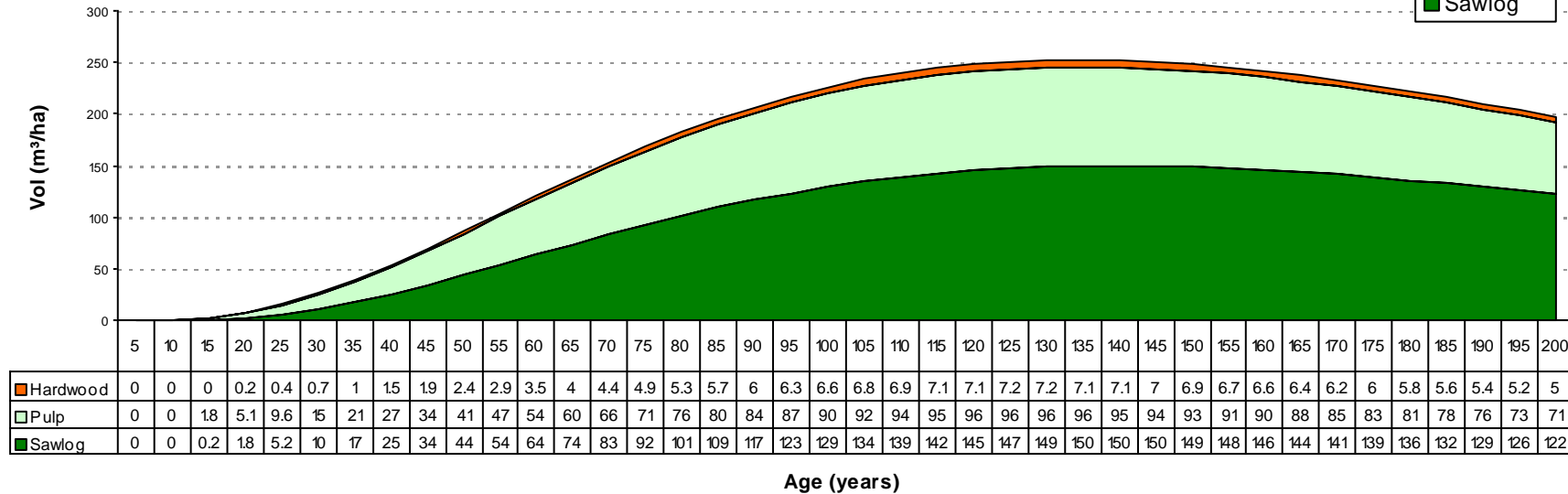
## Yields at 5cm Utilization Standard

## AU: SJP\_3



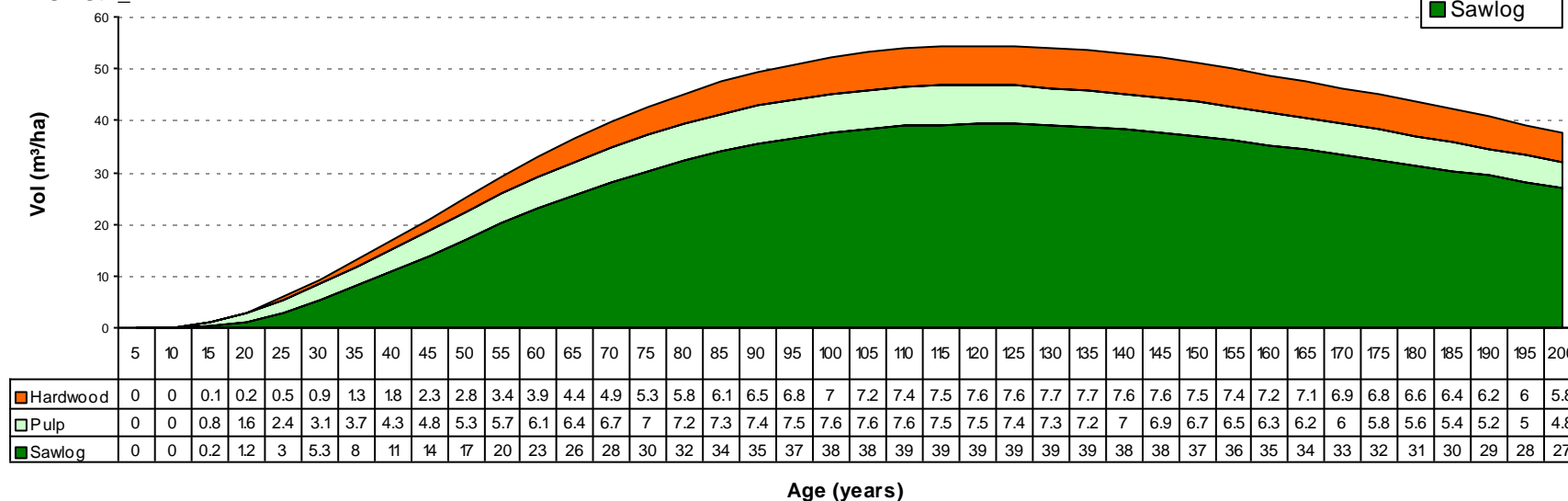
## Yields at 5cm Utilization Standard

## AU: SJP\_4



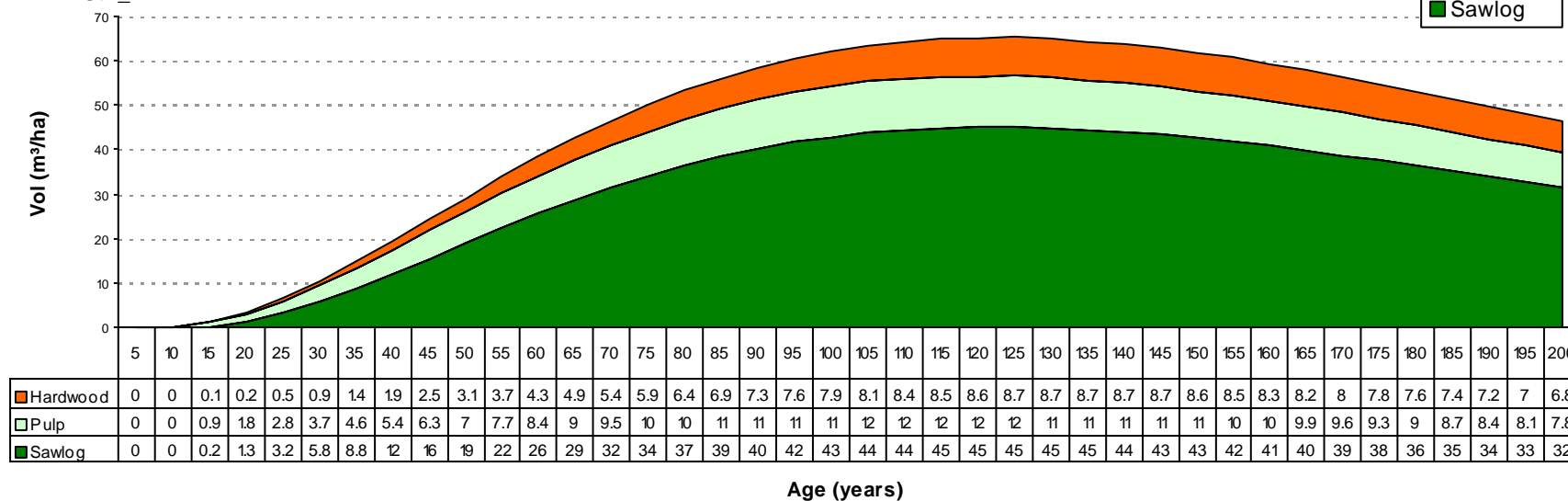
Yields at 5cm Utilization Standard

AU: StL\_1



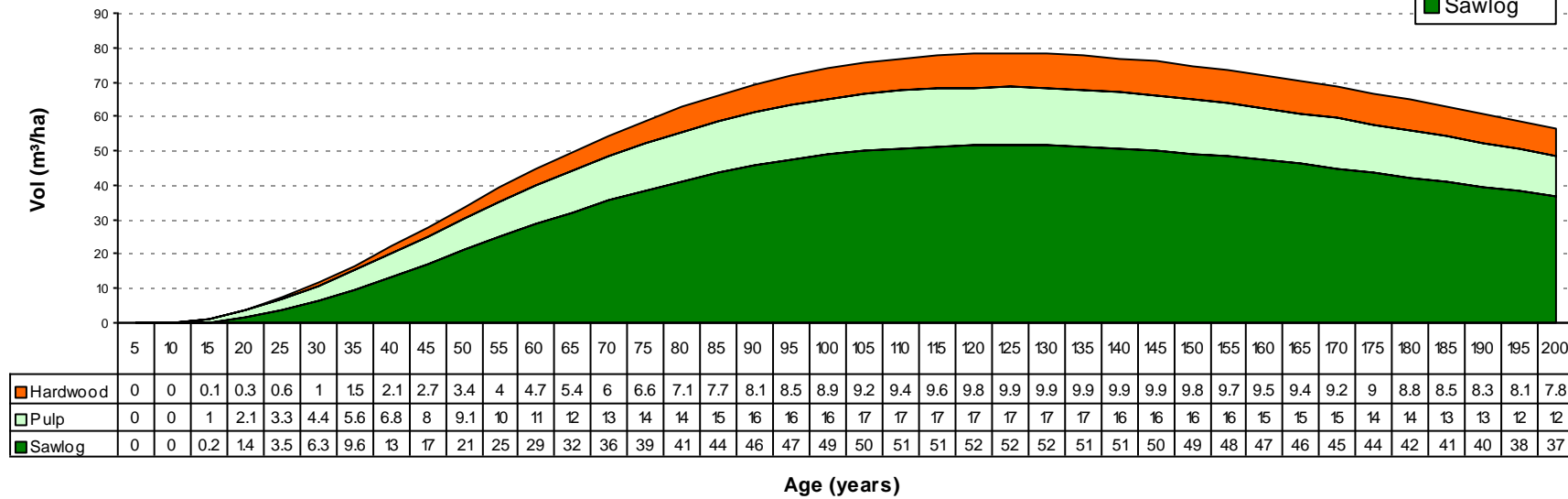
Yields at 5cm Utilization Standard

AU: StL\_2



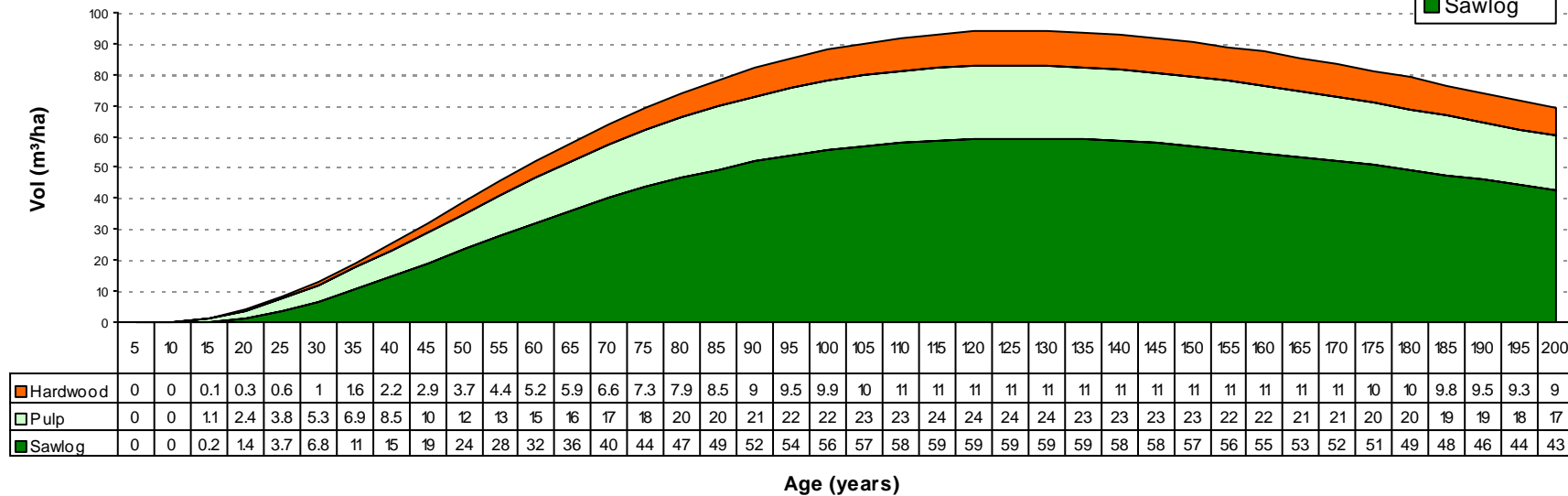
## Yields at 5cm Utilization Standard

AU: StL\_3



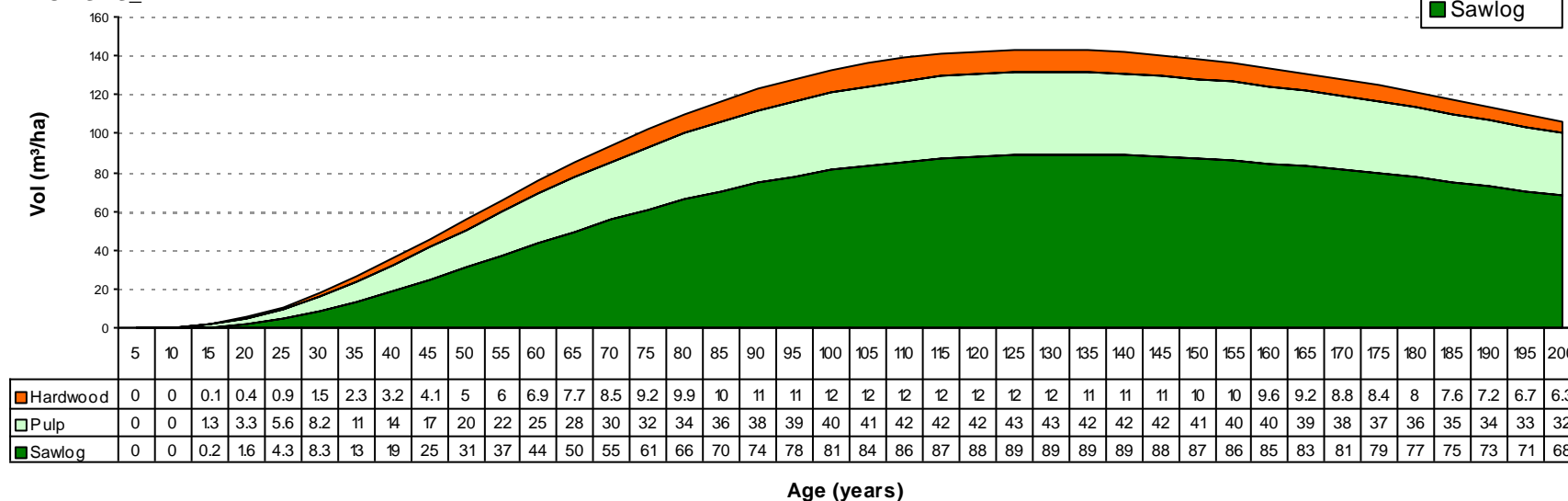
## Yields at 5cm Utilization Standard

AU: StL\_4



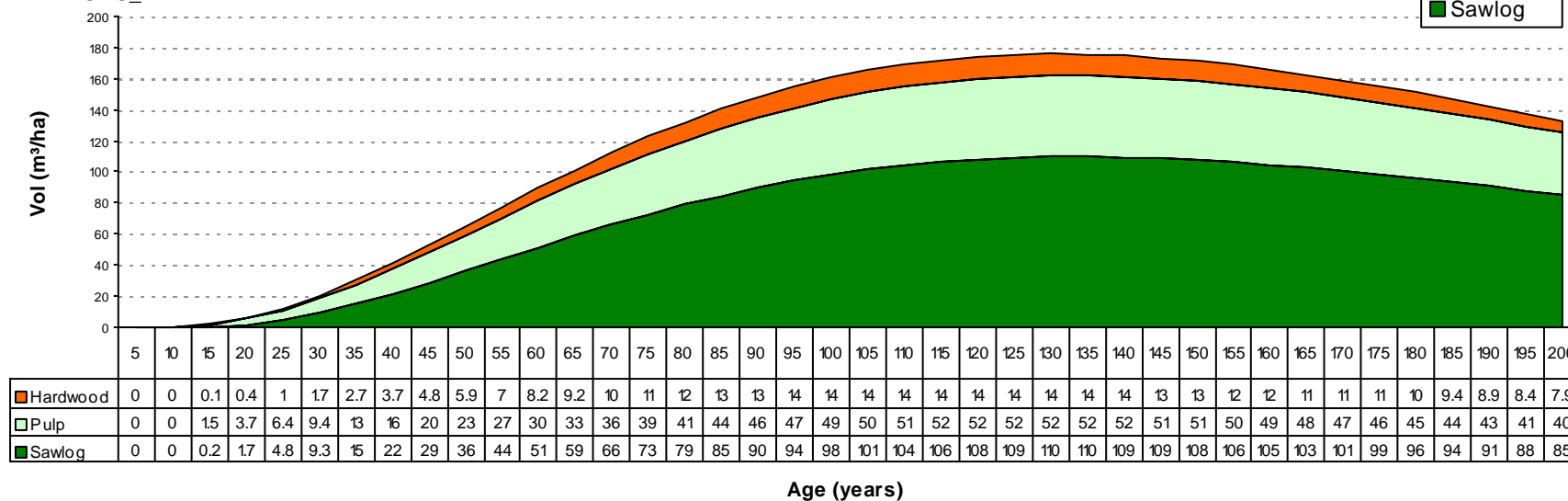
## Yields at 5cm Utilization Standard

## AU: SwS\_1



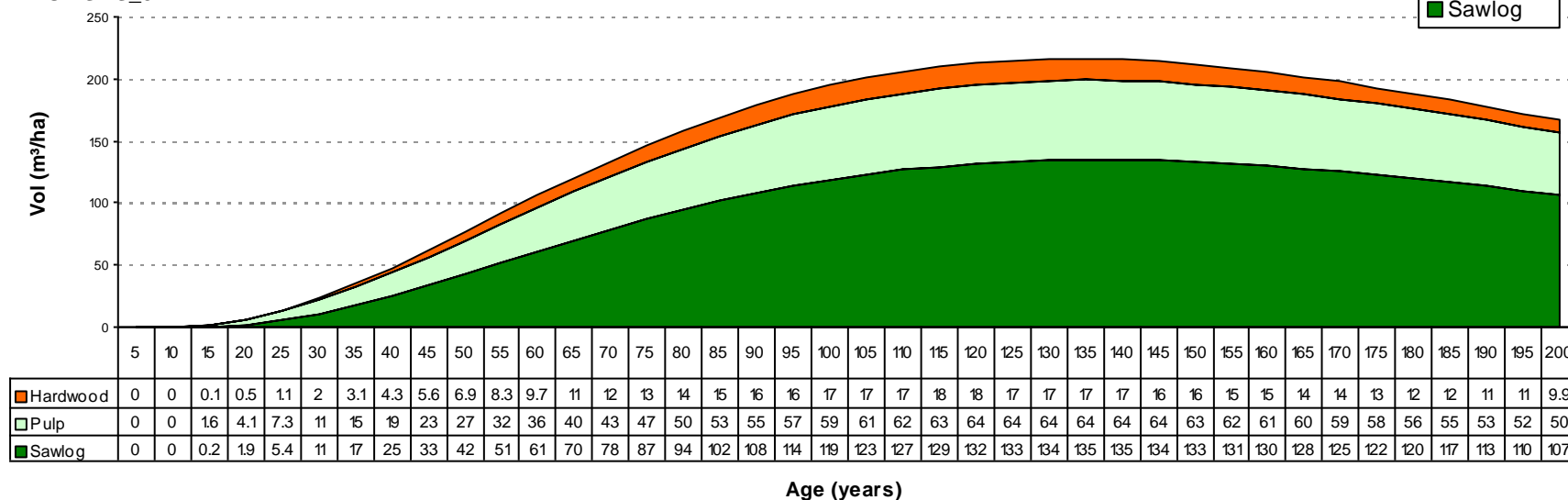
## Yields at 5cm Utilization Standard

## AU: SwS\_2



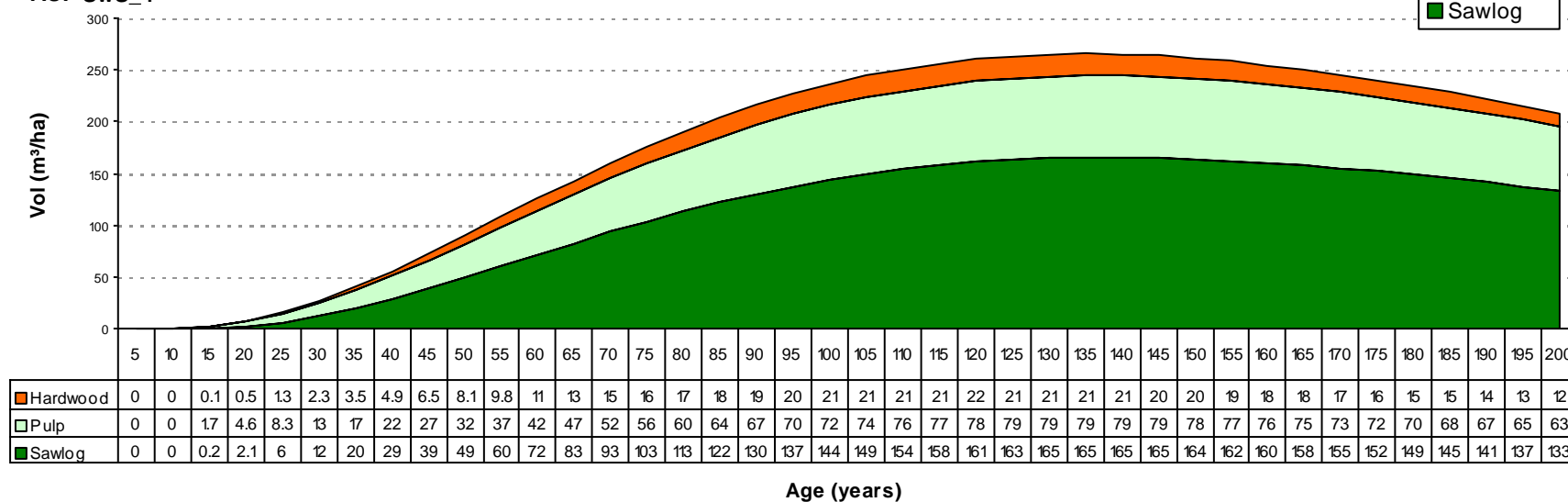
Yields at 5cm Utilization Standard

AU: SwS\_3



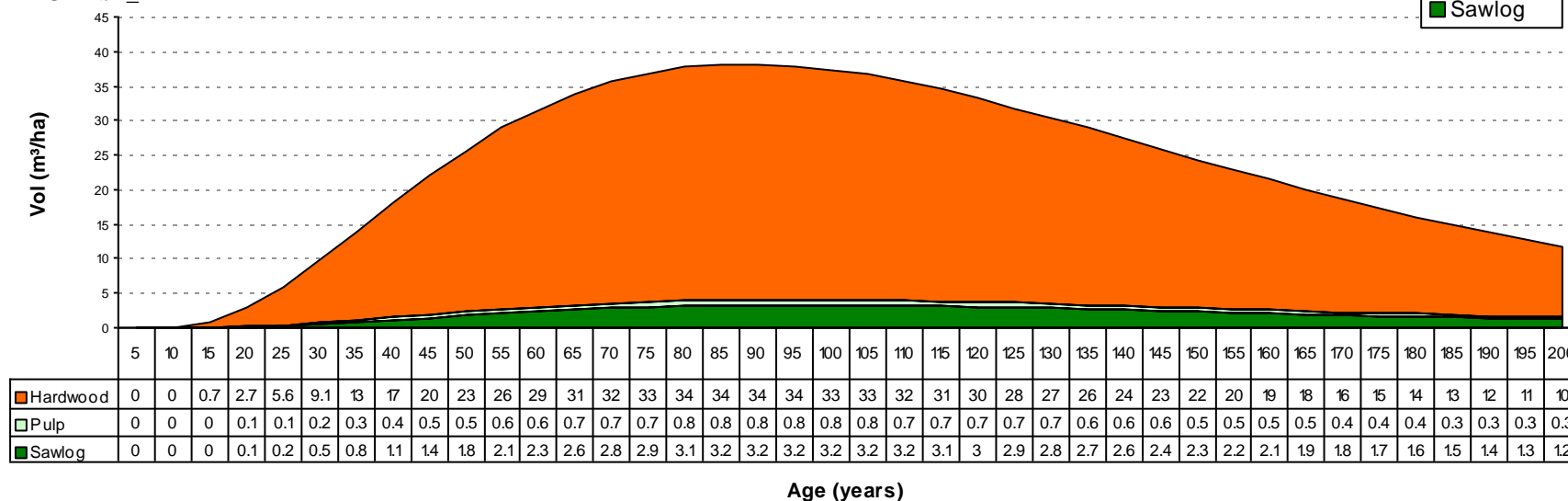
Yields at 5cm Utilization Standard

AU: SwS\_4



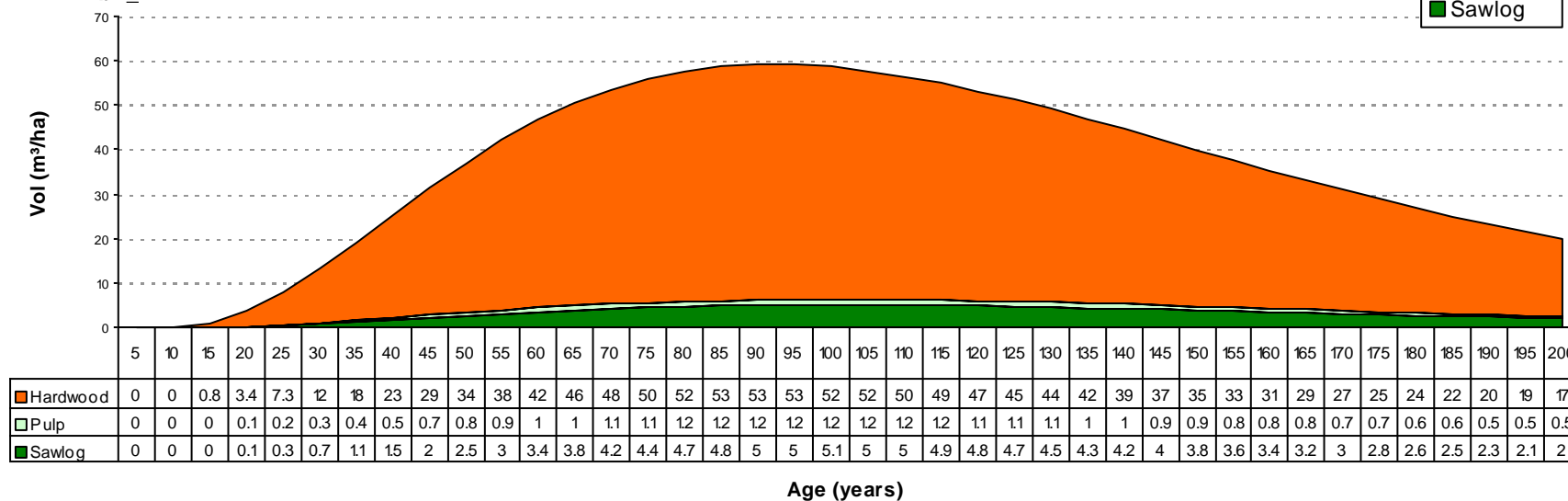
## Yields at 8cm Utilization Standard

AU: HbP\_1



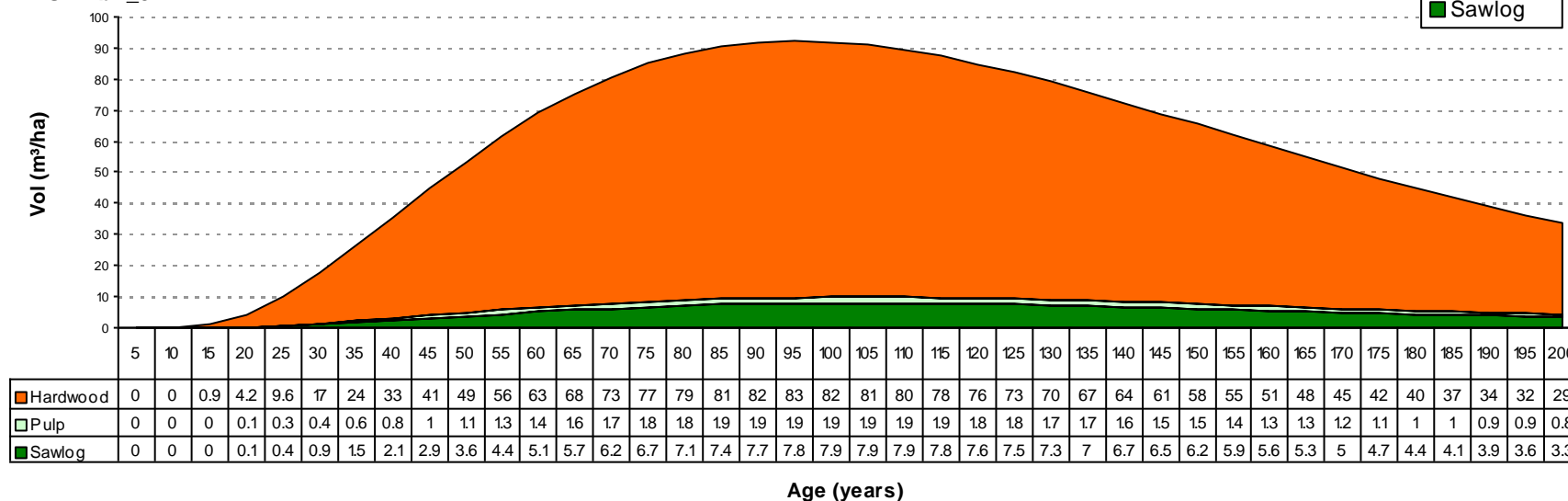
## Yields at 8cm Utilization Standard

AU: HbP\_2



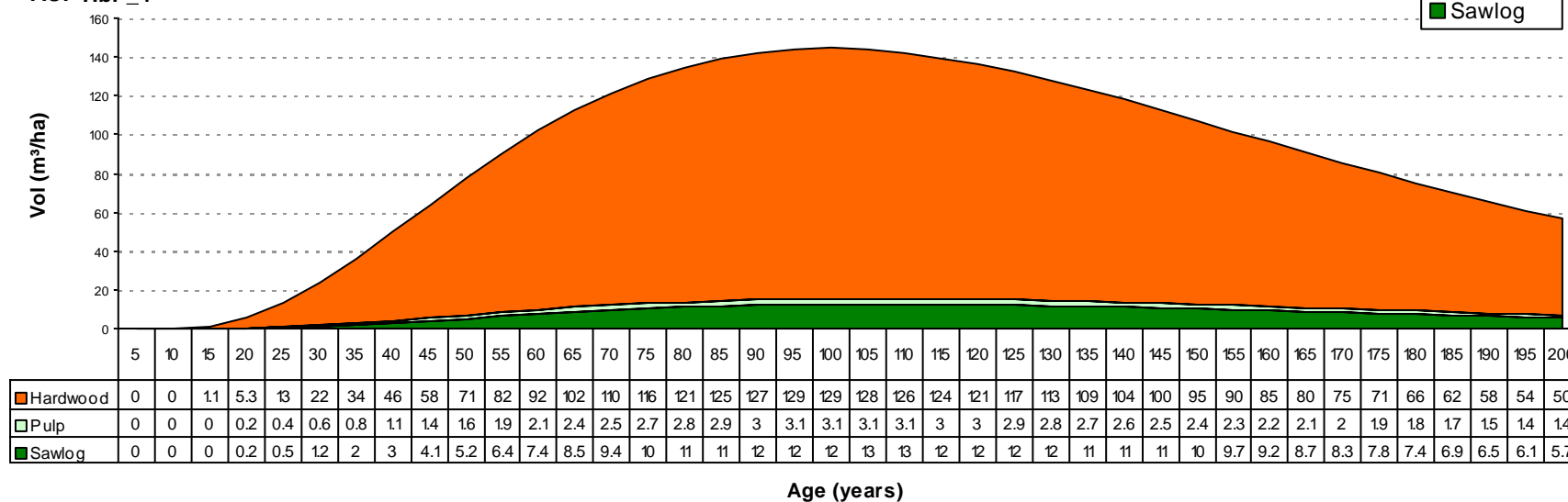
Yields at 8cm Utilization Standard

AU: HbP\_3



Yields at 8cm Utilization Standard

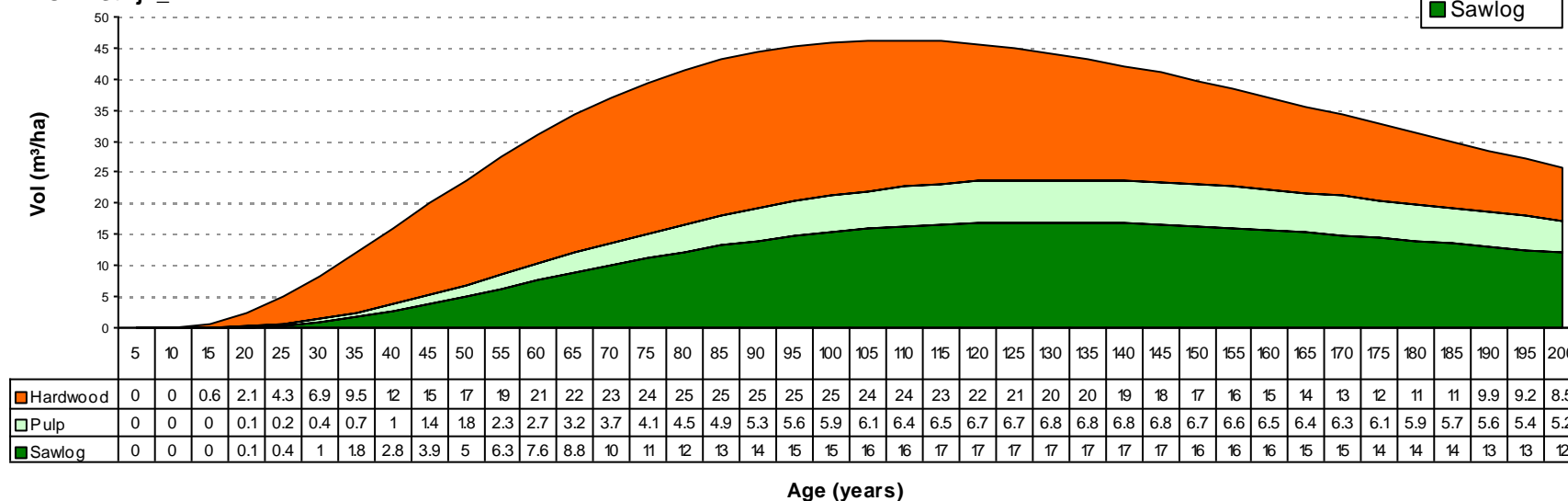
AU: HbP\_4





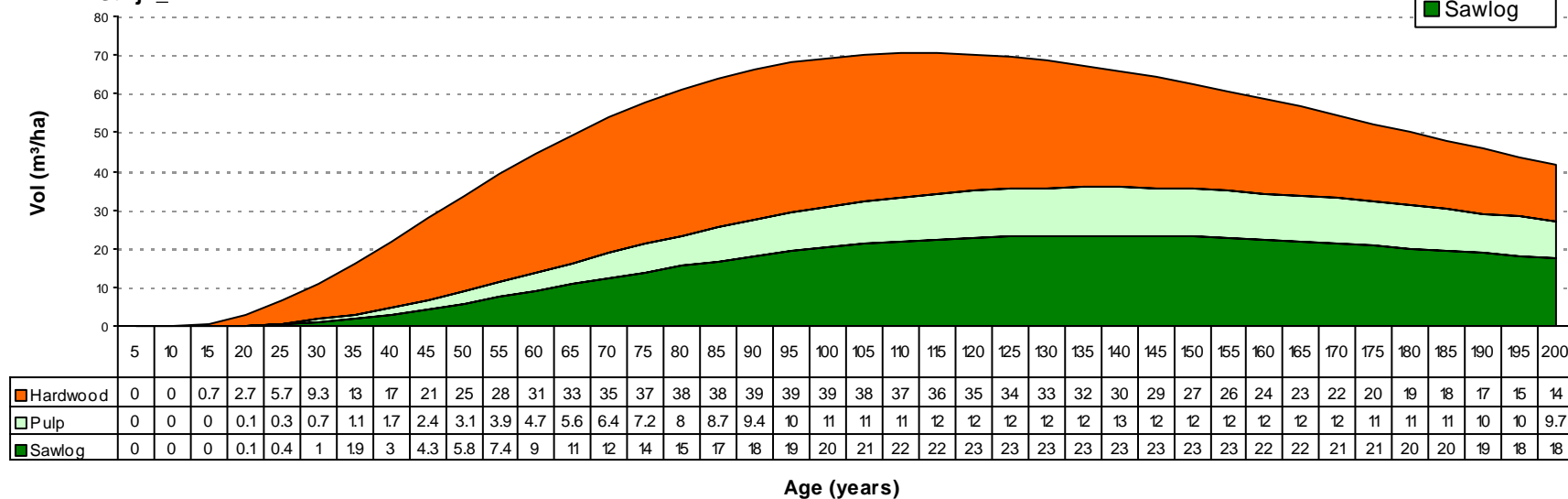
## Yields at 8cm Utilization Standard

AU: HStAjP\_1



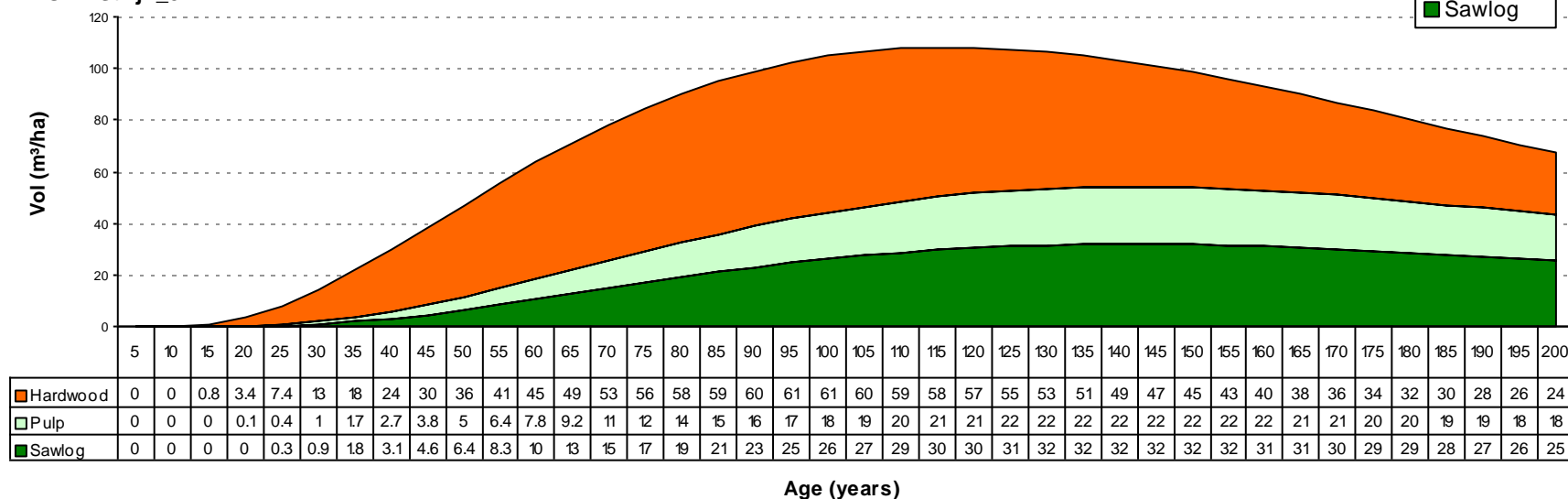
## Yields at 8cm Utilization Standard

AU: HStAjP\_2



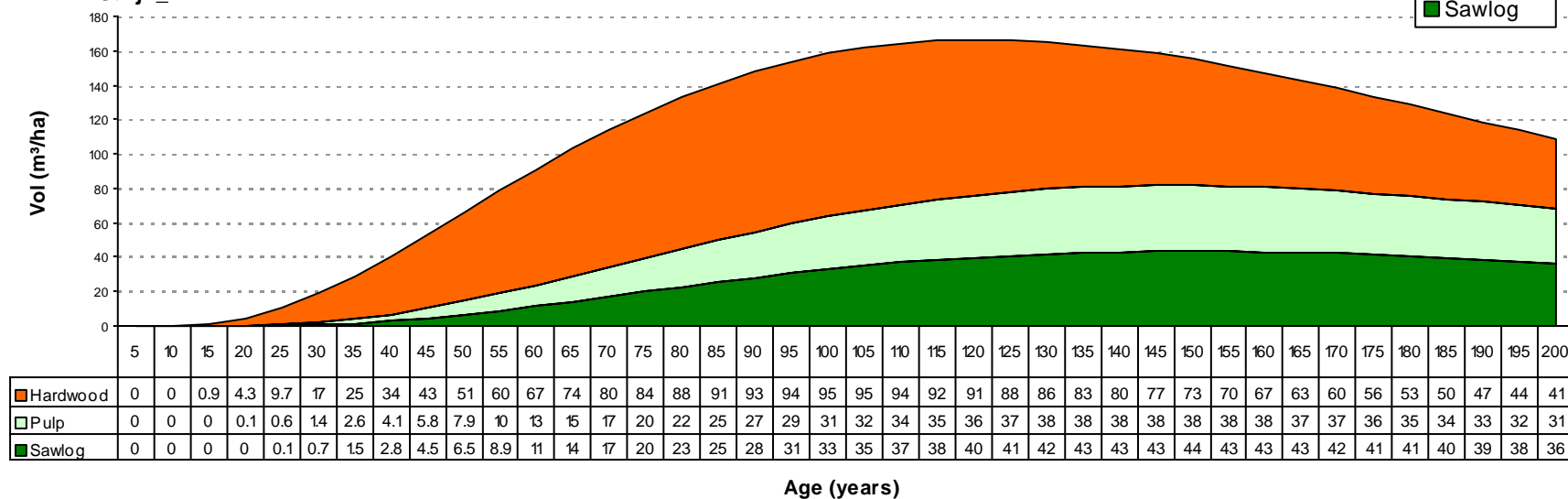
## Yields at 8cm Utilization Standard

## AU: HStAjP\_3



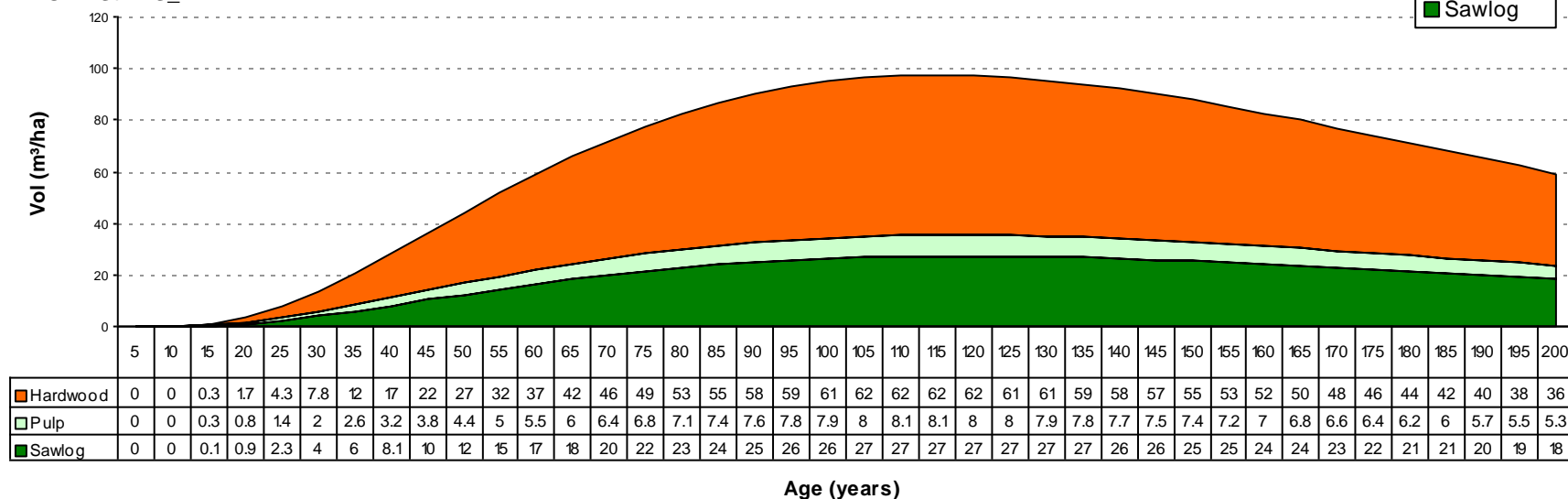
## Yields at 8cm Utilization Standard

## AU: HStAjP\_4



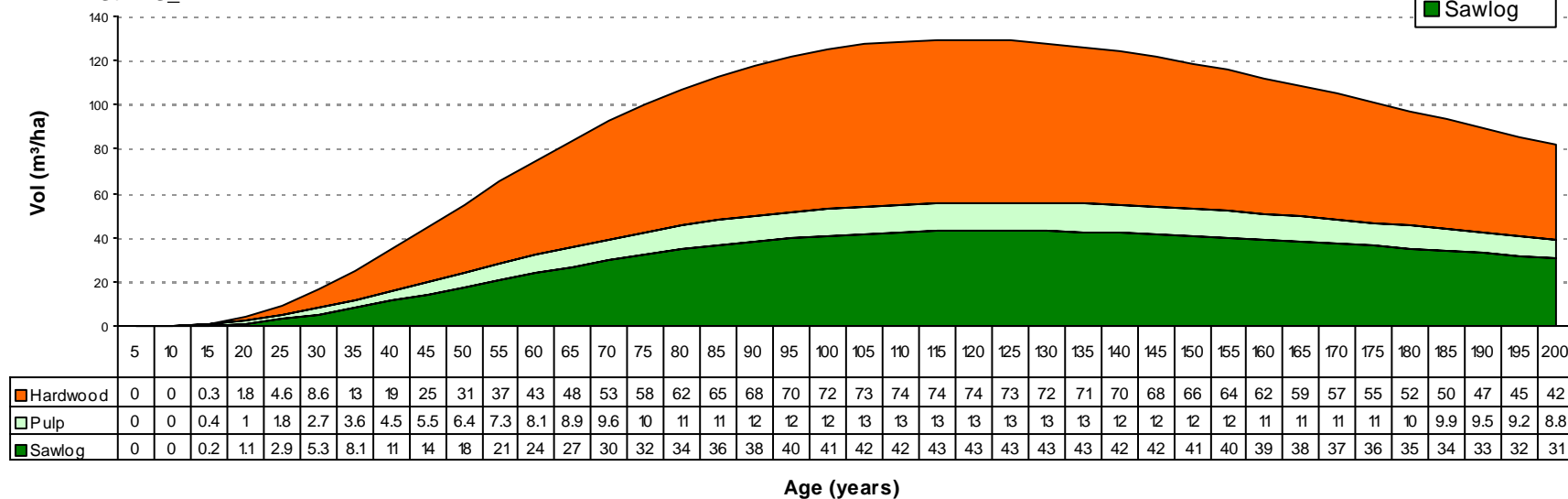
Yields at 8cm Utilization Standard

