

# 2011 – 2021 DETAILED FOREST MANAGEMENT PLAN YIELD TABLES

Weyerhaeuser Grande Prairie  
Forest Management Agreement Area  
FMA # 6900016

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## EXECUTIVE SUMMARY

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Weyerhaeuser Company (Weyerhaeuser) holds a Forest Management Agreement for tenure in the vicinity of Grande Prairie (FMA # 6900016). As part of their license obligations, Weyerhaeuser is required to complete a Detailed Forest Management Plan (DFMP). On November 23 2009, Alberta Sustainable Resource Development (ASRD) approved Weyerhaeuser Grande Prairie Forest Management Area Yield Tables for use in 2011-2021 DFMP. This is the same document with exception of added conifer and deciduous volume adjustments in Sections 3-9 through 3-10. Mean Annual Increment standards were added in Section 3-11.

As part of the 2007 DFMP Mountain Pine Beetle Amendment, Weyerhaeuser Grande Prairie undertook redevelopment of yield curves based on the 1999 methodology, updated to include improved information, stratification methods and updated data sources. Although new yield curves were developed for the 2007 amendment, Weyerhaeuser must submit revised yield curves with their 2011 submission. Since the curves developed in 2007 are fairly up-to date and since minimal changes to yield stratification are being applied to the new DFMP, Weyerhaeuser has elected to utilize portions of the 2007 yield curve process in the development of yield curves for 2011. This document describes the process undertaken to develop yield curves for the 2011 Detailed Forest Management Plan.

### Stratification into yield groups

Weyerhaeuser PSP data were stratified into 23 yield groups based on spatially linked AVI attributes. Stratification rules are those used to develop the 2011 landbase. Assignments to yield groups are based on story of primary management cover type and crown closure class.

### PSP tree- and plot-level compilation

Conifer volume was compiled to a 15/10 utilization standard. Deciduous volume was compiled to a 15/10 utilization standard for plots located in pure conifer (CX), and mixedwood (CD and DC) broad cover groups, and to a 15/11 utilization standard for plots located in the pure deciduous (DX) broad cover group. Both conifer and deciduous compilations assumed a 15 cm stump height.

### Yield model development

Yield tables were developed for each yield group using a two-stage modeling approach. First, individual plot gross merchantable volume was modeled with top height. Models developed for the 2007 submission were used. Then, stand growth was related to site productivity by modeling stand top height to AVI stand age using GYPSY 2009 top height models. Finally, volume-age tables were generated by yield group and natural subregion by calculating the site index seed by guide species group and natural subregion, and combining the volume-height and height-age models.

### Site index seeds

Height-age models were initiated using a site index seed calculated from the most recent PSP measurements for natural stands, and using Regenerated Stand Productivity study results for PL- or SW-leading managed stands. Where AT or SB was the leading (guide) species, managed stand site index

seeds defaulted to natural values. Enhanced site index seeds were created by increasing managed site index seeds such that a specified height increase at rotation age was achieved (3.5% at 80 years for PL and 2.6% at 105 years for SW). Enhanced yield tables were created only for yield groups 2 and 5 ([PI]-C and [Sw,Fa]-CD yield groups).

## Yield validation

Both models (volume-height and height-age) were assessed relative to available plot data and fit statistics (bias, R-squared) were calculated. Both sets of models showed good R-square values and modest to minimal bias.

Bias and R-squared for the resulting natural stand yield curves were also calculated. Results were more variable, as expected with multiple yield curves and relatively few data points for assessment. As the broad cover group level, R-squared and bias for volume-age curves are very reasonable.

Fit statistics were backed up by a “volume today” calculation. The net landbase area (natural stands) by yield group and natural subregion was attached to each yield table, and used to calculate area-weighted yield tables by broad cover group, by yield group, and overall. Total, conifer, and deciduous area-weighted yield tables by broad cover group fall within the 95% confidence intervals of the 25-year age class average PSP volumes for total and major species volumes.

Yields were also assessed by comparing area-weighted yield curves to 95% confidence intervals generated using the most recent PSP measurement for natural stands. Area-weighted yield curves by broad cover group for 2007 and 2011 were compared graphically; there is minimal difference between the two sets of area-weighted curves.

For managed and enhanced stands, little data were available for validating yields. Managed stand PSP trajectories, where available, were plotted against area-weighted yield curves by yield group. Volume accumulation trends are generally good at these early ages.

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# 1. INTRODUCTION

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## 1.1 Background

Weyerhaeuser Company (Weyerhaeuser) holds a Forest Management Agreement for tenure in the vicinity of Grande Prairie (FMA # 6900016). As part of their license obligations, Weyerhaeuser is required to complete a Detailed Forest Management Plan (DFMP). In 1999, Alberta Sustainable Resource Development (ASRD) approved Weyerhaeuser Grande Prairie's 1999-2009 DFMP and its program commitments. Weyerhaeuser Grande Prairie is currently operating under a DFMP Mountain Pine Beetle Amendment that is effective May 1, 2007. Their next DFMP is scheduled for approval by May 1, 2011.

As part of the 2007 DFMP Mountain Pine Beetle Amendment, Weyerhaeuser Grande Prairie undertook redevelopment of yield curves based on the 1999 methodology, updated to include improved information, stratification methods and updated data sources, including:

1. Recently completed AVI 2.1 inventory with enhancements for using two levels of photography (leaf-off) to identify understory stands.
2. New yield stratification methods suggested by the ASRD.<sup>1</sup>
3. Removal of Grande Cache part of FMA (E8 Management Unit) in July 2004.
4. Changes to the base PSP data used to derive the empirical yield tables (e.g., exclusion of industrial disturbance plots).
5. PSP establishments and remeasurements since 1999.
6. Improved information on the growth performance of regenerated stands (677 PSP measurements).<sup>2</sup>
7. Increased utilization (lower stump heights) than was modeled in the previous analysis.
8. Increased emphasis on understory yield tables.
9. The objective to incorporate the interim yield tables into a Woodstock timber supply model.
10. Further development of caribou management strategies.

Although new yield curves were developed for the 2007 amendment, Weyerhaeuser must submit revised yield curves with their 2011 submission. Since the curves developed in 2007 are fairly up-to date and since minimal changes to yield stratification are being applied to the new DFMP, Weyerhaeuser has elected to utilize portions of the 2007 yield curve process in the development of yield curves for 2011. This document describes the process undertaken to develop yield curves for the 2011 Detailed Forest Management Plan.

## 1.2 Report Objectives

This report documents the models, model inputs, and analytical procedures used to derive the yield tables for the Grande Prairie FMA timber supply analysis. The intent is to provide ASRD staff with the

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<sup>1</sup> ASRD. 2006. Alberta Forest Management Planning Standards version 4.1. 114 p.

<sup>2</sup> J.S. Thrower and Associates Ltd. 2002. Validating Regenerated Yield Expectations in the Weyerhaeuser Grande Prairie/Grand Cache FMA. Contract Report for Weyerhaeuser Canada Ltd. (Grande Prairie/Grande Cache). 58 pp. Project WCG-004.

information necessary to review and approve the analysis methods, assumptions, and resulting yield tables.

### 1.3 Terms of Reference

The report was prepared for Greg Behuniak, *RPFT* of Weyerhaeuser. The Timberline project team included Janis Braze, *MSc* (project manager), Katrina Froese, *MSc RPF* (data analyst), and Gyula Gulyas, *MSc* (project advisor). This report will be submitted to the ASRD for review and approval.

## 2. METHODS

### 2.1 Overview of Permanent Sample Plot Data

Weyerhaeuser's PSP data provides up-to-date volume and growth information for the FMA and are located on a predetermined systematic fixed grid. This grid layout is identical for each township and consists of 12 plots per township. The locations of the plots in each township are depicted in Figure 1.

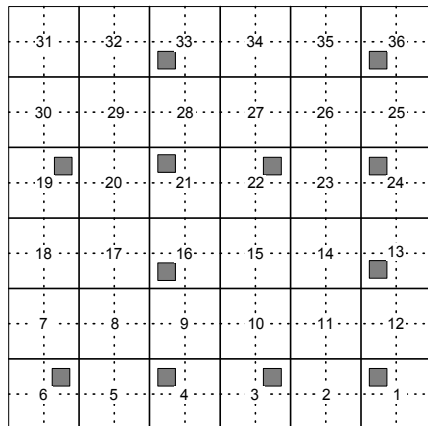


Figure 1 Sample grid PSP locations

*Center of northwest quarter, section 1*  
*Center of northeast quarter, section 3*  
*Center of northwest quarter, section 4*  
*Center of northeast quarter, section 6*  
*Center of southwest quarter, section 13*  
*Center of southwest quarter, section 16*  
*Center of northeast quarter, section 19*  
*Center of northwest quarter, section 21*  
*Center of northeast quarter, section 22*  
*Center of northwest quarter, section 24*  
*Center of southwest quarter, section 33*  
*Center of southwest quarter, section 36*

This sample design guarantees uniform spatial coverage, often leading to estimates with smaller variance than other sampling schemes. In this scheme, the plot is established unless the entire mapped plot is located on a road, lake, or large permanent creek. A PSP is never moved, even if it encompasses a cutline, trail or straddled a stand boundary. PSPs in fire-origin (natural) stands are not protected from harvesting activities; the plot is harvested and re-established at the same location.

The PSPs are composed of three nested plots; the main plot is square with an area of 0.08 ha (0.04 ha in reduced size plots) and aligned in the cardinal directions. All trees greater than 50 mm DBH are tagged and measured in the main plot. PSPs in natural stands utilize the main plot only.

The 0.02 ha sapling plot is nested in the north west corner of the main plot. Trees from 1.3 m height to 50 mm DBH are tagged and measured in regenerated stands. There are four 0.001 ha regeneration plots within the sapling plot, located along cardinal bearings from the center post. Trees less than 1.3 m are tallied in the regeneration plots. The fire-origin PSPs initially contain only the main plot, but four 0.001 ha regeneration plots are currently being added to these plots tally trees 50 mm DBH and smaller.

Plots are numbered according to their location in the grid system and whether they are located in a fire-origin (NAT) or regenerated (REG) stand. Plot numbers are composed of 12 digits; the first digit corresponds to the Meridian, the next three to the township, the next two to the range and the six final to the section (survey number). For example, PlotID = 605606000003\_NAT represents fire-origin plot #3 in township 56, range 6 and Meridian 6.

A detailed description of Weyerhaeuser's PSP program and data collection protocols can be found in the Weyerhaeuser PSP manuals.<sup>3,4</sup>

<sup>3</sup> Weyerhaeuser 2001. Natural Stand PSPs: Field Manual. Unpublished document.

The PSP data have been cleaned and compiled several times to support previous projects. For instance, in 2002 J.S. Thrower completed a validation of regenerated stand performance using the PSP data<sup>5</sup> and a statistical analysis of the natural stand PSP data.<sup>6</sup> In 2008/2009 the data were used as part of a Forest Resource Improvement Association of Alberta (FRIAA) project to validate the new (2009) GYPSY model.

A summary of the PSP distribution that was available for the yield analysis is presented in Table 1. Note that there are several inactive PSPs: these are natural stand PSPs that have been harvested, with new PSPs reestablished in the subsequent regenerating stands.

Table 1. Summary of PSP data in Grande Prairie FMA.

PSP Status	NAT		MGD		Total
	Estab	Remeas	Estab	Remeas	
Active	1,047	1,760	218	562	3,587
Inactive	121	131	0	0	252
Total	1,168	1,891	218	562	3,839

## 2.2 Data Preparation

Table 2 shows the main steps followed to prepare the data for analysis. Several iterations of some of these steps were required to detect and remove outliers and identify other errors and data anomalies. The SAS programs were written so that compilations can be easily adjusted or modified (e.g., changes in utilization standards). This section describes these steps in more detail. All SAS programs and input data file are included on the attached CD.

### 2.2.1 Extract and verify data

The raw Weyerhaeuser PSP data was first assembled into a Microsoft Access<sup>TM</sup> database and then extracted into SAS data format. All relevant raw plot and tree level data was stored in the SAS files: *wgp\_plots\_N*, *wgp\_trees\_N*, *wgp\_plots\_R*, and *wgp\_trees\_R*.<sup>7</sup> The data dictionary for the tree and plot level variables is provided in APPENDIX I – Data Dictionary.

### 2.2.2 Pre-compile data to specifications

Error reports were provided to Weyerhaeuser to identify and correct suspicious tree and plot measurements. Weyerhaeuser provided a list of corrections to be applied in this project. The corrections were incorporated into the import routine at the beginning of this project.

### 2.2.3 Validate and clean data

The PSP data was used previously in DFMP related projects, receiving constant cleaning, validation and correction of measurement errors (i.e., trees do not match tagging limits, missing species code, incorrect height etc.) and time specific errors (i.e., trees that changes species or shrink in height from one

<sup>4</sup> Weyerhaeuser 2001. Regen/Sapling PSPs: Field Manual. Unpublished document.

<sup>5</sup> J.S. Thrower and Associates Ltd. 2002. Statistical Analysis of Permanent Sample Plots in the Weyerhaeuser Grande Prairie/Grande Cache FMA. Project WCG-003 report. Prepared for Weyerhaeuser Canada Ltd. Grande Prairie/Grande Cache Operations.

<sup>6</sup> J.S. Thrower and Associates Ltd. 2002. Validating Regenerated Yield Expectations in the Weyerhaeuser Grande Prairie/Grande Cache FMA. Project WCG-004 report. Prepared for Weyerhaeuser Canada Ltd. Grande Prairie/Grande Cache Operations.

<sup>7</sup> N=Natural Stands, R=Regenerated Stands.

measurement to the next, trees that are labeled “live” when previously “dead”). Height-DBH and density-average DBH scattergrams were prepared to identify potential problem trees and plots. Suspicious trees

Table 2. Major tasks and SAS programs used in this project.

ID	Tasks	SAS Programs	Input data files	Output data files	See Section
0	Read in and correct PSP data	00a_data_prep.sas	pspdatabase May10.mdb -> wgp_tree_N -> wgp_tree_R -> wgp_plot_N -> wgp_plot_R	wgp_trees_N wgp_trees_R wgp_plots_N wgp_plots_R psp_inactive wgp_missinginfo_N wgp_missinginfo_R wgp_transpose_N wgp_transpose_R	2.2.3
1	Identify veterans in MGD stands	00b_identify_veterans.sas	wgp_trees_N wgp_trees_R	wgp_vets_N wgp_vets_R	2.2.3
2	Compile tree-level data to specifications	01_compile_tree_vol.sas	wgp_trees_N wgp_trees_R wgp_plots_N wgp_plots_R wgp_vets_N wgp_vets_R volcoeff	wgp_treesout_N wgp_treesout_R wgp_treesout_append_utils_N wgp_treesout_append_utils_R	2.2.4
3	Compile plot-level data	02_compile_plot_vol.sas	wgp_treesout_N wgp_treesout_R wgp_plots_N wgp_plots_R	wgp_plotsout_Cxxxx_Dxxxx_N wgp_plotsout_Cxxxx_Dxxxx_R	2.2.5
4	Transpose data to necessary format	03_transpose_plots.sas	wgp_plotsout_Cxxxx_Dxxxx_N wgp_plotsout_Cxxxx_Dxxxx_R	wgp_plotsout2_Cxxxx_Dxxxx_N wgp_plotsout2_Cxxxx_Dxxxx_R	2.2.5
5	Create PSP modeling dataset	04_create_PSP_modeling_dataset.sas	n_plots_nlb.dbf r_plots_nlb.dbf wgp_plotsout2_Cxxxx_Dxxxx_N wgp_plotsout2_Cxxxx_Dxxxx_R	psp_modeling_dataset psp_modeling_dataset_null psp_deletion_dataset psp_deletion_dataset_null	3.1
6	Volume-height model assessment	05a_vol_ht_models.sas	parms_volht_tophtw psp_modeling_dataset	fit_vol_topht	3.2.1
7	Height-age model assessment	05b_tophtw_age_models.sas	parms_gypsy2009_topht psp_modeling_dataset	fit_topht_first_last fit_topht_all	0
8	Calculate NAT site index seed	06a_calculate_si_seed_NAT.sas	psp_modeling_dataset	si_seed_nsr_groups si_plot si_plot_last_meas si_plot_avg_by_nregion si_raw_by_yg_nsr	0, App

			site_index_seed1_NAT	
9	Calculate MGD site index seed	06b_calculate_si_seed_MGD.sas	psp_modeling_dataset avi_dbase.dbf adjusted_psi	landbase_productive landbase_productive_summ site_inxed_seed2_MGD 0
10	Calculate ENH site index seed	06c_calculate_si_seed_ENH.sas	site_index_seed2_MGD	site_index3_ENH 0
11	Volume-age model for conifer understory yield group	07_model_conifer_US.sas	psp_modeling_dataset decmort_alt	conifer_US_yield_curve_raw 3.4.4
12	Generate raw volume-age tables	08_create_raw_yield_tables.sas	parms_vol_tophtw parms_gypsy2009_topht site_index_seed1_NAT site_index_seed2_MGD site_index_seed3_ENH psp_modeling_dataset psp_modeling_dataset_null decmort_alt	site_index_seeds site_index_seeds_yc maximum_age yield_curves_raw 3.4.1, 3.4.2, 3.4.3
13	Apply cull reduction	09_apply_cull_reduction.sas	conifer_us_yield_curve_raw yield_curves_raw	cull_factors yield_tables_cull_adj 3.4
14	Model piece size (DBHq)	10_model_piece_size.sas	psp_modeling_dataset	parms_piece_size_con parms_piece_size_decid fit_piece_size_con fit_piece_size_decid 2.11, App
15	Area-weighted yield tables and validation graphs – NAT stands	11a_area_weighted_NAT.sas	avi_dbase.dbf yield_tables_cull_adj maximum_age psp_modeling_dataset psp_modeling_dataset_null	landbase_summ_strata_nsr_NAT landbase_summ_strata_nsr_ALL yield_tables_area_weighted_NAT yield_tables_overall_aw_NAT yield_tables_strata_aw_NAT 3.5
16	Area-weighted yield tables and validation graphs – MGD stands	11b_area_weighted_MGD.sas	avi_dbase.dbf yield_tables_cull_adj maximum_age psp_modeling_dataset psp_modeling_dataset_null	landbase_summ_strata_nsr_NAT yield_tables_area_weighted_MGD yield_tables_overall_aw_MGD yield_tables_strata_aw_MGD 3.5
17	Volume-age fit statistics	11c_volume_age_fit.sas	psp_modeling_dataset psp_modeling_dataset_null yield_tables_cull_adj	fit_vol_age_BCG fit_vol_age_YG fit_vol_age_YG_NSR 3.4.1
18	Compare predicated volumes to PSP volumes in natural net landbase	12_volume_today_calculation.sas	landbase_productive yield_tables_cull_adj psp_modeling_dataset	volume_today 3.6, App





			psp_modeling_dataset_null	
19	Graphic overlays of 2007 vs. 2011 yield curves	13_comparison_overlays_2007_DFMP.sas	yield_tables_cull_adj yield_tables_cull_adj (2007) yield_tables_area_weighted area_weighted_yield_tables (2007)	App
20	Calculate sawlog proportions for sawlog AAC	14a_sawlog_AAC.sas	psp_modeling_dataset wgp_plotsout2_c2010_d2010_N landbase_productive	sawlog_data sawlog_plots_become_nonmerch sawlog_ratios 3.8
21	Calculate sawlog proportions for sawlog AAC	14b_sawlog_AAC_sp.sas	psp_modeling_dataset wgp_plotsout2_c2010_d2010_N landbase_productive	sawlog_plots_become_nonmerch_sp sawlog_ratios_sp 3.8
22	Assess MGD PSP data against Regenerated Stand Productivity results	15_MGD_PSP_assessmt.sas	wgp_plotsout_c1510_d1511_R wgp_plotsout_c1510_d1511_N psp_modeling_dataset si_plot site_index_seeds2_MGD	App
23	Calculate areas for use in yield table generation (reporting)	16a_yg_nsr_area_for_report.sas	avi_dbase.dbf	area_for_report_yg_nsr App

were filtered out using the height to DBH ratio and sent to Weyerhaeuser for verification and correction. This list was later filtered down to trees with a large DBH and suspect height; the intent being to fix errors that significantly affect the calculation of top height, which is an integral component of the yield model. A number of these suspect trees were corrected based on the plot tally sheets. Some tree heights (including live trees with missing height) were re-calculated using tree DBH and the natural subregion based Provincial height-DBH equations.

There were no veteran designation codes in the natural stand PSP data. For managed stands, veteran trees were identified by viewing time series height-DBH graphs in conjunction with tree age information. For the purposes of yield curve development, veteran trees were considered any trees present after harvesting, where such presence was evident in height-DBH graphs. This information was used to replace veteran tree calls in the original data. Veteran trees in managed stands were excluded from compilation.

## 2.2.4 Tree-level compilation

Table 3 presents the tree-level compilation specifications. The variable names represent those that can be found in the tree output SAS data files (*wgp\_treesout\_N* and *wgp\_treesout\_R*).

Table 3. Specifications for tree-level compiled variables.

Variable	Description	Comments	SAS function
IsLive	Tree is live (Y) or dead (N)	Based on tree condition code (cond1) cond1 in (4,5,6) indicates dead or missing tree	IsLive_AB
IsBroken	Tree top is broken (Y) or not (N)	Based on tree condition code (cond1=10)	IsBroken_AB
ConDec	Species is coniferous (C) or deciduous (D)	Based on tree species code (species)	ConDec
ReportSpp	Species grouping for reporting purposes	Based on tree species code (species) Fa-Fb, Sw-Se, Sb-Lt were grouped	Spp_Remap
NewHt	Total height (m)	Based on actual tree height or Provincial natural HD_AB subregion based height-DBH equations, if missing	
PHF	Expansion factor (trees/ha)	Based on plot size	PHF_AB
BasalArea	Basal area (m <sup>2</sup> )	Based on DBH	BasalArea
Dibs	Stump diameter inside bark (cm)	Based on the variable exponent taper equation	TreeVolComp_AB
Dobs	Stump diameter outside bark (cm)	Based on dib to dob conversion equation	TreeVolComp_AB
Mh	Merchantable height (m)	As per FMA utilization (Table 8)	TreeVolComp_AB
Mlen	Merchantable length (m)	Merchantable height less 15 cm stump	TreeVolComp_AB
MerchVol	Merchantable volume (m <sup>3</sup> )	Gross volume based on As per FMA utilization	TreeVolComp_AB
TotVol	Total tree volume (m <sup>3</sup> )	Calculated to a 1.25 cm top dib, includes stump volume The cylinder formula was used only below 15 cm stump height	TreeVolComp_AB
TopHt_weak	Tree can be selected as top height tree (Y/N)	Healthy, non-veteran dominant or co-dominant tree (no fork or broken top), scars, conks, insect damage and crook or sweep codes are allowed	Topht_W
TopHt_strict	Tree can be selected as top height tree (Y/N)	Healthy, non-veteran dominant or co-dominant tree (no fork or broken top), scars, conks, insect damage and crook or sweep codes are <b>NOT</b> allowed	Topht_S

Most of the specifications follow the generally accepted compilation standards in Alberta. Natural subregion based variable exponent taper equation parameters were based on those provided by Dr. Huang with the exception of lodgepole pine in the central mixedwood, where Weyerhaeuser requested the use of localized taper parameters based on previous work in the FMA.<sup>8</sup> The cylinder formula was used only below 15 cm stump. Volume coefficients are listed in APPENDIX II – Volume Coefficients.

Healthy (see condition codes in Table 4), non-veteran, dominant and co-dominant trees were flagged as potential top height trees for the plot-level compilation. Trees could not have a broken or forked top, however, the less rigorous selection criteria allowed for scars, conks, insects, disease and crook or sweep. Species were grouped for reporting purposes only. The original species code was used to lookup volume and other coefficients. The SAS programs used to compile the tree level statistics are listed in Table 2.

## 2.2.5 Plot-level compilation

Table 5 presents the plot-level compilation specifications. The variable names represent those found in the plot output SAS data files (*wgp\_plotsout2\_cxxxx\_dxxxx\_N* and *wgp\_plotsout2\_cxxxx\_dxxxx\_R*).<sup>9</sup> All variable names include a suffix for tagging limit ('51' for trees  $\geq 51$  mm in DBH, '13' for trees  $\geq 1.3$  m height and '00' for all trees in the plot) and species group code. For example, HDC51\_CON represents the average height of dominant and co-dominant live

Table 4. Tree condition codes.

ID	Description
1	No signs of any damage, live and thrifty tree
2	Live crown 50%+ of tree height
3	Live crown 20-50% of tree height
4	Unhealthy tree, live crown less than 20% of tree height
5	The tree is dead and fallen down
6	The tree is dead and standing
7	The tree cannot be found
8	Non-suspect (in pure trembling aspen stands only)
9	Scars and other defects
10	Conks and punks
11	Broken tops
12	Insects
13	Disease
14	Crook or sweep (definition of sweep is 6 inches in 12 feet)
15	Browsed above DBH
16	Browsed below DBH
17	Rubs/scars caused by ungulates or fur bearers
18	Climatic; hail, snow, red belt
19	Forked Tops

Table 5. Specifications for plot-level compiled variables.

Variable	Description	Comments
N	Density (trees/ha)	All live trees
Ht	Average height (m)	All live trees
Dbh	Average DBH (cm)	All live trees
Hdc	Site height	All live dominant and co-dominant trees
Ba	Basal area (m <sup>2</sup> /ha)	All live trees
Qmd	Quadratic mean DBH (cm)	All live trees
Mvol	Merchantable volume (m <sup>3</sup> /ha)	All live trees gross volume based on FMA utilization stds
Tvol	Total tree volume (m <sup>3</sup> /ha)	All live trees calculated to a 1.25 cm top dib, includes stump and tip volume
Htopw	Top height based on weak selection	Minimum 2 trees per plot
Htops	Top height based on strict selection	Minimum 2 trees per plot

<sup>8</sup> Simons Reid Collins 1997. Validation of the variable exponent taper equation in the Weyerhaeuser Grande Prairie/Grande Cache FMA. Unpublished project report. Prepared for Weyerhaeuser Company Limited, Alberta Forestlands. 46 pp.

<sup>9</sup> Plots were compiled to various utilization standards depending on the yield group (Table 8). For example, the filename 'wgp\_plotsout2\_c1510\_d1511\_N' denotes that coniferous trees were compiled to the 15/10 utilization standard and deciduous trees were compiled to the 15/11 utilization standard.

conifer trees that are greater than or equal to 51 mm at DBH. All variables were compiled for all living trees in each plot measurement by species, conifer or deciduous, and overall.

Most of the specifications follow the generally accepted compilation standards in Alberta. Averages were based on the proper weighting by the tree expansion factors. Top height was defined as the average height of the 100 healthy, non-veteran, dominant and co-dominant trees per hectare. A minimum of two eligible trees were necessary to calculate top height in a 0.08 ha main plot and a minimum of two in the 0.04 ha reduced plots. Position codes of 1 (dominant), 2 (codominant), 6 (not assessed) or blank were used to identify eligible trees. Position codes of 6 were primarily assigned in REG PSPs.

The SAS programs used to compile the plot level statistics are listed in Table 2.

## 2.3 Define Yield Groups

PSP data were stratified into 23 yield groups based on spatially linked AVI attributes. Stratification rules were based on those used in landbase assignment for the 2011 DFMP and are consistent with rules used for the 2007 DFMP amendment. See landbase documentation for further description. Assignments are based on story of primary management (SoPM)<sup>10</sup> cover type and crown closure class. Stratification occurred in the timber supply model during the preparation of the net landbase.<sup>11</sup>

Table 6. Stratification of Grande Prairie FMA into yield groups (including grazing areas outside FMA included in timber supply analysis).

Broad Cover Group	Yield Group	Species Group	Crown Closure	Guide Species	Net Landbase Area					
					Natural		Managed		Total	
					Area (ha)	% Area	Area (ha)	% Area	Area (ha)	% Area
CX	1	PI	AB	PI	43,269	6.4	5,892	3.0	49,161	5.7
	2	PI	C	PI	52,031	7.8	59,404	30.4	111,435	12.9
	3	PI	D	PI	32,410	4.8	4,565	2.3	36,975	4.3
	4	[Sw,Fa]	AB	Sw	57,496	8.6	6,288	3.2	63,784	7.4
	5	[Sw,Fa]	CD	Sw	20,317	3.0	43,990	22.5	64,307	7.4
	6	[Sb, Lt]	AB	Sb	20,469	3.0	407	0.2	20,876	2.4
	7	[Sb, Lt]	CD	Sb	13,246	2.0	154	0.1	13,400	1.5
	8	PI-Sw	ABCD	PI	55,703	8.3	9,433	4.8	65,137	7.5
	9	Sw-PI	ABCD	Sw	35,265	5.3	2,952	1.5	38,217	4.4
	10	[PI-Sb, Sb-PI]	AB	PI	18,158	2.7	672	0.3	18,830	2.2
	11	[PI-Sb, Sb-PI]	CD	PI	10,412	1.6	195	0.1	10,607	1.2
	12	[Sw-Sb, Sb-Sw]	ABCD	Sw	15,640	2.3	534	0.3	16,174	1.9
CD	13	PI-Hwd	ABCD	PI	8,903	1.3	4,204	2.1	13,106	1.5
	14	[Sw, Sb]-Hwd	AB	Sw	9,962	1.5	11,509	5.9	21,471	2.5
	15	[Sw, Sb]-Hwd	CD	Sw	7,647	1.1	3,748	1.9	11,395	1.3
DC	16	Hwd-Swd	AB	At	21,108	3.1	1,868	1.0	22,977	2.7
	17	Hwd-Swd	CD	At	12,041	1.8	1,165	0.6	13,206	1.5
DX	18	Hwd	A	At	1,446	0.2	2,893	1.5	4,338	0.5
	19	Hwd	B	At	48,538	7.2	2,975	1.5	51,513	5.9
	20	Hwd	C	At	96,673	14.4	27,266	13.9	123,940	14.3
	21	Hwd	D	At	38,557	5.7	1,289	0.7	39,846	4.6
DX <sup>a</sup>	40	conifer US			51,973	7.7	0	0.0	51,973	6.0
n/a	50 <sup>b</sup>				36	0.0	4,238	2.2	4,275	0.5
Total					671,301	100.0	195,643	100.0	866,943	100.0

<sup>a</sup>Conifer understory yield group has DX overstory with greater than or equal to 250 understory conifer stems/ha.

<sup>10</sup> SOPM is defined as the story for which a stand is managed for. In most cases the SOPM of non-horizontal polygons was designated on the overstory.

<sup>11</sup> Weyerhaeuser Company Limited. 2009. Grande Prairie Forest Management Area. Land Base Assignment. Forest Management Agreement Area FMA #6900016.

<sup>b</sup>Sliver polygons in the timber supply model are assigned to yield group 50 (receives overall area-weighted curve)<sup>11</sup>

A breakdown of landbase areas by yield group, natural subregion and stand type (natural vs. managed) is provided in Table 7, below.

Table 7. Breakdown of landbase areas by yield group, natural subregion group and stand type (NAT vs. MGD).

Yield Group	Natural Stand Landbase Area (ha)					Managed Stand Landbase Area (ha)				
	Natural Subregion Group					Natural Subregion Group				
	CMW/DMW	LF	UF	M/SA/A	Total	CMW/DMW	LF	UF	M/SA/A	Total
1	2,679	12,339	17,371	10,881	43,269	473	2,059	2,776	584	5,892
2	1,695	14,445	22,858	13,033	52,031	2,621	22,534	27,451	6,797	59,404
3	188	3,028	15,363	13,831	32,410	0	1,970	2,577	18	4,565
4	5,378	28,289	10,615	13,215	57,496	921	4,821	506	39	6,288
5	1,331	13,645	2,204	3,137	20,317	3,900	29,609	9,160	1,322	43,990
6	0	14,807	5,662	0	20,469	0	272	135	0	407
7	0	10,856	2,390	0	13,246	0	120	34	0	154
8	1,407	12,293	19,228	22,775	55,703	84	3,261	4,906	1,182	9,433
9	1,170	11,742	11,182	11,172	35,265	76	1,432	1,317	127	2,952
10	1,967	6,433	8,990	767	18,158	2	152	486	33	672
11	198	3,111	6,362	741	10,412	7	103	83	1	195
12	1,654	6,784	5,579	1,622	15,640	158	285	71	21	534
13	762	5,092	2,394	655	8,903	115	2,273	1,816	0	4,204
14	2,302	6,460	1,085	116	9,962	407	9,631	1,462	9	11,509
15	980	6,321	322	23	7,647	104	2,821	822	1	3,748
16	4,784	12,308	4,016	0	21,108	30	1,399	440	0	1,868
17	1,916	7,477	2,647	0	12,041	42	827	296	0	1,165
18	540	865	41	0	1,446	382	2,108	403	0	2,893
19	14,617	30,170	3,751	0	48,538	703	2,068	205	0	2,975
20	23,690	66,786	6,198	0	96,673	13,806	13,045	414	0	27,266
21	8,653	28,299	1,605	0	38,557	314	829	146	0	1,289
40	n/a	n/a	n/a	n/a	51,973	n/a	n/a	n/a	n/a	0
50	n/a	n/a	n/a	n/a	36	n/a	n/a	n/a	n/a	4,238
Total					671,301					195,643

### 2.3.1 Horizontal stands

Horizontal stands are defined in the *Alberta Vegetation Inventory Standards Manual*<sup>12</sup> as “Stands ... composed of numerous homogeneous stands within other distinctly different homogeneous stands, but both or each individual stand are too small to delineate...”. Therefore, horizontal stands are processed somewhat differently than non-horizontal polygons. Although the different parts of a horizontal stand are located in the overstory and understory fields, they are not to be understood as overstory and understory but rather separate “mini-stands” within the polygon. The following rules for delineating horizontal stands were used:

#### Horizontal stands that had a valid forest cover type for both the overstory and understory fields:

1. If the overstory proportion of the stand was 50% or greater, the overstory was defined as the SoPM.
2. If the understory proportion of the stand was greater than 50%, the understory was defined as the SoPM.

#### Stands that had only one valid forest cover type:

1. If the overstory was the only valid forest cover type then the SoPM was defined as the overstory.

<sup>12</sup> Alberta Environmental Protection. 1991. Resource Data Division. Data Acquisition Branch. Alberta Vegetation Inventory Standards Manual. Version 2.1.

2. If the understory was the only valid forest covertype then the SoPM was defined as the understory.

## 2.4 FMA Utilization Standards

Utilization standards for coniferous species were 15 cm stump diameter outside bark (DOB), 10 cm top diameter inside bark (DIB) with a minimum stump height of 15 cm for all yield groups (Table 8).

Utilization standards for deciduous species differed whether the yield group was coniferous- or deciduous-leading. Deciduous species top DIB was 10 cm in coniferous-leading yield groups (yield groups 1-17 and 40), and 11 cm in deciduous-leading yield groups (yield groups 18-21). Minimum merchantable length for all species was 3.66 m.

Table 8. Utilization standards for PSP compilation.

Utilization Parameter	Conifer	Deciduous
Stump DOB / top DIB (cm)		
Conifer yield groups	15/10	15/10
Deciduous yield groups	15/10	15/11
Stump height (cm)	15	15
Min. merch. length (m)	3.66	3.66

## 2.5 Yield Model Development

Yield relationships were derived for each yield group using a two-stage modeling approach. First, individual plot gross merchantable volume was modeled as a function of top height (Section 2.5.1). Then, related stand growth was related to site productivity by modeling stand top height as a function of AVI stand age (Section 2.5.2). Lastly, volume-age tables were generated by yield group and natural subregion by calculating the average site index, or site index seed, by guide species group and natural subregion (Section 2.6), and combining the volume-height and height-age models.

The naming schema of yield tables is documented in Table 9. In the last (2007) submission, two types of regenerated stands were identified: REG (regenerated without tending) and RST (regenerated with tending). For the 2011 DFMP submission, these two types were combined to form a MGD (managed) type representing all regenerating stands except those with deployment of genetically improved stock (ENH).

Table 9. Yield table stand types in Weyerhaeuser Grande Prairie FMA.

Stand Type	Label	Definition	Modeling Notes	
			Volume Top-Height Model	Site Index Seed for Top-Height Age Model
Natural	NAT	Stands > 30 years	Section 2.5.1	Section 2.6.1. Link inventory age to plot top height. Use last measurement NAT PSPs to determine average site index by guide species/natural subregion
Managed (regenerated stands without improved stock)	MGD	Regenerating stands without genetically improved stock	Section 2.5.1	Section 2.6.2. Use results from Regenerated Stand Productivity study to determine average site index by guide species/natural subregion for PL and SW. Default to NAT site index seed for AT and SB.
Enhanced	ENH	Regenerating stands with genetically improved stock	Section 2.5.1	Section 2.6.3. Calculate by adding 3.5% to MGD conifer top height at rotation age in the PI-C density yield group (yield group 2) , and 2.6% to MGD conifer top height at rotation age in the [Sw,Fa]-CD density yield group (yield group 5) <sup>13</sup>
Conifer Understory	UND		Develop a volume/age model based on plots in this stratum	

<sup>13</sup> ASRD approval received in a letter from Vicky Bossé dated July 29, 2009.

## 2.5.1 Volume-height-model

Volume-height models developed as part of the 2007 amendment were used for creating 2011 yield tables. The 2007 model development is described in this section.

For the 2007 submission, yield group-level volume height models were developed from individual plot relationships between merchantable volume and top height (Equation 1). Top height (weak definition as described in Table 3) was used as the height index for yield modeling. Yield groups with the same species group were combined by parameterizing crown closure into parameter 'a' with 'dummy' variables (Equation 1). For example, yield groups 1-3 (PI) were modeled together, and the effect of crown closure was accounted for in parameter 'a' (Table 10, Table 13). This forced the volume-height model to be consistent between yield groups within species groups.

$$\text{Equation 1: } V = a \frac{1 - e^{c*(H-d)}}{1 + b * e^{c*(H-d)}}$$

- where V = Gross merchantable volume (m<sup>3</sup>/ha)  
 H = Guide species<sup>14</sup> top height (m)  
 a,b,c,d = Coefficients  
 a = Upper asymptote  
 d = Height below which merchantable volume is 0

Merchantable volume of the major species group (conifer volume for yield groups 1-15 and deciduous volume for yield groups 16-21) was then modeled as a function of top height using Equation 1. The major species volume-height model was restricted so that it did not exceed the total (all species) volume-height model. Incidental volumes in the resulting volume-age models were simply the difference between the total and major species volume-age models.

The volume-height models were developed with the option to estimate parameter 'd' from the data, or to substitute visual estimates for each yield group. Model estimates for the height at which the yield group starts to accumulate merchantable volume were found to be too low (e.g. as low as 2m), therefore the parameter 'd' in Equation 1 was estimated visually for each yield group.

Table 10. Yield groups combined in volume-height model.

Species Group	Volume-Height Model Group	Included Yield Groups
PI	[123]	1,2,3
[Sw,Fa]	[45]	4,5
[Sb,Lt]	[67]	6,7
PI-Sw	[8]	8
Sw-PI	[9]	9
[PI-Sb,Sb-PI]	[1011]	10,11
[Sw-Sb,Sb-Sw]	[12]	12
PI-hwd	[13]	13
[Sw-Sb]-hwd	[1415]	14, 15
hwd-swd	[1617]	16, 17
hwd	[1821]	18,19,20,21

<sup>14</sup> Guide species is the leading species for the particular yield group (Table 6).



A few of the yield groups did not have adequate PSP representation beyond stand height of 22 m (Table 11). For these yield groups, the asymptote of the volume-height model (parameter 'a') was limited to the asymptote of similar yield groups to ensure model consistency across yield groups.

Table 11. Volume-height asymptote substitutions for yield group with limited PSP representation.

Yield Groups with Limited Representation	Use Asymptote From Yield Group	Asymptote Value (m <sup>3</sup> /ha)	Comment
12	4	431	[Sw-Sb,Sb-Sw] should not exceed [Sw,Fa] – AB density
6,7	5	533	[Sb,Lt] should not exceed [Sw,Fa] – CD density
14,15	5	533	[Sw-Sb]-hwd should not exceed [Sw,Fa] – CD density

The volume height models for two yield groups with limited plot representation were extremely sensitive to outliers. These outliers were removed from the volume-height model (Table 12) during model development. The red line in Figure 2 and Figure 3 illustrate the 2007 models with the plots left in.

Table 12. Plots removed from volume-height model.

Yield Group	Plots Removed From Total Volume-Height Model	Plots Removed From Major Species Volume-Height Model
12	606207000036_NAT	606207000036_NAT
13	606409000033_NAT	606409000033_NAT 606308000001_NAT 606507000004_NAT

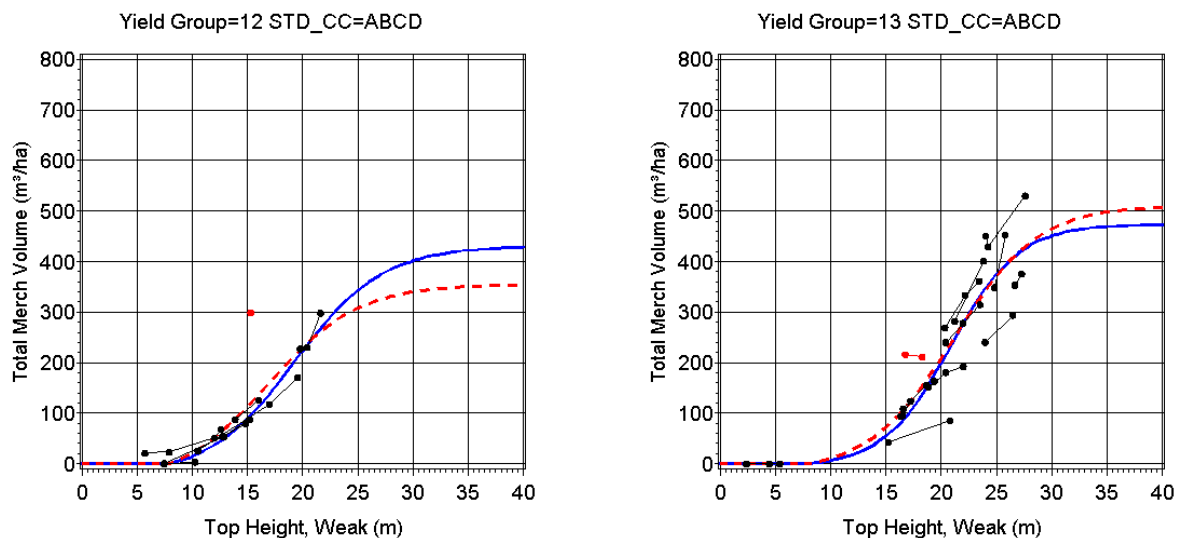


Figure 2. Effect of removing plots from total volume-height model (based on 2007 modeling dataset).



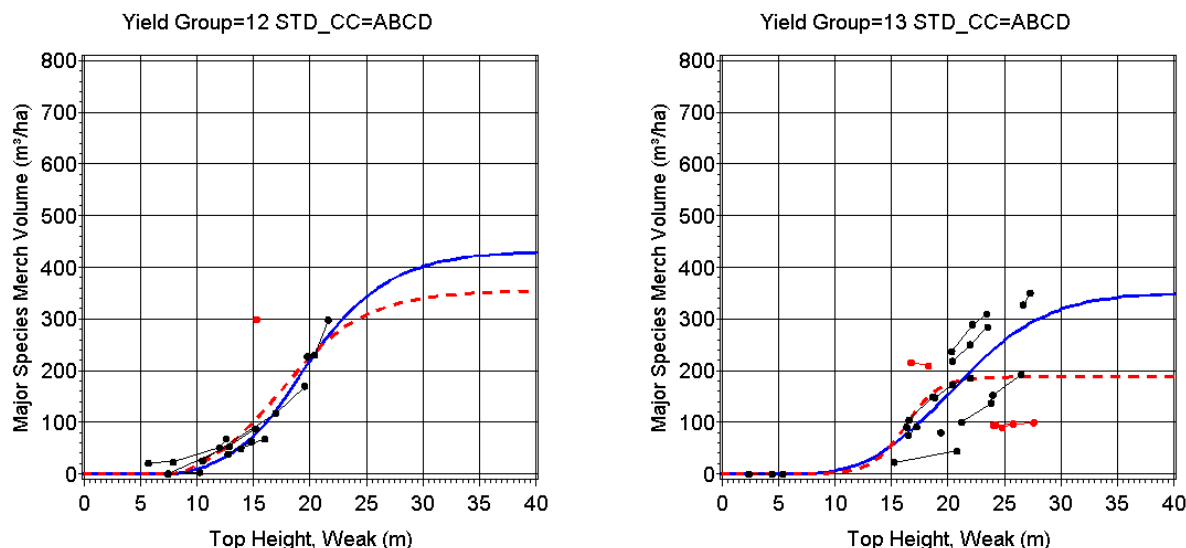


Figure 3. Effect of removing plots from major species volume-height model (based on 2007 modeling dataset).

Parameters for the volume-top height models developed in 2007 are provided in Table 13.

Table 13. Volume-height model parameters for Grande Prairie FMA yield tables.

Yield Group	Species Group	Crown Closure	Total Volume Parameters <sup>a</sup>				Major Species Group Volume Parameters <sup>a</sup>			
			a	b	c	d	a	b	c	d
1	PI	AB	493.4	11.3281	-0.2084	8	408.9	11.0235	-0.2277	8
2	PI	C	547.1	11.3281	-0.2084	8	475.1	11.0235	-0.2277	8
3	PI	D	594.9	11.3281	-0.2084	8	507.8	11.0235	-0.2277	8
4	[Sw,Fa]	AB	431.0	8.6364	-0.1402	6	406.4	8.6384	-0.1310	6
5	[Sw,Fa]	CD	532.6	8.6364	-0.1402	6	458.5	8.6384	-0.1310	6
6	[Sb,Lt]	AB	470.5	15.0796	-0.2238	8	470.5	15.8909	-0.2277	8
7	[Sb,Lt]	CD	533.0	15.0796	-0.2238	8	533.0	15.8909	-0.2277	8
8	PI-Sw	ABCD	460.3	7.3263	-0.2059	8	358.7	6.2343	-0.2286	8
9	Sw-PI	ABCD	413.2	18.4618	-0.2488	8	371.4	15.6661	-0.2388	8
10	[PI-Sb,Sb-PI]	AB	354.4	7.9875	-0.2474	8	354.4	6.1819	-0.2206	8
11	[PI-Sb,Sb-PI]	CD	373.6	7.9875	-0.2474	8	354.4	6.1819	-0.2206	8
12	[Sw-Sb,Sb-Sw]	ABCD	431.0	17.2416	-0.2517	8	431.0	35.7856	-0.3054	8
13	PI-hwd	ABCD	473.9	69.5996	-0.3291	8	351.3	23.5295	-0.2492	8
14	[Sw-Sb]-hwd	AB	517.3	6.6951	-0.1559	8	253.8	22.0328	-0.1951	8
15	[Sw-Sb]-hwd	CD	533.0	6.6951	-0.1559	8	400.0	22.0328	-0.1951	8
16	hwd-swd	AB	404.7	14.5359	-0.2093	8	404.7	4.9013	-0.0969	8
17	hwd-swd	CD	491.4	14.5359	-0.2093	8	431.8	4.9013	-0.0969	8
18	hwd	A	427.7	13.6508	-0.2405	11	332.9	17.2670	-0.2758	11
19	hwd	B	481.9	13.6508	-0.2405	11	412.9	17.2670	-0.2758	11
20	hwd	C	489.9	13.6508	-0.2405	11	417.9	17.2670	-0.2758	11
21	hwd	D	489.9	13.6508	-0.2405	11	435.4	17.2670	-0.2758	11

<sup>a</sup>Bold for parameters a, b and c indicate significance (p<0.05).

## 2.5.2 Height-age model

For the 2007 DFMP amendment, height-age models were developed using a difference equation approach, modeling top height growth (weak definition as described in Table 3) as a function of total AVI age for each guide species using a process developed by ASRD.<sup>15</sup> Model fit was poor for pine and white spruce. For pine, the existing GYPSY model top height functions were used to replace the local model. For white spruce, a total-age based SW height-age model was developed by adding years to breast height to the 1997 ARSD top height model<sup>16</sup>, and refitting the model for top height and total age using the difference equation approach.

For the 2011 DFMP, Weyerhaeuser elected to use the newest (2009) GYPSY top height models to represent height-age relationships. The new GYPSY top height models had been recently validated against the Weyerhaeuser PSP dataset, and ASRD had concerns regarding the modeling approach used in 2007 for white spruce,

therefore this was deemed a reasonable and cost-efficient approach to yield table development. The GYPSY model provided separate top height-age equations exist by species group (Equations 2-5):

Table 14. GYPSY 2009 height-age model parameters.

Guide Species	Model Parameters			
	b1	b2	b3	b4
AT	9.908888	-3.92451	-0.32778	0.134376
PL	12.84571	-5.73936	-0.91312	0.150668
SB	14.56236	-6.04705	-1.53715	0.240174
SW	12.14943	-3.77051	-0.28534	0.165483

$$\text{Equation 2: } HT_{AT} = SI_{AT_{tot}} * \frac{1 + \exp(b1 + b2\sqrt{\log(50 + 1)} + b3 * (\log(SI_{AT_{tot}}))^2 + b4 * \sqrt{50})}{1 + \exp(b1 + b2\sqrt{\log(\text{TotAge} + 1)} + b3 * (\log(SI_{AT_{tot}}))^2 + b4 * \sqrt{50})}$$

$$\text{Equation 3: } HT_{PL} = SI_{PL_{tot}} * \frac{1 + \exp(b1 + b2\sqrt{\log(50 + 1)} + b3 * \log(SI_{PL_{tot}}) + b4 * \sqrt{50})}{1 + \exp(b1 + b2\sqrt{\log(\text{TotAge} + 1)} + b3 * \log(SI_{PL_{tot}}) + b4 * \sqrt{50})}$$

$$\text{Equation 4: } HT_{SB} = SI_{SB_{tot}} * \frac{1 + \exp(b1 + b2\sqrt{\log(50 + 1)} + b3 * \log(SI_{SB_{tot}}) + b4 * \sqrt{50})}{1 + \exp(b1 + b2\sqrt{\log(\text{TotAge} + 1)} + b3 * \log(SI_{SB_{tot}}) + b4 * \sqrt{50})}$$

$$\text{Equation 5: } HT_{SW} = SI_{SW_{tot}} * \frac{1 + \exp(b1 + b2\sqrt{\log(50^2 + 1)} + b3 * (\log(SI_{SW_{tot}}))^2 + b4 * \sqrt{50})}{1 + \exp(b1 + b2\sqrt{\log(\text{TotAge}^2 + 1)} + b3 * (\log(SI_{SW_{tot}}))^2 + b4 * \sqrt{50})}$$

where SI = Site index of guide species (m)

<sup>15</sup> Huang, S., Morgan, D.J., Klappstein, G., Heidt, J., Yang, Y., and Greidanus, G. 2001. A growth and yield projection system (GYPSY) for natural and regenerated lodgepole pine stands within an ecologically based, enhanced forest management framework: yield tables for seed-origin natural and regenerated lodgepole pine stands. ASRD Tech. Rep. Pub. No. T/485, Edmonton, Alberta. 193p.

<sup>16</sup> Huang, S. 1997. Subregion-based compatible height and site index models for young and mature stands in Alberta: revisions and summaries (Part II). Forest Management Research Note. Alberta Environmental Protection No. 10 August 1997. Pub. No.:T/390.

HT = Top height of guide species (m)  
 TA = Total age (AVI-based) (years)  
 b1,b2,b3,b4 = Height-age model coefficients (Table 14)

## 2.6 Site Index Seeds

Separate methods were used to obtain site index seeds for NAT, MGD and ENH yield curves. The calculation and selection of site index seeds is described further in Section 3.3.

### 2.6.1 Natural stands

The site index seeds for NAT yield tables were calculated as the average site index from the most recent measurement of each NAT PSP by guide species and natural subregion. Site index seeds were calculated for each plot using the parameters from the height-age model (Section 2.5.2) and a process developed by ASRD (Equations 6-9 and Equation 10).<sup>17,18</sup>

$$\text{Equation 6: } SI1_{ATot} = HT_{AT} * \frac{1 + \exp(b1 + b2\sqrt{\log(\text{TotAge} + 1)} + b3 * (\log(SI0_{ATot}))^2 + b4 * \sqrt{50})}{1 + \exp(b1 + b2\sqrt{\log(50 + 1)} + b3 * (\log(SI0_{ATot}))^2 + b4 * \sqrt{50})}$$

$$\text{Equation 7: } SI1_{PLtot} = HT_{PL} * \frac{1 + \exp(b1 + b2\sqrt{\log(\text{TotAge} + 1)} + b3 * \log(SI0_{PLtot}) + b4 * \sqrt{50})}{1 + \exp(b1 + b2\sqrt{\log(50 + 1)} + b3 * \log(SI0_{PLtot}) + b4 * \sqrt{50})}$$

$$\text{Equation 8: } SI1_{SBtot} = HT_{SB} * \frac{1 + \exp(b1 + b2\sqrt{\log(\text{TotAge} + 1)} + b3 * \log(SI0_{SBtot}) + b4 * \sqrt{50})}{1 + \exp(b1 + b2\sqrt{\log(50 + 1)} + b3 * \log(SI0_{SBtot}) + b4 * \sqrt{50})}$$

$$\text{Equation 9: } SI1_{SWtot} = HT_{SW} * \frac{1 + \exp(b1 + b2\sqrt{\log(\text{TotAge}^2 + 1)} + b3 * (\log(SI0_{SWtot}))^2 + b4 * \sqrt{50})}{1 + \exp(b1 + b2\sqrt{\log(50^2 + 1)} + b3 * (\log(SI0_{SWtot}))^2 + b4 * \sqrt{50})}$$

$$\text{Equation 10: } SI0 = (SI0 + SI1)/2$$

where SI1 = Site index of plot (m)  
 SI0 = Site index of plot (m). The program solves iteratively until there is no difference between SI0 and SI1  
 HT = Top height of plot (m)  
 TA = Total age (AVI-based) of plot (years)  
 b1,b2,b3,b4 = Height-age model coefficients (Table 14)

<sup>17</sup> Huang, S. 1997. Development of compatible height and site index models for young and mature stands within an ecosystem-based management framework. In "Empirical and Process-based Models for Forest Tree and Stand Growth Simulation". A. Amaro and M. Tomé (editors), Oeiras, Portugal. pp. 61-98.

<sup>18</sup> Huang, S. 2009. Notes on GYPSY SAS Codes and Examples. Unpublished report.

## 2.6.2 Managed stands

In the 2007 submission, it was determined that there was insufficient PSP data to determine site index seeds for managed (regenerating) stands. In 2007, Weyerhaeuser undertook a Regenerated Stand Productivity (RSP) study with the intent to obtain estimates of regenerated stand site index. The results of this study were updated in 2009 to incorporate new GYPSY top height models into estimates of site index.<sup>19</sup>

Results of the RSP study provided estimates of site index by guide species, natural subregion and ecosite for PL, SW and AT. Results for AT were not as robust as those for PL and SW, and as such only PL and SW results were used for calculating MGD site index seeds for the 2011 DFMP. AT and SB site index seeds for MGD stands defaulted to NAT site index values.

For PL and SW, the site index estimates by natural subregion and ecosite were area-weighted using the 2011 landbase to provide estimates by natural subregion. Estimates of site index were linked to the landbase by guide species, natural subregion and ecosite. Some ecosites were not represented in the RSP analysis; in these cases, landbase areas were assigned the minimum site index observed for that guide species and natural subregion. Landbase areas were then rolled up to guide species/natural subregion using landbase areas as a weight to calculate average site index. Additional details on the methods used are provided in APPENDIX III – Calculation of Site Index Seeds Using Results From Regenerated Stand Productivity Study.

## 2.6.3 Enhanced stands

Enhanced yield curves were developed to reflect increases in yield resulting from the deployment of genetically improved stock. In order to develop these curves, site index seeds were required to initiate yield curve development.

In 2009, Alberta Sustainable Resources Development undertook an analysis of progeny trial data for the G1 (white spruce)<sup>20</sup> and B1 (pine)<sup>21</sup> orchards. The results of analysis were deemed satisfactory for white spruce, but were unclear for pine. ASRD indicated that additional investigation was required in determining effects of genetic gain on pine progeny trial results. In a letter issued by ASRD on July 29, 2009, genetic gains were approved by ASRD for use in yield table development as follows:

- PL: 3.5% height gain at rotation age (80 years); and
- SW: 2.6% height gain at rotation age (105 years).

This information was used to calculate an ENH site index seed for yield groups 2 and 5 by applying the approved height gain to MGD height-age curves. For example, for pine:

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<sup>19</sup> Timberline Natural Resource Group. 2009. Regenerated Stand Productivity in North Central Alberta, Report #1, Weyerhaeuser Forest Management Area: Revised Using New GYPSY Top Height Models. Unpublished report.

<sup>20</sup> Hansen, C. 2009. Genetic test analysis report, Region G1/G2 white spruce G135A and G135B progeny trials: 18 year results. Technical File Report ATISC #09-39. Alberta Tree Improvement and Seed Centre, Alberta Sustainable Resource Development. Smoky Lake, AB. Unpublished report.

<sup>21</sup> Rweyongeza, D. 2009. Prediction of height and diameter breeding region values and genetic gain for lodgepole pine in breeding region B1. Alberta Tree Improvement and Seed Centre, Alberta Sustainable Resource Development. Smoky Lake, AB. Unpublished report.

- Take the MGD site index seeds by natural subregion group for yield group #2
- Using Equation 3, determine top height at rotation age (80 years) for each natural subregion
- Increase each top height at rotation age by 3.5%
- Using Equation 7, calculate new site index seeds for each natural subregion

The resulting site index seeds were used to initiate yield curves for ENH stands.

## 2.7 Conifer Understory Yield Table Development

Total volume was modeled as function of SoPM inventory age for the conifer understory yield tables (Equation 11). Then, conifer volume was modeled as a function of SoPM age, ensuring the conifer volume-age model did not exceed the total volume-age model. Incidental deciduous volume was calculated as the difference between the total and conifer volume-age models. Net merchantable volume yield tables used in the timber supply model were generated by adjusting for cull (Section 2.8).

Equation 11:  $V = a * (1 - \exp(-b * \text{totage}))^c$

where V = Gross merchantable volume (m<sup>3</sup>/ha)  
 age = Total age (AVI-based) of plot (years)  
 a,b,c = Coefficients

## 2.8 Conifer and Deciduous Cull Reduction

Gross merchantable volumes were adjusted based on softwood and hardwood cull factors to generate net merchantable volumes. Scale data from 1999 – 2005 has not been linked to a natural subregion at this point. Therefore, cull reductions from the 1999 DFMP analysis were used as an approximation (Table 15).

In the 1999 analysis, conifer cull deduction was calculated by analyzing scaling records from the Grande Prairie locations collected between 1993 and 1998. The cull volume for each scale load associated with the classification of heartrot, buttrot, saprot and catface was calculated. This was then summed by

Table 15. Cull reductions used in Grande Prairie FMA yield tables.

Natural Subregion	Conifer Cull (%)	Deciduous Cull (%)	
		Yield Group 1-17	Yield Group 18-21
Central/Dry Mixedwood	1.86	5.6	4.1
Lower Foothills	1.86	5.6	4.1
Upper Foothills	1.59	5.6	4.1
Montane/Subalpine/Alpine	3.49	5.6	4.1

natural subregion, as well as total gross scaled volume and a cull percent deduction was determined. Cull percent values calculated for the Lower Foothills were used because of the insufficient sample size in the Central Mixedwood, Dry Mixedwood and Peace River Parkland regions. Likewise, values calculated for the Subalpine region were used for the Montane region. The cull percentages were not differentiated by yield groups but applied globally across all of the strata within the associated natural subregion.

Ainsworth Lumber Co. Ltd. provided a cull reduction estimate for the pure deciduous yield groups (yield groups 18-21) from volume-weighted scale records collected between 1995 and 2008.<sup>22</sup>

<sup>22</sup> Deciduous cull estimates provided by Dave Beck (Divisional Forester, Ainsworth Engineered Canada LP) in an email dated January 21, 2009.

The cull factor was applied to volumes at all age classes in natural coniferous yield tables. A single cull factor of 5.6% was applied to the hardwood incidental volumes in all age classes in the natural yield tables for Yield Groups 1-17. In managed stand yield tables, the cull factors were only applied after the culmination age.

## 2.9 Deciduous Mortality

Deciduous mortality functions were developed in conjunction with ASRD for the 2007 submission, as there were insufficient data to model mortality.<sup>23</sup> In summary, deciduous volume in yield tables is capped at 110 years, flatlined to 130 years and then declines at such a rate that the pure deciduous composite curve has approximately 75 m<sup>3</sup>/ha deciduous volume at 180 years (Figure 4). The deciduous mortality assumption was applied to the deciduous component of all yield groups. However, the deciduous volume reduction in coniferous yield groups occurred at a constant rate until there was zero deciduous volume left in the stand.

There are two caveats with the deciduous mortality function:

1. There is no data to support the deciduous mortality assumptions.
2. Weyerhaeuser would prefer to model stand succession rather than use mortality assumptions with subsequent deciduous volume growth when the stand is regenerated in the timber supply model.

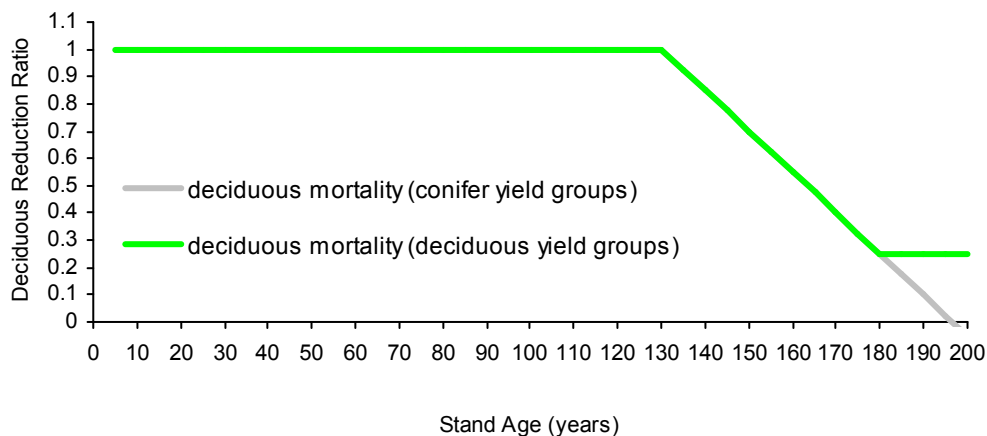


Figure 4. Deciduous mortality volume reduction in Grande Prairie FMA yield curves.

<sup>23</sup> J.S. Thrower and Associates Ltd. 2005. Options for revised deciduous volume mortality curve. Memo to Weyerhaeuser dated November 3, 2005. ASRD approval in principle received by email November 4, 2005.

## 2.10 Conifer Yield Termination Age

Conifer volumes in NAT yield tables were capped beyond the age range of the PSP data to minimize extrapolation errors in the yield tables. The maximum age of the PSP data was calculated as the 90<sup>th</sup> percentile age of PSPs in each yield group. The termination age, beyond which conifer volume are capped, was determined as 30 years after the maximum age (Table 17). Conifer volumes were not capped in MGD/ENH stands as there are no regenerated PSPs in mature stands to determine a maximum age. The timber supply model also harvests these stands well before the termination age indicated by NAT PSPs.

Table 17. Conifer yield termination age in Grande Prairie FMA yield tables.

Yield Group	Species Group	Density	Maximum Age	Termination Age
1	PI	AB	120	150
2	PI	C	110	140
3	PI	D	100	130
4	[Sw,Fa]	AB	150	180
5	[Sw,Fa]	CD	100	130
6	[Sb,Lt]	AB	160	190
7	[Sb,Lt]	CD	150	180
8	PI-Sw	ABCD	135	165
9	Sw-PI	ABCD	130	160
10	[PI-Sb,Sb-PI]	AB	110	140
11	[PI-Sb,Sb-PI]	CD	110	140
12	[Sw-Sb,Sb-Sw]	ABCD	165	195
13	PI-hwd	ABCD	100	130
14	[Sw-Sb]-hwd	AB	110	140
15	[Sw-Sb]-hwd	CD	100	130
16	hwd-swd	AB	105	135
17	hwd-swd	CD	100	130
18	hwd	A	100	130
19	hwd	B	90	120
20	hwd	C	100	130
21	hwd	D	80	110

## 2.11 Estimation of Piece Size

Recent planning standards require an estimate of piece size to be included in the yield table. Details of the piece size model are provided in APPENDIX X – Estimation of Piece Size.

## 2.12 Sawlog AAC

As part of timber supply analysis, Weyerhaeuser would like to assess the potential sawlog supply based on the allocated AAC. A sawlog is defined as any merchantable log that has a stump diameter of 20 cm or greater (Table 16).

A simplified approach was used to determine the potential AAC for sawlogs. This approach follows the previously employed methods for determining the effects of conifer utilization change for the Weyerhaeuser FMA area.

Plot data used for 2011 yield curve assessments were recompiled, changing stump diameter outside of bark to 20 cm for coniferous species. Data were restricted to plots from natural stands which meet minimum merchantability limits<sup>24</sup>. Plot attribute assignments were the same as for yield curve development. The average coniferous volume was then calculated for each utilization standard (15/10 and 20/10) by broad cover group, and the ratio-of-means method was used to calculate a utilization ratio for each broad cover group. An area-weighted average volume was calculated across all broad cover groups using the proportion of net landbase area of natural stands, and used to determine a weighted ratio of means across all broad cover groups.

Table 16. Utilization standards for sawlogs.

Utilization Parameter	Conifer
Stump DOB / top DIB (cm)	
Conifer yield groups	20/10
Deciduous yield groups	20/10
Stump height (cm)	15
Min. merch. length (m)	3.66

<sup>24</sup> Minimum merchantability criteria from the 2007 DFMP were used. For deciduous stands, a minimum age of 60 years was used; for aliother stand types, a minimum coniferous merchantable volume of 47.5 m<sup>3</sup>/ha was used.



### 3. RESULTS & DISCUSSION

#### 3.1 Plot Netdown

There are 3,059 observations from natural PSPs and 780 observations from regenerated PSPs in the Grande Prairie FMA (Table 18). Of these, 967 natural PSP observations and 58 regenerated PSP observations were removed from the PSP modeling dataset for the reasons indicated in the table. This left 2,092 natural PSP observations and 722 regenerated PSP observations for analysis. A breakdown of the number of observations by yield group and PSP type is provided in Table 19.

Table 18. PSP netdown in Grande Prairie FMA.

Netdown Type	PSP Type		Total
	NAT	MGD	
Total PSP Observations	3,059	780	3,839
Harvested Natural PSPs	252	-	252
Landbase Deletions			
Outside FMA	3	-	3
Dispositions	68	7	75
Non-Forested	72	7	79
Buffers	209	6	215
Subjective	256	-	256
Wrong type <sup>1</sup>	107	35	142
Genetic PSPs <sup>2</sup>	-	3	3
Obs in Net Landbase	2,092	722	2,814

<sup>1</sup> Wrong type = NAT in a cutblock or MGD not in a cutblock.

<sup>2</sup> Genetic plots requiring additional data cleaning prior to inclusion in dataset.

Table 19. Distribution of PSP observations by yield group and PSP type.

Broad Cover Group	Yield Group	Species Group	Crown Closure	Guide Species	Number of Permanent Sample Plot Observations					
					Natural		Managed		Total	
					Obs	% Obs	Obs	% Obs	Obs	% Obs
CX	1	PI	AB	PI	200	9.6	46	6.4	246	8.7
	2	PI	C	PI	210	10.0	170	23.5	380	13.5
	3	PI	D	PI	103	4.9	20	2.8	123	4.4
	4	[Sw,Fa]	AB	Sw	145	6.9	42	5.8	187	6.6
	5	[Sw,Fa]	CD	Sw	47	2.2	159	22.0	206	7.3
	6	[Sb, Lt]	AB	Sb	52	2.5	6	0.8	58	2.1
	7	[Sb, Lt]	CD	Sb	40	1.9	-	0.0	40	1.4
	8	PI-Sw	ABCD	PI	196	9.4	88	12.2	284	10.1
	9	Sw-PI	ABCD	Sw	109	5.2	33	4.6	142	5.0
	10	[PI-Sb, Sb-PI]	AB	PI	66	3.2	8	1.1	74	2.6
	11	[PI-Sb, Sb-PI]	CD	PI	35	1.7	-	0.0	35	1.2
	CD	12	[Sw-Sb, Sb-Sw]	ABCD	Sw	44	2.1	-	0.0	44
13		PI-Hwd	ABCD	PI	38	1.8	30	4.2	68	2.4
14		[Sw, Sb]-Hwd	AB	Sw	26	1.2	28	3.9	54	1.9
DC	15	[Sw, Sb]-Hwd	CD	Sw	27	1.3	14	1.9	41	1.5
	16	Hwd-Swd	AB	At	71	3.4	7	1.0	78	2.8
DX	17	Hwd-Swd	CD	At	47	2.2	3	0.4	50	1.8
	18	Hwd	A	At	4	0.2	24	3.3	28	1.0
	19	Hwd	B	At	143	6.8	6	0.8	149	5.3
	20	Hwd	C	At	269	12.9	21	2.9	290	10.3
DX <sup>a</sup>	21	Hwd	D	At	89	4.3	1	0.1	90	3.2
	40	conifer US			131	6.3	-	0.0	131	4.7
n/a	50 <sup>b</sup>				-	0.0	16	2.2	16	0.6
Total					2,092	100.0	722	100.0	2,814	100.0

Note that not all observations were used in all aspects of yield curve development; additional PSP netdown information is provided in each relevant section of the results and discussion.



## 3.2 Model Assessment

### 3.2.1 Volume-height model

The 2007 volume-height models for yield groups 1-21 were validated using updated Weyerhaeuser PSP data. A total of 2,092 observations were available for validation, as described in Table 20. Two outlier plots (6 observations) were removed from the dataset (plots 606303000004\_REG and 606412000016\_REG). Plots belonging to yield stratum 40 or 50 were removed since these stand types were not modeled. Observations missing a valid top height were also excluded, as were those observations missing both top height and volume (nulls). Observations with a valid top height but no merchantable volume were retained and included in model assessment.

Table 20. Observations used for volume-height model validation.

Yield Stratum	PSP Type		Total
	NAT	MGD	
Obs in Net Landbase	2,092	722	2,814
Yield Stratum 40	131	-	131
Yield Stratum 50	-	16	16
Missing Top Height	264	217	481
Null Observation	9	15	24
Outlier	-	6	6
Obs for Model Validn	1,688	468	2,156

During the development of volume-height models, a PSP observation was deemed valid if there was a top height present for the guide species assigned to that plot. This resulted in discarding many observations where top height was present, but not for the guide species assigned to that plot. This meant that, for example, if the guide species was AT (based on landbase assignment) and there was no top height for AT (based on plot data), the observation was discarded – even if top height for another deciduous species was present. However, yield curves for the DFMP reflect estimates of volume for deciduous stands, not just aspen stands; the same applies to the inclusion of fir in white spruce stands. As such, for 2011 volume-height model validation, two exceptions to this rule were made:

- If guide species is AT, top height for PB is an acceptable alternative (104 NAT and 7 MGD observations)
- If guide species is SW, top height for FA is an acceptable alternative (13 NAT and 5 MGD observations)

Fit statistics for total and major species volume are provided in Table 21. R-squared values are generally good for all yield groups, with values > 0.6 in most cases. Bias is below 10% for most yield groups with a few exceptions (YG 12, 14, 16 and 18). Note that for YG 18, only 4 out of 23 observations were from mature (NAT) stands. There are no trends in bias across yield groups – e.g., some yield groups show positive bias while others show negative bias.

Table 21. Fit statistics for volume-height models.

Yield Stratum	n Obs	Total Vol		Major Spp Vol	
		% Bias	R <sup>2</sup>	% Bias	R <sup>2</sup>
1	201	1.7	0.77	3.7	0.75
2	292	0.4	0.82	-1.2	0.77
3	120	5.4	0.75	4.3	0.67
4	162	7.6	0.67	8.2	0.57
5	119	4.8	0.91	1.4	0.82
6	47	6.0	0.79	6.4	0.79
7	37	1.3	0.90	1.1	0.91
8	228	3.7	0.76	5.2	0.68
9	120	0.7	0.76	3.1	0.75
10	48	-9.6	0.71	-9.0	0.68
11	29	-1.5	0.46	1.6	0.44
12	31	13.7	0.71	16.7	0.69
13	43	-8.5	0.78	-0.1	0.72
14	33	21.2	0.85	13.7	0.82
15	39	5.9	0.77	2.1	0.91
16	57	12.0	0.81	-9.4	0.59
17	38	-3.2	0.60	-5.1	0.73
18	23	40.9	0.86	45.8	0.79
19	133	-2.4	0.69	-7.3	0.74
20	273	-3.4	0.69	-3.2	0.63
21	83	-0.7	0.75	-5.4	0.53
Total	2,156				

Negative bias = overprediction; positive bias = underprediction

PSP trajectories were plotted against volume-height curves for each yield group. The yield group-level volume height models from individual plot relationships between merchantable volume and top height resulted in model fits that closely matched the PSP trajectories very well (Figure 5 - Figure 25). The

parameterization of crown closure created a logical progression of volume-height relationships within species groups.

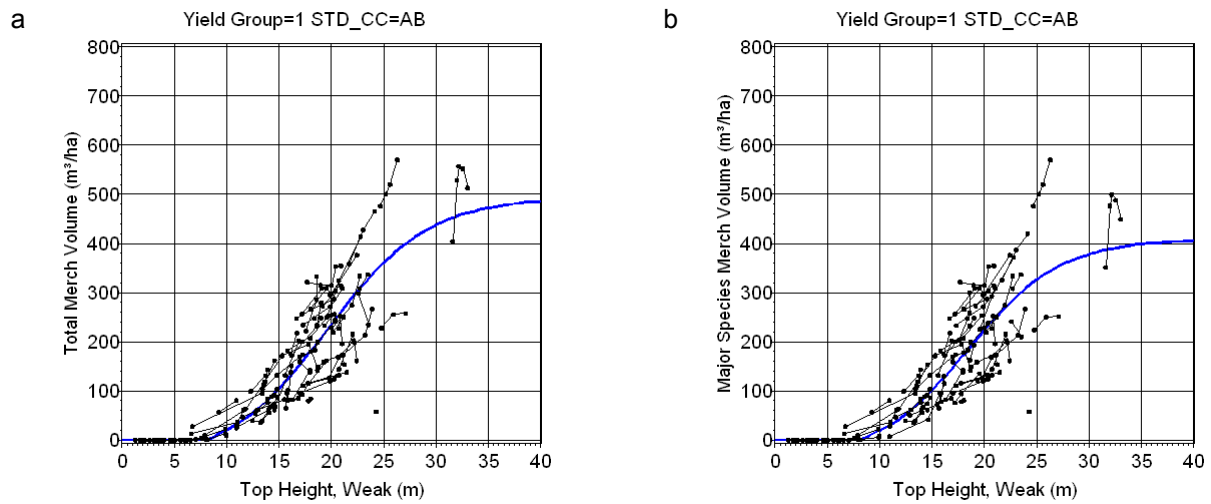


Figure 5. Total (a) and major species (b) volume-height model for PL-AB density (yield group 1).

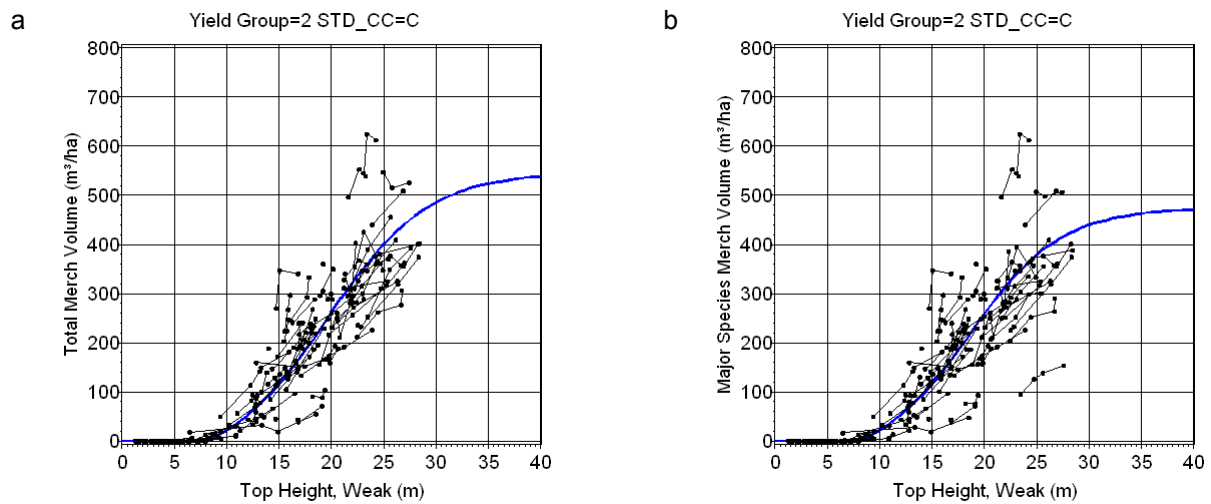


Figure 6. Total (a) and major species (b) volume-height model for PL-C density (yield group 2).

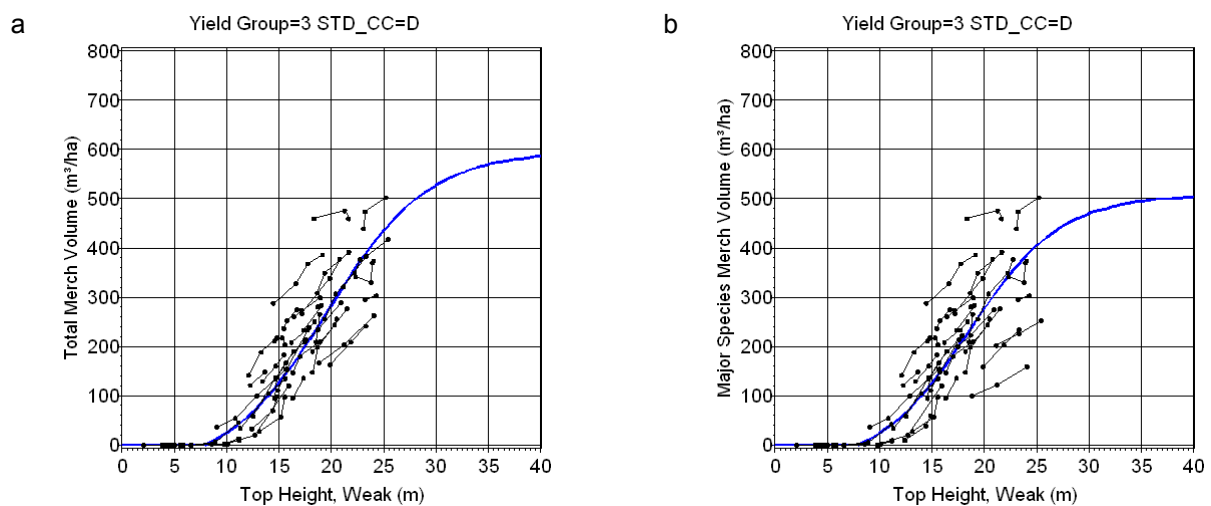


Figure 7. Total (a) and major species (b) volume-height model for PL-D density (yield group 3).

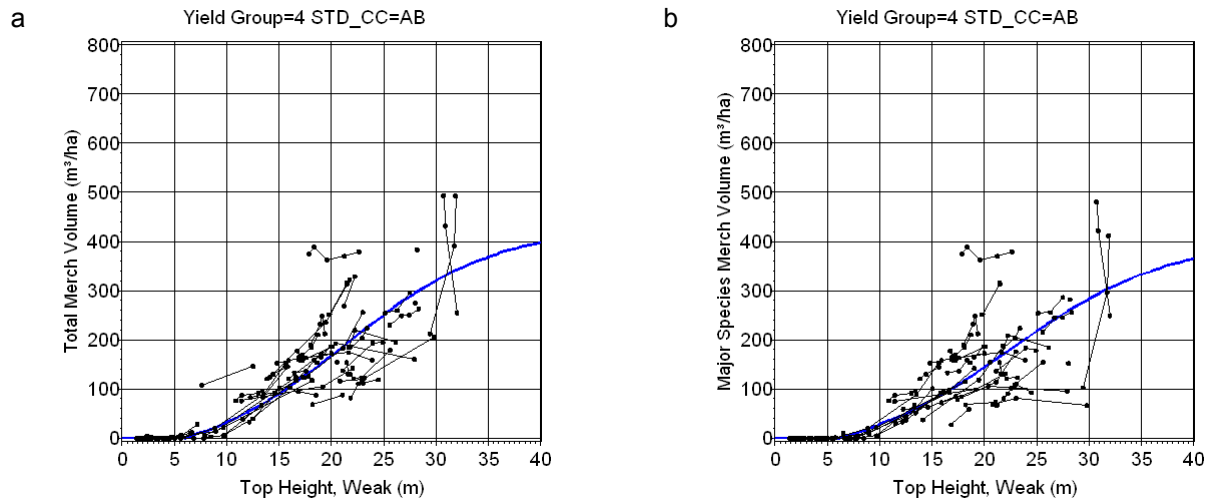


Figure 8. Total (a) and major species (b) volume-height model for [Sw,Fa]-AB density (yield group 4).

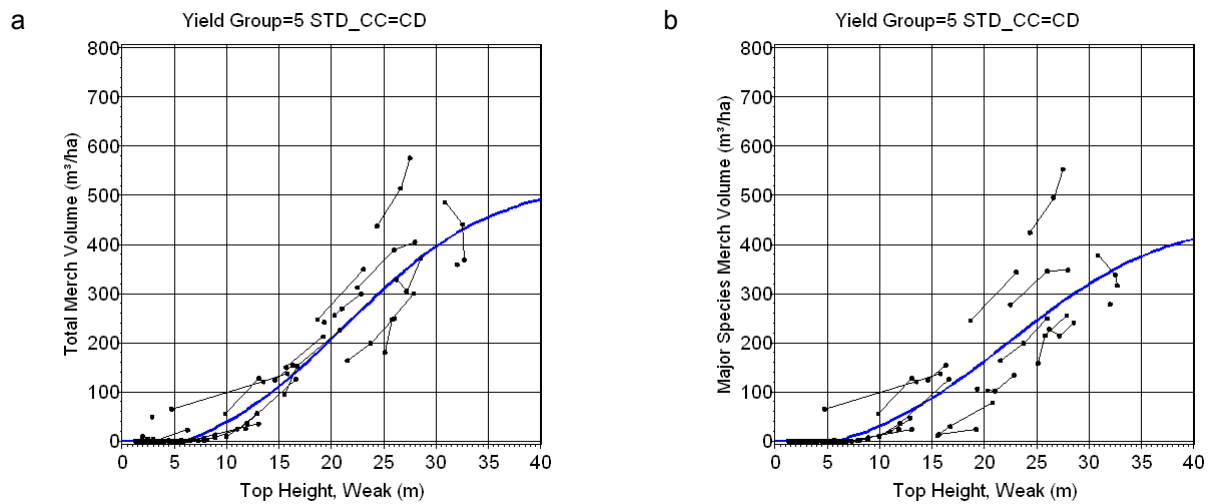


Figure 9. Total (a) and major species (b) volume-height model for [Sw,Fa]-CD density (yield group 5).

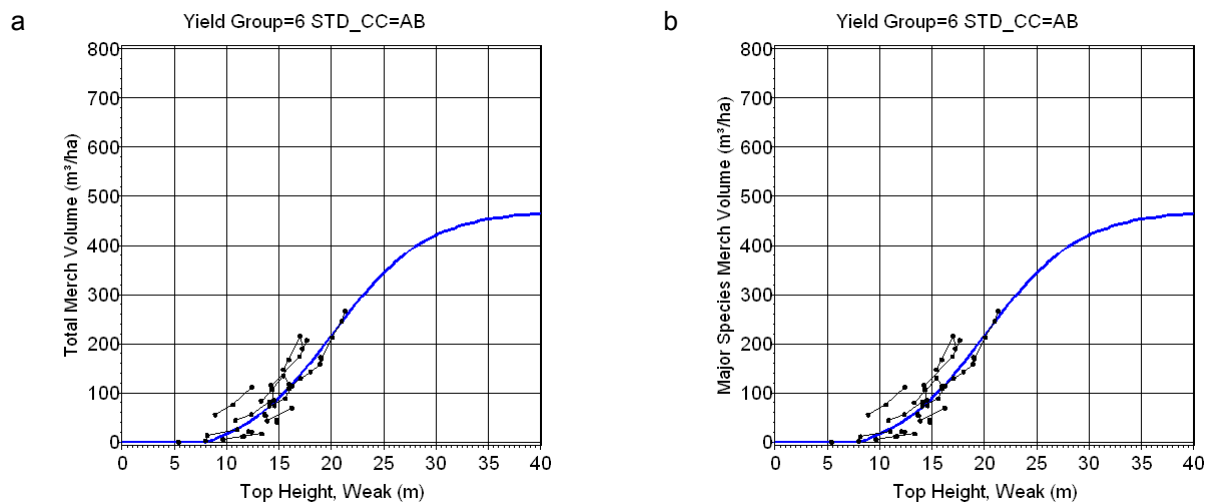


Figure 10. Total (a) and major species (b) volume-height model for [Sb,Lt]-AB density (yield group 6).

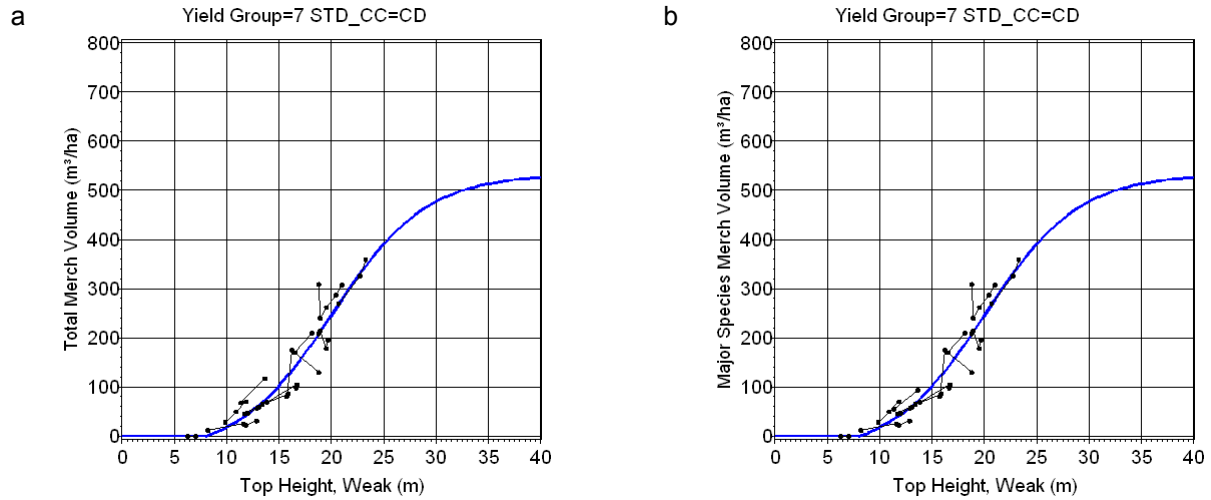


Figure 11. Total (a) and major species (b) volume-height model for [Sb,Lt]-CD density (yield group 7).

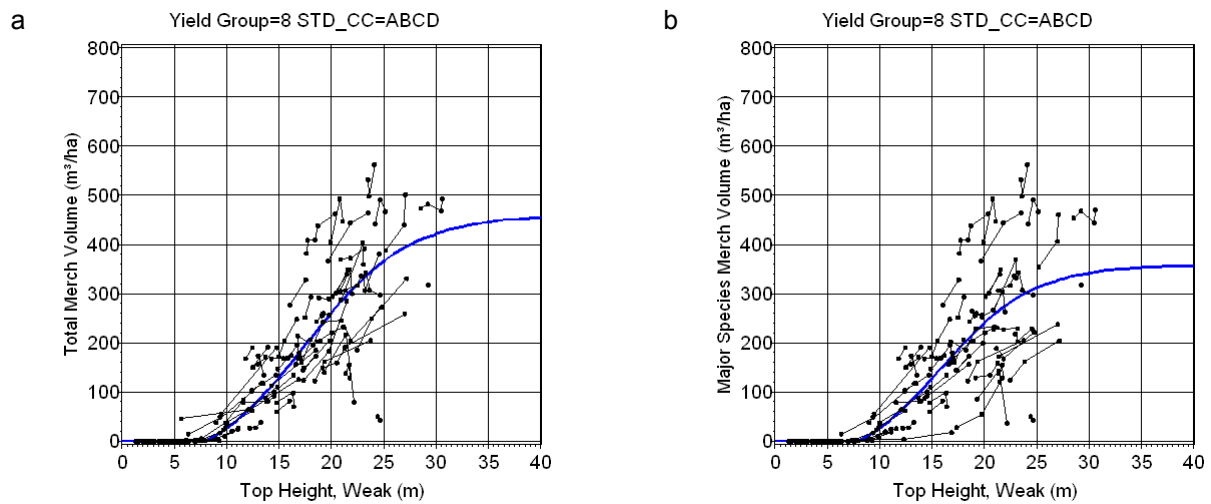


Figure 12. Total (a) and major species (b) volume-height model for PI-Sw-ABCD density (yield group 8).

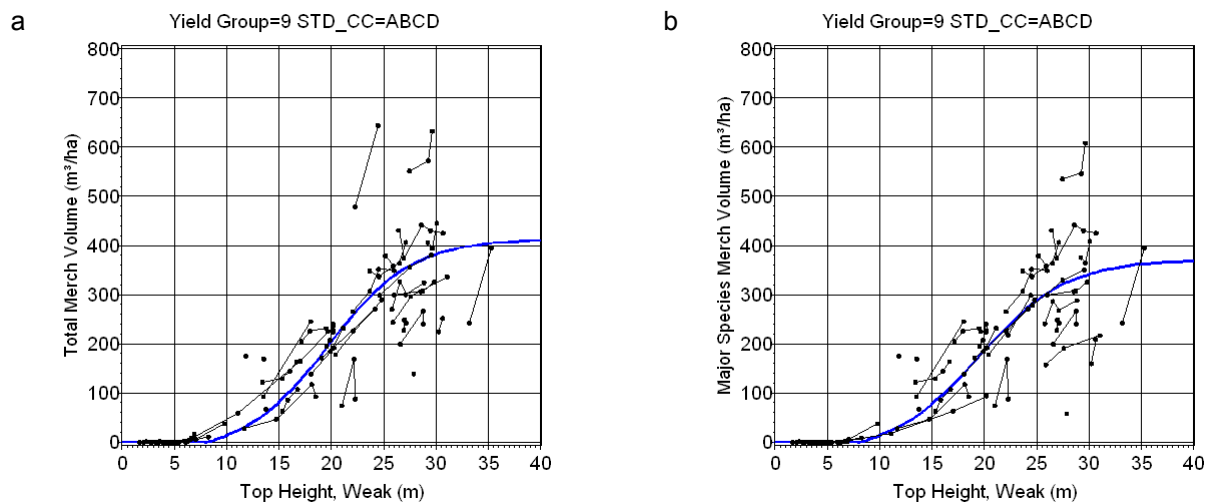


Figure 13. Total (a) and major species (b) volume-height model for Sw-PI-ABCD density (yield group 9).

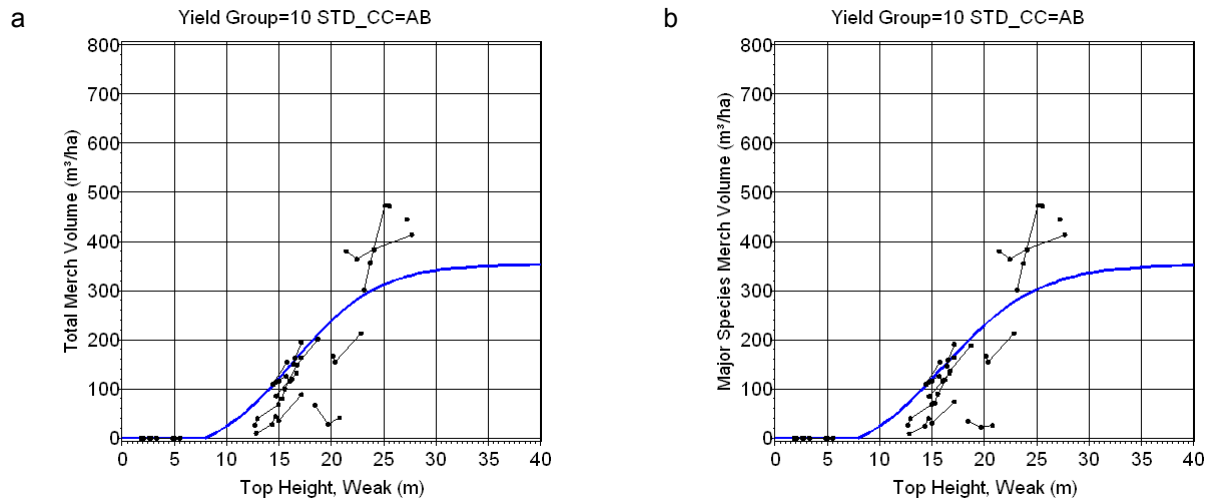


Figure 14. Total (a) and major species (b) volume-height model for [PI-Sb,Sb-PI]-AB density (yield group 10).

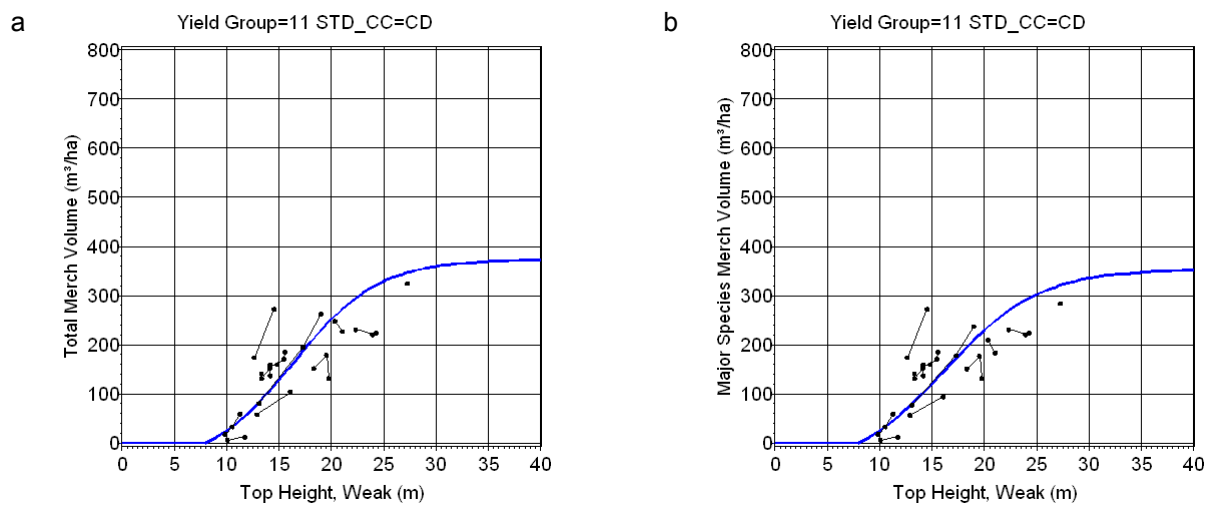


Figure 15. Total (a) and major species (b) volume-height model for [PI-Sb,Sb-PI]-CD density (yield group 11).

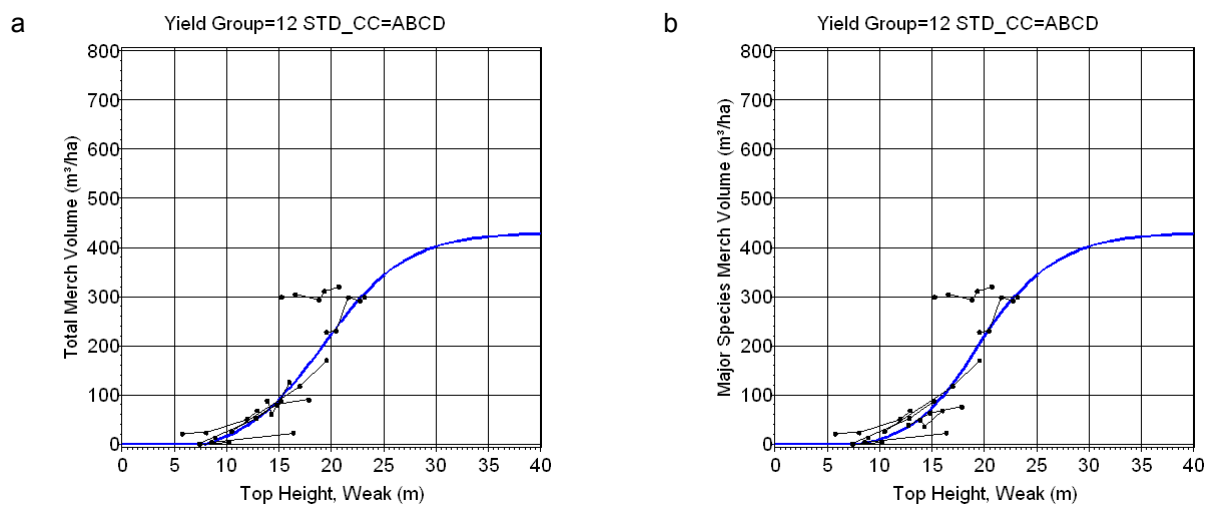


Figure 16. Total (a) and major species (b) volume-height model for [Sw-Sb,Sb-Sw]-ABCD density (yield group 12).

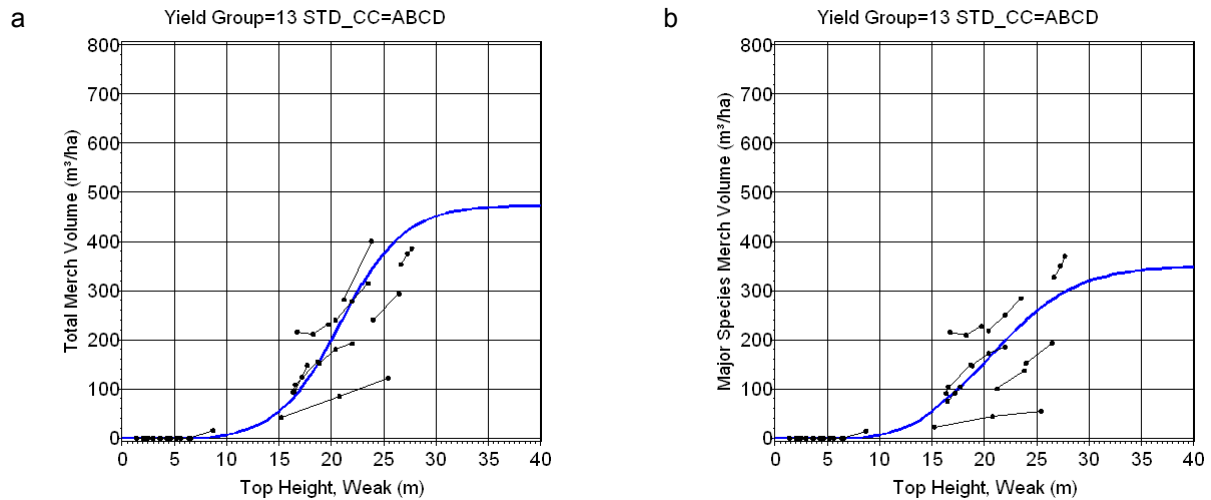


Figure 17. Total (a) and major species (b) volume-height model for PI-hwd-ABCD density (yield group 13).

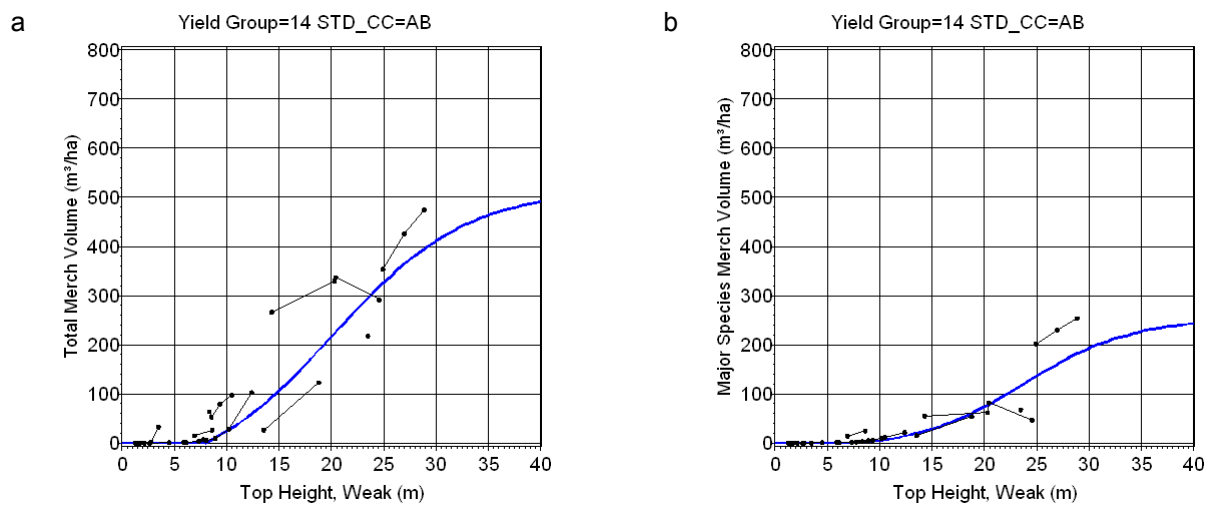


Figure 18. Total (a) and major species (b) volume-height model for [Sw-Sb]-hwd]-AB density (yield group 14).

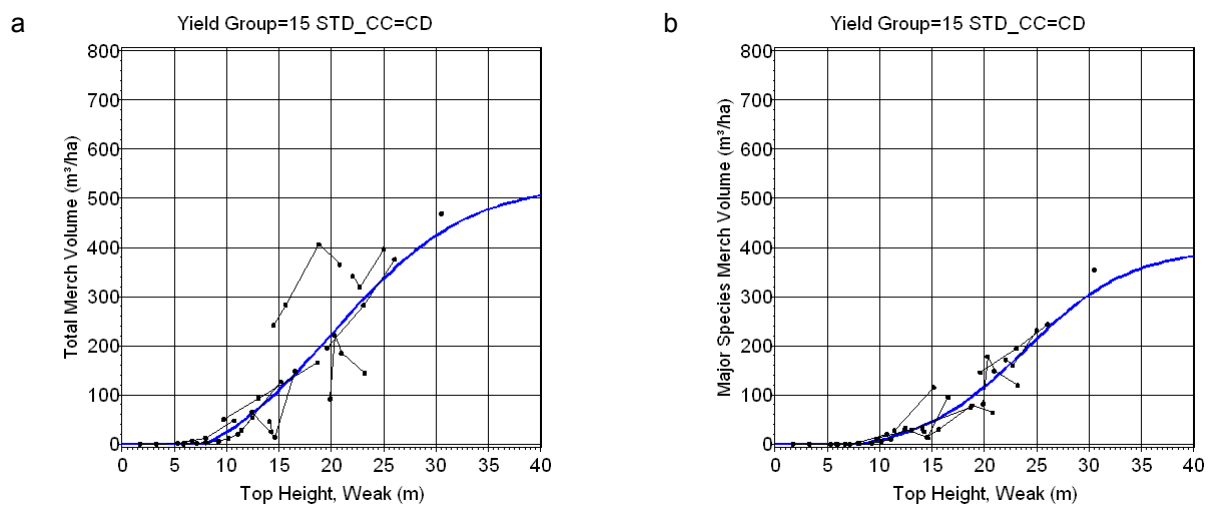


Figure 19. Total (a) and major species (b) volume-height model for [Sw-Sb]-hwd]-CD density (yield group 15).

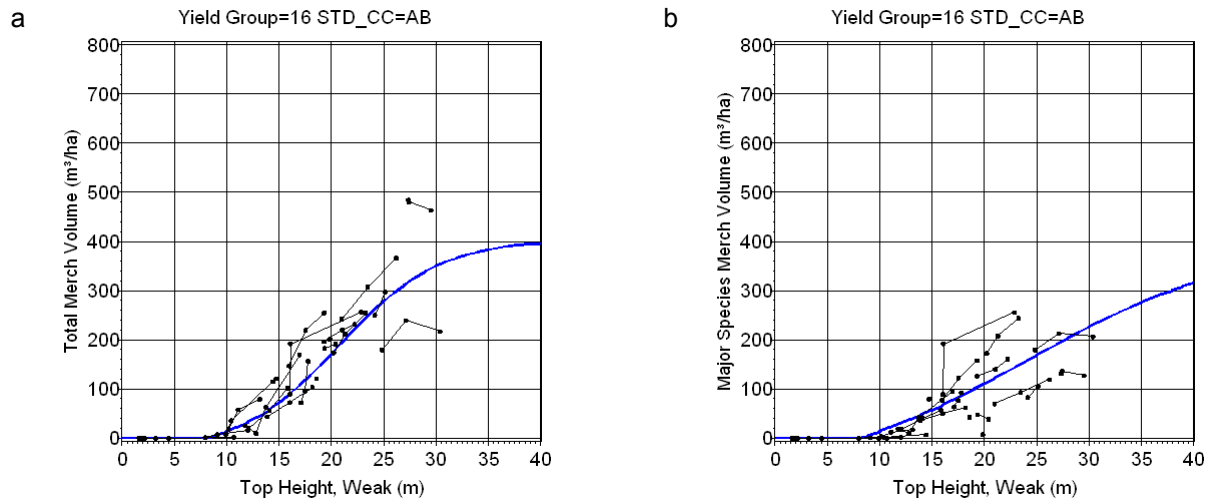


Figure 20. Total (a) and major species (b) volume-height model for hwd-swd -AB density (yield group 16).

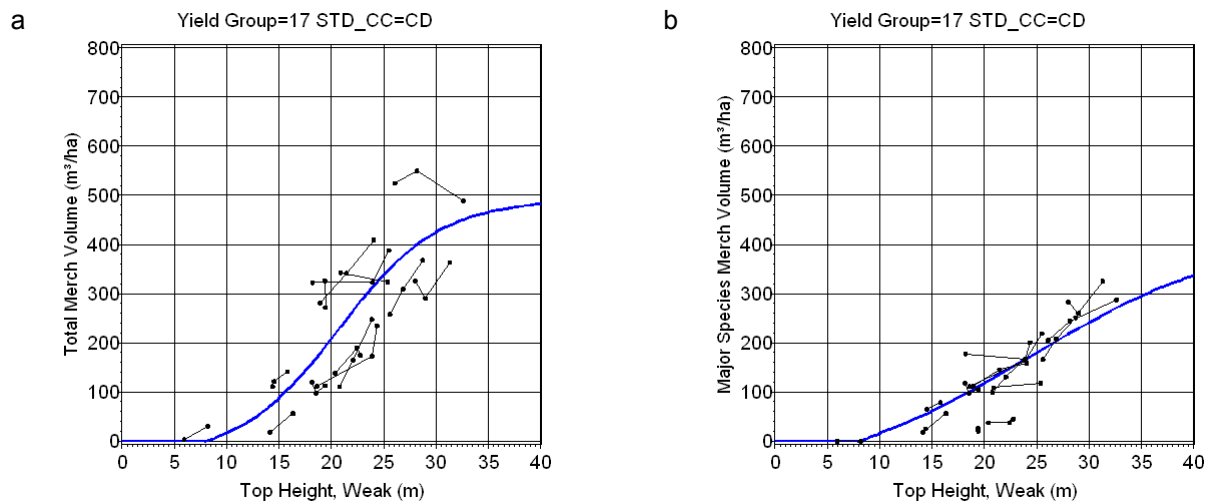


Figure 21. Total (a) and major species (b) volume-height model for hwd-swd -CD density (yield group 17).

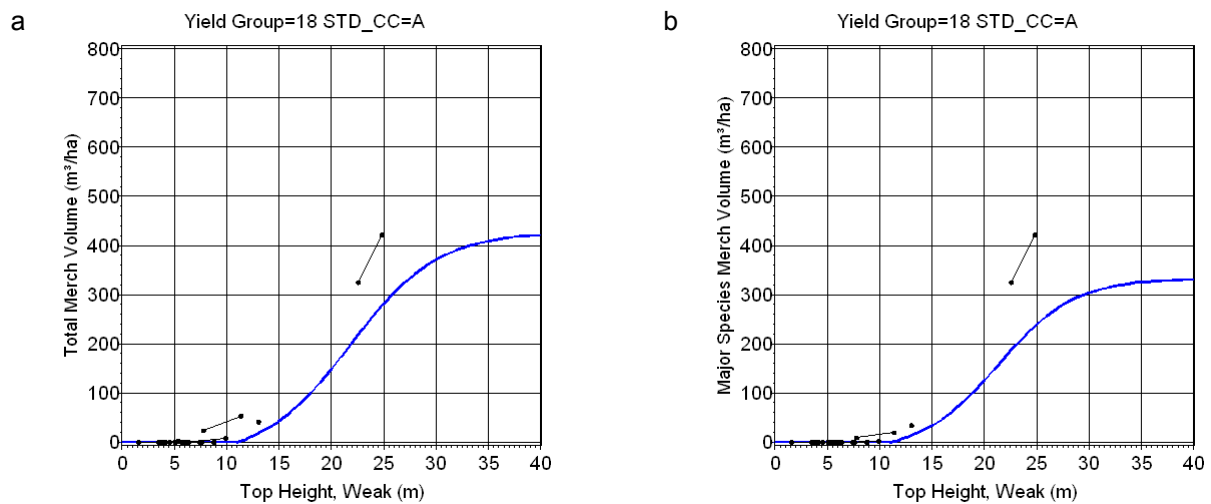


Figure 22. Total (a) and major species (b) volume-height model for hwd -A density (yield group 18).

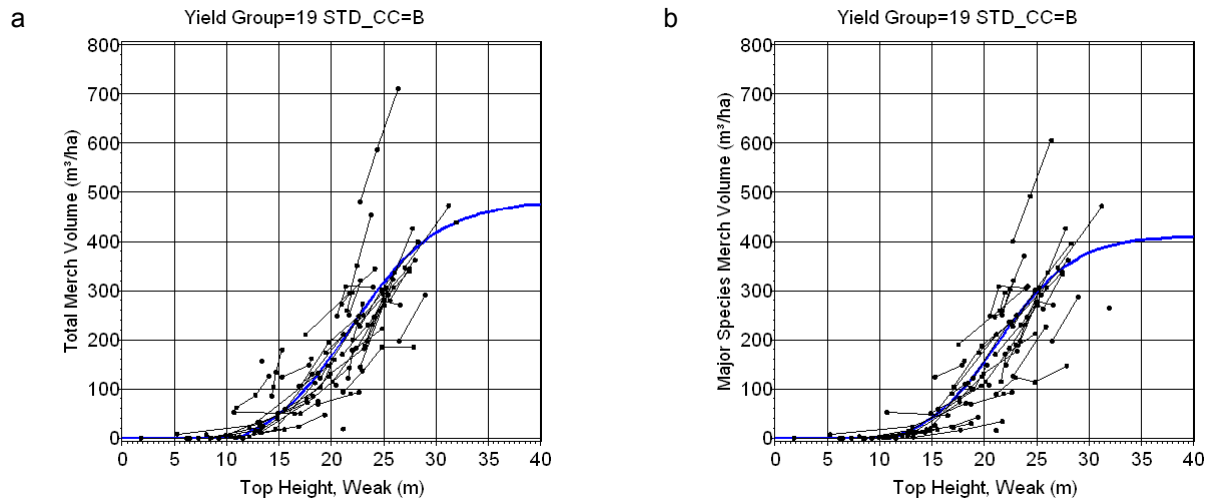


Figure 23. Total (a) and major species (b) volume-height model for hwd -B density (yield group 19).

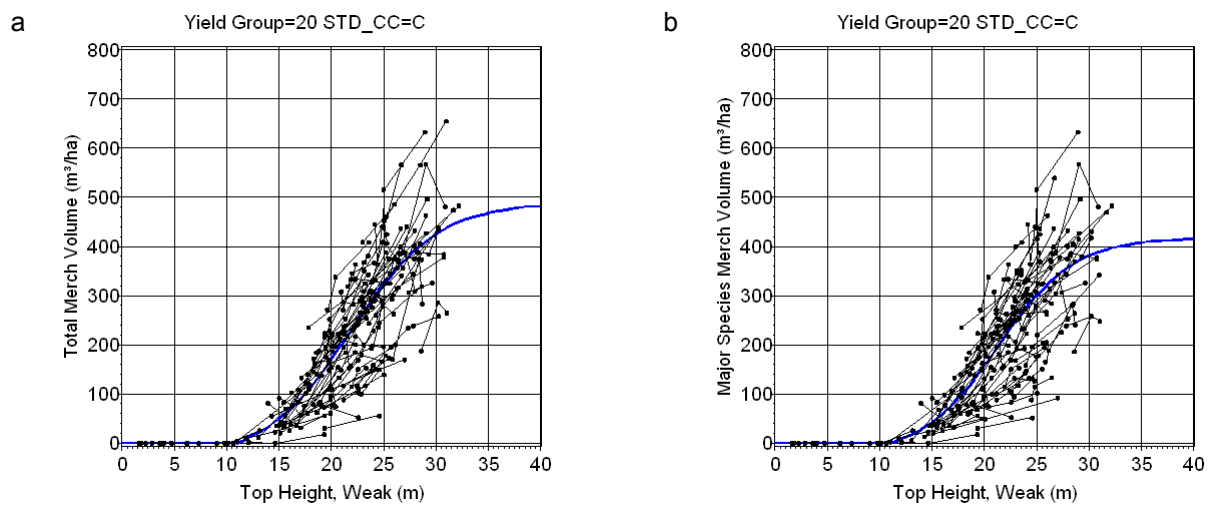


Figure 24. Total (a) and major species (b) volume-height model for hwd -C density (yield group 20).

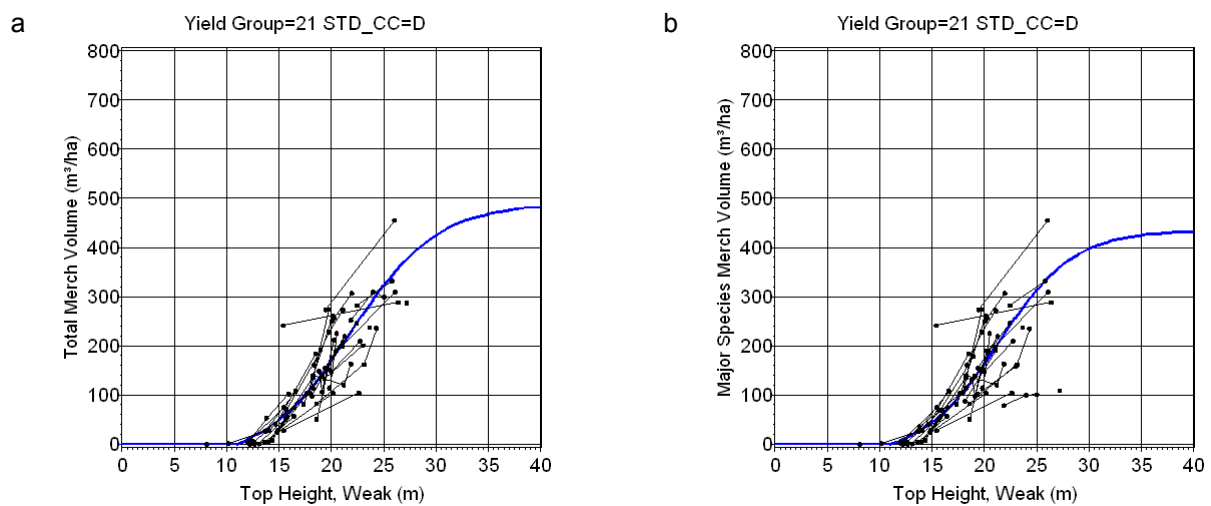


Figure 25. Total (a) and major species (b) volume-height model for hwd -D density (yield group 21).



### 3.2.2 Height-age model

The same dataset used for assessing volume-height models was used for validating height-age models, with one key difference: plots with a total age less than 10 years were excluded (50 observations from managed stands). These observations were excluded from model assessment since estimating site index at very young ages, particularly where total age is based on inventory information rather than actual tree age, can inflate variability in results.

Table 22. Observations used for height-age model validation.

Yield Stratum	PSP Type		Total
	NAT	MGD	
Obs in Net Landbase	2,092	722	2,814
Yield Stratum 40	131	-	131
Yield Stratum 50	-	16	16
Missing Top Height	264	217	481
Null Observation	9	15	24
Outlier	-	6	6
Totage<10	-	51	51
Obs for Model Validn	1,688	417	2,105

PSP plot trajectories were graphed against top height curves generated using GYPSY 2009 top height models (Figure 26 to Figure 29). Site index values of 6, 9, 12, 15, 18, 21 and 24 m are shown. The models are biologically plausible, and fit the Grande Prairie data quite well. For white spruce, there are some trajectories in the 40-80 year range that do not follow the site index curve trajectories; this is likely due to the use of inventory age rather than tree age for modeling purposes.

Fit statistics for height-age relationships by guide species are provided in Table 23. Fit was assessed using all possible observations for each PSP (e.g. measurement 1&2, 1&3, 2&3) as well as the first and last measurement only. R-squared values are very good for all guide species, with minimal observed bias.

Table 23. Fit statistics for height-age models.

Guide Species	All Possible Obs			First & Last Obs		
	n Obs	% Bias	R <sup>2</sup>	n Obs	% Bias	R <sup>2</sup>
AT	505	1.5	0.87	221	1.9	0.75
PL	1,048	1.9	0.96	293	2.4	0.90
SB	87	0.0	0.90	28	0.0	0.87
SW	572	1.3	0.92	138	2.7	0.83
Total	2,212			680		

Negative bias = overprediction; positive bias = underprediction

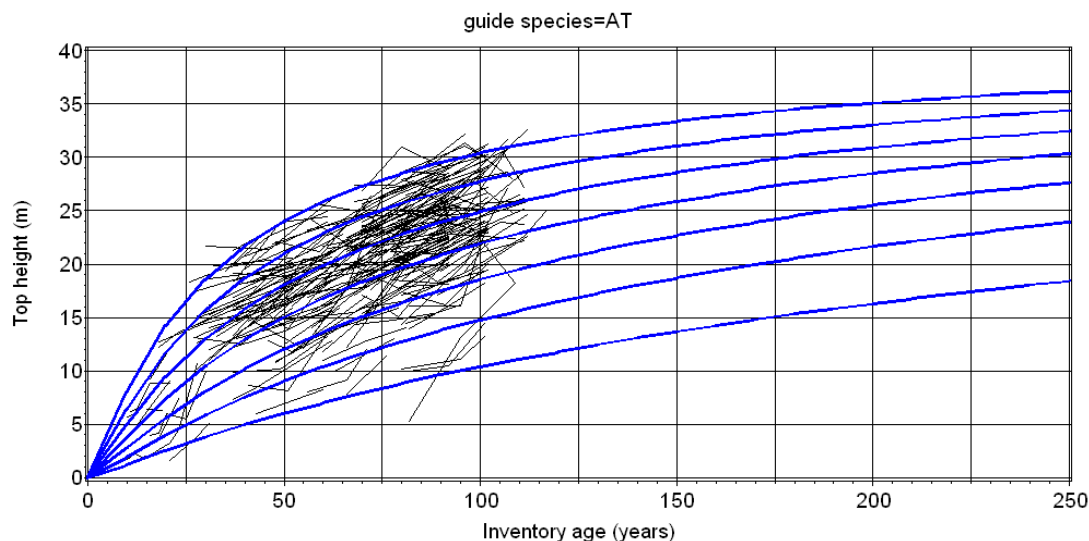


Figure 26. Height-age model for AT guide species yield groups.

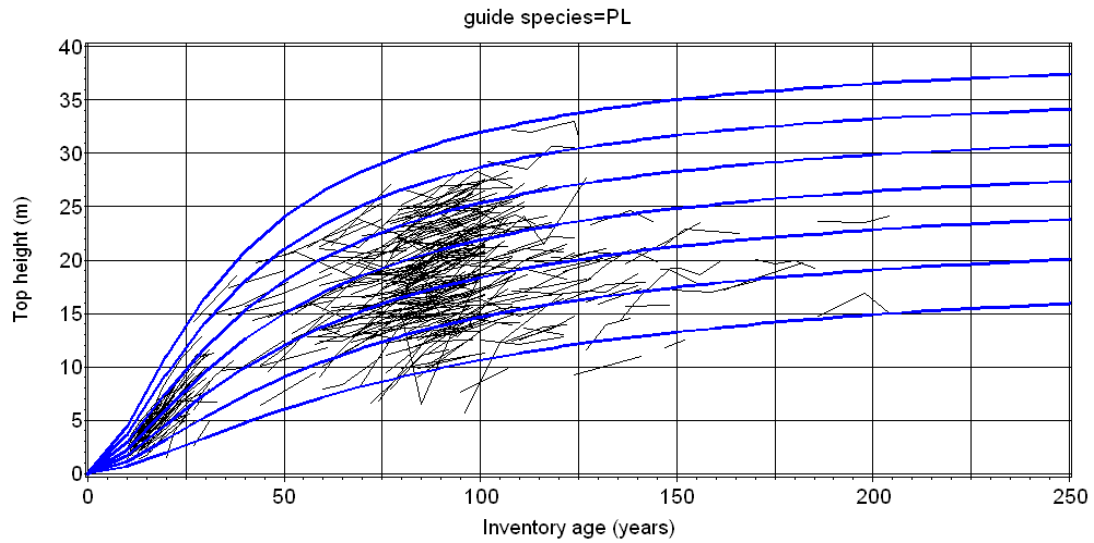


Figure 27. Height-age model for PL guide species yield groups.

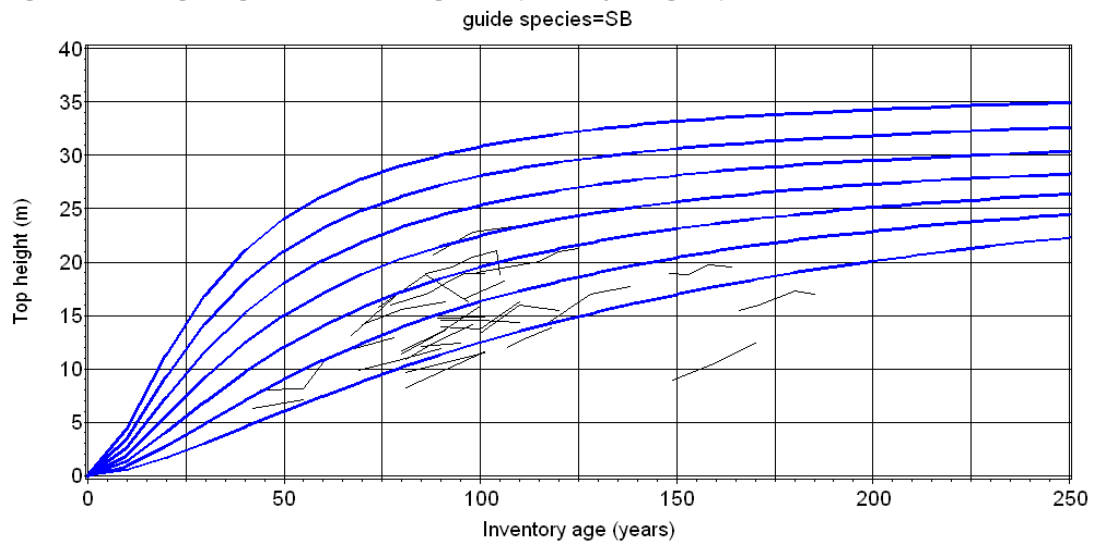


Figure 28. Height-age model for SB guide species yield groups.

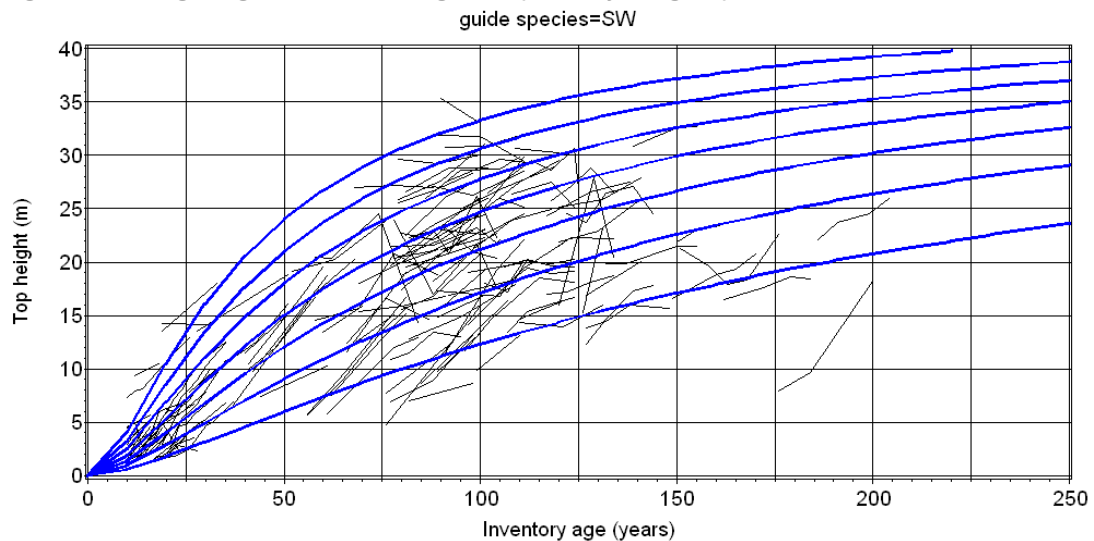


Figure 29. Height-age model for SW guide species yield groups.

### 3.3 Site Index Seeds

Natural subregion groups were created to improve plot representation in yield curve development. The Mixedwood natural subregions were combined into one group, and the upper elevation natural subregions were combined into another group (Table 24).

The site index seed for NAT yield tables is the average site index of the most recent measurement for each PSP by guide species and natural subregion group (Table 25).<sup>25</sup> For PL and SW guide species, the site index seed for MGD yield tables was obtained by area-weighting the results of the Regenerated Stand Productivity analysis, as described in Section 2.6.2. MGD site index seeds for AT and SB defaulted to NAT values. Average site index values from MGD PSPs is provided for reference, however there were insufficient MGD PSPs to calculate a logical set of regenerated site index seeds for every combination of guide species and natural subregion. For the M/SA/A natural subregion group, the Regenerated Stand Productivity site index estimate was based on a single observation; as such, the natural site index seed was used instead of the RSP result.

Table 24. Natural subregion groups used in yield model.

Natural Subregion Group	Included Natural Subregions
CMW/DMW	Central Mixedwood, Dry Mixedwood
LF	Lower Foothills
UF	Upper Foothills
M/SA/A	Montane, Subalpine, Alpine

Table 25. Preliminary site index seeds for Grande Prairie yield tables.

Guide Species	Natural Subregion Group	Natural Stands			Managed Stands			RSP Results	Site Index Seeds		
		# NAT PSPs	PSP Data		# MGD PSPs	PSP Data			NAT	MGD	ENH <sup>1</sup>
			Mean	Std Err		Mean	Std Err				
AT	CMW/DMW	57	19.8	0.6	4	14.9	0.8	n/a	19.8	19.8	n/a
	LF	160	17.7	0.3	8	16.5	1.5	n/a	17.7	17.7	n/a
	UF	11	12.4	1.4	1	16.0	-	n/a	12.4	12.4	n/a
PL	CMW/DMW	11	15.1	1.3	1	9.9	-	17.7	15.1	17.7	18.4
	LF	55	15.9	0.5	21	16.2	0.5	17.4	15.9	17.4	18.1
	UF	106	13.2	0.3	30	14.4	0.4	16.1	13.2	16.1	16.8
	M/SA/A	89	10.9	0.3	6	11.4	0.7	13.4	10.9	13.4	14.0
SB	LF	24	7.9	0.5	-	-	-	n/a	7.9	7.9	n/a
	UF	7	7.2	1.0	-	-	-	n/a	7.2	7.2	n/a
SW	CMW/DMW	15	14.6	1.0	7	15.2	1.5	12.9	14.6	12.9	13.4
	LF	62	13.3	0.6	32	14.5	0.7	14.7	13.3	14.7	15.3
	UF	19	10.7	0.9	9	12.3	1.3	13.7	10.7	13.7	14.2
	M/SA/A	20	8.0	0.6	2	14.6	0.6	8.0	8.0	8.0	8.3
Total		636			121						

<sup>1</sup> Applies to yield strata 2 and 5 only.