AU: HStAwS\_1



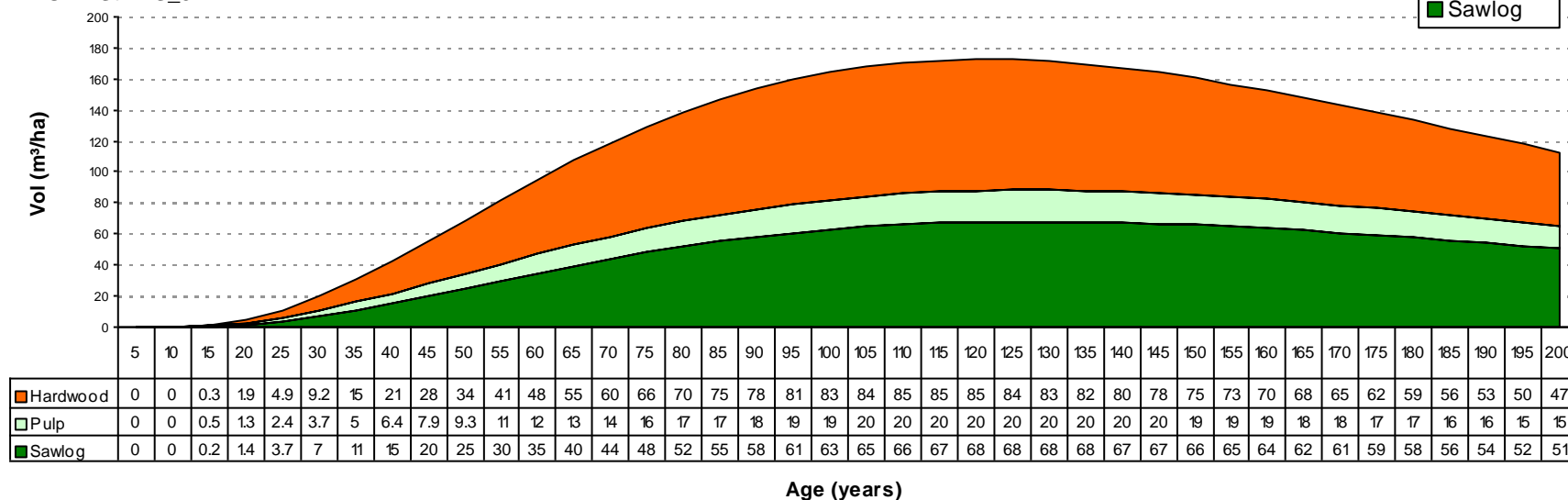
Yields at 8cm Utilization Standard

AU: HStAwS\_2



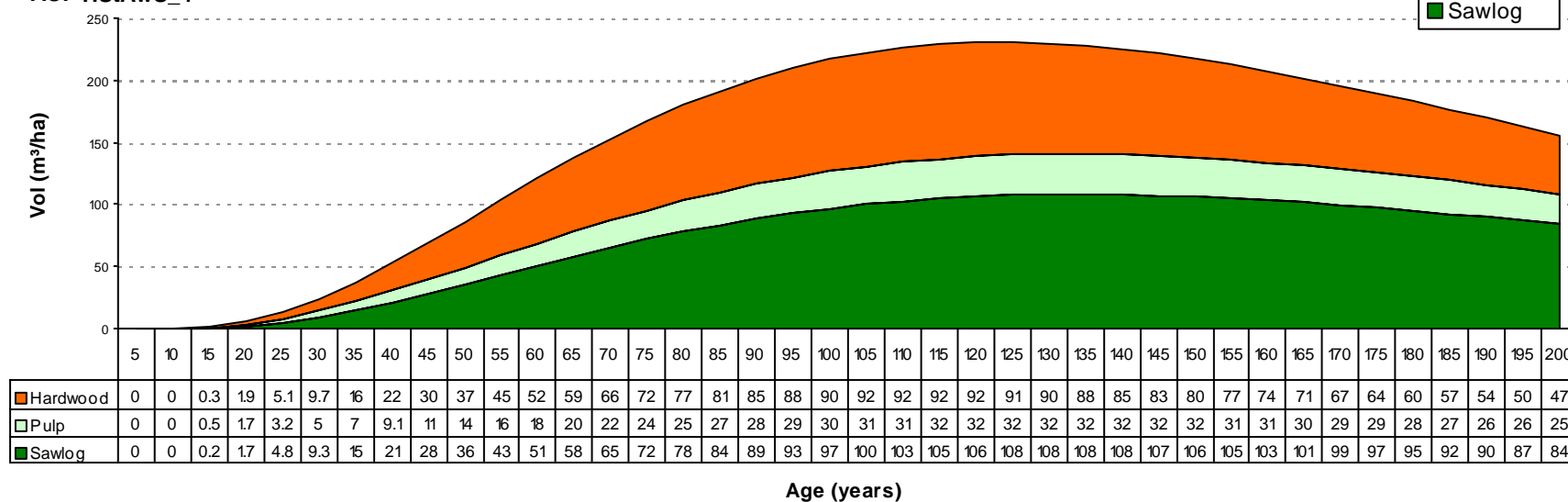
## Yields at 8cm Utilization Standard

## AU: HStAwS\_3



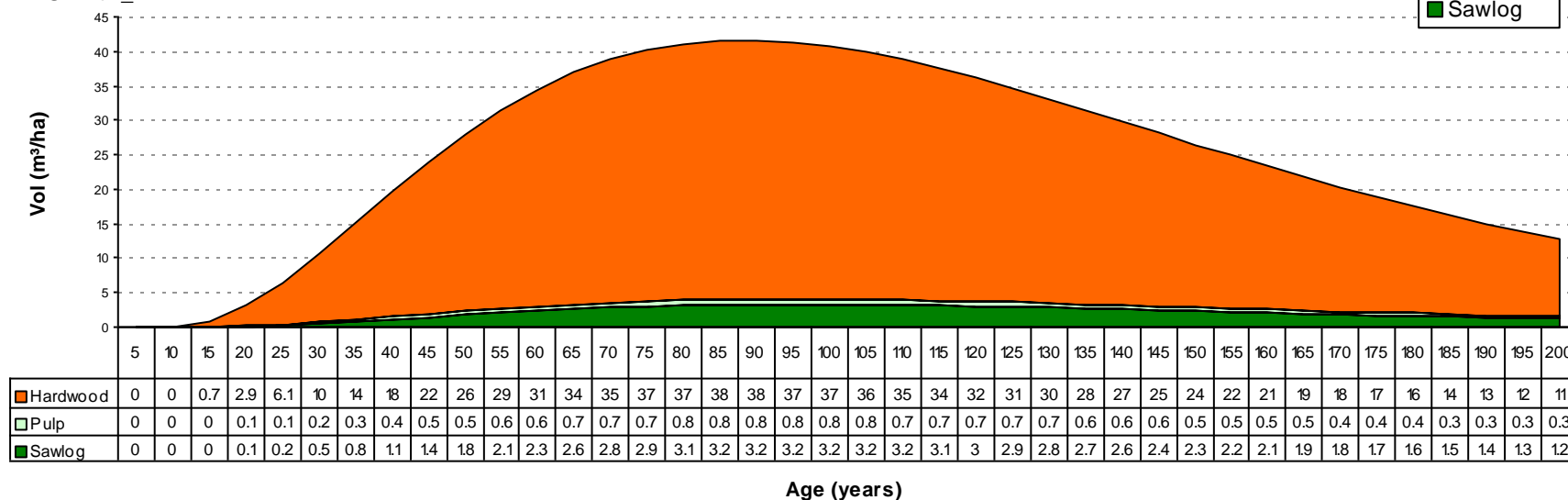
## Yields at 8cm Utilization Standard

## AU: HStAwS\_4



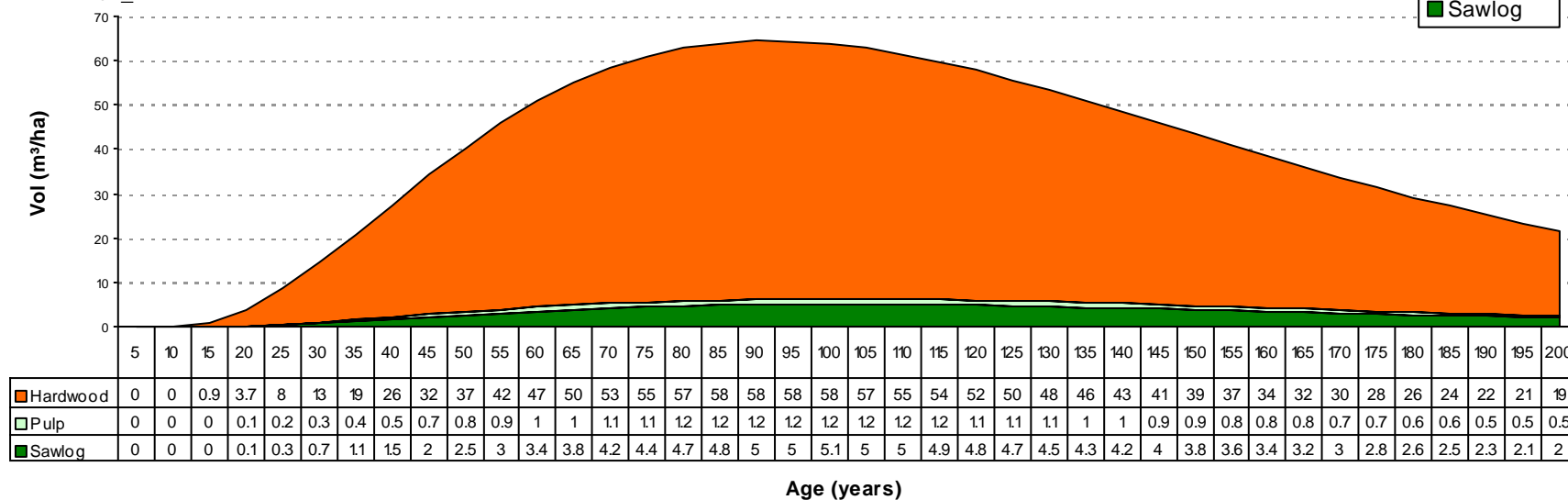
## Yields at 8cm Utilization Standard

AU: HtA\_1



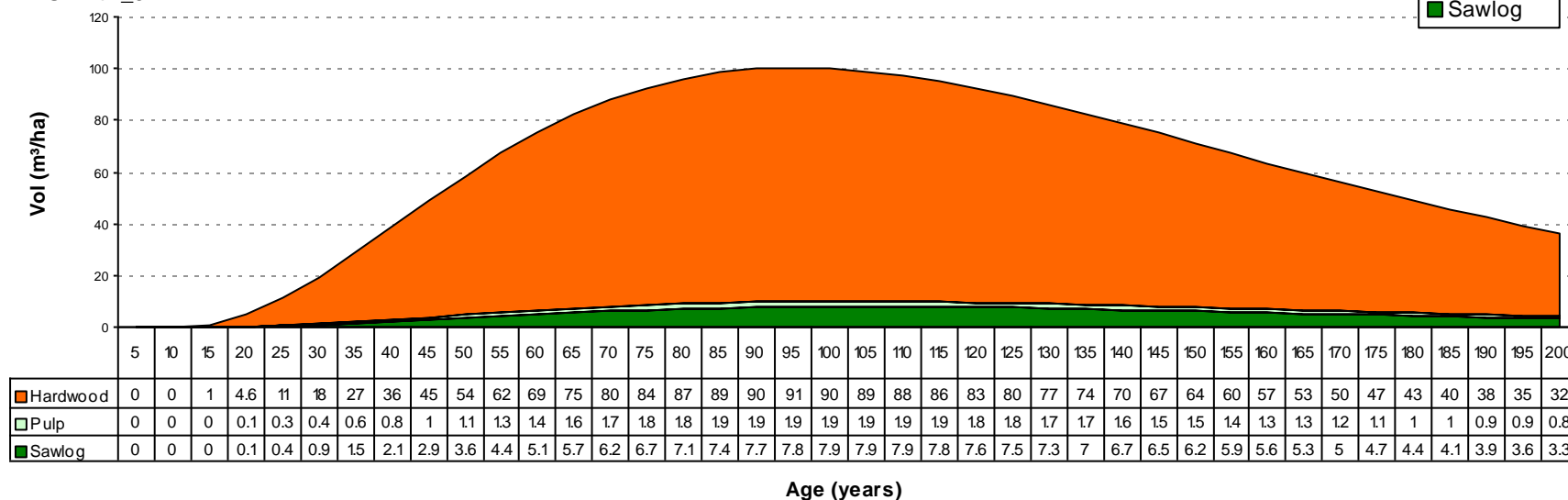
## Yields at 8cm Utilization Standard

AU: HtA\_2



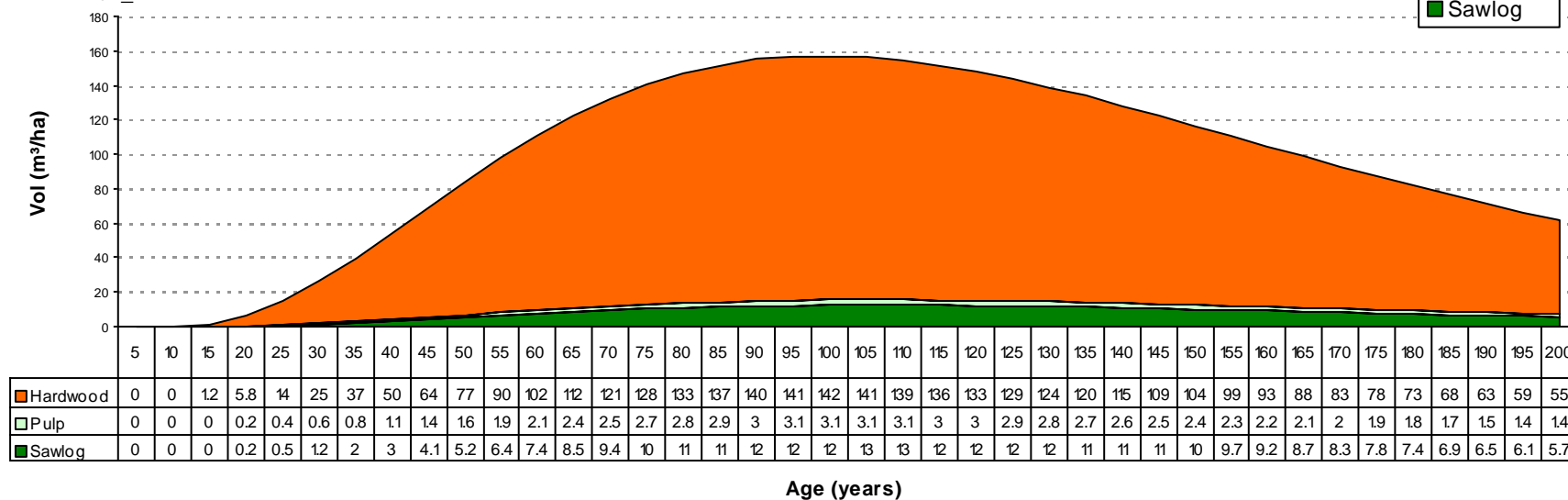
## Yields at 8cm Utilization Standard

AU: HtA\_3



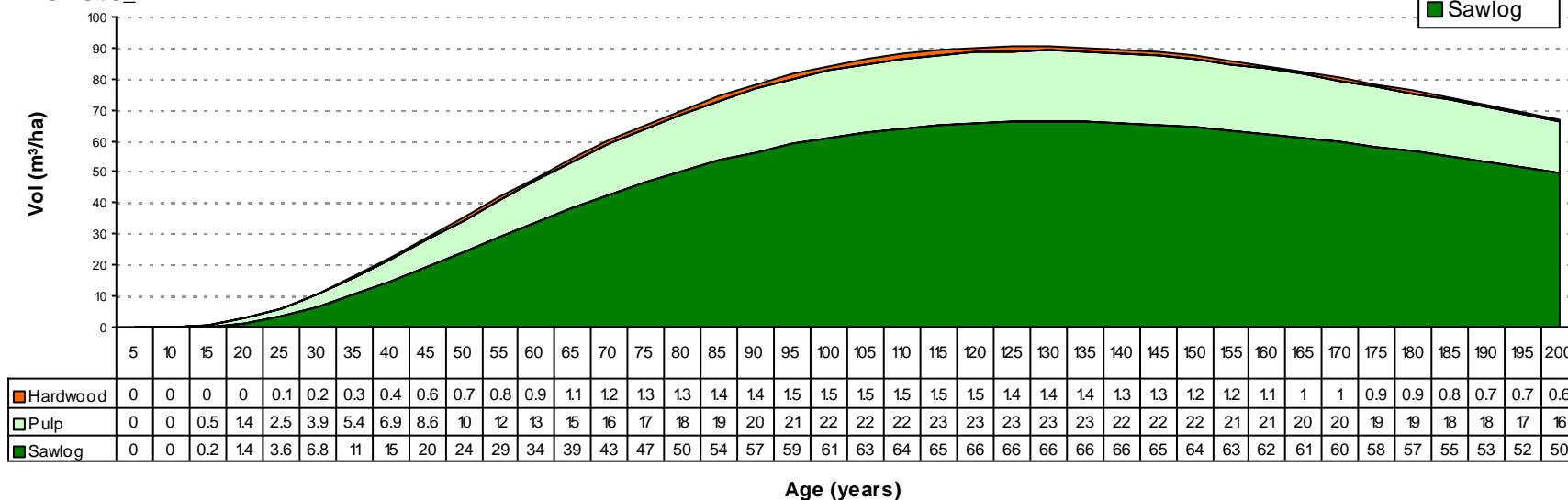
## Yields at 8cm Utilization Standard

AU: HtA\_4



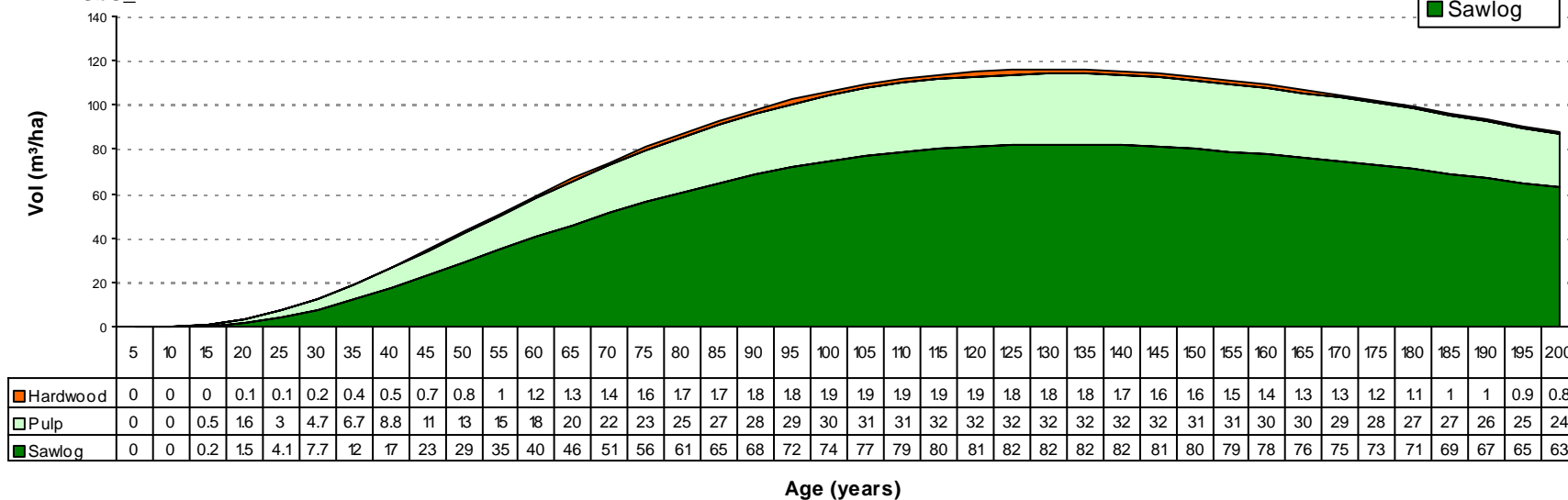
## Yields at 8cm Utilization Standard

AU: SbS\_1



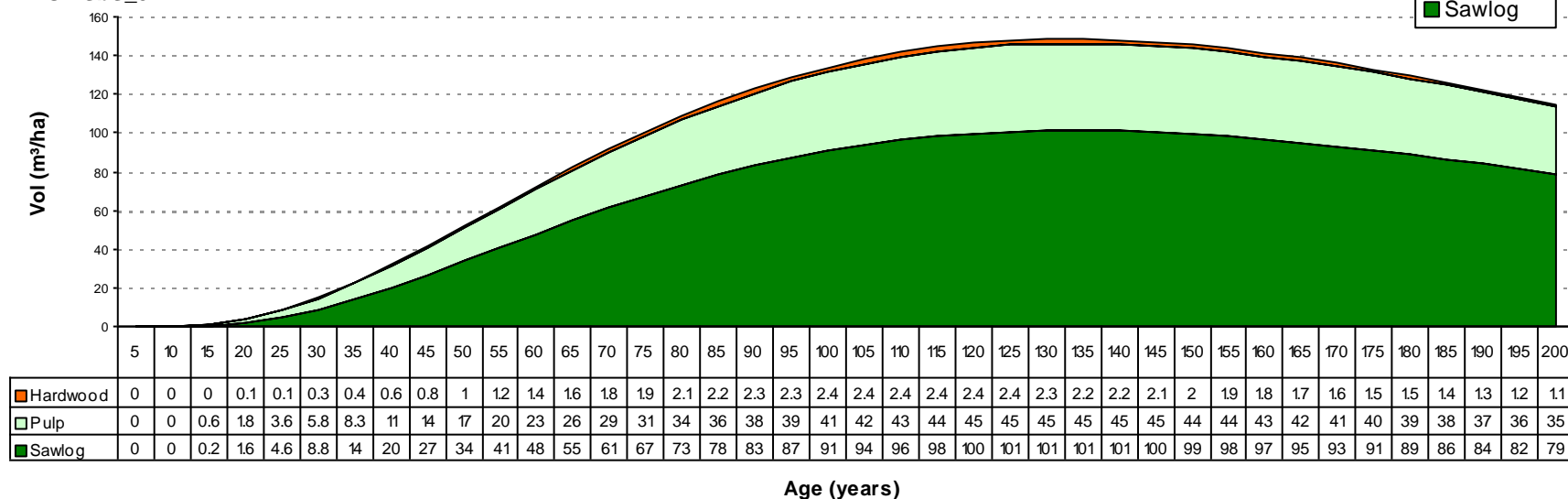
## Yields at 8cm Utilization Standard

AU: SbS\_2



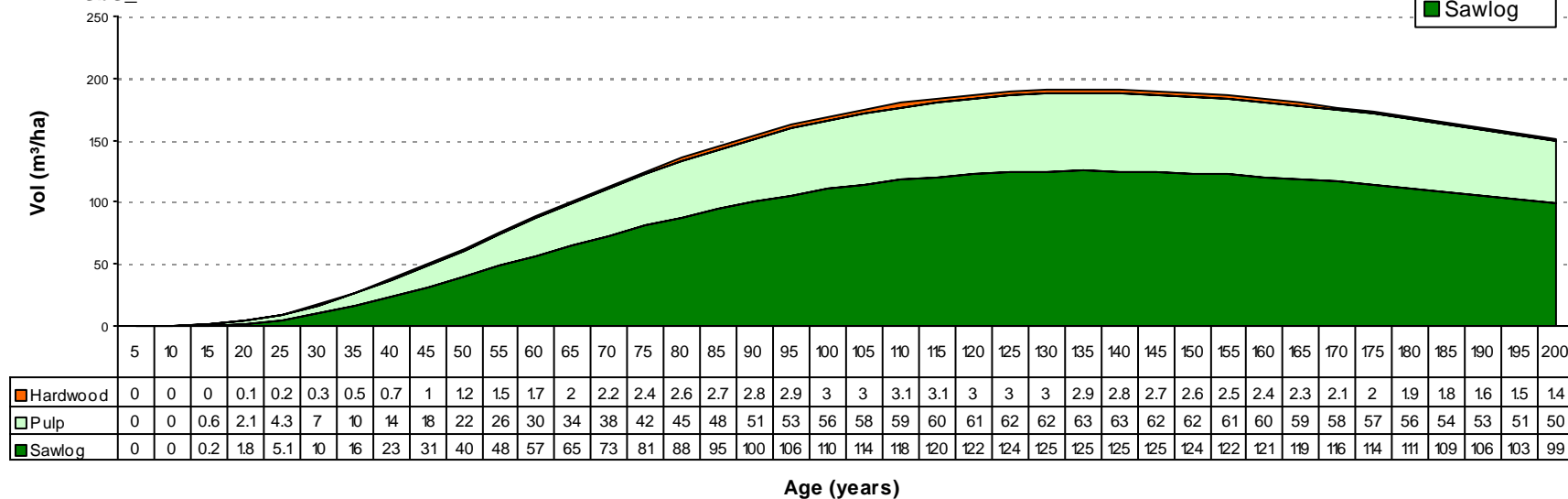
## Yields at 8cm Utilization Standard

## AU: SbS\_3



## Yields at 8cm Utilization Standard

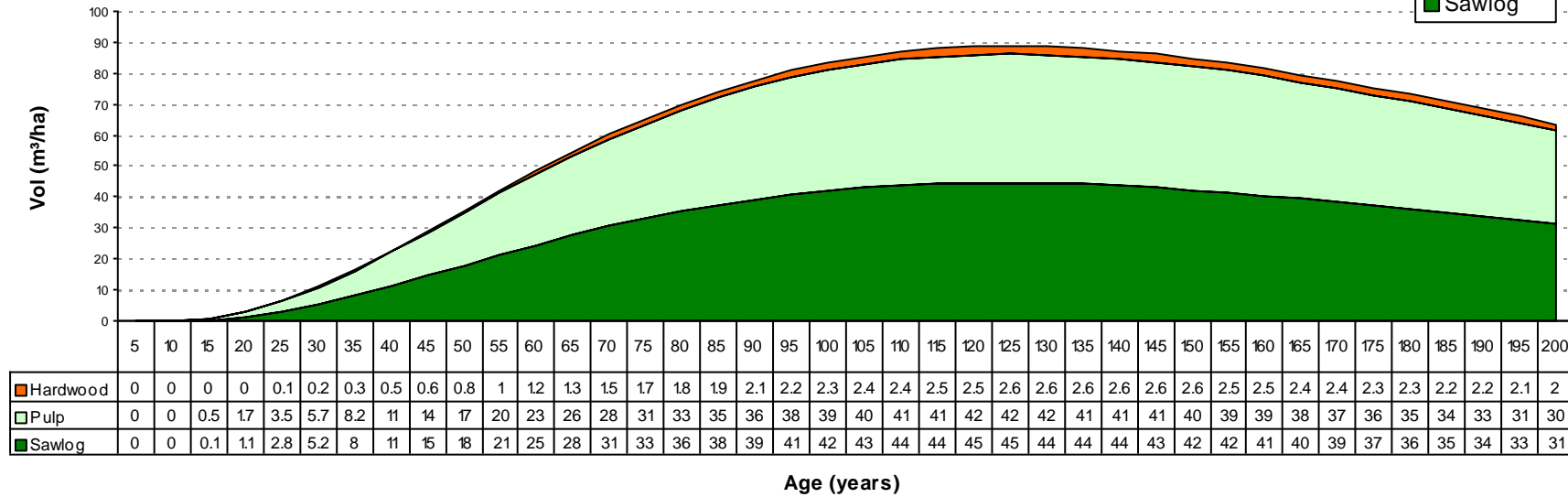
## AU: SbS\_4





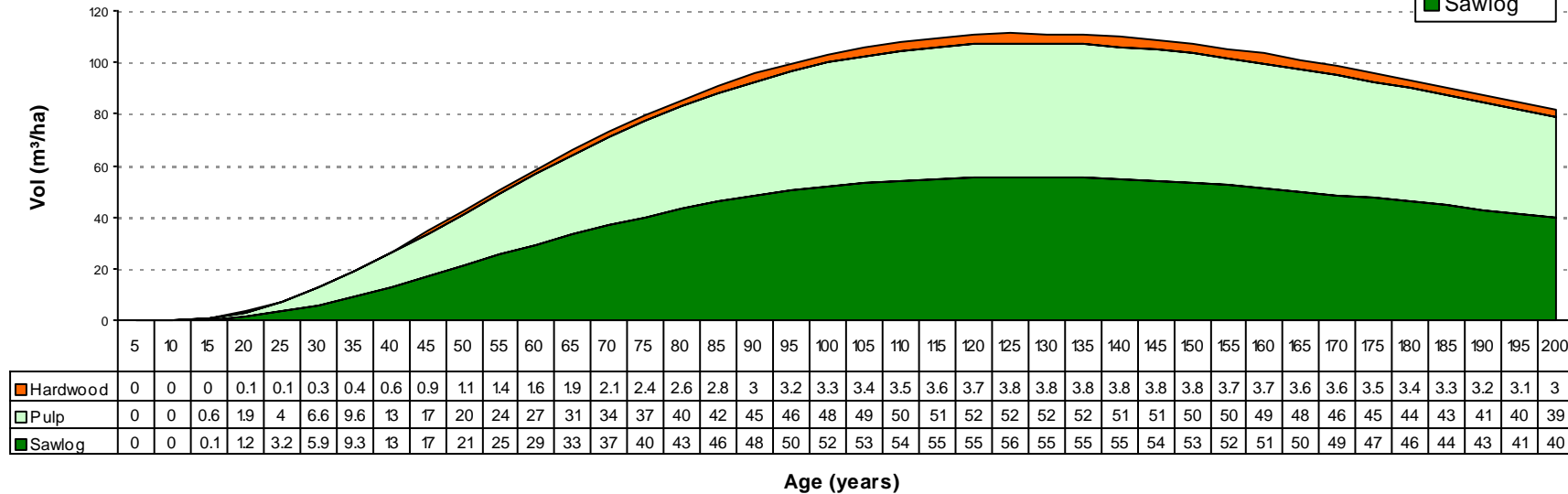
## Yields at 8cm Utilization Standard

## AU: SbSjP\_1



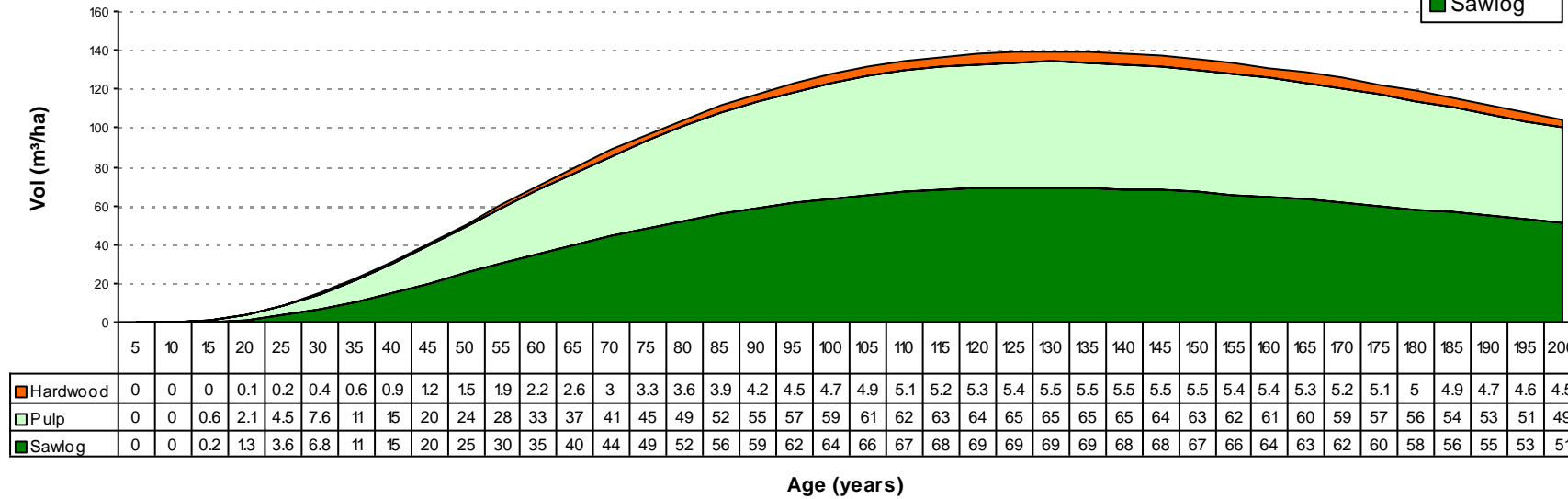
## Yields at 8cm Utilization Standard

## AU: SbSjP\_2



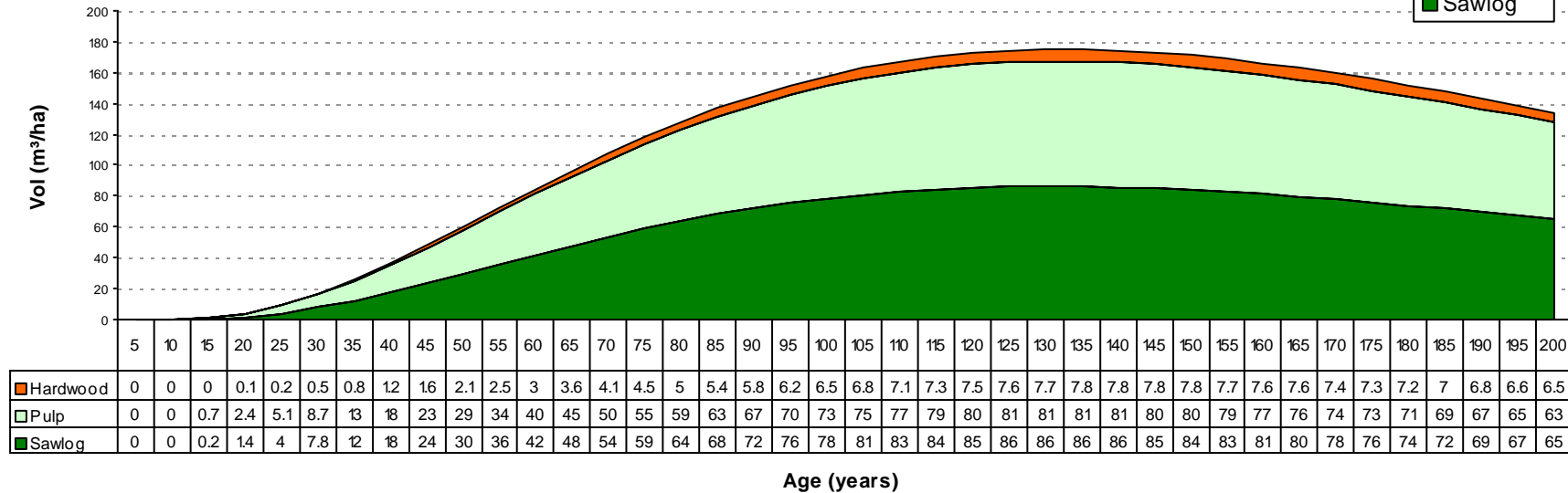
## Yields at 8cm Utilization Standard

## AU: SbSjP\_3



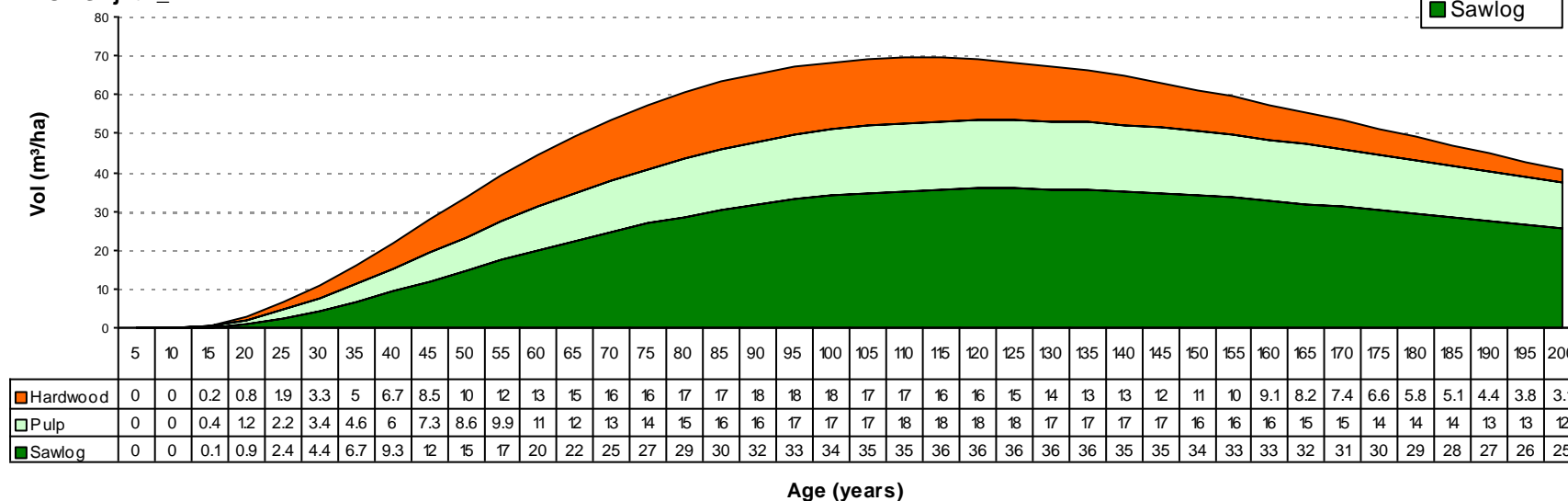
## Yields at 8cm Utilization Standard

## AU: SbSjP\_4



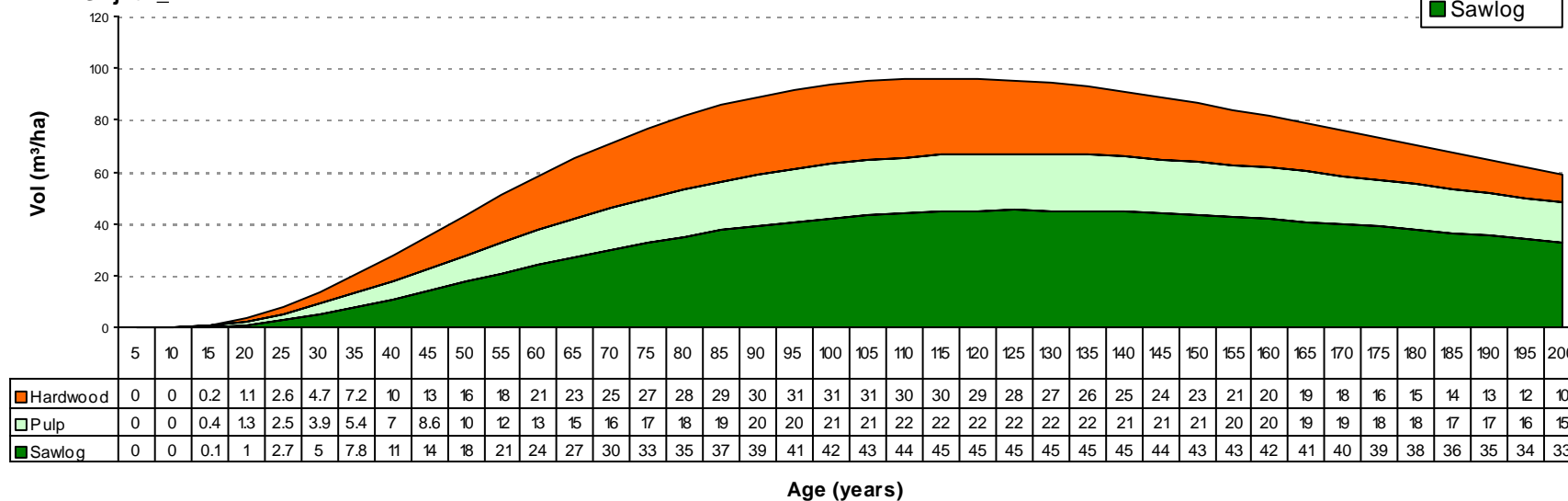
Yields at 8cm Utilization Standard

AU: SHjPtA\_1



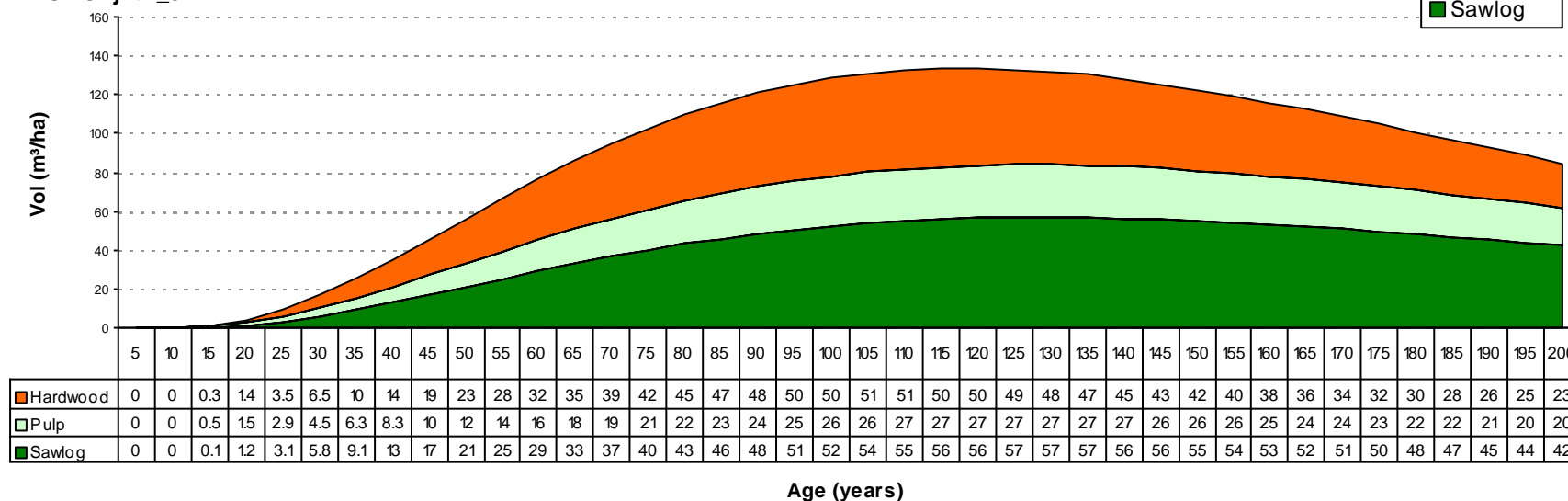
Yields at 8cm Utilization Standard

AU: SHjPtA\_2



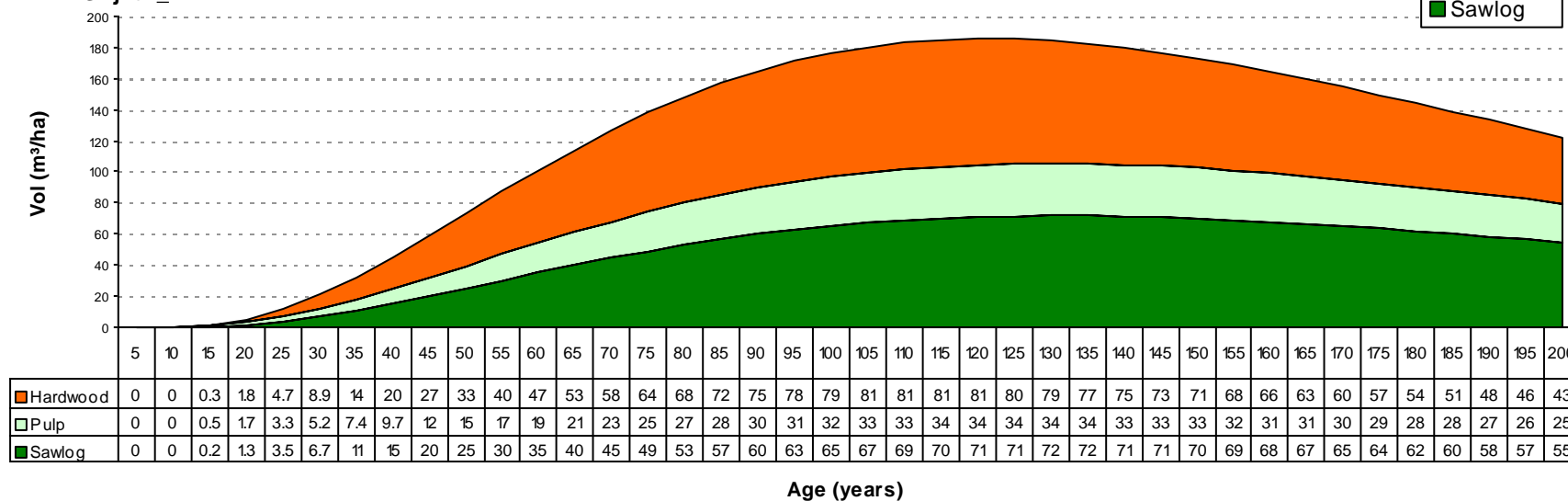
Yields at 8cm Utilization Standard

AU: SHjPtA\_3



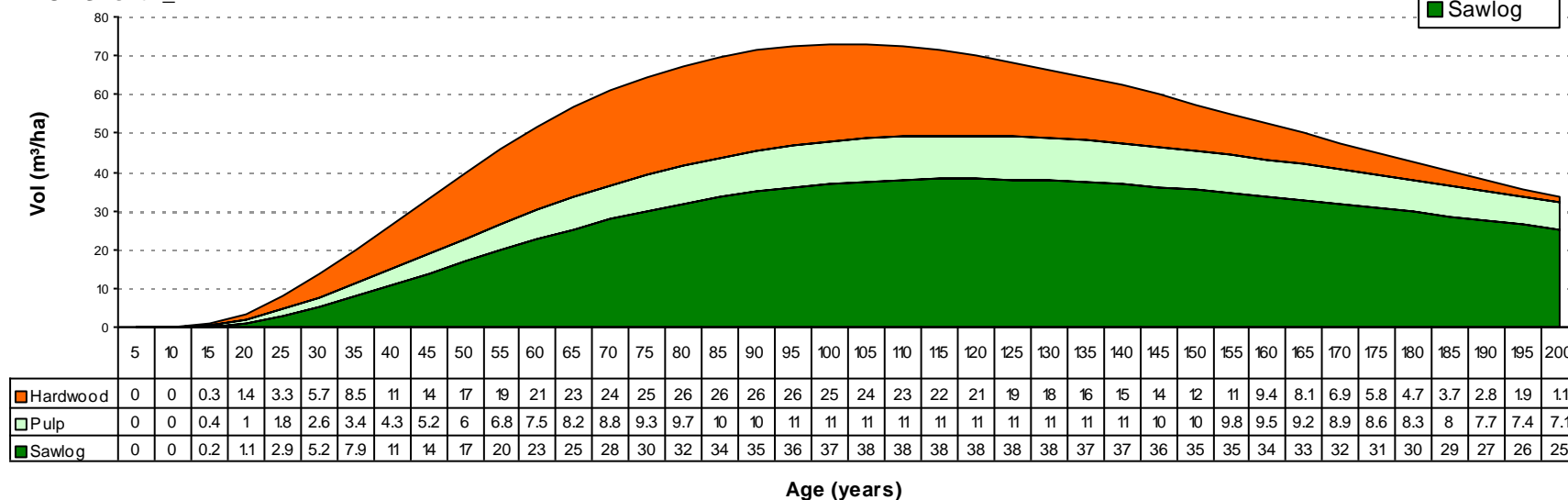