During the 2007 yield curve development, a few yield groups were identified as problematic. The average NAT site index by yield group (rather than guide species group) and natural subregion was substituted for yield groups 1 (PI-all natural subregions), 4 ([Sw,Fa]-all natural subregions) and 18 (hwd-Lower Foothills only) to improve the validation results. During 2011 yield curve development, these yield groups were reassessed for fit. Yield group 4 did not exhibit problematic results, likely as a result of incorporating new GYPSY (2009) height-age models into yield curve development. Yield group 1 was still problematic and as such, the revised SI seed approach was retained. In the absence of sufficient data to reassess yield curve 18, the 2007 approach was continued as well.

<sup>25</sup> We could not use the average SI of last measurement PSPs by yield group and natural subregion group because there were many cases with low or no PSP representation. There was also no decrease in SI with an increase in elevation in some cases. Average SI by yield group and natural subregion group is reported in Appendix XIII.

During the development of the 2011 yield curves, several additional issues were identified and corrected.

Yield groups 10, 11, 12 and 16 exhibited considerable bias (yield overprediction – see Section 3.4.1) relative to plot data. In order to reduce this bias, the average NAT site index by yield group/natural subregion was used for yield group 10 ([PI-Sb, Sb-PI AB density] – Lower Foothills), 11 ([PI-Sb, Sb-PI CD density] – Upper Foothills), 12 ([Sw-Sb, Sb-Sw] – Lower Foothills) and 16 ([hwd-swd] – Mixedwoods).

In addition, minor modifications in the yield stratification for the 2011 DFMP resulted in some A density deciduous stands reverting to layer 2 as the story of primary management. Consequently, certain areas were reassigned from yield group 18 to yield groups 19 and 20 based on the presence of a B or C density deciduous understory. Validation of these two yield groups indicated that volume was slightly overpredicted for the CMW/DMW natural subregions. However, for yield group 20, the yield group-specific site index was higher than the natural subregion-specific site index, and could not be used to improve validation results. Instead, the average site index for the Aw guide species (across natural subregions) was found to be a suitable replacement.

For yield curves 16-20, since these yield groups (AT guide species) default to NAT site index seeds, the revised SI seeds were also used as site index seeds for developing MGD yield curves. Where higher site index values were used to develop MGD yield curves based on RSP results, MGD site index seeds were reduced by the same amount as for NAT stand site index seeds. Revised NAT and MGD site index seeds used for 2011 yield tables are shown in Table 26.

Table 26. Revised site index seed to improve validation.

Yield Group	Natural Subregion Group	Guide Species	Natural Stand SI (m)			Managed Stand SI (m)		
			Initial	Revised	Difference	Initial	Revised	Difference
1	CMW/DMW	PL	15.1	14.4	-0.7	17.7	17.0	-0.7
1	LF	PL	15.9	14.6	-1.3	17.4	16.1	-1.3
1	UF	PL	13.2	12.2	-1.0	16.1	15.1	-1.0
1	M/SA/A	PL	10.9	10.7	-0.2	13.4	13.2	-0.2
10	LF	PL	15.9	12.6	-3.3	17.4	14.1	-3.3
11	UF	PL	13.2	10.9	-2.3	16.1	13.8	-2.3
12	LF	SW	13.3	9.8	-3.5	14.7	11.2	-3.5
16	CMW/DMW	AT	19.8	12.1	-7.7	19.8	12.1	-7.7
18	LF	AT	17.7	14.1	-3.6	17.7	14.1	-3.6
19	CMW/DMW	AT	19.8	17.9	-1.9	19.8	17.9	-1.9
20	CMW/DMW	AT	19.8	17.9	-1.9	19.8	17.9	-1.9

## 3.4 Volume-Age Yield Tables

### 3.4.1 Natural stands (NAT)

Volume-age tables were generated by yield group and natural subregion by using the site index seed to generate height-age curves, then combining the volume-height and height-age models. Gross (without cull) merchantable volume yield tables by yield group and natural subregion are listed in APPENDIX VII – Natural Yield Curves (NAT). Net merchantable volume yield tables used in the timber supply model were generated by adjusting for cull (Section 2.8).

Fit statistics were generated for each yield group using a “curve family” approach. Because there are 74 yield curves (one for each yield group and NSR group) and only 714 observations (most recent measurement from each NAT PSP), it would be difficult to obtain meaningful fit statistics at this level (with very few observations per curve). Instead, fit statistics were calculated by comparing observations to each yield curve, but then rolling up results to the family (yield group) level.

Percent bias was calculated using the difference between the predicted and observed volume for each yield group/NSR group specific curve, and then differences were summed to the yield group level. The sum of difference was divided by the family (yield group) mean to obtain percent bias. R-squared was calculated in a similar

manner, by calculating the sum of squared differences between observed and predicted values using individual yield curves, and comparing these to the sum of squared differences between the observed value and the family mean. The resulting R-squared indicates the how well yield curves describe volume relative to using a straight line, or constant, to describe volume (family mean).

Fit statistics at the family level are provided in Table 27. Even at the family level, percent bias can be quite variable, and R-squared values can be negative, indicating that using a mean

(straight line) to represent volume would provide better predictions than the yield curves. However, interpretation of these results must be undertaken with caution, particularly for R-squared. Because PSPs were established on a grid basis, the majority of plots in natural stands fall in the mature age range. Because volumes at mature ages are quite stable, they could reasonably be represented by a flat line average rather than a curve. In addition, many of these curves have small sample sizes. It is known that there are often errors in attribute assignments when using inventory data (e.g., inaccurate ages and/or species composition) which can lead to apparent “outliers” or increased variability in observed values relative to predicted yields. This variability can have a considerable impact on fit statistics where sample size is low. Generally percent bias provides a better indication of overall fit where sample size is reasonable.

Table 27. Volume-age fit statistics by yield group.

Yield Group	n Obs	Total Vol		Major Spp Vol		Incidental Vol	
		% Bias	R <sup>2</sup>	% Bias	R <sup>2</sup>	% Bias	R <sup>2</sup>
1	72	-2.3	0.06	-2.4	0.03	0.5	0.06
2	75	0.3	0.02	-2.0	-0.02	63.0	0.01
3	37	13.7	-0.43	12.3	-0.42	50.2	-0.03
4	49	-13.6	-0.14	-26.9	-0.41	37.7	0.00
5	18	1.5	-0.03	-3.1	-0.06	17.0	0.08
6	18	-20.3	0.07	-25.2	-0.04	83.2	-0.06
7	15	20.0	-0.06	19.1	-0.03	64.9	-0.07
8	68	3.5	0.12	2.6	0.07	13.9	0.20
9	35	16.4	-0.11	14.5	-0.25	33.1	0.05
10	22	-42.0	-0.14	-39.8	-0.09	-143.4	-0.70
11	13	-7.8	0.28	-6.0	0.18	-37.1	0.37
12	13	-61.2	-0.54	-62.8	-0.62	-27.7	-0.27
13	14	10.5	-0.35	-3.2	-0.20	34.8	-0.04
14	10	-32.5	-0.50	-25.1	-0.05	-38.3	-0.52
15	10	5.6	0.46	-1.6	0.19	14.1	0.23
16	25	-20.5	0.30	-58.9	-0.06	14.9	0.12
17	17	-6.3	0.41	-17.7	0.39	4.9	-0.04
18	2	52.9	-0.37	57.7	-0.32	-10.7	-0.13
19	58	-14.8	0.19	-26.0	0.10	50.8	-0.06
20	105	4.8	0.22	4.0	0.19	15.3	0.02
21	38	7.0	0.28	1.4	0.31	64.1	-0.05
Total	714						

Negative bias = overprediction; positive bias = underprediction

To obtain a better indication of fit at a more meaningful level, fit statistics were calculated at the broad cover group level. The same method as the “curve family” approach was used, where observed values were compared to predicted values at the yield

group/natural subregion level, and assessed relative to the “family” mean.

Results are presented in Table 28. There is a good fit for all broad cover groups.

For the CD broad cover group, there is a negative R-squared, but only a 1.3% overprediction bias.

Table 28. Volume-age fit statistics by broad cover group.

Broad Cover Group	n Obs	Total Vol		Major Spp Vol		Incidental Vol	
		% Bias	R <sup>2</sup>	% Bias	R <sup>2</sup>	% Bias	R <sup>2</sup>
CX	435	-0.6	0.11	-2.8	0.06	26.1	0.15
CD	34	-1.3	-0.03	-6.8	0.06	5.7	-0.09
DC	42	-13.4	0.41	-38.0	0.21	10.0	0.08
DX	203	1.0	0.26	-2.6	0.23	35.1	-0.01
Total	714						

Negative bias = overprediction; positive bias = underprediction

The largest bias occurs in the DC broad cover group, with an overprediction bias of 13.4% for total volume. Note that for the CX and DX broad cover groups, which represent the majority of landbase areas, the overall bias is within 1%. Incidental percent bias is high simply because incidental volumes are low; the actual bias ranges from 6 to 7 m<sup>3</sup>/ha for CX and DX stands.

For additional evaluation of the fit of natural stand PSP data against yield curves, see Section 3.5 (Area Weighted Yield Tables) and Section 3.6 (Volume Today Calculation).

### 3.4.2 Managed stands (MGD)

Yield tables for managed stands (MGD) used the same volume-height (Section 3.2.1) and height-age (Section 2.5.2) models as natural stand (NAT) yield tables, but for yield groups with a PL and SW guide species these tables were initiated using site index seeds calculated from Regenerated Stand Productivity study results. MGD site index seeds defaulted to NAT site index seeds for deciduous yield groups (yield groups 18-21) and spruce-leading yield groups (yield groups 6 and 7). Gross merchantable volume yield tables by yield group and natural subregion are listed in APPENDIX VIII – Managed Yield Curves (MGD). Net merchantable volume yield tables for MGD stands used in the timber supply model were generated by adjusting for cull after the culmination age (Section 2.8).

Fit statistics were not generated for MGD yield curves. The majority of PSP data are below merchantable ages, which results in erratic fit statistics. To provide some indication of the fit of yield curves against plot data, PSP trajectories from existing managed stand plots were plotted against area-weighted yield curves by yield group, and are included in APPENDIX V – Area-Weighted MGD Yield Curves Against PSP Trajectories. There is little data and stands are very young, but generally volume accumulation is as predicted for many yield groups.

### 3.4.3 Genetically improved stands (ENH)

Managed stand yield tables for stands containing genetically improved stock were calculated by adding 3.5% to MGD conifer height at rotation age in the PI-C density yield group (yield group 2), and 2.6% to MGD conifer height at rotation age in the [Sw,Fa]-CD density yield group (yield group 5). The values were used to calculate an ENH site index seed, which was in turn used to initiate yield curves for these two yield

groups (as described in Section 2.6.3). Gross merchantable volume yield tables by yield group and natural subregion are listed in APPENDIX IX – Enhanced Yield Curves (ENH). Net merchantable volume yield tables for ENH stands used in the timber supply model were generated by adjusting for cull after the culmination age (Section 2.8).

### 3.4.4 Conifer understory yield tables (UND)

The intent of modeling the conifer understory yield group was to fit a volume-age function to the PSP data (Section 2.7). A few problems became apparent with the preliminary volume-age model fit:

1. Since each measurement in the PSP data is treated as an independent observation, the preliminary volume-age model did not follow the growth observed in the PSP trajectories.
2. A few PSPs had huge volumes at young stand ages as a result of using the age of the story of primary management (SoPM) in the model. These points had a large influence on the model.
3. The few PSPs > 80 years of age with low volumes also had a large influence on the model.

The following process was used to improve the volume-age model fit:

1. Model total volume by SoPM age using Equation 11. The total volume asymptote was set to 300 m<sup>3</sup>/ha so the curve does not outperform the Spruce yield group curve<sup>26</sup>, but still follows the PSP trajectories (Figure 30a).
2. Model conifer volume by SoPM age using Equation 11 with an asymptote of 140 m<sup>3</sup>/ha (Figure 30b).<sup>27</sup>
3. The difference between total and conifer models is deciduous volume (Figure 30c).
4. Apply the deciduous mortality function after age 130 years as in other yield groups. Flat-lining deciduous volume between 110 and 130 years was not necessary with this model fit.
5. Plot resulting model against 20-year age class average of last measurement PSPs (Figure 31).

---

<sup>26</sup> ASRD expressed concern that the Conifer US yield curve should not outperform the overstory spruce yield curve (YG4). The volume asymptote for the Conifer US model ensured that it did not exceed the volume observed in the Spruce yield curve.

<sup>27</sup> The resulting conifer volume curve may be conservative as the model levels off after stand age of 60 years. The conifer volume may increase after 60 years of age as succession occurs and the conifer species become dominant. However, there is a lack of data beyond 60 years to model this.



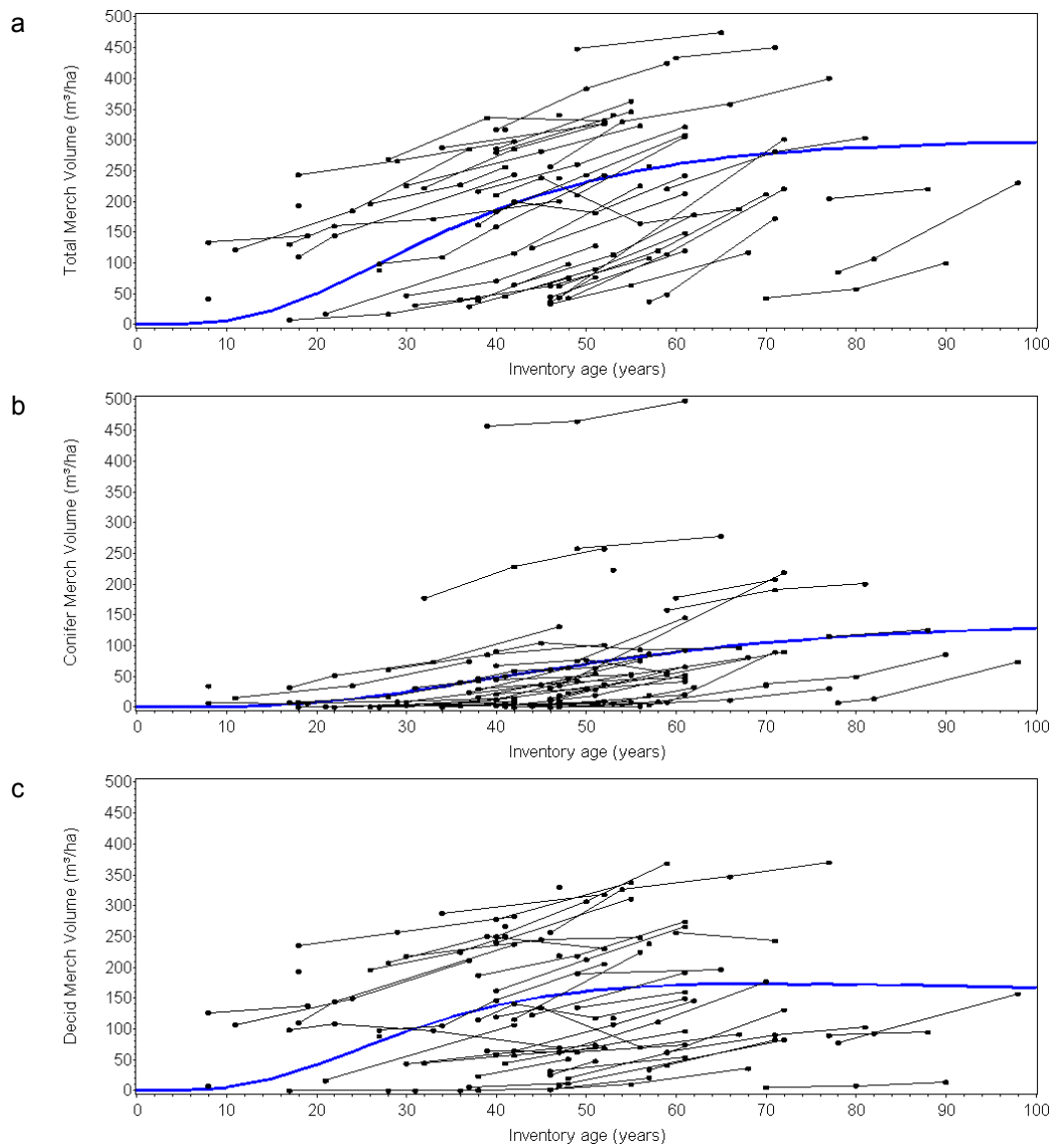


Figure 30. Conifer understory yield group total (a), conifer (b), and deciduous (c) volume-age modes with PSP trajectories.



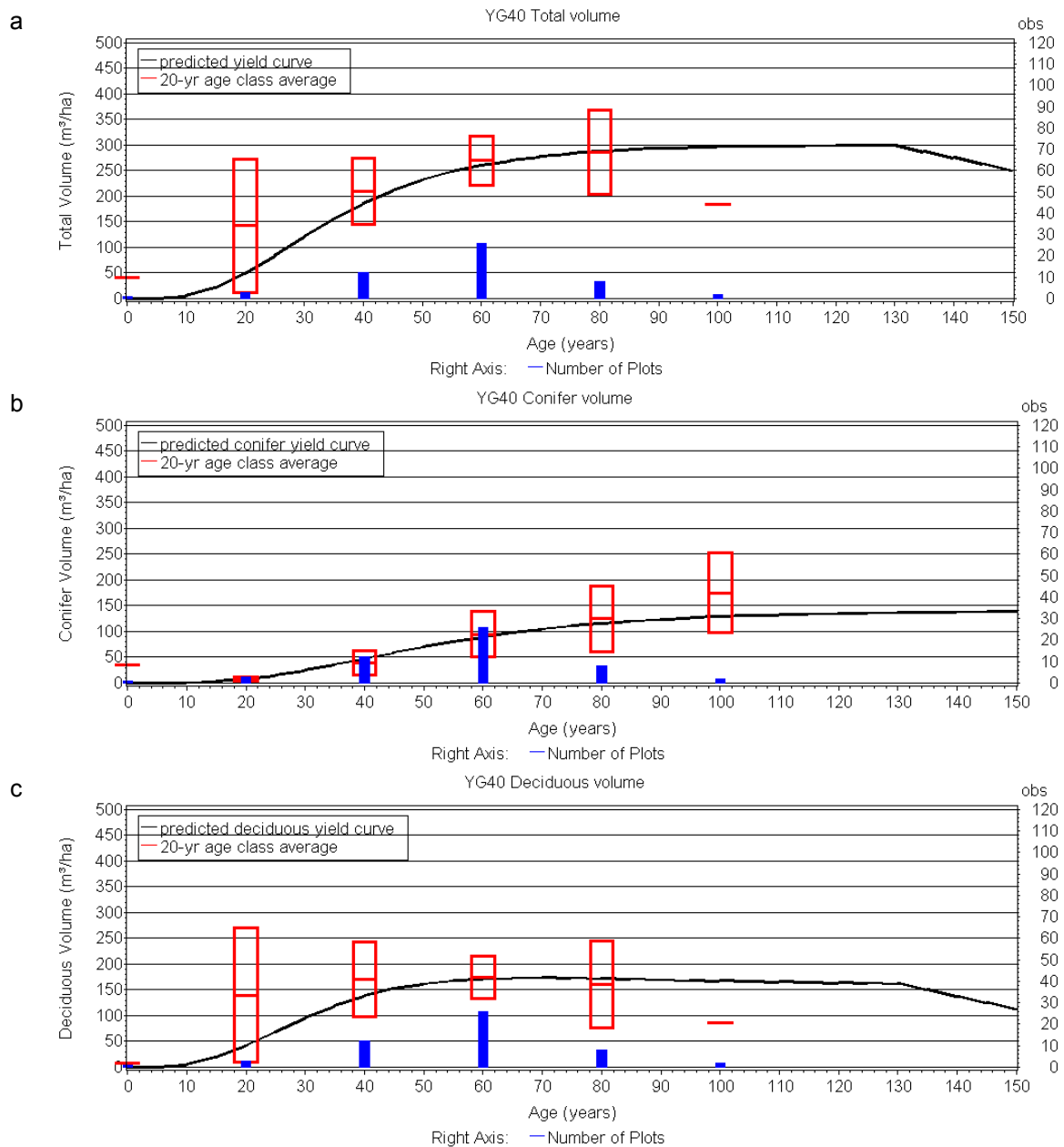


Figure 31. Conifer understory yield group total (a), conifer (b), and deciduous (c) volume-age model comparison to 20-year age-class averages from PSPs.

Net merchantable volume yield tables for the conifer understory yield group used in the timber supply model were generated by adjusting for cull (Section 2.8).

### 3.5 Area Weighted Yield Tables

The validation process required by ASRD involves comparing the area-weighted yield tables to the average of last measurement PSP volumes by age class averages. We attached the natural net landbase area by yield group and natural subregion to each yield table, and calculated area-weighted yield tables by broad cover group, by yield group, and overall.

The issue of large area representation by yield group accompanied by low PSP representation at older age classes is demonstrated by the overall area-weighted yield curve. Here, the area-weighted conifer yield curve falling below the 125-year age class average is related to the large area representation of the DX broad cover group (Figure 70). However, this does not mean that starting conifer volumes for 125-year age class stands are underestimated in the timber supply model (see Section 3.6 for further comments).

Total, conifer, and deciduous area-weighted yield tables by broad cover groups fall within the 95% confidence intervals of the 25-year age class average PSP volumes where there is sufficient plot representation (Figure 33 to Figure 36).

Area-weighted results should be interpreted with caution. For example in the CX broad cover group, the area-weighted yield curve falling above the 150-year age class average is related to yield groups with large area representation and little to no PSP representation at that age class. For example, the PI-B yield group has a large influence on the area-weighted yield curve, yet has little PSP representation at the 150-year age class (Figure 51). However, this does not mean that starting volumes for 150-year age class stands are overestimated in the timber supply model (Sec 3.6).

Area-weighted average yield tables by yield group are presented in APPENDIX VI – Area-Weighted Yield Tables by Yield Group. However, yield validation within yield groups is limited by PSP representation. *Note that percent areas shown in area-weighted graphs are percent NAT landbase area.*

### 3.5.1 Overall area-weighted yield tables

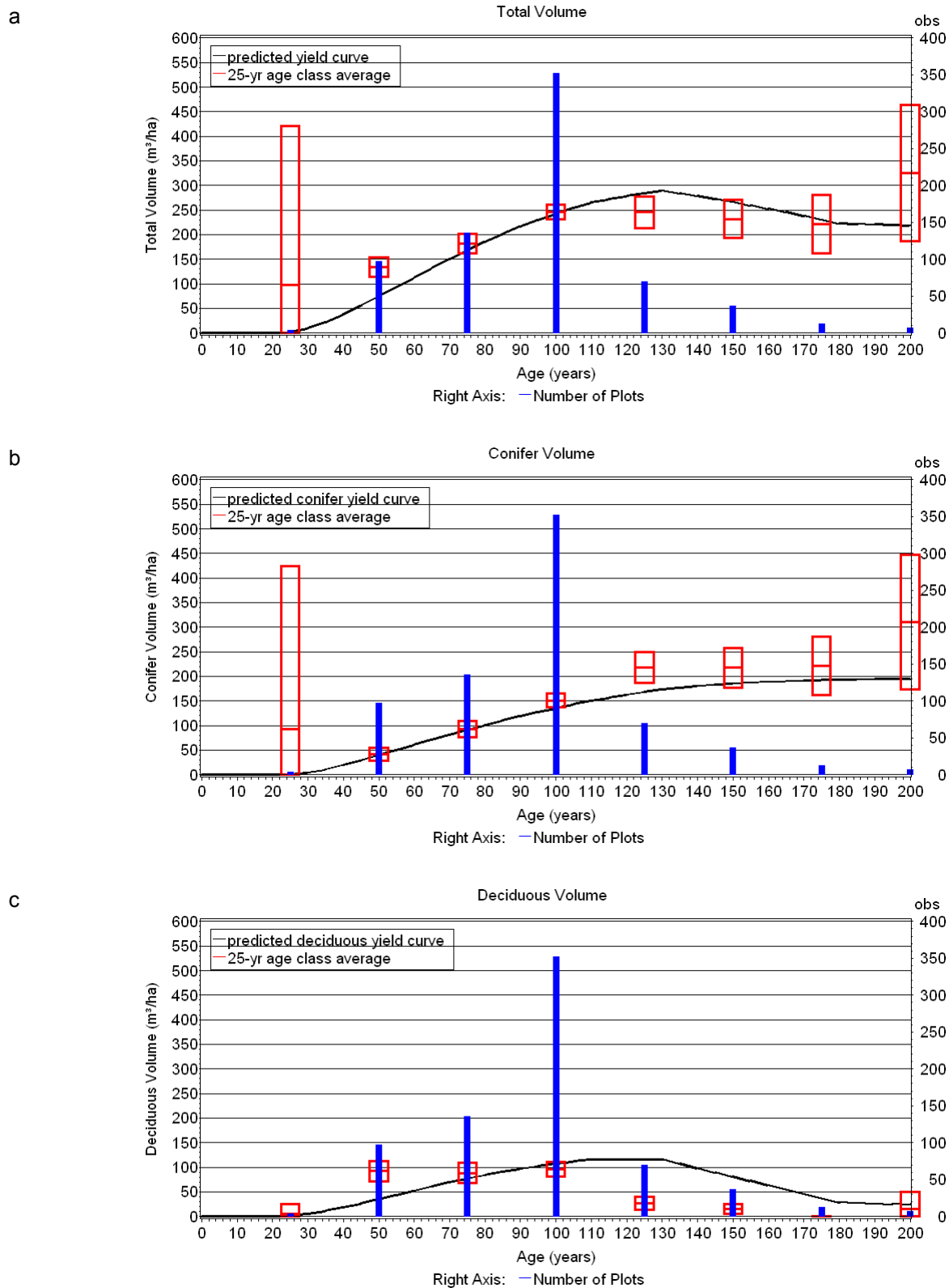


Figure 32. Overall total (a), conifer (b), and deciduous (c) area-weighted yield tables.

### 3.5.2 Area-weighted yield tables by broad cover group.

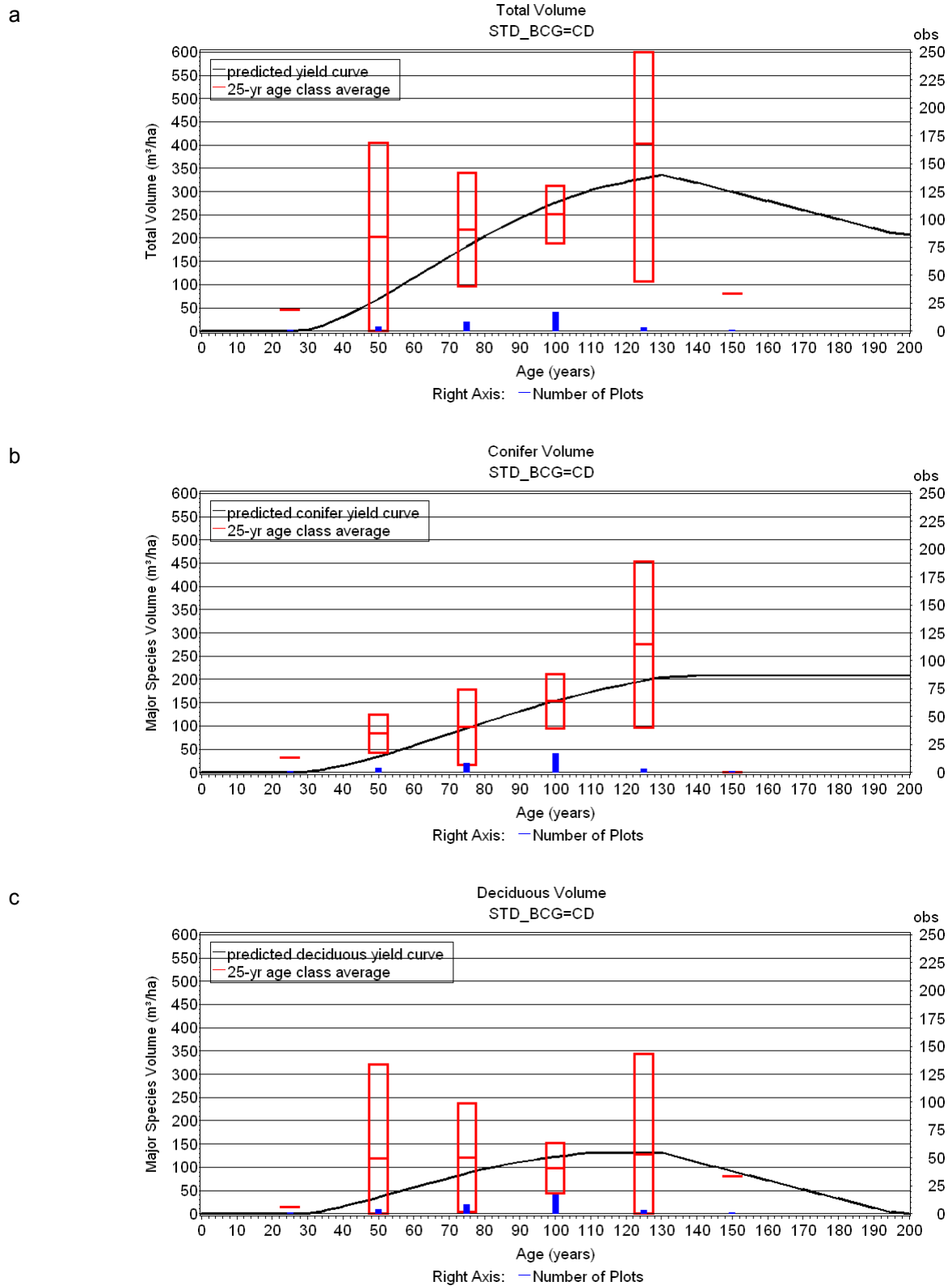


Figure 33. Total (a), conifer (b), and deciduous (c) area-weighted yield tables for the CD broad cover group.

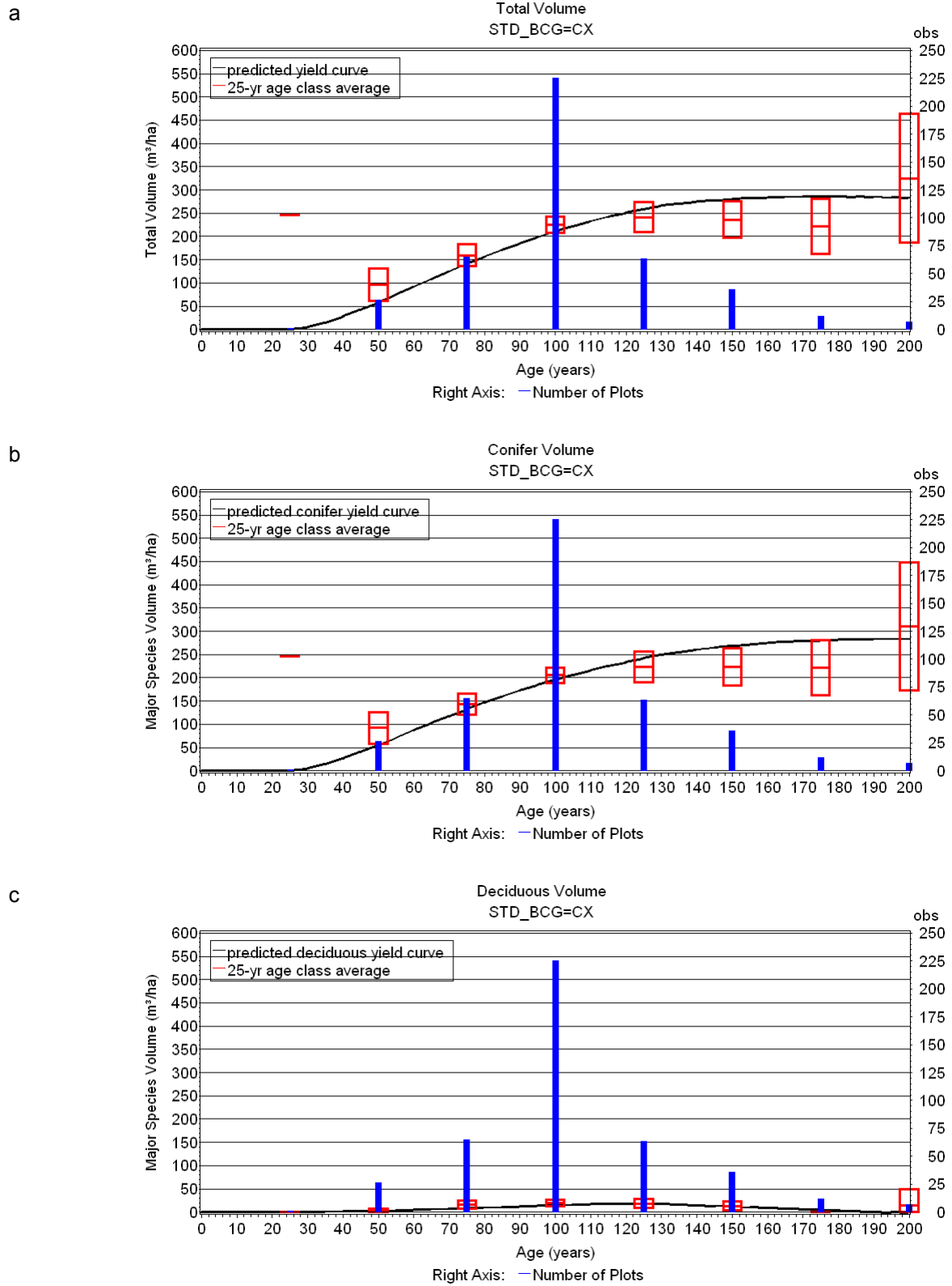


Figure 34. Total (a), conifer (b), and deciduous (c) area-weighted yield tables for the CX broad cover group.

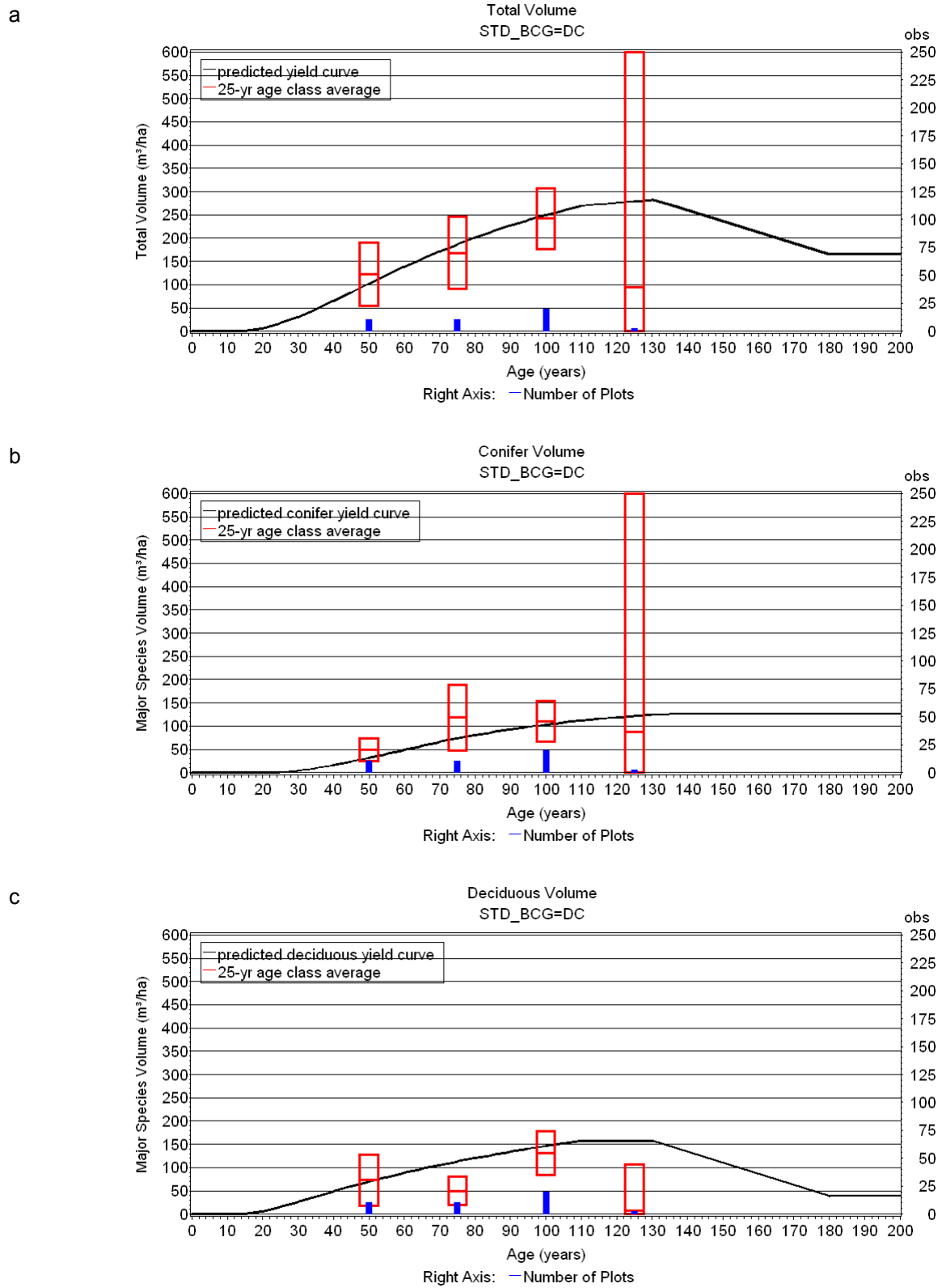


Figure 35. Total (a), conifer (b), and deciduous (c) area-weighted yield tables for the DC broad cover group..

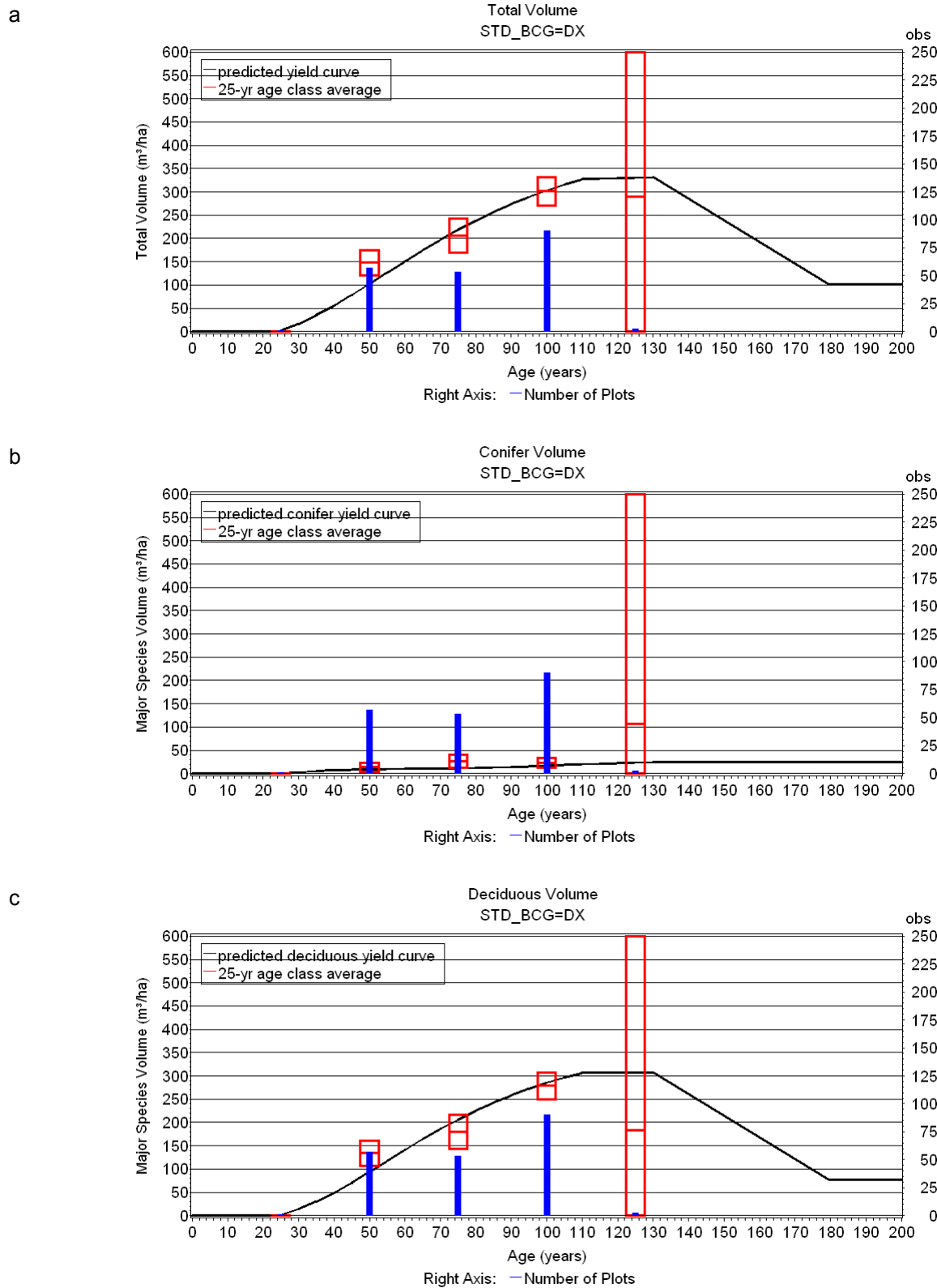


Figure 36. Total (a), conifer (b), and deciduous (c) area-weighted yield tables for the DX broad cover group.

### 3.6 Volume Today Calculation

Variance from the 95% confidence intervals at later stand ages in the yield validation process is related to the area-weighted effect of yield groups with large area representation at later stand ages, but low plot representation at these same ages. The area weighting by yield group and natural subregion does not account for age class distribution in the net landbase. The volume predicted by the volume-age models was compared to the last-measurement PSP volumes in the natural net landbase to ensure starting volume in the timber supply model did not over- or underestimate.

Each net landbase polygon was assigned a gross (excluding cull) volume based on yield group, natural subregion and age. This information was used to calculate an area-weighted estimate of volume (volume-age model mean) by broad cover group. Observed PSP volumes were used to calculate a PSP mean and 95% confidence interval. Although PSPs were established on a grid, there was some evidence of lack of representativeness by age class, which is not unexpected when monitoring at a coarse landscape level. As such, the data were weighted by age class.

Results show good correspondence with estimates of bias at the broad cover group level (Section 3.4.1). Yield table estimates for total and major species volume are within the 95% confidence interval of the last measurement PSP volumes (Figure 37, Table 29). Deciduous volume will appear to have a slight upward bias due to the mortality assumptions included in the model (Section 2.9).

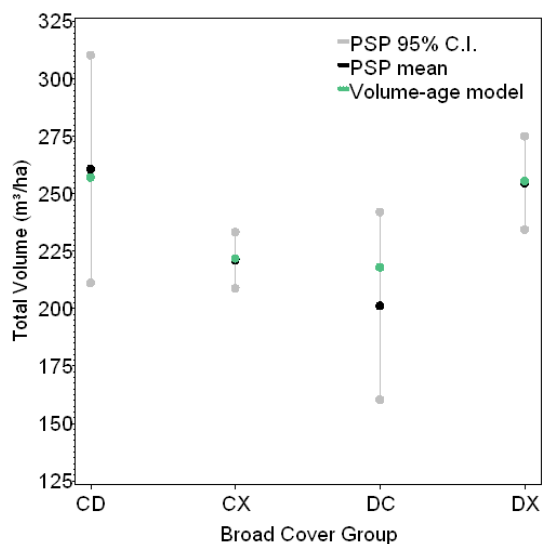


Figure 37. Comparison of volume-age predictions to PSP volumes in natural net landbase.

Table 29. Comparison of yield table estimates for PSP volume today.

BCG	Total Vol (m³/ha)				Conifer Vol (m³/ha)				Deciduous Vol (m³/ha)				No. Plots	Net Area (ha) REG_PATH=NAT
	PSP Mean	Lower 95% C.I.	Upper 95% C.I.	Vol.-Age Model	PSP Mean	Lower 95% C.I.	Upper 95% C.I.	Vol.-Age Model	PSP Mean	Lower 95% C.I.	Upper 95% C.I.	Vol.-Age Model		
CX	221	209	233	222	204	193	216	208	17	13	21	14	435	374,418
CD	261	211	310	257	152	111	194	148	108	73	144	109	34	26,511
DC	201	160	242	218	105	77	133	89	96	68	125	130	42	33,149
DX	255	235	275	256	25	18	32	15	230	210	249	240	203	185,214
ALL	232	222	242	233	143	134	153	142	89	79	98	92	714	619,291

### 3.7 Comparison Graphics

Comparisons of current and previous yield curves are provided in APPENDIX XII – Yield Curve Overlays: Area Weighted 2007 vs. 2011 and APPENDIX XIII – Yield Curve Overlays: NAT, MGD, ENH. Appendix XII provides overlays of the area-weighted yield curves by broad cover group, which were developed for natural stands. Appendix XIII provides overlays of all yield curves by yield group.



Note that for comparison purposes, the 2007 RST curves were renamed to MGD (to compare to 2011 MGD curves) and REG curves were excluded from the graphs.

### 3.8 Conifer Utilization Adjustment Factors

The ratio of means represents the proportional difference between baseline compiled coniferous volumes (15/10 utilization specified for yield curves) and an adjusted coniferous utilization for coniferous sawlogs (20/10).

Data were checked to ensure that all recomputed coniferous volumes were less than or equal to the baseline volumes (Figure 38). Note that all observations are included in graphics, although only the most recent measurement was used for analysis. Observations lacking “suitable” top height were included in analysis.

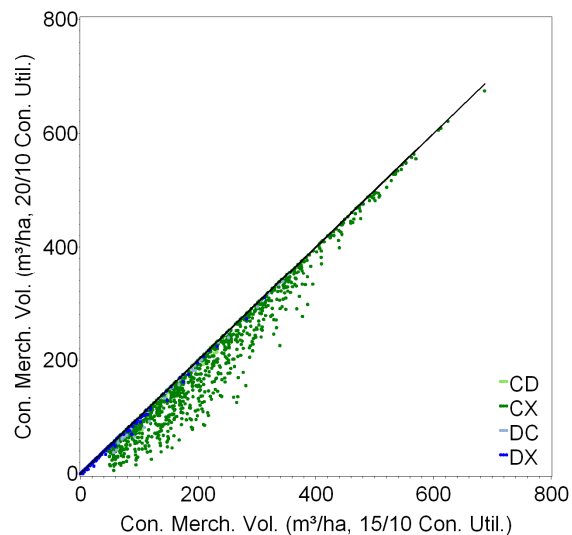


Figure 38. Merchantable volume comparisons for 15/10 and 20/10 coniferous volume.

The variability in ratios when calculated at the plot level is shown in Figure 38. The results of analysis by broad cover group is provided in Table 30. Only the most recent measurement was used for analysis, to

prevent plots with many measurements from having an undue influence on results.

The overall ratio of means for the alternate utilization is 0.90 for coniferous volume. However, it is expected that the proportion of sawlog trees will vary by species.

Table 31 provides the ratio of means by broad cover group and guide species. Note that the multiplier for black spruce is considerably lower than for white spruce or pine, reflecting the difference in log size for this species.

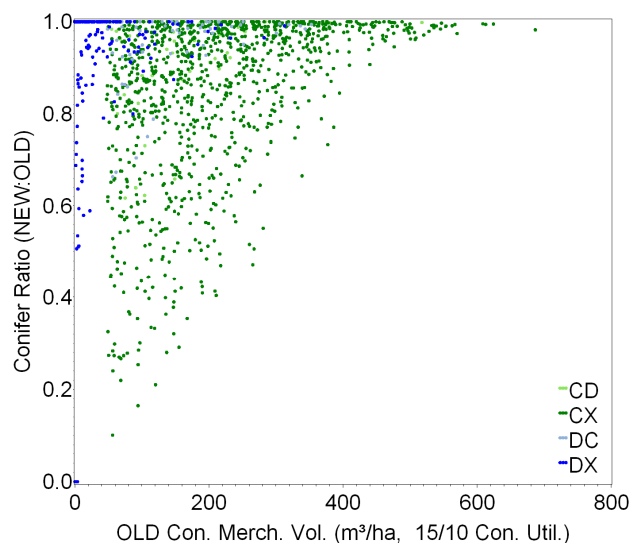


Figure 39. Utilization ratios against (baseline) utilization standards.

Table 30. Ratio of means for sawlogs by broad cover group, and across broad cover groups.

Broad Cover Group	Number of Obs	Mean Coniferous Merch Volume (m <sup>3</sup> /ha)		Ratio of Means	Net Area (ha) <i>Reg_Path=NAT</i>
		15/10	20/10		
		CX	387		
CD	25	176.0	167.8	0.95	26,511
DC	26	147.0	139.3	0.95	33,149
DX	164	23.4	22.5	0.96	185,214
WTD		153.9	138.5	0.90	619,291

Table 31. Ratio of means for sawlogs by broad cover group and guide species.

Broad Cover Group	Guide Species	Number of Obs	Mean Coniferous Merch Volume (m <sup>3</sup> /ha)		Ratio of Means	Net Area (ha) <i>Reg_Path=NAT</i>
			15/10	20/10		
			CX	PL		
CX	SB	22	149.4	119.2	0.80	33,715
CX	SW	102	197.7	186.3	0.94	128,718
CD	PL	11	208.3	198.7	0.95	8,903
CD	SW	14	150.5	143.6	0.95	17,609
DC	AT	26	147.0	139.3	0.95	33,149
DX	AT	164	23.4	22.5	0.96	185,214

### 3.9 Deciduous Utilization Adjustment Factors

A ratio of means approach was used to create a utilization adjustment factor for deciduous yield in the DX broad cover group (yield strata 18-21). The ratio of means represents the proportional difference between baseline compiled deciduous volumes (15/11 utilization specified for yield curves)

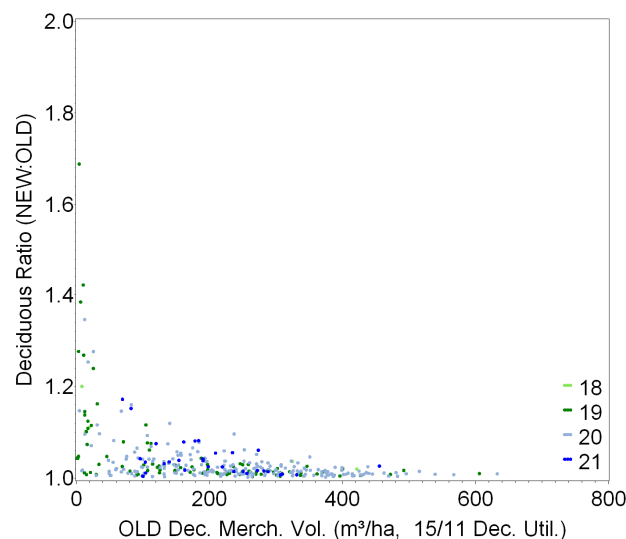


Figure 41 Utilization ratios against (baseline) utilization standards by yield stratum, DX broad cover group.

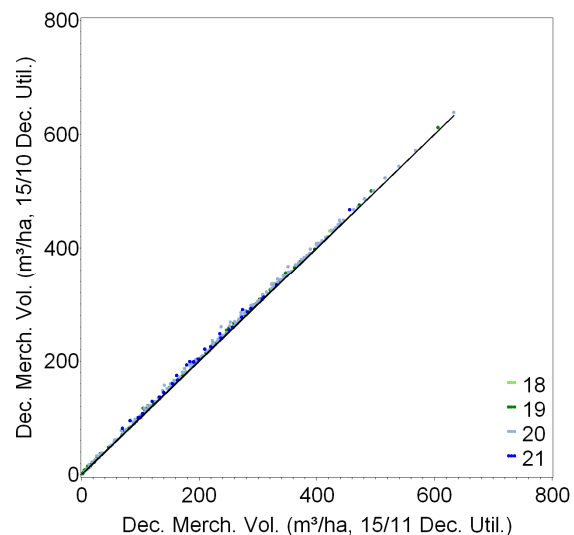


Figure 40 Merchantable volume comparisons for 15/11 and 15/10 deciduous volume, DX broad cover group

and the alternative deciduous utilization (15/10).

Data were checked to ensure that all recompiled deciduous volumes were greater than or equal to the baseline volumes (Figure 3–36). Note that all observations are included in graphics, although only the most recent measurement was used for analysis. Observations lacking “suitable” top height were included in analysis.

The variability in ratios when they are calculated at the plot level is illustrated in Figure 41. The results of analysis by yield stratum and for the DX broad cover group is provided in Table 32.

Only the most recent measurement was used for analysis, to prevent plots with many measurements from having an undue influence on results. Observations with a stand age less than 60 years (minimum harvest age) were also excluded. One outlier was removed, which had a ratio of greater than six.

The overall ratio of means for the alternate utilization is 1.02 for deciduous volume.

Table 32 Ratio of means for deciduous volume by yield stratum, and areas weighted for the DX broad cover group

Yield Strata	Number of Obs	Mean Deciduous		Ratio of Means	Net Area (ha) <i>Reg_Path=NAT</i>
		Merch 15/11	Volume (m <sup>3</sup> /ha) 15/10		
18	2	220.6	225.9	1.02	1,446
19	46	184.6	187.7	1.02	48,538
20	94	261.0	265.1	1.02	96,673
21	21	215.4	222.5	1.03	38,557
WTD DX	163	231.2	235.7	1.02	185,214

## 3.10 Conifer Volume Adjustments for Pine Containing Stands

### 3.10.1 Background

In November 28, 2010 Alberta Sustainable Resources Development (ASRD) provided considerations regarding methods for modeling mountain pine beetle impacts on timber supply yield forecasts. ASRD requested that “pine containing” stand yields should be adjusted using both available plot data and stand specific yield curves. This section documents the methods for development of yield curve-specific adjustment factors.

### 3.10.2 Pine Stand Volume Adjustment

Pine stand volume adjustment was based on AVI and permanent sample plot information. Based on AVI overstory's label, each polygon in the net land base was assigned conifer and pine percent estimates. For example, an inventory label Aw5PI3Sw2 was interpreted as 50% conifer and 30% pine content. Based on this information, a preliminary adjustment factor was calculated using the percent of pine as a proportion of coniferous percent. Using the previous example, pine as percent of conifer was calculated as  $(30/50 \times 100)$  or 60%.

Originally, to reduce conifer yields in pine containing stands, the conifer yield adjustment was modeled based on pine percent of conifer. However, a comparison to PSP data was required to ensure that proportions based on crown closure adequately reflected true proportions of volume, as indicated in compiled plot data.

All 714 PSP observations used in yield curve development (yield groups 1-21, natural stand volumes excluding cull) were used to calculate the same variables calculated from the overstory AVI (percent

conifer, percent pine and pine as percent of conifer). PSP plot locations were intersected with the land base and linked to the AVI-based values, creating 714 paired observations (AVI-PSP).

A comparison between AVI-based and PSP-based pine percent of conifer was undertaken graphically. Initial results indicated a very poor relationship (Figure 1). Plot data often shows a wide range relative to AVI attributes due to many factors: plots falling in atypical portions of stands, understory volumes included in plot compilation, inaccuracies in AVI calls, etc.

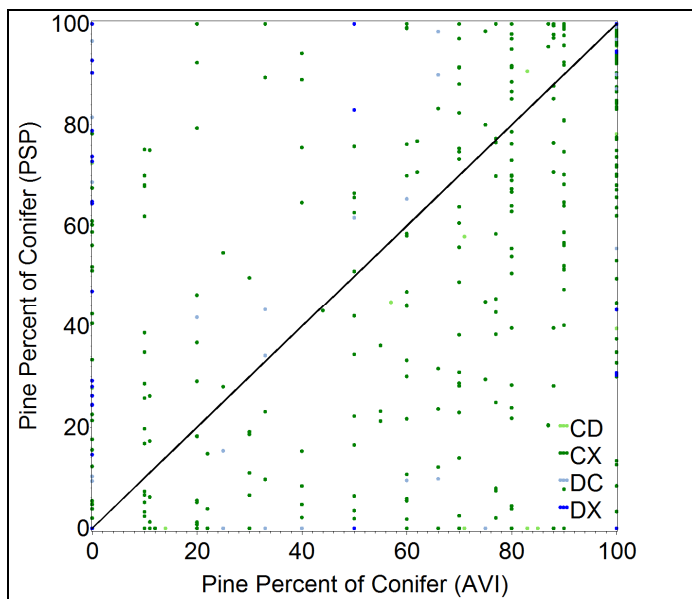


Figure 42 Pine percent of conifer, AVI vs. PSP data

On average, however, the expected trends between AVI and PSP data were observed when box plots (representing the mean, median and range of data) were used to clarify. Figure 43 box plots showing relationship between PSP and AVI "pine percent of conifer" values (plus sign is the mean, boxes represent 75<sup>th</sup> and 25<sup>th</sup> percentiles, whiskers represent the minimum and maximum, and the red center bar indicates the median).

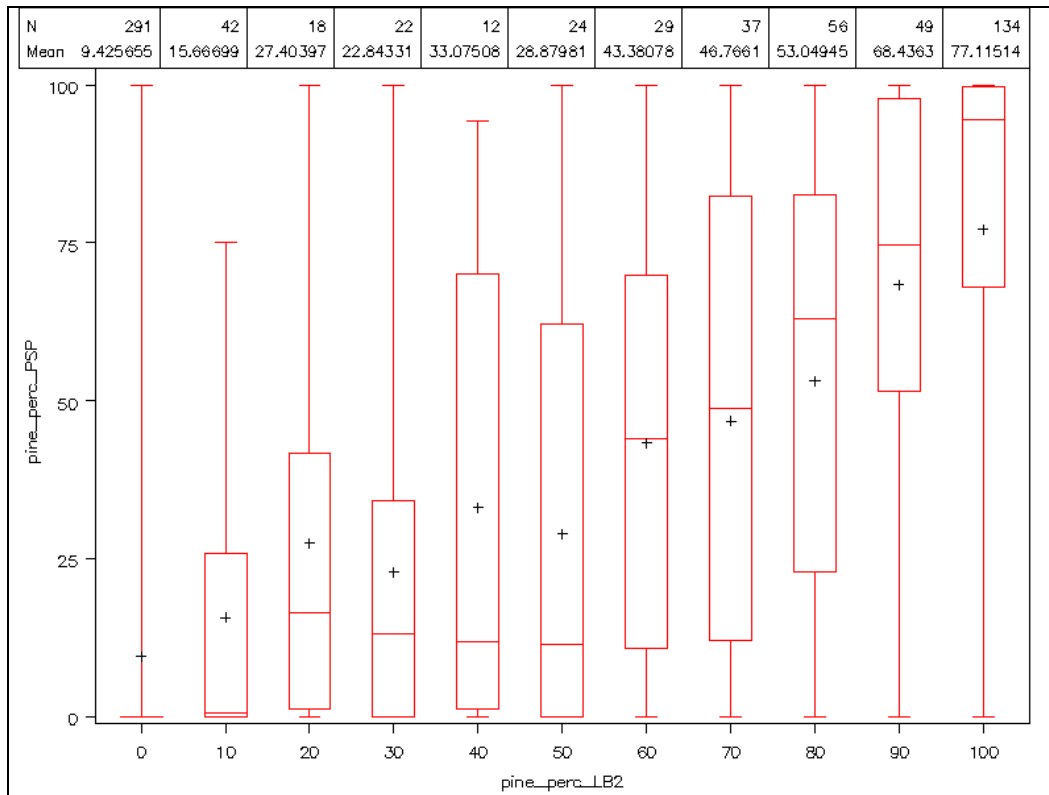


Figure 43 Boxplots showing relationship between PSP and AVI "pine percent of conifer" values

A linear regression line was fit to the 714 observations. Figure 44 shows a reasonable fit obtained from using linear regression modeling.

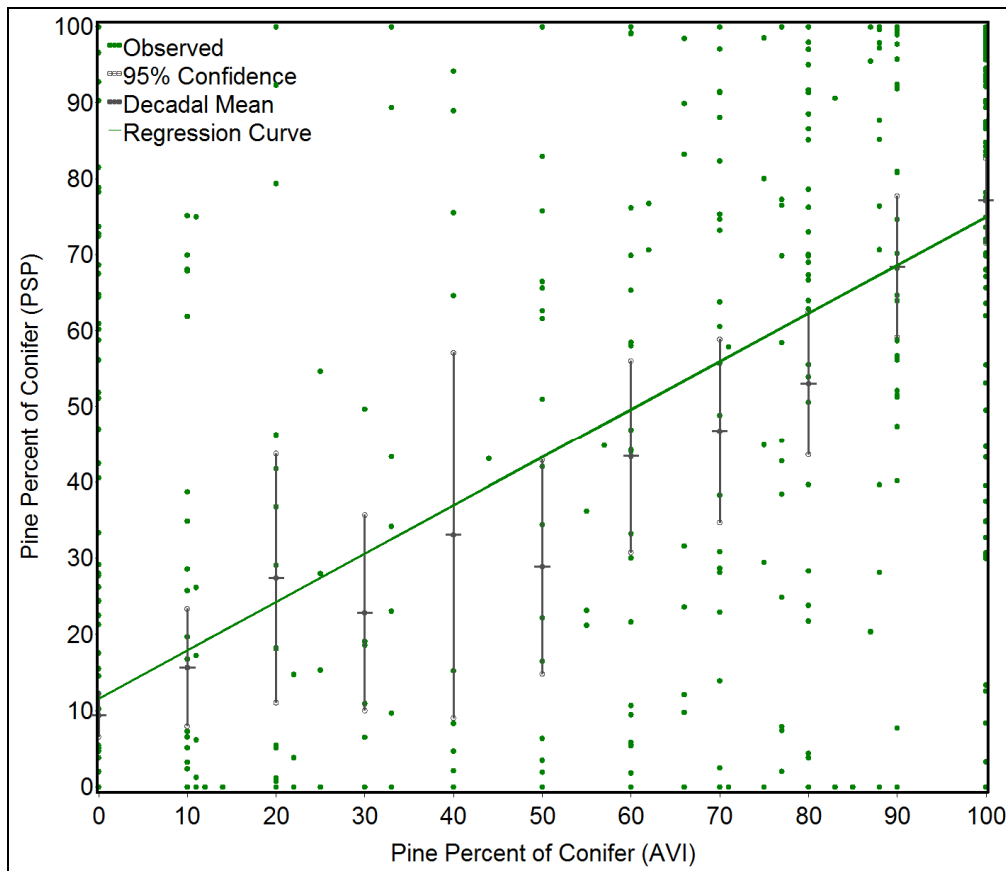


Figure 44 Regression line fit against mean and 95% confidence interval for data

Though, the relationship between PSP and AVI-based adjustment factors was not perfect, the following linear equation was determined to be acceptable and was used to adjust inventory pine volume:

$$\text{Pine as Percent of Conifer} = 11.5884 + 0.6637 * \text{Pine\_Per\_Con\_AVI}$$

### 3.10.3 Application

Pine as percent of conifer adjustment factor was only applied to netdown polygons in yield groups 1-21. Yield group 40 was not included in this analysis, since it is being managed on young immature predominantly spruce understory conditions. The conifer content in yield group 40 was not reduced based on residual conifer in the current hardwood overstory.

## 3.11 Mean Annual Increment (MAI) Standards

The Reforestation Standard of Alberta<sup>28</sup> requires that culmination MAI standards be developed for each regenerated yield curve used in the FMP. There are 21 regenerated yield strata with separate yield curves developed within each stratum for up to four natural subregion groups (CMW/DMW, LF, M/SA/A,

<sup>28</sup> Alberta Sustainable Resource Development. 2010. Reforestation Standard of Alberta. Government of Alberta, Department of Sustainable Resource Development, Edmonton, Alberta. 220 p.

UF)<sup>29</sup>. Conifer and deciduous maximum MAIs (Table 33 and Table 34) were determined at the culmination age for the primary species. Regeneration lags assumed in the timber supply analysis were applied (*reference section of report that describes regen lags*). The yield curves used were for gross merchantable volume. The conifer utilization standards are 15/10 (15 cm stump diameter, 10 cm top diameter). The deciduous utilization standards varied by broad cover group. For CX and CD deciduous utilization standards are 15/10, for DX and DC they are 15/11. The associated culmination ages are presented in Table 35.

Table 33 Conifer MAIs

Yield Group	Natural Subregion Group			
	CMW/DMW	LF	M/SA/A	UF
1	3.333	3.031	2.123	2.707
2	4.166	4.039	2.540	3.527
2E	4.46	4.32	2.73	3.79
3	4.453	4.317	2.715	3.770
4	1.749	2.029	1.066	1.867
5	1.973	2.289	1.203	2.107
5E	2.06	2.40	1.24	2.20
6		1.344		1.249
7		1.522		1.415
8	3.790	3.683	2.417	3.256
9	2.340	2.712	1.428	2.497
10	3.622	2.501	2.303	3.108
11	3.622	3.516	2.303	2.413
12	2.803	2.412	1.712	2.992
13	2.672	2.580	1.533	2.220
14	1.117	1.300	0.663	1.195
15	1.761	2.049	1.045	1.883
16	0.510	1.018		0.551
17	1.785	1.488		0.815
18	0.472	0.255		0.204
19	0.177	0.170		0.101
20	0.193	0.186		0.109
21	0.084	0.066		0.049

<sup>29</sup> Timberline Natural Resource Group. 2009. 2011 Detailed forest management plan yield tables. Weyerhaeuser Grande Prairie FMA #6900016.

Table 34 Deciduous MAIs

Yield Group	Natural Subregion Group			
	CMW/DMW	LF	M/SA/A	UF
1	0.229	0.197	0.112	0.161
2	0.086	0.070	0.008	0.058
2E	0.091	0.073	0.013	0.066
3	0.170	0.150	0.056	0.129
4	0.266	0.317	0.016	0.295
5	0.508	0.609	0.030	0.565
5E	0.550	0.639	0.061	0.585
6		0.000		0.000
7		0.000		0.000
8	0.318	0.287	0.152	0.226
9	0.267	0.310	0.011	0.286
10	0.148	0.095	0.086	0.127
11	0.352	0.339	0.215	0.224
12	0.000	0.000	0.000	0.000
13	1.139	1.076	0.506	0.903
14	1.074	1.602	0.000	1.417
15	0.721	1.004	0.000	0.923
16	0.950	1.707		0.991
17	2.226	1.822		1.057
18	2.818	1.535		1.133
19	2.915	2.847		1.405
20	2.950	2.881		1.422
21	3.685	3.002		1.481



Table 35 Culminating Ages for MAIs

Natural Subregion Group				
Yield Group	CMW/DMW	LF	M/SA/A	UF
1	75	80	100	85
2	70	70	95	80
2E	65	65	90	75
3	70	70	95	80
4	115	100	185	105
5	115	100	185	105
5E	110	95	175	105
6		185		200
7		185		200
8	60	60	85	65
9	110	95	180	105
10	60	80	85	70
11	60	60	85	80
12	110	125	175	100
13	80	80	115	90
14	140	120	200	130
15	140	120	200	130
16	110	70		110
17	55	70		110
18	75	110		110
19	90	90		110
20	90	90		110
21	75	90		110

## APPENDIX I – DATA DICTIONARY

Table 36. Raw plot tables – Record: PSPs by measurement.

ID	Variable	Type	Len	Description
1	COMPANY	Char	255	Company name
2	PLOTID	Char	255	Plot identifier
3	MEASYEAR	Num	8	Measurement year
4	MEASNUMB	Num	8	Measurement number
5	TAGLIMIT1	Num	8	Main plot tagging limit (cm)
6	PLOTSIZE1	Num	8	Main plot size (m2)
7	TAGLIMIT2	Num	8	Sapling plot tagging limit (cm)
8	PLOTSIZE2	Num	8	Sapling plot size (m2)
9	TAGLIMIT3	Num	8	Sapling plot tagging limit (cm)
10	PLOTSIZE3	Num	8	Regeneration plot size (m2)
11	NREGION	Num	8	Natural subregion code (ASRD)
12	TWP	Num	8	Township
13	RGE	Num	8	Range
14	MER	Num	8	Meridian
15	PLOTDISTURB	Char	255	Plot disturbance comment
16	XCOORD	Num	8	X coordinate
17	YCOORD	Num	8	Y coordinate
18	ORACLE_PLOTID	Num	8	Company PSP system internal key
19	SURVEY_DATE	Char	255	Field survey date

Table 37. Output plot tables – Record: PSPs by measurement.

ID	Variable	Type	Len	Description
1	PLOTID	Char	255	Plot identifier
2	MEASNUMB	Num	8	Measurement number
3	N00_ALL	Num	8	Stems per hectare all live trees, all species
4	HT00_ALL	Num	8	Average height (m) all live trees, all species
5	DBH00_ALL	Num	8	Average DBH (cm) all live trees, all species
6	HDC00_ALL	Num	8	Average dom/codom height (m) all live trees, all species
7	BA00_ALL	Num	8	Basal area per hectare (m2) all live trees, all species
8	QMD00_ALL	Num	8	Quadratic mean DBH (cm) all live trees, all species
9	HTOPS00_ALL	Num	8	Top height strict selection (m) all live trees, all species
10	HTOPW00_ALL	Num	8	Top height weak selection (m) all live trees, all species
11	TVOL00_ALL	Num	8	Total (0/0) volume per hectare (m3) all live trees, all species
12	MVOL00_ALL	Num	8	Merch (15/10) volume per hectare (m3) all live trees, all species
13	N13_ALL	Num	8	Stems per hectare live trees >= 1.3 m, all species
14	HT13_ALL	Num	8	Average height (m) live trees >= 1.3 m, all species
15	DBH13_ALL	Num	8	Average DBH (cm) live trees >= 1.3 m, all species
16	HDC13_ALL	Num	8	Average dom/codom height (m) live trees >= 1.3 m, all species
17	BA13_ALL	Num	8	Basal area per hectare (m2) live trees >= 1.3 m, all species
18	QMD13_ALL	Num	8	Quadratic mean DBH (cm) live trees >= 1.3 m, all species
19	HTOPS13_ALL	Num	8	Top height strict selection (m) live trees >= 1.3 m, all species
20	HTOPW13_ALL	Num	8	Top height weak selection (m) live trees >= 1.3 m, all species
21	TVOL13_ALL	Num	8	Total (0/0) volume per hectare (m3) live trees >= 1.3 m, all species
22	MVOL13_ALL	Num	8	Merch (15/10) volume per hectare (m3) live trees >= 1.3 m, all species
23	N51_ALL	Num	8	Stems per hectare live trees > 5 cm DBH, all species
24	HT51_ALL	Num	8	Average height (m) live trees > 5 cm DBH, all species
25	DBH51_ALL	Num	8	Average DBH (cm) live trees > 5 cm DBH, all species
26	HDC51_ALL	Num	8	Average dom/codom height (m) live trees > 5 cm DBH, all species
27	BA51_ALL	Num	8	Basal area per hectare (m2) live trees > 5 cm DBH, all species
28	QMD51_ALL	Num	8	Quadratic mean DBH (cm) live trees > 5 cm DBH, all species
29	HTOPS51_ALL	Num	8	Top height strict selection (m) live trees > 5 cm DBH, all species
30	HTOPW51_ALL	Num	8	Top height weak selection (m) live trees > 5 cm DBH, all species
31	TVOL51_ALL	Num	8	Total (0/0) volume per hectare (m3) live trees > 5 cm DBH, all species
32	MVOL51_ALL	Num	8	Merch (15/10) volume per hectare (m3) live trees > 5 cm DBH, all species
33	N00_AT	Num	8	Stems per hectare all live trees, AT
34	HT00_AT	Num	8	Average height (m) all live trees, AT
35	DBH00_AT	Num	8	Average DBH (cm) all live trees, AT
36	HDC00_AT	Num	8	Average dom/codom height (m) all live trees, AT
37	BA00_AT	Num	8	Basal area per hectare (m2) all live trees, AT
38	QMD00_AT	Num	8	Quadratic mean DBH (cm) all live trees, AT
39	HTOPS00_AT	Num	8	Top height strict selection (m) all live trees, AT
40	HTOPW00_AT	Num	8	Top height weak selection (m) all live trees, AT
41	TVOL00_AT	Num	8	Total (0/0) volume per hectare (m3) all live trees, AT
42	MVOL00_AT	Num	8	Merch (15/10) volume per hectare (m3) all live trees, AT
43	N13_AT	Num	8	Stems per hectare live trees >= 1.3 m, AT
44	HT13_AT	Num	8	Average height (m) live trees >= 1.3 m, AT
45	DBH13_AT	Num	8	Average DBH (cm) live trees >= 1.3 m, AT

ID	Variable	Type	Len	Description
46	HDC13_AT	Num	8	Average dom/codom height (m) live trees $\geq$ 1.3 m, AT
47	BA13_AT	Num	8	Basal area per hectare (m <sup>2</sup> ) live trees $\geq$ 1.3 m, AT
48	QMD13_AT	Num	8	Quadratic mean DBH (cm) live trees $\geq$ 1.3 m, AT
49	HTOPS13_AT	Num	8	Top height strict selection (m) live trees $\geq$ 1.3 m, AT
50	HTOPW13_AT	Num	8	Top height weak selection (m) live trees $\geq$ 1.3 m, AT
51	TVOL13_AT	Num	8	Total (0/0) volume per hectare (m <sup>3</sup> ) live trees $\geq$ 1.3 m, AT
52	MVOL13_AT	Num	8	Merch (15/10) volume per hectare (m <sup>3</sup> ) live trees $\geq$ 1.3 m, AT
53	N51_AT	Num	8	Stems per hectare live trees > 5 cm DBH, AT
54	HT51_AT	Num	8	Average height (m) live trees > 5 cm DBH, AT
55	DBH51_AT	Num	8	Average DBH (cm) live trees > 5 cm DBH, AT
56	HDC51_AT	Num	8	Average dom/codom height (m) live trees > 5 cm DBH, AT
57	BA51_AT	Num	8	Basal area per hectare (m <sup>2</sup> ) live trees > 5 cm DBH, AT
58	QMD51_AT	Num	8	Quadratic mean DBH (cm) live trees > 5 cm DBH, AT
59	HTOPS51_AT	Num	8	Top height strict selection (m) live trees > 5 cm DBH, AT
60	HTOPW51_AT	Num	8	Top height weak selection (m) live trees > 5 cm DBH, AT
61	TVOL51_AT	Num	8	Total (0/0) volume per hectare (m <sup>3</sup> ) live trees > 5 cm DBH, AT
62	MVOL51_AT	Num	8	Merch (15/10) volume per hectare (m <sup>3</sup> ) live trees > 5 cm DBH, AT
63	N00_BW	Num	8	Stems per hectare all live trees, BW
64	HT00_BW	Num	8	Average height (m) all live trees, BW
65	DBH00_BW	Num	8	Average DBH (cm) all live trees, BW
66	HDC00_BW	Num	8	Average dom/codom height (m) all live trees, BW
67	BA00_BW	Num	8	Basal area per hectare (m <sup>2</sup> ) all live trees, BW
68	QMD00_BW	Num	8	Quadratic mean DBH (cm) all live trees, BW
69	HTOPS00_BW	Num	8	Top height strict selection (m) all live trees, BW
70	HTOPW00_BW	Num	8	Top height weak selection (m) all live trees, BW
71	TVOL00_BW	Num	8	Total (0/0) volume per hectare (m <sup>3</sup> ) all live trees, BW
72	MVOL00_BW	Num	8	Merch (15/10) volume per hectare (m <sup>3</sup> ) all live trees, BW
73	N13_BW	Num	8	Stems per hectare live trees $\geq$ 1.3 m, BW
74	HT13_BW	Num	8	Average height (m) live trees $\geq$ 1.3 m, BW
75	DBH13_BW	Num	8	Average DBH (cm) live trees $\geq$ 1.3 m, BW
76	HDC13_BW	Num	8	Average dom/codom height (m) live trees $\geq$ 1.3 m, BW
77	BA13_BW	Num	8	Basal area per hectare (m <sup>2</sup> ) live trees $\geq$ 1.3 m, BW
78	QMD13_BW	Num	8	Quadratic mean DBH (cm) live trees $\geq$ 1.3 m, BW
79	HTOPS13_BW	Num	8	Top height strict selection (m) live trees $\geq$ 1.3 m, BW
80	HTOPW13_BW	Num	8	Top height weak selection (m) live trees $\geq$ 1.3 m, BW
81	TVOL13_BW	Num	8	Total (0/0) volume per hectare (m <sup>3</sup> ) live trees $\geq$ 1.3 m, BW
82	MVOL13_BW	Num	8	Merch (15/10) volume per hectare (m <sup>3</sup> ) live trees $\geq$ 1.3 m, BW
83	N51_BW	Num	8	Stems per hectare live trees > 5 cm DBH, BW
84	HT51_BW	Num	8	Average height (m) live trees > 5 cm DBH, BW
85	DBH51_BW	Num	8	Average DBH (cm) live trees > 5 cm DBH, BW
86	HDC51_BW	Num	8	Average dom/codom height (m) live trees > 5 cm DBH, BW
87	BA51_BW	Num	8	Basal area per hectare (m <sup>2</sup> ) live trees > 5 cm DBH, BW
88	QMD51_BW	Num	8	Quadratic mean DBH (cm) live trees > 5 cm DBH, BW
89	HTOPS51_BW	Num	8	Top height strict selection (m) live trees > 5 cm DBH, BW
90	HTOPW51_BW	Num	8	Top height weak selection (m) live trees > 5 cm DBH, BW
91	TVOL51_BW	Num	8	Total (0/0) volume per hectare (m <sup>3</sup> ) live trees > 5 cm DBH, BW

ID	Variable	Type	Len	Description
92	MVOL51_BW	Num	8	Merch (15/10) volume per hectare (m3) live trees > 5 cm DBH, BW
93	N00_CON	Num	8	Stems per hectare all live trees, conifer
94	HT00_CON	Num	8	Average height (m) all live trees, conifer
95	DBH00_CON	Num	8	Average DBH (cm) all live trees, conifer
96	HDC00_CON	Num	8	Average dom/codom height (m) all live trees, conifer
97	BA00_CON	Num	8	Basal area per hectare (m2) all live trees, conifer
98	QMD00_CON	Num	8	Quadratic mean DBH (cm) all live trees, conifer
99	HTOPS00_CON	Num	8	Top height strict selection (m) all live trees, conifer
100	HTOPW00_CON	Num	8	Top height weak selection (m) all live trees, conifer
101	TVOL00_CON	Num	8	Total (0/0) volume per hectare (m3) all live trees, conifer
102	MVOL00_CON	Num	8	Merch (15/10) volume per hectare (m3) all live trees, conifer
103	N13_CON	Num	8	Stems per hectare live trees >= 1.3 m, conifer
104	HT13_CON	Num	8	Average height (m) live trees >= 1.3 m, conifer
105	DBH13_CON	Num	8	Average DBH (cm) live trees >= 1.3 m, conifer
106	HDC13_CON	Num	8	Average dom/codom height (m) live trees >= 1.3 m, conifer
107	BA13_CON	Num	8	Basal area per hectare (m2) live trees >= 1.3 m, conifer
108	QMD13_CON	Num	8	Quadratic mean DBH (cm) live trees >= 1.3 m, conifer
109	HTOPS13_CON	Num	8	Top height strict selection (m) live trees >= 1.3 m, conifer
110	HTOPW13_CON	Num	8	Top height weak selection (m) live trees >= 1.3 m, conifer
111	TVOL13_CON	Num	8	Total (0/0) volume per hectare (m3) live trees >= 1.3 m, conifer
112	MVOL13_CON	Num	8	Merch (15/10) volume per hectare (m3) live trees >= 1.3 m, conifer
113	N51_CON	Num	8	Stems per hectare live trees > 5 cm DBH, conifer
114	HT51_CON	Num	8	Average height (m) live trees > 5 cm DBH, conifer
115	DBH51_CON	Num	8	Average DBH (cm) live trees > 5 cm DBH, conifer
116	HDC51_CON	Num	8	Average dom/codom height (m) live trees > 5 cm DBH, conifer
117	BA51_CON	Num	8	Basal area per hectare (m2) live trees > 5 cm DBH, conifer
118	QMD51_CON	Num	8	Quadratic mean DBH (cm) live trees > 5 cm DBH, conifer
119	HTOPS51_CON	Num	8	Top height strict selection (m) live trees > 5 cm DBH, conifer
120	HTOPW51_CON	Num	8	Top height weak selection (m) live trees > 5 cm DBH, conifer
121	TVOL51_CON	Num	8	Total (0/0) volume per hectare (m3) live trees > 5 cm DBH, conifer
122	MVOL51_CON	Num	8	Merch (15/10) volume per hectare (m3) live trees > 5 cm DBH, conifer
123	N00_DEC	Num	8	Stems per hectare all live trees, deciduous
124	HT00_DEC	Num	8	Average height (m) all live trees, deciduous
125	DBH00_DEC	Num	8	Average DBH (cm) all live trees, deciduous
126	HDC00_DEC	Num	8	Average dom/codom height (m) all live trees, deciduous
127	BA00_DEC	Num	8	Basal area per hectare (m2) all live trees, deciduous
128	QMD00_DEC	Num	8	Quadratic mean DBH (cm) all live trees, deciduous
129	HTOPS00_DEC	Num	8	Top height strict selection (m) all live trees, deciduous
130	HTOPW00_DEC	Num	8	Top height weak selection (m) all live trees, deciduous
131	TVOL00_DEC	Num	8	Total (0/0) volume per hectare (m3) all live trees, deciduous
132	MVOL00_DEC	Num	8	Merch (15/10) volume per hectare (m3) all live trees, deciduous
133	N13_DEC	Num	8	Stems per hectare live trees >= 1.3 m, deciduous
134	HT13_DEC	Num	8	Average height (m) live trees >= 1.3 m, deciduous
135	DBH13_DEC	Num	8	Average DBH (cm) live trees >= 1.3 m, deciduous
136	HDC13_DEC	Num	8	Average dom/codom height (m) live trees >= 1.3 m, deciduous
137	BA13_DEC	Num	8	Basal area per hectare (m2) live trees >= 1.3 m, deciduous

ID	Variable	Type	Len	Description
138	QMD13_DEC	Num	8	Quadratic mean DBH (cm) live trees >= 1.3 m, deciduous
139	HTOPS13_DEC	Num	8	Top height strict selection (m) live trees >= 1.3 m, deciduous
140	HTOPW13_DEC	Num	8	Top height weak selection (m) live trees >= 1.3 m, deciduous
141	TVOL13_DEC	Num	8	Total (0/0) volume per hectare (m3) live trees >= 1.3 m, deciduous
142	MVOL13_DEC	Num	8	Merch (15/10) volume per hectare (m3) live trees >= 1.3 m, deciduous
143	N51_DEC	Num	8	Stems per hectare live trees > 5 cm DBH, deciduous
144	HT51_DEC	Num	8	Average height (m) live trees > 5 cm DBH, deciduous
145	DBH51_DEC	Num	8	Average DBH (cm) live trees > 5 cm DBH, deciduous
146	HDC51_DEC	Num	8	Average dom/codom height (m) live trees > 5 cm DBH, deciduous
147	BA51_DEC	Num	8	Basal area per hectare (m2) live trees > 5 cm DBH, deciduous
148	QMD51_DEC	Num	8	Quadratic mean DBH (cm) live trees > 5 cm DBH, deciduous
149	HTOPS51_DEC	Num	8	Top height strict selection (m) live trees > 5 cm DBH, deciduous
150	HTOPW51_DEC	Num	8	Top height weak selection (m) live trees > 5 cm DBH, deciduous
151	TVOL51_DEC	Num	8	Total (0/0) volume per hectare (m3) live trees > 5 cm DBH, deciduous
152	MVOL51_DEC	Num	8	Merch (15/10) volume per hectare (m3) live trees > 5 cm DBH, deciduous
153	N00_FB	Num	8	Stems per hectare all live trees, FB
154	HT00_FB	Num	8	Average height (m) all live trees, FB
155	DBH00_FB	Num	8	Average DBH (cm) all live trees, FB
156	HDC00_FB	Num	8	Average dom/codom height (m) all live trees, FB
157	BA00_FB	Num	8	Basal area per hectare (m2) all live trees, FB
158	QMD00_FB	Num	8	Quadratic mean DBH (cm) all live trees, FB
159	HTOPS00_FB	Num	8	Top height strict selection (m) all live trees, FB
160	HTOPW00_FB	Num	8	Top height weak selection (m) all live trees, FB
161	TVOL00_FB	Num	8	Total (0/0) volume per hectare (m3) all live trees, FB
162	MVOL00_FB	Num	8	Merch (15/10) volume per hectare (m3) all live trees, FB
163	N13_FB	Num	8	Stems per hectare live trees >= 1.3 m, FB
164	HT13_FB	Num	8	Average height (m) live trees >= 1.3 m, FB
165	DBH13_FB	Num	8	Average DBH (cm) live trees >= 1.3 m, FB
166	HDC13_FB	Num	8	Average dom/codom height (m) live trees >= 1.3 m, FB
167	BA13_FB	Num	8	Basal area per hectare (m2) live trees >= 1.3 m, FB
168	QMD13_FB	Num	8	Quadratic mean DBH (cm) live trees >= 1.3 m, FB
169	HTOPS13_FB	Num	8	Top height strict selection (m) live trees >= 1.3 m, FB
170	HTOPW13_FB	Num	8	Top height weak selection (m) live trees >= 1.3 m, FB
171	TVOL13_FB	Num	8	Total (0/0) volume per hectare (m3) live trees >= 1.3 m, FB
172	MVOL13_FB	Num	8	Merch (15/10) volume per hectare (m3) live trees >= 1.3 m, FB
173	N51_FB	Num	8	Stems per hectare live trees > 5 cm DBH, FB
174	HT51_FB	Num	8	Average height (m) live trees > 5 cm DBH, FB
175	DBH51_FB	Num	8	Average DBH (cm) live trees > 5 cm DBH, FB
176	HDC51_FB	Num	8	Average dom/codom height (m) live trees > 5 cm DBH, FB
177	BA51_FB	Num	8	Basal area per hectare (m2) live trees > 5 cm DBH, FB
178	QMD51_FB	Num	8	Quadratic mean DBH (cm) live trees > 5 cm DBH, FB
179	HTOPS51_FB	Num	8	Top height strict selection (m) live trees > 5 cm DBH, FB
180	HTOPW51_FB	Num	8	Top height weak selection (m) live trees > 5 cm DBH, FB
181	TVOL51_FB	Num	8	Total (0/0) volume per hectare (m3) live trees > 5 cm DBH, FB
182	MVOL51_FB	Num	8	Merch (15/10) volume per hectare (m3) live trees > 5 cm DBH, FB
183	N00_PB	Num	8	Stems per hectare all live trees, PB

ID	Variable	Type	Len	Description
184	HT00_PB	Num	8	Average height (m) all live trees, PB
185	DBH00_PB	Num	8	Average DBH (cm) all live trees, PB
186	HDC00_PB	Num	8	Average dom/codom height (m) all live trees, PB
187	BA00_PB	Num	8	Basal area per hectare (m2) all live trees, PB
188	QMD00_PB	Num	8	Quadratic mean DBH (cm) all live trees, PB
189	HTOPS00_PB	Num	8	Top height strict selection (m) all live trees, PB
190	HTOPW00_PB	Num	8	Top height weak selection (m) all live trees, PB
191	TVOL00_PB	Num	8	Total (0/0) volume per hectare (m3) all live trees, PB
192	MVOL00_PB	Num	8	Merch (15/10) volume per hectare (m3) all live trees, PB
193	N13_PB	Num	8	Stems per hectare live trees >= 1.3 m, PB
194	HT13_PB	Num	8	Average height (m) live trees >= 1.3 m, PB
195	DBH13_PB	Num	8	Average DBH (cm) live trees >= 1.3 m, PB
196	HDC13_PB	Num	8	Average dom/codom height (m) live trees >= 1.3 m, PB
197	BA13_PB	Num	8	Basal area per hectare (m2) live trees >= 1.3 m, PB
198	QMD13_PB	Num	8	Quadratic mean DBH (cm) live trees >= 1.3 m, PB
199	HTOPS13_PB	Num	8	Top height strict selection (m) live trees >= 1.3 m, PB
200	HTOPW13_PB	Num	8	Top height weak selection (m) live trees >= 1.3 m, PB
201	TVOL13_PB	Num	8	Total (0/0) volume per hectare (m3) live trees >= 1.3 m, PB
202	MVOL13_PB	Num	8	Merch (15/10) volume per hectare (m3) live trees >= 1.3 m, PB
203	N51_PB	Num	8	Stems per hectare live trees > 5 cm DBH, PB
204	HT51_PB	Num	8	Average height (m) live trees > 5 cm DBH, PB
205	DBH51_PB	Num	8	Average DBH (cm) live trees > 5 cm DBH, PB
206	HDC51_PB	Num	8	Average dom/codom height (m) live trees > 5 cm DBH, PB
207	BA51_PB	Num	8	Basal area per hectare (m2) live trees > 5 cm DBH, PB
208	QMD51_PB	Num	8	Quadratic mean DBH (cm) live trees > 5 cm DBH, PB
209	HTOPS51_PB	Num	8	Top height strict selection (m) live trees > 5 cm DBH, PB
210	HTOPW51_PB	Num	8	Top height weak selection (m) live trees > 5 cm DBH, PB
211	TVOL51_PB	Num	8	Total (0/0) volume per hectare (m3) live trees > 5 cm DBH, PB
212	MVOL51_PB	Num	8	Merch (15/10) volume per hectare (m3) live trees > 5 cm DBH, PB
213	N00_PL	Num	8	Stems per hectare all live trees, PL
214	HT00_PL	Num	8	Average height (m) all live trees, PL
215	DBH00_PL	Num	8	Average DBH (cm) all live trees, PL
216	HDC00_PL	Num	8	Average dom/codom height (m) all live trees, PL
217	BA00_PL	Num	8	Basal area per hectare (m2) all live trees, PL
218	QMD00_PL	Num	8	Quadratic mean DBH (cm) all live trees, PL
219	HTOPS00_PL	Num	8	Top height strict selection (m) all live trees, PL
220	HTOPW00_PL	Num	8	Top height weak selection (m) all live trees, PL
221	TVOL00_PL	Num	8	Total (0/0) volume per hectare (m3) all live trees, PL
222	MVOL00_PL	Num	8	Merch (15/10) volume per hectare (m3) all live trees, PL
223	N13_PL	Num	8	Stems per hectare live trees >= 1.3 m, PL
224	HT13_PL	Num	8	Average height (m) live trees >= 1.3 m, PL
225	DBH13_PL	Num	8	Average DBH (cm) live trees >= 1.3 m, PL
226	HDC13_PL	Num	8	Average dom/codom height (m) live trees >= 1.3 m, PL
227	BA13_PL	Num	8	Basal area per hectare (m2) live trees >= 1.3 m, PL
228	QMD13_PL	Num	8	Quadratic mean DBH (cm) live trees >= 1.3 m, PL
229	HTOPS13_PL	Num	8	Top height strict selection (m) live trees >= 1.3 m, PL



ID	Variable	Type	Len	Description
230	HTOPW13_PL	Num	8	Top height weak selection (m) live trees >= 1.3 m, PL
231	TVOL13_PL	Num	8	Total (0/0) volume per hectare (m3) live trees >= 1.3 m, PL
232	MVOL13_PL	Num	8	Merch (15/10) volume per hectare (m3) live trees >= 1.3 m, PL
233	N51_PL	Num	8	Stems per hectare live trees > 5 cm DBH, PL
234	HT51_PL	Num	8	Average height (m) live trees > 5 cm DBH, PL
235	DBH51_PL	Num	8	Average DBH (cm) live trees > 5 cm DBH, PL
236	HDC51_PL	Num	8	Average dom/codom height (m) live trees > 5 cm DBH, PL
237	BA51_PL	Num	8	Basal area per hectare (m2) live trees > 5 cm DBH, PL
238	QMD51_PL	Num	8	Quadratic mean DBH (cm) live trees > 5 cm DBH, PL
239	HTOPS51_PL	Num	8	Top height strict selection (m) live trees > 5 cm DBH, PL
240	HTOPW51_PL	Num	8	Top height weak selection (m) live trees > 5 cm DBH, PL
241	TVOL51_PL	Num	8	Total (0/0) volume per hectare (m3) live trees > 5 cm DBH, PL
242	MVOL51_PL	Num	8	Merch (15/10) volume per hectare (m3) live trees > 5 cm DBH, PL
243	N00_SB	Num	8	Stems per hectare all live trees, SB
244	HT00_SB	Num	8	Average height (m) all live trees, SB
245	DBH00_SB	Num	8	Average DBH (cm) all live trees, SB
246	HDC00_SB	Num	8	Average dom/codom height (m) all live trees, SB
247	BA00_SB	Num	8	Basal area per hectare (m2) all live trees, SB
248	QMD00_SB	Num	8	Quadratic mean DBH (cm) all live trees, SB
249	HTOPS00_SB	Num	8	Top height strict selection (m) all live trees, SB
250	HTOPW00_SB	Num	8	Top height weak selection (m) all live trees, SB
251	TVOL00_SB	Num	8	Total (0/0) volume per hectare (m3) all live trees, SB
252	MVOL00_SB	Num	8	Merch (15/10) volume per hectare (m3) all live trees, SB
253	N13_SB	Num	8	Stems per hectare live trees >= 1.3 m, SB
254	HT13_SB	Num	8	Average height (m) live trees >= 1.3 m, SB
255	DBH13_SB	Num	8	Average DBH (cm) live trees >= 1.3 m, SB
256	HDC13_SB	Num	8	Average dom/codom height (m) live trees >= 1.3 m, SB
257	BA13_SB	Num	8	Basal area per hectare (m2) live trees >= 1.3 m, SB
258	QMD13_SB	Num	8	Quadratic mean DBH (cm) live trees >= 1.3 m, SB
259	HTOPS13_SB	Num	8	Top height strict selection (m) live trees >= 1.3 m, SB
260	HTOPW13_SB	Num	8	Top height weak selection (m) live trees >= 1.3 m, SB
261	TVOL13_SB	Num	8	Total (0/0) volume per hectare (m3) live trees >= 1.3 m, SB
262	MVOL13_SB	Num	8	Merch (15/10) volume per hectare (m3) live trees >= 1.3 m, SB
263	N51_SB	Num	8	Stems per hectare live trees > 5 cm DBH, SB
264	HT51_SB	Num	8	Average height (m) live trees > 5 cm DBH, SB
265	DBH51_SB	Num	8	Average DBH (cm) live trees > 5 cm DBH, SB
266	HDC51_SB	Num	8	Average dom/codom height (m) live trees > 5 cm DBH, SB
267	BA51_SB	Num	8	Basal area per hectare (m2) live trees > 5 cm DBH, SB
268	QMD51_SB	Num	8	Quadratic mean DBH (cm) live trees > 5 cm DBH, SB
269	HTOPS51_SB	Num	8	Top height strict selection (m) live trees > 5 cm DBH, SB
270	HTOPW51_SB	Num	8	Top height weak selection (m) live trees > 5 cm DBH, SB
271	TVOL51_SB	Num	8	Total (0/0) volume per hectare (m3) live trees > 5 cm DBH, SB
272	MVOL51_SB	Num	8	Merch (15/10) volume per hectare (m3) live trees > 5 cm DBH, SB
273	N00_SW	Num	8	Stems per hectare all live trees, SW
274	HT00_SW	Num	8	Average height (m) all live trees, SW
275	DBH00_SW	Num	8	Average DBH (cm) all live trees, SW



ID	Variable	Type	Len	Description
276	HDC00_SW	Num	8	Average dom/codom height (m) all live trees, SW
277	BA00_SW	Num	8	Basal area per hectare (m2) all live trees, SW
278	QMD00_SW	Num	8	Quadratic mean DBH (cm) all live trees, SW
279	HTOPS00_SW	Num	8	Top height strict selection (m) all live trees, SW
280	HTOPW00_SW	Num	8	Top height weak selection (m) all live trees, SW
281	TVOL00_SW	Num	8	Total (0/0) volume per hectare (m3) all live trees, SW
282	MVOL00_SW	Num	8	Merch (15/10) volume per hectare (m3) all live trees, SW
283	N13_SW	Num	8	Stems per hectare live trees >= 1.3 m, SW
284	HT13_SW	Num	8	Average height (m) live trees >= 1.3 m, SW
285	DBH13_SW	Num	8	Average DBH (cm) live trees >= 1.3 m, SW
286	HDC13_SW	Num	8	Average dom/codom height (m) live trees >= 1.3 m, SW
287	BA13_SW	Num	8	Basal area per hectare (m2) live trees >= 1.3 m, SW
288	QMD13_SW	Num	8	Quadratic mean DBH (cm) live trees >= 1.3 m, SW
289	HTOPS13_SW	Num	8	Top height strict selection (m) live trees >= 1.3 m, SW
290	HTOPW13_SW	Num	8	Top height weak selection (m) live trees >= 1.3 m, SW
291	TVOL13_SW	Num	8	Total (0/0) volume per hectare (m3) live trees >= 1.3 m, SW
292	MVOL13_SW	Num	8	Merch (15/10) volume per hectare (m3) live trees >= 1.3 m, SW
293	N51_SW	Num	8	Stems per hectare live trees > 5 cm DBH, SW
294	HT51_SW	Num	8	Average height (m) live trees > 5 cm DBH, SW
295	DBH51_SW	Num	8	Average DBH (cm) live trees > 5 cm DBH, SW
296	HDC51_SW	Num	8	Average dom/codom height (m) live trees > 5 cm DBH, SW
297	BA51_SW	Num	8	Basal area per hectare (m2) live trees > 5 cm DBH, SW
298	QMD51_SW	Num	8	Quadratic mean DBH (cm) live trees > 5 cm DBH, SW
299	HTOPS51_SW	Num	8	Top height strict selection (m) live trees > 5 cm DBH, SW
300	HTOPW51_SW	Num	8	Top height weak selection (m) live trees > 5 cm DBH, SW
301	TVOL51_SW	Num	8	Total (0/0) volume per hectare (m3) live trees > 5 cm DBH, SW
302	MVOL51_SW	Num	8	Merch (15/10) volume per hectare (m3) live trees > 5 cm DBH, SW

Table 38. Raw tree tables – Record: trees by measurement.

ID	Variable	Type	Len	Description
1	PLOTID	Char	255	Plot identifier
2	ORACLE_PLOTID	Num	8	Company PSP system internal key
3	MEASYEAR	Num	8	Measurement year
4	MEASNUMB	Num	8	Measurement number
5	STRIP	Num	8	Strip number
6	TREEID	Num	8	Tree identifier
7	TREETYPE	Num	8	Tree type (1-regen, 2-sapling, 3-main plot)
8	SPECIES	Char	4	Species code
9	COND1	Num	8	Tree condition code
10	DBH	Num	8	DBH (cm)
11	HEIGHT	Num	8	Height (m)
12	TREE_AGE	Num	8	Tree total age (years)
13	CROWNLEN	Num	8	Crown length (m)
14	VETERAN	Num	8	Field veteran identification
15	POSITION	Num	8	Tree position
16	INOUT	Num	8	Tree in/out of plot (1 for all)

Table 39. Output tree tables – Record: Live trees by measurement.

ID	Variable	Type	Len	Description
1	PLOTID	Char	255	Plot identifier
2	MEASNUMB	Num	8	Measurement number
3	TREEID	Num	8	Tree identifier
4	TREETYPE	Num	8	Tree type (1-regen, 2-sapling, 3-main plot)
5	SPECIES	Char	4	Species code
6	COND1	Num	8	Tree condition code
7	DBH	Num	8	DBH (cm)
8	HEIGHT	Num	8	Height (m)
9	CROWNLEN	Num	8	Crown length (m)
10	NREGION	Num	8	Natural subregion code (ASRD)
11	VETERAN	Num	8	Tree is veteran (1)
12	ISBROKEN	Char	1	Tree has broken top (Y/N)
13	ISLIVE	Char	1	Tree is live (Y/N)
14	MAINAREA	Num	8	Main plot area (ha)
15	PHF	Num	8	Tree expansion factor (/ha)
16	HD1	Num	8	Height-DBH equation parameter
17	HD2	Num	8	Height-DBH equation parameter
18	HD3	Num	8	Height-DBH equation parameter
19	SD1	Num	8	Stump diameter over bark-DBH equation parameter
20	SD2	Num	8	Stump diameter over bark-DBH equation parameter
21	SD3	Num	8	Stump diameter over bark-DBH equation parameter
22	A0	Num	8	Taper equation parameter
23	A1	Num	8	Taper equation parameter
24	A2	Num	8	Taper equation parameter
25	B1	Num	8	Taper equation parameter
26	B2	Num	8	Taper equation parameter
27	B3	Num	8	Taper equation parameter
28	B4	Num	8	Taper equation parameter
29	B5	Num	8	Taper equation parameter
30	INOUT1	Num	8	Stump diameter inside bark-over bark equation parameter
31	INOUT2	Num	8	Stump diameter inside bark-over bark equation parameter
32	CONDEC	Char	1	Tree is deciduous (1) or conifer (2)
33	REPORTSPP	Char	2	Species group
34	HTCB	Num	8	Height to crown base (m)
35	CROWNLEN	Num	8	Crown length (m)
36	CROWNPC	Num	8	Crown ratio (%)
37	NEWHT	Num	8	New height (m)
38	HT	Num	8	Height (final height used in volume calculations)
39	BASALAREA	Num	8	Tree basal area (m2)
40	DIBS	Num	8	Stump diameter inside bark (cm)
41	DOBS	Num	8	Stump diameter over bark (cm)
42	MH	Num	8	Merchantable height (m)
43	MLEN	Num	8	Merchantable length (m)
44	VOL	Num	8	Tree volume (m3)

ID	Variable	Type	Len	Description
45	MERCHVOL	Num	8	Tree merchantable (15/10) volume (m3)
46	TOTVOL	Num	8	Tree total volume (stump and tip incl) (m3)
47	POSITION	Num	8	Tree position code
48	TOPHT_WEAK	Char	1	Tree qualifies as top height tree (weak selection criteria)
49	TOPHT_STRICT	Char	1	Tree qualifies as top height tree (strict selection criteria)

## APPENDIX II – VOLUME COEFFICIENTS

Table 40. Volume coefficients used in data compilation.

spp	nsr	hd1	hd2	hd3	a0	a1	a2	b1	b2	b3	b4	b5	p	inout1	inout2
AW	0	25.66	0.068	1.14	0.790	1.027	0.998	0.601	-0.066	-0.174	0.121	0.063	0.225	0.091	1.077
AW	1	24.84	0.081	1.24	0.842	0.997	0.999	0.537	-0.064	-0.234	0.180	0.032	0.225	0.062	1.080
AW	2	26.55	0.057	0.98	0.945	0.938	1.002	0.695	-0.068	0.051	-0.016	0.116	0.225	0.024	1.081
AW	3	24.84	0.081	1.24	0.842	0.997	0.999	0.537	-0.064	-0.234	0.180	0.032	0.225	0.062	1.080
AW	4	24.84	0.081	1.24	0.842	0.997	0.999	0.537	-0.064	-0.234	0.180	0.032	0.225	0.062	1.080
AW	5	24.84	0.081	1.24	0.842	0.997	0.999	0.537	-0.064	-0.234	0.180	0.032	0.225	0.062	1.080
AW	6	24.84	0.081	1.24	0.842	0.997	0.999	0.537	-0.064	-0.234	0.180	0.032	0.225	0.062	1.080
AW	7	28.08	0.049	1.22	0.589	1.162	0.992	0.709	-0.075	-0.116	0.041	0.114	0.225	0.211	1.074
AW	8	28.08	0.049	1.22	0.589	1.162	0.992	0.709	-0.075	-0.116	0.041	0.114	0.225	0.211	1.074
AW	9	25.67	0.074	1.26	0.906	0.965	1.000	0.553	-0.050	-0.281	0.171	0.076	0.225	0.135	1.073
AW	10	28.08	0.049	1.22	0.589	1.162	0.992	0.709	-0.075	-0.116	0.041	0.114	0.225	0.211	1.074
AW	11	25.67	0.074	1.26	0.906	0.965	1.000	0.553	-0.050	-0.281	0.171	0.076	0.225	0.135	1.073
AW	12	24.84	0.081	1.24	0.842	0.997	0.999	0.537	-0.064	-0.234	0.180	0.032	0.225	0.062	1.080
AW	13	24.84	0.081	1.24	0.842	0.997	0.999	0.537	-0.064	-0.234	0.180	0.032	0.225	0.062	1.080
AW	14	26.55	0.057	0.98	0.945	0.938	1.002	0.695	-0.068	0.051	-0.016	0.116	0.225	0.024	1.081
AW	15	26.55	0.057	0.98	0.945	0.938	1.002	0.695	-0.068	0.051	-0.016	0.116	0.225	0.024	1.081
AW	16	26.55	0.057	0.98	0.945	0.938	1.002	0.695	-0.068	0.051	-0.016	0.116	0.225	0.024	1.081
AW	17	25.66	0.068	1.14	0.790	1.027	0.998	0.601	-0.066	-0.174	0.121	0.063	0.225	0.091	1.077
AW	18	25.66	0.068	1.14	0.790	1.027	0.998	0.601	-0.066	-0.174	0.121	0.063	0.225	0.091	1.077
AW	19	25.66	0.068	1.14	0.790	1.027	0.998	0.601	-0.066	-0.174	0.121	0.063	0.225	0.091	1.077
AW	20	25.66	0.068	1.14	0.790	1.027	0.998	0.601	-0.066	-0.174	0.121	0.063	0.225	0.091	1.077
BW	0	27.97	0.035	0.87	0.894	1.008	0.991	-0.483	0.156	-2.273	1.327	0.169	0.225	0.077	1.063
BW	1	27.97	0.035	0.87	0.894	1.008	0.991	-0.483	0.156	-2.273	1.327	0.169	0.225	0.077	1.063
BW	2	27.97	0.035	0.87	0.894	1.008	0.991	-0.483	0.156	-2.273	1.327	0.169	0.225	0.077	1.063
BW	3	27.97	0.035	0.87	0.894	1.008	0.991	-0.483	0.156	-2.273	1.327	0.169	0.225	0.077	1.063
BW	4	27.97	0.035	0.87	0.894	1.008	0.991	-0.483	0.156	-2.273	1.327	0.169	0.225	0.077	1.063
BW	5	27.97	0.035	0.87	0.894	1.008	0.991	-0.483	0.156	-2.273	1.327	0.169	0.225	0.077	1.063
BW	6	27.97	0.035	0.87	0.894	1.008	0.991	-0.483	0.156	-2.273	1.327	0.169	0.225	0.077	1.063
BW	7	27.97	0.035	0.87	0.894	1.008	0.991	-0.483	0.156	-2.273	1.327	0.169	0.225	0.077	1.063
BW	8	27.97	0.035	0.87	0.894	1.008	0.991	-0.483	0.156	-2.273	1.327	0.169	0.225	0.077	1.063
BW	9	27.97	0.035	0.87	0.894	1.008	0.991	-0.483	0.156	-2.273	1.327	0.169	0.225	0.077	1.063
BW	10	27.97	0.035	0.87	0.894	1.008	0.991	-0.483	0.156	-2.273	1.327	0.169	0.225	0.077	1.063
BW	11	27.97	0.035	0.87	0.894	1.008	0.991	-0.483	0.156	-2.273	1.327	0.169	0.225	0.077	1.063
BW	12	27.97	0.035	0.87	0.894	1.008	0.991	-0.483	0.156	-2.273	1.327	0.169	0.225	0.077	1.063
BW	13	27.97	0.035	0.87	0.894	1.008	0.991	-0.483	0.156	-2.273	1.327	0.169	0.225	0.077	1.063
BW	14	27.97	0.035	0.87	0.894	1.008	0.991	-0.483	0.156	-2.273	1.327	0.169	0.225	0.077	1.063
BW	15	27.97	0.035	0.87	0.894	1.008	0.991	-0.483	0.156	-2.273	1.327	0.169	0.225	0.077	1.063
BW	16	27.97	0.035	0.87	0.894	1.008	0.991	-0.483	0.156	-2.273	1.327	0.169	0.225	0.077	1.063
BW	17	27.97	0.035	0.87	0.894	1.008	0.991	-0.483	0.156	-2.273	1.327	0.169	0.225	0.077	1.063
BW	18	27.97	0.035	0.87	0.894	1.008	0.991	-0.483	0.156	-2.273	1.327	0.169	0.225	0.077	1.063
BW	19	27.97	0.035	0.87	0.894	1.008	0.991	-0.483	0.156	-2.273	1.327	0.169	0.225	0.077	1.063
BW	20	27.97	0.035	0.87	0.894	1.008	0.991	-0.483	0.156	-2.273	1.327	0.169	0.225	0.077	1.063
FA	0	24.75	0.066	1.57	1.002	0.944	1.000	1.336	-0.320	2.839	-1.325	0.077	0.225	0.290	1.051
FA	1	28.63	0.052	1.45	0.919	0.990	0.997	1.569	-0.384	3.503	-1.677	0.128	0.225	0.249	1.050
FA	2	28.63	0.052	1.45	0.919	0.990	0.997	1.569	-0.384	3.503	-1.677	0.128	0.225	0.249	1.050

spp	nsr	hd1	hd2	hd3	a0	a1	a2	b1	b2	b3	b4	b5	p	inout1	inout2
FA	3	28.63	0.052	1.45	0.919	0.990	0.997	1.569	-0.384	3.503	-1.677	0.128	0.225	0.249	1.050
FA	4	28.63	0.052	1.45	0.919	0.990	0.997	1.569	-0.384	3.503	-1.677	0.128	0.225	0.249	1.050
FA	5	28.63	0.052	1.45	0.919	0.990	0.997	1.569	-0.384	3.503	-1.677	0.128	0.225	0.249	1.050
FA	6	28.63	0.052	1.45	0.919	0.990	0.997	1.569	-0.384	3.503	-1.677	0.128	0.225	0.249	1.050
FA	7	24.34	0.067	1.59	1.108	0.898	1.002	1.338	-0.305	2.694	-1.278	0.087	0.225	0.324	1.051
FA	8	24.34	0.067	1.59	1.108	0.898	1.002	1.338	-0.305	2.694	-1.278	0.087	0.225	0.324	1.051
FA	9	28.63	0.052	1.45	0.919	0.990	0.997	1.569	-0.384	3.503	-1.677	0.128	0.225	0.249	1.050
FA	10	24.34	0.067	1.59	1.108	0.898	1.002	1.338	-0.305	2.694	-1.278	0.087	0.225	0.324	1.051
FA	11	28.63	0.052	1.45	0.919	0.990	0.997	1.569	-0.384	3.503	-1.677	0.128	0.225	0.249	1.050
FA	12	28.63	0.052	1.45	0.919	0.990	0.997	1.569	-0.384	3.503	-1.677	0.128	0.225	0.249	1.050
FA	13	28.63	0.052	1.45	0.919	0.990	0.997	1.569	-0.384	3.503	-1.677	0.128	0.225	0.249	1.050
FA	14	28.63	0.052	1.45	0.919	0.990	0.997	1.569	-0.384	3.503	-1.677	0.128	0.225	0.249	1.050
FA	15	28.63	0.052	1.45	0.919	0.990	0.997	1.569	-0.384	3.503	-1.677	0.128	0.225	0.249	1.050
FA	16	28.63	0.052	1.45	0.919	0.990	0.997	1.569	-0.384	3.503	-1.677	0.128	0.225	0.249	1.050
FA	17	24.75	0.066	1.57	1.002	0.944	1.000	1.336	-0.320	2.839	-1.325	0.077	0.225	0.290	1.051
FA	18	24.75	0.066	1.57	1.002	0.944	1.000	1.336	-0.320	2.839	-1.325	0.077	0.225	0.290	1.051
FA	19	24.75	0.066	1.57	1.002	0.944	1.000	1.336	-0.320	2.839	-1.325	0.077	0.225	0.290	1.051
FA	20	24.75	0.066	1.57	1.002	0.944	1.000	1.336	-0.320	2.839	-1.325	0.077	0.225	0.290	1.051
FB	0	24.75	0.066	1.57	1.002	0.944	1.000	1.336	-0.320	2.839	-1.325	0.077	0.225	0.290	1.051
FB	1	28.63	0.052	1.45	0.919	0.990	0.997	1.569	-0.384	3.503	-1.677	0.128	0.225	0.249	1.050
FB	2	28.63	0.052	1.45	0.919	0.990	0.997	1.569	-0.384	3.503	-1.677	0.128	0.225	0.249	1.050
FB	3	28.63	0.052	1.45	0.919	0.990	0.997	1.569	-0.384	3.503	-1.677	0.128	0.225	0.249	1.050
FB	4	28.63	0.052	1.45	0.919	0.990	0.997	1.569	-0.384	3.503	-1.677	0.128	0.225	0.249	1.050
FB	5	28.63	0.052	1.45	0.919	0.990	0.997	1.569	-0.384	3.503	-1.677	0.128	0.225	0.249	1.050
FB	6	28.63	0.052	1.45	0.919	0.990	0.997	1.569	-0.384	3.503	-1.677	0.128	0.225	0.249	1.050
FB	7	24.34	0.067	1.59	1.108	0.898	1.002	1.338	-0.305	2.694	-1.278	0.087	0.225	0.324	1.051
FB	8	24.34	0.067	1.59	1.108	0.898	1.002	1.338	-0.305	2.694	-1.278	0.087	0.225	0.324	1.051
FB	9	28.63	0.052	1.45	0.919	0.990	0.997	1.569	-0.384	3.503	-1.677	0.128	0.225	0.249	1.050
FB	10	24.34	0.067	1.59	1.108	0.898	1.002	1.338	-0.305	2.694	-1.278	0.087	0.225	0.324	1.051
FB	11	28.63	0.052	1.45	0.919	0.990	0.997	1.569	-0.384	3.503	-1.677	0.128	0.225	0.249	1.050
FB	12	28.63	0.052	1.45	0.919	0.990	0.997	1.569	-0.384	3.503	-1.677	0.128	0.225	0.249	1.050
FB	13	28.63	0.052	1.45	0.919	0.990	0.997	1.569	-0.384	3.503	-1.677	0.128	0.225	0.249	1.050
FB	14	28.63	0.052	1.45	0.919	0.990	0.997	1.569	-0.384	3.503	-1.677	0.128	0.225	0.249	1.050
FB	15	28.63	0.052	1.45	0.919	0.990	0.997	1.569	-0.384	3.503	-1.677	0.128	0.225	0.249	1.050
FB	16	28.63	0.052	1.45	0.919	0.990	0.997	1.569	-0.384	3.503	-1.677	0.128	0.225	0.249	1.050
FB	17	24.75	0.066	1.57	1.002	0.944	1.000	1.336	-0.320	2.839	-1.325	0.077	0.225	0.290	1.051
FB	18	24.75	0.066	1.57	1.002	0.944	1.000	1.336	-0.320	2.839	-1.325	0.077	0.225	0.290	1.051
FB	19	24.75	0.066	1.57	1.002	0.944	1.000	1.336	-0.320	2.839	-1.325	0.077	0.225	0.290	1.051
FB	20	24.75	0.066	1.57	1.002	0.944	1.000	1.336	-0.320	2.839	-1.325	0.077	0.225	0.290	1.051
FD	0	21.33	0.061	1.60	0.913	0.964	0.998	1.386	-0.286	1.784	-0.917	0.059	0.225	-0.095	1.123
FD	1	21.33	0.061	1.60	0.913	0.964	0.998	1.386	-0.286	1.784	-0.917	0.059	0.225	-0.095	1.123
FD	2	21.33	0.061	1.60	0.913	0.964	0.998	1.386	-0.286	1.784	-0.917	0.059	0.225	-0.095	1.123
FD	3	21.33	0.061	1.60	0.913	0.964	0.998	1.386	-0.286	1.784	-0.917	0.059	0.225	-0.095	1.123
FD	4	21.33	0.061	1.60	0.913	0.964	0.998	1.386	-0.286	1.784	-0.917	0.059	0.225	-0.095	1.123
FD	5	21.33	0.061	1.60	0.913	0.964	0.998	1.386	-0.286	1.784	-0.917	0.059	0.225	-0.095	1.123
FD	6	21.33	0.061	1.60	0.913	0.964	0.998	1.386	-0.286	1.784	-0.917	0.059	0.225	-0.095	1.123
FD	7	21.33	0.061	1.60	0.913	0.964	0.998	1.386	-0.286	1.784	-0.917	0.059	0.225	-0.095	1.123
FD	8	21.33	0.061	1.60	0.913	0.964	0.998	1.386	-0.286	1.784	-0.917	0.059	0.225	-0.095	1.123

spp	nsr	hd1	hd2	hd3	a0	a1	a2	b1	b2	b3	b4	b5	p	inout1	inout2
FD	9	21.33	0.061	1.60	0.913	0.964	0.998	1.386	-0.286	1.784	-0.917	0.059	0.225	-0.095	1.123
FD	10	21.33	0.061	1.60	0.913	0.964	0.998	1.386	-0.286	1.784	-0.917	0.059	0.225	-0.095	1.123
FD	11	21.33	0.061	1.60	0.913	0.964	0.998	1.386	-0.286	1.784	-0.917	0.059	0.225	-0.095	1.123
FD	12	21.33	0.061	1.60	0.913	0.964	0.998	1.386	-0.286	1.784	-0.917	0.059	0.225	-0.095	1.123
FD	13	21.33	0.061	1.60	0.913	0.964	0.998	1.386	-0.286	1.784	-0.917	0.059	0.225	-0.095	1.123
FD	14	21.33	0.061	1.60	0.913	0.964	0.998	1.386	-0.286	1.784	-0.917	0.059	0.225	-0.095	1.123
FD	15	21.33	0.061	1.60	0.913	0.964	0.998	1.386	-0.286	1.784	-0.917	0.059	0.225	-0.095	1.123
FD	16	21.33	0.061	1.60	0.913	0.964	0.998	1.386	-0.286	1.784	-0.917	0.059	0.225	-0.095	1.123
FD	17	21.33	0.061	1.60	0.913	0.964	0.998	1.386	-0.286	1.784	-0.917	0.059	0.225	-0.095	1.123
FD	18	21.33	0.061	1.60	0.913	0.964	0.998	1.386	-0.286	1.784	-0.917	0.059	0.225	-0.095	1.123
FD	19	21.33	0.061	1.60	0.913	0.964	0.998	1.386	-0.286	1.784	-0.917	0.059	0.225	-0.095	1.123
FD	20	21.33	0.061	1.60	0.913	0.964	0.998	1.386	-0.286	1.784	-0.917	0.059	0.225	-0.095	1.123
LT	0	26.33	0.054	1.40	0.934	0.965	0.998	2.079	-0.462	3.732	-1.950	0.190	0.225	0.379	1.034
LT	1	26.33	0.054	1.40	0.934	0.965	0.998	2.079	-0.462	3.732	-1.950	0.190	0.225	0.379	1.034
LT	2	26.33	0.054	1.40	0.934	0.965	0.998	2.079	-0.462	3.732	-1.950	0.190	0.225	0.379	1.034
LT	3	26.33	0.054	1.40	0.934	0.965	0.998	2.079	-0.462	3.732	-1.950	0.190	0.225	0.379	1.034
LT	4	26.33	0.054	1.40	0.934	0.965	0.998	2.079	-0.462	3.732	-1.950	0.190	0.225	0.379	1.034
LT	5	26.33	0.054	1.40	0.934	0.965	0.998	2.079	-0.462	3.732	-1.950	0.190	0.225	0.379	1.034
LT	6	26.33	0.054	1.40	0.934	0.965	0.998	2.079	-0.462	3.732	-1.950	0.190	0.225	0.379	1.034
LT	7	26.33	0.054	1.40	0.934	0.965	0.998	2.079	-0.462	3.732	-1.950	0.190	0.225	0.379	1.034
LT	8	26.33	0.054	1.40	0.934	0.965	0.998	2.079	-0.462	3.732	-1.950	0.190	0.225	0.379	1.034
LT	9	26.33	0.054	1.40	0.934	0.965	0.998	2.079	-0.462	3.732	-1.950	0.190	0.225	0.379	1.034
LT	10	26.33	0.054	1.40	0.934	0.965	0.998	2.079	-0.462	3.732	-1.950	0.190	0.225	0.379	1.034
LT	11	26.33	0.054	1.40	0.934	0.965	0.998	2.079	-0.462	3.732	-1.950	0.190	0.225	0.379	1.034
LT	12	26.33	0.054	1.40	0.934	0.965	0.998	2.079	-0.462	3.732	-1.950	0.190	0.225	0.379	1.034
LT	13	26.33	0.054	1.40	0.934	0.965	0.998	2.079	-0.462	3.732	-1.950	0.190	0.225	0.379	1.034
LT	14	26.33	0.054	1.40	0.934	0.965	0.998	2.079	-0.462	3.732	-1.950	0.190	0.225	0.379	1.034
LT	15	26.33	0.054	1.40	0.934	0.965	0.998	2.079	-0.462	3.732	-1.950	0.190	0.225	0.379	1.034
LT	16	26.33	0.054	1.40	0.934	0.965	0.998	2.079	-0.462	3.732	-1.950	0.190	0.225	0.379	1.034
LT	17	26.33	0.054	1.40	0.934	0.965	0.998	2.079	-0.462	3.732	-1.950	0.190	0.225	0.379	1.034
LT	18	26.33	0.054	1.40	0.934	0.965	0.998	2.079	-0.462	3.732	-1.950	0.190	0.225	0.379	1.034
LT	19	26.33	0.054	1.40	0.934	0.965	0.998	2.079	-0.462	3.732	-1.950	0.190	0.225	0.379	1.034
LT	20	26.33	0.054	1.40	0.934	0.965	0.998	2.079	-0.462	3.732	-1.950	0.190	0.225	0.379	1.034
PB	0	25.57	0.051	0.99	0.861	0.951	1.001	0.753	-0.167	0.694	-0.224	0.008	0.225	0.149	1.118
PB	1	25.38	0.050	0.93	0.804	0.983	1.000	0.997	-0.223	1.107	-0.460	-0.003	0.225	0.110	1.125
PB	2	25.38	0.050	0.93	0.804	0.983	1.000	0.997	-0.223	1.107	-0.460	-0.003	0.225	0.110	1.125
PB	3	25.38	0.050	0.93	0.804	0.983	1.000	0.997	-0.223	1.107	-0.460	-0.003	0.225	0.110	1.125
PB	4	25.38	0.050	0.93	0.804	0.983	1.000	0.997	-0.223	1.107	-0.460	-0.003	0.225	0.110	1.125
PB	5	25.38	0.050	0.93	0.804	0.983	1.000	0.997	-0.223	1.107	-0.460	-0.003	0.225	0.110	1.125
PB	6	25.38	0.050	0.93	0.804	0.983	1.000	0.997	-0.223	1.107	-0.460	-0.003	0.225	0.110	1.125
PB	7	25.14	0.065	1.32	0.913	0.923	1.003	0.308	-0.066	-0.102	0.226	0.023	0.225	0.257	1.103
PB	8	25.14	0.065	1.32	0.913	0.923	1.003	0.308	-0.066	-0.102	0.226	0.023	0.225	0.257	1.103
PB	9	25.14	0.065	1.32	0.913	0.923	1.003	0.308	-0.066	-0.102	0.226	0.023	0.225	0.257	1.103
PB	10	25.14	0.065	1.32	0.913	0.923	1.003	0.308	-0.066	-0.102	0.226	0.023	0.225	0.257	1.103
PB	11	25.14	0.065	1.32	0.913	0.923	1.003	0.308	-0.066	-0.102	0.226	0.023	0.225	0.257	1.103
PB	12	25.38	0.050	0.93	0.804	0.983	1.000	0.997	-0.223	1.107	-0.460	-0.003	0.225	0.110	1.125
PB	13	25.38	0.050	0.93	0.804	0.983	1.000	0.997	-0.223	1.107	-0.460	-0.003	0.225	0.110	1.125
PB	14	25.14	0.065	1.32	0.913	0.923	1.003	0.308	-0.066	-0.102	0.226	0.023	0.225	0.257	1.103

spp	nsr	hd1	hd2	hd3	a0	a1	a2	b1	b2	b3	b4	b5	p	inout1	inout2
PB	15	25.38	0.050	0.93	0.804	0.983	1.000	0.997	-0.223	1.107	-0.460	-0.003	0.225	0.110	1.125
PB	16	25.38	0.050	0.93	0.804	0.983	1.000	0.997	-0.223	1.107	-0.460	-0.003	0.225	0.110	1.125
PB	17	25.57	0.051	0.99	0.861	0.951	1.001	0.753	-0.167	0.694	-0.224	0.008	0.225	0.149	1.118
PB	18	25.57	0.051	0.99	0.861	0.951	1.001	0.753	-0.167	0.694	-0.224	0.008	0.225	0.149	1.118
PB	19	25.57	0.051	0.99	0.861	0.951	1.001	0.753	-0.167	0.694	-0.224	0.008	0.225	0.149	1.118
PB	20	25.57	0.051	0.99	0.861	0.951	1.001	0.753	-0.167	0.694	-0.224	0.008	0.225	0.149	1.118
PJ	0	31.43	0.039	1.13	0.941	0.956	0.999	0.116	-0.028	-0.384	0.304	0.072	0.225	0.162	1.046
PJ	1	31.43	0.039	1.13	0.941	0.956	0.999	0.116	-0.028	-0.384	0.304	0.072	0.225	0.162	1.046
PJ	2	31.43	0.039	1.13	0.941	0.956	0.999	0.116	-0.028	-0.384	0.304	0.072	0.225	0.162	1.046
PJ	3	31.43	0.039	1.13	0.941	0.956	0.999	0.116	-0.028	-0.384	0.304	0.072	0.225	0.162	1.046
PJ	4	31.43	0.039	1.13	0.941	0.956	0.999	0.116	-0.028	-0.384	0.304	0.072	0.225	0.162	1.046
PJ	5	31.43	0.039	1.13	0.941	0.956	0.999	0.116	-0.028	-0.384	0.304	0.072	0.225	0.162	1.046
PJ	6	31.43	0.039	1.13	0.941	0.956	0.999	0.116	-0.028	-0.384	0.304	0.072	0.225	0.162	1.046
PJ	7	31.43	0.039	1.13	0.941	0.956	0.999	0.116	-0.028	-0.384	0.304	0.072	0.225	0.162	1.046
PJ	8	31.43	0.039	1.13	0.941	0.956	0.999	0.116	-0.028	-0.384	0.304	0.072	0.225	0.162	1.046
PJ	9	31.43	0.039	1.13	0.941	0.956	0.999	0.116	-0.028	-0.384	0.304	0.072	0.225	0.162	1.046
PJ	10	31.43	0.039	1.13	0.941	0.956	0.999	0.116	-0.028	-0.384	0.304	0.072	0.225	0.162	1.046
PJ	11	31.43	0.039	1.13	0.941	0.956	0.999	0.116	-0.028	-0.384	0.304	0.072	0.225	0.162	1.046
PJ	12	31.43	0.039	1.13	0.941	0.956	0.999	0.116	-0.028	-0.384	0.304	0.072	0.225	0.162	1.046
PJ	13	31.43	0.039	1.13	0.941	0.956	0.999	0.116	-0.028	-0.384	0.304	0.072	0.225	0.162	1.046
PJ	14	31.43	0.039	1.13	0.941	0.956	0.999	0.116	-0.028	-0.384	0.304	0.072	0.225	0.162	1.046
PJ	15	31.43	0.039	1.13	0.941	0.956	0.999	0.116	-0.028	-0.384	0.304	0.072	0.225	0.162	1.046
PJ	16	31.43	0.039	1.13	0.941	0.956	0.999	0.116	-0.028	-0.384	0.304	0.072	0.225	0.162	1.046
PJ	17	31.43	0.039	1.13	0.941	0.956	0.999	0.116	-0.028	-0.384	0.304	0.072	0.225	0.162	1.046
PJ	18	31.43	0.039	1.13	0.941	0.956	0.999	0.116	-0.028	-0.384	0.304	0.072	0.225	0.162	1.046
PJ	19	31.43	0.039	1.13	0.941	0.956	0.999	0.116	-0.028	-0.384	0.304	0.072	0.225	0.162	1.046
PJ	20	31.43	0.039	1.13	0.941	0.956	0.999	0.116	-0.028	-0.384	0.304	0.072	0.225	0.162	1.046
PL	0	29.01	0.049	1.18	0.898	0.989	0.999	0.676	-0.130	0.571	-0.275	0.105	0.225	0.283	1.025
PL	1	23.95	0.079	1.48	0.610	1.165	0.991	0.634	-0.098	0.475	-0.241	0.141	0.225	0.190	1.047
PL	2	23.95	0.079	1.48	1.034	0.914	1.001	0.257	-0.049	-0.252	0.174	0.124	0.225	0.190	1.047
PL	3	23.95	0.079	1.48	1.034	0.914	1.001	0.257	-0.049	-0.252	0.174	0.124	0.225	0.190	1.047
PL	4	24.84	0.065	1.29	0.829	1.024	0.997	0.596	-0.119	0.466	-0.196	0.083	0.225	0.308	1.025
PL	5	23.95	0.079	1.48	1.034	0.914	1.001	0.257	-0.049	-0.252	0.174	0.124	0.225	0.190	1.047
PL	6	29.63	0.055	1.30	0.957	0.960	1.000	0.767	-0.141	0.666	-0.355	0.132	0.225	0.294	1.025
PL	7	24.41	0.036	0.78	0.801	1.054	0.996	0.568	-0.125	0.610	-0.238	0.045	0.225	0.240	1.020
PL	8	24.41	0.036	0.78	0.801	1.054	0.996	0.568	-0.125	0.610	-0.238	0.045	0.225	0.240	1.020
PL	9	29.63	0.055	1.30	0.957	0.960	1.000	0.767	-0.141	0.666	-0.355	0.132	0.225	0.294	1.025
PL	10	24.84	0.065	1.29	0.829	1.024	0.997	0.596	-0.119	0.466	-0.196	0.083	0.225	0.308	1.025
PL	11	29.63	0.055	1.30	0.957	0.960	1.000	0.767	-0.141	0.666	-0.355	0.132	0.225	0.294	1.025
PL	12	23.95	0.079	1.48	1.034	0.914	1.001	0.257	-0.049	-0.252	0.174	0.124	0.225	0.190	1.047
PL	13	23.95	0.079	1.48	1.034	0.914	1.001	0.257	-0.049	-0.252	0.174	0.124	0.225	0.190	1.047
PL	14	29.63	0.055	1.30	0.957	0.960	1.000	0.767	-0.141	0.666	-0.355	0.132	0.225	0.294	1.025
PL	15	23.95	0.079	1.48	1.034	0.914	1.001	0.257	-0.049	-0.252	0.174	0.124	0.225	0.190	1.047
PL	16	23.95	0.079	1.48	1.034	0.914	1.001	0.257	-0.049	-0.252	0.174	0.124	0.225	0.190	1.047
PL	17	29.01	0.049	1.18	0.898	0.989	0.999	0.676	-0.130	0.571	-0.275	0.105	0.225	0.283	1.025
PL	18	29.01	0.049	1.18	0.898	0.989	0.999	0.676	-0.130	0.571	-0.275	0.105	0.225	0.283	1.025
PL	19	29.01	0.049	1.18	0.898	0.989	0.999	0.676	-0.130	0.571	-0.275	0.105	0.225	0.283	1.025
PL	20	29.01	0.049	1.18	0.898	0.989	0.999	0.676	-0.130	0.571	-0.275	0.105	0.225	0.283	1.025