Yields at 8cm Utilization Standard

AU: SHjPtA\_4



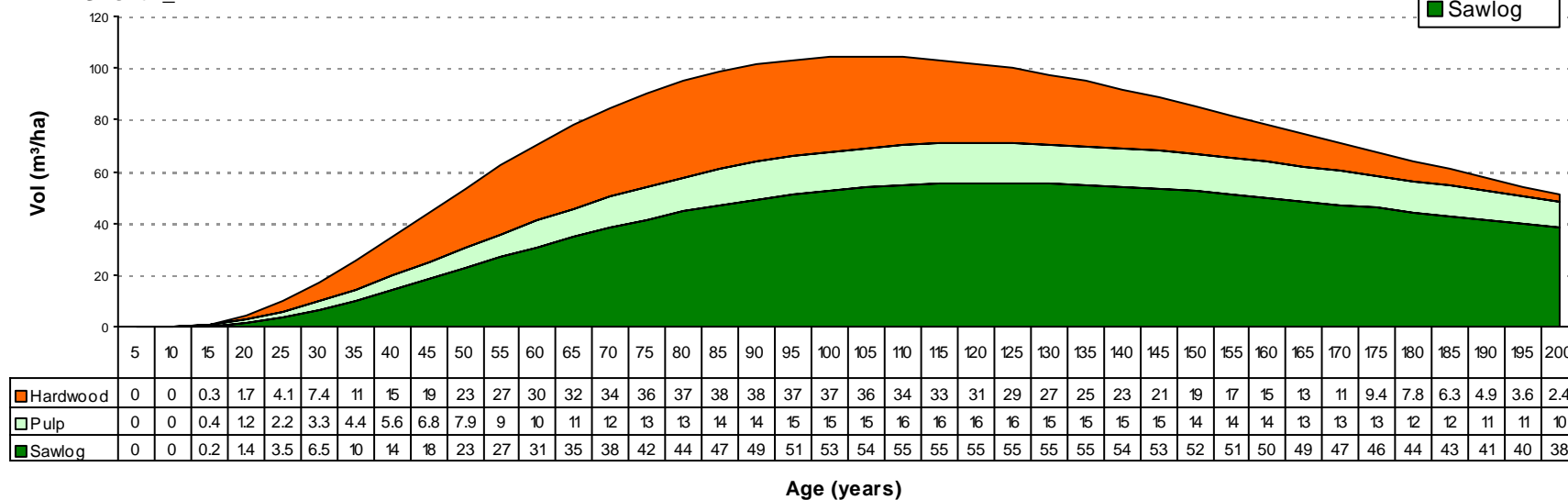
## Yields at 8cm Utilization Standard

## AU: SHsPtA\_1



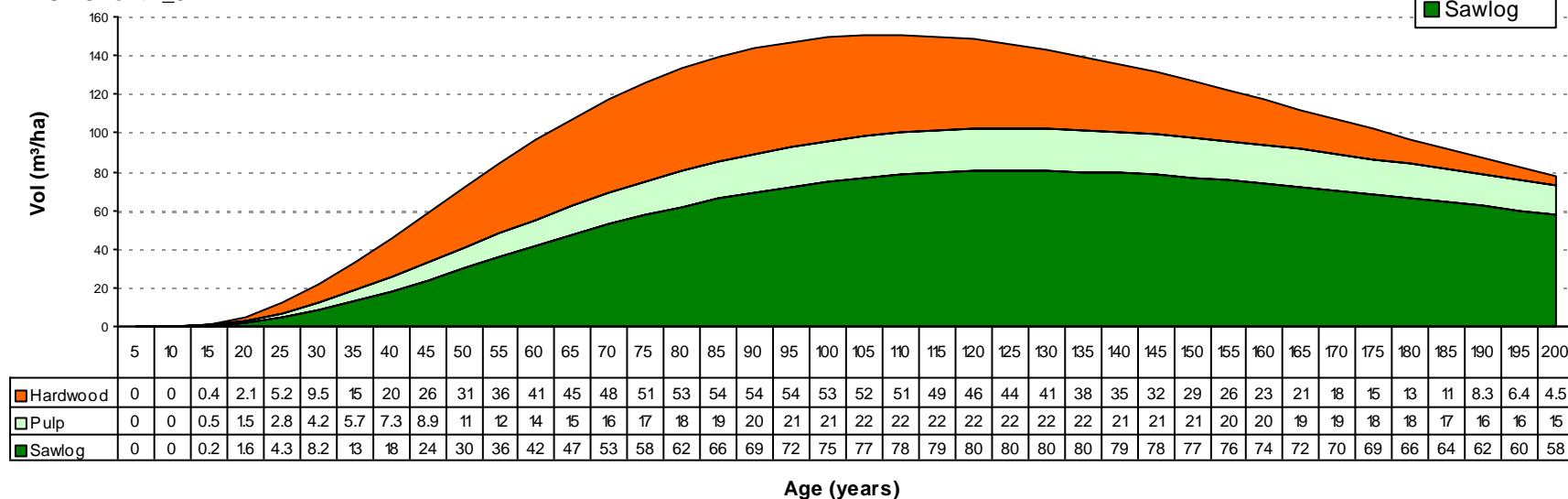
## Yields at 8cm Utilization Standard

## AU: SHsPtA\_2



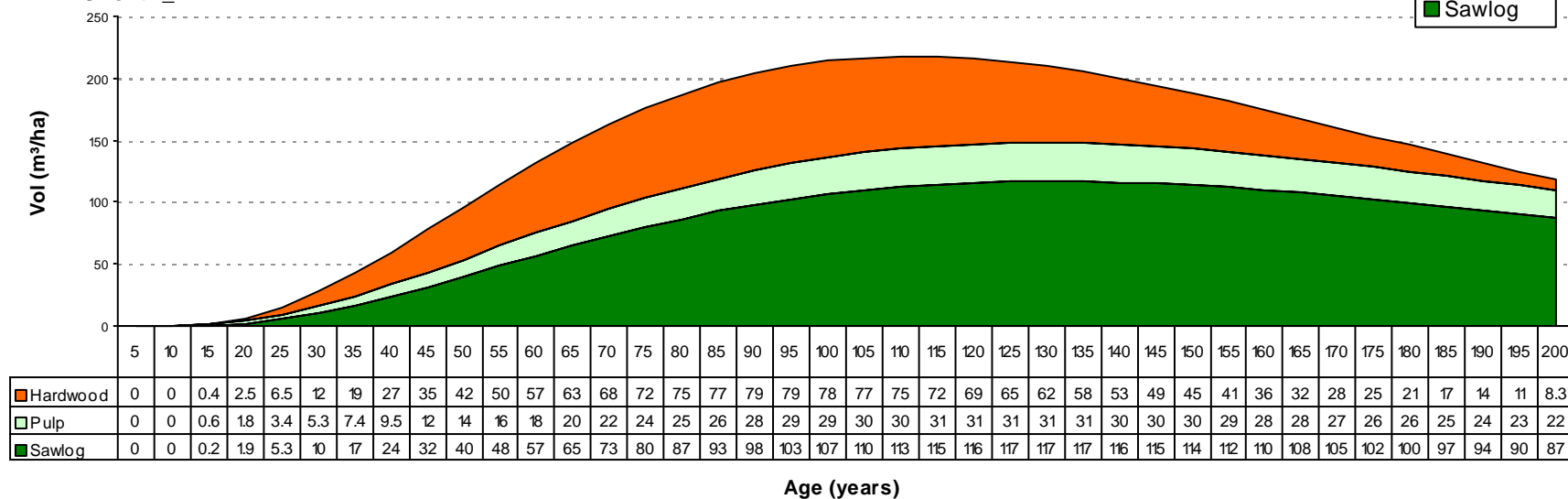
Yields at 8cm Utilization Standard

AU: SHsPtA\_3



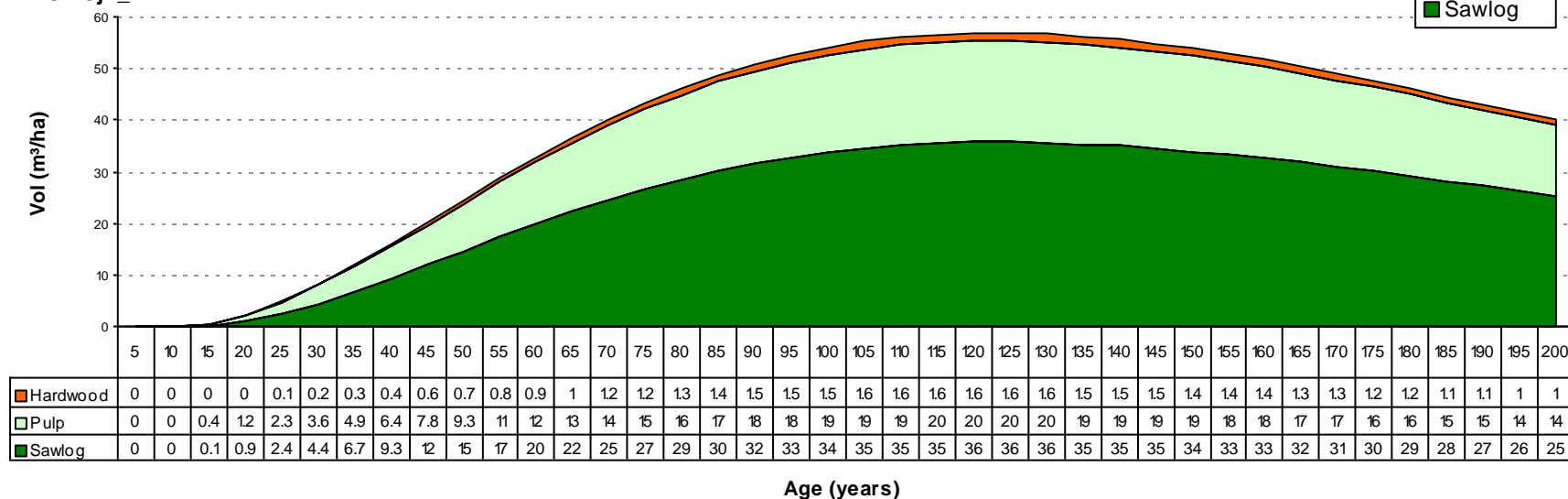
Yields at 8cm Utilization Standard

AU: SHsPtA\_4



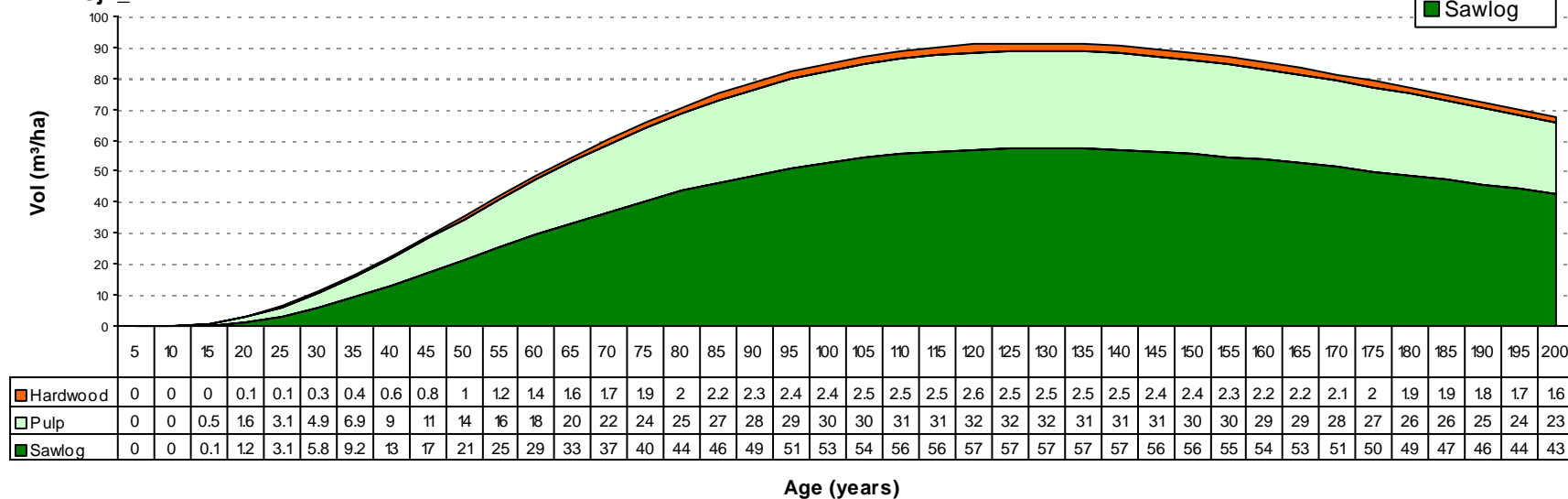
## Yields at 8cm Utilization Standard

AU: SJP\_1



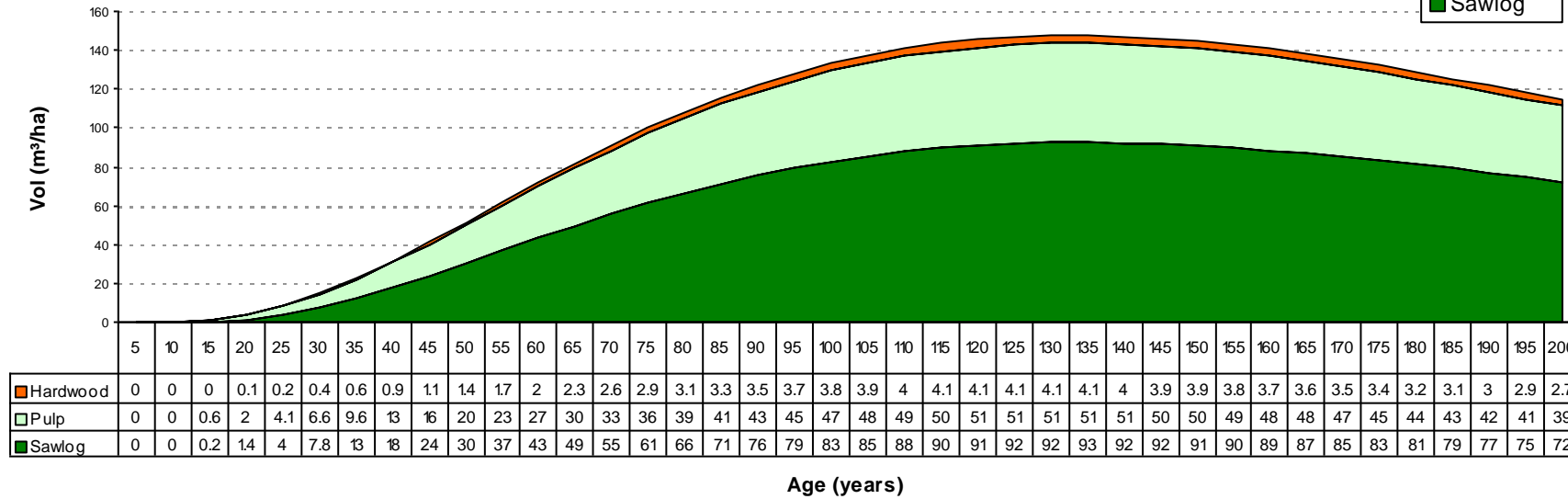
## Yields at 8cm Utilization Standard

AU: SJP\_2



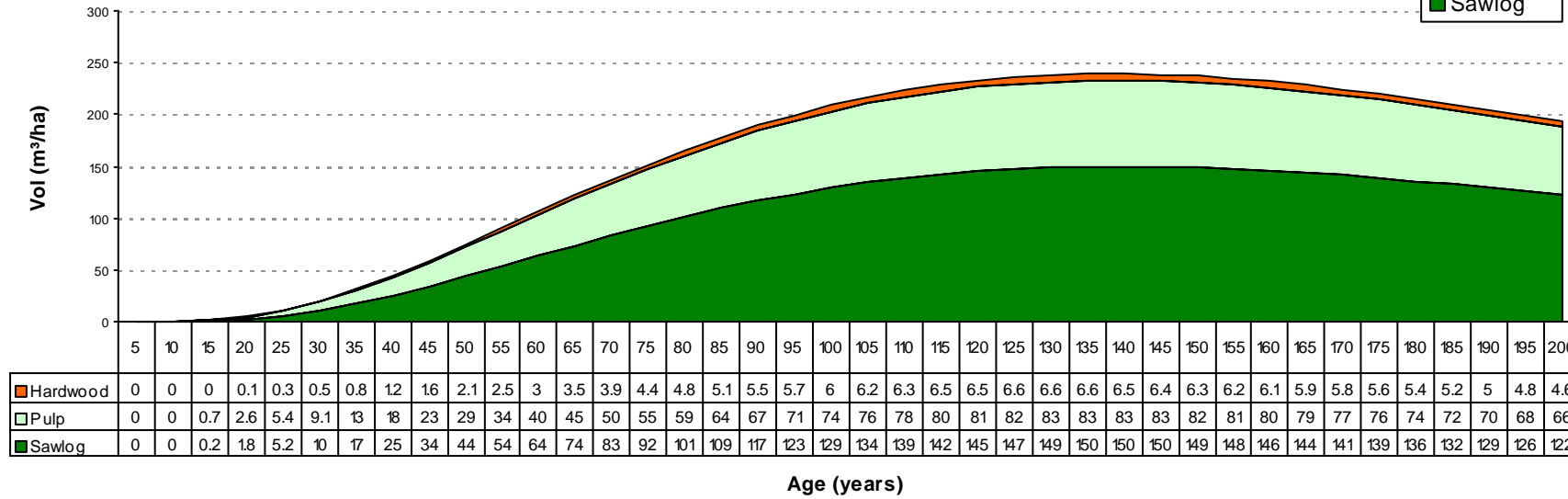
## Yields at 8cm Utilization Standard

AU: SJP\_3



## Yields at 8cm Utilization Standard

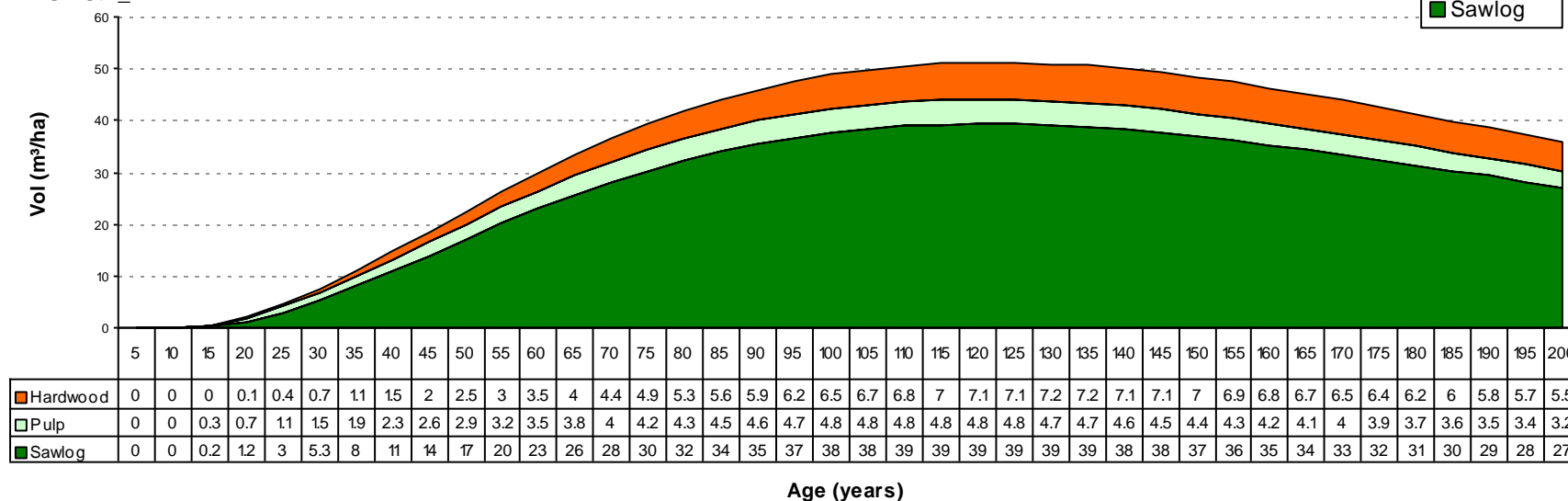
AU: SJP\_4





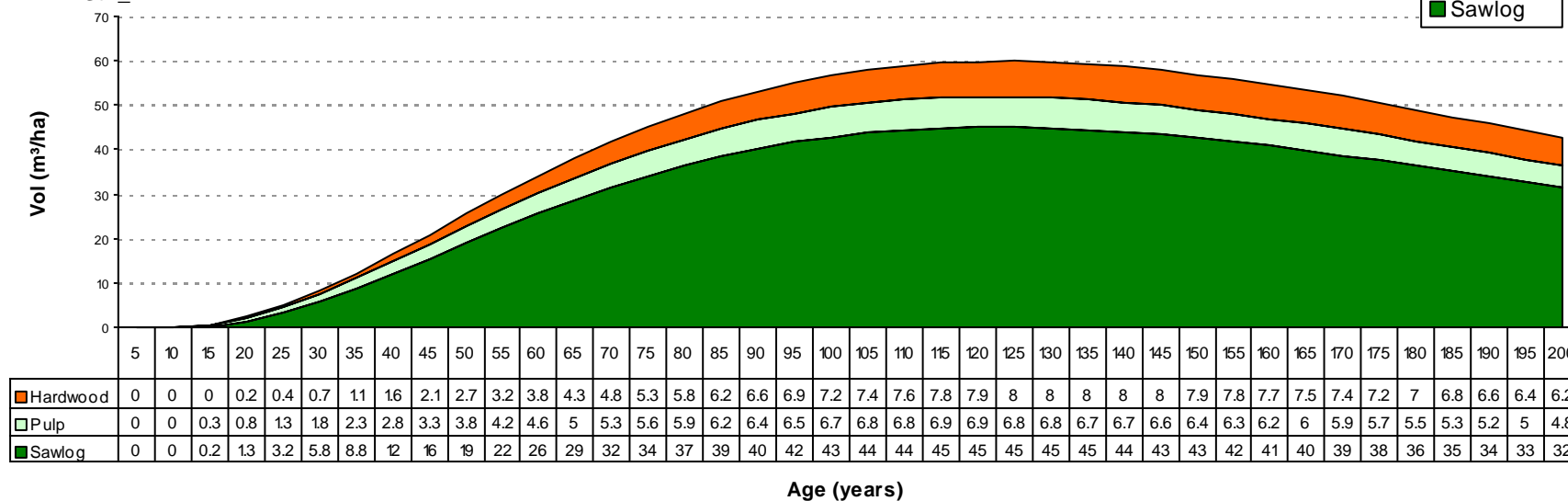
## Yields at 8cm Utilization Standard

AU: StL\_1



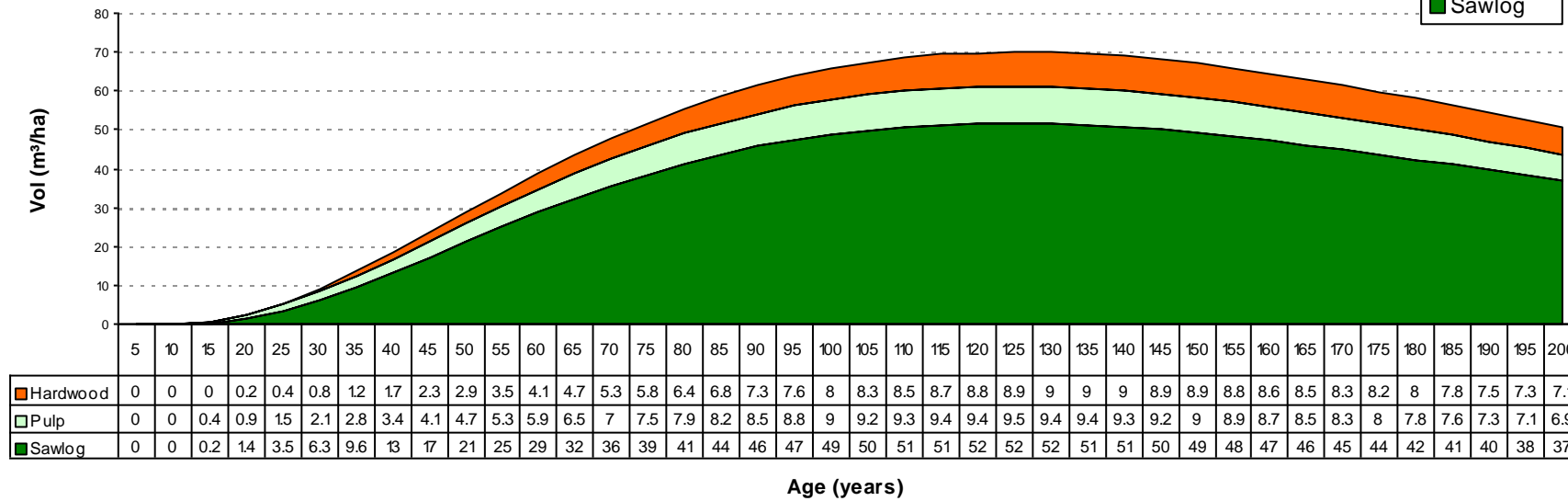
## Yields at 8cm Utilization Standard

AU: StL\_2



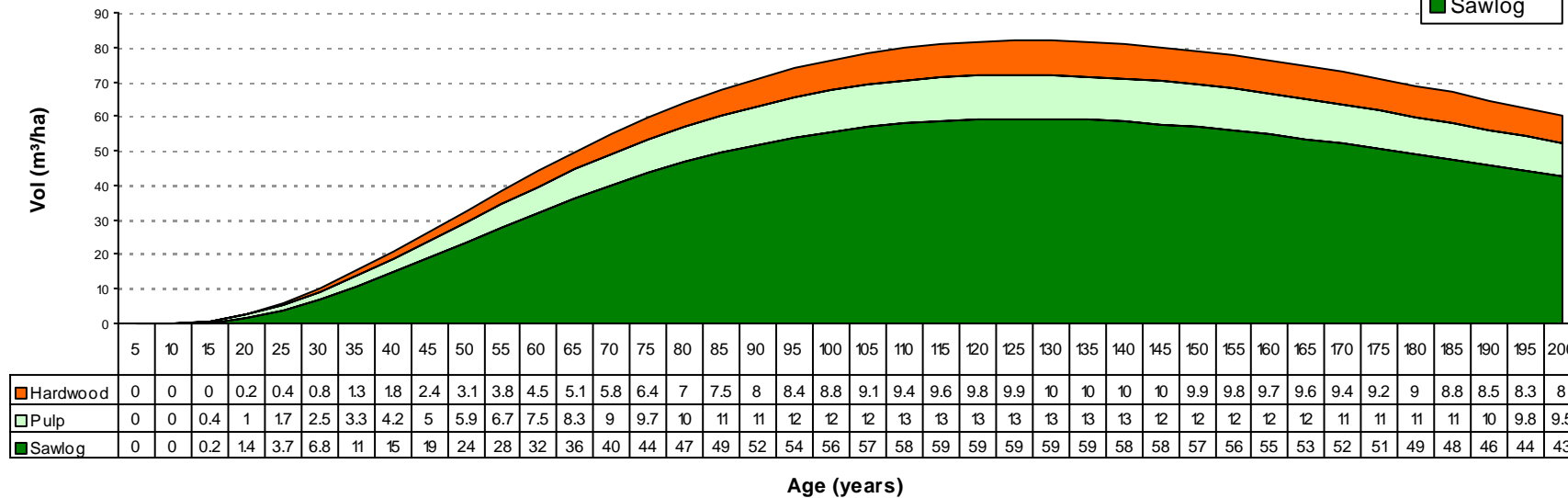
## Yields at 8cm Utilization Standard

AU: StL\_3



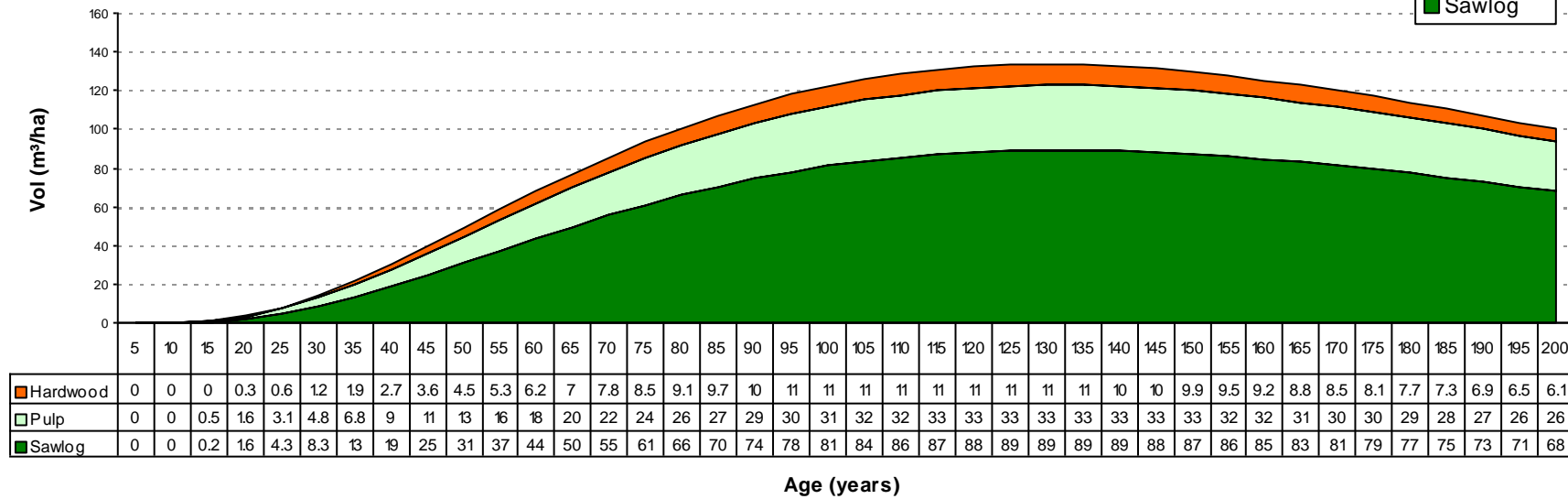
## Yields at 8cm Utilization Standard

AU: StL\_4



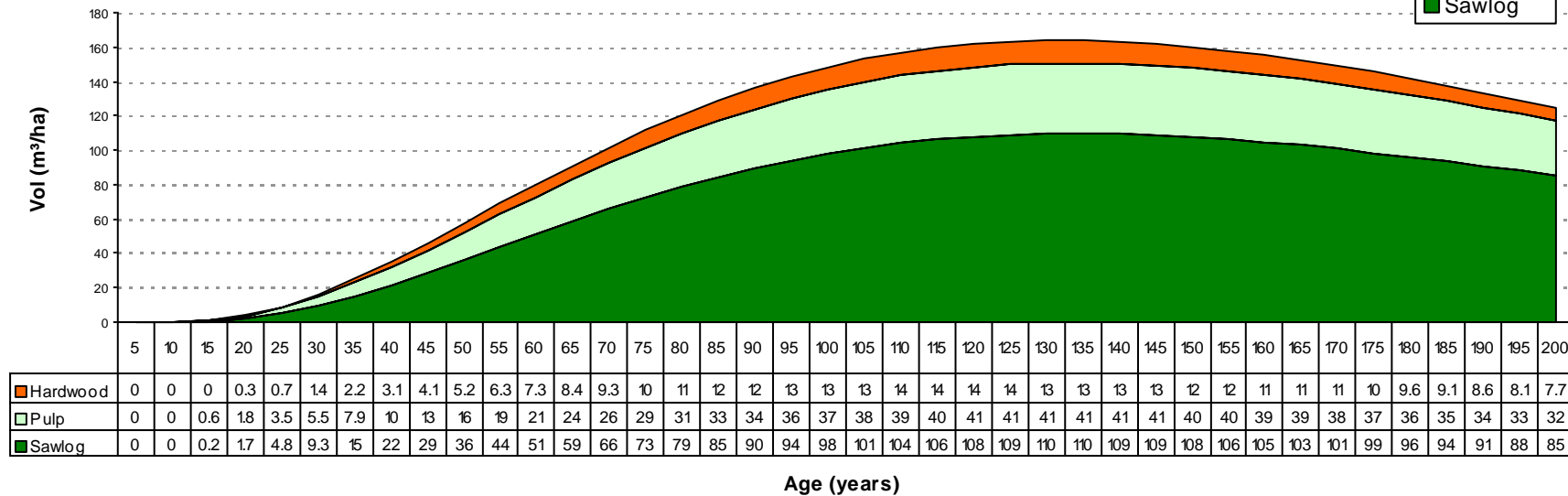
## Yields at 8cm Utilization Standard

AU: SwS\_1



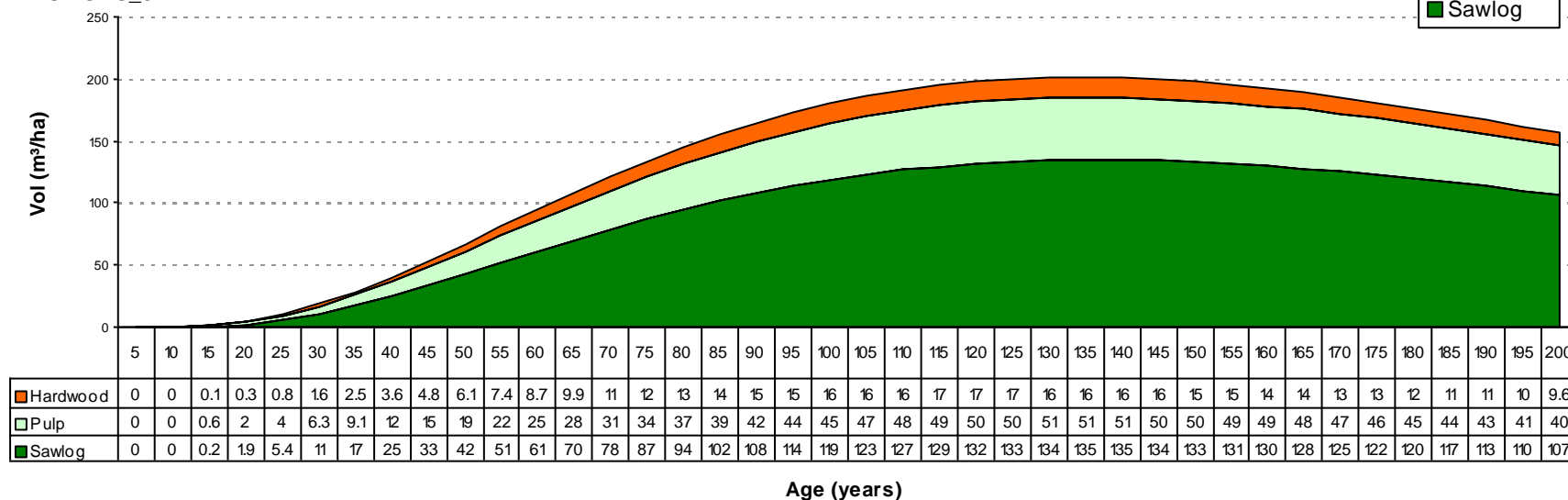
## Yields at 8cm Utilization Standard

AU: SwS\_2



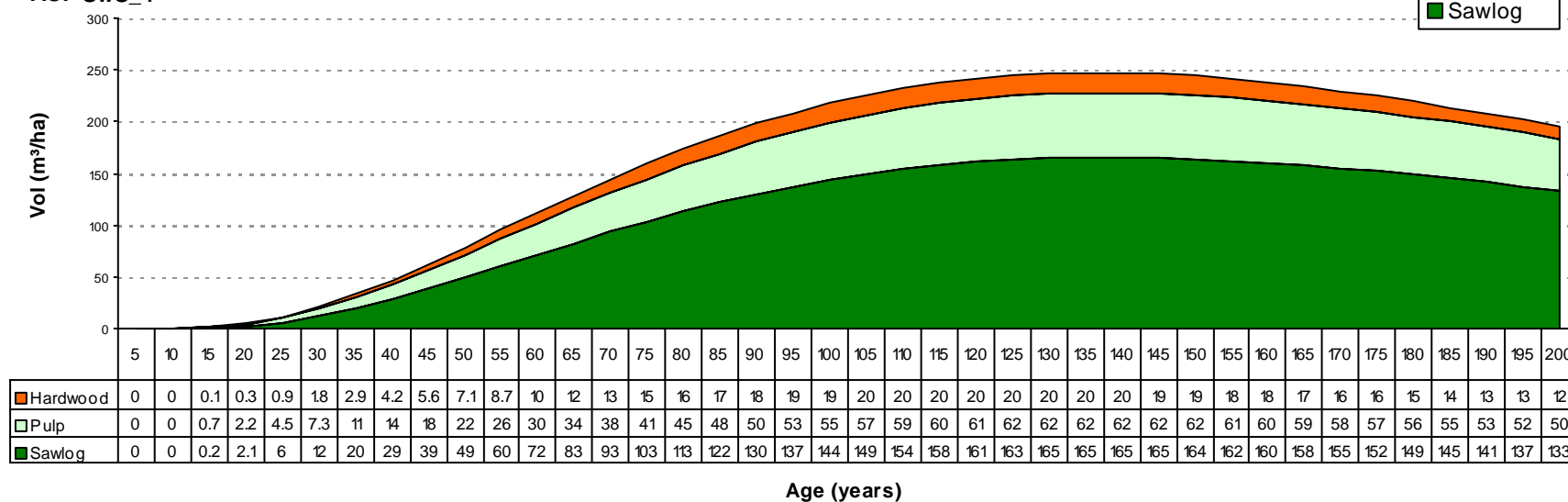
Yields at 8cm Utilization Standard

AU: SwS\_3



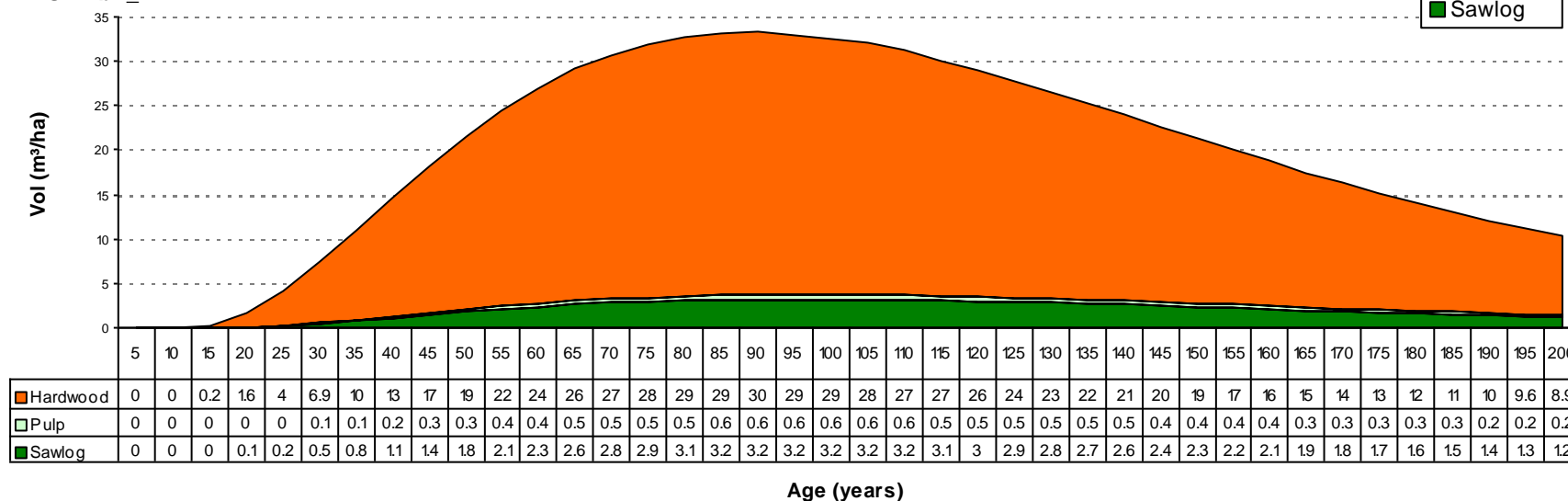
Yields at 8cm Utilization Standard

AU: SwS\_4



## Yields at 10cm Utilization Standard

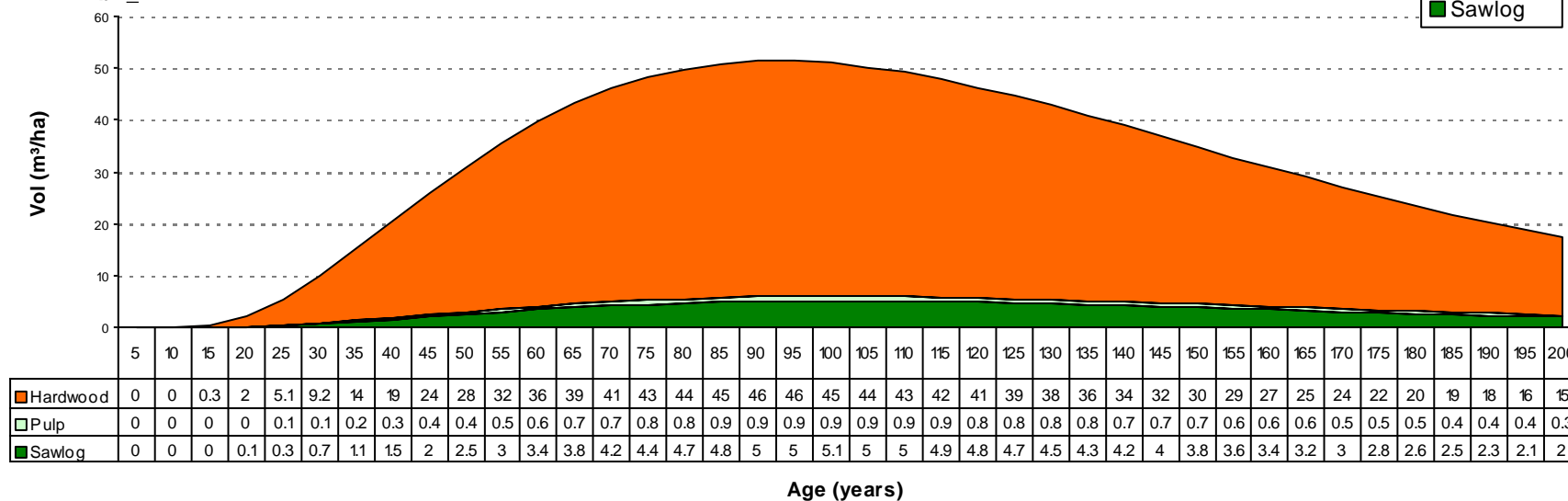
AU: HbP\_1



Age (years)

## Yields at 10cm Utilization Standard

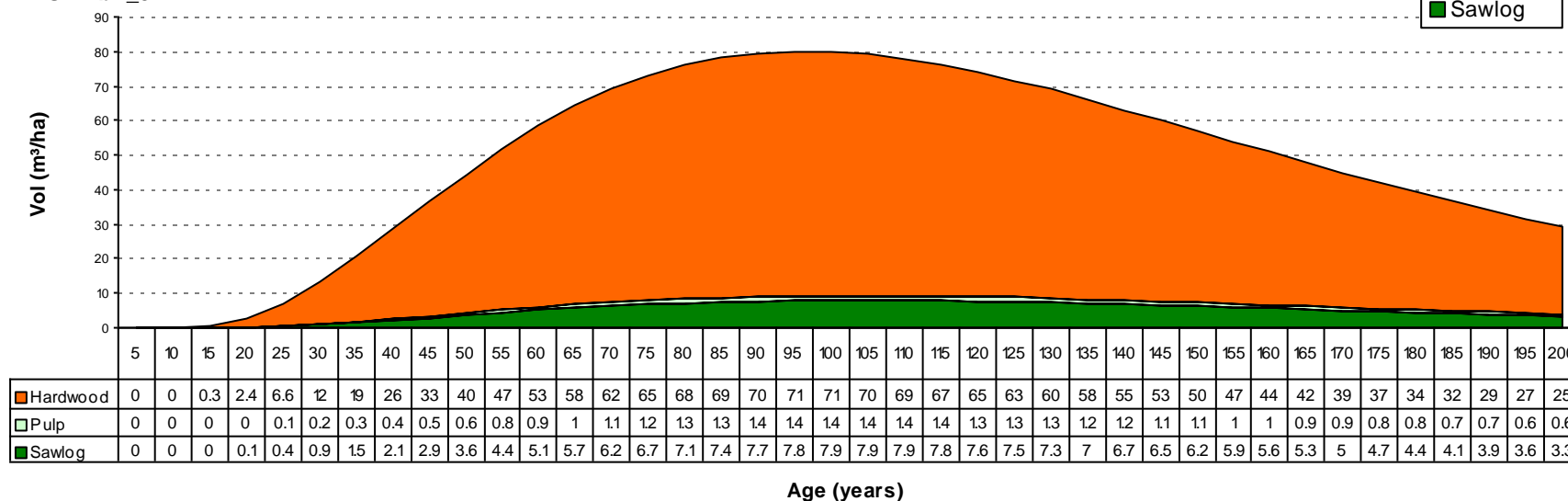
AU: HbP\_2



Age (years)

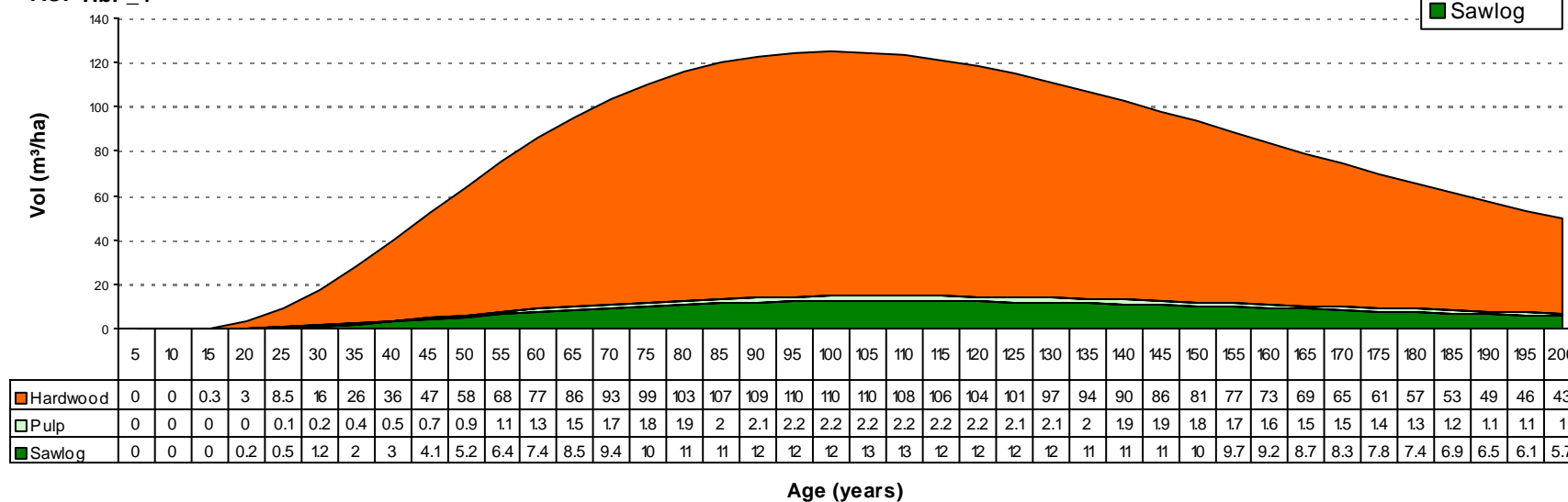
Yields at 10cm Utilization Standard

AU: HbP\_3



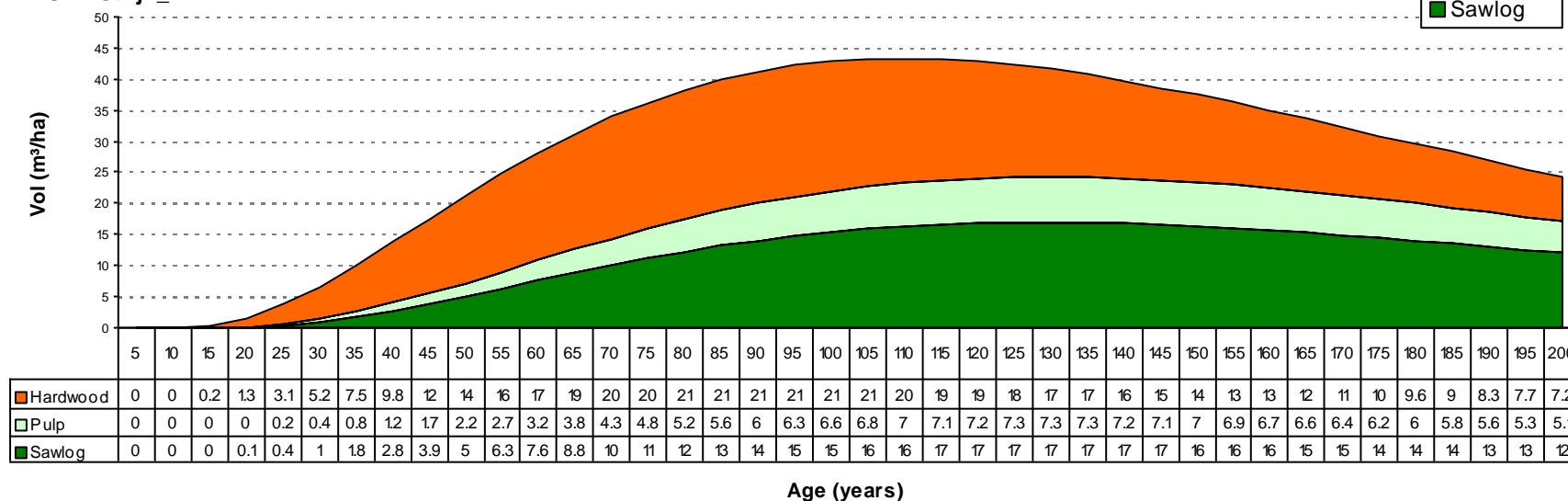
Yields at 10cm Utilization Standard

AU: HbP\_4



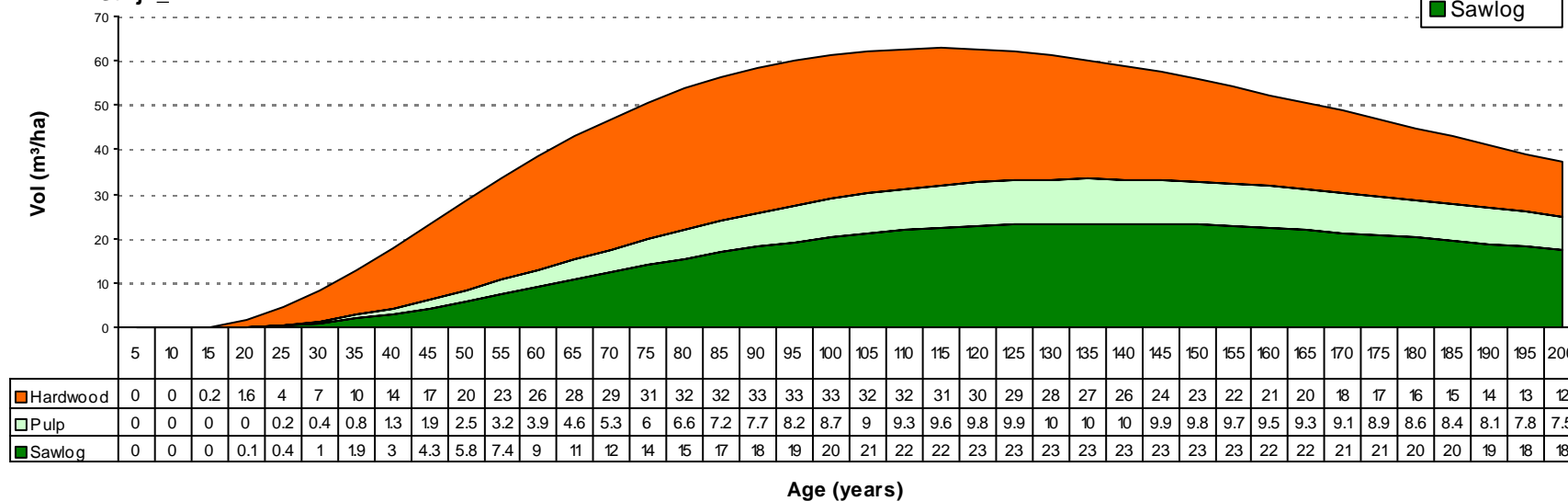
Yields at 10cm Utilization Standard

AU: HStAjP\_1



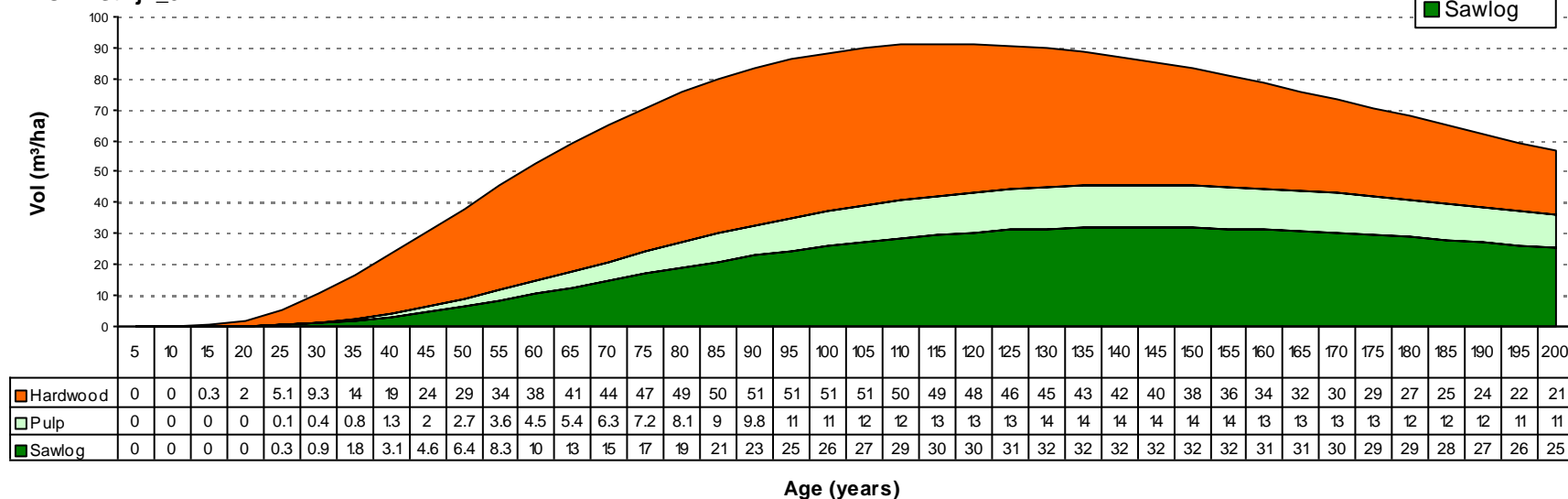
Yields at 10cm Utilization Standard

AU: HStAjP\_2



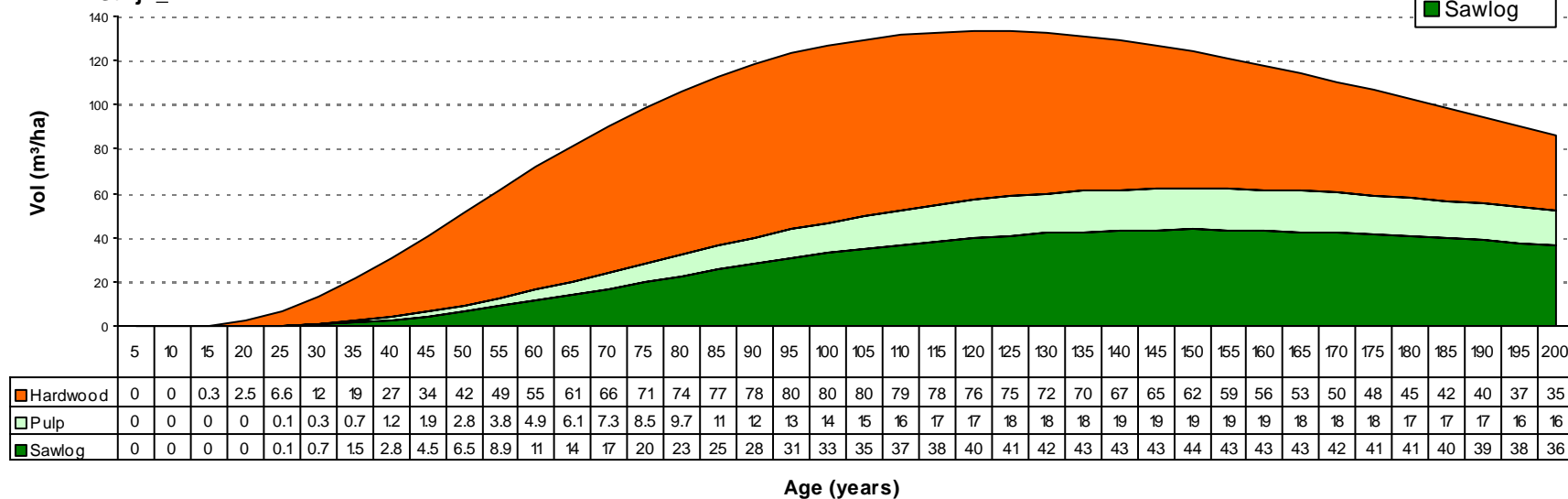
Yields at 10cm Utilization Standard

AU: HStAjP\_3



Yields at 10cm Utilization Standard

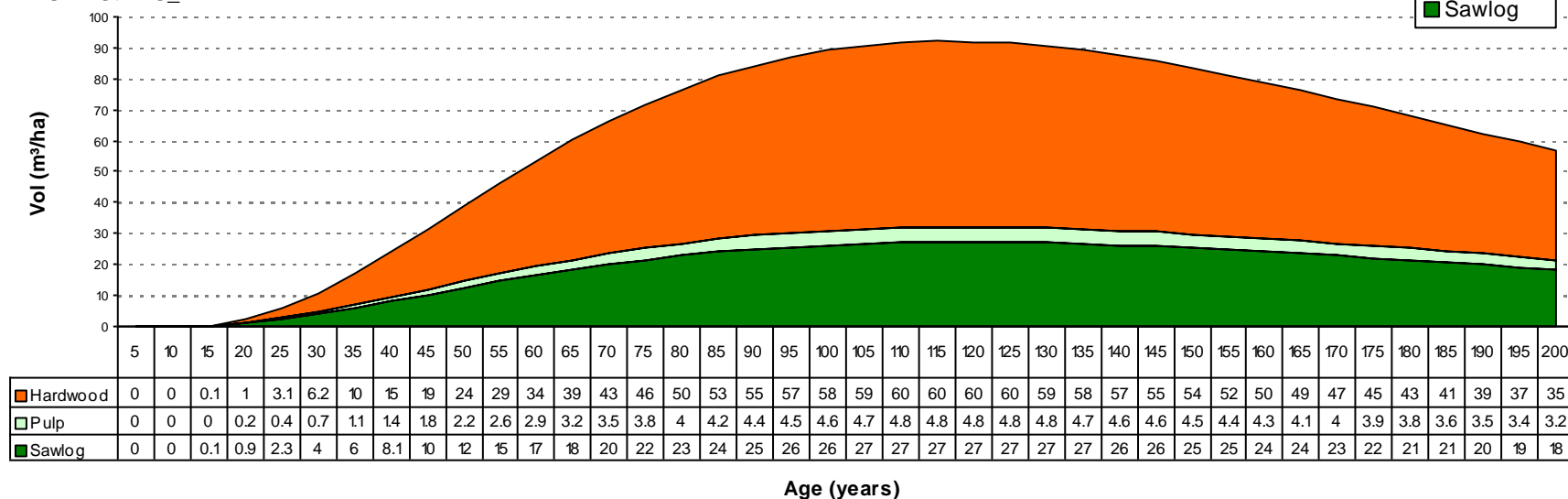
AU: HStAjP\_4





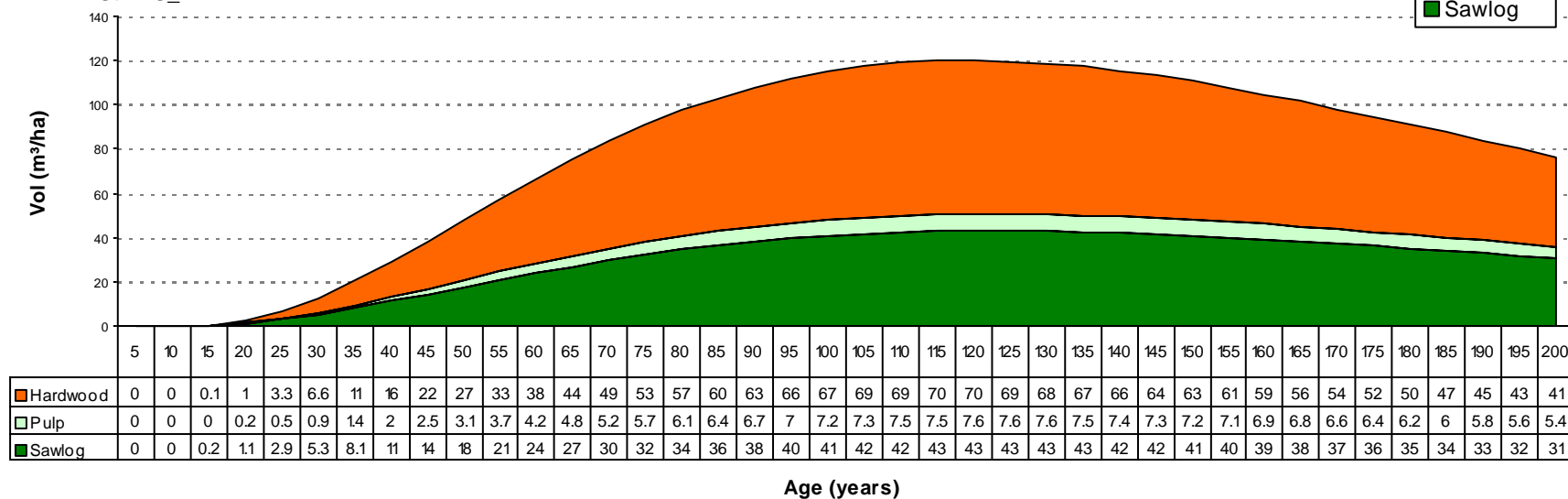
Yields at 10cm Utilization Standard

AU: HStAwS\_1



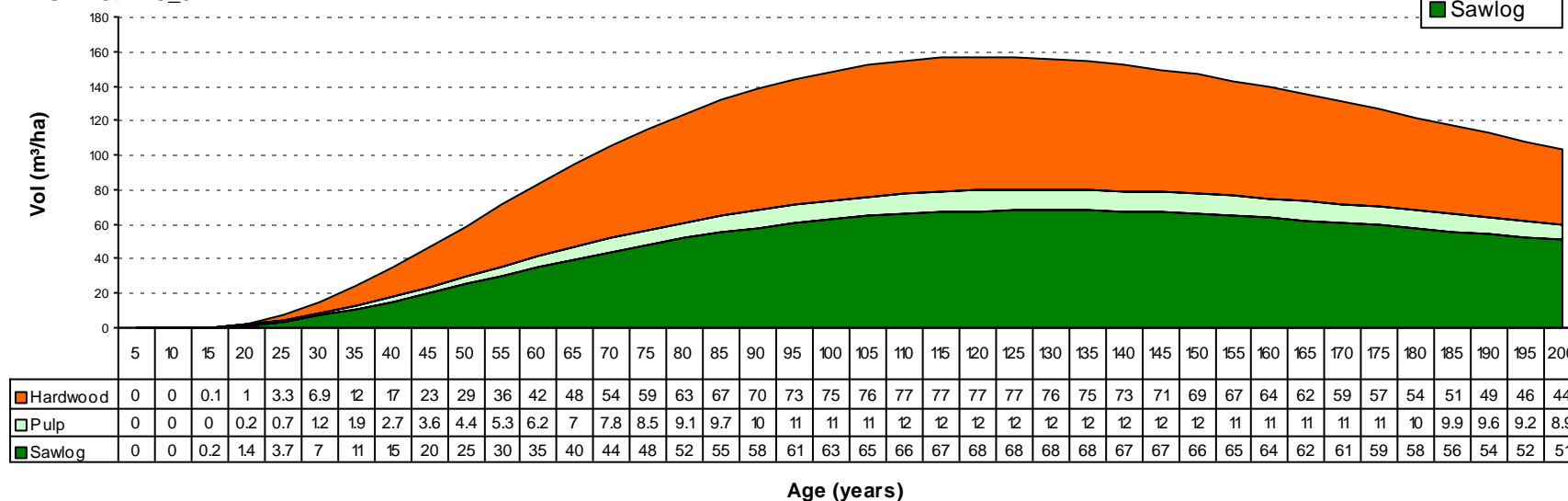
Yields at 10cm Utilization Standard

AU: HStAwS\_2



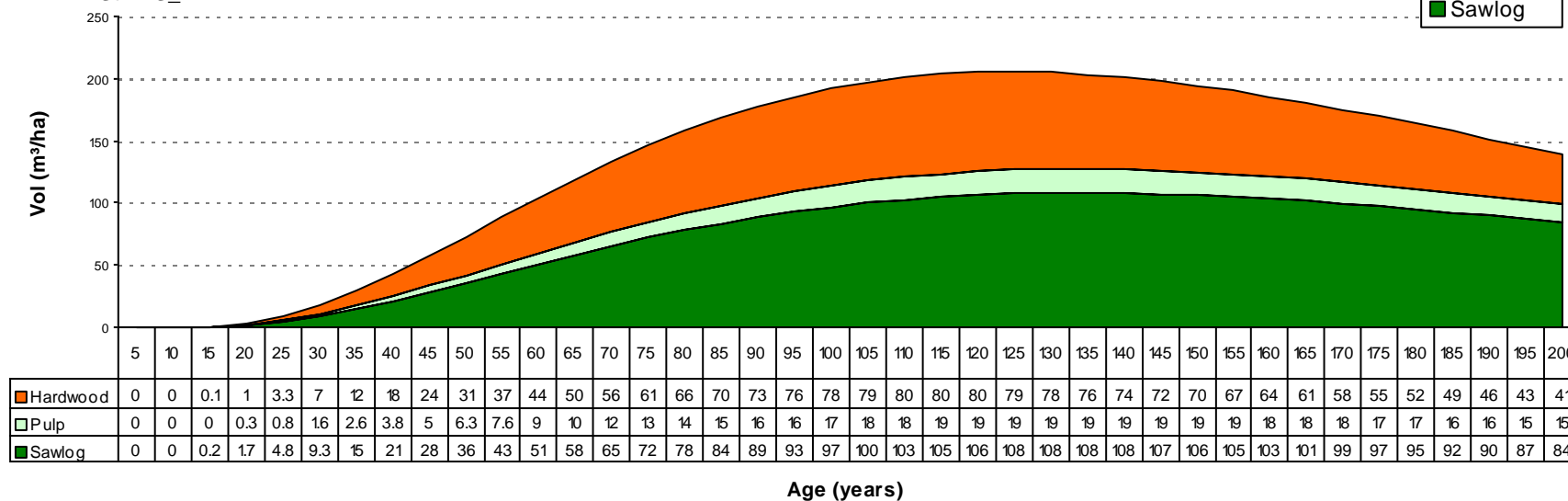
Yields at 10cm Utilization Standard

AU: HStAwS\_3



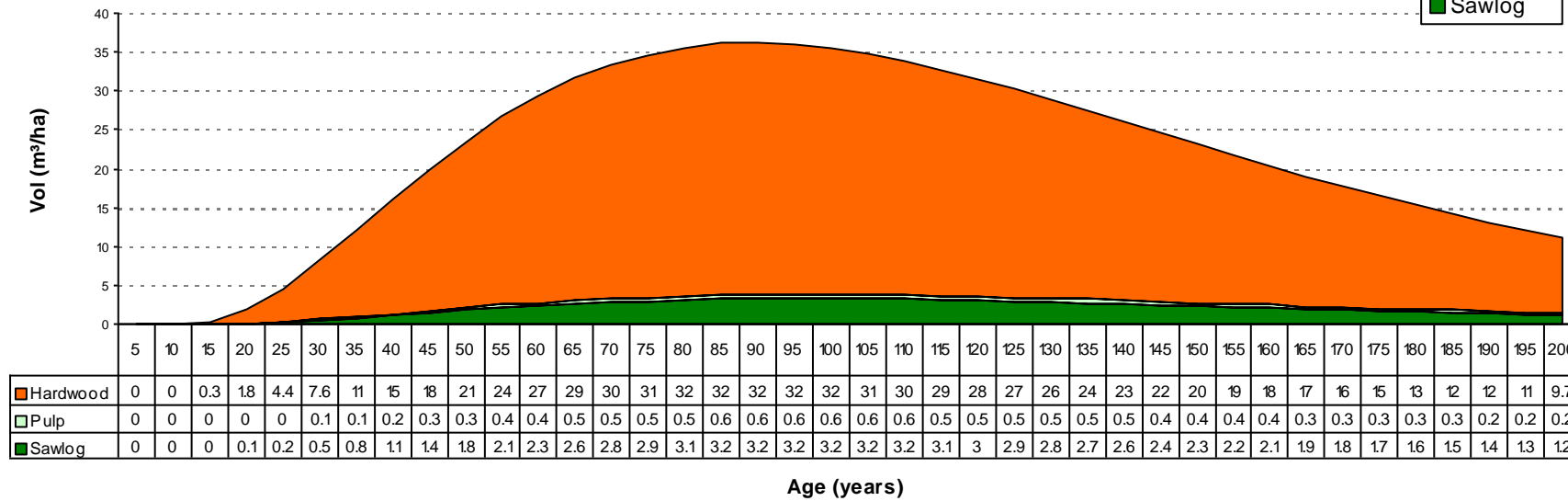
Yields at 10cm Utilization Standard

AU: HStAwS\_4



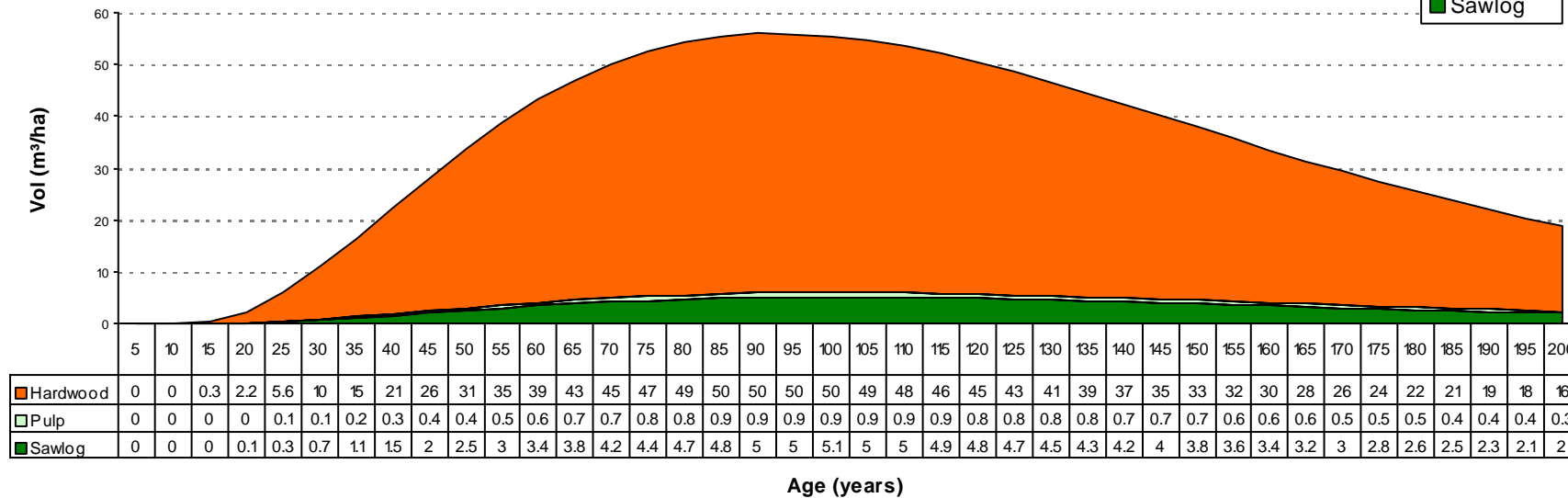
## Yields at 10cm Utilization Standard

AU: HtA\_1



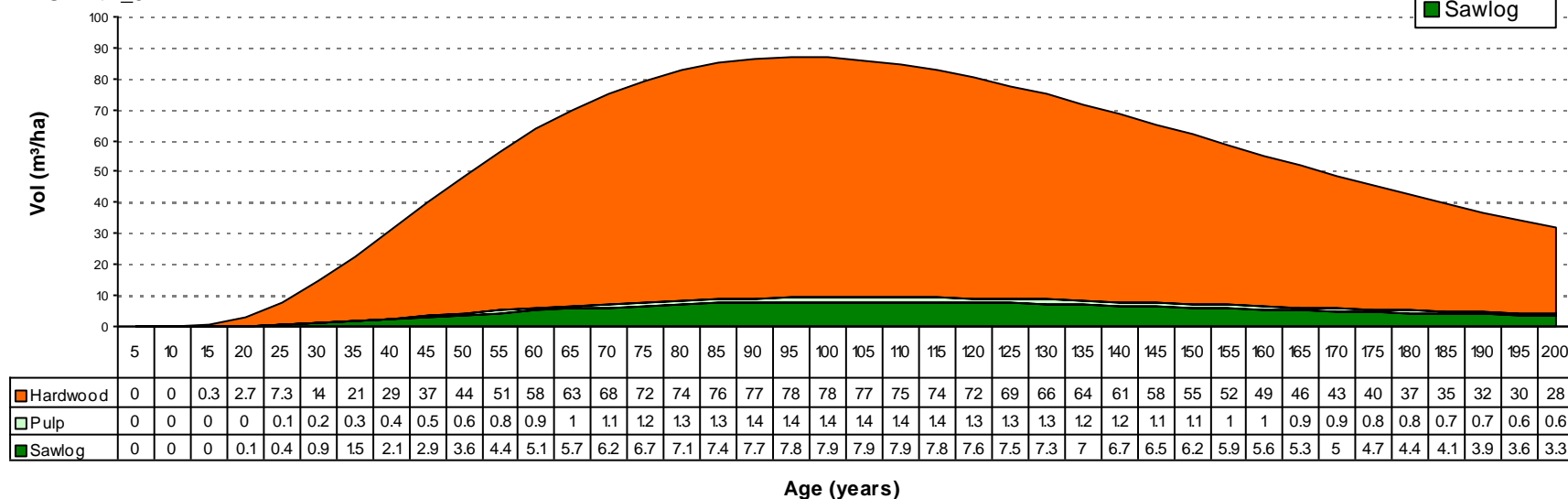
## Yields at 10cm Utilization Standard

AU: HtA\_2



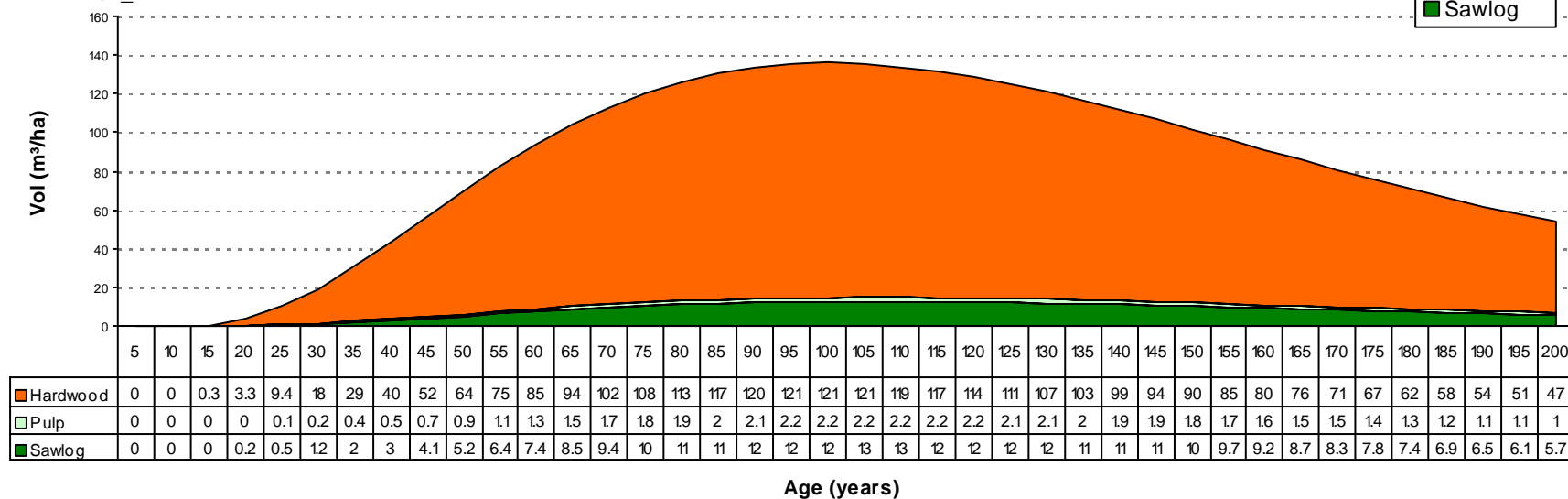
## Yields at 10cm Utilization Standard

AU: HtA\_3



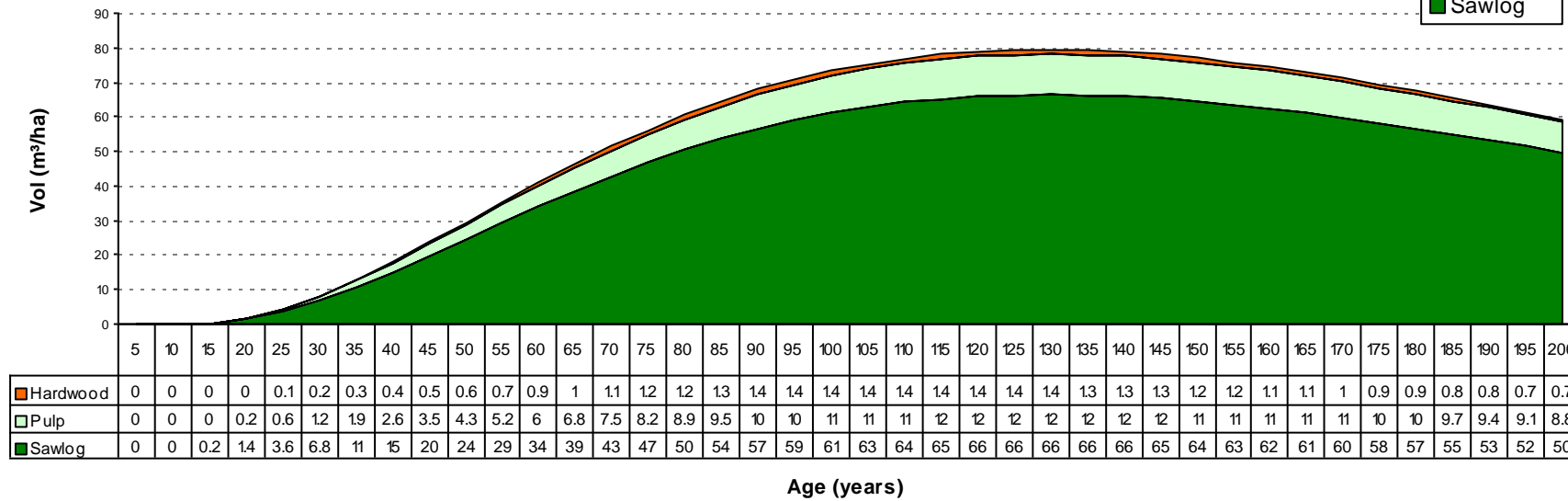
## Yields at 10cm Utilization Standard

AU: HtA\_4



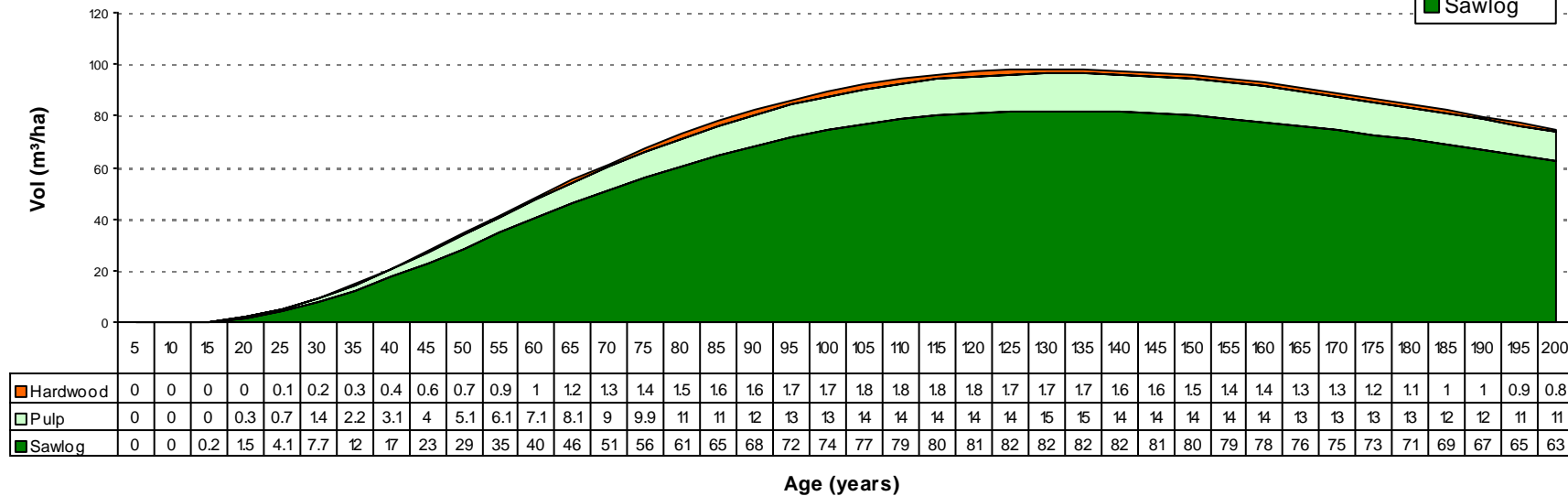
## Yields at 10cm Utilization Standard

AU: SbS\_1



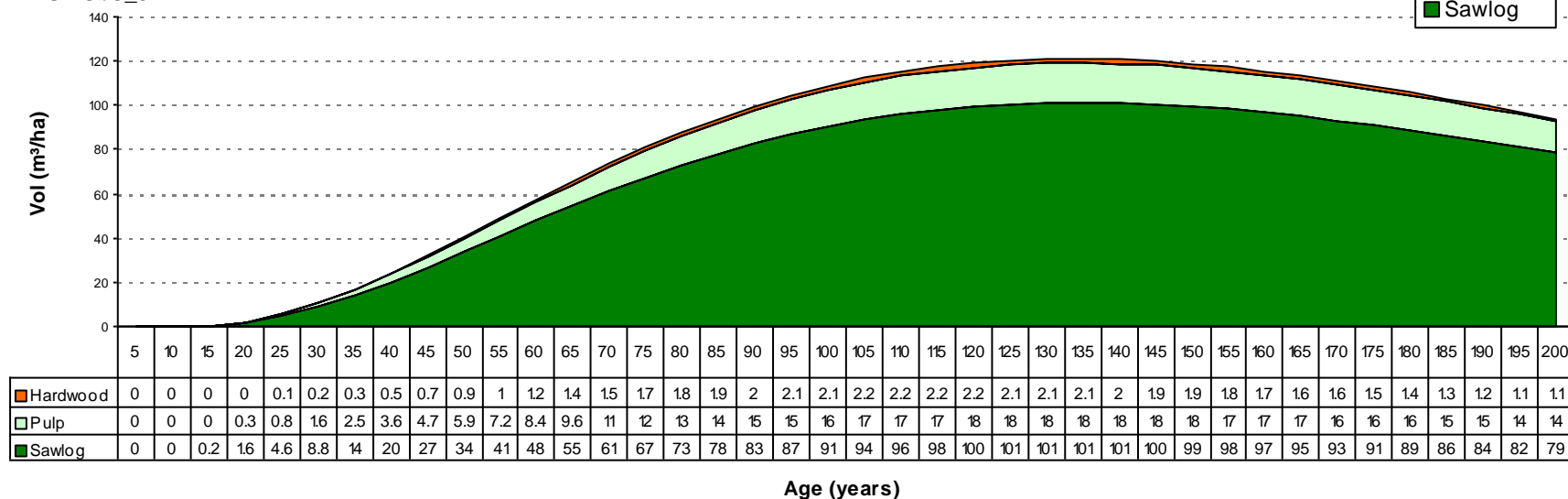
## Yields at 10cm Utilization Standard

AU: SbS\_2



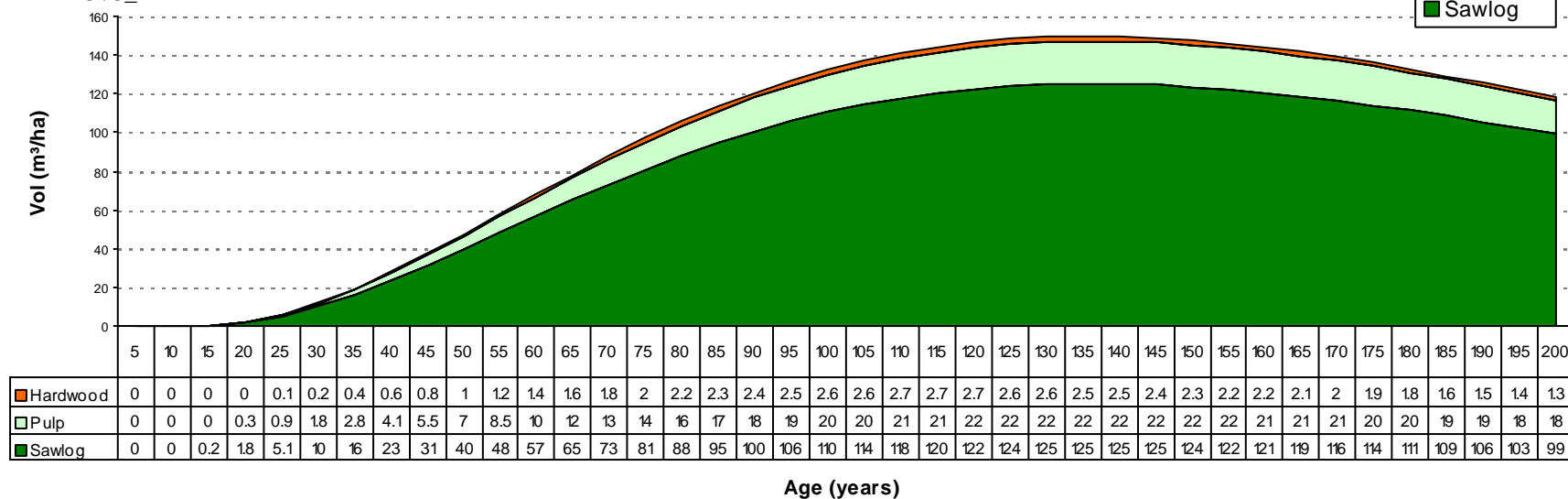
## Yields at 10cm Utilization Standard

## AU: SbS\_3



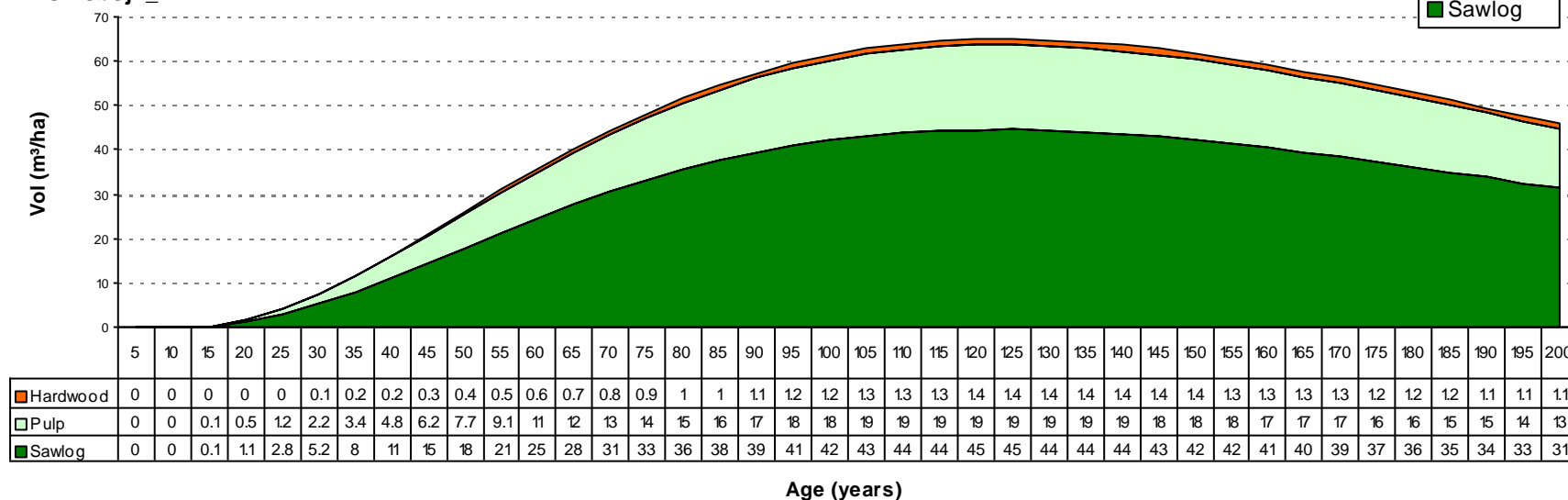
## Yields at 10cm Utilization Standard

## AU: SbS\_4



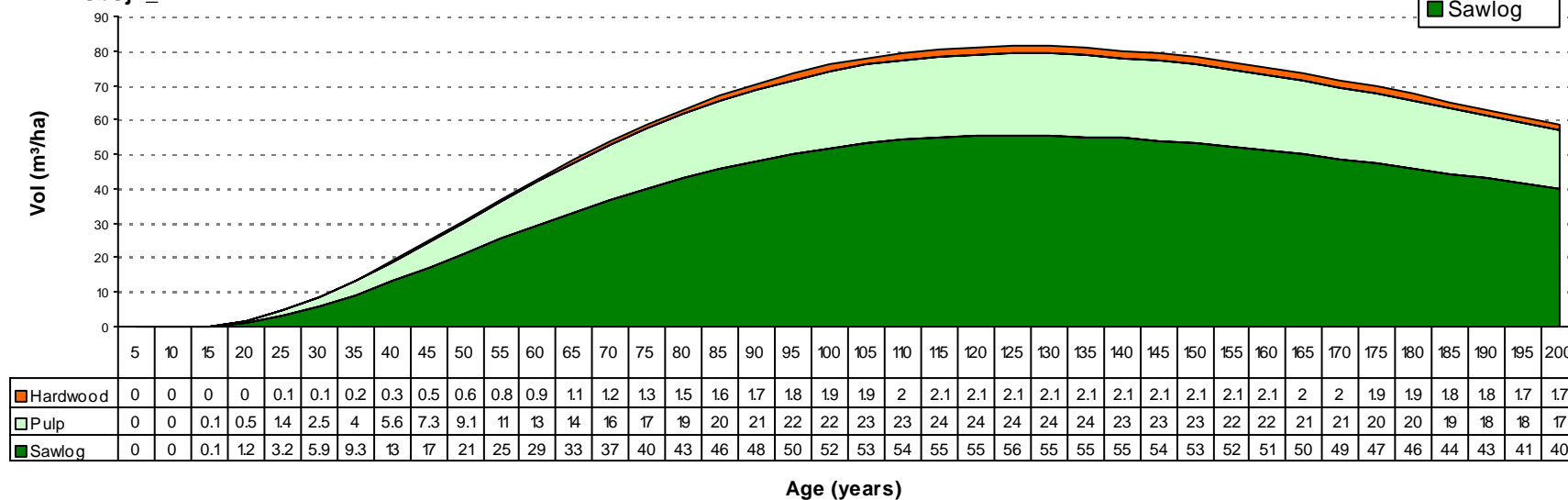
## Yields at 10cm Utilization Standard

AU: SbSjP\_1



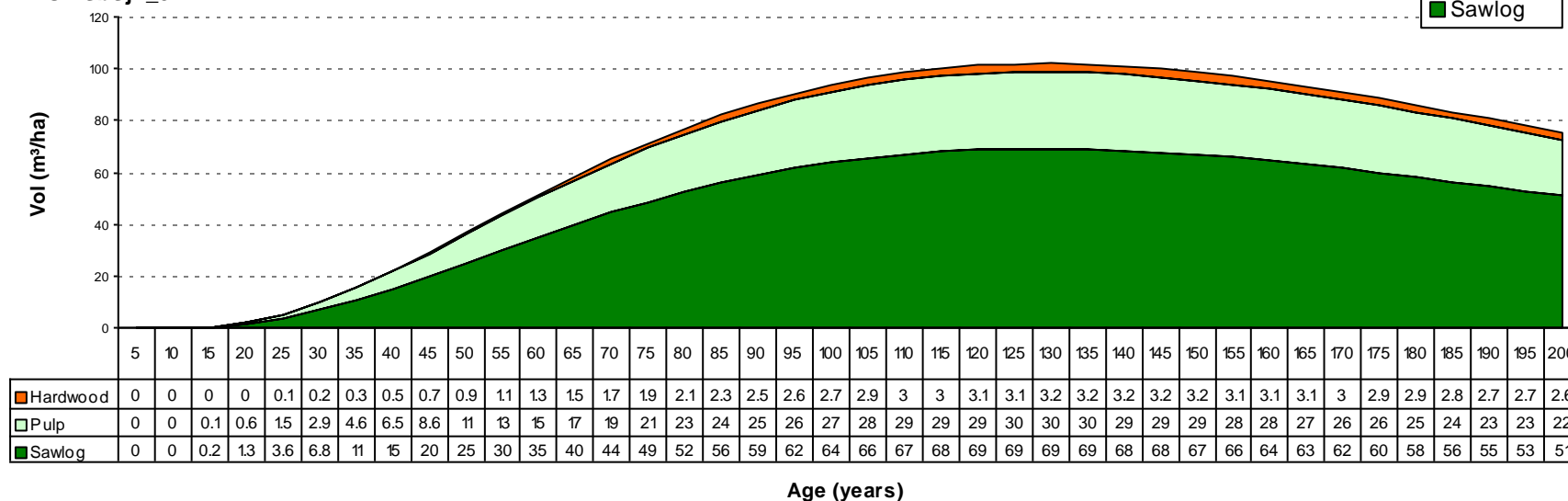
## Yields at 10cm Utilization Standard

AU: SbSjP\_2



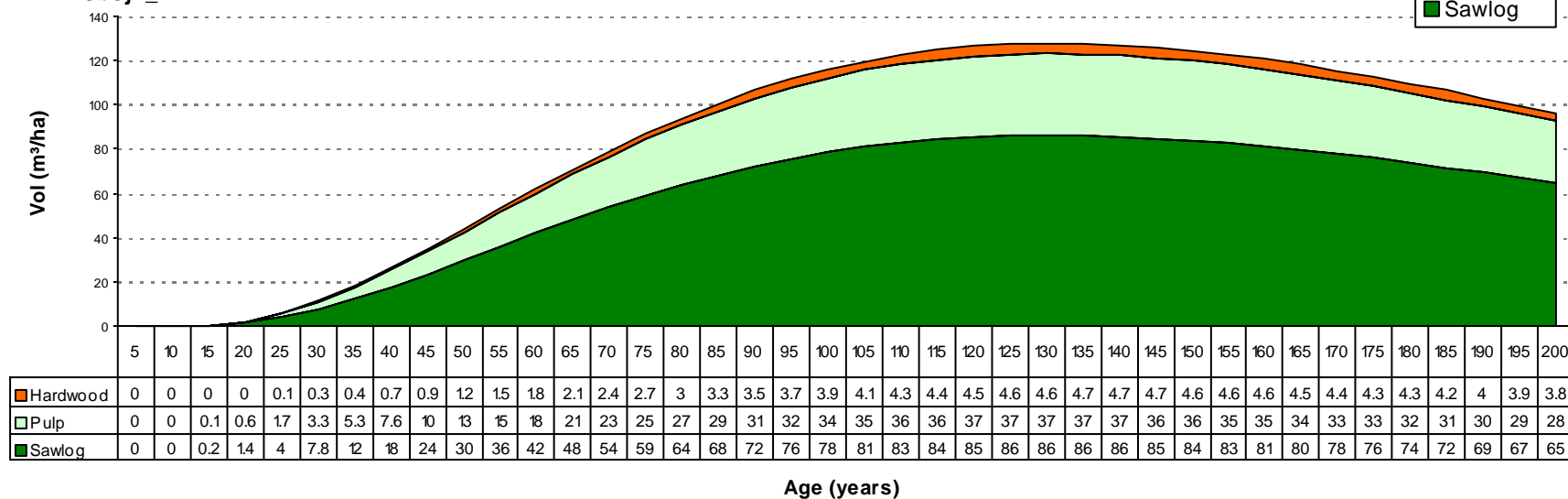
## Yields at 10cm Utilization Standard

## AU: SbSjP\_3



## Yields at 10cm Utilization Standard

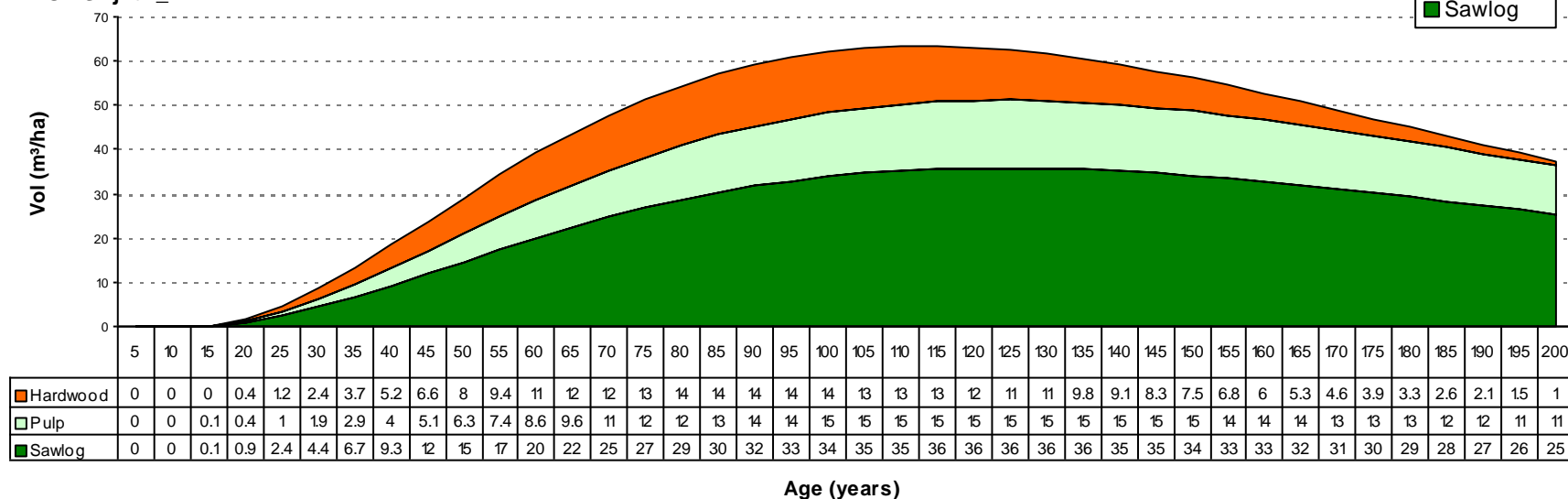
## AU: SbSjP\_4





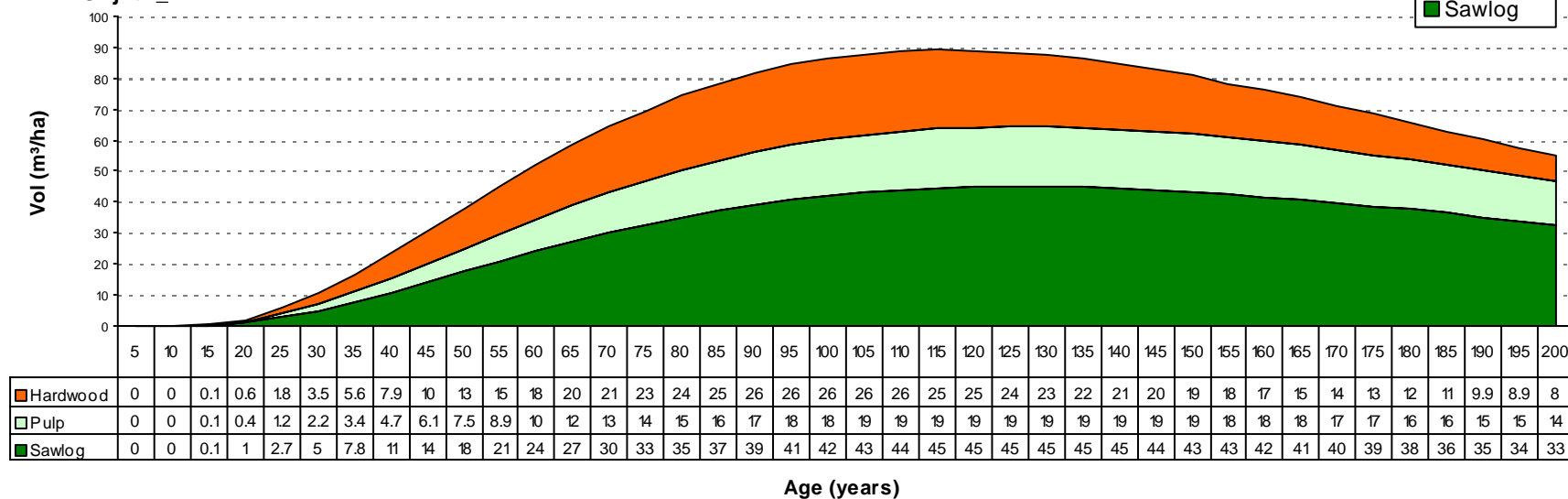
Yields at 10cm Utilization Standard

AU: SHjPtA\_1



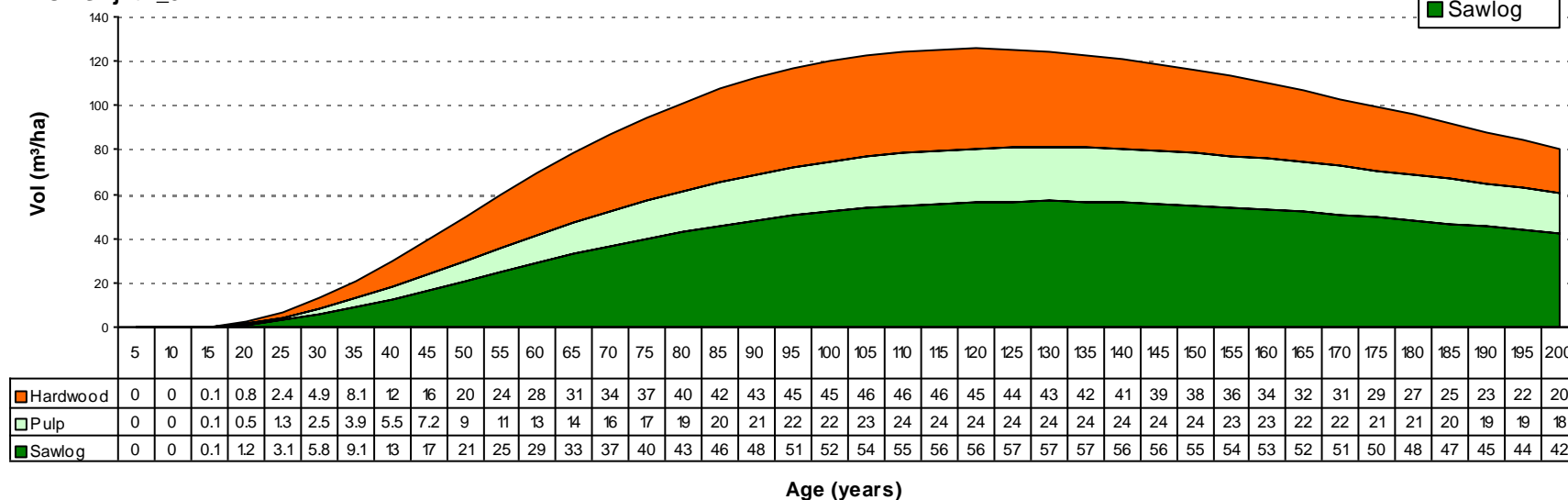
Yields at 10cm Utilization Standard

AU: SHjPtA\_2



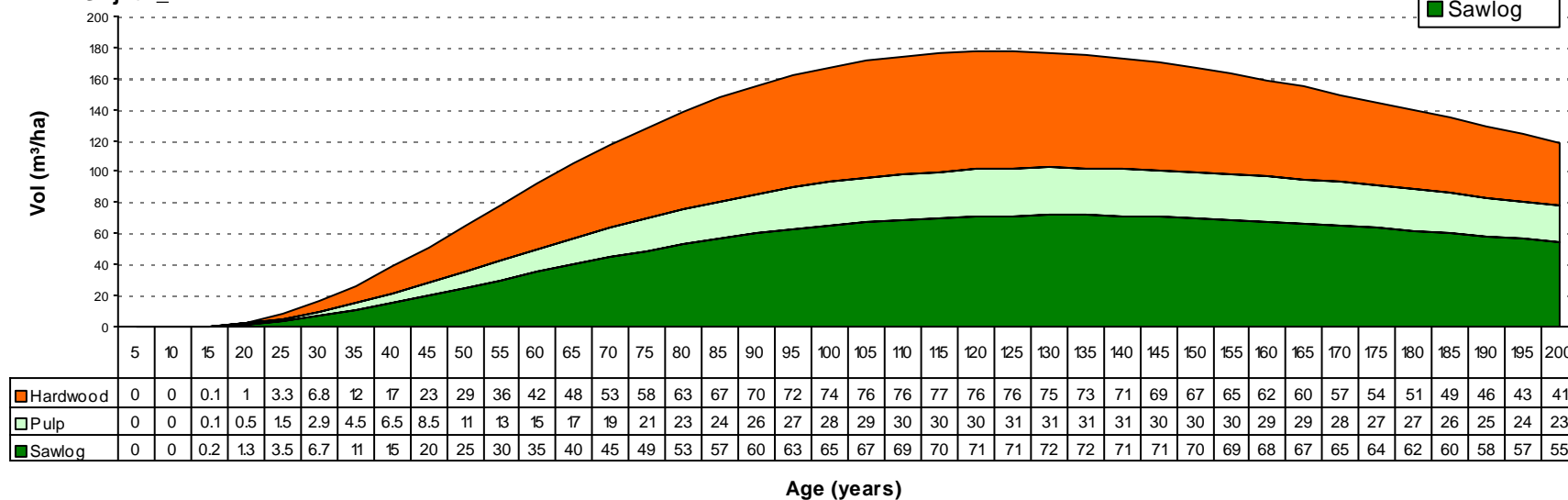
## Yields at 10cm Utilization Standard

AU: SHjPtA\_3



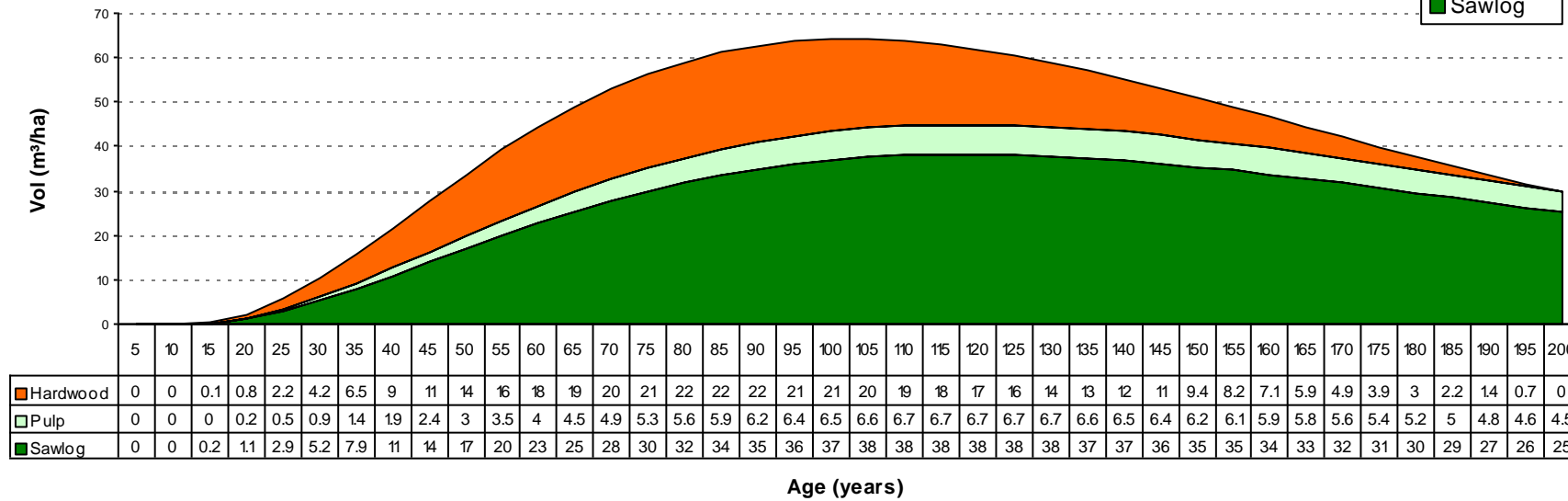
## Yields at 10cm Utilization Standard

AU: SHjPtA\_4



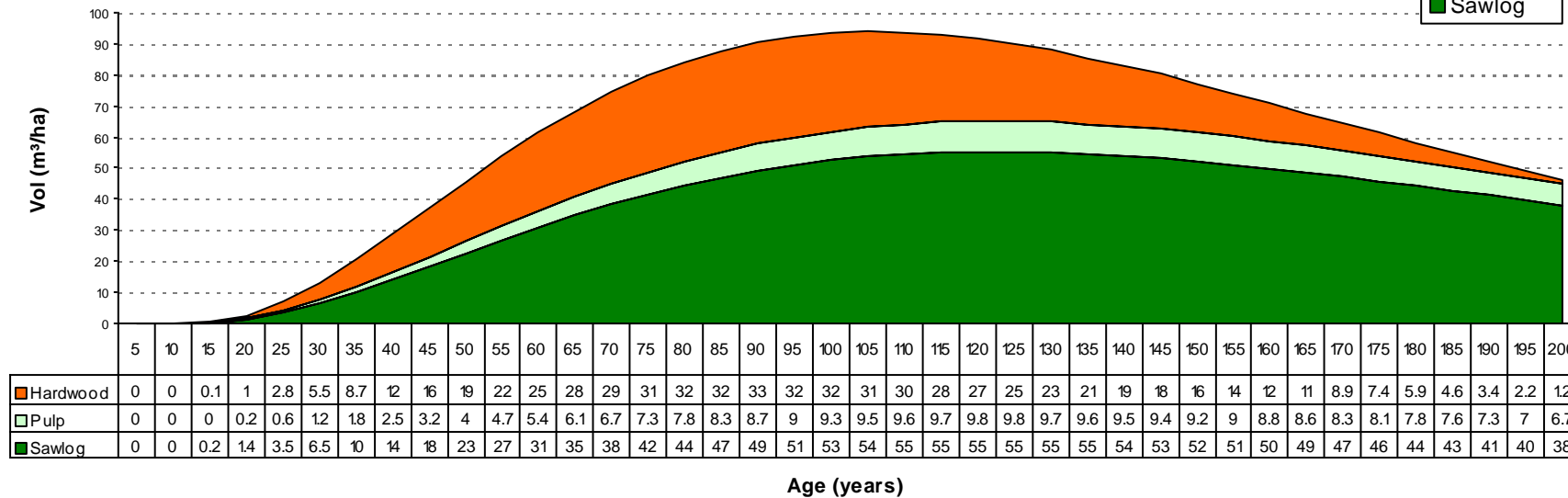
Yields at 10cm Utilization Standard

AU: SHsPtA\_1



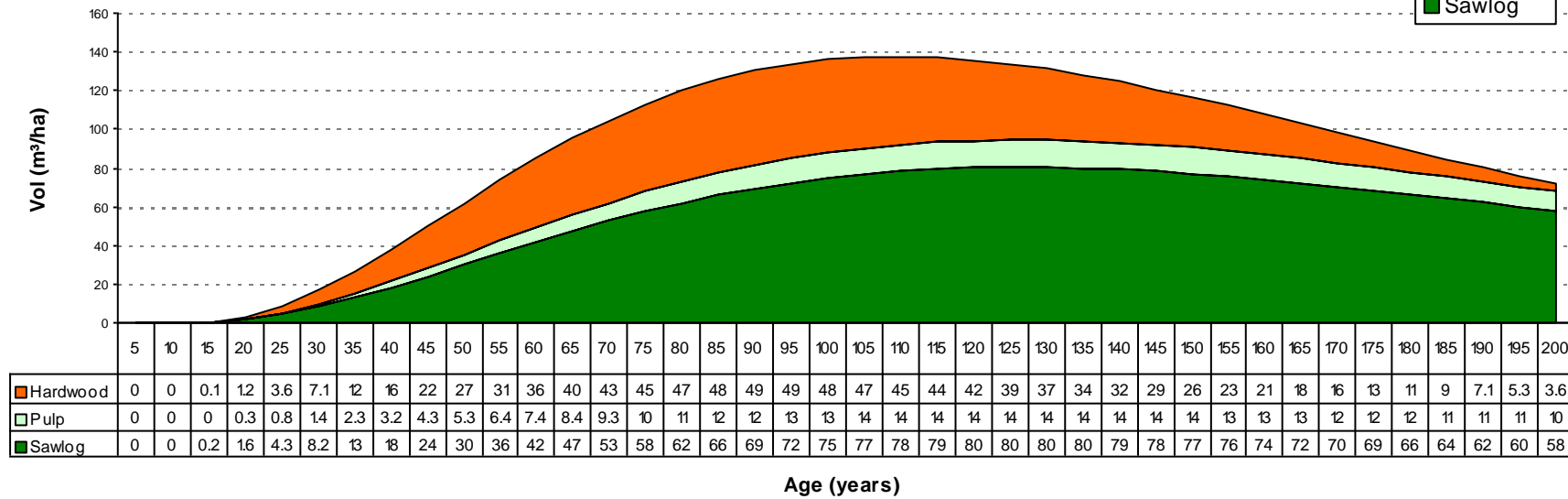
Yields at 10cm Utilization Standard

AU: SHsPtA\_2



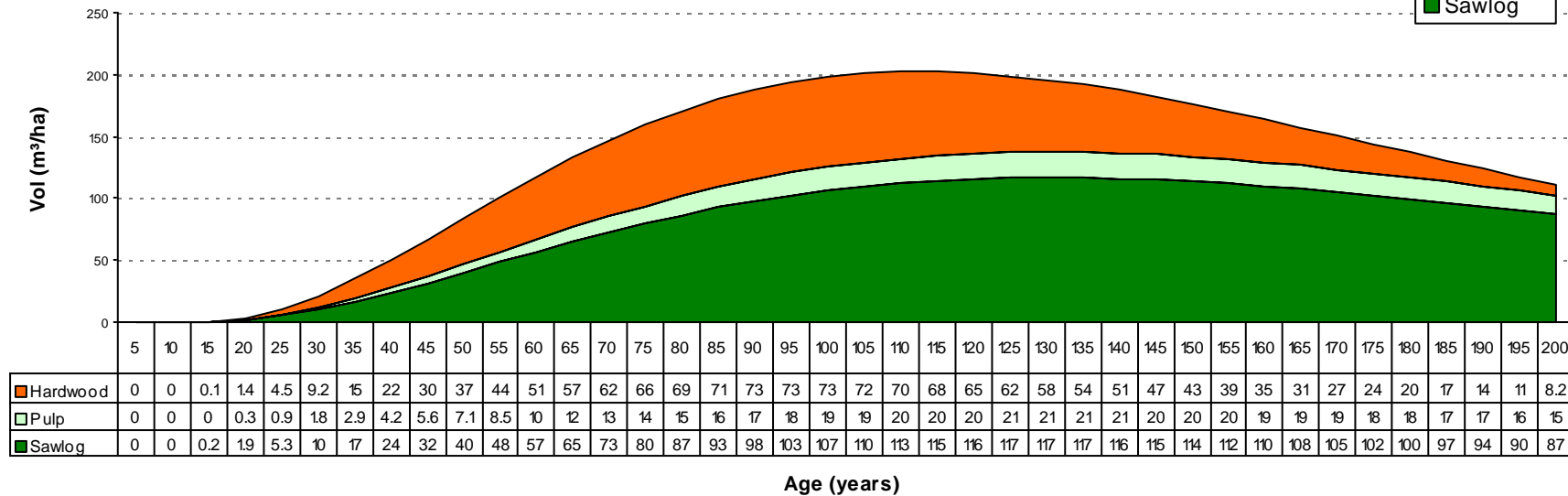
Yields at 10cm Utilization Standard

AU: SHsPtA\_3



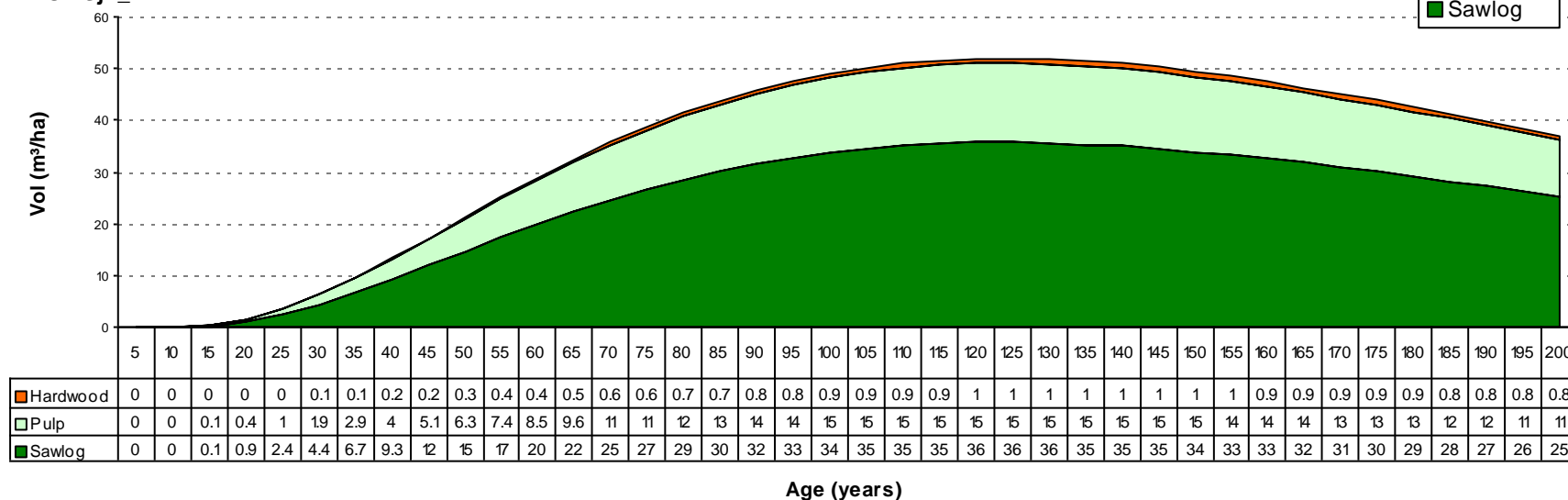
Yields at 10cm Utilization Standard

AU: SHsPtA\_4



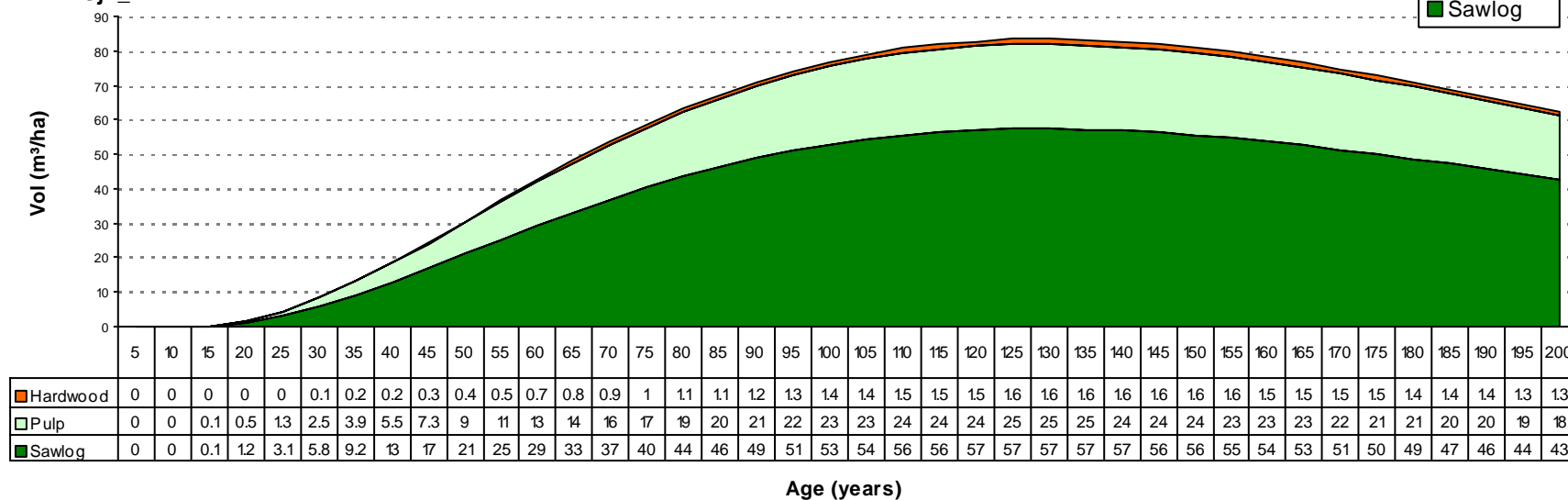
Yields at 10cm Utilization Standard

AU: SJP\_1



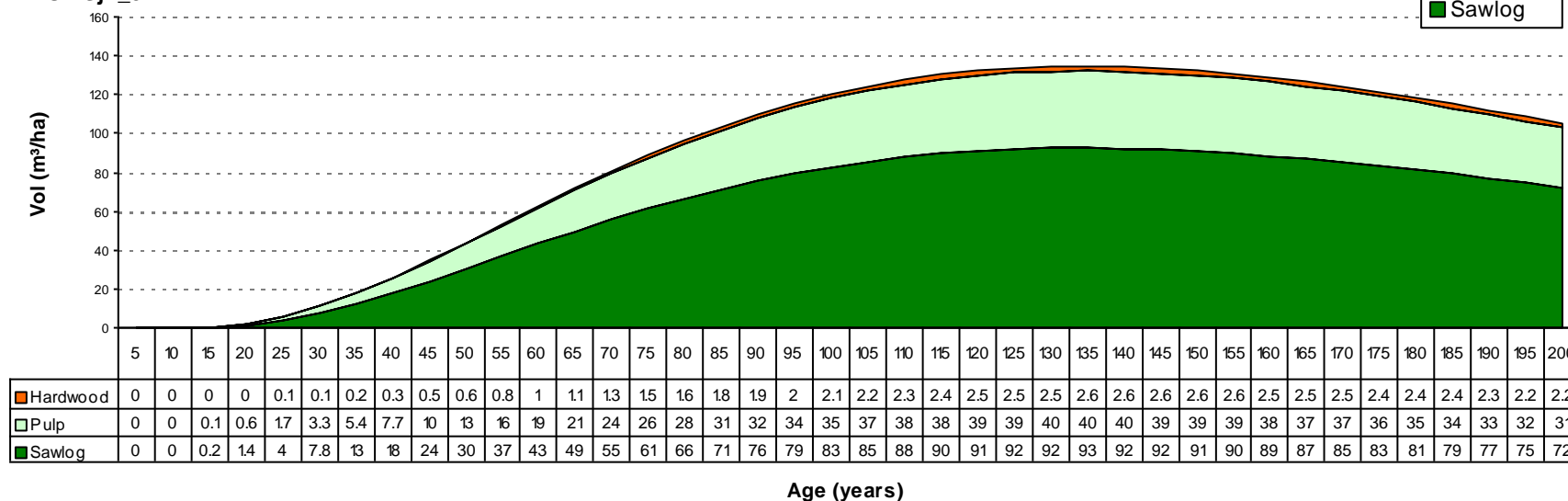
Yields at 10cm Utilization Standard

AU: SJP\_2



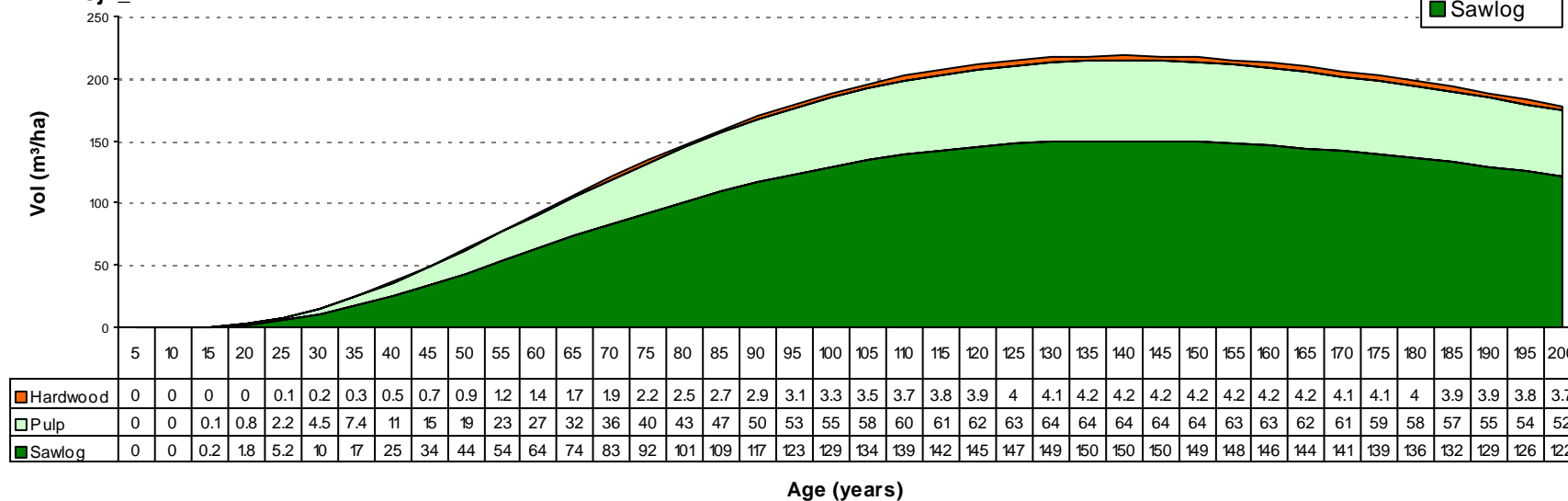
## Yields at 10cm Utilization Standard

AU: SJP\_3



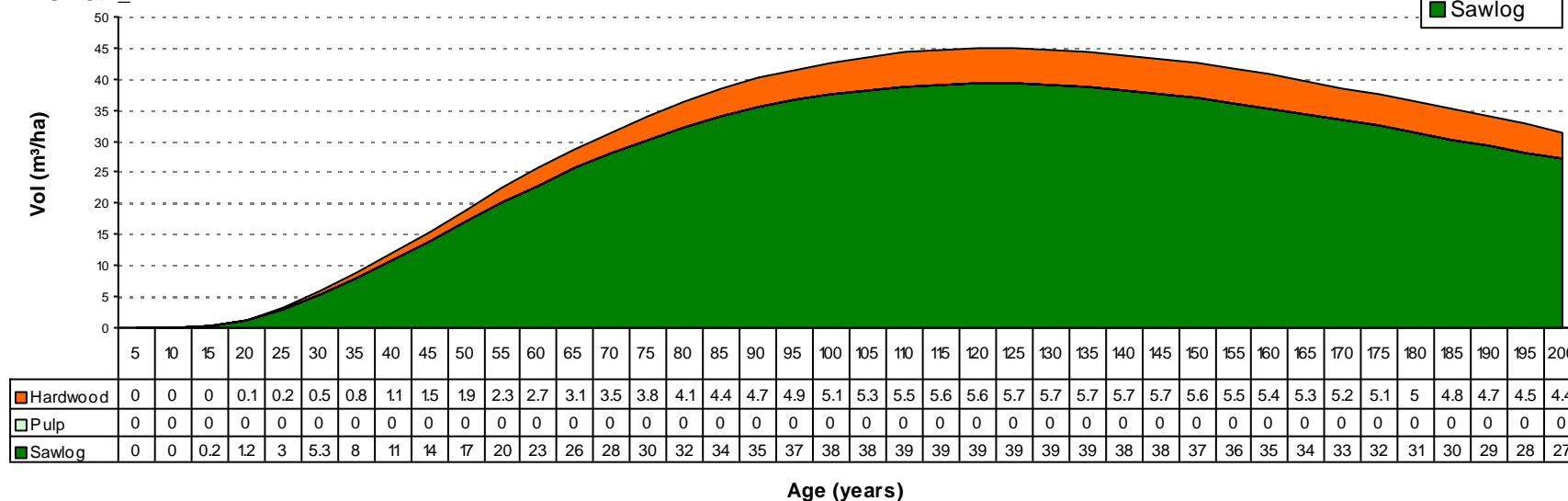
## Yields at 10cm Utilization Standard

AU: SJP\_4



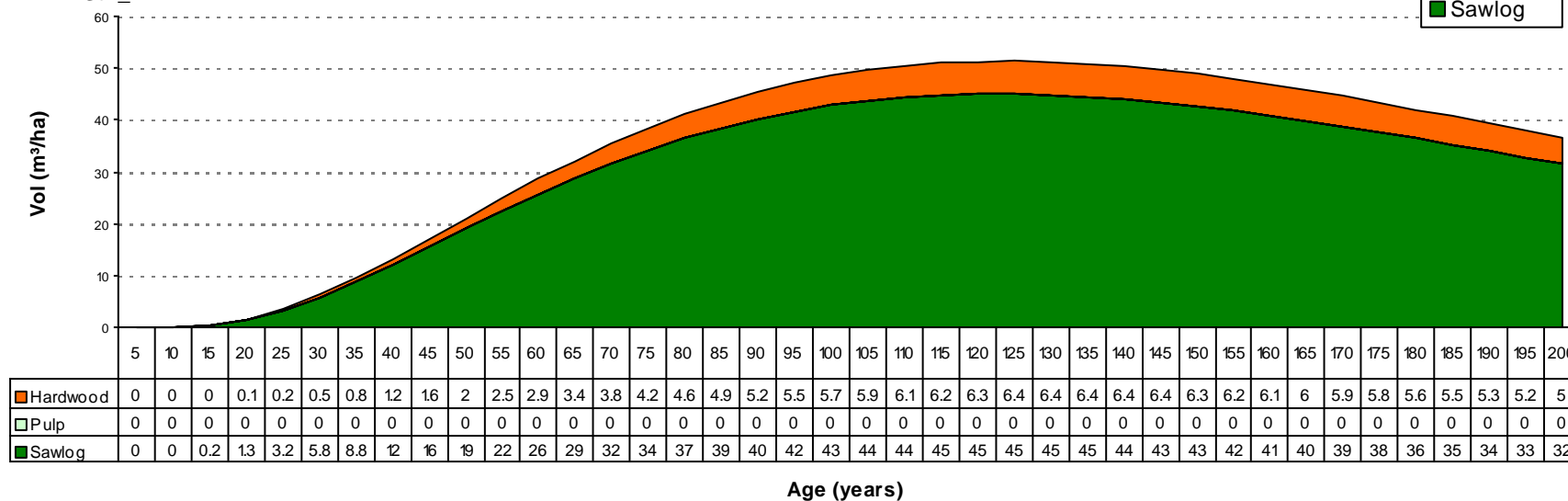
## Yields at 10cm Utilization Standard

AU: StL\_1



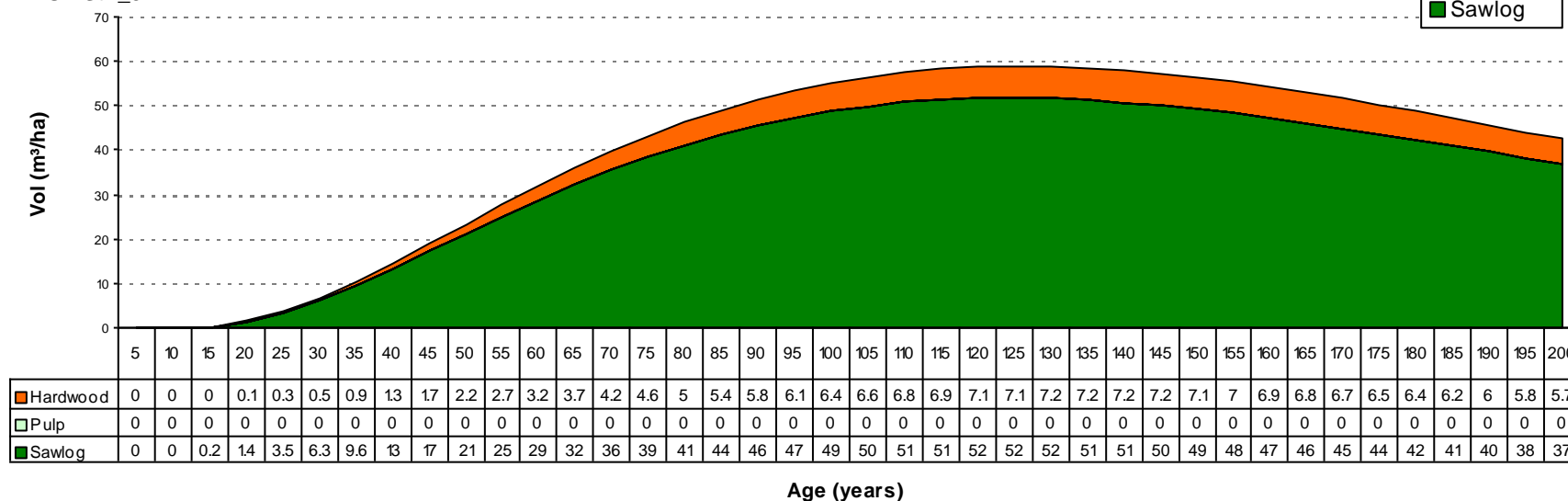
## Yields at 10cm Utilization Standard

AU: StL\_2



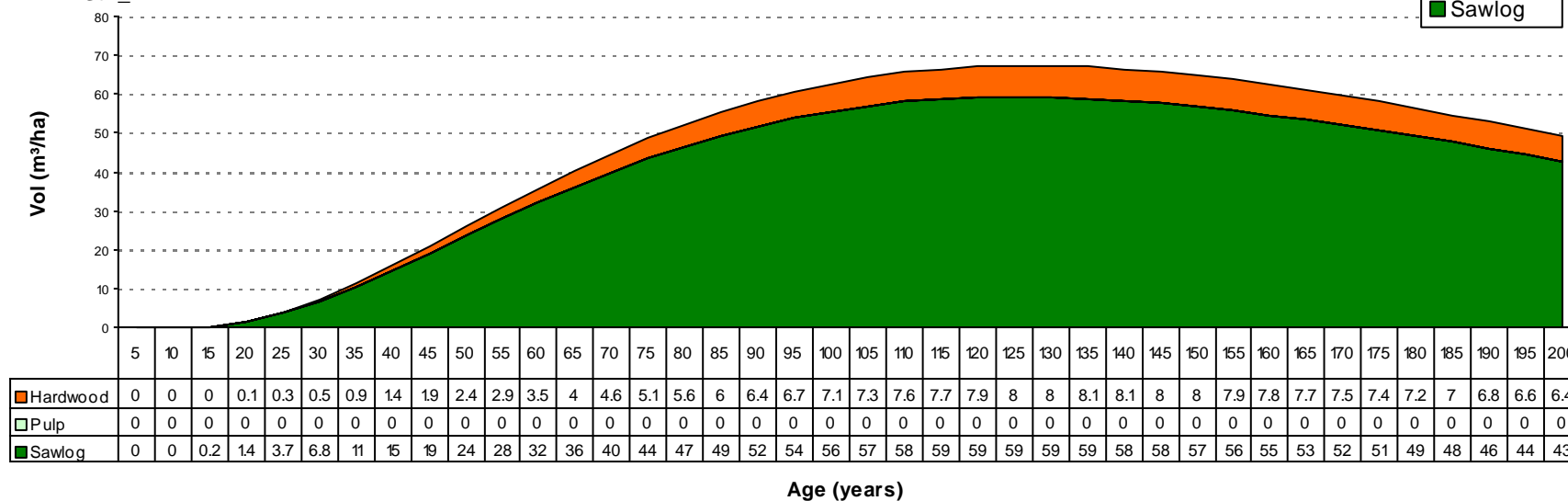
## Yields at 10cm Utilization Standard

AU: StL\_3



## Yields at 10cm Utilization Standard

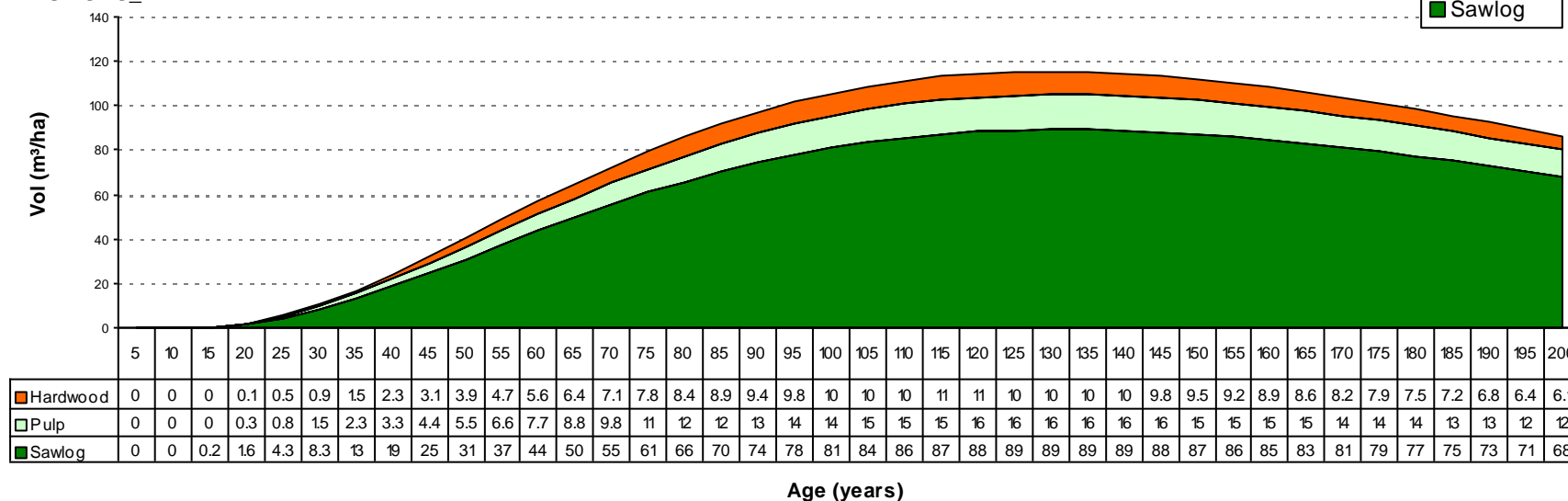
AU: StL\_4





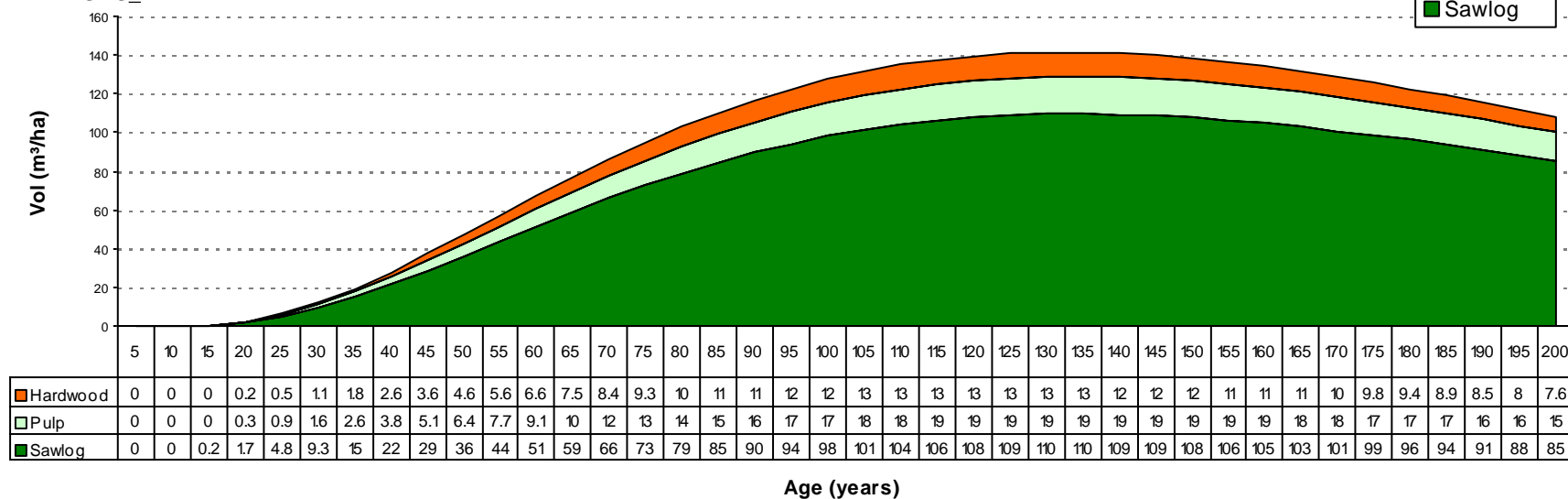
## Yields at 10cm Utilization Standard

AU: SwS\_1



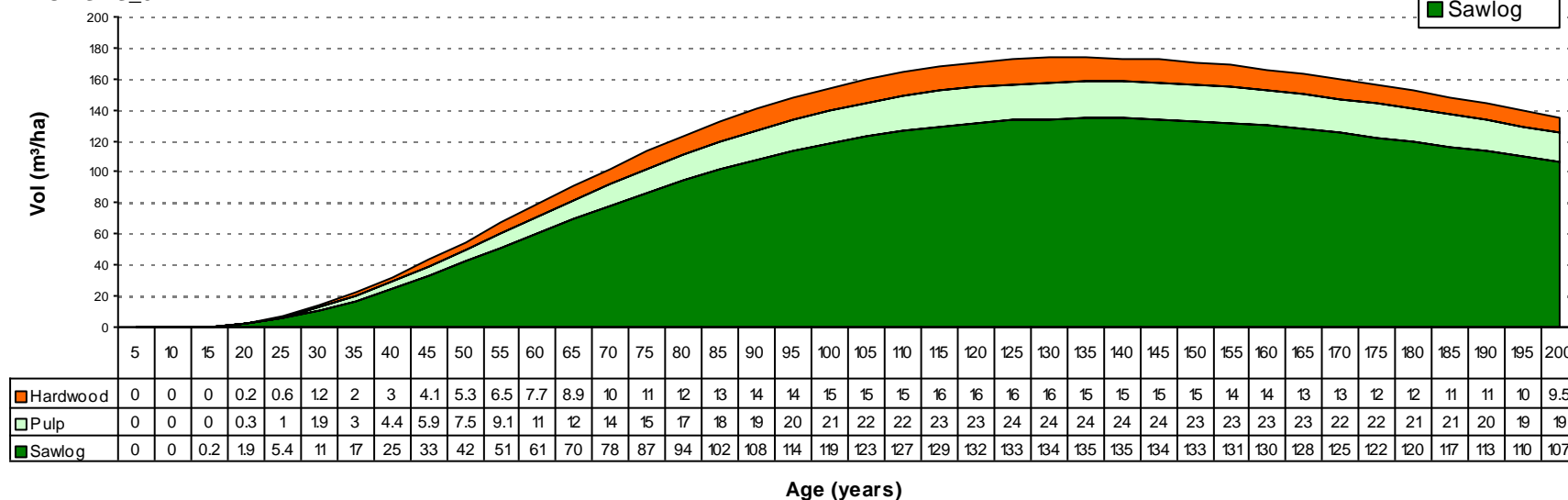
## Yields at 10cm Utilization Standard

AU: SwS\_2



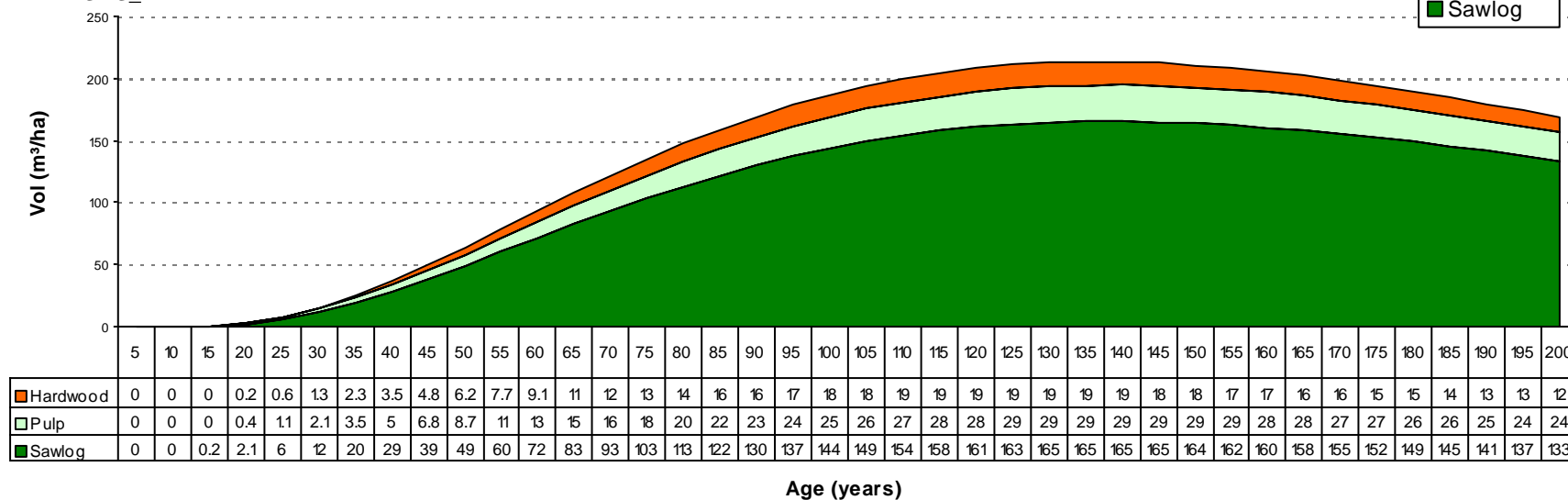
Yields at 10cm Utilization Standard

AU: SwS\_3



Yields at 10cm Utilization Standard

AU: SwS\_4



# Chapter 5

## Island Forests Area

### Forest Estate Modelling Report

June 3, 2016

Project [1272-3]

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Steve Spears of SPS Forestry & Environmental Inc. conducted all the timber supply modelling and Jeremy Hachey (Forsite) managed the project and contributed to the completion of the Data Package and Analysis Report.