spp	nsr	hd1	hd2	hd3	a0	a1	a2	b1	b2	b3	b4	b5	p	inout1	inout2
SB	0	24.58	0.054	1.22	0.941	0.957	1.000	1.396	-0.345	2.836	-1.396	0.152	0.225	0.383	1.033
SB	1	24.37	0.058	1.23	0.929	0.968	0.999	1.237	-0.308	2.536	-1.222	0.146	0.225	0.350	1.037
SB	2	24.37	0.058	1.23	0.929	0.968	0.999	1.237	-0.308	2.536	-1.222	0.146	0.225	0.350	1.037
SB	3	24.37	0.058	1.23	0.929	0.968	0.999	1.237	-0.308	2.536	-1.222	0.146	0.225	0.350	1.037
SB	4	24.37	0.058	1.23	0.929	0.968	0.999	1.237	-0.308	2.536	-1.222	0.146	0.225	0.350	1.037
SB	5	24.37	0.058	1.23	0.929	0.968	0.999	1.237	-0.308	2.536	-1.222	0.146	0.225	0.350	1.037
SB	6	24.37	0.058	1.23	0.929	0.968	0.999	1.237	-0.308	2.536	-1.222	0.146	0.225	0.350	1.037
SB	7	24.93	0.053	1.26	0.958	0.947	1.000	1.430	-0.357	2.951	-1.455	0.154	0.225	0.415	1.031
SB	8	24.93	0.053	1.26	0.958	0.947	1.000	1.430	-0.357	2.951	-1.455	0.154	0.225	0.415	1.031
SB	9	24.93	0.053	1.26	0.958	0.947	1.000	1.430	-0.357	2.951	-1.455	0.154	0.225	0.415	1.031
SB	10	24.93	0.053	1.26	0.958	0.947	1.000	1.430	-0.357	2.951	-1.455	0.154	0.225	0.415	1.031
SB	11	24.93	0.053	1.26	0.958	0.947	1.000	1.430	-0.357	2.951	-1.455	0.154	0.225	0.415	1.031
SB	12	24.37	0.058	1.23	0.929	0.968	0.999	1.237	-0.308	2.536	-1.222	0.146	0.225	0.350	1.037
SB	13	24.37	0.058	1.23	0.929	0.968	0.999	1.237	-0.308	2.536	-1.222	0.146	0.225	0.350	1.037
SB	14	24.37	0.058	1.23	0.929	0.968	0.999	1.237	-0.308	2.536	-1.222	0.146	0.225	0.350	1.037
SB	15	24.37	0.058	1.23	0.929	0.968	0.999	1.237	-0.308	2.536	-1.222	0.146	0.225	0.350	1.037
SB	16	24.37	0.058	1.23	0.929	0.968	0.999	1.237	-0.308	2.536	-1.222	0.146	0.225	0.350	1.037
SB	17	24.58	0.054	1.22	0.941	0.957	1.000	1.396	-0.345	2.836	-1.396	0.152	0.225	0.383	1.033
SB	18	24.58	0.054	1.22	0.941	0.957	1.000	1.396	-0.345	2.836	-1.396	0.152	0.225	0.383	1.033
SB	19	24.58	0.054	1.22	0.941	0.957	1.000	1.396	-0.345	2.836	-1.396	0.152	0.225	0.383	1.033
SB	20	24.58	0.054	1.22	0.941	0.957	1.000	1.396	-0.345	2.836	-1.396	0.152	0.225	0.383	1.033
SE	0	36.32	0.026	1.09	1.073	0.898	1.002	1.302	-0.305	2.266	-1.120	0.124	0.225	0.461	1.024
SE	1	36.32	0.026	1.09	1.073	0.898	1.002	1.302	-0.305	2.266	-1.120	0.124	0.225	0.461	1.024
SE	2	36.32	0.026	1.09	1.073	0.898	1.002	1.302	-0.305	2.266	-1.120	0.124	0.225	0.461	1.024
SE	3	36.32	0.026	1.09	1.073	0.898	1.002	1.302	-0.305	2.266	-1.120	0.124	0.225	0.461	1.024
SE	4	36.32	0.026	1.09	1.073	0.898	1.002	1.302	-0.305	2.266	-1.120	0.124	0.225	0.461	1.024
SE	5	36.32	0.026	1.09	1.073	0.898	1.002	1.302	-0.305	2.266	-1.120	0.124	0.225	0.461	1.024
SE	6	36.32	0.026	1.09	1.073	0.898	1.002	1.302	-0.305	2.266	-1.120	0.124	0.225	0.461	1.024
SE	7	36.32	0.026	1.09	1.073	0.898	1.002	1.302	-0.305	2.266	-1.120	0.124	0.225	0.461	1.024
SE	8	36.32	0.026	1.09	1.073	0.898	1.002	1.302	-0.305	2.266	-1.120	0.124	0.225	0.461	1.024
SE	9	36.32	0.026	1.09	1.073	0.898	1.002	1.302	-0.305	2.266	-1.120	0.124	0.225	0.461	1.024
SE	10	36.32	0.026	1.09	1.073	0.898	1.002	1.302	-0.305	2.266	-1.120	0.124	0.225	0.461	1.024
SE	11	36.32	0.026	1.09	1.073	0.898	1.002	1.302	-0.305	2.266	-1.120	0.124	0.225	0.461	1.024
SE	12	36.32	0.026	1.09	1.073	0.898	1.002	1.302	-0.305	2.266	-1.120	0.124	0.225	0.461	1.024
SE	13	36.32	0.026	1.09	1.073	0.898	1.002	1.302	-0.305	2.266	-1.120	0.124	0.225	0.461	1.024
SE	14	36.32	0.026	1.09	1.073	0.898	1.002	1.302	-0.305	2.266	-1.120	0.124	0.225	0.461	1.024
SE	15	36.32	0.026	1.09	1.073	0.898	1.002	1.302	-0.305	2.266	-1.120	0.124	0.225	0.461	1.024
SE	16	36.32	0.026	1.09	1.073	0.898	1.002	1.302	-0.305	2.266	-1.120	0.124	0.225	0.461	1.024
SE	17	36.32	0.026	1.09	1.073	0.898	1.002	1.302	-0.305	2.266	-1.120	0.124	0.225	0.461	1.024
SE	18	36.32	0.026	1.09	1.073	0.898	1.002	1.302	-0.305	2.266	-1.120	0.124	0.225	0.461	1.024
SE	19	36.32	0.026	1.09	1.073	0.898	1.002	1.302	-0.305	2.266	-1.120	0.124	0.225	0.461	1.024
SE	20	36.32	0.026	1.09	1.073	0.898	1.002	1.302	-0.305	2.266	-1.120	0.124	0.225	0.461	1.024
SW	0	32.13	0.046	1.30	0.860	0.995	0.998	1.040	-0.252	1.843	-0.852	0.110	0.225	0.485	1.025
SW	1	29.88	0.056	1.39	0.904	0.975	0.999	0.847	-0.245	1.783	-0.730	0.041	0.225	0.414	1.028
SW	2	29.88	0.056	1.39	0.904	0.975	0.999	0.847	-0.245	1.783	-0.730	0.041	0.225	0.414	1.028
SW	3	29.88	0.056	1.39	0.904	0.975	0.999	0.847	-0.245	1.783	-0.730	0.041	0.225	0.414	1.028
SW	4	29.88	0.056	1.39	0.904	0.975	0.999	0.847	-0.245	1.783	-0.730	0.041	0.225	0.414	1.028
SW	5	29.88	0.056	1.39	0.904	0.975	0.999	0.847	-0.245	1.783	-0.730	0.041	0.225	0.414	1.028



spp	nsr	hd1	hd2	hd3	a0	a1	a2	b1	b2	b3	b4	b5	p	inout1	inout2
SW	6	29.88	0.056	1.39	0.904	0.975	0.999	0.847	-0.245	1.783	-0.730	0.041	0.225	0.414	1.028
SW	7	38.31	0.026	1.12	0.713	1.072	0.996	1.154	-0.284	2.023	-0.954	0.102	0.225	0.522	1.024
SW	8	38.31	0.026	1.12	0.713	1.072	0.996	1.154	-0.284	2.023	-0.954	0.102	0.225	0.522	1.024
SW	9	32.43	0.051	1.39	0.863	0.993	0.999	1.135	-0.252	1.885	-0.921	0.150	0.225	0.537	1.023
SW	10	38.31	0.026	1.12	0.713	1.072	0.996	1.154	-0.284	2.023	-0.954	0.102	0.225	0.522	1.024
SW	11	32.43	0.051	1.39	0.863	0.993	0.999	1.135	-0.252	1.885	-0.921	0.150	0.225	0.537	1.023
SW	12	29.88	0.056	1.39	0.904	0.975	0.999	0.847	-0.245	1.783	-0.730	0.041	0.225	0.414	1.028
SW	13	29.88	0.056	1.39	0.904	0.975	0.999	0.847	-0.245	1.783	-0.730	0.041	0.225	0.414	1.028
SW	14	32.43	0.051	1.39	0.863	0.993	0.999	1.135	-0.252	1.885	-0.921	0.150	0.225	0.537	1.023
SW	15	29.88	0.056	1.39	0.904	0.975	0.999	0.847	-0.245	1.783	-0.730	0.041	0.225	0.414	1.028
SW	16	29.88	0.056	1.39	0.904	0.975	0.999	0.847	-0.245	1.783	-0.730	0.041	0.225	0.414	1.028
SW	17	32.13	0.046	1.30	0.860	0.995	0.998	1.040	-0.252	1.843	-0.852	0.110	0.225	0.485	1.025
SW	18	32.13	0.046	1.30	0.860	0.995	0.998	1.040	-0.252	1.843	-0.852	0.110	0.225	0.485	1.025
SW	19	32.13	0.046	1.30	0.860	0.995	0.998	1.040	-0.252	1.843	-0.852	0.110	0.225	0.485	1.025
SW	20	32.13	0.046	1.30	0.860	0.995	0.998	1.040	-0.252	1.843	-0.852	0.110	0.225	0.485	1.025

- spp species code
- nsr natural subregion code as per ASRD definitions (e.g. nsr=1 is Central Mixedwood)
- hd1-3 height-DBH model coefficients
- a0-a2 variable exponent taper equation coefficients
- b1-b5 variable exponent taper equation coefficients
- p variable exponent taper equation coefficient
- inout1-2 diameter inside bark to outside bark conversion equation coefficients

## APPENDIX III – CALCULATION OF SITE INDEX SEEDS USING RESULTS FROM REGENERATED STAND PRODUCTIVITY STUDY

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In Weyerhaeuser's 2007 DFMP, average site index (SI) values from PSPs in natural stands (natural stand site index seeds) were used as inputs to develop yield curves for natural stands. There were insufficient PSP data for calculating site index seeds for regenerated stands, and no other information was available upon which to base an estimate of managed stand site index, therefore natural stand SI seeds were also used to develop yield curves for managed stands.

Recently, Weyerhaeuser (in cooperation with ANC and Canfor) undertook a Regenerated Stand Productivity (RSP) data collection program, in order to obtain estimates of site index for managed stands. Estimates of regenerated stand site index at breast height age were generated using GYPSY 2006 top height-age models<sup>30</sup>. In 2009, Weyerhaeuser reran the analysis<sup>31</sup>:

- 1) Using the top height models selected for use in yield curve development (GYPSY 2009); and
- 2) Using total age-based site index rather than breast height-based site index.

As an output from this analysis, site index estimates were produced for each leading species, ecosite and natural subregion (NSR). For yield curve development, an estimate was required by leading species and natural subregion (excluding ecosite). Because sampling was undertaken by natural subregion and ecosite, and the number of samples was not established proportionally to area, an area-weighted exercise was required to produce the necessary site index estimates<sup>32</sup>. In addition, the areas used for area weighting had to be specific to guide species; for example, for the PL-LF site index, only the landbase areas with pine as a guide species would be included in the area weighting (yield groups 1, 2, 3, 8, 10, 11 and 13).

In applying this methodology, two key considerations were identified:

- 1) Certain ecosite/NSR combinations represented in the landbase did not have a corresponding site index estimate from the RSP results. Generally these were minor ecosite/NSR combinations represented by small landbase areas.
- 2) The target population excluded alpine and montane areas, as well as subalpine areas over 1500 m. These areas were excluded because past harvesting activity resulted in few sampling opportunities in these types. Thus alpine, montane and subalpine areas >1500 m were also not represented in the RSP results.

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<sup>30</sup> Timberline Natural Resource Group. 2006. Regenerated Stand Productivity in North Central Alberta, Report #1, Weyerhaeuser Forest Management Area. Unpublished report.

<sup>31</sup> Timberline Natural Resource Group. 2009. Regenerated Stand Productivity in North Central Alberta, Report #1, Weyerhaeuser Forest Management Area: Revised Using New GYPSY Top Height Models. Unpublished report.

<sup>32</sup> A memo was provided to Alberta SRD on May 29, 2009 with preliminary site index seeds calculated using RSP data, but did not include area weighting in its calculation. Thus the results from this memo vary slightly from the values included in the yield curve documentation.

Site index values obtained from the 2009 Regenerated Stand Productivity reanalysis are presented in Table 41.

Table 41. Site index values from Regenerated Stand Productivity analysis.

Guide Species	Natural Subregion Group	Ecosite								
		b	c	d	e	f	g	h	i	j
PL	CMW/DMW	16.5	19.1	19.8						
	LF	16.7	17.8	16.8	18.3	18.0		15.6	16.4	13.5
	UF	15.5	15.5	15.0	17.1	17.1		14.2	12.9	14.2
	M/SA/A	13.2	13.6	13.5		11.8	11.9			
SW	CMW/DMW		11.0	12.4	14.3	14.1		14.3		
	LF		13.1	12.4	15.1	14.9			12.6	13.1
	UF		12.0		14.5	14.9			11.1	13.6
	M/SA/A		10.8							

The landbase (effective August 2009) was summarized to determine area by ecosite, NSR, leading species and elevation class (>1500 m = HIGH, else LOW). Prior to generating area summaries, all stands were transitioned according to DFMP rules:

- Yield strata 16 and 17 (DC stands, AW leading) transition to yield stratum 15 (SW leading);
- Yield stratum 40 (conifer understory) transitions to yield stratum 15 (SW leading); and
- Yield stratum 50 (composite) transitions to yield stratum 13 (pine leading).

Since the intent was to apply the RSP results to all pine and white spruce-leading stands in the landbase, only PL and SW-leading areas were used for summaries. Aspen or black spruce-leading stands were excluded. The following assumptions were made recommended in order to provide site index estimates for ecosites missing representation:

#### PL Leading Stands

- High subalpine. In the case of PL-leading stands, although 1/3 of the SA area was in the high subalpine, the distribution of area by ecosite was similar above and below the 1500 m cutoff for the target population. Since ecosite indicates potential productivity of a stand, areas below and above the elevation cutoff were assigned the same site index if they had the same ecosite.
- Minor ecosites. In most cases the areas that were not represented are in lower productivity site types. Excluding these site types could result in an overestimate of site index by NSR. To be conservative, e.g. assuming unrepresented ecosites are less productive, these areas were assigned the minimum observed site index for that NSR.
- Alpine/montane. This represents a very small area. These areas were assigned the minimum observed site index from the SA NSR.

#### SW Leading Stands

- The same rules were followed as for the PL-leading stands.
- In the case of the SA NSR, there was only one site index observation and it was the lowest observed site index across all ecosites and NSRs. To be conservative, all subalpine stands were assigned the natural stand site index seed (from the 2011 yield curve documentation).

Final site index values by species, natural subregion and ecosite are presented in Table 42.

Table 42. Site index values used for area weighting.

Guide Species	Natural Subregion Group	Ecosite														
		a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
PL	CMW/DMW	16.5	16.5	19.1	19.8	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5
	LF	13.5	16.7	17.8	16.8	18.3	18.0	13.5	15.6	16.4	13.5	13.5	13.5	13.5	13.5	13.5
	UF	11.8	13.2	13.6	13.5	11.8	11.8	11.9	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8
	M/SA/A	12.9	15.5	15.5	15.0	17.1	17.1	12.9	14.2	12.9	14.2	12.9	12.9	12.9	12.9	12.9
SW	CMW/DMW	11.0	11.0	11.0	12.4	14.3	14.1	11.0	14.3	11.0	11.0	11.0	11.0	11.0	11.0	
	LF	12.4	12.4	13.1	12.4	15.1	14.9	12.4	12.4	12.6	13.1	12.4	12.4	12.4	12.4	
	UF	8.0	8.0	10.8	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	
	M/SA/A	11.1	11.1	12.0	11.1	14.5	14.9	11.1	11.1	11.1	13.6	11.1	11.1	11.1	11.1	

Area-weighted results by guide species and natural subregion are provided in Table 25, page 34

## APPENDIX IV – EVALUATION OF PSP-BASED SITE INDEX AGAINST RSP SITE INDEX

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For their last (2007) DFMP, Weyerhaeuser developed separate yield curves for natural and regenerated stands. Two types of regenerated stands were identified and modeled separately: REG (pre-91 blocks) and RST (post-91 blocks). The original intent was to derive separate site index seeds to initiate REG and RST yield curves, however, there was insufficient PSP data in regenerating stands to support this development. Instead, natural stand site index seeds were used to initiate these curves.

For their current (2011) DFMP, Weyerhaeuser developed one set of yield curves for regenerated stands, referred to as managed (MGD) stands. In order to initiate yield curves, an estimate of site index by leading (guide) species and natural subregion was required. To obtain suitable information, Weyerhaeuser undertook a Regenerated Stand Productivity assessment for CX, CD and DC stands in their FMA area (Timberline 2008). The analysis provided site index estimates for regenerated stands by species, natural subregion and ecosite for white spruce and pine, and for aspen where it occurred within these stand types. This information was used to generate site index seeds for regenerated stand yield curves in pine and white spruce leading stands for Weyerhaeuser's 2011 DFMP.

Initial comparisons between average site index calculated using PSPs from regenerated stands and the site index values calculated from RSP results appeared to show a lack of correspondence between the two values, even in cases where sample size was relatively high, particularly for pine in the Lower and Upper Foothills (Table 25, page 34).

One potential explanation for these differences was that, while site index for the Regenerated Stand Productivity study was calculated using average top height and average top height tree age, site index for the PSPs was calculated using average top height and inventory age. This analysis was undertaken to 1) compare site index from PSP data against results from the RSP study; and 2) to assess whether the use of inventory age (as opposed to top height tree age) has an impact on results.

### METHODS AND RESULTS

The 2011 yield curve data compilation code was modified to calculate, for each plot and measurement, the average age of selected top height trees by species. Selected top height trees are the valid top height trees selected during yield curve development. Not all selected top height trees had measured ages, and as such the number of age observations could be less than 2 even where the number of top height trees was 2 or more (the minimum number required to determine an acceptable top height for yield curve development). Observations were retained where they were:

- Within the net MGD landbase (part of the PSP modeling dataset);
- Had a valid top height as per the rules used for yield curve development;
- Had at least two age trees of the same species used for top height; and
- Average age was 10 years or older.

A total of 366 observations met the above criteria.

Top height (weak, as used in yield curve development) was plotted against average age of top height trees to identify outliers (Figure 45). No outliers needed to be removed. Site index was then calculated for each top height – age pair using GYPSY 2009 equations.

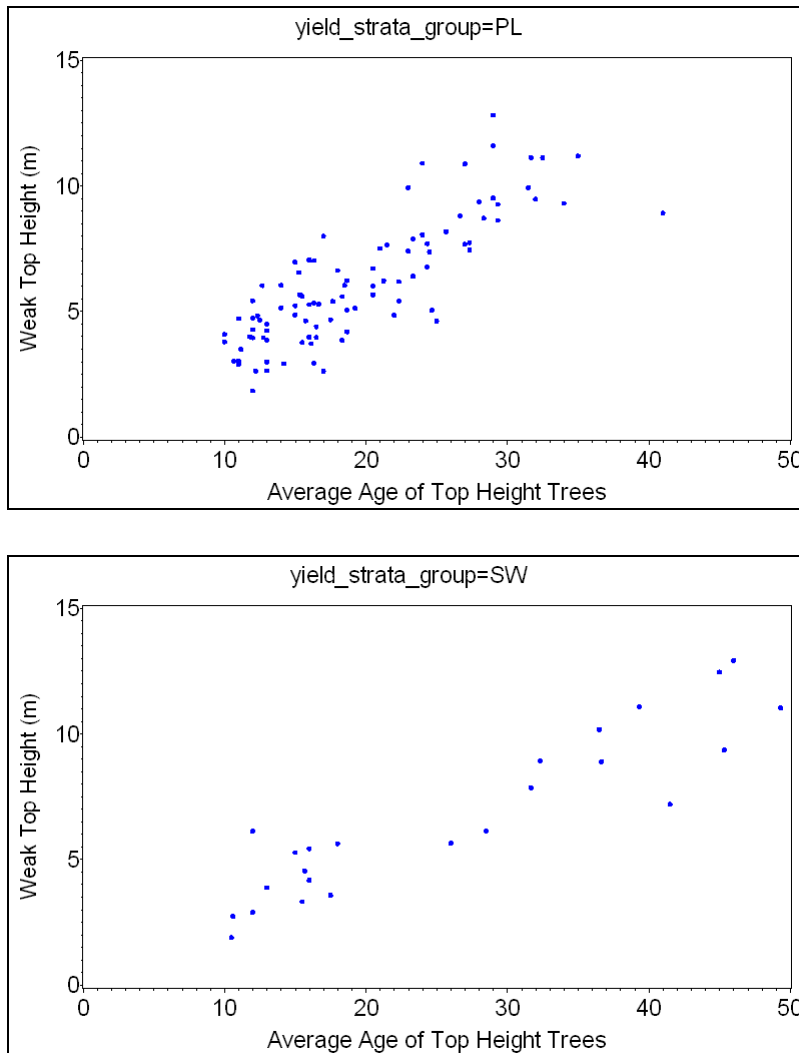


Figure 45. Average age of top height trees against weak top height for pine (top) and white spruce (bottom) trees in MGD PSPs.

To be consistent with the rules used to determine site index seeds for yield curve initiation, the most recent measurement from each plot was extracted from the 366-observation dataset, leaving 65 observations. This dataset was linked to plot site indices calculated based on inventory age as part of the yield curve process. Only observations with both a tree age-based site index and an inventory age-based site index were retained (65 observations). No black spruce observations were available and there were very few aspen observations. Site index estimates developed under the Regenerated Stand Productivity were compared to both methods of determining site index are included in Table 43.

Note that the means calculated using inventory age differ from the values presented in Table 25. For this analysis, a subset of plots was selected, where tree age was available to undertake comparison. In the case of the PL- M/SA/A, the mean based on inventory age differs even though there is the same number of observations because the mean is calculated using *the most recent measurement where a tree age is also available* (which might not be the same as the most recent measurement based on inventory age).

Table 43. Comparison of RSP site index against site index calculated using PSP tree height and a) inventory age and b) tree age.

Guide Species	Natural Subregion Group	# MGD PSPs	Site Index (m) by Method						RSP Results
			Inventory Age			Top Height Tree Age			
			Mean	Min	Max	Mean	Min	Max	
AT	CMW/DMW	1	13.8	13.8	13.8	19.2	19.2	19.2	n/a
	LF	2	14.0	7.7	20.2	17.6	16.3	18.9	n/a
	UF	-	-	-	-	-	-	-	n/a
PL	CMW/DMW	-	-	-	-	-	-	-	17.7
	LF	16	17.0	13.8	19.9	17.8	12.2	23.3	17.4
	UF	26	14.2	5.4	18.1	15.6	9.3	22.0	16.1
	M/SA/A	6	11.3	10.1	14.7	12.8	9.7	17.0	13.4
SB	LF	-	-	-	-	-	-	-	n/a
	UF	-	-	-	-	-	-	-	n/a
SW	CMW/DMW	1	9.8	9.8	9.8	16.5	16.5	16.5	12.9
	LF	13	16.6	9.2	32.7	14.1	8.9	19.7	14.7
	UF	-	-	-	-	-	-	-	13.7
	M/SA/A	-	-	-	-	-	-	-	8.0
Total		65							

Graphics in Figure 46 and Figure 47 illustrate the difference between inventory age and average age based on top height trees. On the left, inventory and tree-based ages are compared; on the right, site index values calculated using these ages are compared. For pine, there are clear indications that inventory age is often greater than total age in managed stands, and results in lower site index values than when using actual tree ages. Results are variable for white spruce. Note that for these graphs, all observations are included in the comparison, not just the most recent measurement.

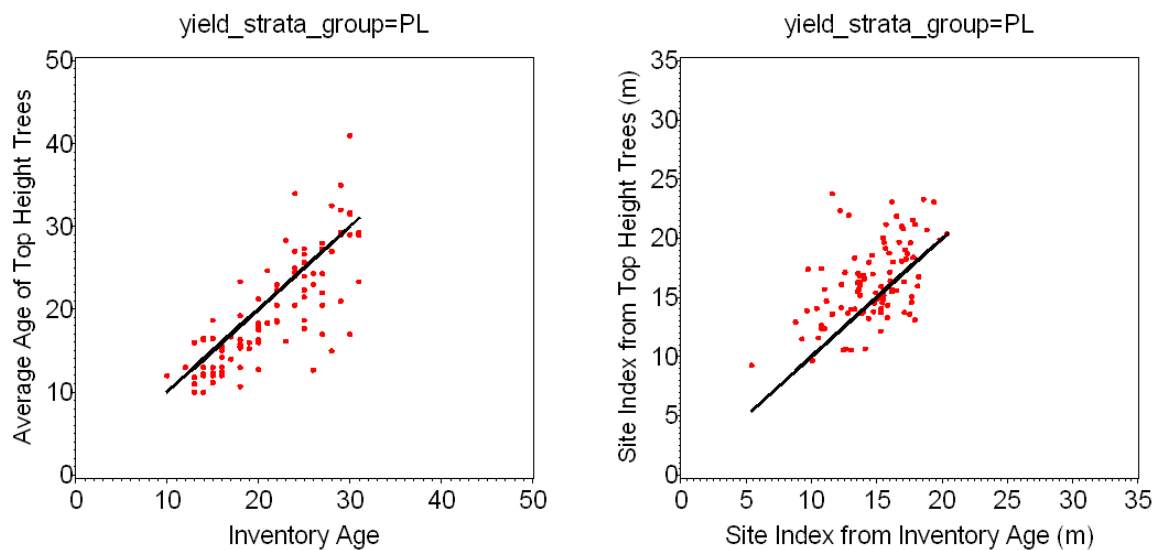


Figure 46. Inventory vs. average tree age (right) and effect on estimate of site index (left) for pine.

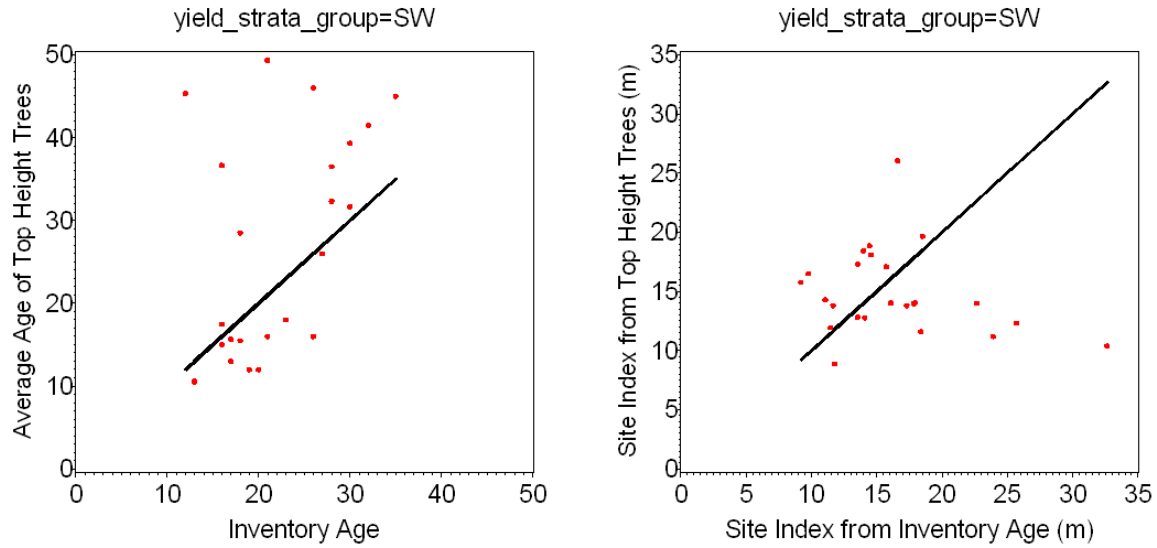


Figure 47. Inventory vs. average tree age (right) and effect on estimate of site index (left) for white spruce.

The results of the Regenerated Stand Productivity study are graphically compared to confidence intervals created using inventory age-based site index and tree age-based site index in Figure 48 and Figure 49. These intervals were developed using the most recent measurement only. For pine, using tree-based site indices results in a good correspondence to RSP results, whereas using inventory-based site index results in an apparent disparity in results. There are fewer observations for white spruce, but the tree-based mean site index is much closer to the RSP mean than the inventory-based mean site index for the Lower Foothills.

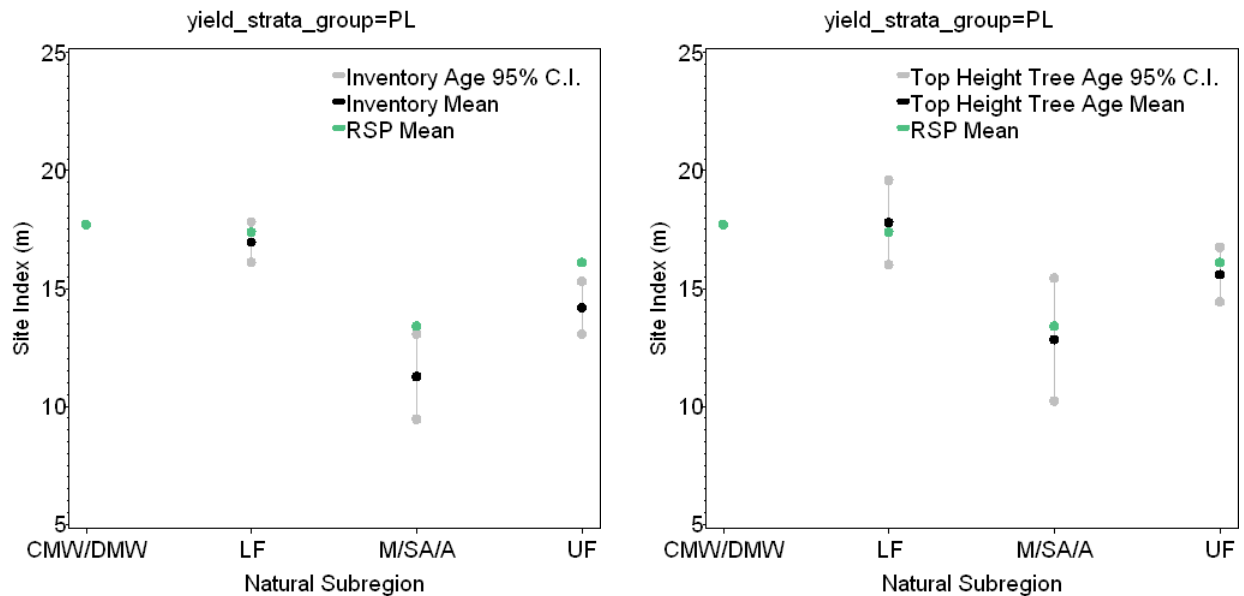


Figure 48. RSP mean SI against 95% confidence interval for pine based on PSP data using inventory age (left) and tree age (right).



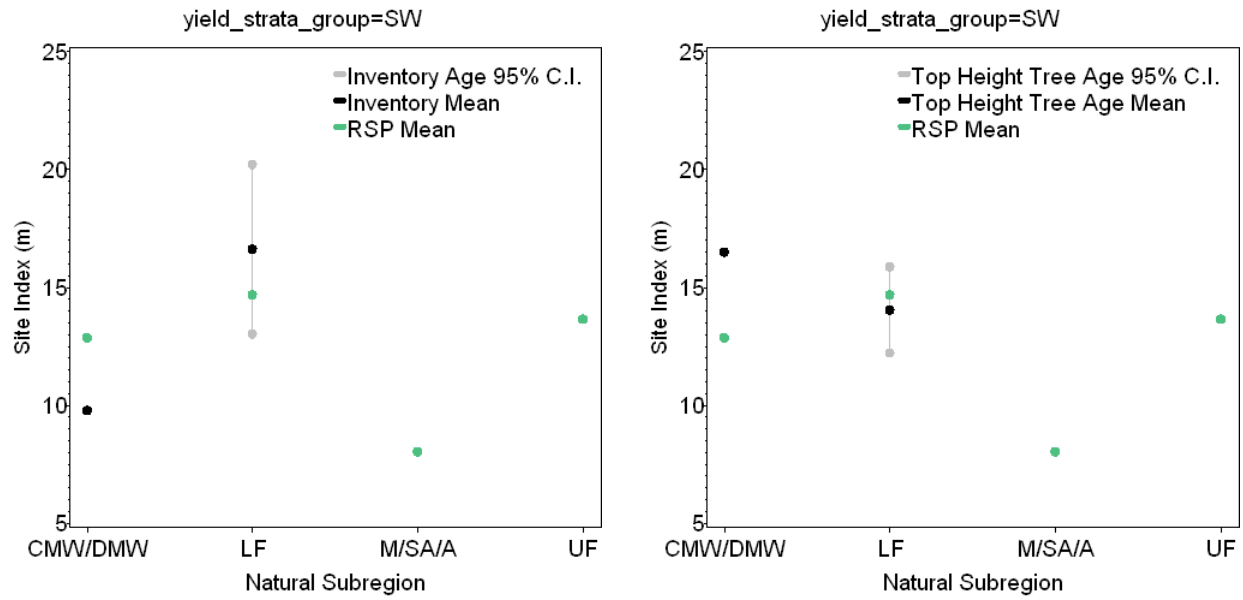


Figure 49. RSP mean SI against 95% confidence interval for white spruce based on PSP data using inventory age (left) and tree age (right).

## CONCLUSIONS

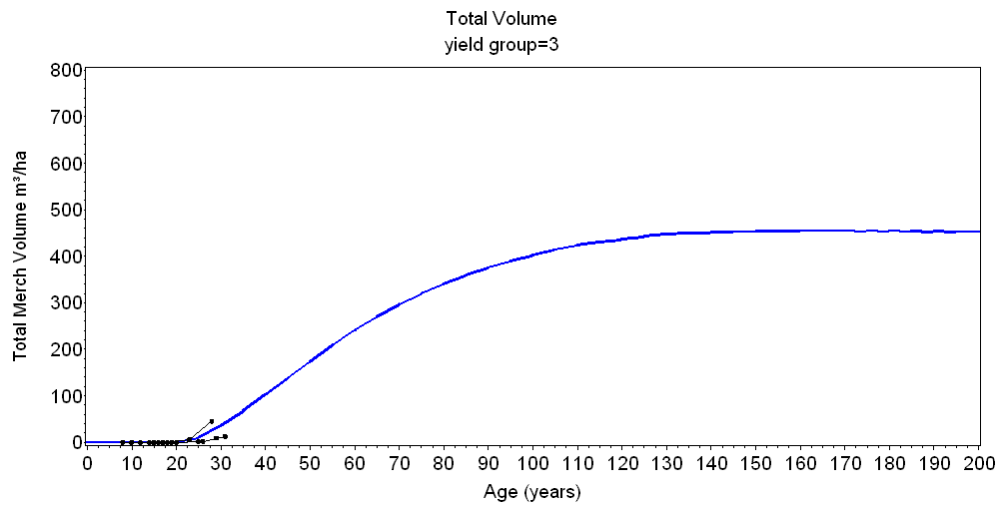
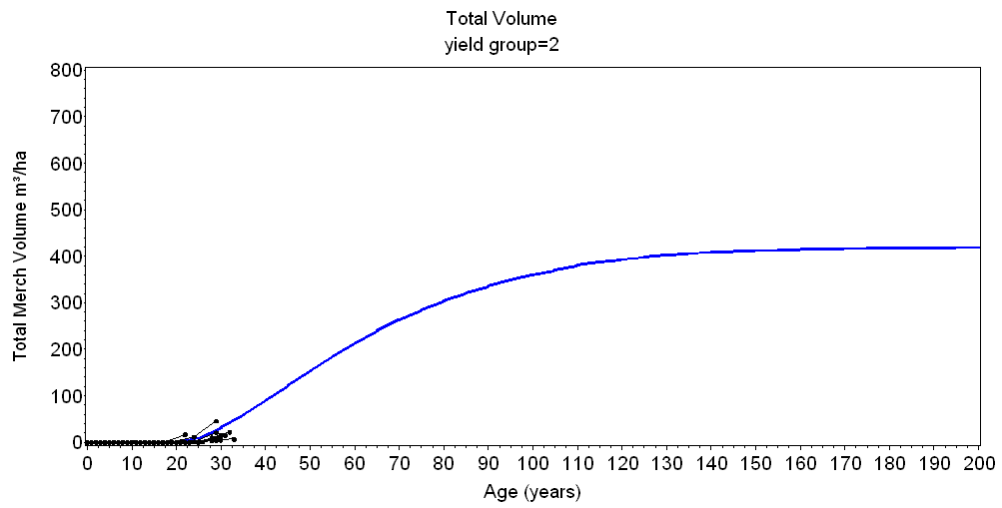
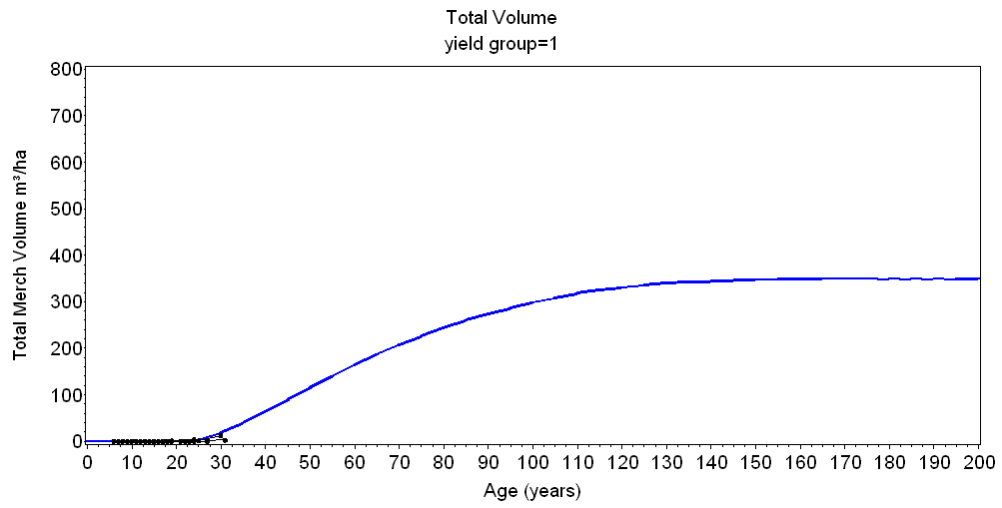
Site index estimates generated by the Regenerated Stand Productivity study and those generated from PSPs in regenerated stands show good correspondence when calculated in the same manner; that is, using average top height and average age of top height trees. For pine, there is clear evidence that pairing inventory age with plot-based top height to estimate site index results in an underestimate of site index in regenerated stands. Results are less clear for white spruce, and there is insufficient data to undertake a comparison for aspen and black spruce.

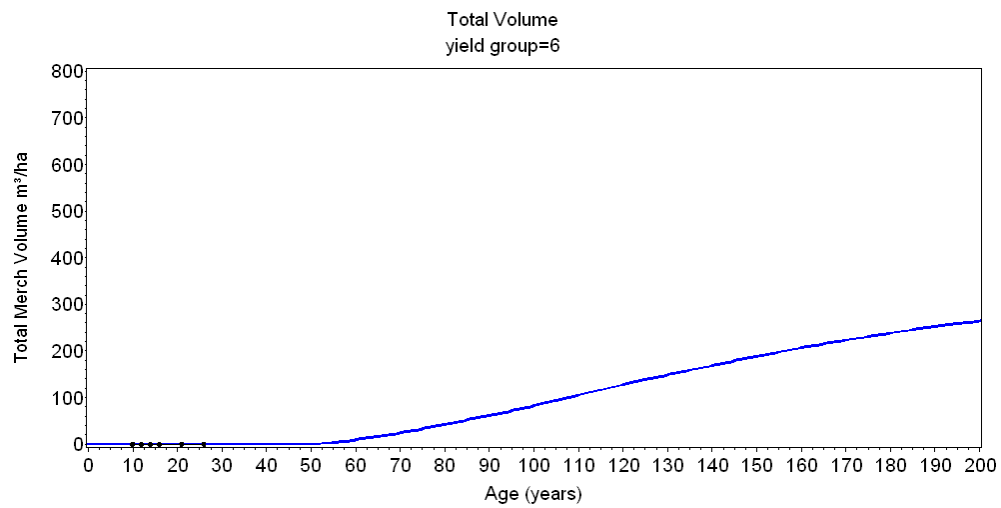
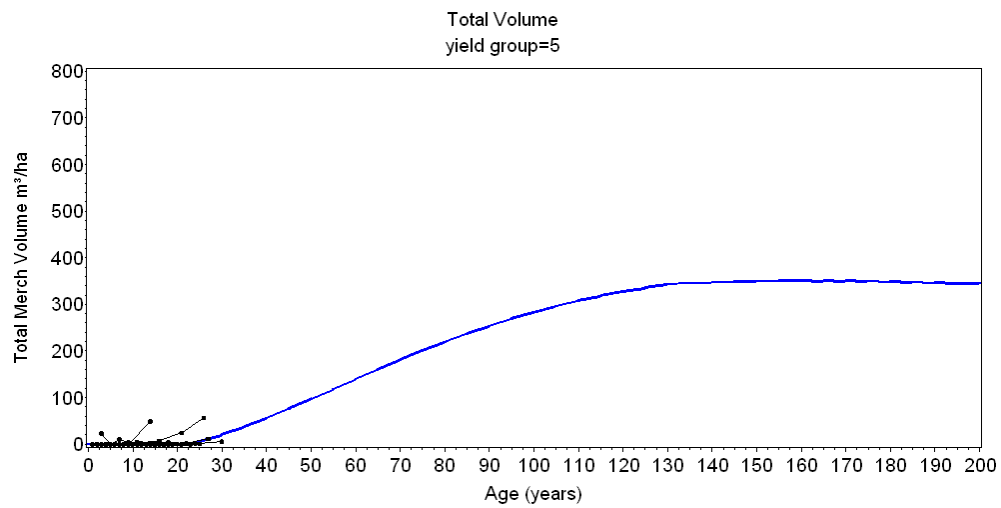
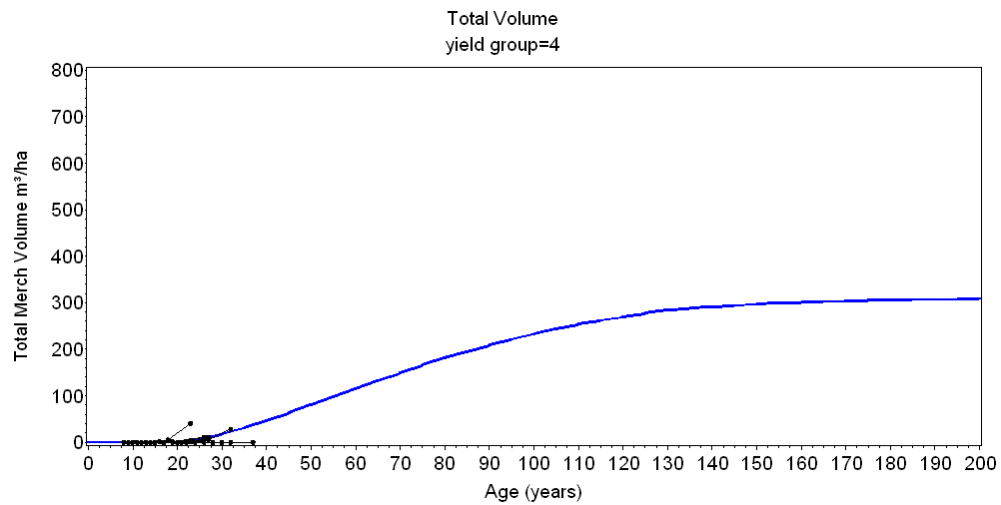
Because regenerated stands are still very young, small differences in estimates of age can result in sizeable impacts on estimates of site index. It is therefore important to carefully assess the effects of using inventory age for developing yield predictions, particularly when the models being used were developed based on tree-based ages.

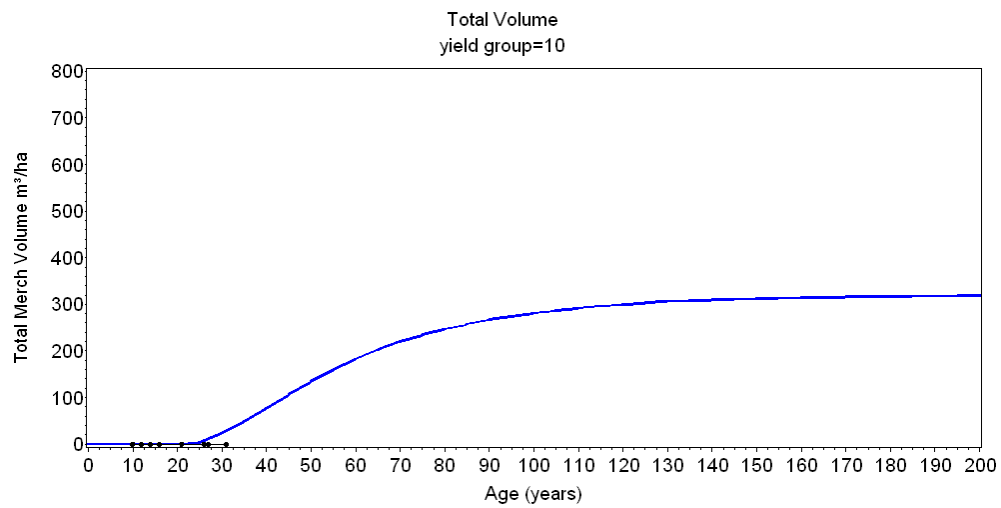
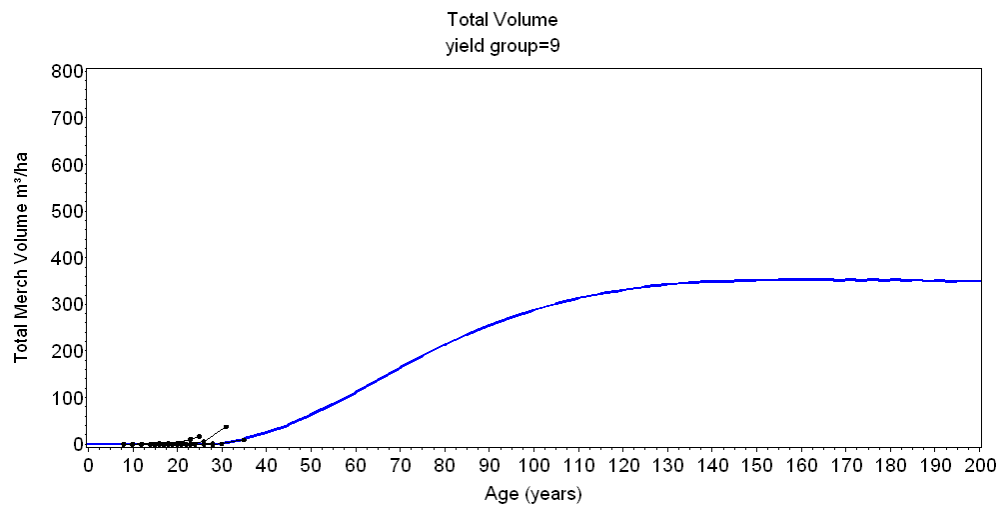
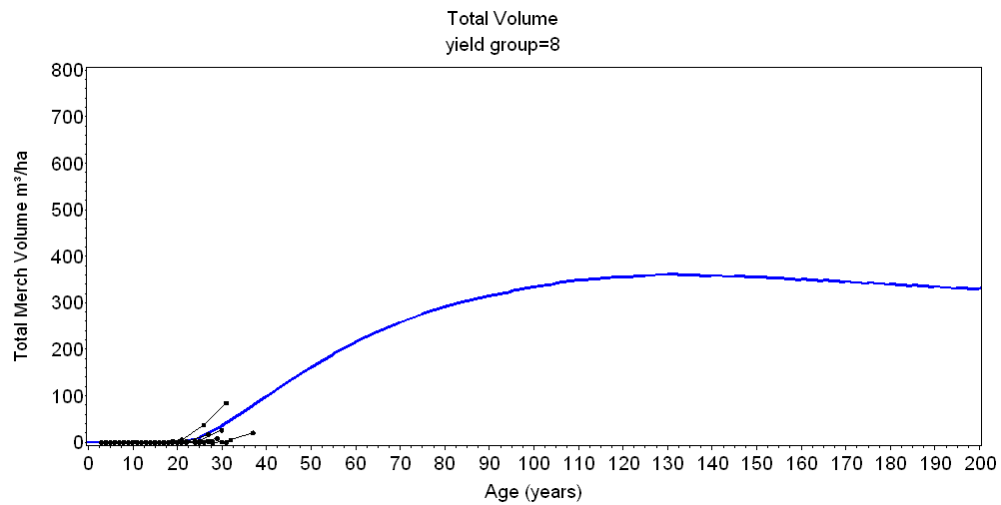
## **APPENDIX V – AREA-WEIGHTED MGD YIELD CURVES AGAINST PSP TRAJECTORIES**

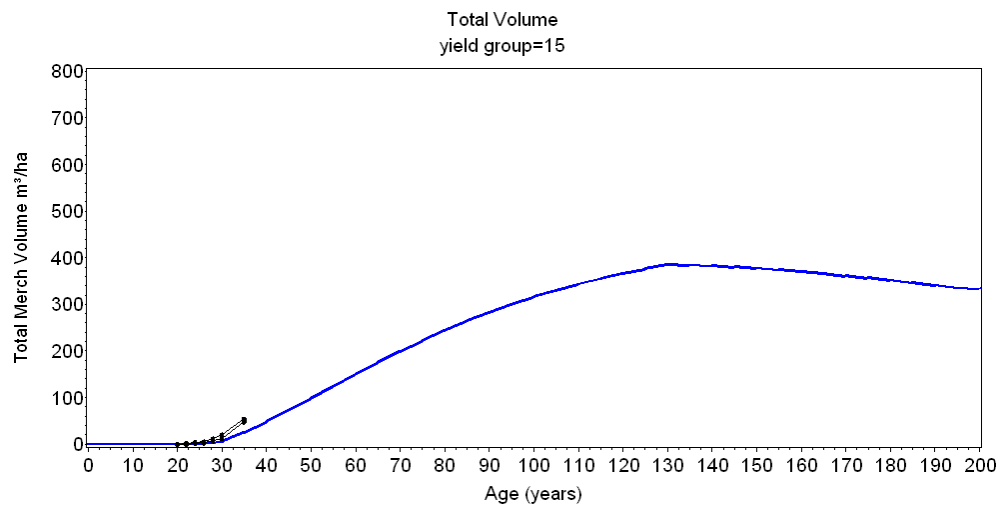
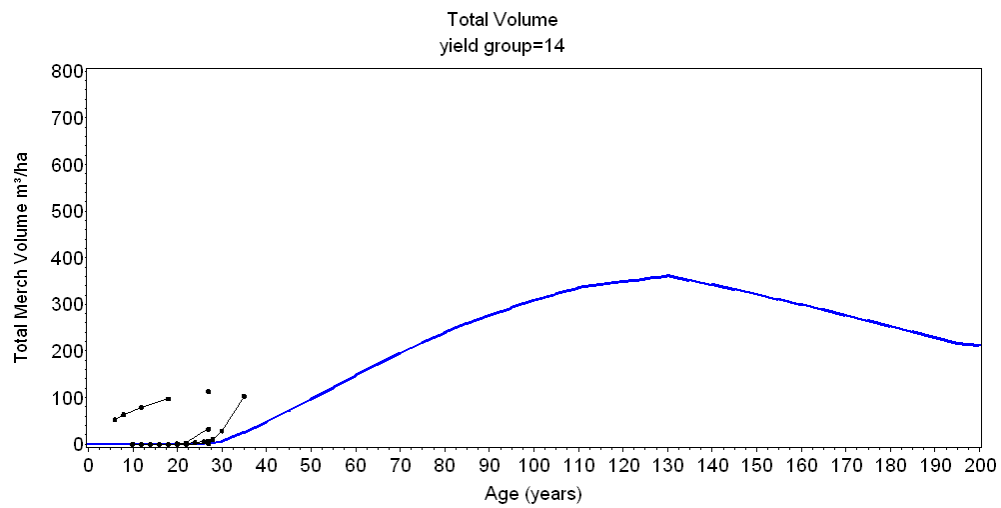
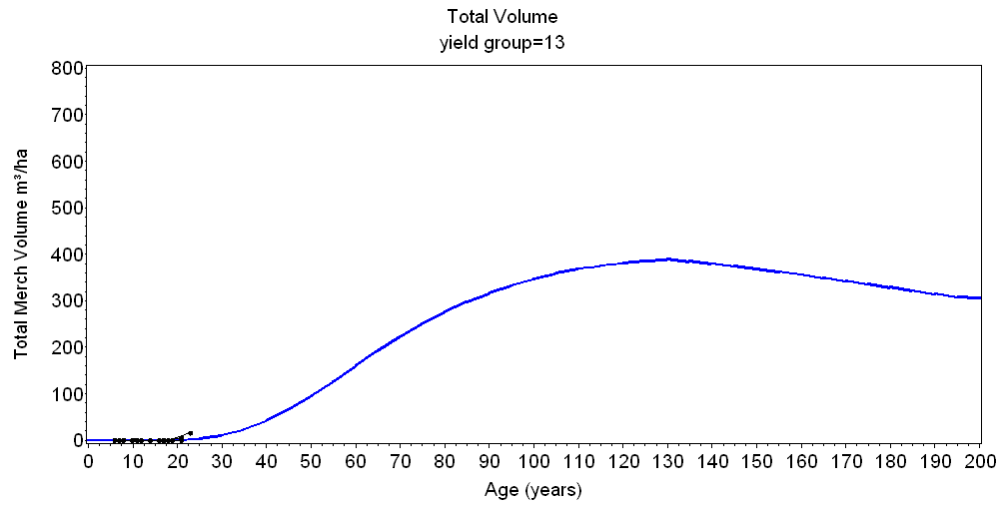
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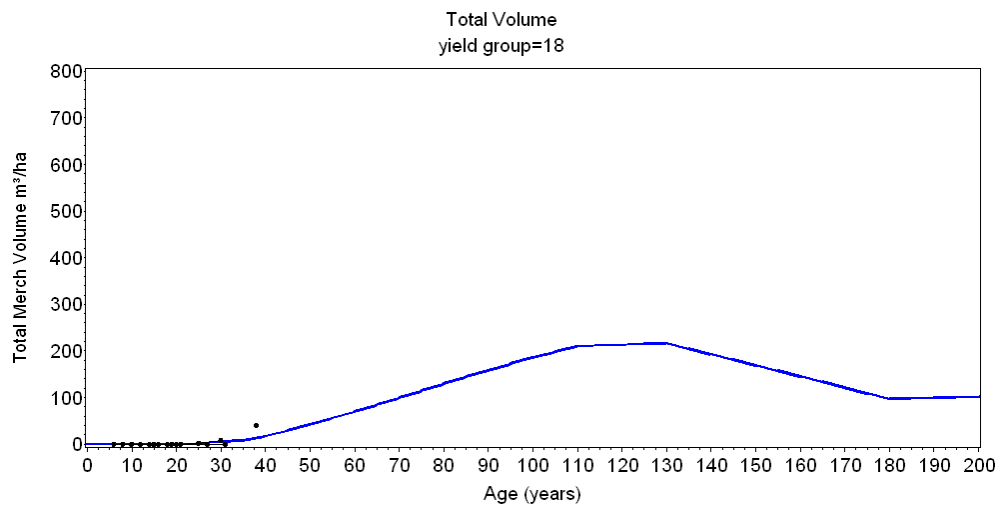
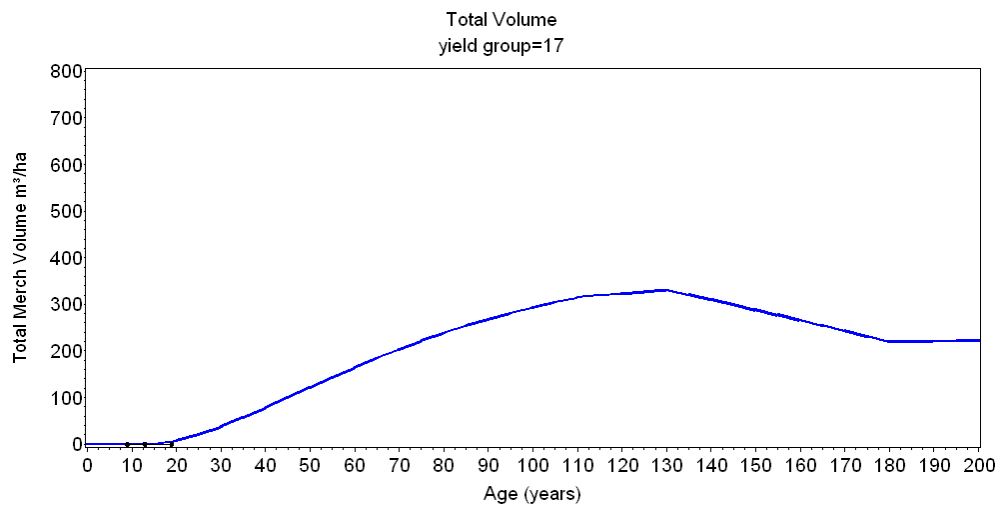
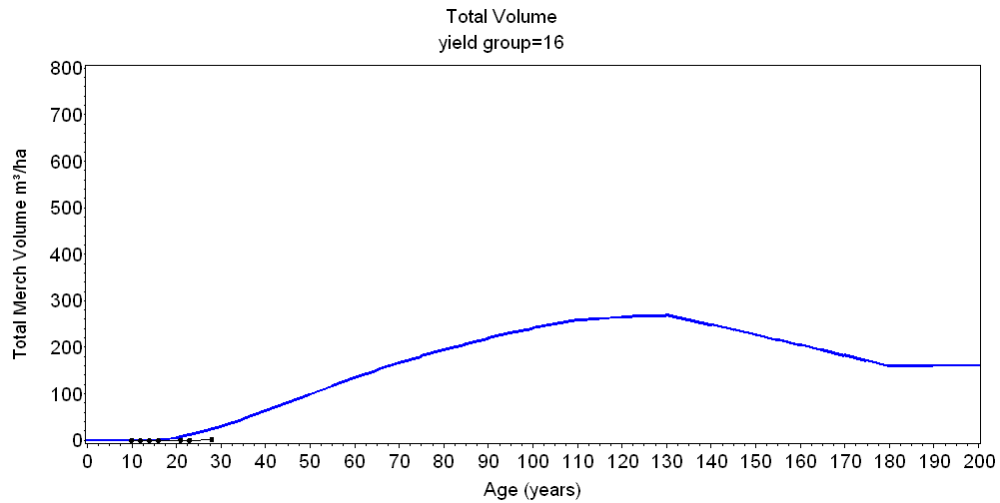
Gross merchantable volume excluding cull