## *Executive Summary*

This document contains the forest estate modelling methodology and results for the Island Forests (IF) Area. The IF Area is approximately 226,000 hectares in size, with 85.3% considered forested. The net land base, where timber harvesting is expected to occur, has been estimated at 71.2% of the total area (161,000 hectares).

The inventory for the IF was generated in 2006 and 2007 based on 1:30,000 aerial photography acquired in 2004. The Saskatchewan government performed updates to the inventory with the natural disturbances (i.e. fire and blowdown) so as to make it current to April 2015.

The yield curves for the IF were compiled in 2012 by the Saskatchewan government using 962 temporary sample plots established in 2007 and 2008.

A total of 15 scenarios were modelled using Woodstock. To accommodate the addition of provincial baseline scenarios proposed in the draft Forest Management Planning Standard after the modelling was complete the Forest Service will commit to the creation of an additional unconstrained baseline scenario that will explore the impact of a 8cm hardwood utilization with a 10 cm softwood utilization. This additional scenario will be an Addendum to the Forest Management Plan. The selected management scenario was formulated subject to the major constraints as follows:

1. Maintaining a minimum amount of operable growing stocks equivalent to 15 years of harvest;
2. Non declining operable growing stock in the last 50 years of the planning horizon;
3. Harvest volume from each species group in each planning period varied no more than 20% over the planning horizon;
4. Seral stage retention targets specified to 15% old or very old, and 5% very old as required by the Natural Forest Pattern (NFP) Standard;
5. 9% harvested area transitioned to the insular retention for meeting the request of the Natural Forest Pattern (NFP) Standard;
6. The total harvest volume allocated proportionally in each management unit;
7. Tamarack stands were excluded from the net area and
8. No Fire reduction factor applied.

The utilization standard for the selected management strategy is 8.0 cm Top Diameter Inside Bark (TDIB) for the softwood, 10 cm TDIB for the hardwood, cut to length, and 5.2 m for the first bole length. Saw log downgrade factors were applied for improving the quality of the sawlog volume determined in the model.

The selected management strategy supports a softwood saw log harvest volume schedule (HVS) of 52,000 m<sup>3</sup>/year, a softwood pulp HVS of 26,000 m<sup>3</sup>/year, and a hardwood HVS of 37,000m<sup>3</sup>/year for next FMP term.

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## **1 Introduction**

This document describes the forest estate modelling conducted for the Island Forests (IF) Area as part of the 20-year Forest Management Plan (FMP). A full description of the study area, the work conducted to prepare the data, and the assumptions used in the model are detailed in a complementary document entitled Forest Estate Modelling Assumptions (FEMA) prepared by Forsite.

Forest estate modelling is employed to assess timber supply and forecast forest related indicators over time. Determining a sustainable timber supply involves consideration of a wide range of physical, biological, social, and economic factors that can influence the acceptable rate of timber harvesting within a management unit. The factors encompass both the timber and non-timber values found on the land base, and ensure that timber harvesting objectives are balanced with the non-timber objectives (concerns for wildlife, biodiversity, recreational opportunities, etc.).

The forest estate modelling documented here explores several management strategies (candidate scenarios) and associated sustainable rates of harvest over a 200-year planning horizon while considering both timber and non-timber objectives. Through consultations with the forest management planning team, the management strategy that best fit the desired outcomes was selected as the preferred scenario for the 20-year FMP.

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## **2 Study Area**

### **2.1 Location**

The IF Area encompasses more than 226,000 hectares of Crown forest land located in north-central Saskatchewan around the city of Prince Albert (Figure 1).



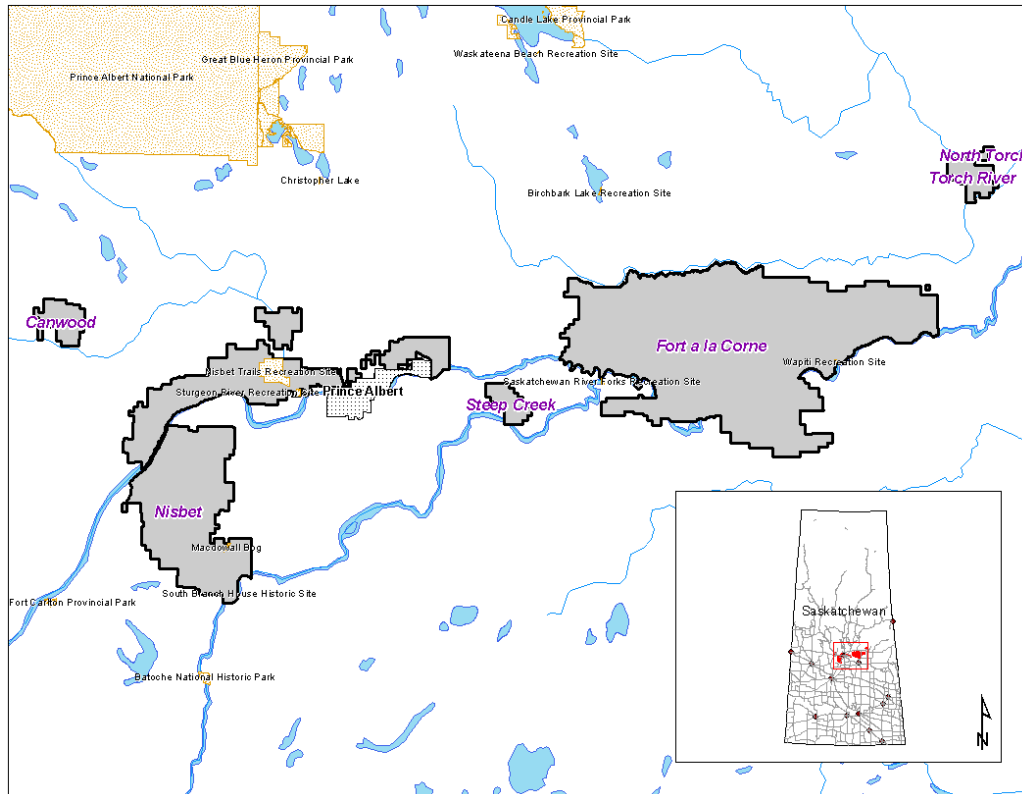


Figure 1 Location and Extent of Island Forests Timber Supply Area

## 2.2 Land Base Definition

This section describes the assumptions used to support land base definitions. Five key land base definitions are made:

1. **Total Area:** the gross area within the legal and geographic extents of the IF boundaries.
2. **Permanent Exclusions:** includes non-forest, unproductive, water, and designated/protected lands
3. **Managed Forest Land Base (MFLB):** the subset of the Productive Forest Land Base (PFLB) that is allowed to contribute toward meeting both timber and non-timber values. It consists of all Partial Exclusion areas and the Net land base as defined in the Forest Management Planning Document (FMPD) Appendix 6, section 13.2.4 (2007 version).
4. **Partial Exclusions:** forested areas within the MFLB where harvesting is not expected to occur for specified reasons.
5. **Net Area:** the subset of the MFLB that contributes to the timber supply.

## 2.3 Land Base Statistics

This section of the document describes the current state of this Timber Supply Area (TSA) and provides descriptions and statistical information useful for understanding timber supply analysis results.

Approximately 89% of the total area of the IF is considered productive forest (Table 1 and Figure 2), and the other 11% of the land base is considered non-productive (e.g. water bodies, flooded lands, pastures, and muskeg). Within the MFLB, once forested exclusions are removed, approximately 80% is

considered net area available for timber harvesting (represents 71% of the total IF Area) (Figure 3 and 4).

*Table 1 Land Base Area Netdown Summary*

<b>Description</b>	<b>Area (ha)</b>	<b>Percent of Total Area</b>	<b>Percent of Forested Area</b>
<b>Island Forests Total</b>	<b>226,269</b>	<b>100%</b>	
Less Permanent Exclusions:			
Unproductive	23,413	10%	
Water	1,683	1%	
First Nations Reserves, Private land, etc.	8,221	4%	
<b>Managed Forest Land Base</b>	<b>192,953</b>	<b>85%</b>	<b>100%</b>
Less Partial Exclusions:			
Representative Area Network	11,521	5%	6%
Proposed Representative Area Network	3,698	2%	2%
Mistletoe	3,211	1%	2%
Steep Slopes	1,057	0%	1%
Riparian	1,968	1%	1%
Tamarack	10,506	5%	5%
<b>Net Area</b>	<b>160,992</b>	<b>71%</b>	<b>83%</b>

Figure 3 shows that landbase statistics by the management unit. There is about 60,000 ha net area in the IF-WEST management unit, accounting for about 40% of the total net area within the IF TSA.

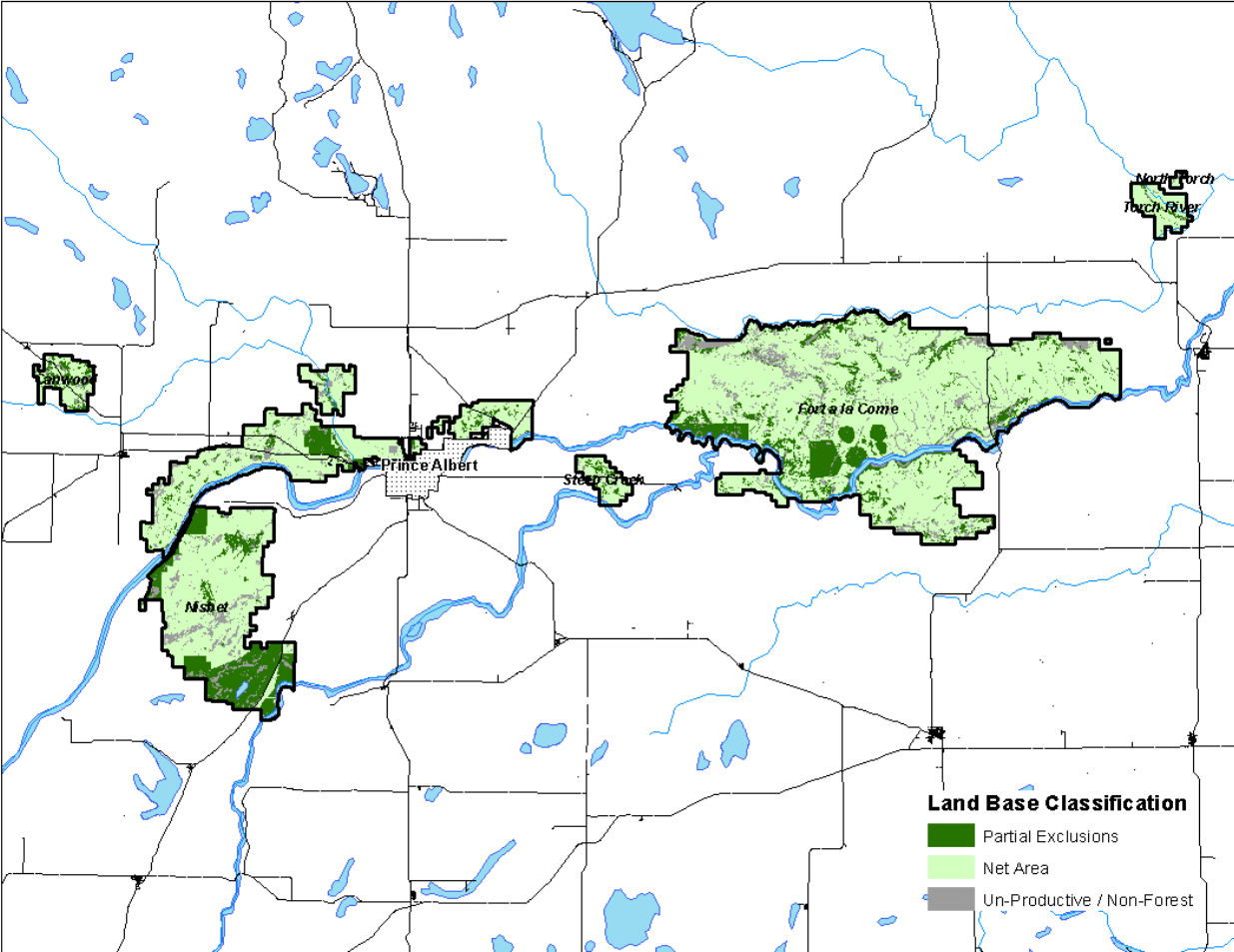


Figure 2 Land Base Classification for the Island Forests Timber Supply Area

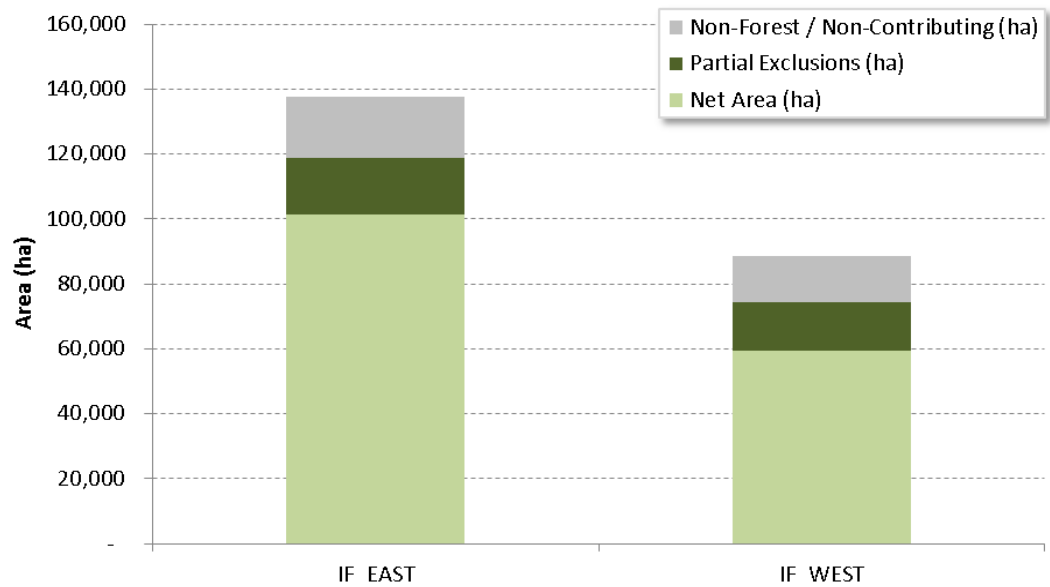


Figure 3 Land Base Classification by Management Unit

Within the net area, approximately 53% is softwood stands, of which 43% is jack pine dominated (JLP) Provincial Forest Type (PFT), 5% black spruce and tamarack dominated (BSL), and 4% white spruce or balsam fir dominated (WSF), 33% is hardwood dominated (TAB/AOH), and 14% is mixed-wood stands such as trembling aspen with jack pine (HPM), hardwood with spruce, balsam fir or tamarack (HSM), jack pine with trembling aspen (PMW), and white spruce with trembling aspen (SMW) (Figure 4).

Figure 5 shows the current age class distribution of the net area by cover species group (CSG). The age classes are not evenly distributed across the land base with the majority of the net area falling into three age classes (21-40, 61-80 and 81-100) and a small amount of area older than 100 years. Also, the net area is dominated by cover species groups Softwoods(S) or Hardwoods (H) in each age class (Figure 5).

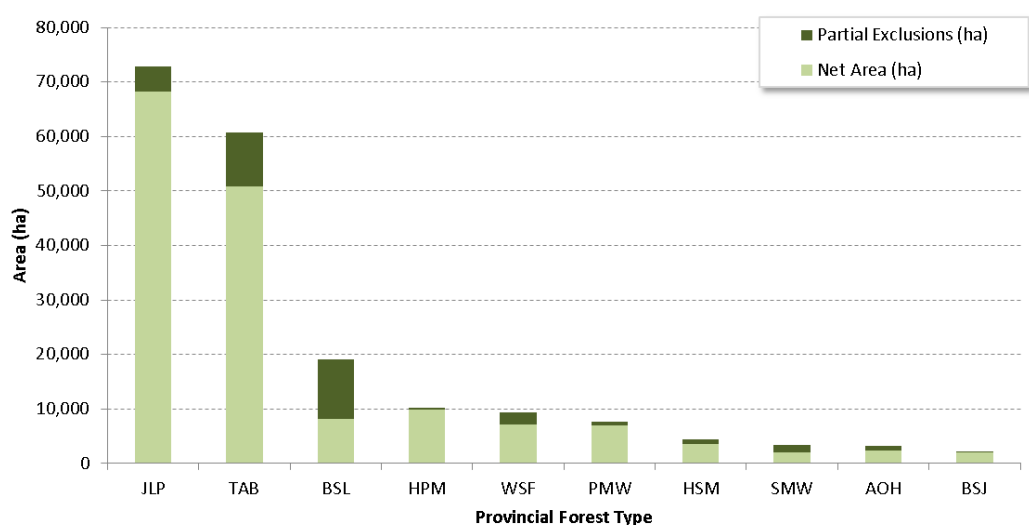


Figure 4 Provincial Forest Types in the Managed Forest Land Base

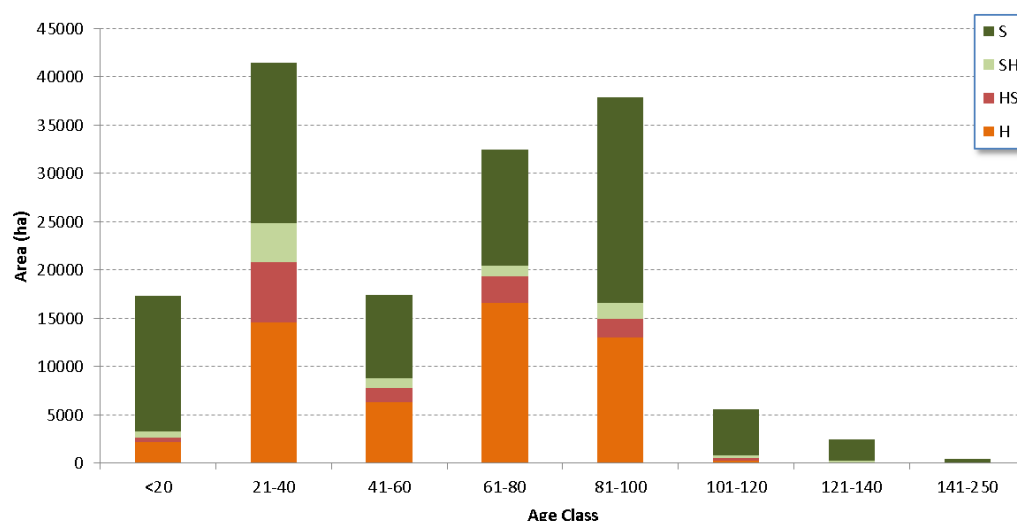


Figure 5 Current Age Class Distribution of the Net Land Base by Cover Species Group

### 3 Summary of Modelling Assumptions

This section provides a summary of the key modelling assumptions. Full details can be found in the Forest Estate Modelling Assumptions.