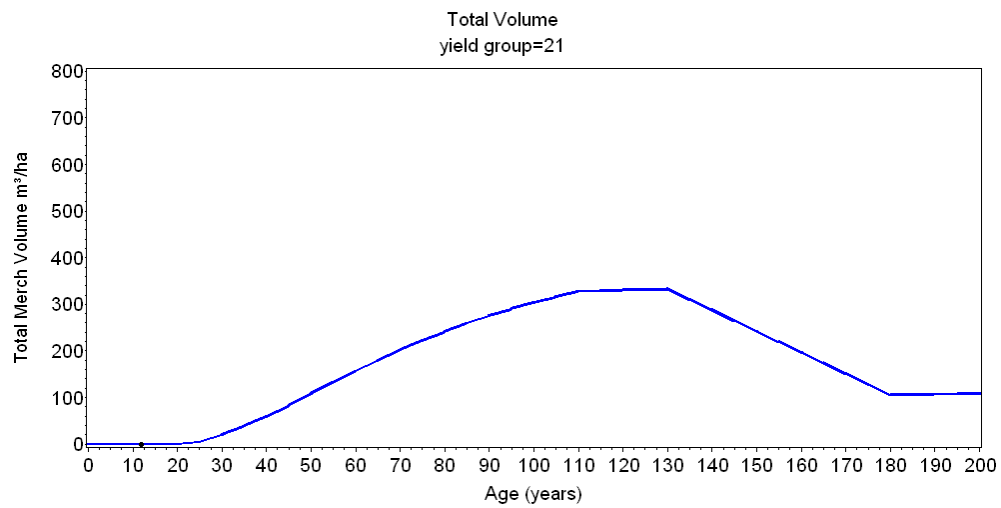
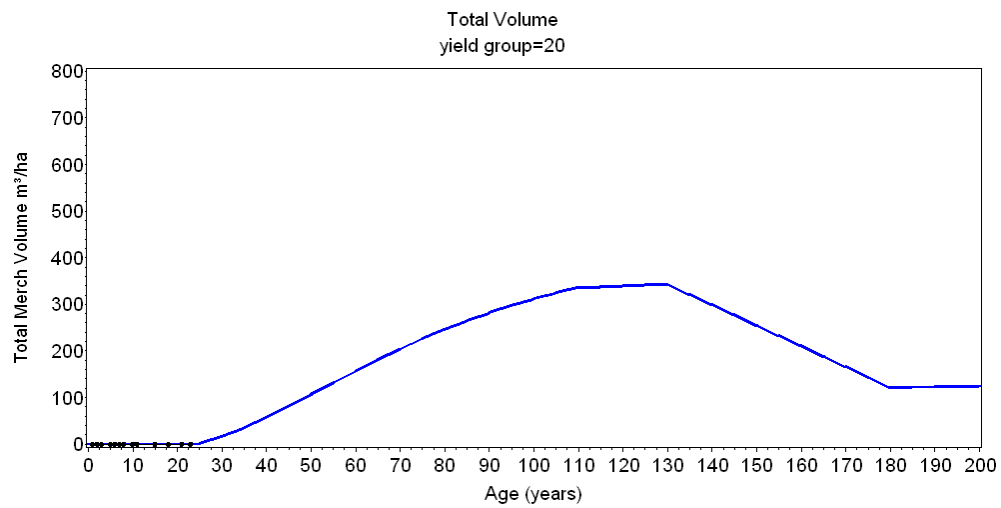
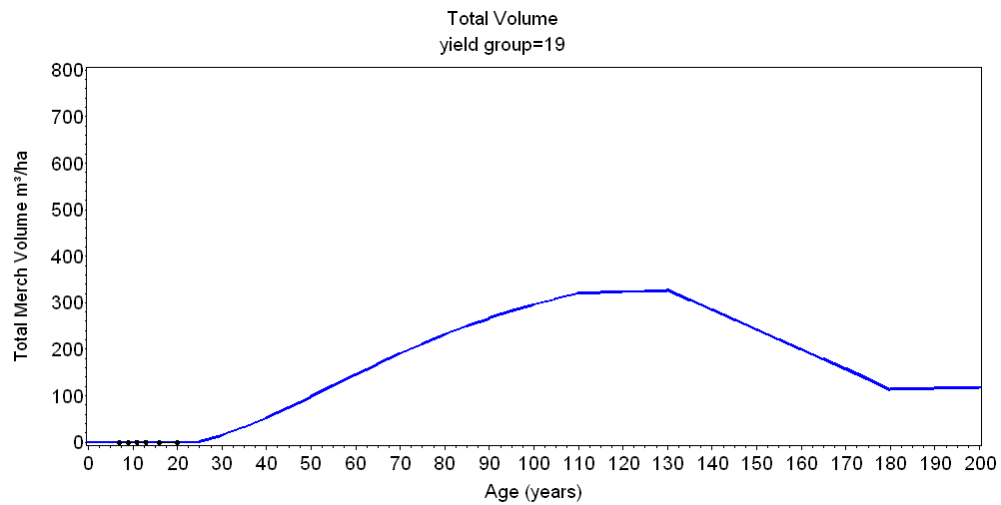














## APPENDIX VI – AREA-WEIGHTED YIELD TABLES BY YIELD GROUP

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Gross merchantable volume excluding cull

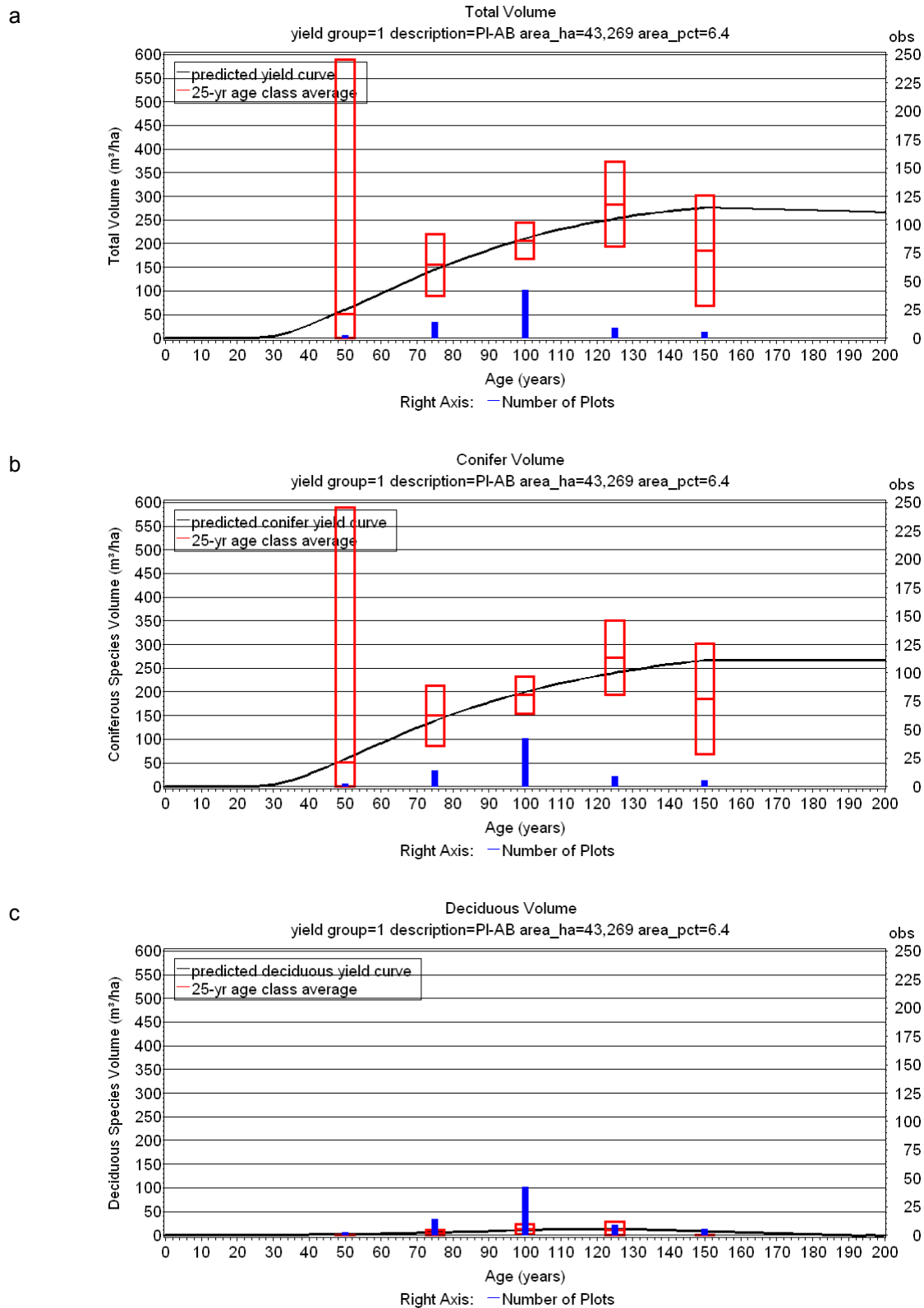
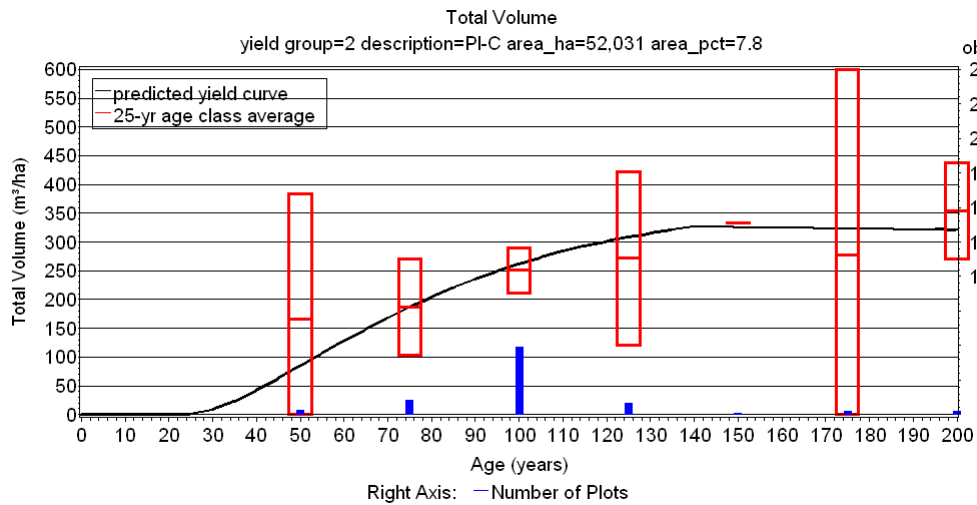
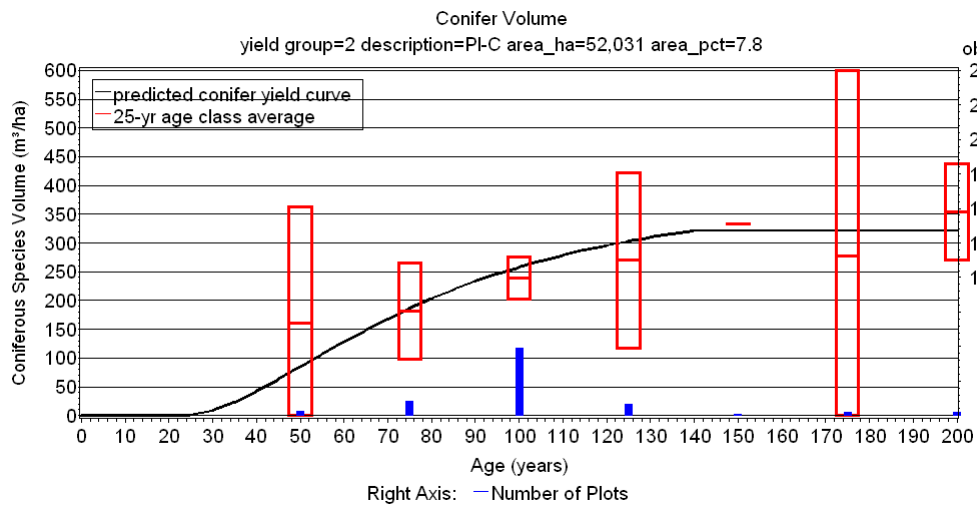


Figure 50. Total (a), conifer (b), and deciduous (c) area-weighted yield tables for yield group 1 (PI-AB).

a



b



c

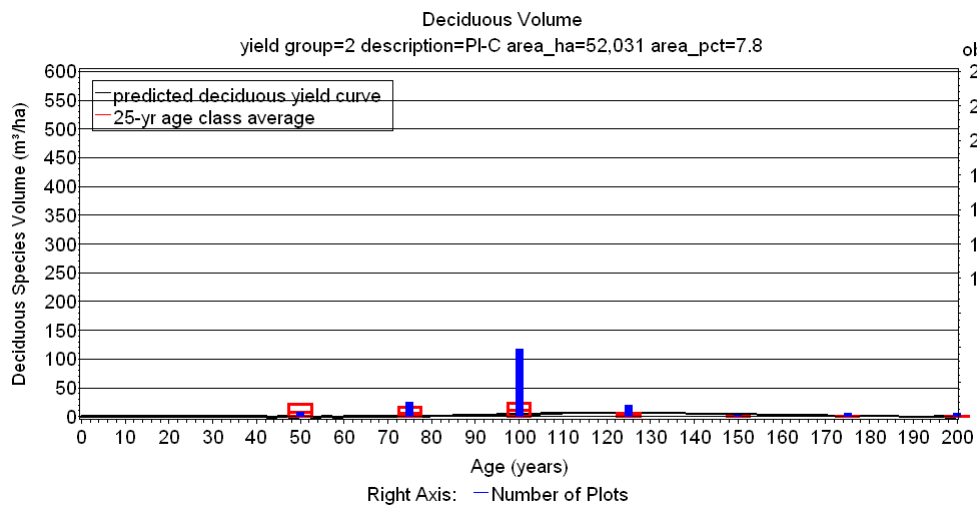


Figure 51. Total (a), conifer (b), and deciduous (c) area-weighted yield tables for yield group 2 (PI-C).

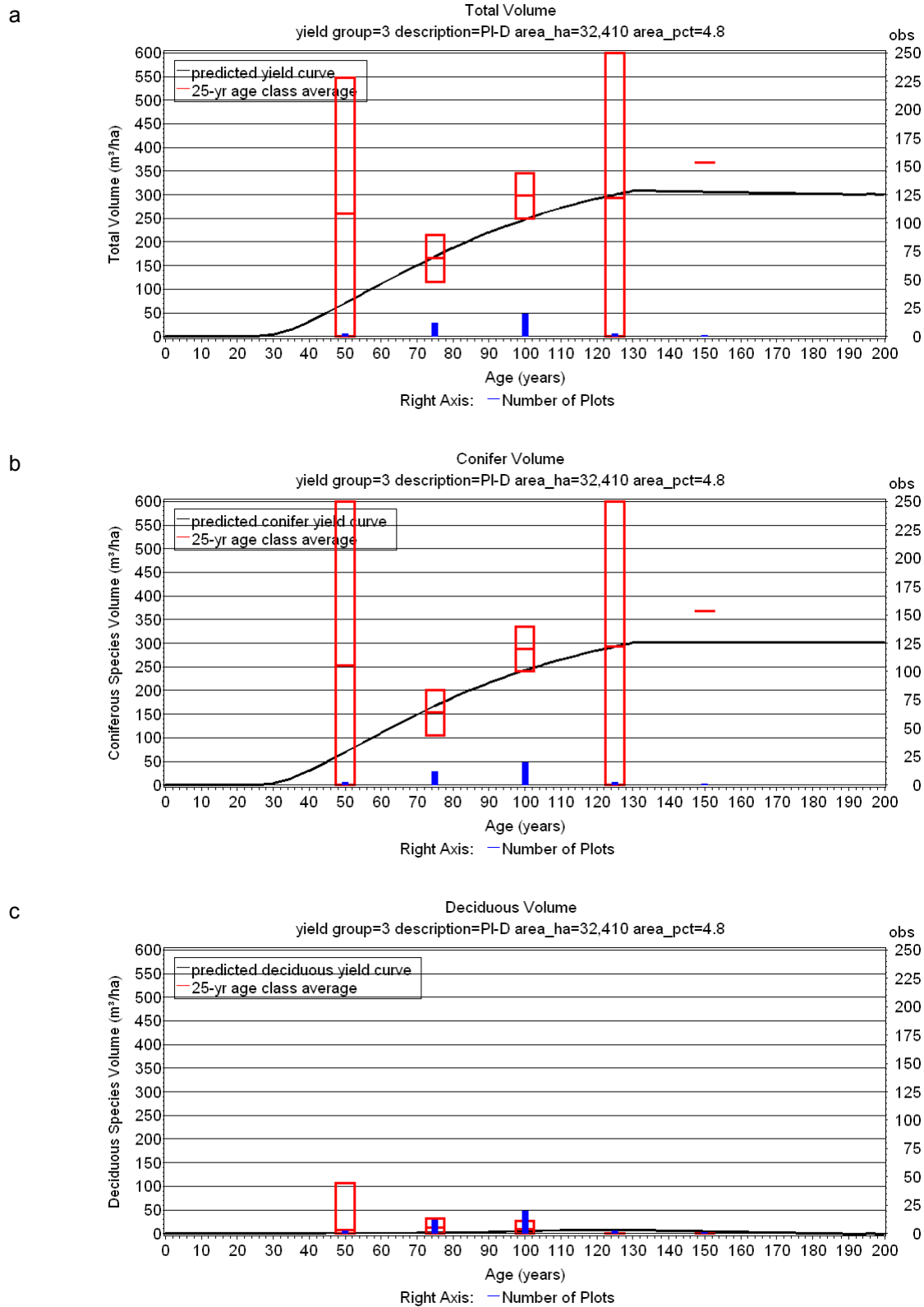


Figure 52. Total (a), conifer (b), and deciduous (c) area-weighted yield tables for yield group 3 (PI-D).

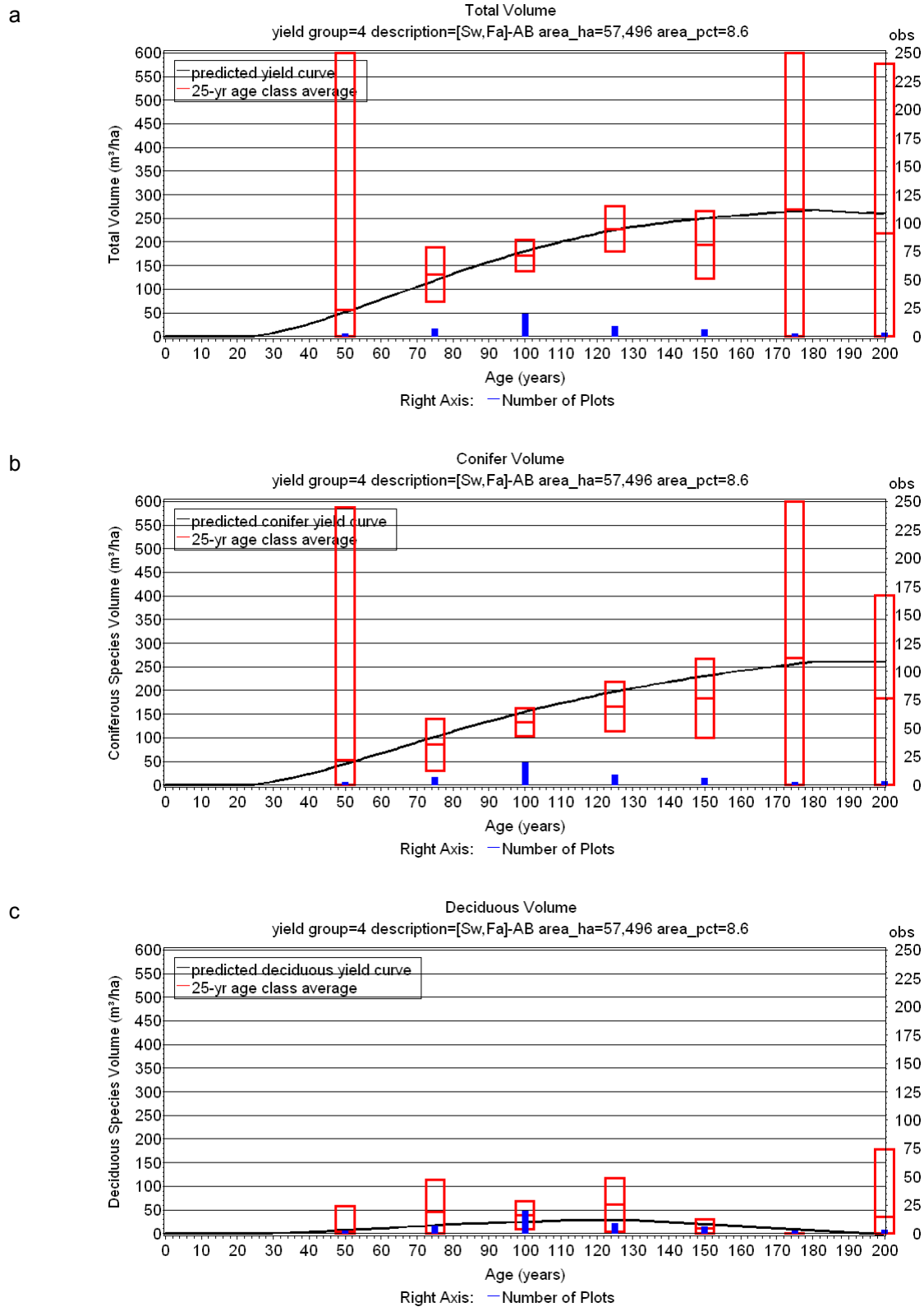


Figure 53. Total (a), conifer (b), and deciduous (c) area-weighted yield tables for yield group 4 ([Sw,Fa]-AB).

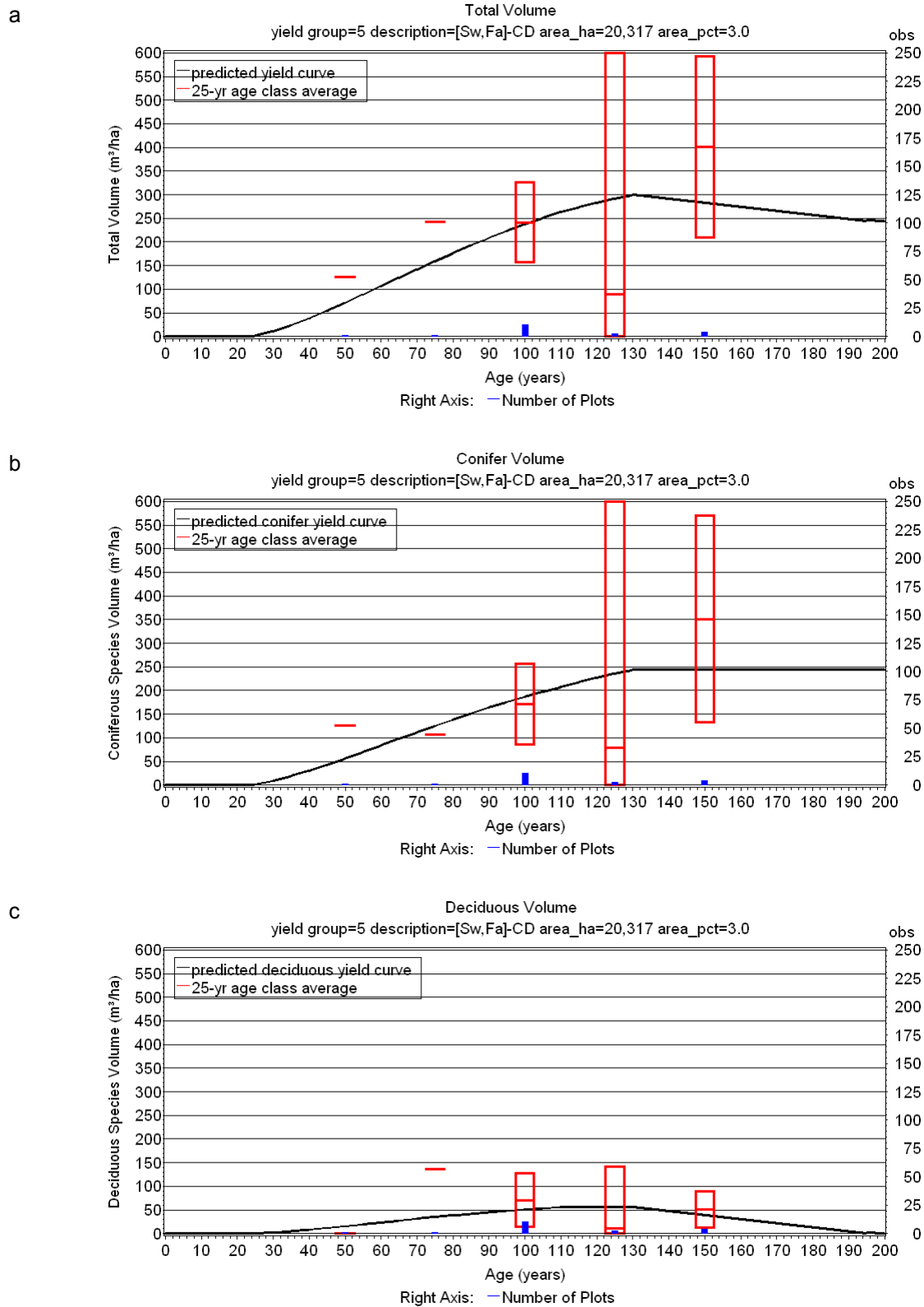


Figure 54. Total (a), conifer (b), and deciduous (c) area-weighted yield tables for yield group 5 ([Sw,Fa]-CD).

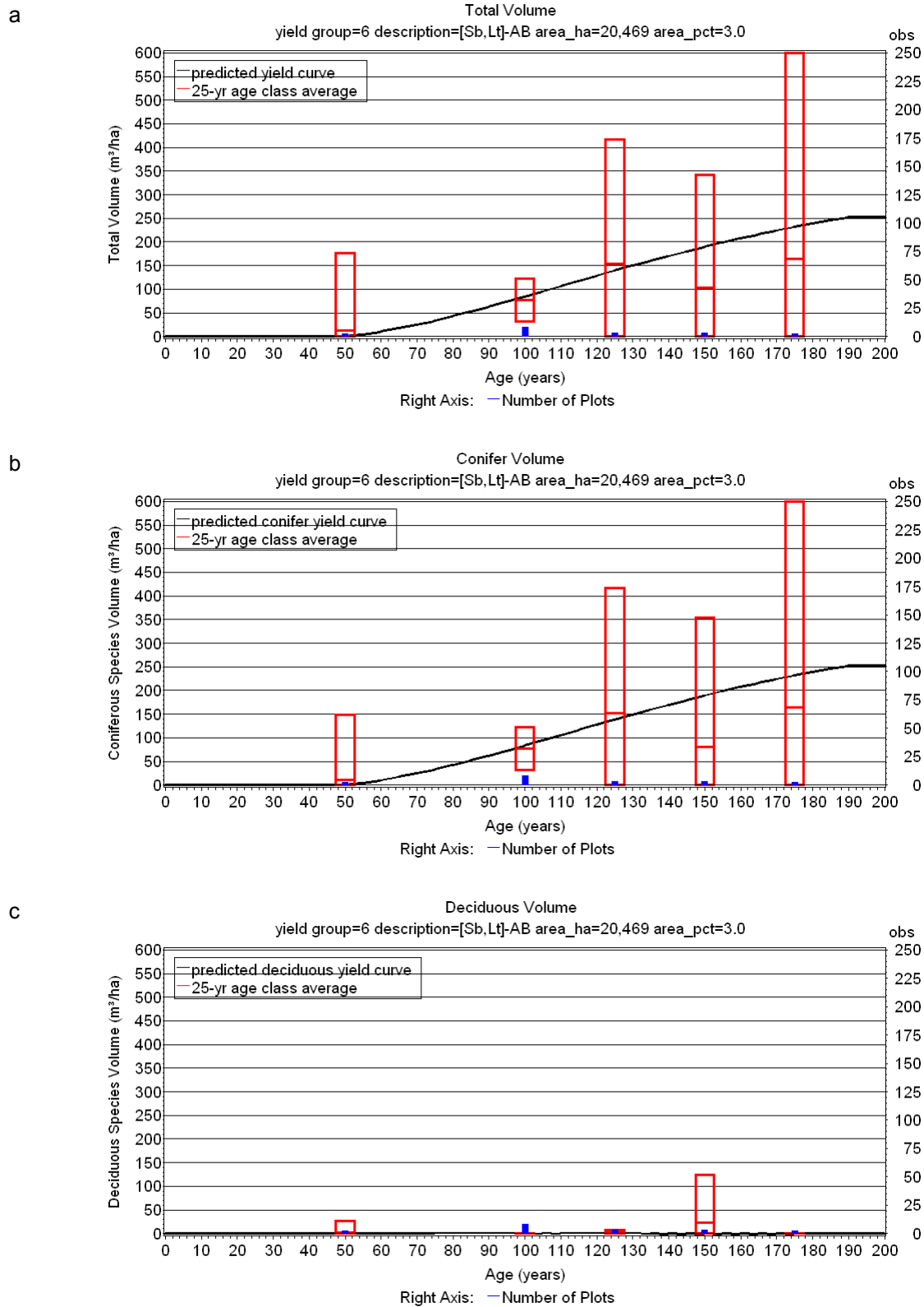


Figure 55. Total (a), conifer (b), and deciduous (c) area-weighted yield tables for yield group 6 ([Sb,Lt]-AB).

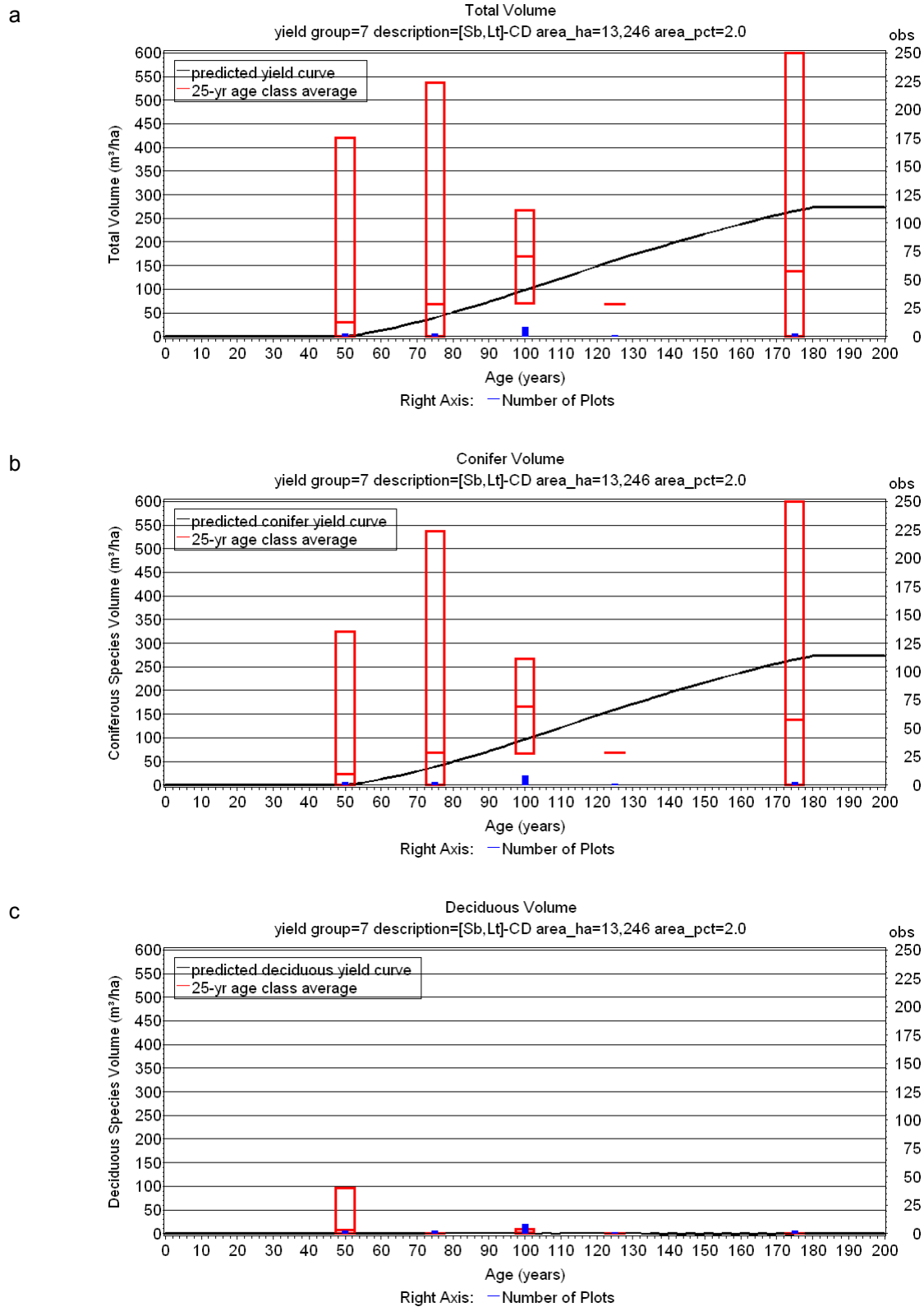
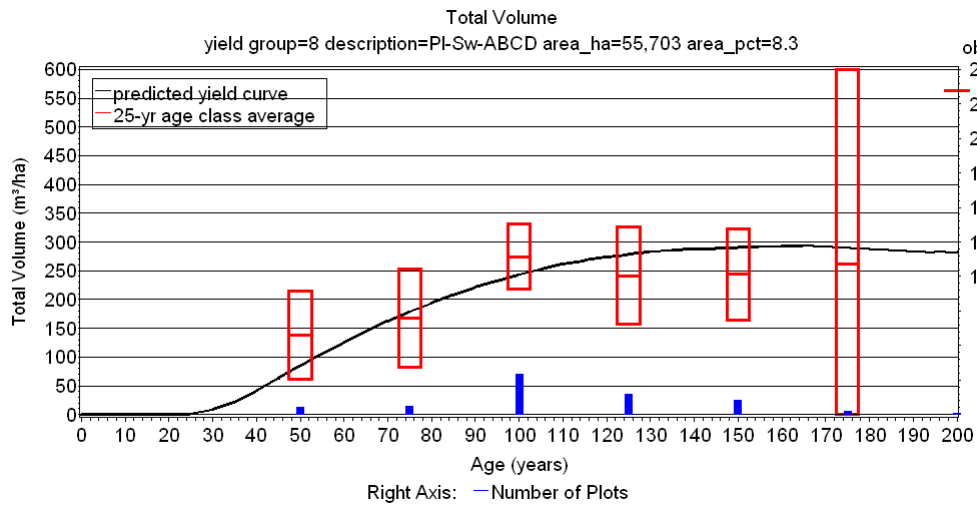


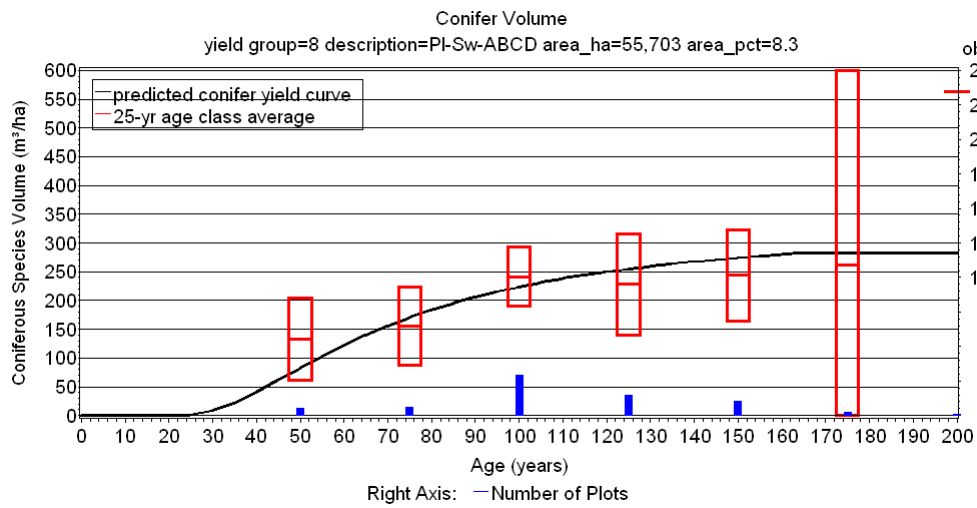
Figure 56. Total (a), conifer (b), and deciduous (c) area-weighted yield tables for yield group 7 ([Sb,Lt]-CD).



a



b



c

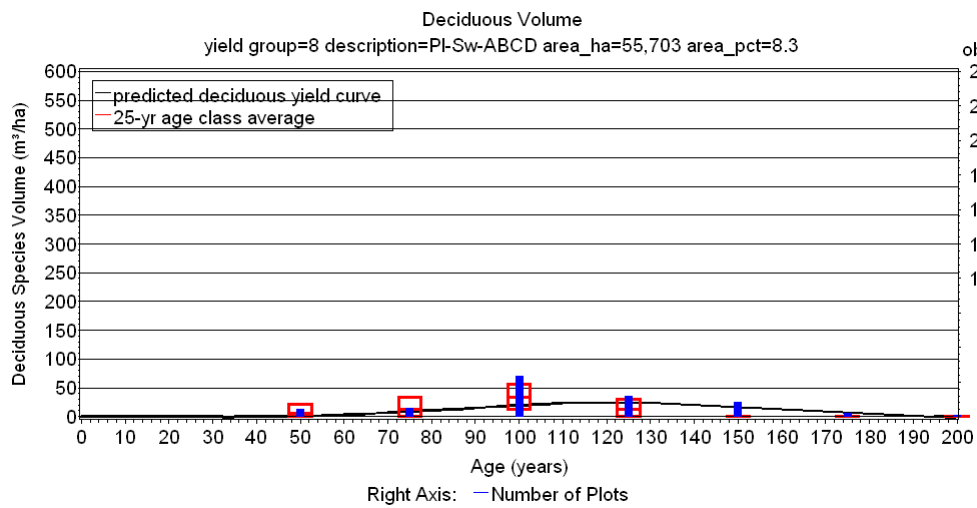


Figure 57. Total (a), conifer (b), and deciduous (c) area-weighted yield tables for yield group 8 (PI-Sw-ABCD).

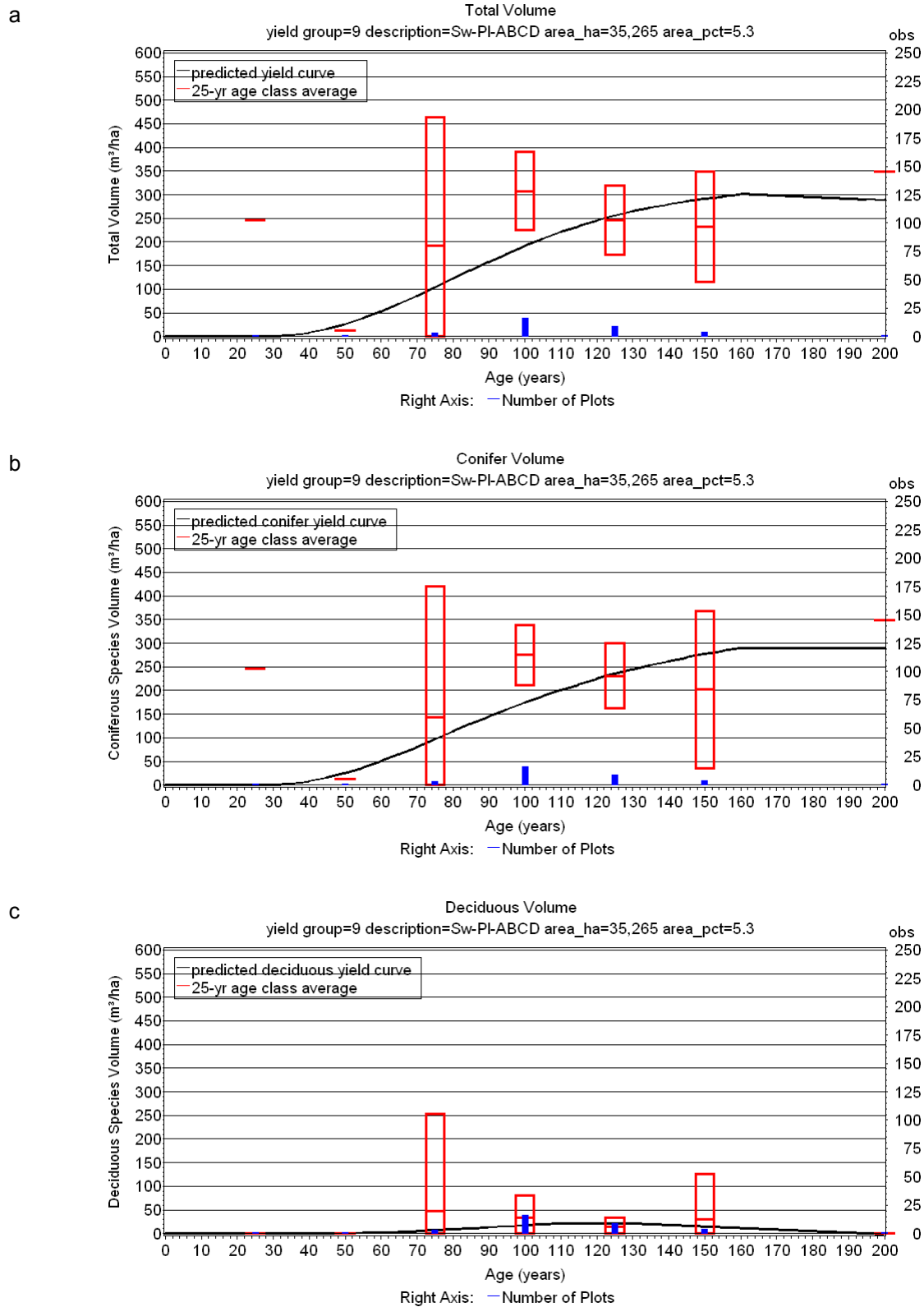


Figure 58. Total (a), conifer (b), and deciduous (c) area-weighted yield tables for yield group 9 (PI-Sw-ABCD).

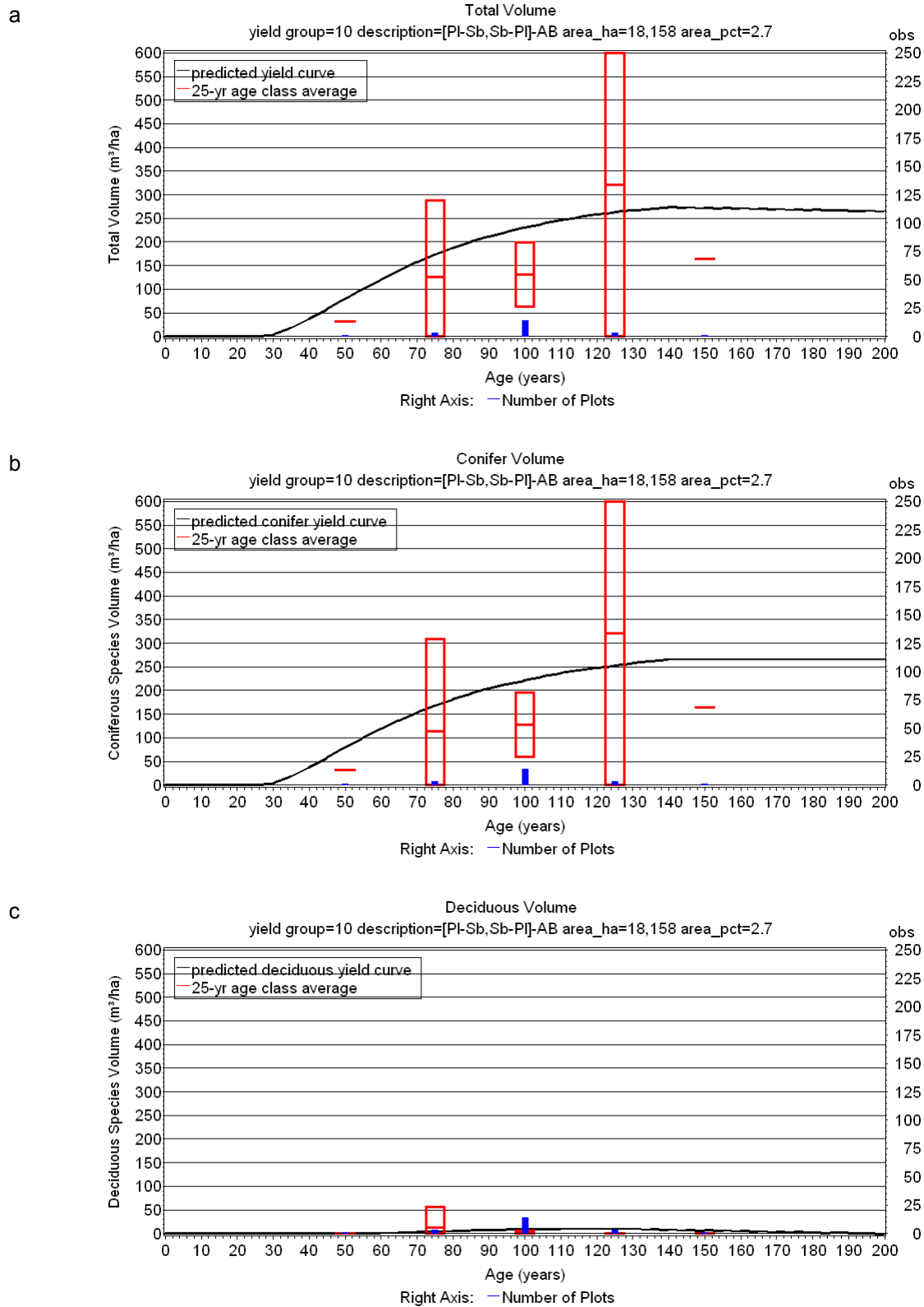


Figure 59. Total (a), conifer (b), and deciduous (c) area-weighted yield tables for yield group 10 ([PI-Sb, Sb-PI]-AB).

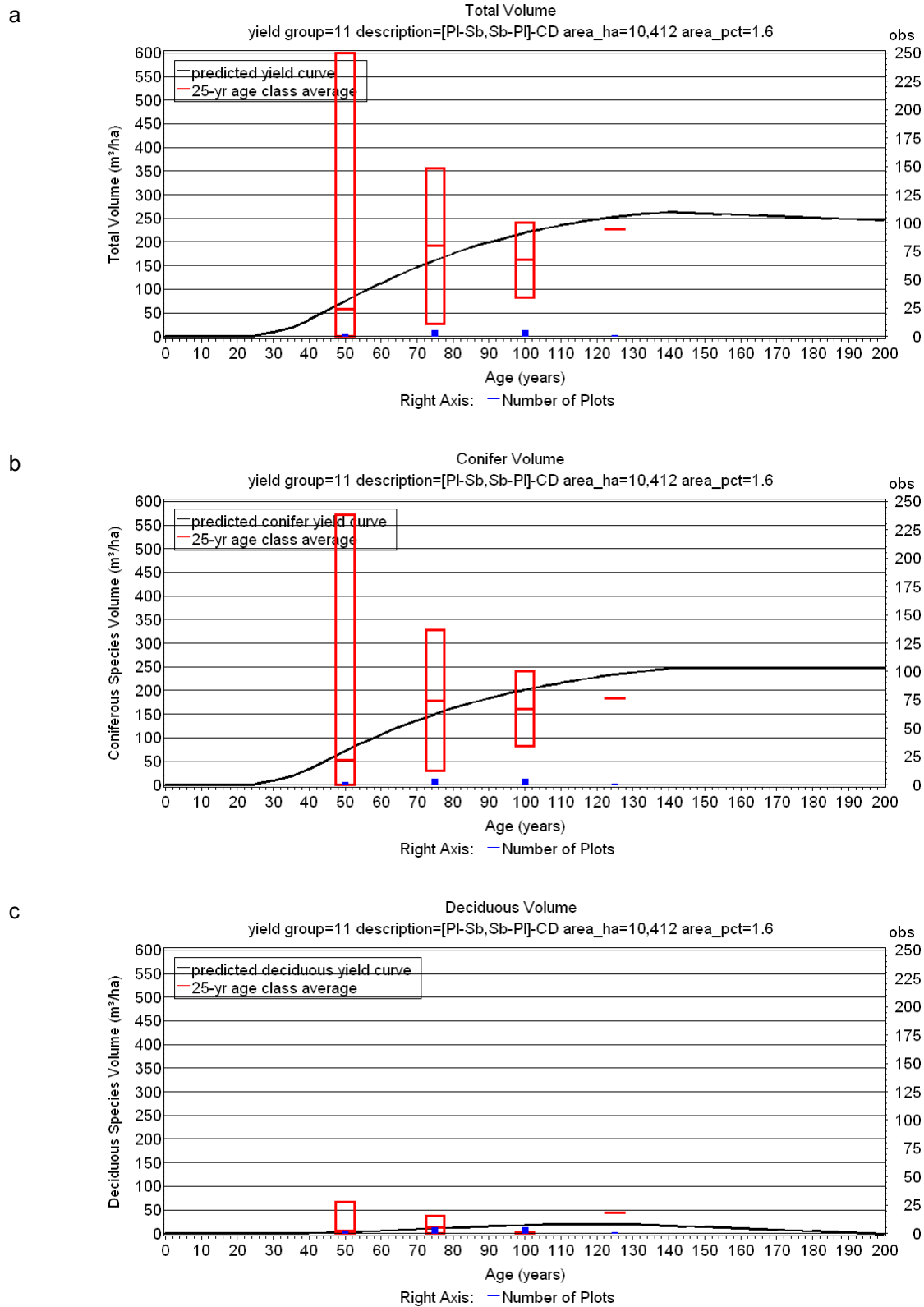


Figure 60. Total (a), conifer (b), and deciduous (c) area-weighted yield tables for yield group 11 ([PI-Sb, Sb-PI]-CD).

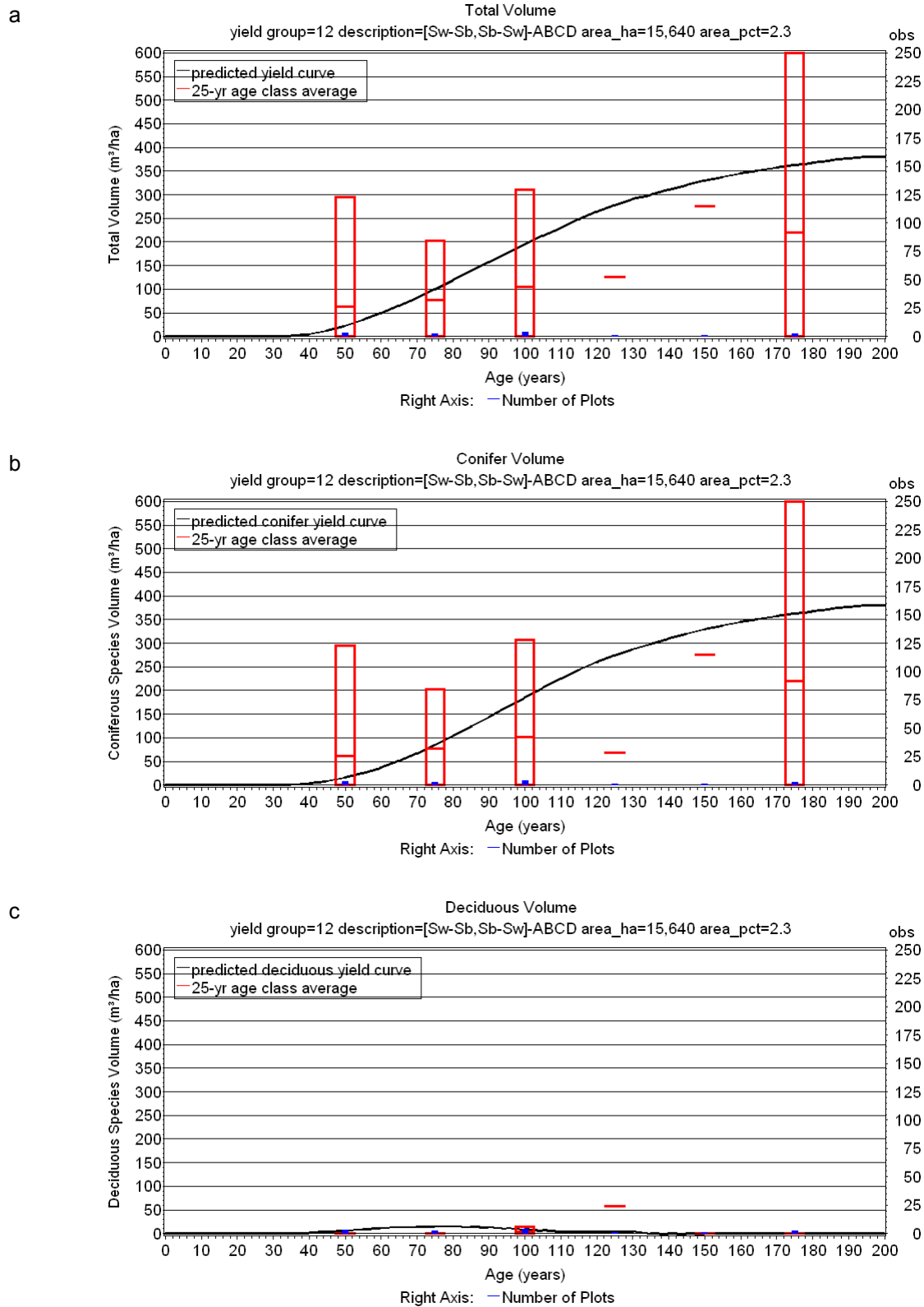


Figure 61. Total (a), conifer (b), and deciduous (c) area-weighted yield tables for yield group 12 ([Sw-Sb, Sb-Sw]-ABCD).

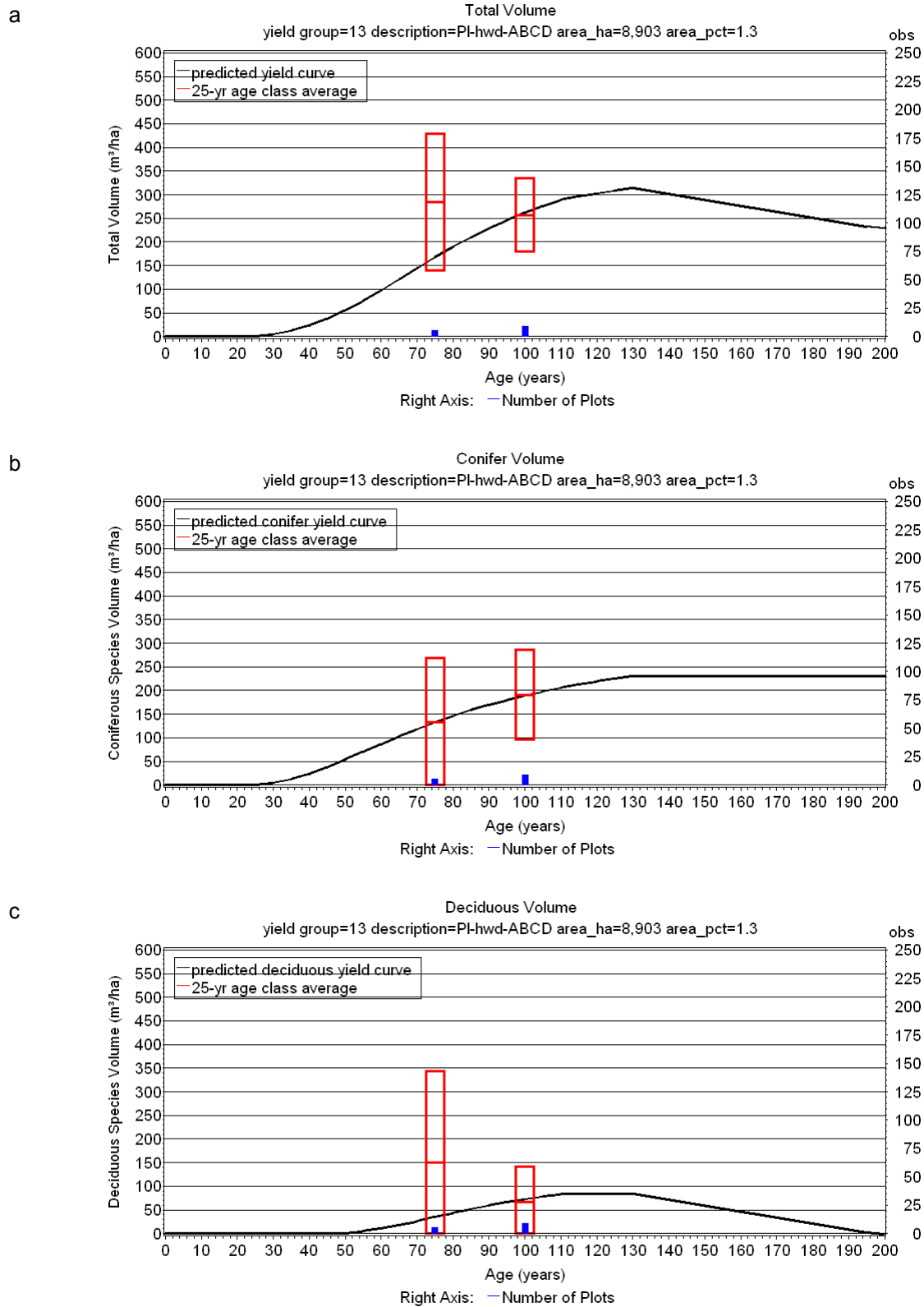


Figure 62. Total (a), conifer (b), and deciduous (c) area-weighted yield tables for yield group 13 (PI-hwd-ABCD).

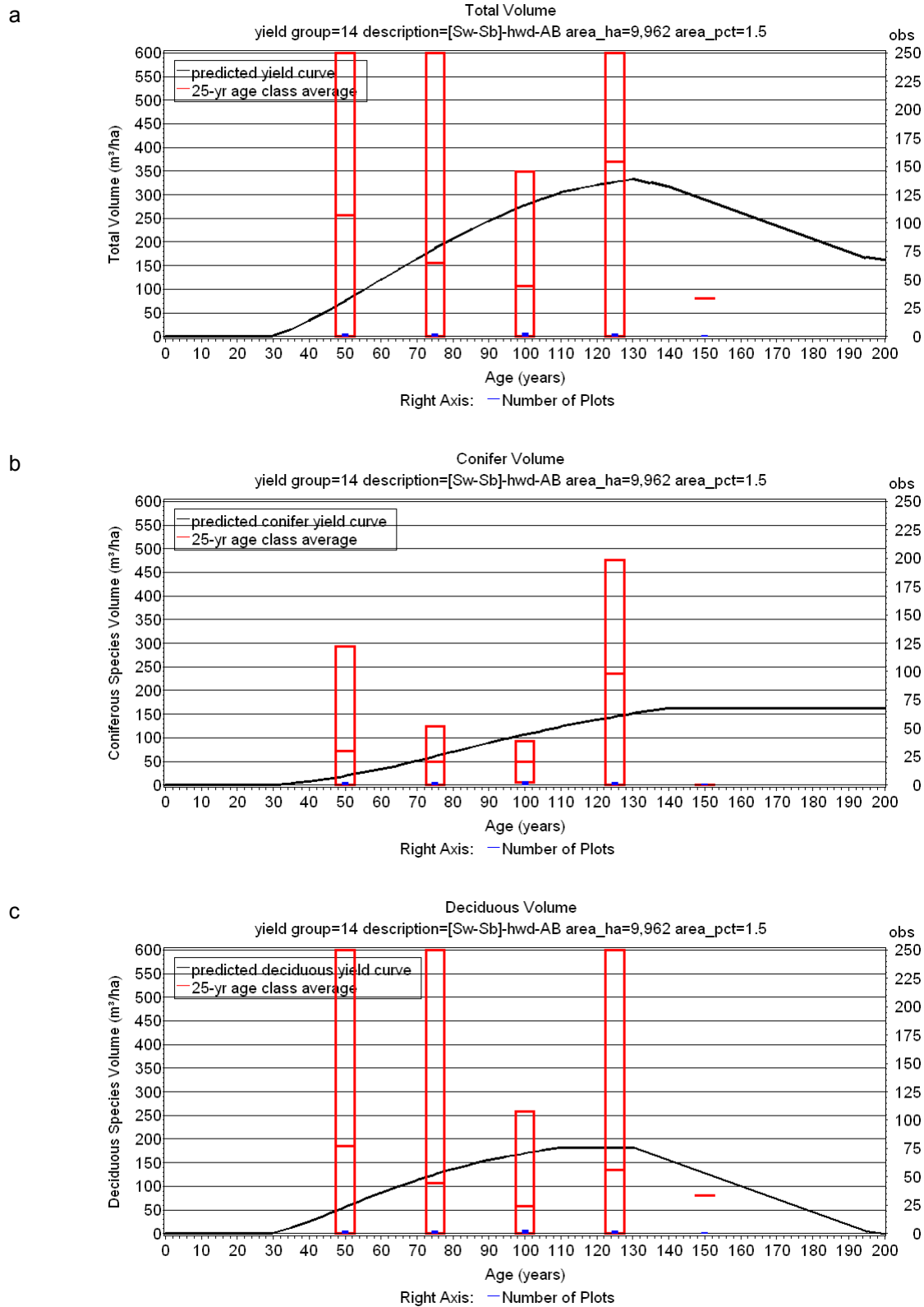


Figure 63. Total (a), conifer (b), and deciduous (c) area-weighted yield tables for yield group 14 ([Sw-Sb]-hwd-AB).

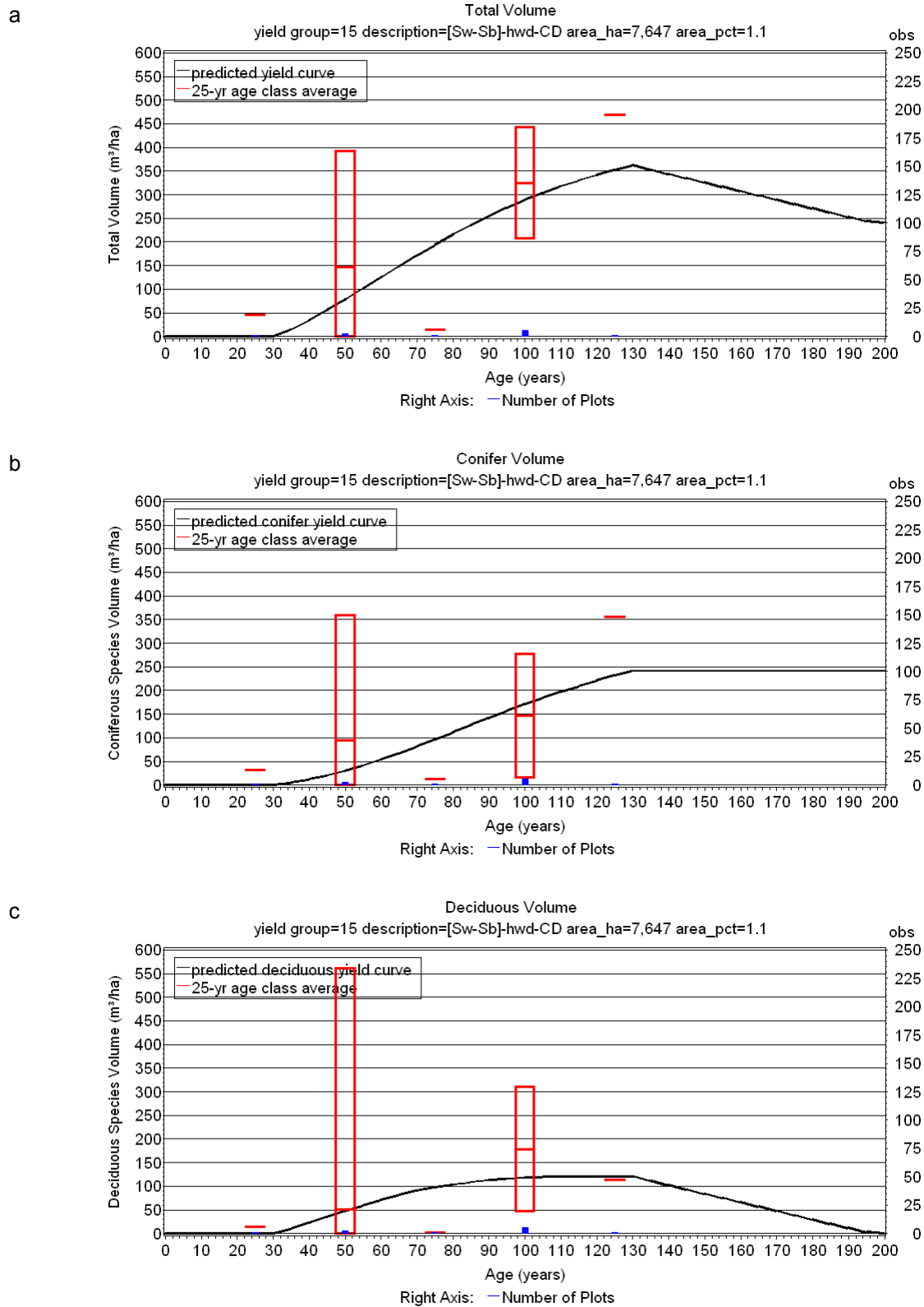


Figure 64. Total (a), conifer (b), and deciduous (c) area-weighted yield tables for yield group 15 ([Sw-Sb]-hwd-CD).