The Woodstock™ ([www.remsoft.com](http://www.remsoft.com)), the forest estate modelling computer software, was used in the analysis. The model was run for a 200-year planning horizon split into forty 5-year planning periods. The approved planning inventory (GIS resultant file) for the FMA was used as model input. Full details around development of the planning inventory file are found in the modelling assumptions document.

### 3.1 Forest Inventory, Growth and Yield, and Harvesting/Silviculture

The inventory for the IF Area was provided by the Saskatchewan Forest Service generated in 2006 and 2007 based on 1:30,000 aerial photography flown in 2004.

Natural stand yield curves were compiled by the Timberline in 2012 from approximately 950 temporary sample plots established in 2007 and 2008, stratified into 11 development types (species combinations) and further split by crown closure classes. Yield curves were created for each development type and crown closure combination at 3 utilization specifications: a 10 cm Top Diameter Inside Bark (TDIB), an 8 cm TDIB, and a 5 cm TDIB. Cull factors, which accounts for decayed wood, for Survey Zone C50<sup>1</sup> were used to adjust all the yield curves with the softwood and hardwood species.

All curves reach a stand breakup age and then undergo succession. For hardwoods, succession occurred between 140-170 years old, and for softwoods between 140-180 years old.

Silviculture treatments were predominantly clear cut with retention. Stands were regenerated following predefined transition rules based on silviculture treatment options (STO). A summary of the modelled Analysis Units (AUs), their operability windows, and regeneration delays can be found in Appendix I.

Endemic losses from pest and disease are reflected in the yield curves. No recognition of catastrophic losses (i.e. wind throw, fire) are included in the analysis. Fire losses were not modelled.

### 3.2 Non-Timber Objectives

In-block retention of areas representative of those being harvested was modelled at 9%. This was incorporated as part of the transition rules implemented, which allowed retained areas to contribute towards old and very old seral requirements.

Old seral and very old seral stands were maintained on the land base within two geographic management units (MU's – see Figure 6) and within five stand types (H, HS/SH, bS, wS, Jp) for a total of 10 independent targets. A minimum of 15% of the MFLB in each MU/stand type had to be in old or very old seral stage, and 5% of that amount had to be at very old seral stage.

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<sup>1</sup> With ecodistrict as reference, the commercial forest area in Saskatchewan was classified into different survey zones that, at a landscape level, reflect the relationship among forest vegetation, soil and climate characteristics.

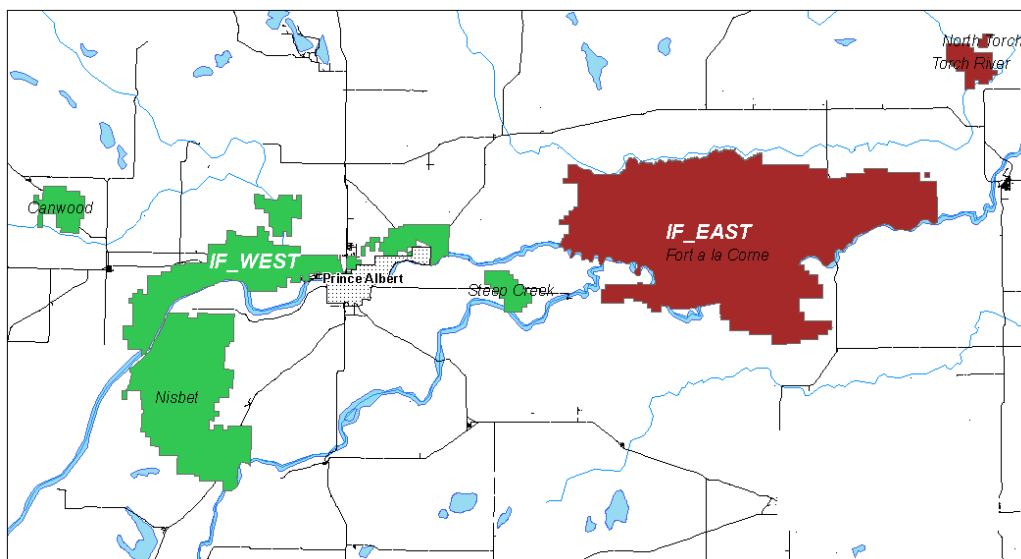


Figure 6 Management Units for Managing Old Forest

#### 4 The LRSY Calculation

The long run sustained yield (LRSY) was calculated by determining, for each yield group (YG), the product of maximum Mean Annual Increment (MAI) and net area (completed for each utilization standard). The reference year for hardwood stands was based on maximum hardwood MAI, mixed-wood stands was based on the maximum total MAI, and softwood stands was based on the maximum softwood MAI.

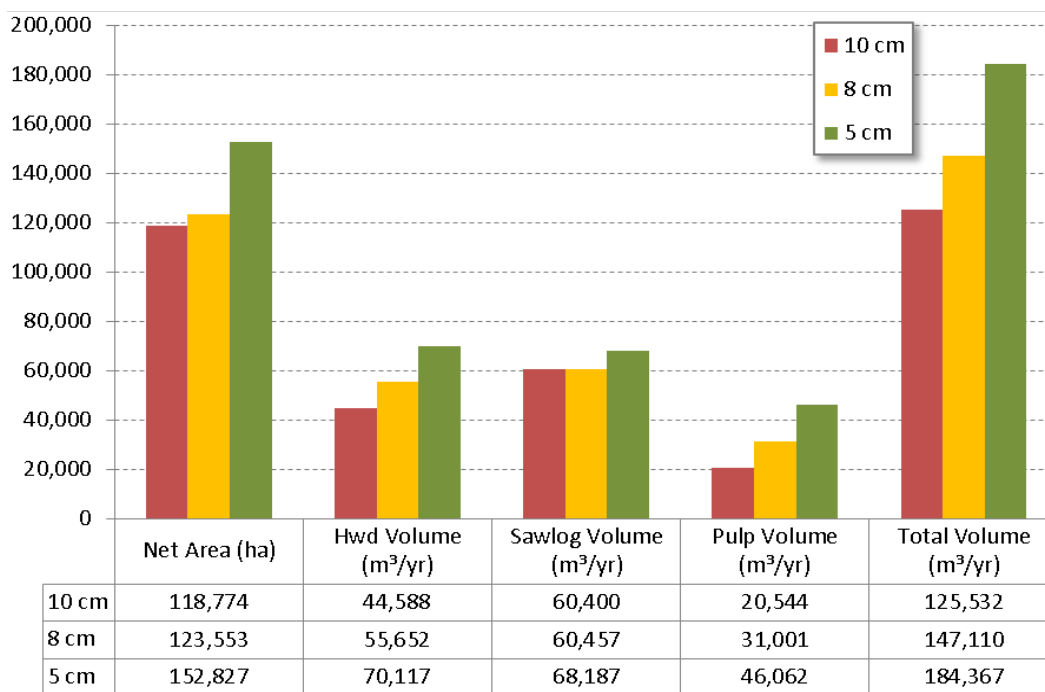


Figure 7 Summary of LRSY Calculations for 10, 8, and 5 cm Utilizations Considering Merchantability

This LRSY calculation suggests that with the 10 cm TDIB, the maximum long term harvest level for this land base would be approximately 44,600 m<sup>3</sup>/year for hardwood, 60,500 m<sup>3</sup>/year for softwood sawlog, and 20,500 m<sup>3</sup>/year for pulp (Figure 7). These harvest levels would only be achieved if no constraints are applied in the model and stands could all be harvested at exactly the assumed age. Actual harvest levels can vary substantially from these levels.

## 5 Scenarios

A total of 14 scenarios were formulated: one no harvest scenario, four unconstrained baseline scenarios that explored the impact of different utilization levels, five scenarios that explored impacts of applying incremental constraints, and four sensitivities to the SMS. Table 2 provides a summary of the scenarios and highlights the variables that change with each scenario.

Table 2 Scenarios Investigated

Scenario Category	Scenario #	Yield Adjustment	Utilization	Flow Constraints	Stand Level Retention	Operable Growing Stock	Harvest Species Group Distribution	Management Unit Distribution	Old and Very Old Seral	Wildlife Habitat
Baseline	1	N/A	N/A	N/A	9%	tracking only	tracking only	tracking only	tracking only	tracking only
	2	N/A	Softwood 8cm/ Hardwood 10cm	Even Flow	9%	Non-declining for last 50 years	tracking only	tracking only	tracking only	tracking only
	3	N/A	10 cm	Even Flow	9%	Non-declining for last 50 years	tracking only	tracking only	tracking only	tracking only
	4	N/A	8 cm	Even Flow	9%	Non-declining for last 50 years	tracking only	tracking only	tracking only	tracking only
	5	N/A	5 cm	Even Flow	9%	Non-declining for last 50 years	tracking only	tracking only	tracking only	tracking only
Incremental Constraints	6	N/A	Softwood 8cm/ Hardwood 10cm	Even flow for 20 years then 20% variation for remaining 180 years	9%	None	tracking only	tracking only	tracking only	tracking only
	7	N/A	Softwood 8cm/ Hardwood 10cm	Even flow for 20 years then 20% variation for remaining 180 years	9%	Non-declining for last 50 years, ≥ 15 years Hw/Sw operable	tracking only	tracking only	tracking only	tracking only



Scenario Category	Scenario #	Yield Adjustment	Utilization	Flow Constraints	Stand Level Retention	Operable Growing Stock	Harvest Species Group Distribution	Management Unit Distribution	Old and Very Old Seral	Wildlife Habitat
	8	N/A	Softwood 8cm/ Hardwood 10cm	Even flow for 20 years then 20% variation for remaining 180 years	9%	Non-declining for last 50 years, $\geq 15$ years Hw/Sw operable	<b>20% for variance for spruce, jack pine, and hardwood</b>	tracking only	tracking only	tracking only
	9	N/A	Softwood 8cm/ Hardwood 10cm	Even flow for 20 years then 20% variation for remaining 180 years	9%	Non-declining for last 50 years, $\geq 15$ years Hw/Sw operable	20% for variance for spruce, jack pine, and hardwood	<b>Monitor and control if necessary</b>	tracking only	tracking only
	10	N/A	Softwood 8cm/ Hardwood 10cm	Even flow for 20 years then 20% variation for remaining 180 years	9%	Non-declining for last 50 years, $\geq 15$ years Hw/Sw operable	20% for variance for spruce, jack pine, and hardwood	Monitor and control if necessary	<b>15% Old/Very Old, 5% Very Old</b>	tracking only
<b>Sensitivity</b>	11	Yields +10%	Softwood 8cm/ Hardwood 10cm	Even flow for 20 years then 20% variation for remaining 180 years	9%	Non-declining for last 50 years, $\geq 15$ years Hw/Sw operable	20% for variance for spruce, jack pine, and hardwood	<b>Maintain controls from SMS</b>	15% Old/Very Old, 5% Very Old	tracking only
	12	Yields -10%	Softwood 8cm/ Hardwood 10cm	Even flow for 20 years then 20% variation for remaining 180 years	9%	Non-declining for last 50 years, $\geq 15$ years Hw/Sw operable	20% for variance for spruce, jack pine, and hardwood	Maintain controls from SMS	15% Old/Very Old, 5% Very Old	tracking only
	13	Increase Yields for Managed Stands Only by 10%	Softwood 8cm/ Hardwood 10cm	Even flow for 20 years then 20% variation for remaining 180 years	9%	Non-declining for last 50 years, $\geq 15$ years Hw/Sw operable	20% for variance for spruce, jack pine, and hardwood	Maintain controls from SMS	15% Old/Very Old, 5% Very Old	tracking only
	14	N/A	Softwood 8cm/ Hardwood 10cm	Even flow	9%	Non-declining for last 50 years, $\geq 15$ years Hw/Sw operable	20% for variance for spruce, jack pine, and hardwood	Maintain controls from SMS	15% Old/Very Old, 5% Very Old	tracking only

## 6 Scenario Modelling Results

### 6.1 Timber Focused (Baseline) Scenarios

#### 6.1.1 No Harvest

The first scenario completed was a no harvest scenario. This explored the resulting forest condition over time given the succession and subsequent transition assumptions embedded in the model. Growing stock over time is presented in Figure 8. Succession assumptions prevent growing stock from accumulating indefinitely. Figure 9 shows the amount of volume lost due to succession and stand break up. No natural disturbances were assumed.

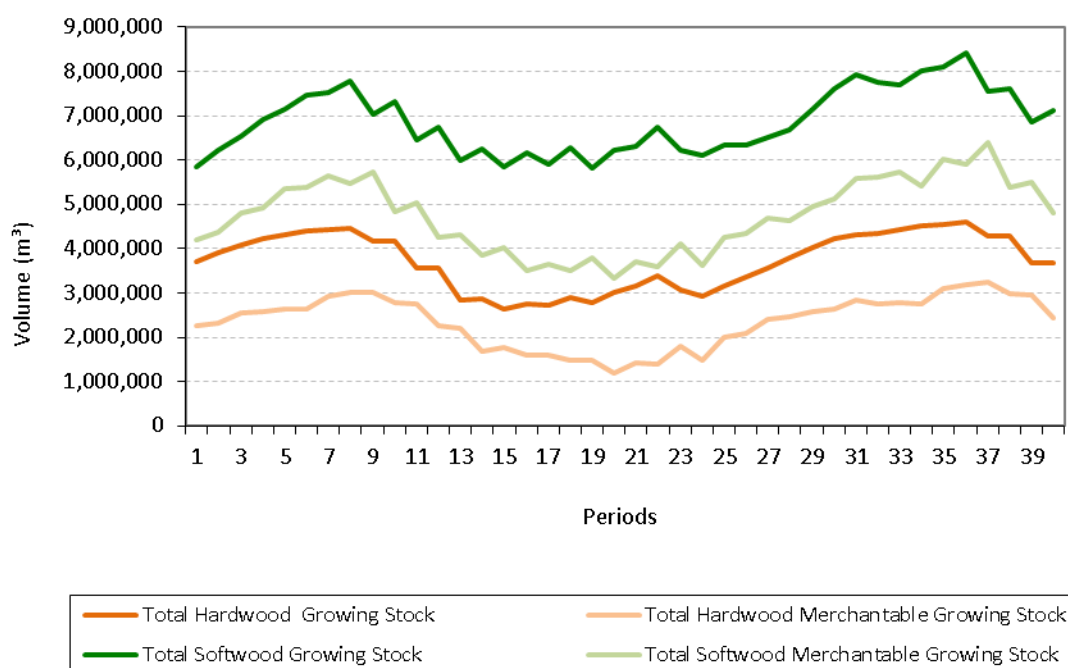


Figure 8 Total and Merchantable Growing Stocks for the No Harvest Scenario

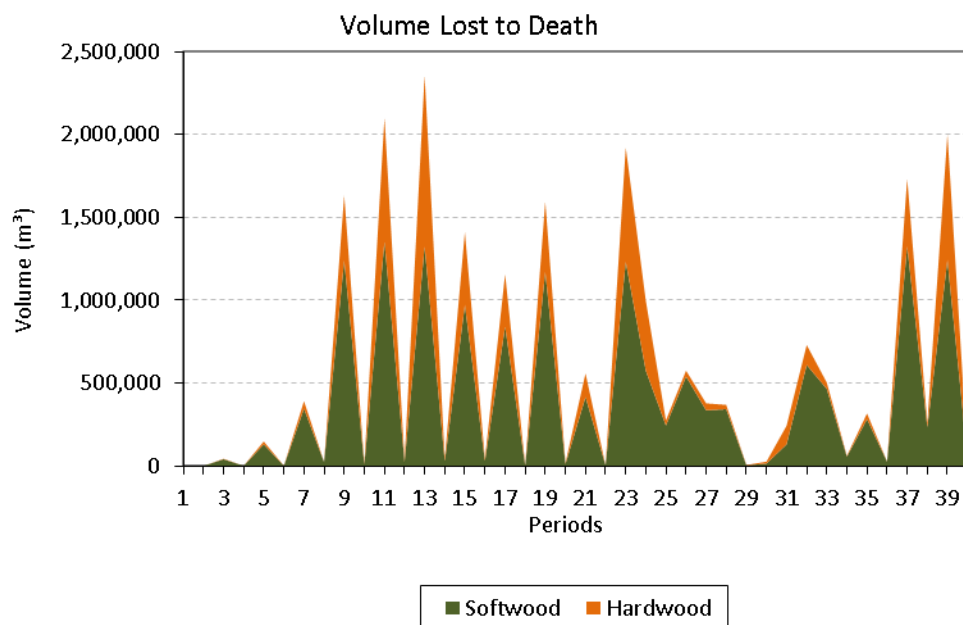


Figure 9 Volume Lost to Succession / Death for the No Harvest Scenario

Habitat metrics are shown for Fisher, Moose, and Warbler in Figures 10, 11 and 12, respectively. Again, embedded succession assumptions mean that some wildlife habitats experience declines even in the absence of harvesting treatment due to stand break up and succession.

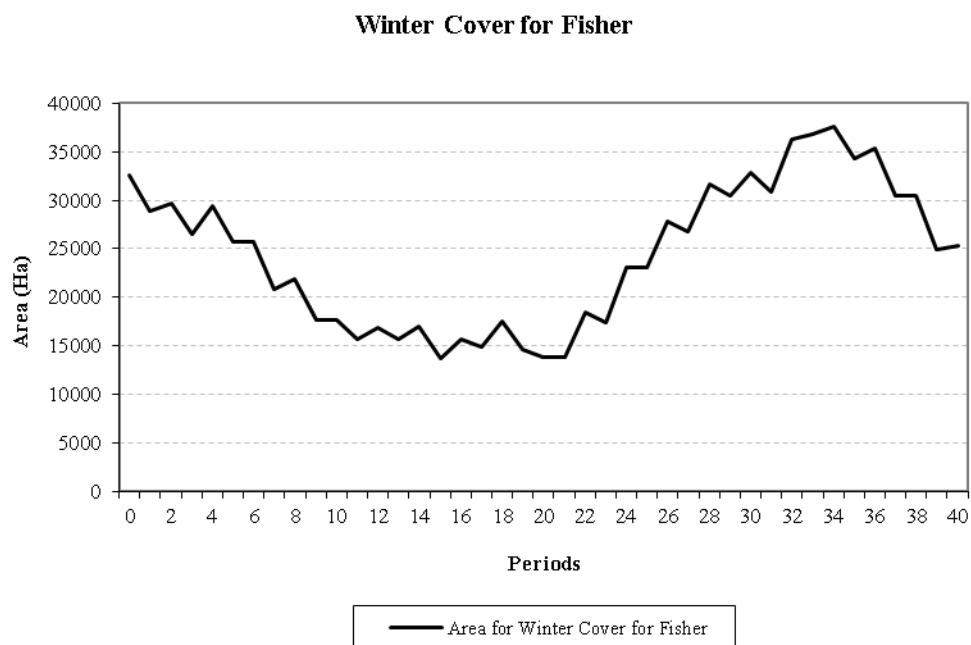


Figure 10 Winter Cover for Fisher for the No Harvest Scenario

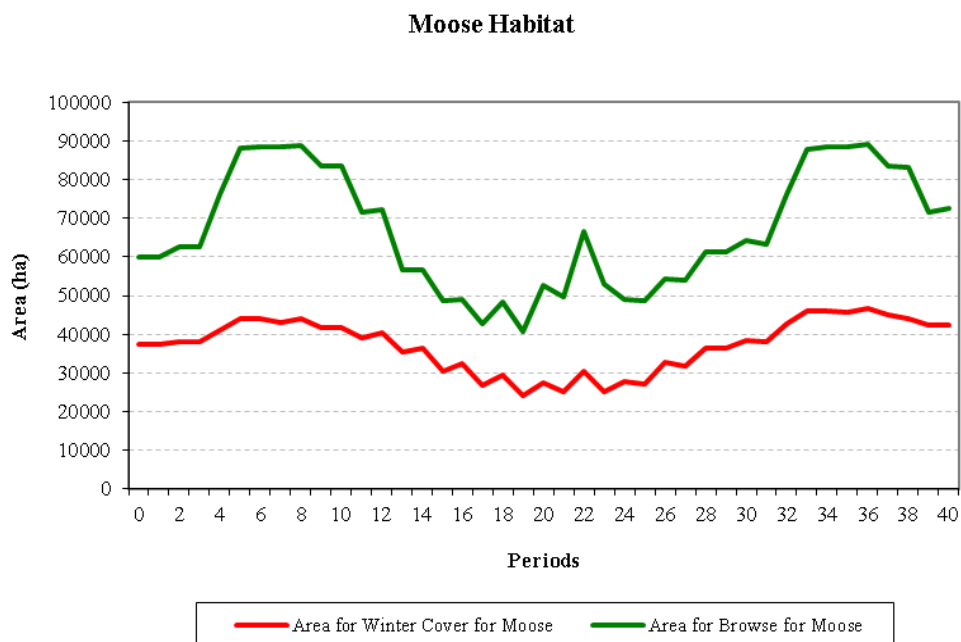


Figure 11 Moose Habitat for the No Harvest Scenario

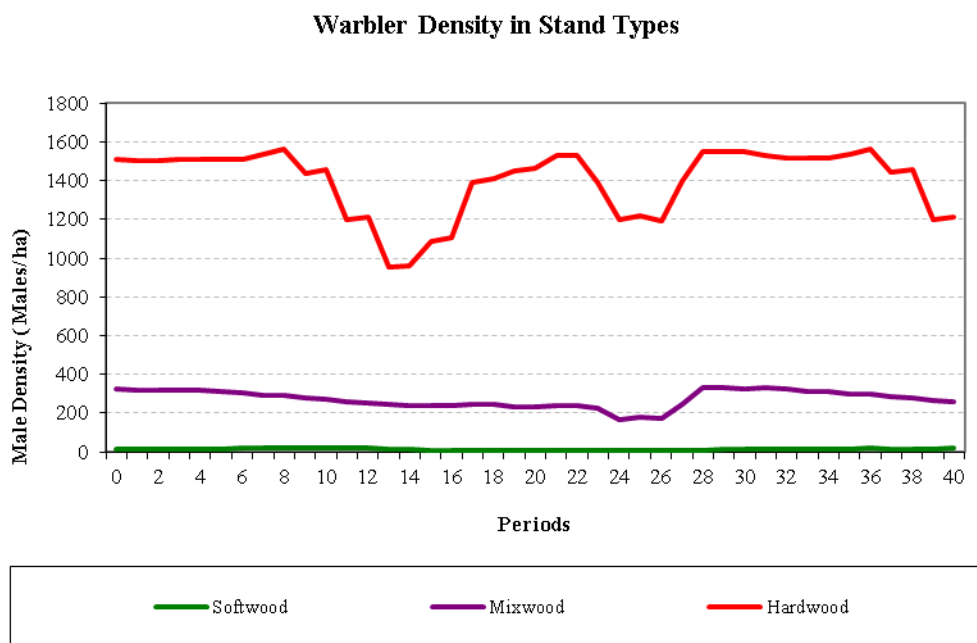


Figure 12 Male Warbler Density for the No Harvest Scenario

Old seral conditions over time relative to minimum targets are shown for each stand type for the West Management Unit (Figure 13) as well as the East Management Unit (Figure 14). This also showcases the impact to seral conditions resulting from modelled succession and transition patterns, even in the absence of harvest disturbances.

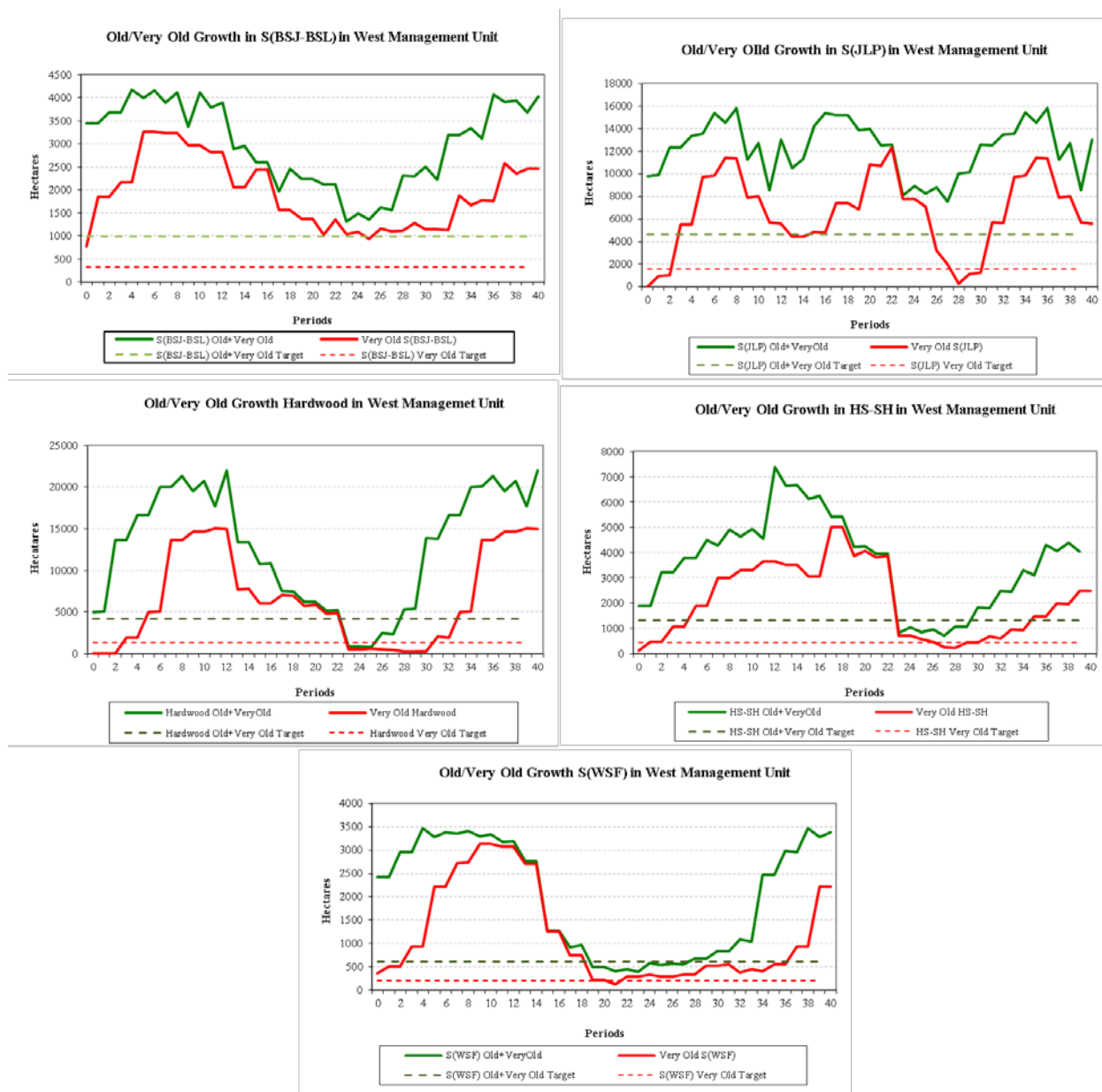


Figure 13 Old and Old or Very Old Seral Condition in the West Management Unit Relative to Target Minimums for the No Harvest Scenario

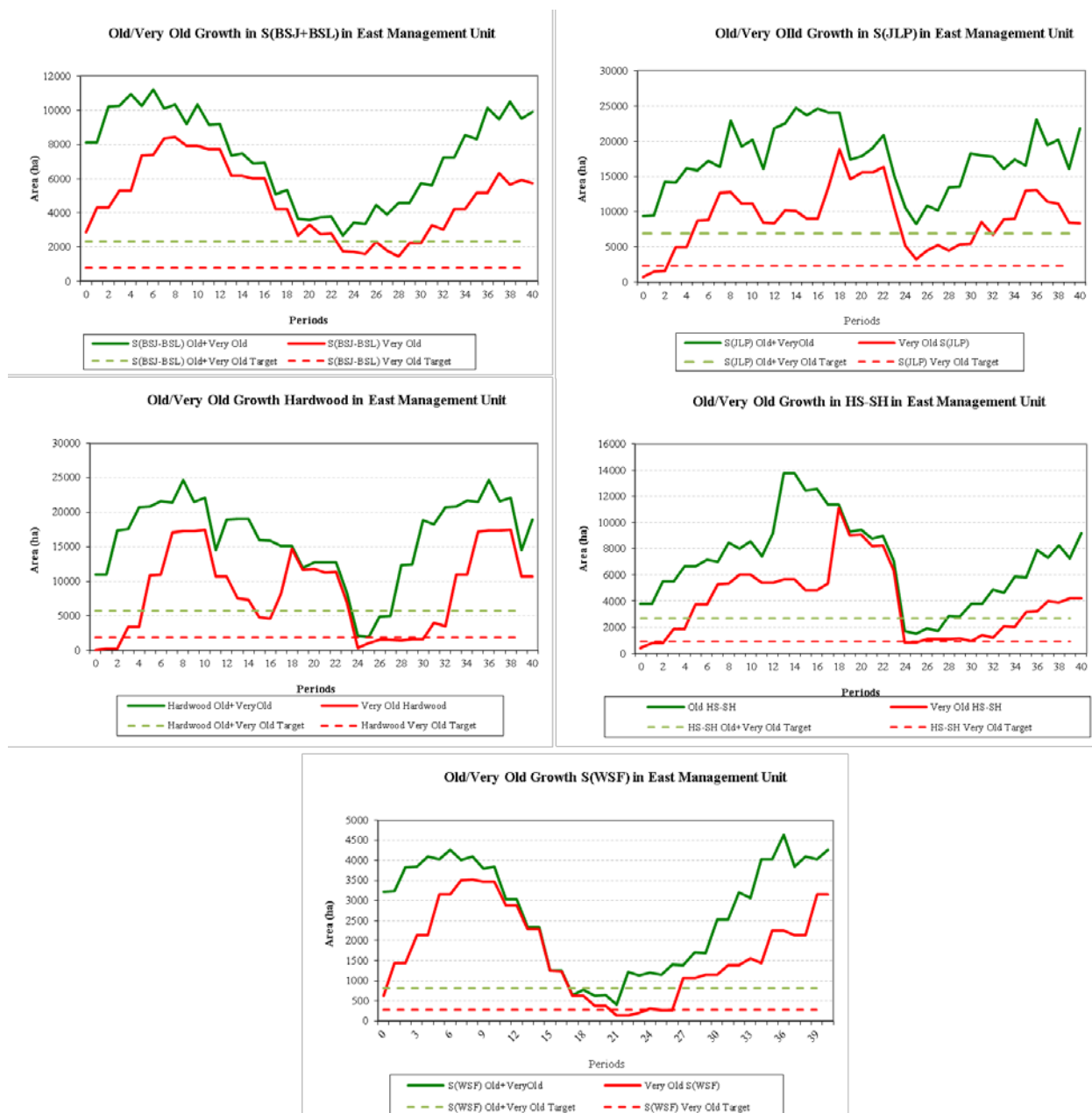


Figure 14 Old and Old or Very Old Seral Condition in the East Management Unit Relative to Target Minimums for the No Harvest Scenario

### 6.1.2 Baseline Scenario Comparisons

A summary of the average annual harvest rate by product for the baseline scenarios is shown in Figure 15. In all cases, the softwood sawlog harvest remains relatively unchanged. However, the softwood pulp and hardwood harvest levels increase with smaller utilization levels. Based on these results, the softwood at 8 cm TDIB and hardwood at 10 cm TDIB utilization was chosen for the remaining scenarios.

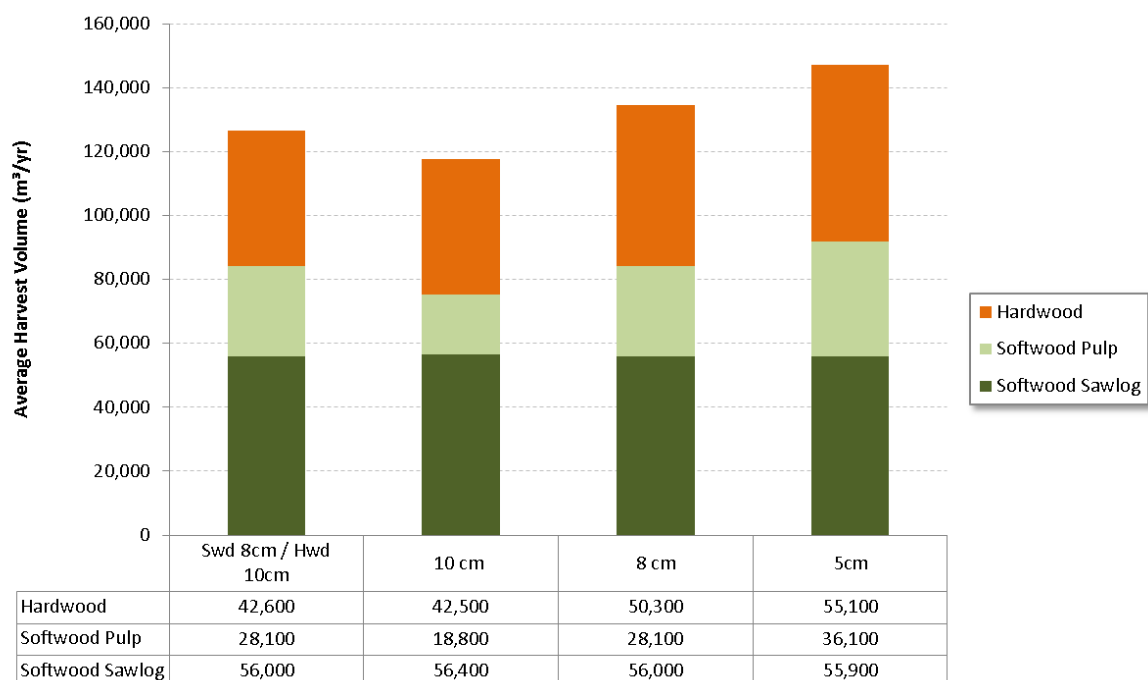


Figure 15 Comparison of Average Harvest Volume by Product over 200-year Planning Horizon for Baseline Scenarios

## 6.2 Incremental Constraint Scenarios

There are the following 5 non timber constraints (targets) applied to the forest estate modelling analysis,

- 9% insular retention (Insular);
- Merchantable growing stock retention equivalent to 15 years of HVS (MGSR) and non-declining merchantable growing stock for the last 50 years over the planning horizon;
- Less than 20% variation of harvesting from each species group along the planning horizon (SG);
- Harvest distribution between the management unit (HDMU); and
- 15% old or very old seral stage retention (OVOSSR) and 5% very old seral stage retention (VOSSR)

As shown in Table 2, five scenarios were formulated for assessing the impact of each non timber target on the HVS determination. Starting from scenario 6, the targets are added to next scenario, one at a time. As a result, scenario 6 contains one non-timber target, i.e. 9% insular retention and scenario 10 contains all of 5 targets.

The average Harvest Volume Schedule (HVS) results of running the 5 model scenarios are shown in Table 3 and Figure 16. The comparison of the results of Scenarios 6 and 7 provides the impact of the MGSR target on the HVS, i.e. the HVS is reduced by 3% for softwood sawlog and softwood pulp, and 4% for the HWD volume. Similarly, the results of comparison of Scenarios 7 and 8 shows the SG targets caused reduction by 2%, 4% and 4% respectively for softwood sawlog, softwood pulp, and hardwood HVS. The results of comparing scenarios 8 and 9 show the HDMU targets resulted in 2% reduction for hardwood

volume, but no impact on softwood sawlog and pulp. The impact of the OVOSSR and VOSSR targets on the HVS can be obtained by comparing the results of Scenarios 9 and 10, and comparison shows that these two targets cause reduction by 5% for softwood sawlog, 3% for softwood pulp, and 9% for hardwood volume. In total, the 5 non-timber targets, namely, MGSR, SG, HDMU, OVOR and VOR, impacted on the average HVS by 10% for softwood sawlog, 10% for softwood pulp, and 18% for hardwood.

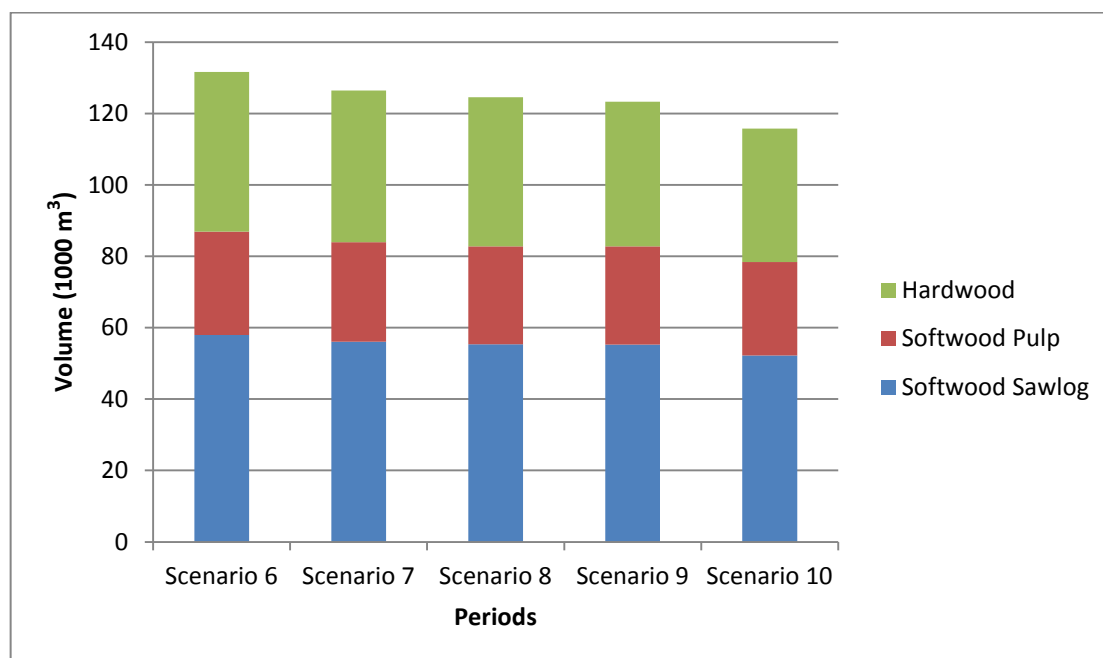


Figure 16 Comparison of Average Harvest Volume by Product over the 200-year Planning Horizon

Table 3 Comparison of Average Harvest Volume by Products and Scenarios

Scenarios	Softwood Sawlog (m <sup>3</sup> )	change (%)	Softwood Pulp (m <sup>3</sup> )	Change (%)	Pulp (m <sup>3</sup> )	Change (%)
6	58,000	0	29,000	0	45,000	0
7	56,000	-3%	28,000	-3%	43,000	-4%
8	55,000	-5%	27,000	-7%	42,000	-7%
9	55,000	-5%	27,000	-7%	41,000	-9%
10	52,000	-10%	26,000	-10%	37,000	-18%



### 6.3 Sensitivity Analysis

Sensitivity analyses were performed against Scenario 10 to illustrate how sensitive the HVS are to changes of different assumptions. Table 2 demonstrates 4 scenarios formulated for the purpose of the sensitivity analysis, i.e. Scenarios 11 to 14. The timber yield for Scenario 11 is assumed to increase by 10%, and that for Scenario 12 is assumed to decrease by 10%. For Scenario 13, increasing 10% timber yield is only for future stands, not for current stands. Scenario 14 is used to examine the impact of the timber even flow on the HVS.

Table 4 and Figure 17 show the results of the sensitivity analysis. Presumably, increasing 10% yield in Scenario 11 resulted in 8% more HVS for all products relative to Scenario 10, and decreasing 10% yield in Scenario 12 reduced the softwood sawlog by 10%, and softwood pulp and hardwood by 8%. Increasing 10% yield for future stands in Scenario 13 only resulted in a 4-5% increase in the products harvested. An even flow constraints applied to Scenario 14 resulted in a 2 % decrease in softwood sawlog, a 4% drop for softwood pulp, and a 8 % drop in hardwood, and a significantly lower initial harvest level than Scenario 10.

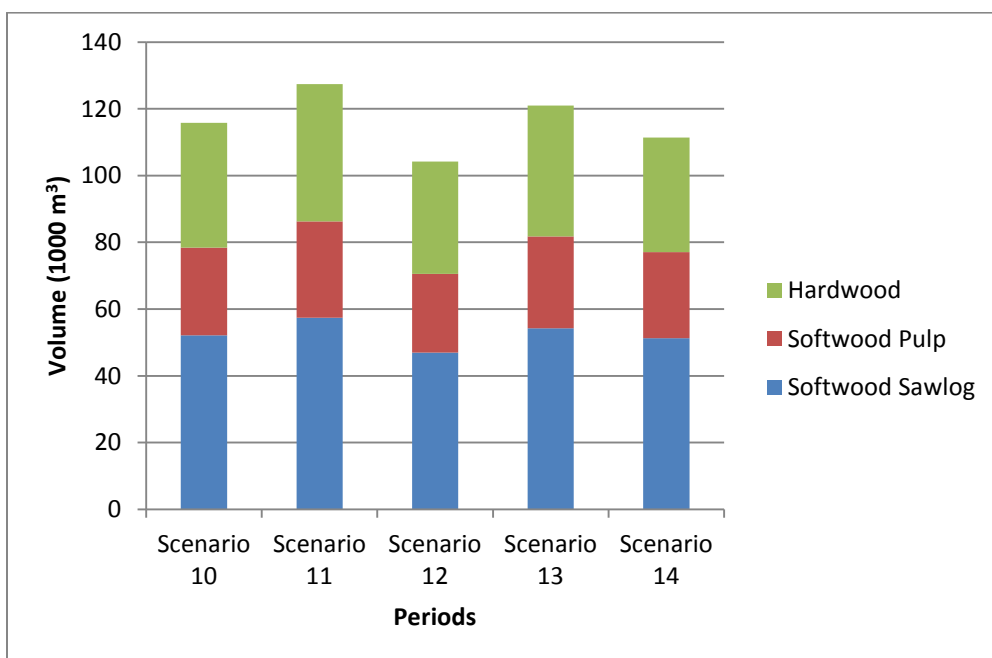


Figure 17 Average Harvest Volume by Product for the Sensitivity Analysis Scenarios

Table 4 Comparison of Average Harvest Volume by Product for the Sensitivity Analysis Scenarios

Scenar ios	Hardwood (m <sup>3</sup> )	Change (%)	Sawlog (m <sup>3</sup> )	Change (%)	Pulp (m <sup>3</sup> )	Change (%)
10	52,000	0	26,000	0	37,000	0
11	56,000	8%	28,000	8%	40,000	8%
12	47,000	-10%	24,000	-8%	34,000	-8%
13	54,000	4%	27,000	4%	39,000	5%
14	50,000	-2%	23,000	-4%	34,000	-8%

## 6.4 The Selected Management Strategy (SMS)

Based on the scenario results and the forest resource management objectives in the Island Forests, Scenario 10 is selected as SMS. Detailed results of different indicators under this scenario are reported in this section.

### 6.4.1 Harvest Volume and Area

The harvest flow over time for the SMS is shown in Figure 18. The flow constraints applied resulted in a variable harvest flow over time starting with high initial harvest rates for all products that is held for 20 years followed by a decline to the lowest harvest levels. For softwood sawlog and pulp, the lowest harvest level remains from year 50 to year 95, and for hardwood, it is from year 45 to year 125. After the lowest level range, the harvest volume for all products rebounds and fluctuates in the remaining years. At the end of the planning horizon, the harvest volume for all products reaches about similar amount as the initial harvest level.