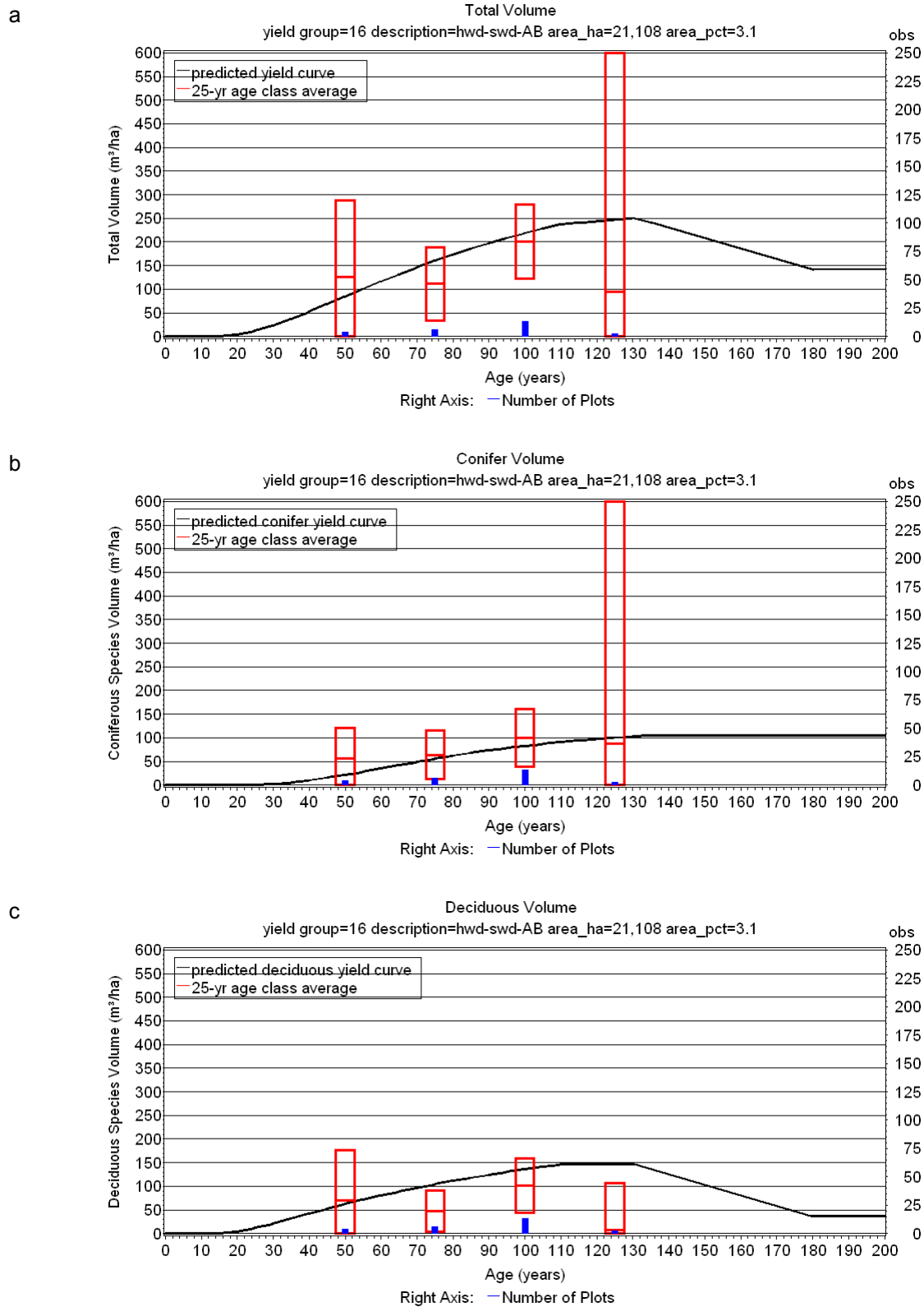


Figure 65. Total (a), conifer (b), and deciduous (c) area-weighted yield tables for yield group 16 (hwd-swd-AB).

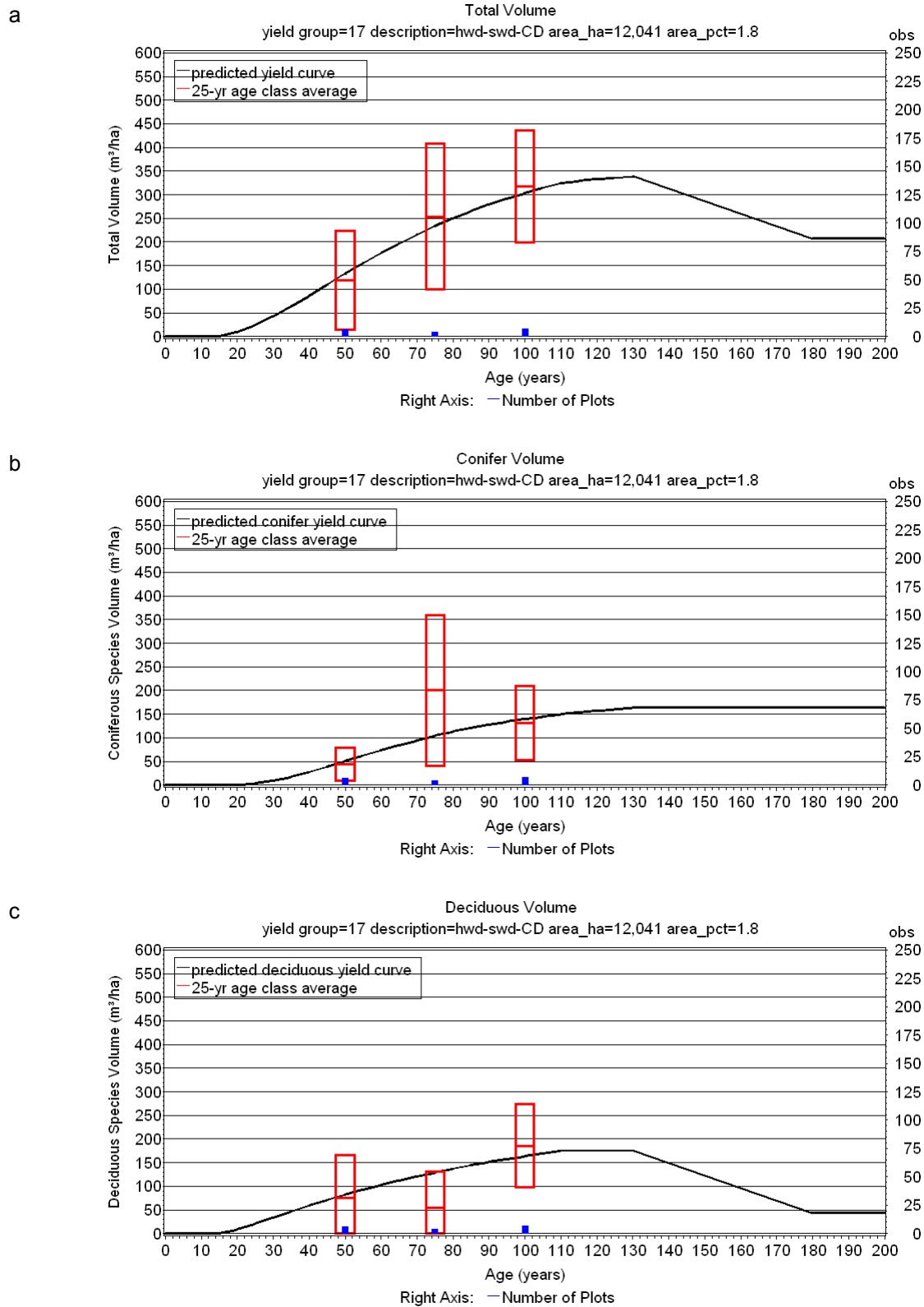


Figure 66. Total (a), conifer (b), and deciduous (c) area-weighted yield tables for yield group 17 (hwd-swd-CD).

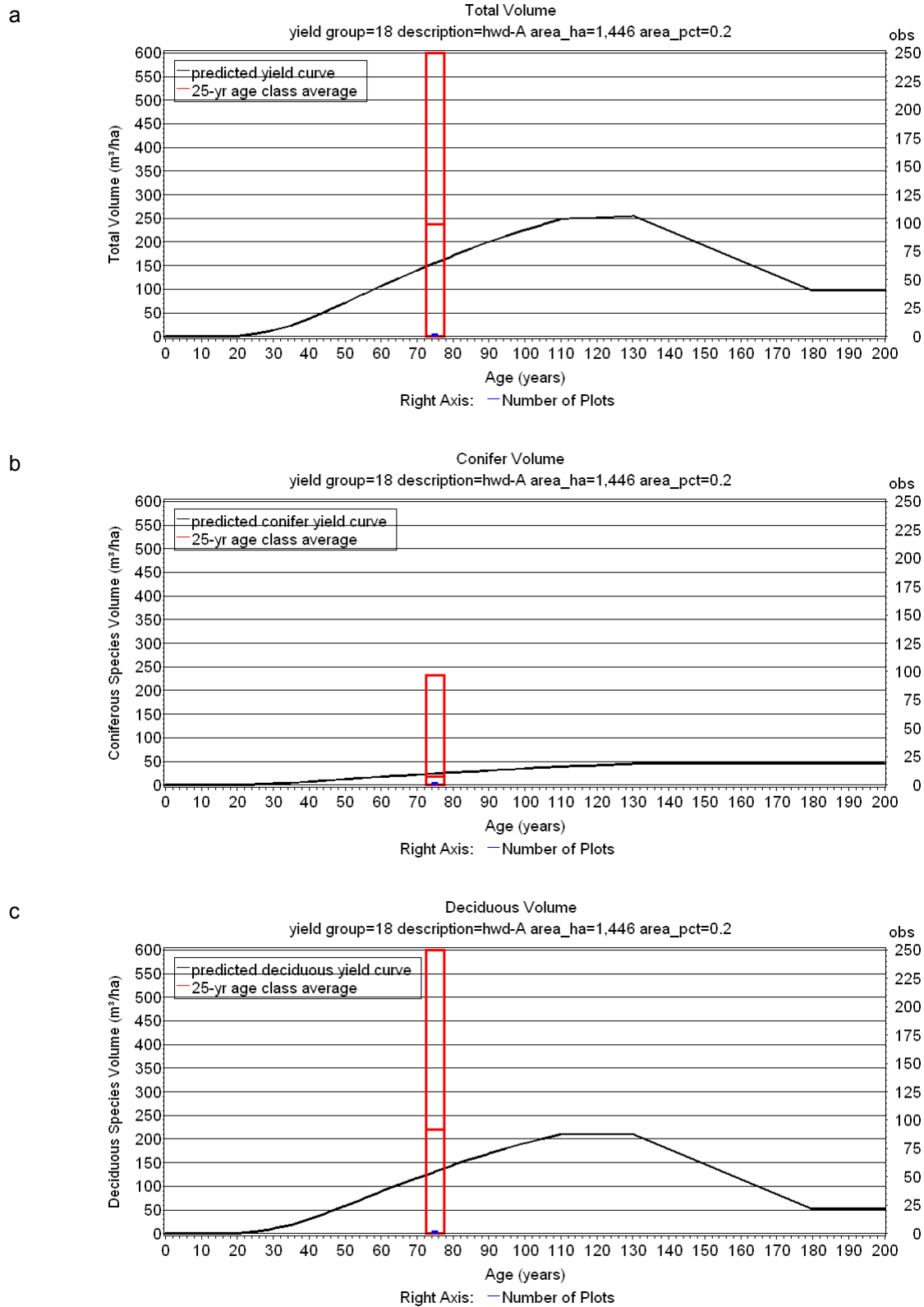


Figure 67. Total (a), conifer (b), and deciduous (c) area-weighted yield tables for yield group 18 (hwd-A).

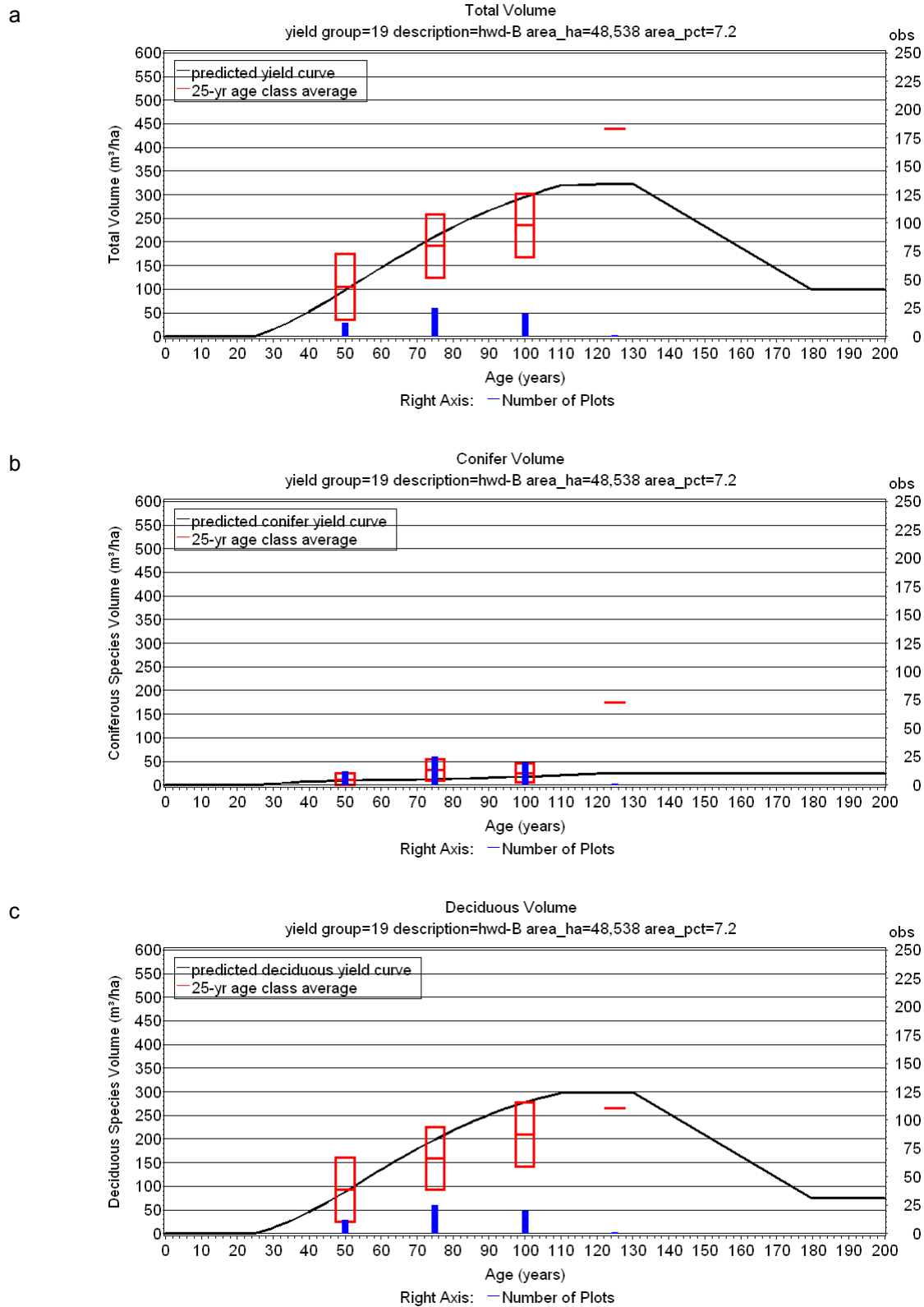


Figure 68. Total (a), conifer (b), and deciduous (c) area-weighted yield tables for yield group 19 (hwd-B).

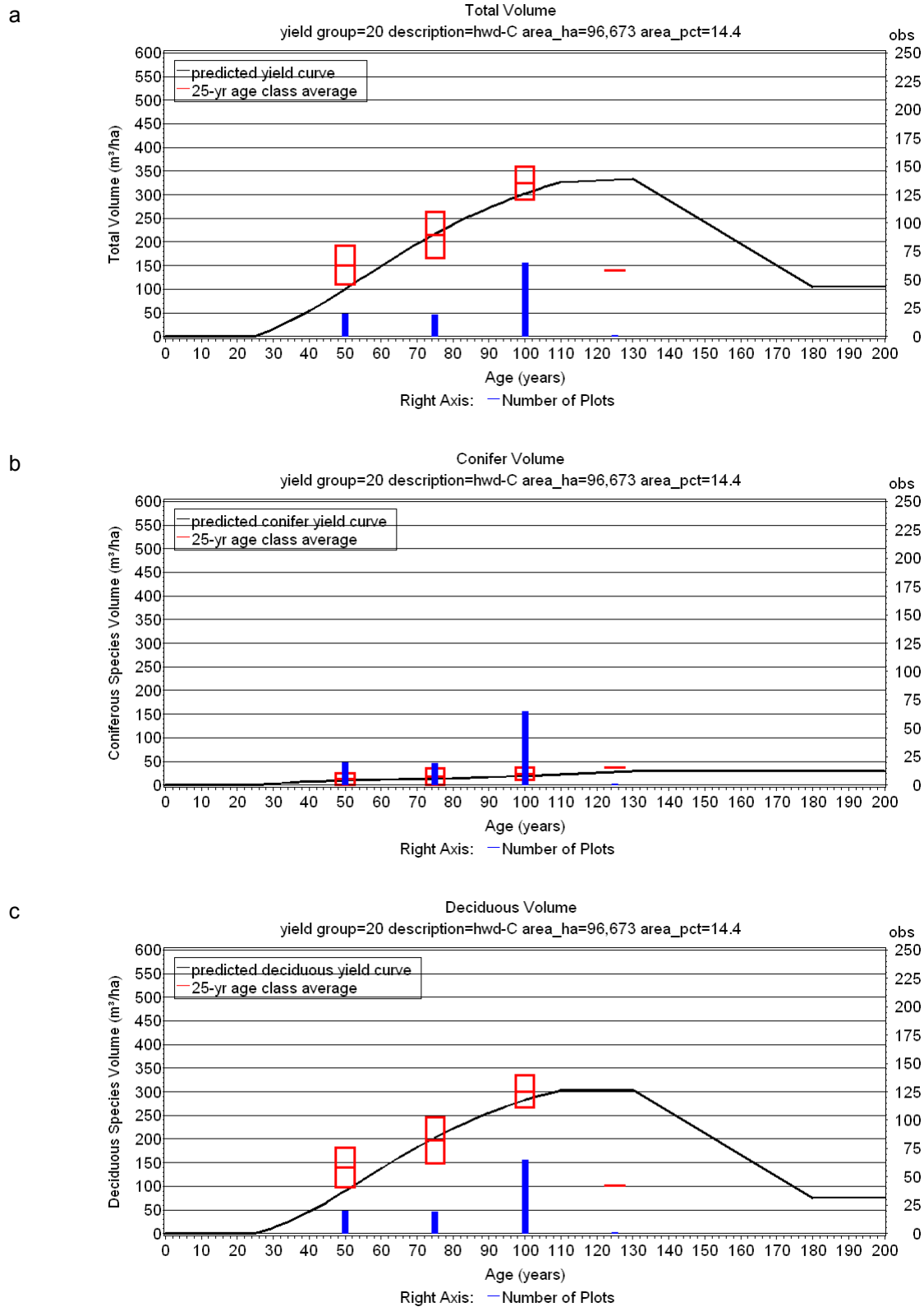


Figure 69. Total (a), conifer (b), and deciduous (c) area-weighted yield tables for yield group 20 (hwd-C).

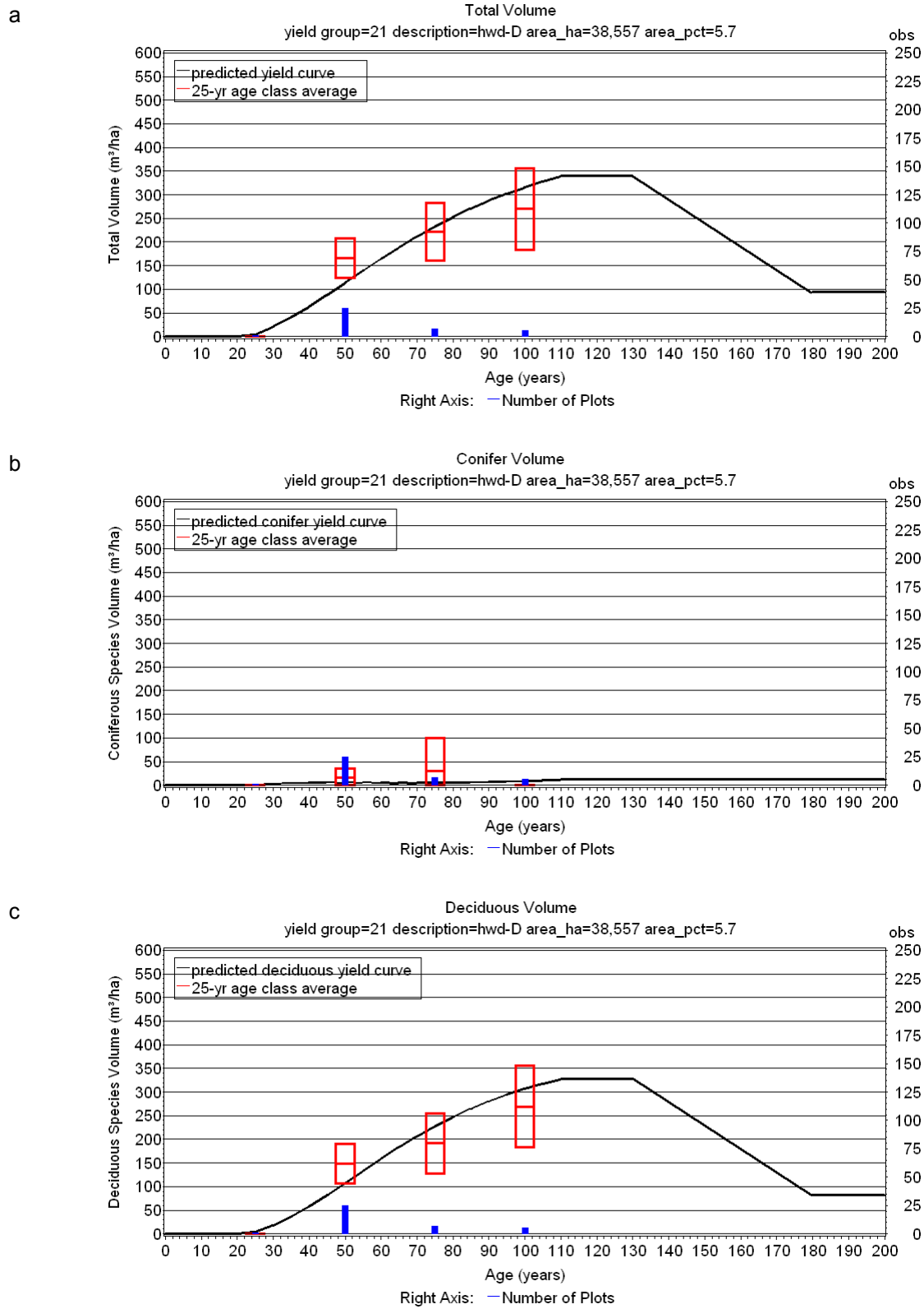


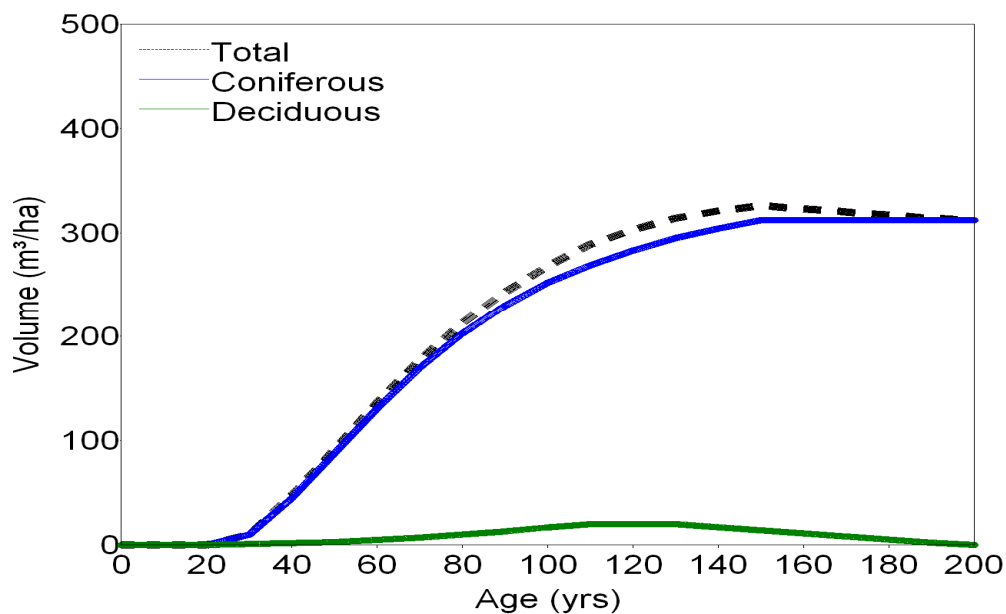
Figure 70. Total (a), conifer (b), and deciduous (c) area-weighted yield tables for yield group 21 (hwd-D).

## APPENDIX VII – NATURAL YIELD CURVES (NAT)

Gross merchantable volume excluding cull

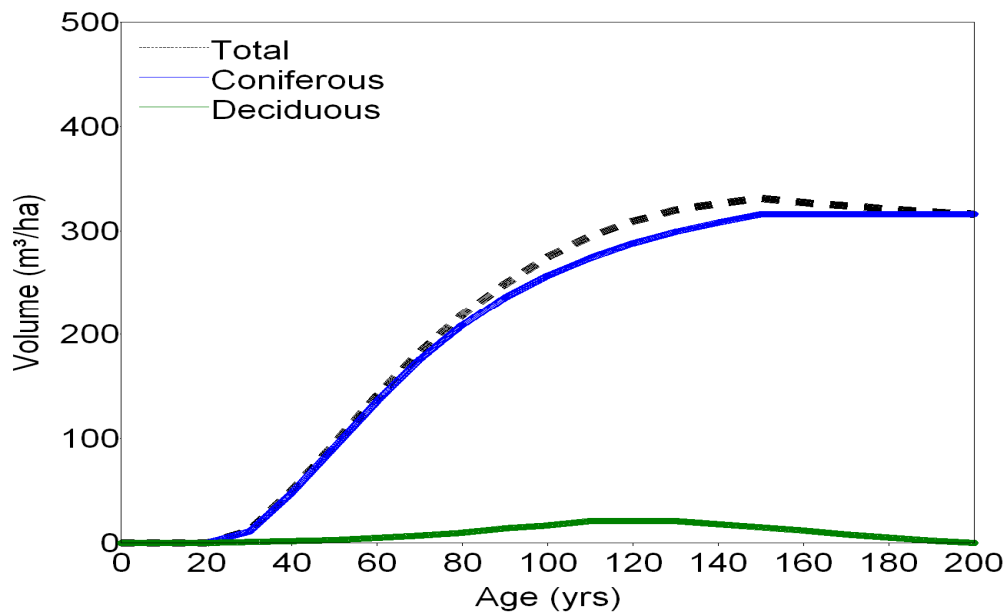
Yield group: 1 Description: PI-AB NSR: CMW/DMW Area (ha): 2679 (%): 0.31

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	10	0.3	10	0.3	1	0.0
40	47	1.2	45	1.1	2	0.1
50	91	1.8	88	1.8	3	0.1
60	136	2.3	131	2.2	5	0.1
70	177	2.5	170	2.4	7	0.1
80	213	2.7	203	2.5	10	0.1
90	243	2.7	230	2.6	13	0.1
100	268	2.7	252	2.5	17	0.2
110	289	2.6	269	2.4	20	0.2
120	303	2.5	283	2.4	20	0.2
130	314	2.4	295	2.3	20	0.2
140	321	2.3	304	2.2	17	0.1
150	326	2.2	312	2.1	14	0.1
160	323	2.0	312	1.9	11	0.1
170	320	1.9	312	1.8	8	0.0
180	317	1.8	312	1.7	5	0.0
190	314	1.7	312	1.6	2	0.0
200	312	1.6	312	1.6	0	0.0



Yield group: 1 Description: PI-AB NSR: LF Area (ha): 12339 (%): 1.43

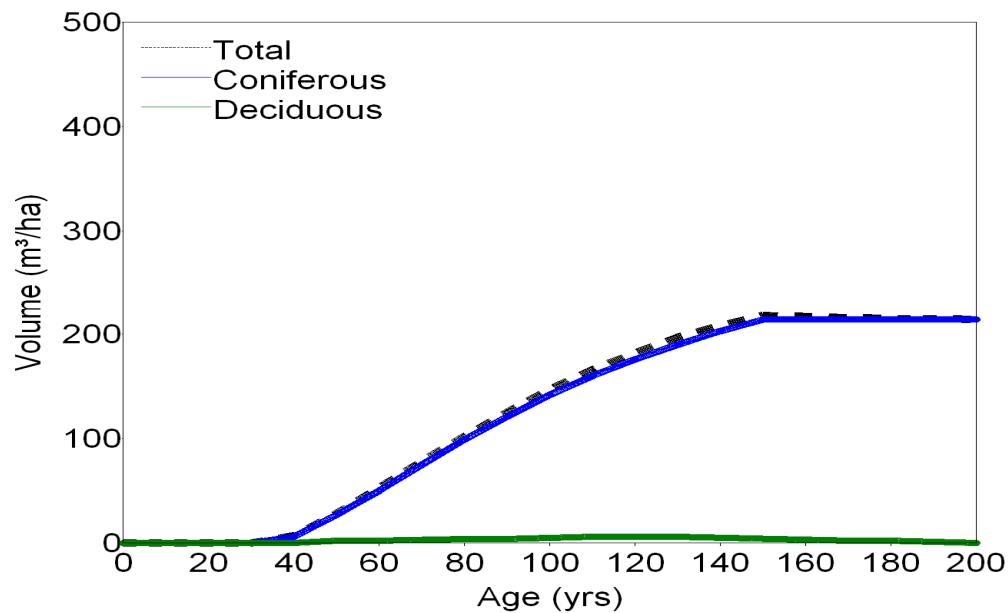
Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	12	0.4	11	0.4	1	0.0
40	50	1.3	48	1.2	2	0.1
50	95	1.9	92	1.8	3	0.1
60	141	2.4	136	2.3	5	0.1
70	183	2.6	176	2.5	7	0.1
80	219	2.7	209	2.6	10	0.1
90	249	2.8	236	2.6	14	0.2
100	275	2.7	257	2.6	17	0.2
110	295	2.7	274	2.5	21	0.2
120	309	2.6	288	2.4	21	0.2
130	320	2.5	299	2.3	21	0.2
140	326	2.3	308	2.2	18	0.1
150	331	2.2	316	2.1	15	0.1
160	327	2.0	316	2.0	12	0.1
170	324	1.9	316	1.9	8	0.0
180	321	1.8	316	1.8	5	0.0
190	318	1.7	316	1.7	2	0.0
200	316	1.6	316	1.6	0	0.0





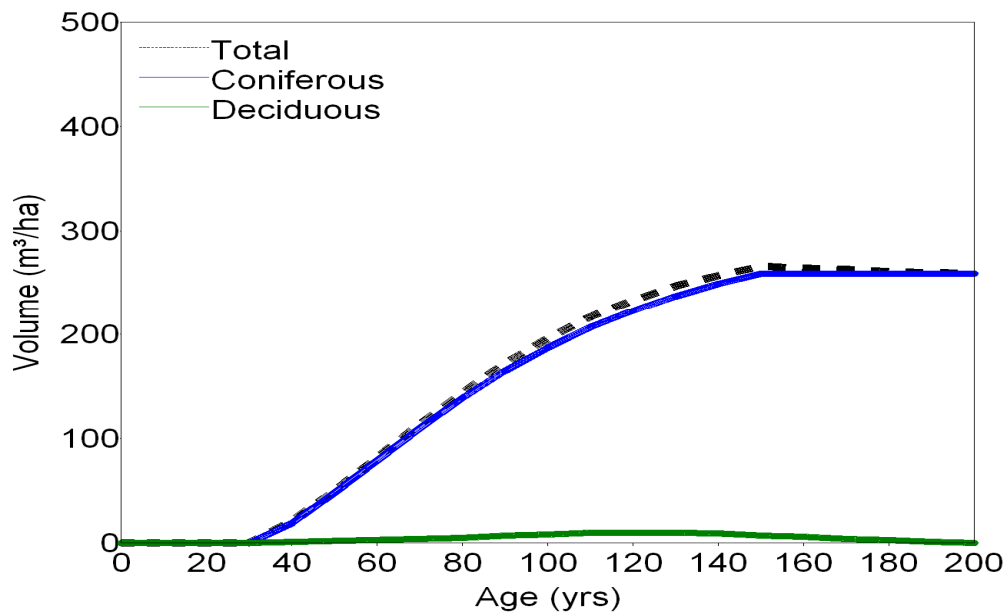
Yield group: 1 Description: PI-AB NSR: M/SA/A Area (ha): 10881 (%): 1.26

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	0	0.0	0	0.0	0	0.0
40	7	0.2	6	0.2	0	0.0
50	28	0.6	27	0.5	2	0.0
60	53	0.9	50	0.8	2	0.0
70	78	1.1	75	1.1	3	0.0
80	102	1.3	99	1.2	4	0.0
90	125	1.4	121	1.3	4	0.0
100	147	1.5	142	1.4	5	0.1
110	166	1.5	160	1.5	6	0.1
120	182	1.5	176	1.5	6	0.1
130	197	1.5	190	1.5	6	0.0
140	208	1.5	203	1.4	5	0.0
150	218	1.5	214	1.4	4	0.0
160	217	1.4	214	1.3	3	0.0
170	216	1.3	214	1.3	2	0.0
180	215	1.2	214	1.2	2	0.0
190	215	1.1	214	1.1	1	0.0
200	214	1.1	214	1.1	0	0.0



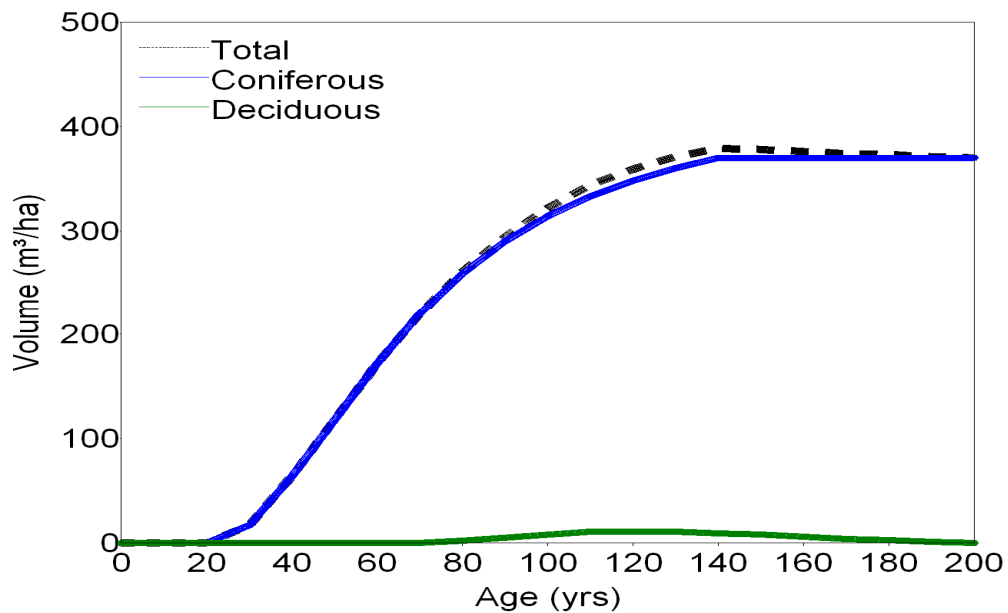
Yield group: 1 Description: PI-AB NSR: UF Area (ha): 17371 (%): 2.01

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	0	0.0	0	0.0	0	0.0
40	21	0.5	19	0.5	1	0.0
50	50	1.0	48	1.0	2	0.0
60	82	1.4	79	1.3	3	0.1
70	114	1.6	110	1.6	4	0.1
80	144	1.8	139	1.7	5	0.1
90	172	1.9	165	1.8	7	0.1
100	196	2.0	187	1.9	8	0.1
110	217	2.0	207	1.9	10	0.1
120	233	1.9	223	1.9	10	0.1
130	247	1.9	237	1.8	10	0.1
140	257	1.8	249	1.8	9	0.1
150	266	1.8	259	1.7	7	0.0
160	264	1.7	259	1.6	6	0.0
170	263	1.5	259	1.5	4	0.0
180	261	1.5	259	1.4	3	0.0
190	260	1.4	259	1.4	1	0.0
200	259	1.3	259	1.3	0	0.0



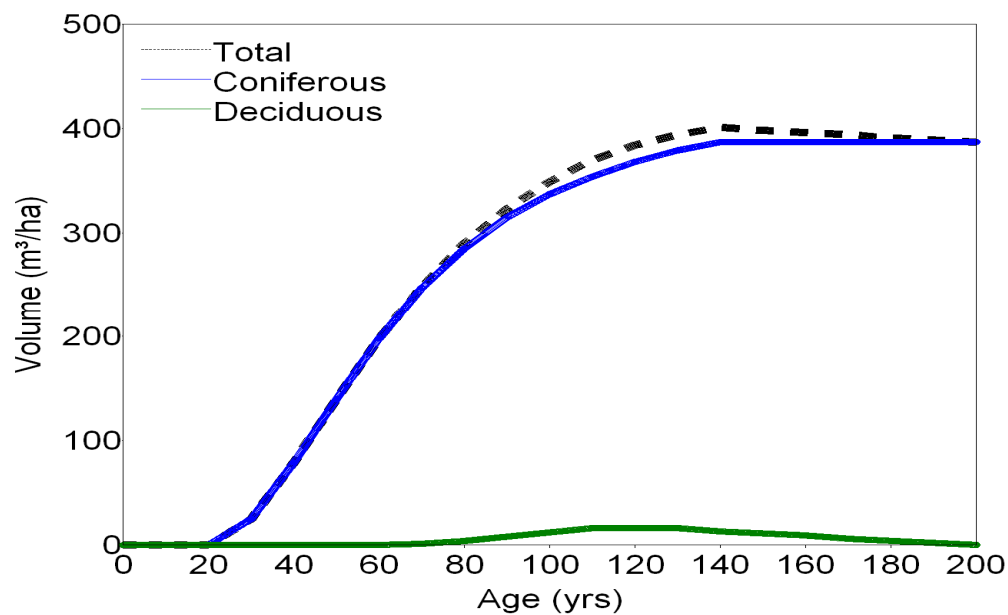
Yield group: 2 Description: PI-C NSR: CMW/DMW Area (ha): 1695 (%): 0.2

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	17	0.6	17	0.6	0	0.0
40	64	1.6	64	1.6	0	0.0
50	118	2.4	118	2.4	0	0.0
60	172	2.9	172	2.9	0	0.0
70	220	3.1	220	3.1	0	0.0
80	261	3.3	259	3.2	2	0.0
90	294	3.3	290	3.2	5	0.1
100	322	3.2	314	3.1	8	0.1
110	344	3.1	333	3.0	11	0.1
120	359	3.0	348	2.9	11	0.1
130	371	2.9	360	2.8	11	0.1
140	379	2.7	370	2.6	9	0.1
150	378	2.5	370	2.5	8	0.1
160	376	2.4	370	2.3	6	0.0
170	374	2.2	370	2.2	4	0.0
180	373	2.1	370	2.1	3	0.0
190	371	2.0	370	1.9	1	0.0
200	370	1.8	370	1.8	0	0.0



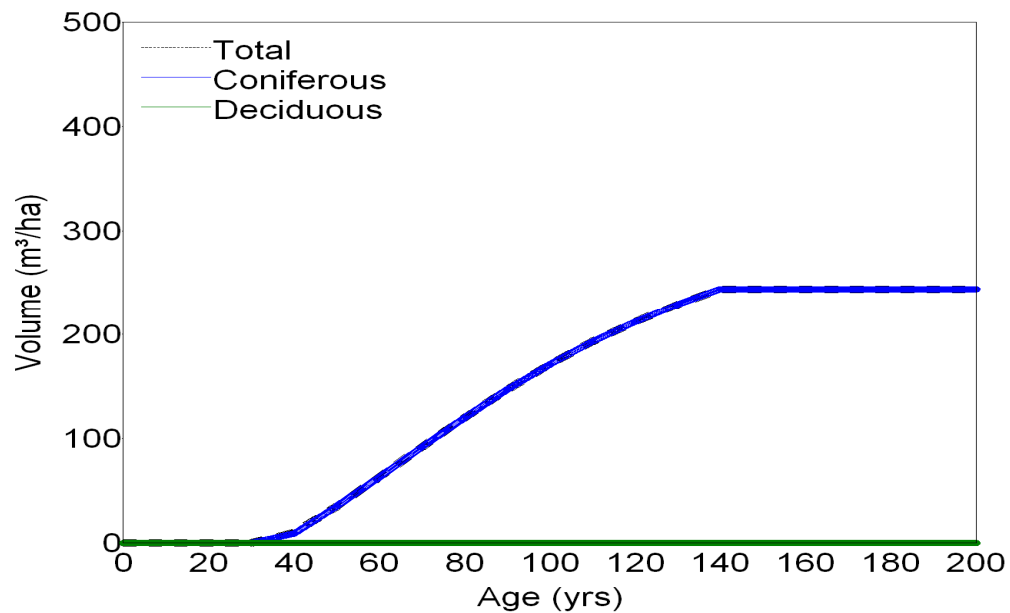
Yield group: 2 Description: PI-C NSR: LF Area (ha): 14445 (%): 1.67

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	25	0.8	25	0.8	0	0.0
40	79	2.0	79	2.0	0	0.0
50	140	2.8	140	2.8	0	0.0
60	198	3.3	198	3.3	0	0.0
70	248	3.5	247	3.5	1	0.0
80	290	3.6	285	3.6	4	0.1
90	323	3.6	315	3.5	8	0.1
100	349	3.5	337	3.4	12	0.1
110	370	3.4	354	3.2	16	0.1
120	384	3.2	368	3.1	16	0.1
130	394	3.0	379	2.9	16	0.1
140	401	2.9	387	2.8	13	0.1
150	398	2.7	387	2.6	11	0.1
160	396	2.5	387	2.4	9	0.1
170	394	2.3	387	2.3	6	0.0
180	391	2.2	387	2.2	4	0.0
190	389	2.0	387	2.0	2	0.0
200	387	1.9	387	1.9	0	0.0



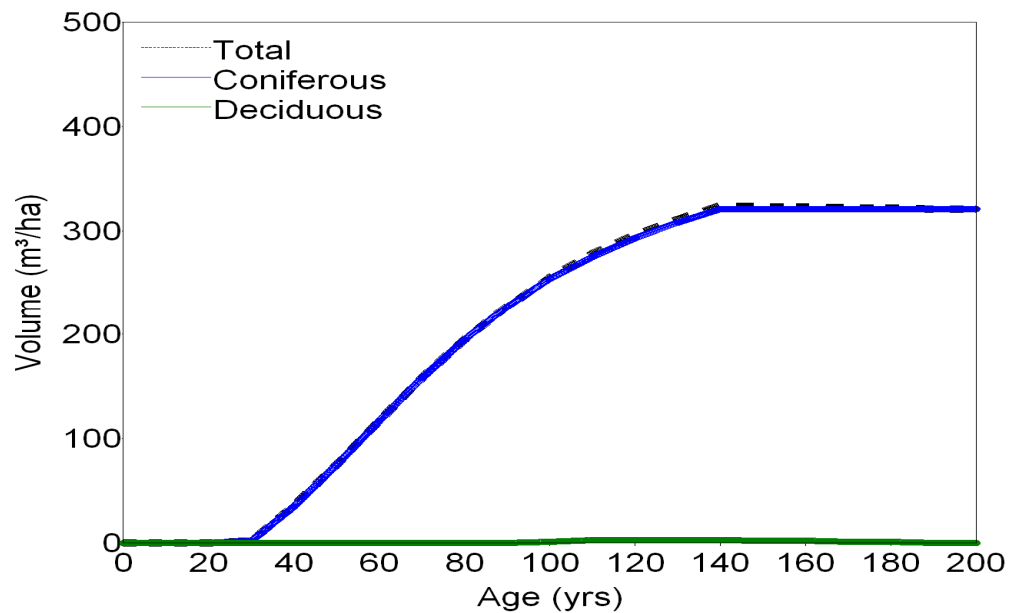
Yield group: 2 Description: PI-C NSR: M/SA/A Area (ha): 13033 (%): 1.51

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0
10	0	0.0	0	0.0	0	0
20	0	0.0	0	0.0	0	0
30	0	0.0	0	0.0	0	0
40	10	0.2	9	0.2	0	0
50	35	0.7	35	0.7	0	0
60	63	1.1	63	1.1	0	0
70	92	1.3	92	1.3	0	0
80	120	1.5	120	1.5	0	0
90	147	1.6	147	1.6	0	0
100	171	1.7	171	1.7	0	0
110	193	1.8	193	1.8	0	0
120	212	1.8	212	1.8	0	0
130	229	1.8	229	1.8	0	0
140	244	1.7	244	1.7	0	0
150	244	1.6	244	1.6	0	0
160	244	1.5	244	1.5	0	0
170	244	1.4	244	1.4	0	0
180	244	1.4	244	1.4	0	0
190	244	1.3	244	1.3	0	0
200	244	1.2	244	1.2	0	0



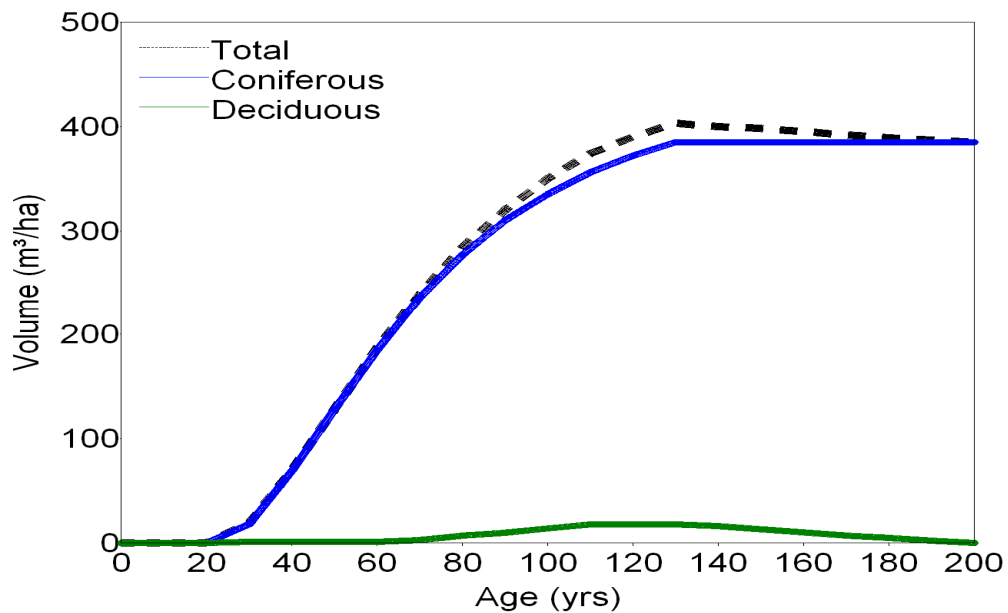
Yield group: 2 Description: PI-C NSR: UF Area (ha): 22858 (%): 2.65

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0
10	0	0.0	0	0.0	0	0
20	0	0.0	0	0.0	0	0
30	2	0.1	2	0.1	0	0
40	36	0.9	35	0.9	0	0
50	75	1.5	75	1.5	0	0
60	117	2.0	117	2.0	0	0
70	158	2.3	158	2.3	0	0
80	195	2.4	195	2.4	0	0
90	227	2.5	227	2.5	0	0
100	255	2.5	254	2.5	1	0
110	278	2.5	275	2.5	3	0
120	296	2.5	293	2.4	3	0
130	311	2.4	308	2.4	3	0
140	324	2.3	321	2.3	3	0
150	323	2.2	321	2.1	2	0
160	323	2.0	321	2.0	2	0
170	322	1.9	321	1.9	1	0
180	322	1.8	321	1.8	1	0
190	321	1.7	321	1.7	0	0
200	321	1.6	321	1.6	0	0



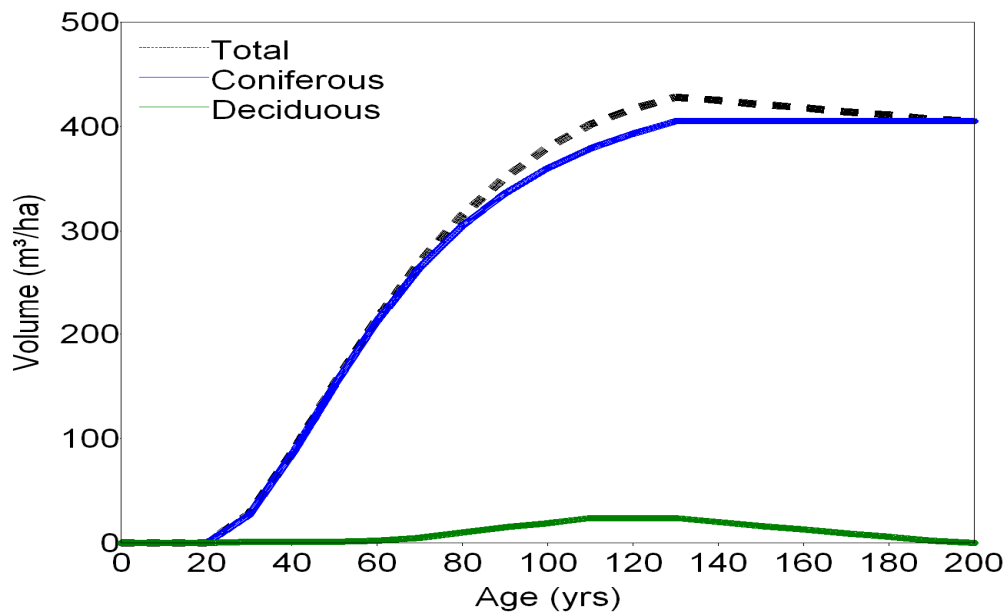
Yield group: 3 Description: PI-D NSR: CMW/DMW Area (ha): 188 (%): 0.02

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	19	0.6	18	0.6	1	0.0
40	70	1.7	69	1.7	1	0.0
50	128	2.6	128	2.6	1	0.0
60	187	3.1	185	3.1	1	0.0
70	239	3.4	236	3.4	3	0.0
80	284	3.5	277	3.5	7	0.1
90	320	3.6	310	3.4	10	0.1
100	350	3.5	335	3.4	14	0.1
110	374	3.4	356	3.2	18	0.2
120	390	3.3	372	3.1	18	0.2
130	403	3.1	385	3.0	18	0.1
140	400	2.9	385	2.7	16	0.1
150	398	2.7	385	2.6	13	0.1
160	395	2.5	385	2.4	10	0.1
170	392	2.3	385	2.3	7	0.0
180	389	2.2	385	2.1	5	0.0
190	387	2.0	385	2.0	2	0.0
200	385	1.9	385	1.9	0	0.0



Yield group: 3 Description: PI-D NSR: LF Area (ha): 3028 (%): 0.35

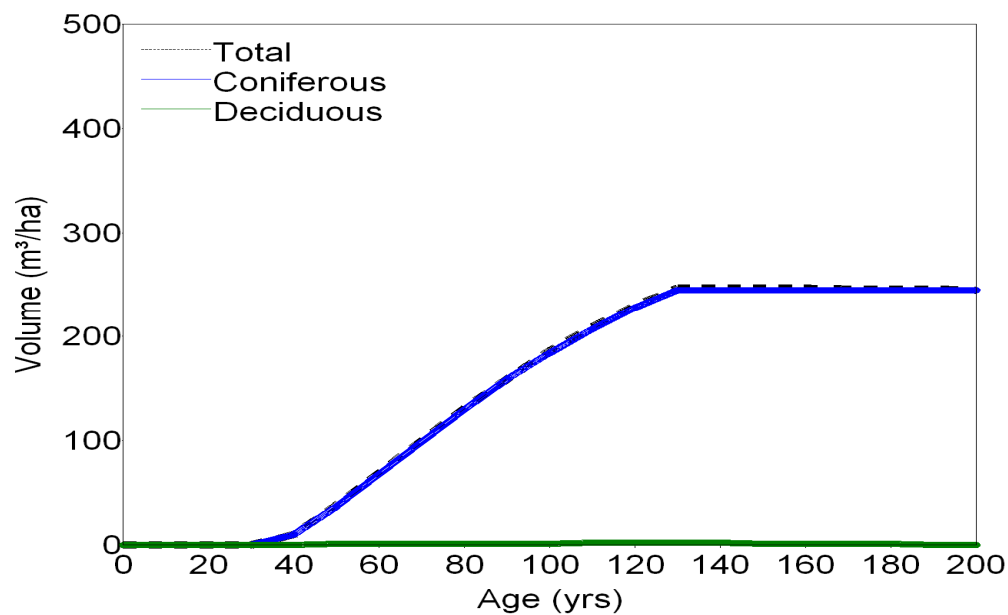
Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	28	0.9	27	0.9	1	0.0
40	86	2.1	85	2.1	1	0.0
50	152	3.0	151	3.0	1	0.0
60	215	3.6	213	3.5	2	0.0
70	270	3.9	265	3.8	5	0.1
80	315	3.9	305	3.8	10	0.1
90	351	3.9	336	3.7	15	0.2
100	380	3.8	360	3.6	19	0.2
110	402	3.7	379	3.4	24	0.2
120	417	3.5	393	3.3	24	0.2
130	428	3.3	405	3.1	24	0.2
140	425	3.0	405	2.9	20	0.1
150	421	2.8	405	2.7	16	0.1
160	418	2.6	405	2.5	13	0.1
170	414	2.4	405	2.4	9	0.1
180	411	2.3	405	2.2	6	0.0
190	407	2.1	405	2.1	2	0.0
200	405	2.0	405	2.0	0	0.0





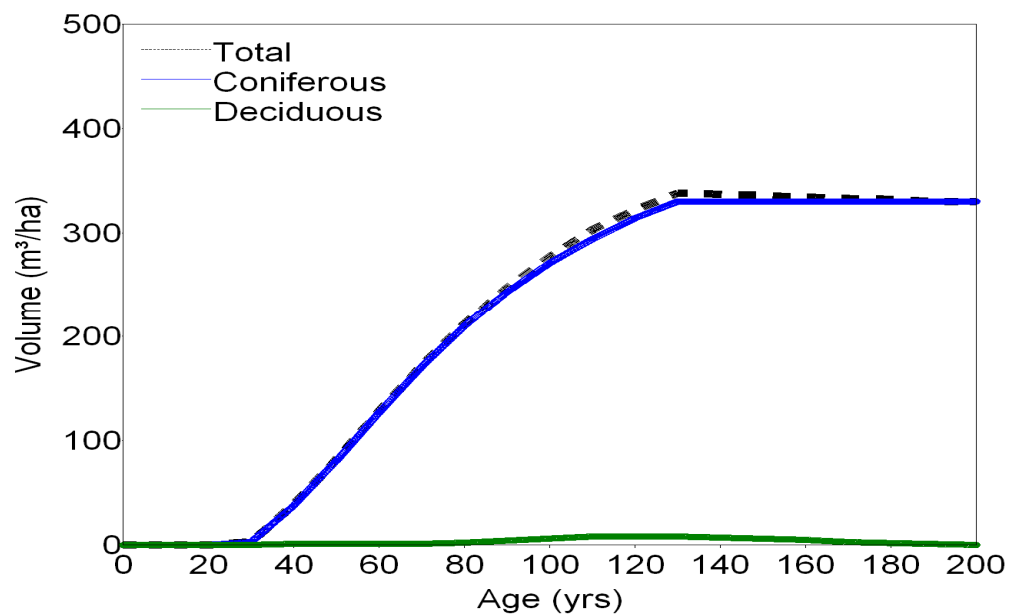
Yield group: 3 Description: PI-D NSR: M/SA/A Area (ha): 13831 (%): 1.6

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0
10	0	0.0	0	0.0	0	0
20	0	0.0	0	0.0	0	0
30	0	0.0	0	0.0	0	0
40	10	0.3	10	0.2	0	0
50	38	0.8	37	0.7	1	0
60	69	1.1	68	1.1	1	0
70	100	1.4	99	1.4	1	0
80	131	1.6	130	1.6	1	0
90	159	1.8	159	1.8	1	0
100	186	1.9	184	1.8	1	0
110	209	1.9	207	1.9	2	0
120	230	1.9	228	1.9	2	0
130	247	1.9	245	1.9	2	0
140	247	1.8	245	1.8	2	0
150	247	1.6	245	1.6	1	0
160	247	1.5	245	1.5	1	0
170	246	1.4	245	1.4	1	0
180	246	1.4	245	1.4	1	0
190	246	1.3	245	1.3	0	0
200	245	1.2	245	1.2	0	0



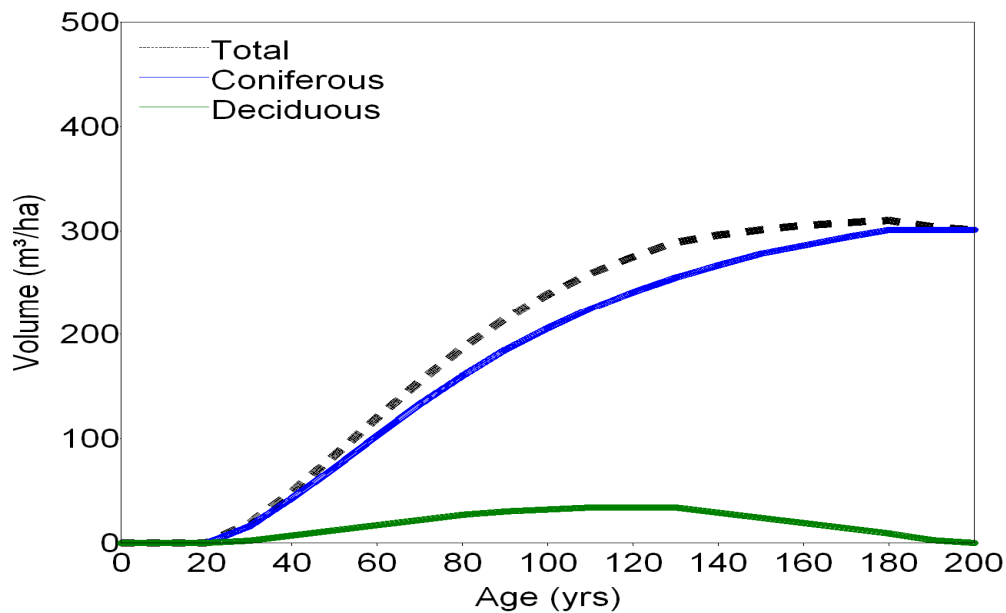
Yield group: 3 Description: PI-D NSR: UF Area (ha): 15363 (%): 1.78

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	3	0.1	3	0.1	0	0.0
40	39	1.0	38	0.9	1	0.0
50	82	1.6	81	1.6	1	0.0
60	128	2.1	127	2.1	1	0.0
70	172	2.5	171	2.4	1	0.0
80	212	2.6	210	2.6	2	0.0
90	247	2.7	243	2.7	4	0.0
100	277	2.8	271	2.7	6	0.1
110	303	2.8	294	2.7	8	0.1
120	322	2.7	314	2.6	8	0.1
130	338	2.6	330	2.5	8	0.1
140	337	2.4	330	2.4	7	0.1
150	336	2.2	330	2.2	6	0.0
160	334	2.1	330	2.1	5	0.0
170	333	2.0	330	1.9	3	0.0
180	332	1.8	330	1.8	2	0.0
190	330	1.7	330	1.7	1	0.0
200	330	1.6	330	1.6	0	0.0



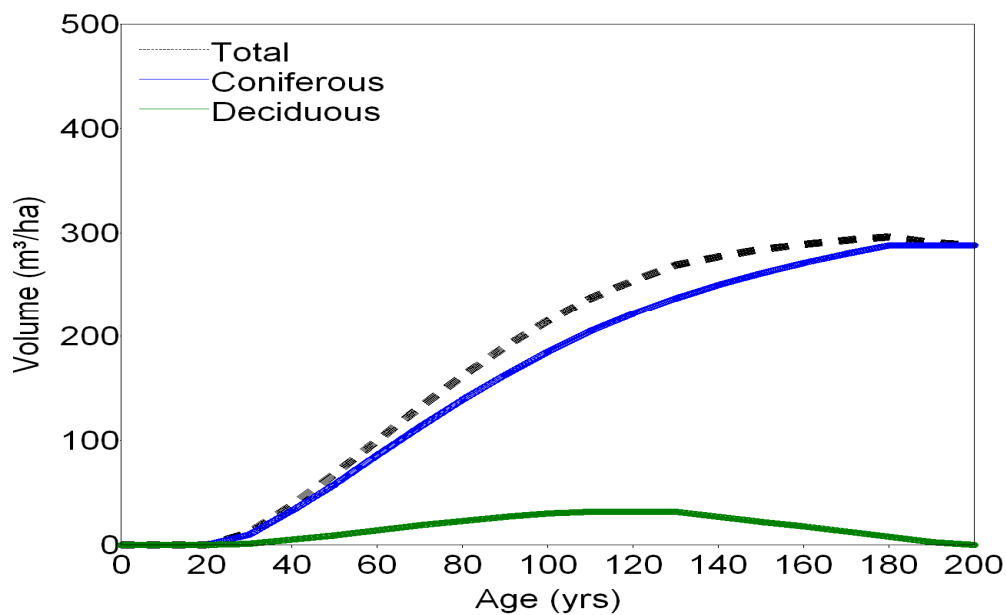
Yield group: 4 Description: [Sw,Fa]-AB NSR: CMW/DMW Area (ha): 5378 (%): 0.62

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	19	0.6	16	0.5	2	0.1
40	49	1.2	43	1.1	7	0.2
50	84	1.7	72	1.4	12	0.2
60	120	2.0	103	1.7	17	0.3
70	155	2.2	133	1.9	22	0.3
80	187	2.3	160	2.0	27	0.3
90	215	2.4	185	2.1	30	0.3
100	239	2.4	206	2.1	32	0.3
110	259	2.4	225	2.0	34	0.3
120	275	2.3	241	2.0	34	0.3
130	289	2.2	255	2.0	34	0.3
140	296	2.1	267	1.9	29	0.2
150	301	2.0	278	1.9	24	0.2
160	305	1.9	286	1.8	19	0.1
170	308	1.8	294	1.7	14	0.1
180	310	1.7	301	1.7	9	0.0
190	304	1.6	301	1.6	3	0.0
200	301	1.5	301	1.5	0	0.0



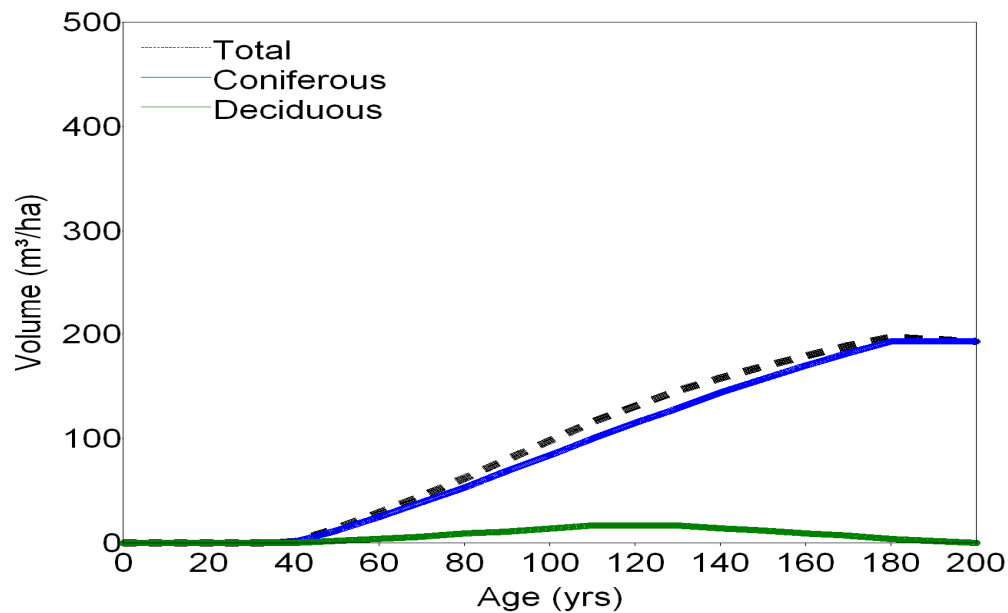
Yield group: 4 Description: [Sw,Fa]-AB NSR: LF Area (ha): 28289 (%): 3.28