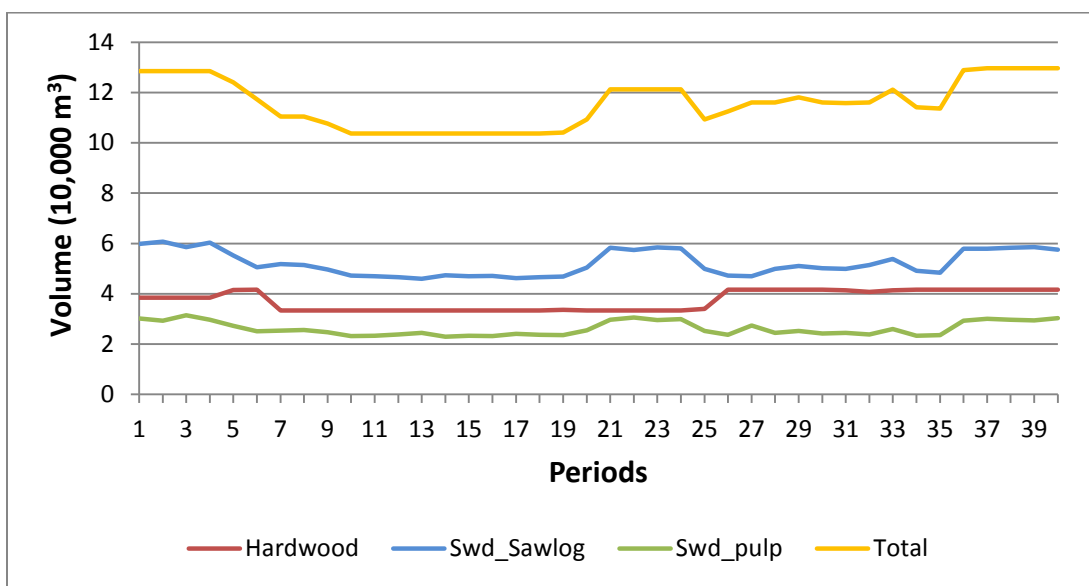


Figure 18 Harvest Volume by Product for the Selected Management Scenario (SMS)

Figure 19 shows the annual harvest area over the 200 year planning horizon. On average, about 1,212 ha is required to be harvested annually. The maximum annual harvest area, 1,675 ha, is in the first period, and the minimum annual harvest area, 952 ha, is in period 19, or in year 95.

### 6.4.2 Average Harvest Age, and Average Harvest Yield

Average harvest age over time is shown in Figure 20. Although there are variations, the average harvest age has a declining tendency over the planning horizon. The youngest average age, 76 years, is found at the end of the planning horizon.

Figure 20 also shows the average harvest volume, which fluctuates throughout the planning horizon with an average of 100 m³/ha. The minimum average harvest volume, 84 m³/ha, appears in the first period, and the maximum harvest volume is 122 m³/ha is located in period 4.

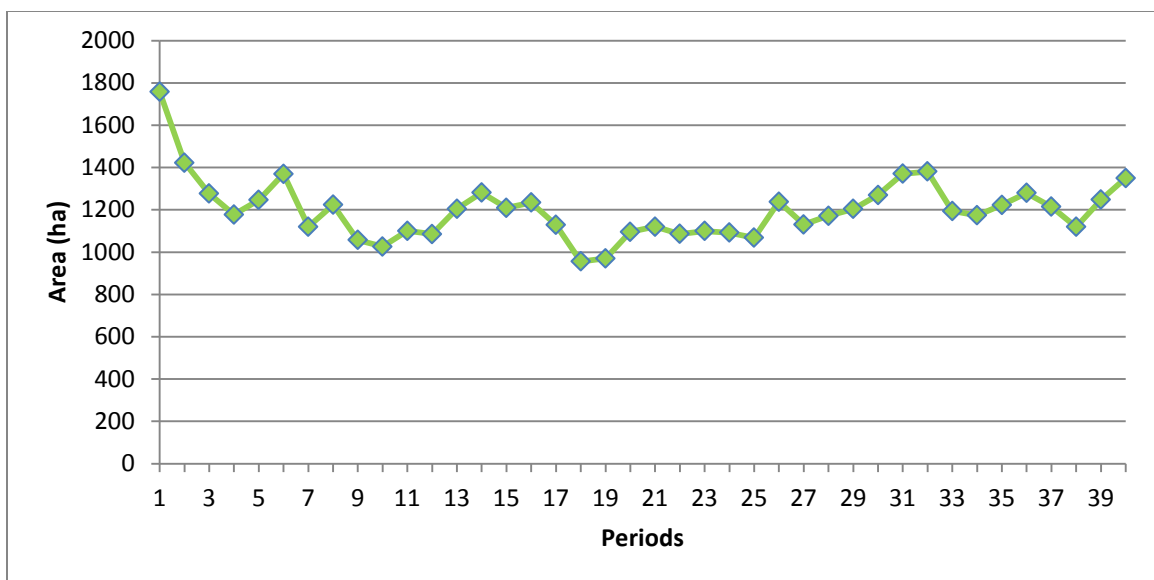


Figure 19 Annual harvest area for the Selected Management Scenario (SMS)

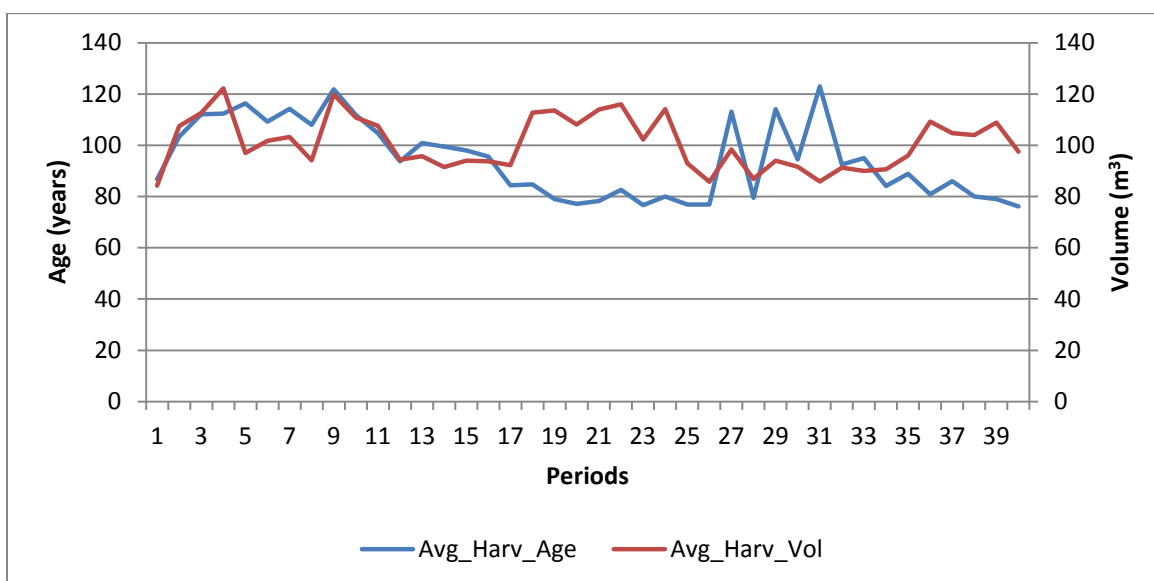


Figure 20 Average harvest volume and average harvest age

#### 6.4.3 Merchantable Growing Stocks

The merchantable growing stocks (MGS) for softwood and hardwood over time are shown in Figure 21. For softwood, the MGS declines from 4.3 million m<sup>3</sup> in period 1 to 1.4 million m<sup>3</sup> in period 17, and then the MGS rises to its peak point, 2.3 million m<sup>3</sup> in period 21. The MGS declines from its peak point until period 30. It is the non-declining constraints in the model that hold the MGS from further dropping from period 31 to period 40, i.e. in the last 50 years of the planning horizon. For hardwood, the MGS has a similar tendency of changing along the planning horizon, but the variation is smaller.

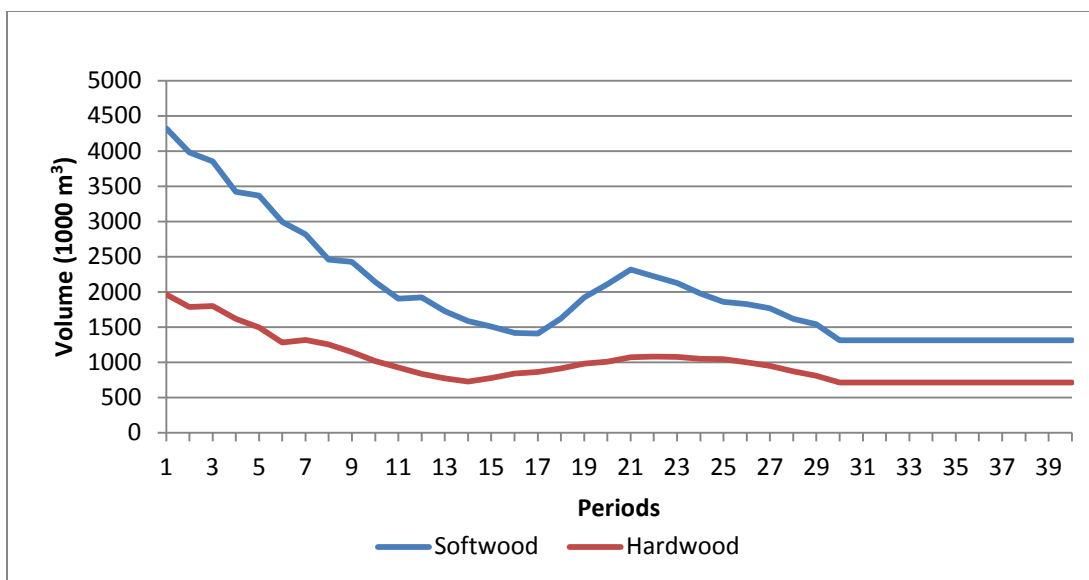


Figure 21 Merchantable Growing Stock for the Selected Management Scenario (SMS)

Figure 22 shows the ratio of the MGS against the HVS. For both softwood and hardwood, the ratio is greater or equal to 15. In other words, the MGS for both hardwood and softwood are maintained at an amount which is worth of 15 years of harvest along the planning horizon. It means the MGS targets are met in the selected management strategy.

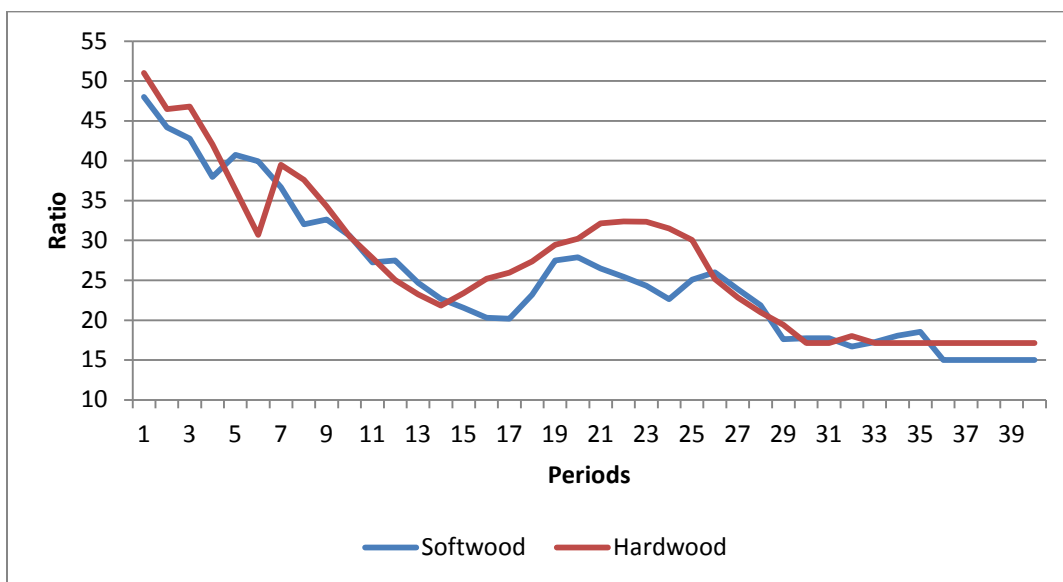


Figure 22 Merchantable Growing Stock to Volume Harvest Ratio for the Selected Management Scenario (SMS)

#### 6.4.3 Species Group Distribution

For the SMS scenario, there are constraints for controlling harvest volume from each of three species groups, i.e. spruce group, jack pine group, and hardwood group. The targets are the periodic harvest timber volume from each species group should not vary more than 20% over the planning

horizon. Table 23 shows the harvest volume from each species group over the planning horizon. For the spruce group, the average harvest volume of 40 planning periods is 127,900 m<sup>3</sup>. The maximum harvest is 138,500 m<sup>3</sup>, or 8% higher than the average harvest volume and the minimum harvest volume is 110,800 m<sup>3</sup>, or 13% lower than the average. For the jack pine species group, the maximum harvest volume is 337,500 m<sup>3</sup>, or 14% higher the average harvest volume, 296,300 m<sup>3</sup>, and the minimum harvest volume is 270,000 m<sup>3</sup>, 9% lower than the average. The values of maximum and minimum harvest volume from the hardwood species group are 10% higher and 12% lower than the average harvest volume, 135,700 m<sup>3</sup>. In conclusion, the targets for controlling the harvest volume from species group are met.

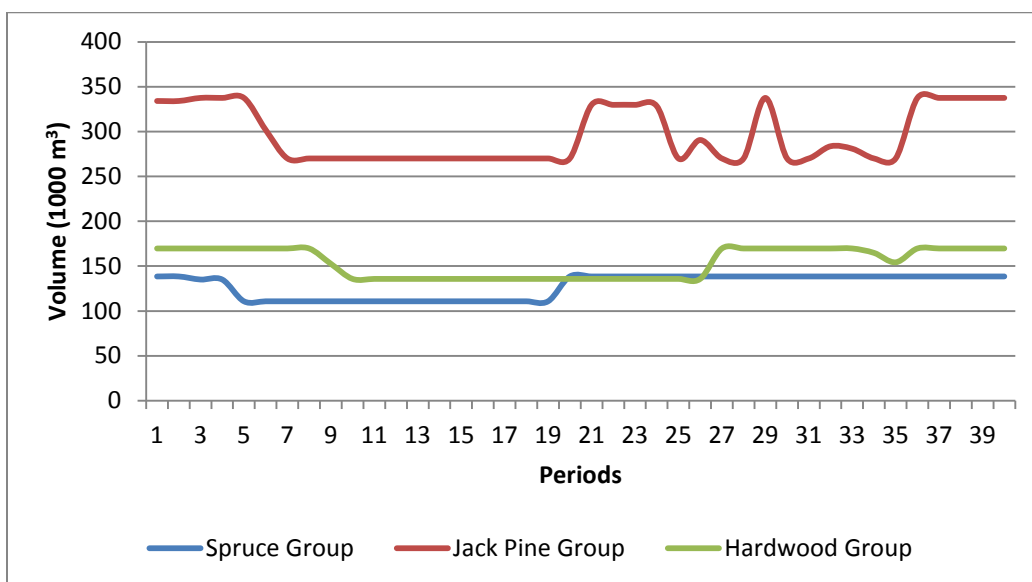


Figure 23 Species Distribution for the Selected Management Scenario (SMS)

#### 6.4.4 Management Unit Harvest Distribution

For the SMS scenario, there are targets for controlling harvest distribution between management units. The targets request that about 40% of the total harvest volume comes from the west management unit, and 60% from the East Management Unit. Figure 23 shows such targets are met.

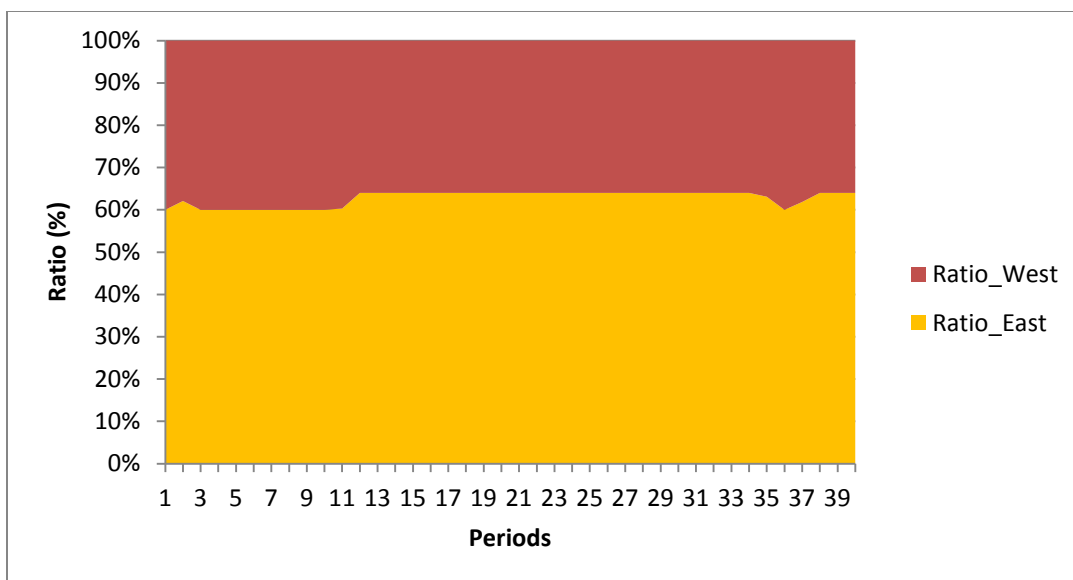


Figure 24 Management Unit Distribution for the Selected Management Scenario (SMS)

#### 6.4.5 in-Block Retention Area and Converted Road Area

Figure 25 shows the in-block retention area converted from harvest. The area converted as the in-block retention rises sharply in the initial planning periods due to accumulation from historic conversion with harvest. After the in-block retention area reaches the maximum age, the status of the in-block retention area will be removed and stands within the in-block area are assumed be regenerated and become available for harvest in the future rotation. Such situation can explain the fluctuation of the in-block retention area along the planning horizon.

It is assumed 2% of the harvested area is converted to the permanent road area for the first rotation. As shown in Figure 25, about 2,300 ha will be converted to the permanent road area at the end of the planning horizon, which accounts for about 1.4% of the total net area.

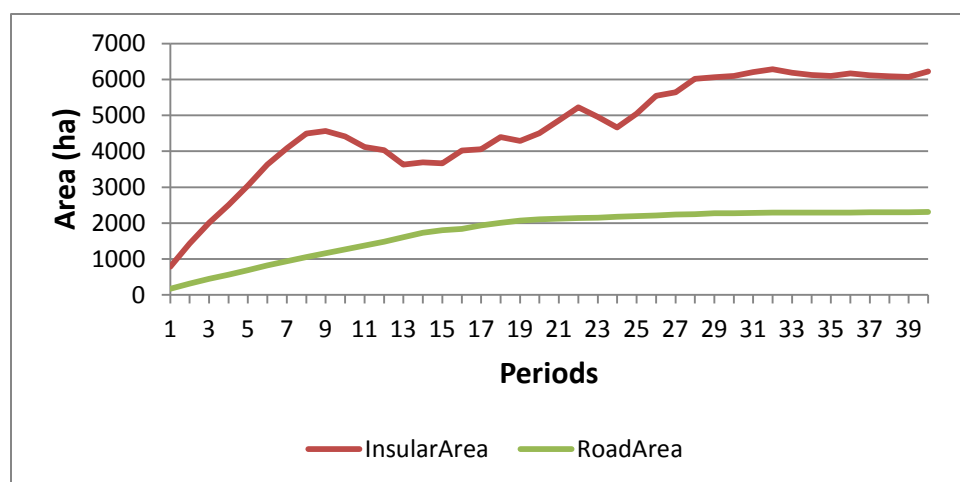


Figure 25 Area Held as In-Block Retention for the Selected Management Scenario (SMS)

#### 6.4.6 Area and Volume Lost to Succession (Death)

The modeled results for the area and volume lost due to mortality are shown in Figures 26. The death area may be caused by the following three factors,

- The minimum harvest volume factor, i.e. 60 m<sup>3</sup>/ha. Some stands with low productivity may never be allocated for harvest subject to this factor. As a result, they will become terminated naturally.
- Timber flow constraints. The amount of harvest volume at each planning period is controlled by the timber flow control constraints, and as a result, some merchantable area will not be harvested before it breaks up naturally.
- Other model constraints such as old and very old seral stage retention requirements may also prevent some stands from being harvested so as to cause such stands to pass the natural succession.

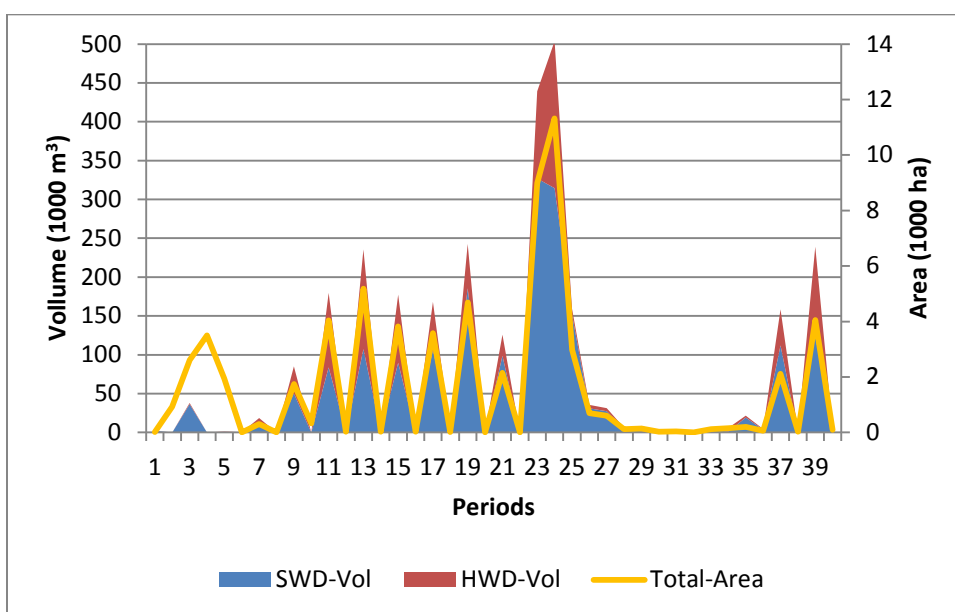


Figure 26 Area and Volume Lost to Succession / Death for the Selected Management Scenario (SMS)

#### 6.4.7 Age Class Distribution

20-year Age class distribution for the net area and partial exclusion is shown in Figure 27 at years 0 (current), 10, 50, 100, and 200. With the harvest and natural succession, the age classes went through series of changes eventually reaching more balanced state at year 200, or end of the planning horizon. About 2500 ha of net area which is currently 100 or older is maintained at the end of the planning horizon.

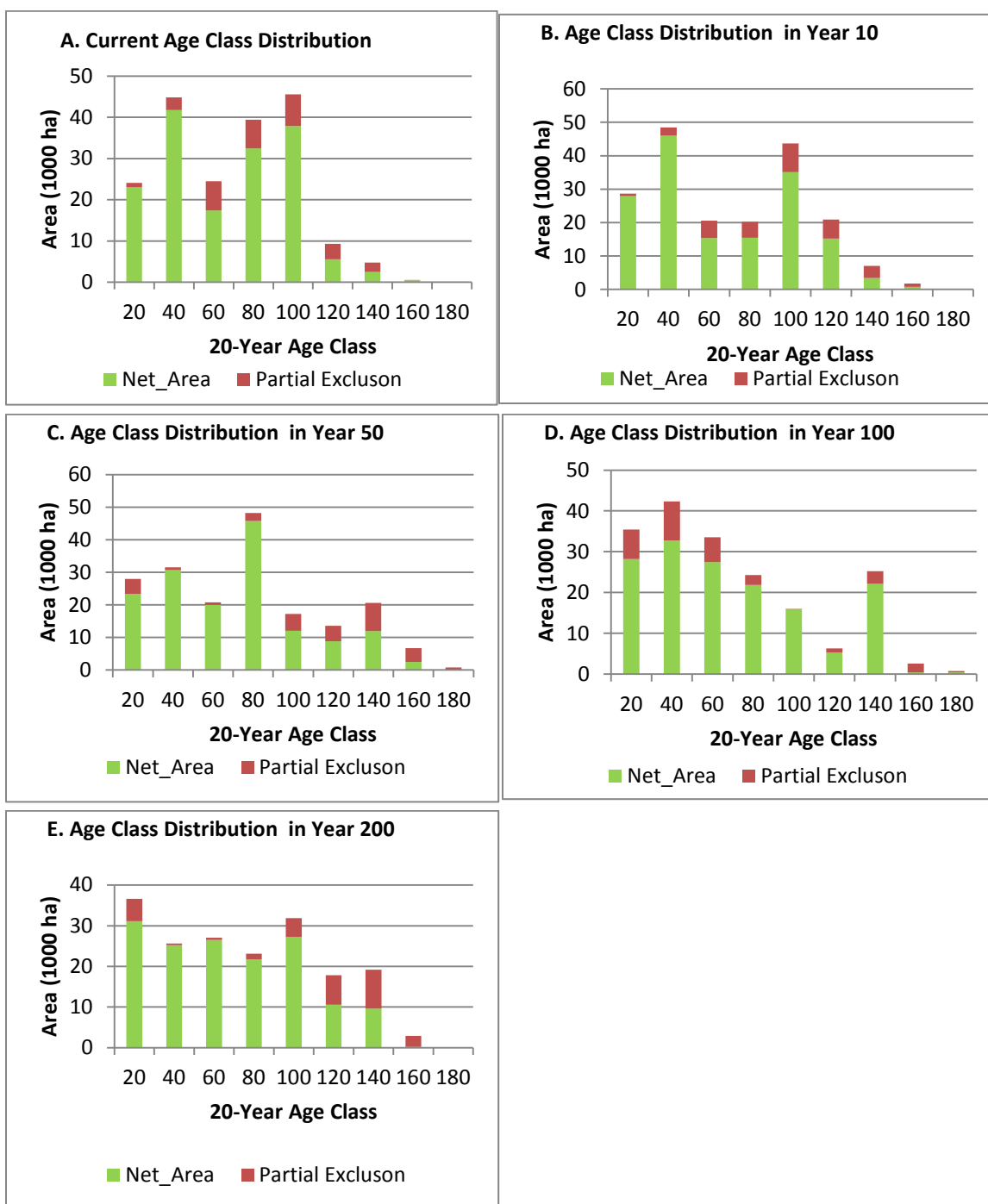


Figure 27 Age Class Distribution for Current, 10, 50, 100, and 200 years from Now

#### 6.4.8 Habitat (Fisher, Moose, Warbler)

Habitat metrics are shown for Fisher, Moose, and Warbler in Figures 28, 29, and 30 respectively for the SMS. Relative to the no harvest scenario, habitat levels perform fairly similarly under the SMS.



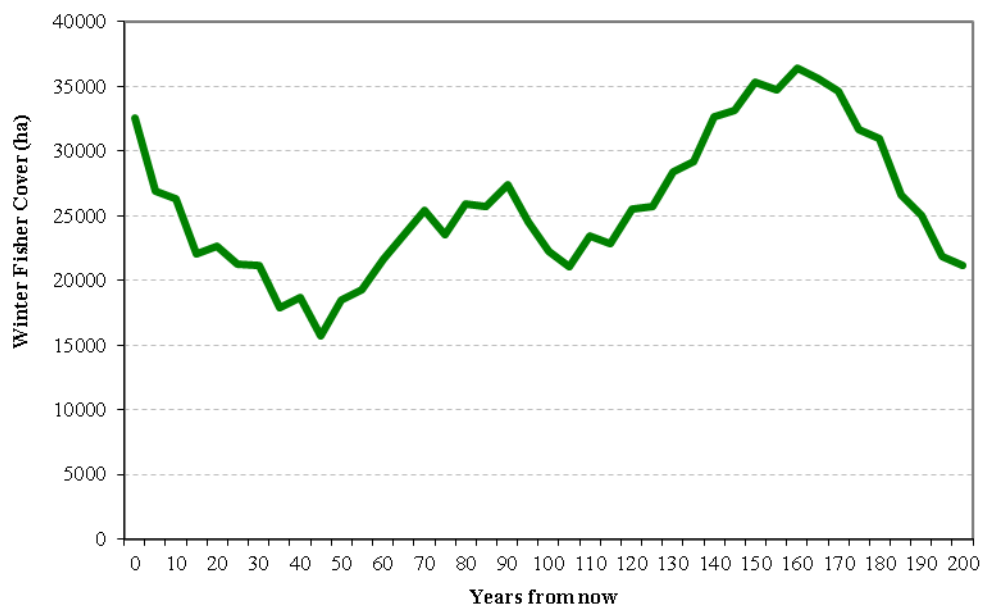


Figure 28 Winter Cover for Fisher for the Selected Management Scenario (SMS)

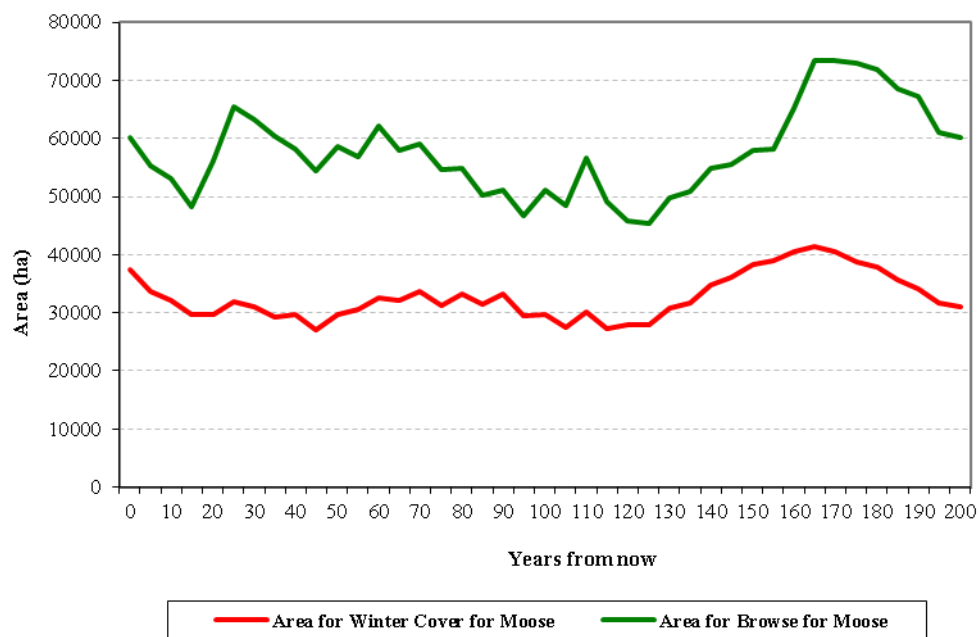


Figure 29 Moose Habitat for the Selected Management Scenario (SMS)

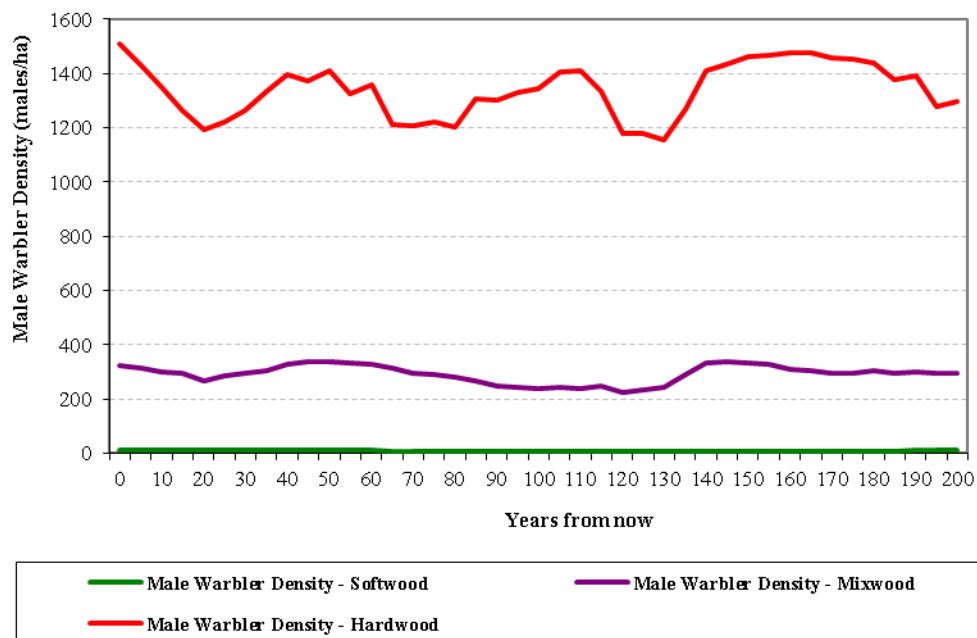


Figure 30 Male Warbler Density for the Selected Management Scenario (SMS)

#### 6.4.9 Old and Very Old Seral Stage Retention Targets

Figures 31 and 32 present detailed achieved old or very old seral stage (OVOSS) target values for each cover species group by planning period for both of the management units. Except for the white spruce cover species group (WSCP), the OVOSS targets by cover species group, i.e. at least 15%, are met for 4 other species cover groups in both management units over the planning horizon. For the WSCP, OVOSS targets are not met in 17, 18, 19, and 20 planning periods in the east management unit and 19<sup>th</sup> planning period in the west management unit.

There are also the very old seral stage (VOSS) retention targets in the SMS scenario which requires that at least 5% of the VOSS area by species cover group and management unit is maintained over the planning horizon. Figures 33 and 34 shows that VOSS targets of the Jack pine (JP) group and the mixed wood (MW) group are not met in the first periods in both of the management units. The OVSS targets of the WSCP are not met in periods 21 and 22 in the east management unit as well as in period 21 in the west management unit.

#### 6.5 The Tactical Plan

The spatial tactical plan dataset was generated by the Forest Service, which shows the spatial location of harvest area for next 20 years. A part of the tactical plan area was assessed in the field by the Forest Service and Saskatchewan Research Council. The area identified in the tactical plan was incorporated into the model using preschedule function in the Woodstock. As a result, doing this did not cause any impacts on the model results.

Tables 5 shows the planned harvest volume by products and planning periods calculated based on the tactical plan dataset. For the softwood sawlog and pulp, the volume is 12% to 27% less than the softwood and pulp HVS. For the hardwood, the volume is 8% and 19% less than the hardwood HVS in periods 1 and 3. The hardwood volume in periods 2 and 4 is similar to the hardwood HVS.

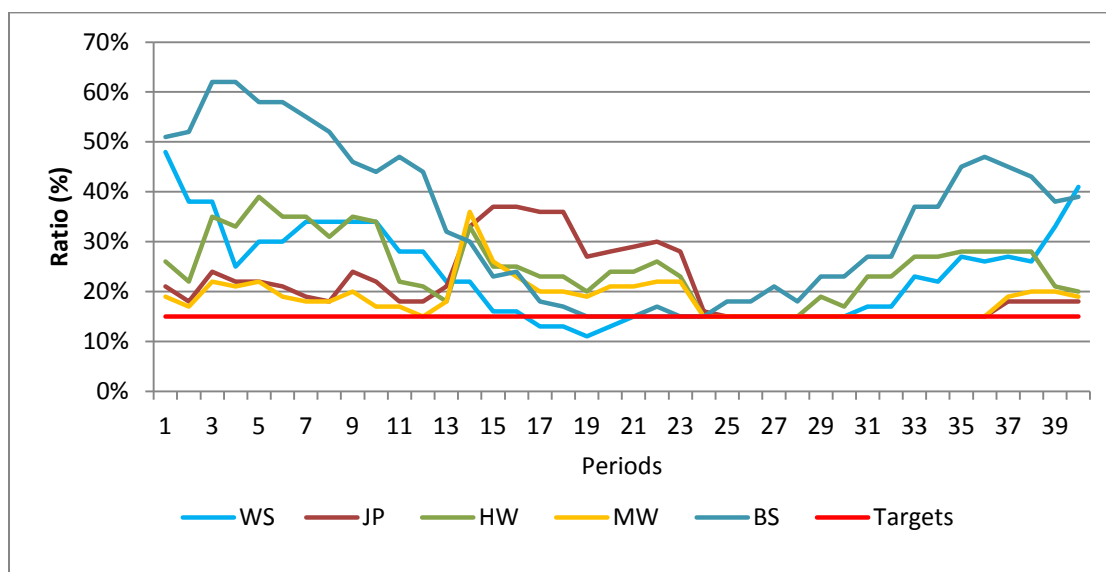


Figure 31 Old and Very Old Seral Target Achievement in the East Management Unit

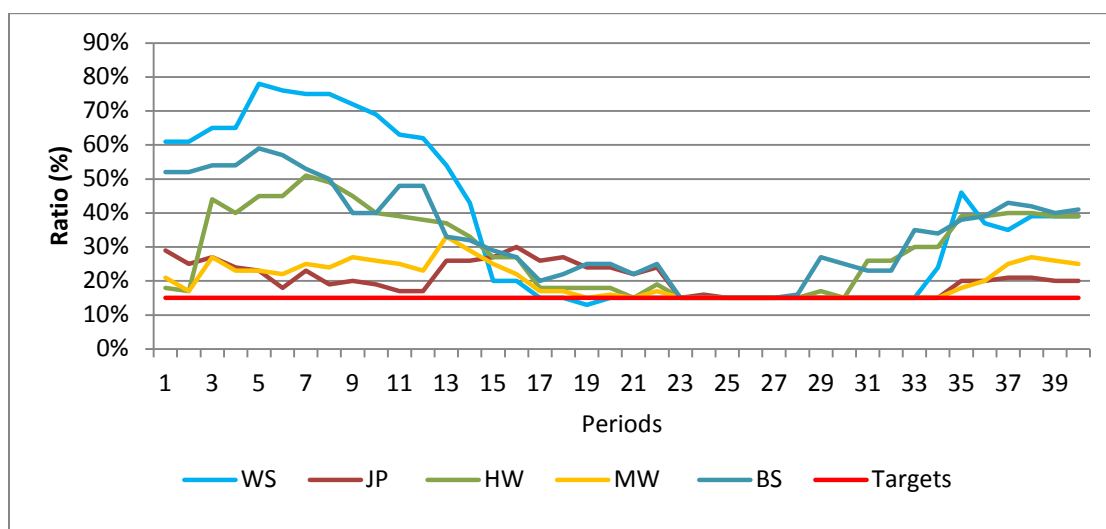


Figure 32 Old and Very Old Seral Target Achievement in the West Management Unit

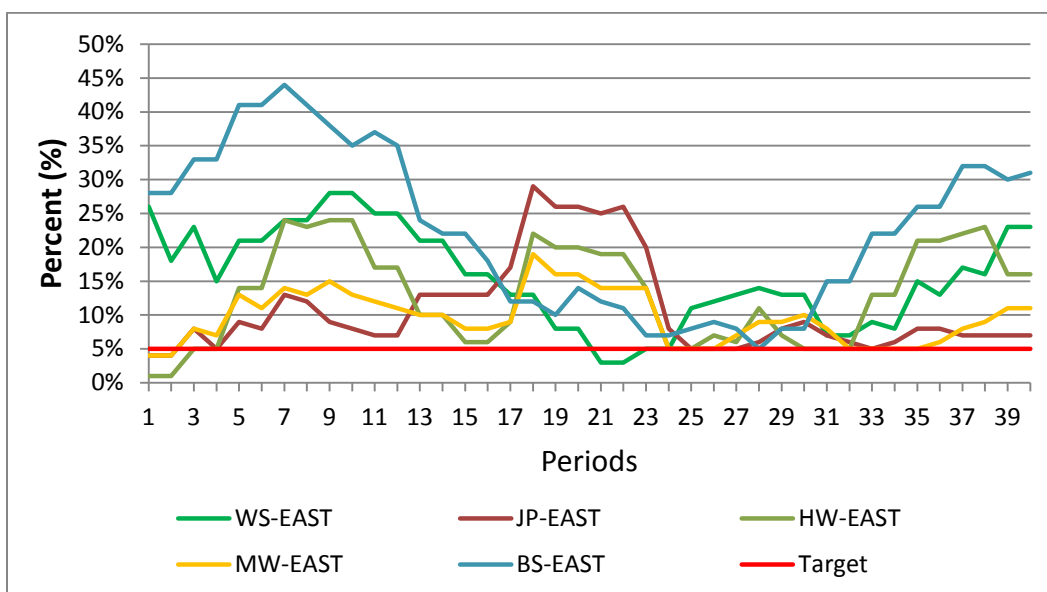


Figure 33 Very Old Seral Target Achievement in the West Management Unit

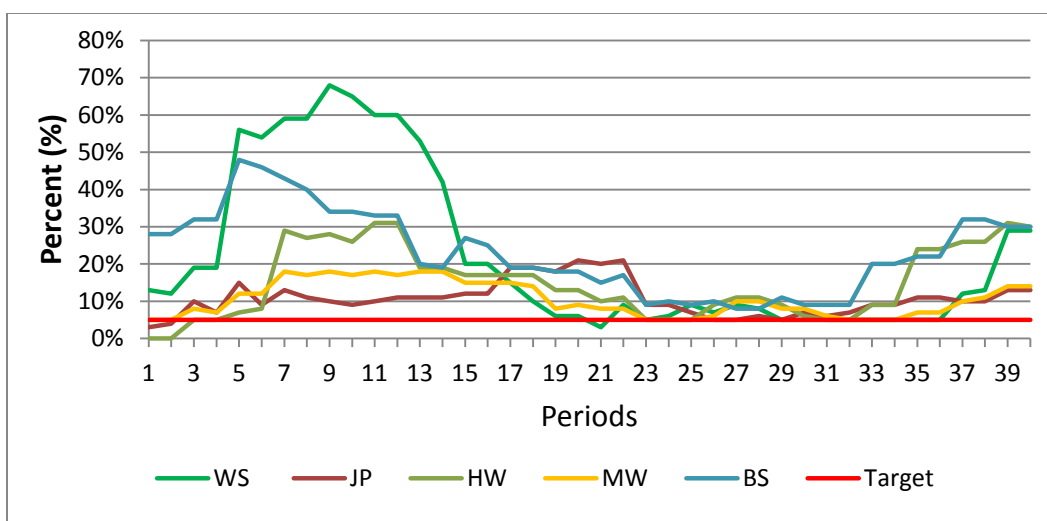


Figure 34 Very Old Seral Target Achievement in the East Management Unit

Table 5 Planned Harvest Volume Summary by Products and Planning Periods

Period	Sawlog (m <sup>3</sup> )	Pulp (m <sup>3</sup> )	Total- SWD(m <sup>3</sup> )	Hardwood (m <sup>3</sup> )	Total (m <sup>3</sup> )
1	42,889	20,785	63,674	33,923	97,597
2	45,120	22,206	67,326	38,337	105,663
3	39,141	18,931	58,072	30,132	88,203
4	41,626	19,151	60,776	37,179	97,955

## 7 Summary

The concept of maintaining sustainable social, environmental, and economic values have been incorporated in the forest estate model through the inventory netdown process and applying the non-timber constraints in the model. Great efforts have been made in maintaining sustainable forest resources in the process of formulating this model.

Scenario 10 was selected as the selected management strategy. As such, the softwood and hardwood maximum HVS is presented in Table 6.

With Scenario 10, all the non-timber targets are met except for the old and very old seral stage targets for the white spruce species group, whose targets are not met for a few planning periods in either management units. For some cases, it requires about one rotation (i.e. 100 years) to adjust in order to meet the old and very old seral stage targets. The initial age class distribution of a species group play an important role in meeting the old and very old seral stage targets

*Table 6 Recommended softwood and hardwood maximum HVS based on the SMS*

SWD Sawlog (m <sup>3</sup> )	SWD Pulp (m <sup>3</sup> )	Total SWD (m <sup>3</sup> )	HWD (m <sup>3</sup> )
52,000	26,000	78,000	37,000

In addition to 9% harvested area transition to the insular-retention, the non-timber targets caused the HVS to reduce by 10%, 10% and 18% respectively for softwood sawlog, softwood pulp and hardwood volume.