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	12	0.4	10	0.3	1	0.0
40	38	0.9	33	0.8	5	0.1
50	68	1.4	58	1.2	9	0.2
60	100	1.7	86	1.4	14	0.2
70	132	1.9	113	1.6	19	0.3
80	162	2.0	139	1.7	23	0.3
90	190	2.1	163	1.8	27	0.3
100	215	2.1	185	1.9	30	0.3
110	237	2.2	205	1.9	32	0.3
120	254	2.1	222	1.8	32	0.3
130	269	2.1	237	1.8	32	0.2
140	277	2.0	250	1.8	27	0.2
150	284	1.9	261	1.7	22	0.1
160	289	1.8	271	1.7	18	0.1
170	293	1.7	280	1.6	13	0.1
180	296	1.6	288	1.6	8	0.0
190	291	1.5	288	1.5	3	0.0
200	288	1.4	288	1.4	0	0.0



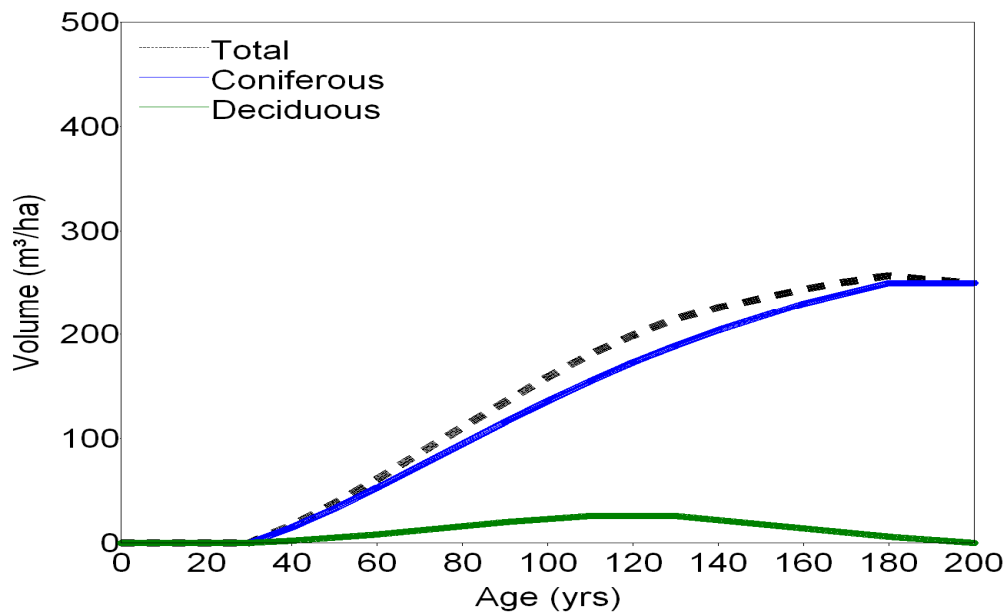
Yield group: 4 Description: [Sw,Fa]-AB NSR: M/SA/A Area (ha): 13215 (%): 1.53

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	0	0.0	0	0.0	0	0.0
40	1	0.0	1	0.0	0	0.0
50	14	0.3	12	0.2	2	0.0
60	29	0.5	25	0.4	4	0.1
70	45	0.6	39	0.6	6	0.1
80	62	0.8	53	0.7	9	0.1
90	80	0.9	69	0.8	11	0.1
100	98	1.0	84	0.8	14	0.1
110	116	1.1	100	0.9	17	0.2
120	131	1.1	115	1.0	17	0.1
130	146	1.1	129	1.0	17	0.1
140	158	1.1	144	1.0	14	0.1
150	169	1.1	157	1.0	12	0.1
160	179	1.1	170	1.1	9	0.1
170	189	1.1	182	1.1	7	0.0
180	197	1.1	193	1.1	4	0.0
190	195	1.0	193	1.0	2	0.0
200	193	1.0	193	1.0	0	0.0



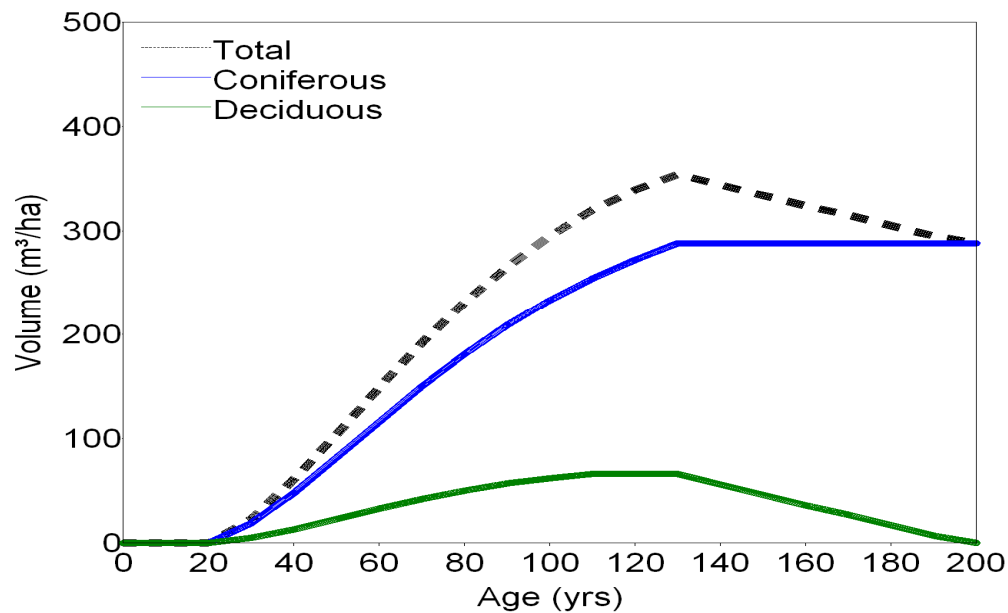
Yield group: 4 Description: [Sw,Fa]-AB NSR: UF Area (ha): 10615 (%): 1.23

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	0	0.0	0	0.0	0	0.0
40	17	0.4	15	0.4	2	0.1
50	38	0.8	33	0.7	5	0.1
60	61	1.0	53	0.9	8	0.1
70	86	1.2	74	1.1	12	0.2
80	111	1.4	95	1.2	16	0.2
90	135	1.5	116	1.3	20	0.2
100	159	1.6	136	1.4	23	0.2
110	181	1.6	155	1.4	26	0.2
120	199	1.7	173	1.4	26	0.2
130	215	1.7	189	1.5	26	0.2
140	226	1.6	204	1.5	22	0.2
150	235	1.6	217	1.4	18	0.1
160	244	1.5	230	1.4	14	0.1
170	251	1.5	240	1.4	10	0.1
180	257	1.4	250	1.4	6	0.0
190	253	1.3	250	1.3	3	0.0
200	250	1.3	250	1.3	0	0.0



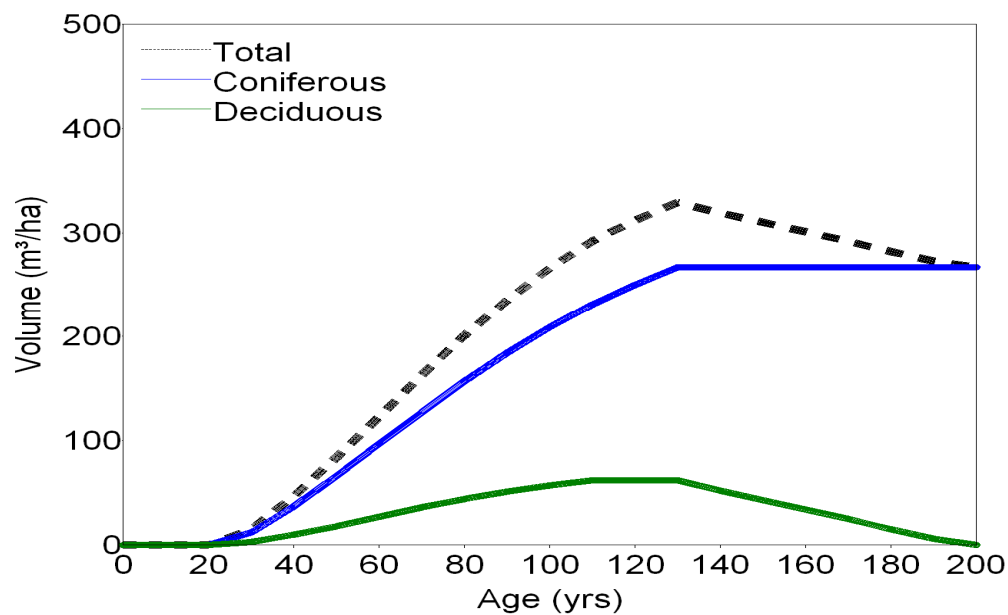
Yield group: 5 Description: [Sw,Fa]-CD NSR: CMW/DMW Area (ha): 1331 (%): 0.15

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	23	0.8	19	0.6	5	0.2
40	61	1.5	48	1.2	13	0.3
50	104	2.1	82	1.6	23	0.5
60	149	2.5	116	1.9	33	0.5
70	192	2.7	150	2.1	42	0.6
80	231	2.9	181	2.3	50	0.6
90	265	2.9	209	2.3	57	0.6
100	295	3.0	233	2.3	62	0.6
110	320	2.9	254	2.3	66	0.6
120	339	2.8	272	2.3	66	0.6
130	354	2.7	288	2.2	66	0.5
140	344	2.5	288	2.1	56	0.4
150	334	2.2	288	1.9	46	0.3
160	324	2.0	288	1.8	36	0.2
170	315	1.9	288	1.7	27	0.2
180	305	1.7	288	1.6	17	0.1
190	295	1.6	288	1.5	7	0.0
200	288	1.4	288	1.4	0	0.0



Yield group: 5 Description: [Sw,Fa]-CD NSR: LF Area (ha): 13645 (%): 1.58

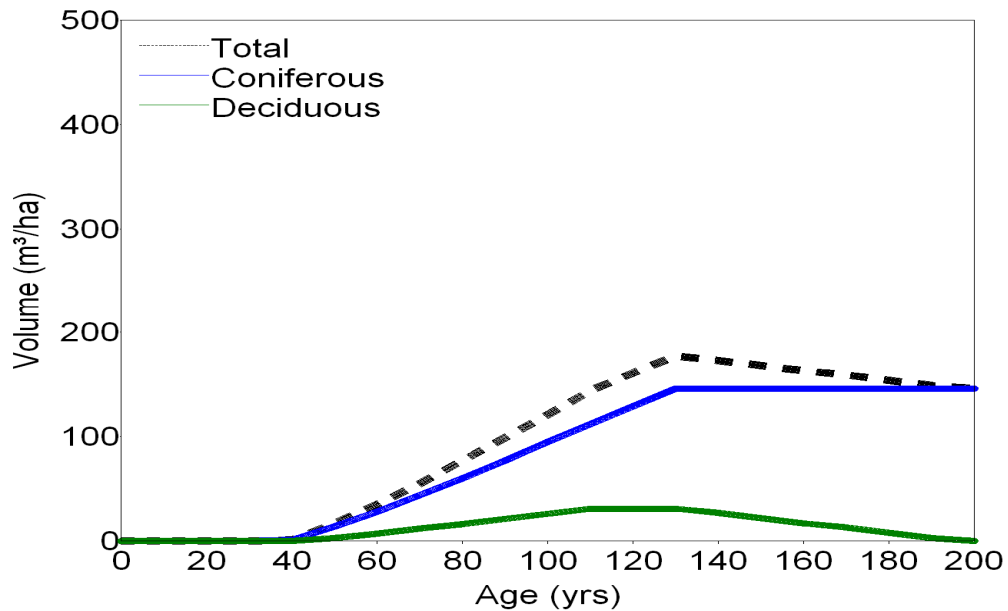
Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	15	0.5	12	0.4	3	0.1
40	47	1.2	37	0.9	10	0.2
50	84	1.7	66	1.3	18	0.4
60	123	2.1	97	1.6	27	0.4
70	163	2.3	127	1.8	36	0.5
80	201	2.5	157	2.0	44	0.5
90	235	2.6	184	2.0	51	0.6
100	266	2.7	209	2.1	57	0.6
110	292	2.7	231	2.1	62	0.6
120	312	2.6	250	2.1	62	0.5
130	329	2.5	267	2.1	62	0.5
140	319	2.3	267	1.9	52	0.4
150	310	2.1	267	1.8	43	0.3
160	301	1.9	267	1.7	34	0.2
170	292	1.7	267	1.6	25	0.1
180	282	1.6	267	1.5	15	0.1
190	273	1.4	267	1.4	6	0.0
200	267	1.3	267	1.3	0	0.0





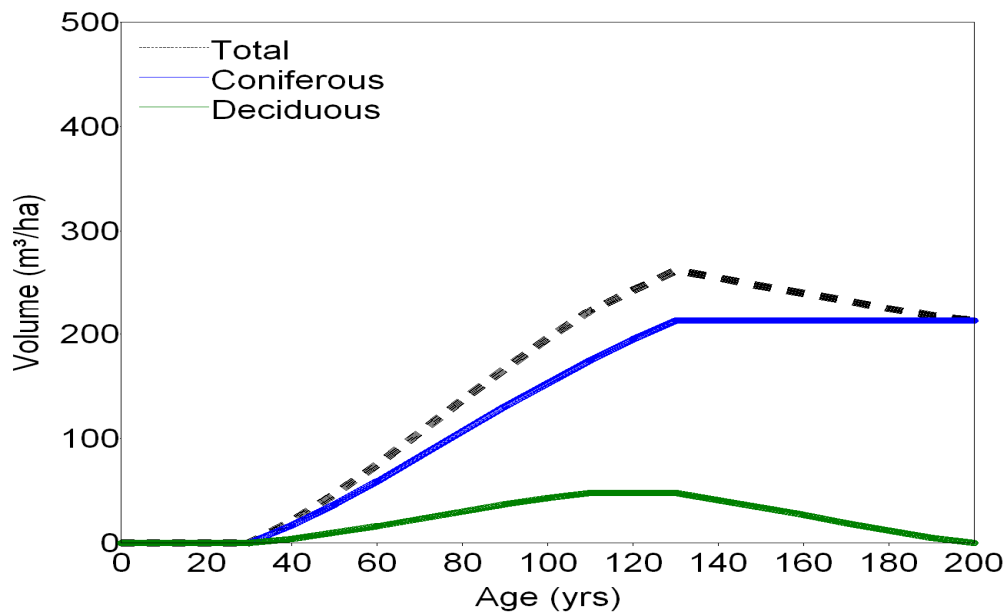
Yield group: 5 Description: [Sw,Fa]-CD NSR: M/SA/A Area (ha): 3137 (%): 0.36

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	0	0.0	0	0.0	0	0.0
40	1	0.0	1	0.0	0	0.0
50	17	0.3	14	0.3	3	0.1
60	35	0.6	28	0.5	7	0.1
70	55	0.8	44	0.6	12	0.2
80	77	1.0	60	0.8	16	0.2
90	99	1.1	77	0.9	21	0.2
100	121	1.2	95	0.9	26	0.3
110	144	1.3	112	1.0	31	0.3
120	161	1.3	129	1.1	31	0.3
130	177	1.4	146	1.1	31	0.2
140	173	1.2	146	1.0	27	0.2
150	168	1.1	146	1.0	22	0.1
160	163	1.0	146	0.9	17	0.1
170	159	0.9	146	0.9	13	0.1
180	154	0.9	146	0.8	8	0.0
190	149	0.8	146	0.8	3	0.0
200	146	0.7	146	0.7	0	0.0



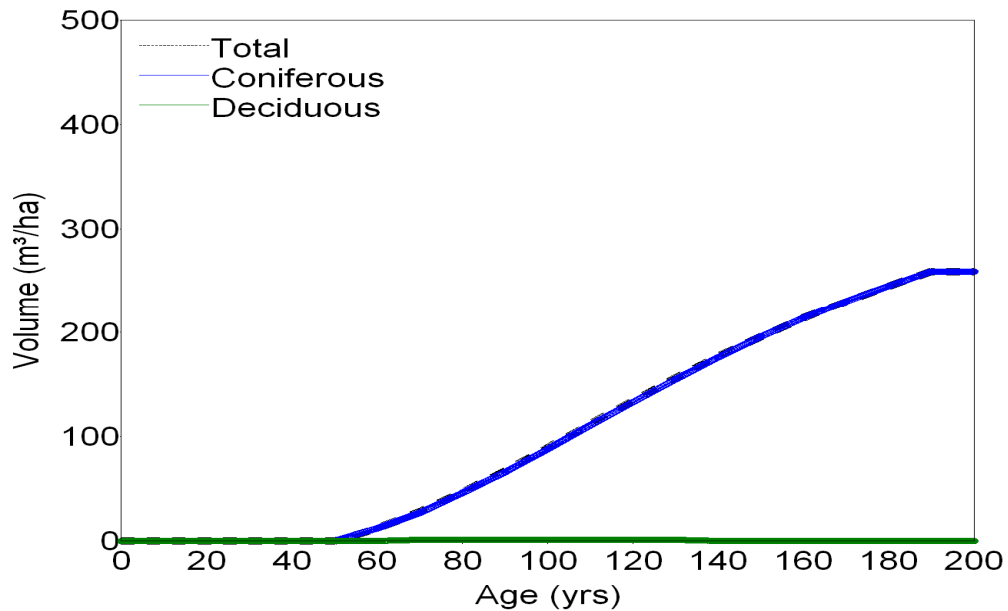
Yield group: 5 Description: [Sw,Fa]-CD NSR: UF Area (ha): 2204 (%): 0.26

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	0	0.0	0	0.0	0	0.0
40	21	0.5	17	0.4	4	0.1
50	47	0.9	37	0.7	10	0.2
60	75	1.3	59	1.0	16	0.3
70	106	1.5	83	1.2	23	0.3
80	137	1.7	107	1.3	30	0.4
90	167	1.9	131	1.5	37	0.4
100	196	2.0	153	1.5	43	0.4
110	223	2.0	175	1.6	48	0.4
120	243	2.0	195	1.6	48	0.4
130	262	2.0	213	1.6	48	0.4
140	255	1.8	213	1.5	41	0.3
150	247	1.6	213	1.4	34	0.2
160	240	1.5	213	1.3	27	0.2
170	233	1.4	213	1.3	19	0.1
180	225	1.3	213	1.2	12	0.1
190	218	1.1	213	1.1	5	0.0
200	213	1.1	213	1.1	0	0.0



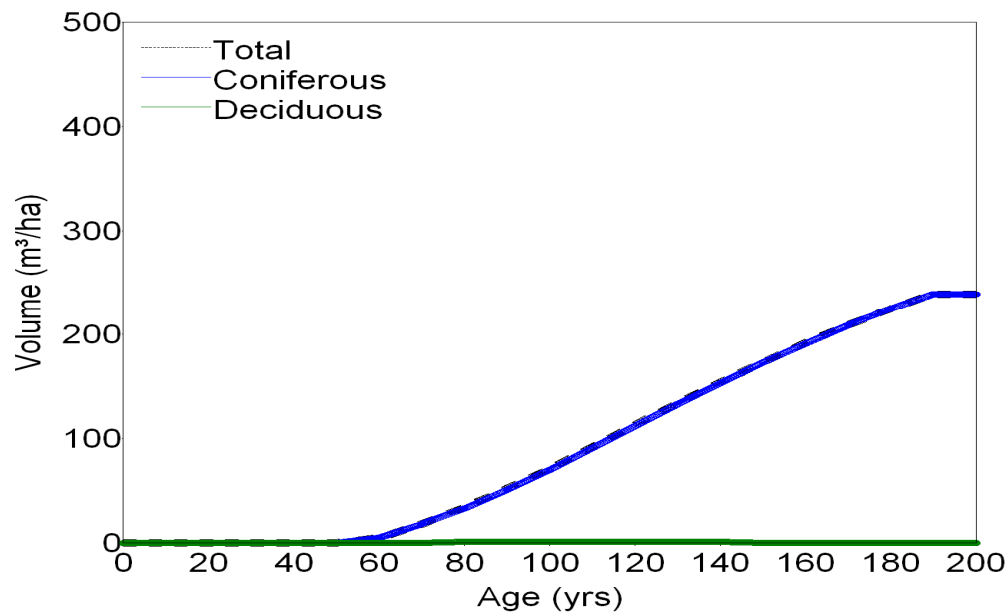
Yield group: 6 Description: [Sb,Lt]-AB NSR: LF Area (ha): 14807 (%): 1.72

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0
10	0	0.0	0	0.0	0	0
20	0	0.0	0	0.0	0	0
30	0	0.0	0	0.0	0	0
40	0	0.0	0	0.0	0	0
50	0	0.0	0	0.0	0	0
60	12	0.2	12	0.2	0	0
70	28	0.4	27	0.4	1	0
80	47	0.6	46	0.6	1	0
90	67	0.7	66	0.7	1	0
100	89	0.9	88	0.9	1	0
110	112	1.0	111	1.0	1	0
120	134	1.1	133	1.1	1	0
130	156	1.2	155	1.2	1	0
140	177	1.3	176	1.3	0	0
150	196	1.3	196	1.3	0	0
160	214	1.3	214	1.3	0	0
170	230	1.4	230	1.4	0	0
180	245	1.4	245	1.4	0	0
190	259	1.4	259	1.4	0	0
200	259	1.3	259	1.3	0	0



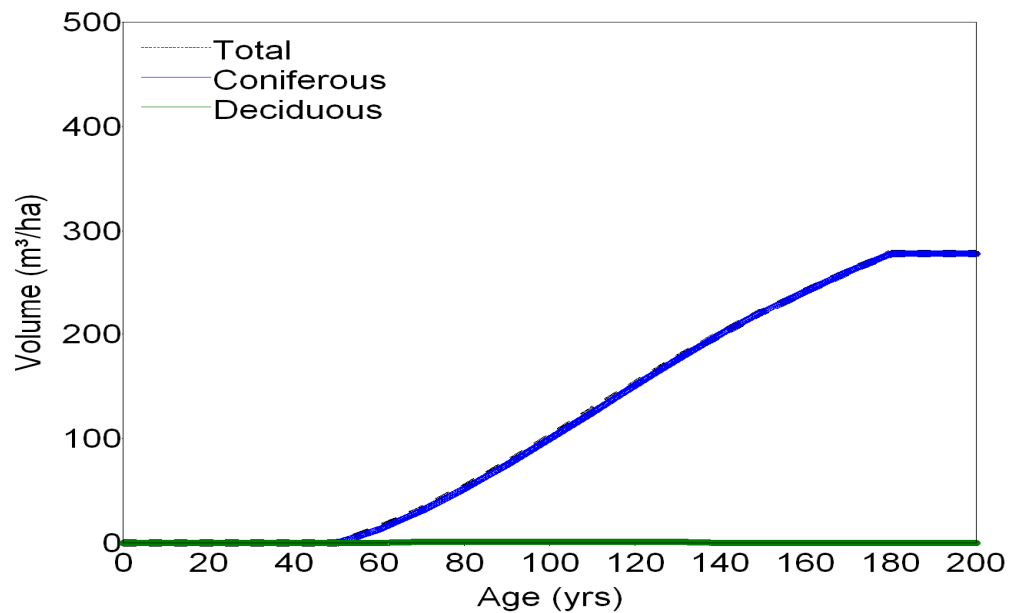
Yield group: 6 Description: [Sb,Lt]-AB NSR: UF Area (ha): 5662 (%): 0.66

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0
10	0	0.0	0	0.0	0	0
20	0	0.0	0	0.0	0	0
30	0	0.0	0	0.0	0	0
40	0	0.0	0	0.0	0	0
50	0	0.0	0	0.0	0	0
60	5	0.1	5	0.1	0	0
70	18	0.3	18	0.3	0	0
80	34	0.4	33	0.4	1	0
90	52	0.6	51	0.6	1	0
100	71	0.7	70	0.7	1	0
110	92	0.8	91	0.8	1	0
120	113	0.9	112	0.9	1	0
130	134	1.0	133	1.0	1	0
140	154	1.1	153	1.1	1	0
150	173	1.2	173	1.2	0	0
160	192	1.2	191	1.2	0	0
170	209	1.2	209	1.2	0	0
180	225	1.2	225	1.2	0	0
190	239	1.3	239	1.3	0	0
200	239	1.2	239	1.2	0	0



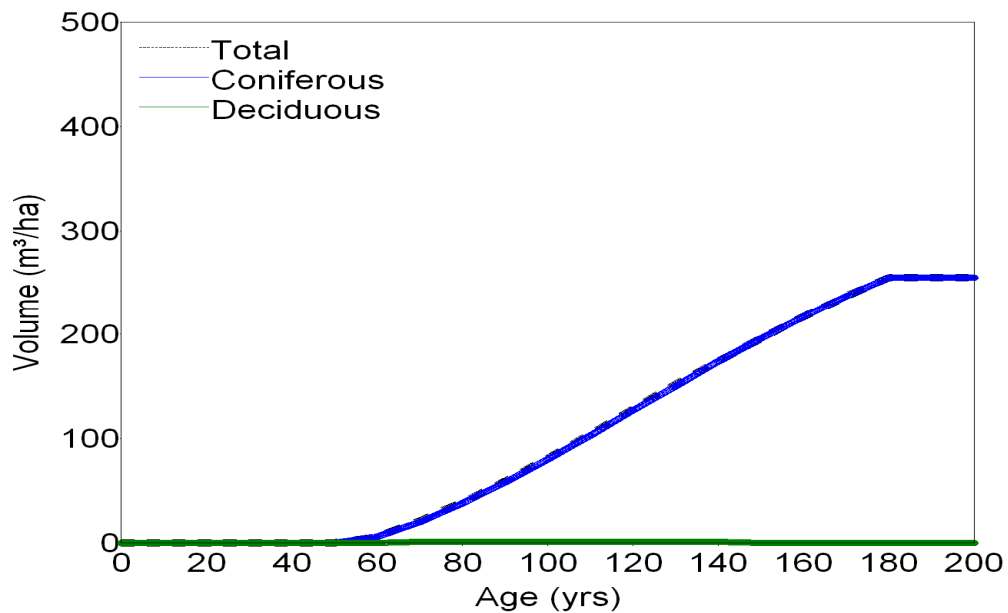
Yield group: 7 Description: [Sb,Lt]-CD NSR: LF Area (ha): 10856 (%): 1.26

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0
10	0	0.0	0	0.0	0	0
20	0	0.0	0	0.0	0	0
30	0	0.0	0	0.0	0	0
40	0	0.0	0	0.0	0	0
50	0	0.0	0	0.0	0	0
60	14	0.2	13	0.2	0	0
70	32	0.5	31	0.4	1	0
80	53	0.7	52	0.6	1	0
90	76	0.8	75	0.8	1	0
100	101	1.0	100	1.0	1	0
110	127	1.2	125	1.1	1	0
120	152	1.3	151	1.3	1	0
130	177	1.4	176	1.4	1	0
140	200	1.4	200	1.4	0	0
150	222	1.5	222	1.5	0	0
160	242	1.5	242	1.5	0	0
170	261	1.5	261	1.5	0	0
180	278	1.5	278	1.5	0	0
190	278	1.5	278	1.5	0	0
200	278	1.4	278	1.4	0	0



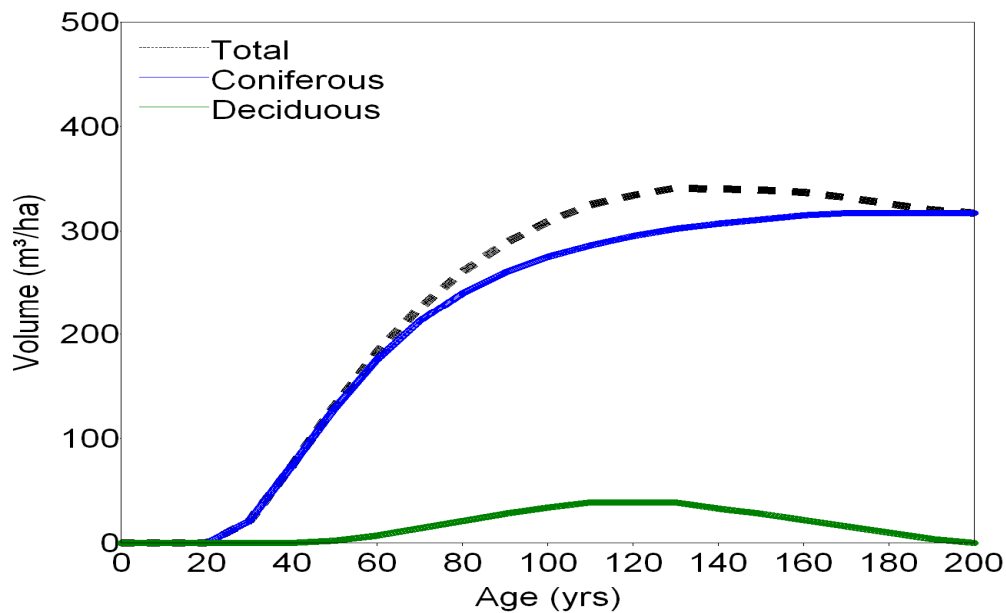
Yield group: 7 Description: [Sb,Lt]-CD NSR: UF Area (ha): 2390 (%): 0.28

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0
10	0	0.0	0	0.0	0	0
20	0	0.0	0	0.0	0	0
30	0	0.0	0	0.0	0	0
40	0	0.0	0	0.0	0	0
50	0	0.0	0	0.0	0	0
60	6	0.1	6	0.1	0	0
70	21	0.3	20	0.3	1	0
80	39	0.5	38	0.5	1	0
90	59	0.7	58	0.6	1	0
100	81	0.8	80	0.8	1	0
110	104	0.9	103	0.9	1	0
120	128	1.1	127	1.1	1	0
130	152	1.2	150	1.2	1	0
140	174	1.2	174	1.2	1	0
150	196	1.3	196	1.3	0	0
160	217	1.4	217	1.4	0	0
170	237	1.4	237	1.4	0	0
180	255	1.4	255	1.4	0	0
190	255	1.3	255	1.3	0	0
200	255	1.3	255	1.3	0	0



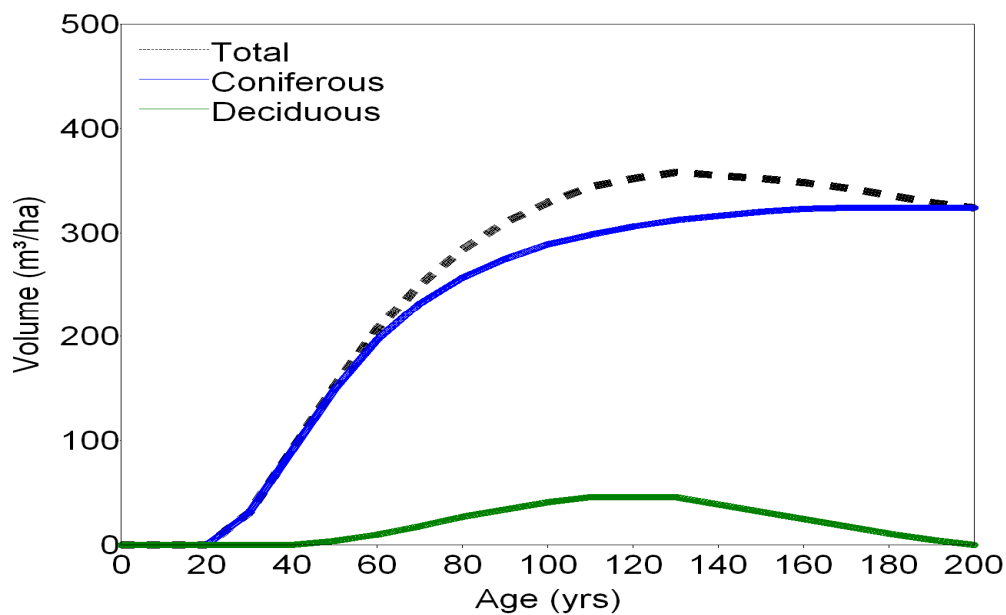
Yield group: 8 Description: PI-Sw-ABCD NSR: CMW/DMW Area (ha): 1407 (%): 0.16

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	21	0.7	21	0.7	0	0.0
40	74	1.9	74	1.9	0	0.0
50	131	2.6	129	2.6	2	0.0
60	183	3.0	176	2.9	7	0.1
70	226	3.2	213	3.0	14	0.2
80	261	3.3	240	3.0	21	0.3
90	288	3.2	260	2.9	28	0.3
100	309	3.1	275	2.7	34	0.3
110	325	3.0	286	2.6	39	0.4
120	334	2.8	295	2.5	39	0.3
130	341	2.6	302	2.3	39	0.3
140	340	2.4	307	2.2	33	0.2
150	339	2.3	311	2.1	28	0.2
160	337	2.1	315	2.0	22	0.1
170	332	2.0	317	1.9	16	0.1
180	326	1.8	317	1.8	10	0.1
190	320	1.7	317	1.7	4	0.0
200	317	1.6	317	1.6	0	0.0



Yield group: 8 Description: PI-Sw-ABCD NSR: LF Area (ha): 12293 (%): 1.42

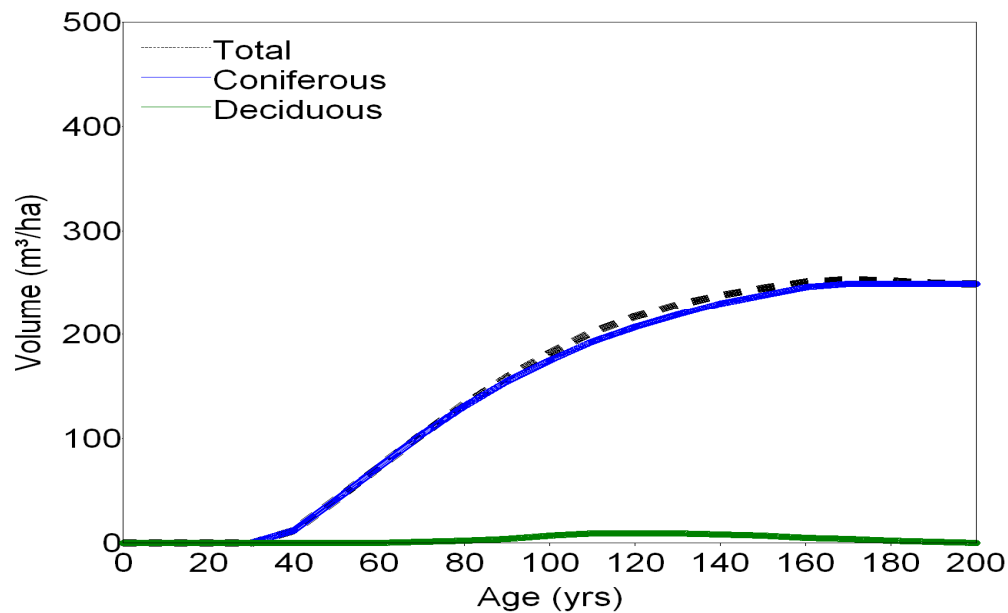
Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	31	1.0	31	1.0	0	0.0
40	91	2.3	90	2.3	0	0.0
50	152	3.0	149	3.0	4	0.1
60	207	3.4	197	3.3	10	0.2
70	250	3.6	232	3.3	18	0.3
80	284	3.5	257	3.2	27	0.3
90	310	3.4	275	3.1	34	0.4
100	329	3.3	289	2.9	41	0.4
110	344	3.1	298	2.7	46	0.4
120	352	2.9	306	2.5	46	0.4
130	358	2.8	312	2.4	46	0.4
140	355	2.5	316	2.3	39	0.3
150	352	2.3	320	2.1	32	0.2
160	348	2.2	323	2.0	25	0.2
170	343	2.0	324	1.9	18	0.1
180	336	1.9	324	1.8	11	0.1
190	329	1.7	324	1.7	5	0.0
200	324	1.6	324	1.6	0	0.0





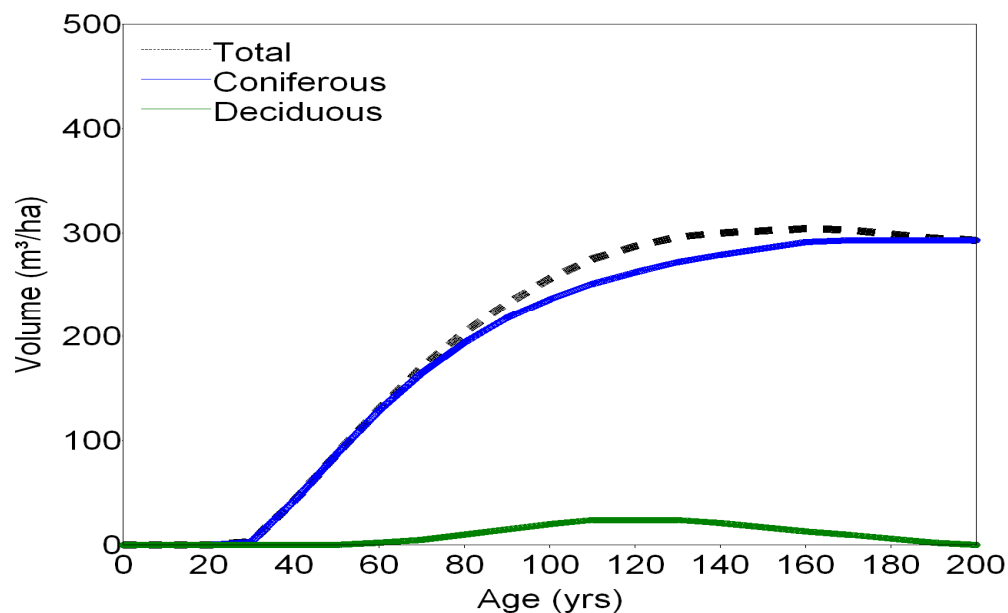
Yield group: 8 Description: PI-Sw-ABCD NSR: M/SA/A Area (ha): 22775 (%) : 2.64

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	0	0.0	0	0.0	0	0.0
40	12	0.3	12	0.3	0	0.0
50	42	0.8	42	0.8	0	0.0
60	73	1.2	73	1.2	0	0.0
70	104	1.5	104	1.5	1	0.0
80	133	1.7	131	1.6	2	0.0
90	159	1.8	155	1.7	4	0.0
100	182	1.8	175	1.8	7	0.1
110	202	1.8	193	1.8	9	0.1
120	217	1.8	207	1.7	9	0.1
130	229	1.8	219	1.7	9	0.1
140	238	1.7	230	1.6	8	0.1
150	245	1.6	238	1.6	7	0.0
160	251	1.6	246	1.5	5	0.0
170	253	1.5	249	1.5	4	0.0
180	252	1.4	249	1.4	2	0.0
190	250	1.3	249	1.3	1	0.0
200	249	1.2	249	1.2	0	0.0



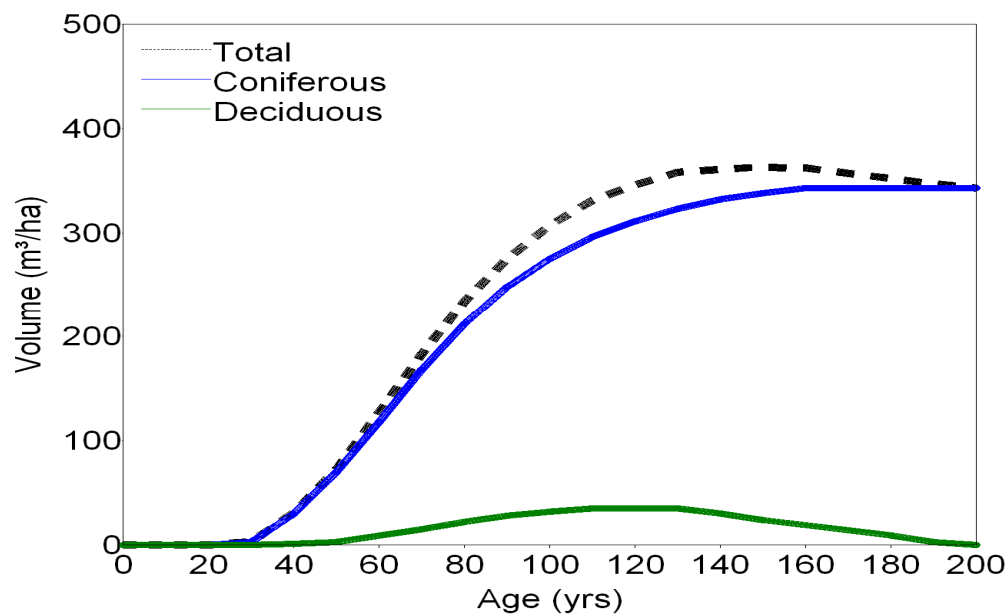
Yield group: 8 Description: PI-Sw-ABCD NSR: UF Area (ha): 19228 (%): 2.23

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	3	0.1	3	0.1	0	0.0
40	42	1.1	42	1.1	0	0.0
50	87	1.7	87	1.7	0	0.0
60	130	2.2	129	2.1	2	0.0
70	170	2.4	165	2.4	5	0.1
80	204	2.5	194	2.4	10	0.1
90	232	2.6	218	2.4	15	0.2
100	256	2.6	236	2.4	20	0.2
110	275	2.5	251	2.3	24	0.2
120	287	2.4	262	2.2	24	0.2
130	296	2.3	272	2.1	24	0.2
140	300	2.1	279	2.0	21	0.1
150	302	2.0	285	1.9	17	0.1
160	304	1.9	291	1.8	13	0.1
170	303	1.8	293	1.7	10	0.1
180	299	1.7	293	1.6	6	0.0
190	295	1.6	293	1.5	2	0.0
200	293	1.5	293	1.5	0	0.0



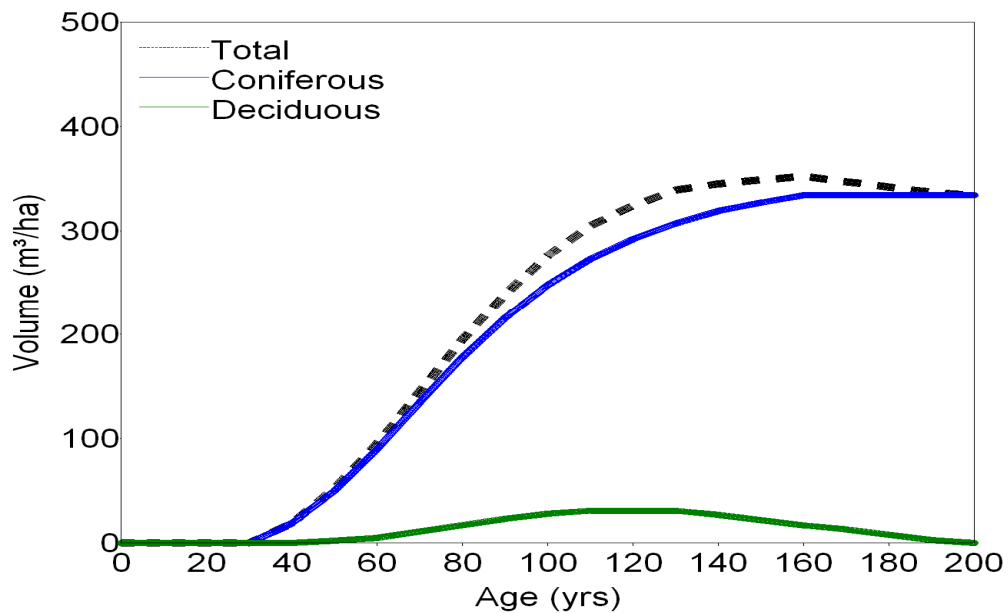
Yield group: 9 Description: Sw-PI-ABCD NSR: CMW/DMW Area (ha): 1170 (%): 0.14

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	3	0.1	3	0.1	0	0.0
40	31	0.8	30	0.8	1	0.0
50	73	1.5	70	1.4	3	0.1
60	127	2.1	118	2.0	9	0.1
70	183	2.6	168	2.4	15	0.2
80	234	2.9	212	2.6	22	0.3
90	275	3.1	248	2.8	28	0.3
100	307	3.1	275	2.8	32	0.3
110	331	3.0	296	2.7	35	0.3
120	346	2.9	311	2.6	35	0.3
130	358	2.8	323	2.5	35	0.3
140	361	2.6	332	2.4	30	0.2
150	363	2.4	338	2.3	24	0.2
160	362	2.3	343	2.1	19	0.1
170	357	2.1	343	2.0	14	0.1
180	352	2.0	343	1.9	9	0.0
190	347	1.8	343	1.8	3	0.0
200	343	1.7	343	1.7	0	0.0



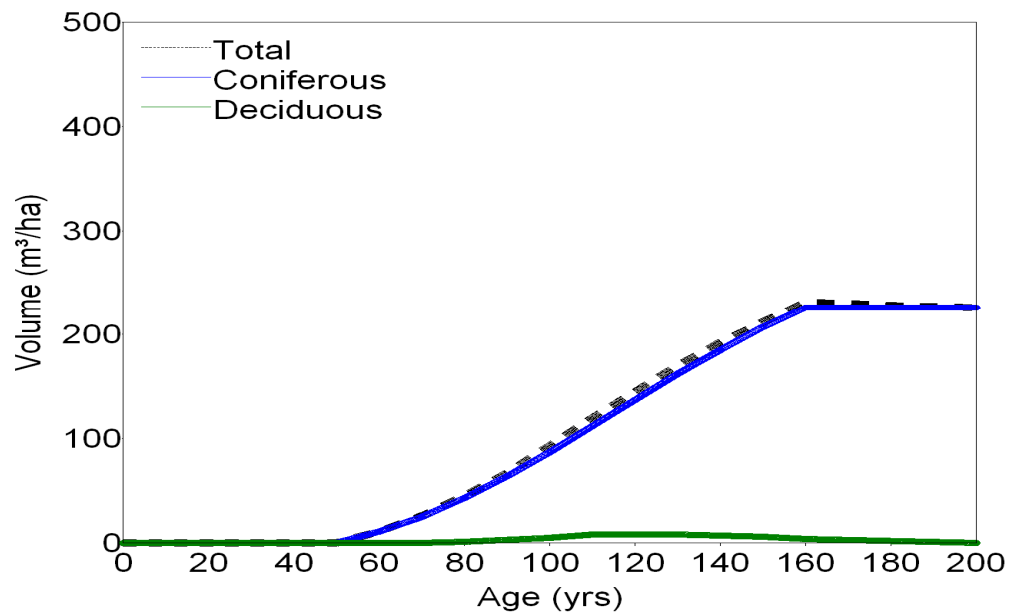
Yield group: 9 Description: Sw-PI-ABCD NSR: LF Area (ha): 11742 (%): 1.36

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	0	0.0	0	0.0	0	0.0
40	19	0.5	19	0.5	0	0.0
50	52	1.0	50	1.0	2	0.0
60	95	1.6	90	1.5	5	0.1
70	145	2.1	135	1.9	11	0.2
80	195	2.4	178	2.2	17	0.2
90	239	2.7	216	2.4	23	0.3
100	276	2.8	248	2.5	28	0.3
110	305	2.8	273	2.5	31	0.3
120	324	2.7	292	2.4	31	0.3
130	339	2.6	307	2.4	31	0.2
140	345	2.5	319	2.3	27	0.2
150	349	2.3	327	2.2	22	0.1
160	352	2.2	334	2.1	17	0.1
170	347	2.0	334	2.0	13	0.1
180	342	1.9	334	1.9	8	0.0
190	337	1.8	334	1.8	3	0.0
200	334	1.7	334	1.7	0	0.0



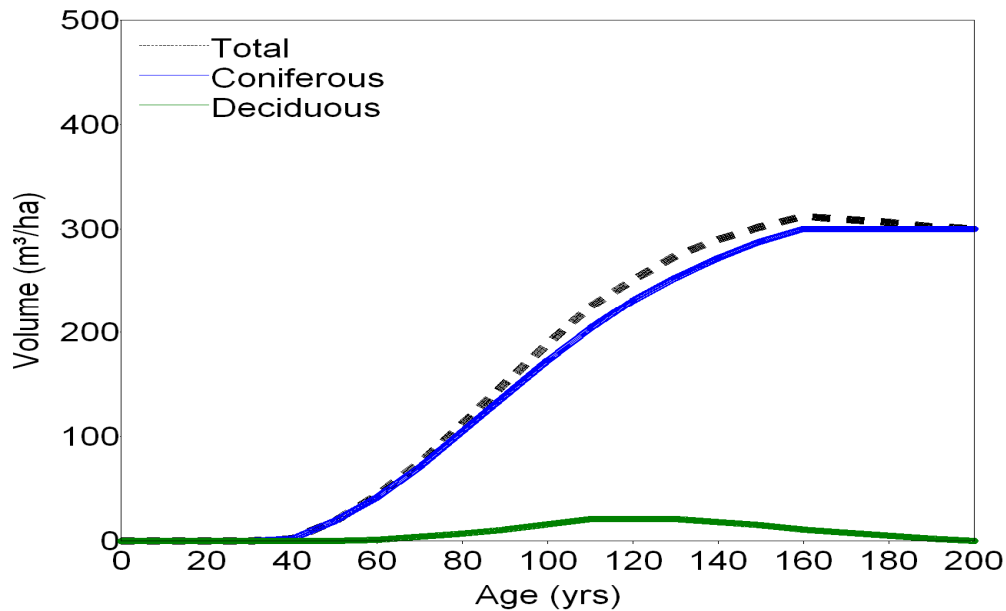
Yield group: 9 Description: Sw-PI-ABCD NSR: M/SA/A Area (ha): 11172 (%): 1.3

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	0	0.0	0	0.0	0	0.0
40	0	0.0	0	0.0	0	0.0
50	0	0.0	0	0.0	0	0.0
60	11	0.2	11	0.2	0	0.0
70	26	0.4	25	0.4	0	0.0
80	45	0.6	43	0.5	1	0.0
90	67	0.7	64	0.7	3	0.0
100	93	0.9	87	0.9	5	0.1
110	120	1.1	112	1.0	8	0.1
120	145	1.2	137	1.1	8	0.1
130	170	1.3	162	1.2	8	0.1
140	192	1.4	185	1.3	7	0.0
150	212	1.4	207	1.4	6	0.0
160	231	1.4	226	1.4	4	0.0
170	230	1.4	226	1.3	3	0.0
180	228	1.3	226	1.3	2	0.0
190	227	1.2	226	1.2	1	0.0
200	226	1.1	226	1.1	0	0.0



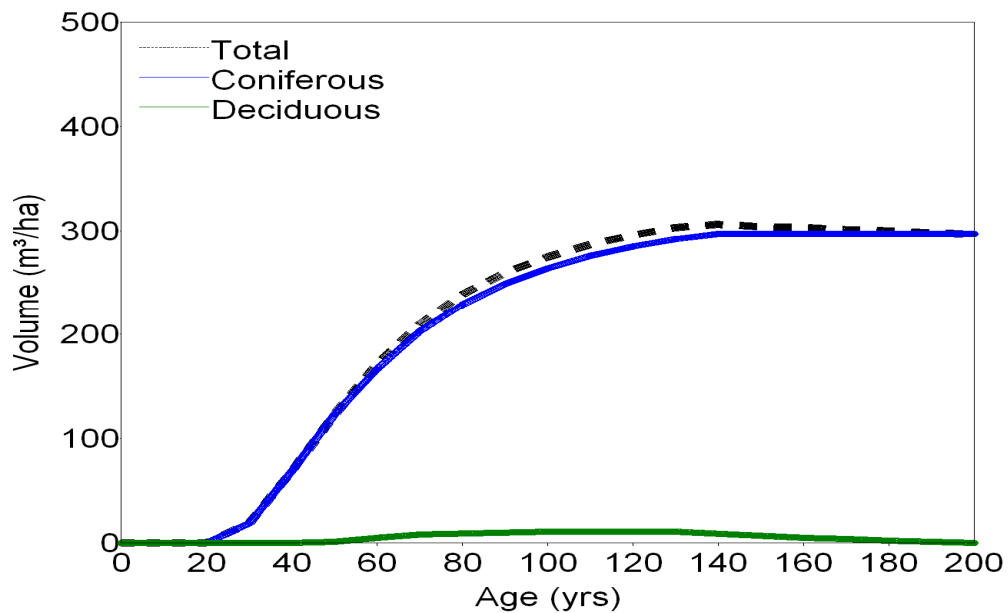
Yield group: 9 Description: Sw-PI-ABCD NSR: UF Area (ha): 11182 (%): 1.3

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	0	0.0	0	0.0	0	0.0
40	2	0.1	2	0.1	0	0.0
50	19	0.4	19	0.4	0	0.0
60	44	0.7	42	0.7	1	0.0
70	75	1.1	71	1.0	4	0.1
80	112	1.4	105	1.3	7	0.1
90	151	1.7	139	1.5	11	0.1
100	189	1.9	173	1.7	16	0.2
110	225	2.0	204	1.9	21	0.2
120	251	2.1	231	1.9	21	0.2
130	274	2.1	253	1.9	21	0.2
140	290	2.1	272	1.9	18	0.1
150	302	2.0	288	1.9	15	0.1
160	312	1.9	300	1.9	11	0.1
170	309	1.8	300	1.8	8	0.0
180	306	1.7	300	1.7	5	0.0
190	302	1.6	300	1.6	2	0.0
200	300	1.5	300	1.5	0	0.0



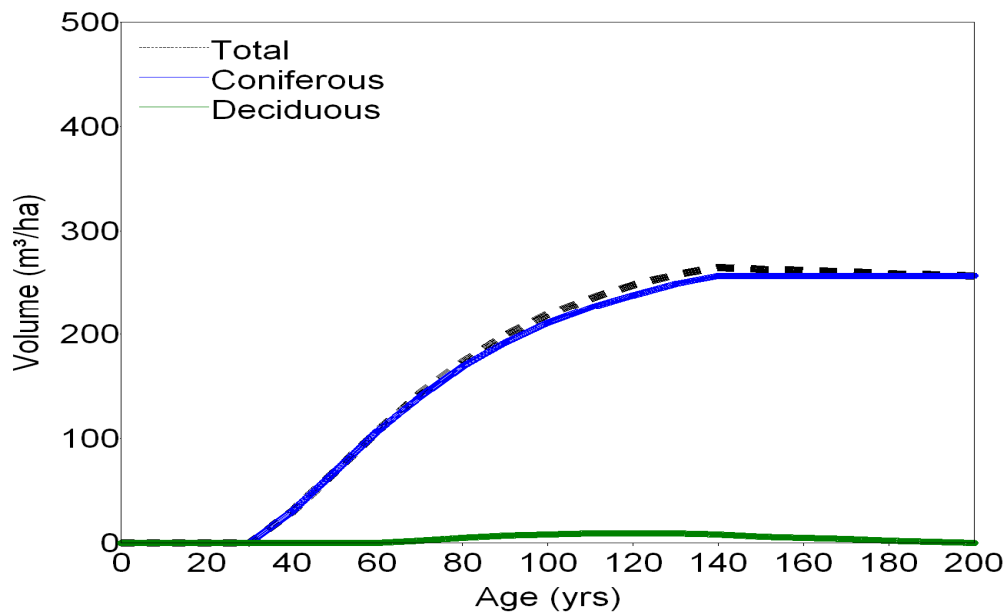
Yield group: 10 Description: [Pl-Sb,Sb-Pl]-AB NSR: CMW/DMW Area (ha): 1967 (%): 0.23

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	19	0.6	19	0.6	0	0.0
40	69	1.7	69	1.7	0	0.0
50	123	2.5	123	2.5	1	0.0
60	172	2.9	167	2.8	5	0.1
70	210	3.0	203	2.9	8	0.1
80	239	3.0	229	2.9	9	0.1
90	260	2.9	249	2.8	10	0.1
100	275	2.8	264	2.6	11	0.1
110	287	2.6	276	2.5	11	0.1
120	296	2.5	285	2.4	11	0.1
130	303	2.3	292	2.2	11	0.1
140	306	2.2	297	2.1	9	0.1
150	304	2.0	297	2.0	7	0.0
160	303	1.9	297	1.9	5	0.0
170	301	1.8	297	1.7	4	0.0
180	300	1.7	297	1.7	2	0.0
190	298	1.6	297	1.6	1	0.0
200	297	1.5	297	1.5	0	0.0



Yield group: 10 Description: [PI-Sb,Sb-PI]-AB NSR: LF Area (ha): 6433 (%): 0.75

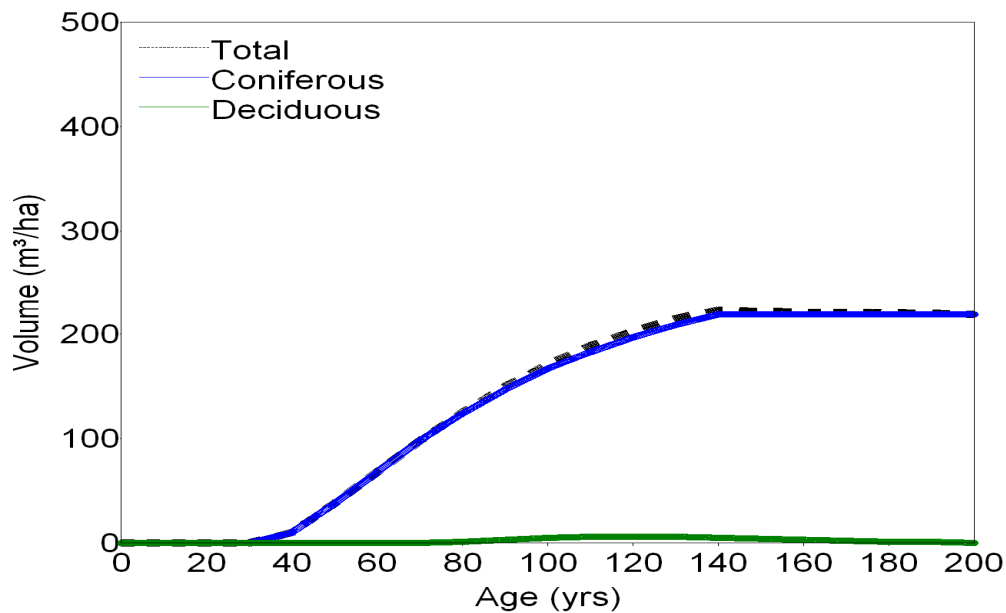
Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	0	0.0	0	0.0	0	0.0
40	30	0.7	30	0.7	0	0.0
50	68	1.4	68	1.4	0	0.0
60	107	1.8	107	1.8	0	0.0
70	143	2.0	140	2.0	2	0.0
80	173	2.2	169	2.1	5	0.1
90	199	2.2	192	2.1	7	0.1
100	219	2.2	211	2.1	8	0.1
110	235	2.1	226	2.1	9	0.1
120	248	2.1	238	2.0	9	0.1
130	258	2.0	249	1.9	9	0.1
140	265	1.9	257	1.8	8	0.1
150	263	1.8	257	1.7	6	0.0
160	262	1.6	257	1.6	5	0.0
170	261	1.5	257	1.5	4	0.0
180	259	1.4	257	1.4	2	0.0
190	258	1.4	257	1.4	1	0.0
200	257	1.3	257	1.3	0	0.0





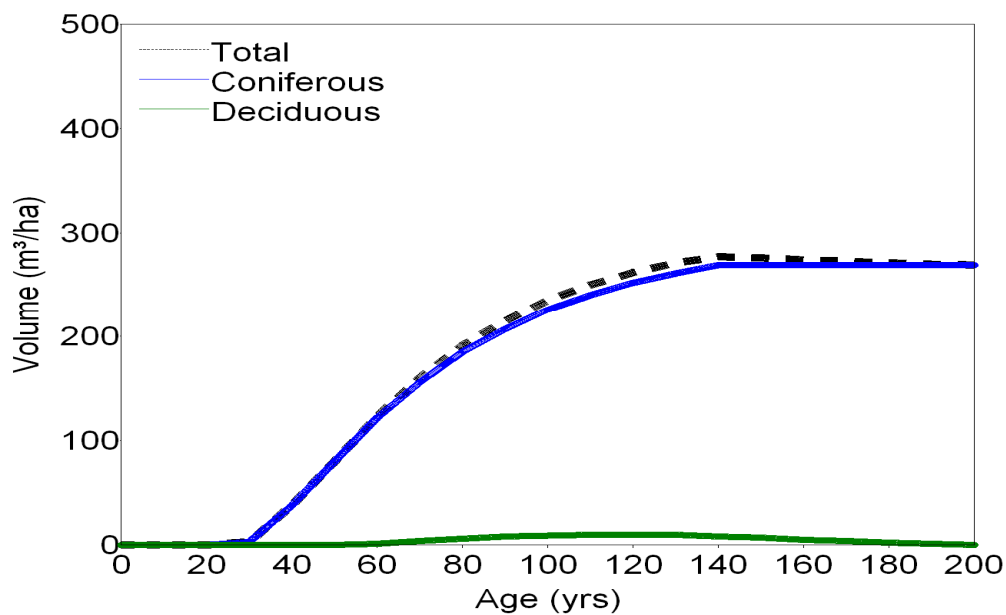
Yield group: 10 Description: [PI-Sb,Sb-PI]-AB NSR: M/SA/A Area (ha): 767 (%): 0.09

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	0	0.0	0	0.0	0	0.0
40	10	0.3	10	0.3	0	0.0
50	38	0.8	38	0.8	0	0.0
60	68	1.1	68	1.1	0	0.0
70	98	1.4	98	1.4	0	0.0
80	125	1.6	124	1.6	1	0.0
90	150	1.7	147	1.6	3	0.0
100	171	1.7	167	1.7	5	0.0
110	189	1.7	183	1.7	6	0.1
120	203	1.7	197	1.6	6	0.0
130	215	1.7	209	1.6	6	0.0
140	224	1.6	219	1.6	5	0.0
150	223	1.5	219	1.5	4	0.0
160	222	1.4	219	1.4	3	0.0
170	222	1.3	219	1.3	2	0.0
180	221	1.2	219	1.2	1	0.0
190	220	1.2	219	1.2	1	0.0
200	219	1.1	219	1.1	0	0.0



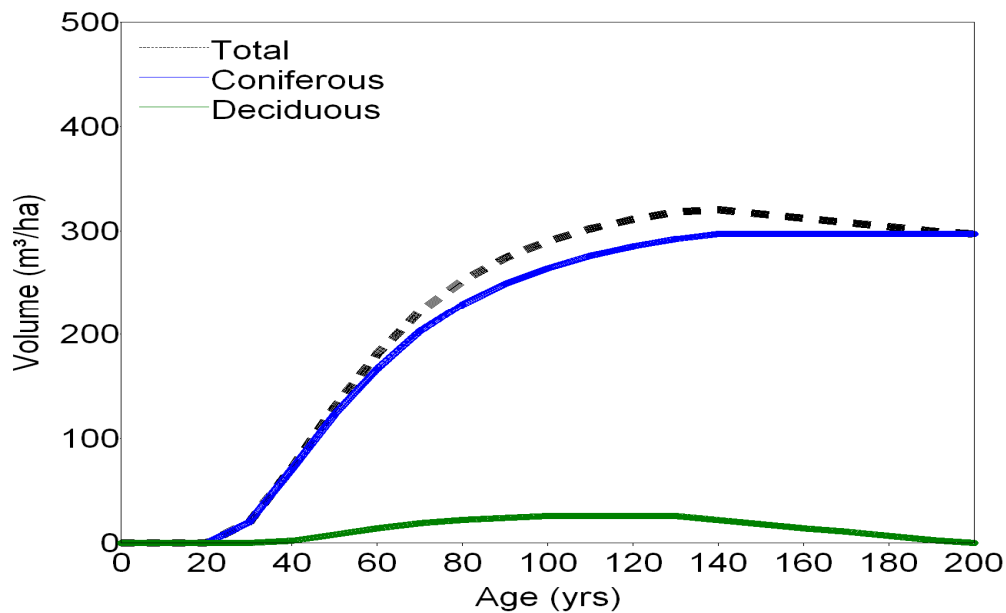
Yield group: 10 Description: [PI-Sb,Sb-PI]-AB NSR: UF Area (ha): 8990 (%): 1.04

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	3	0.1	3	0.1	0	0.0
40	38	1.0	38	1.0	0	0.0
50	80	1.6	80	1.6	0	0.0
60	123	2.0	122	2.0	1	0.0
70	160	2.3	156	2.2	4	0.1
80	191	2.4	185	2.3	6	0.1
90	215	2.4	207	2.3	8	0.1
100	235	2.3	226	2.3	9	0.1
110	250	2.3	240	2.2	10	0.1
120	262	2.2	252	2.1	10	0.1
130	271	2.1	261	2.0	10	0.1
140	277	2.0	269	1.9	8	0.1
150	276	1.8	269	1.8	7	0.0
160	274	1.7	269	1.7	5	0.0
170	273	1.6	269	1.6	4	0.0
180	271	1.5	269	1.5	2	0.0
190	270	1.4	269	1.4	1	0.0
200	269	1.3	269	1.3	0	0.0



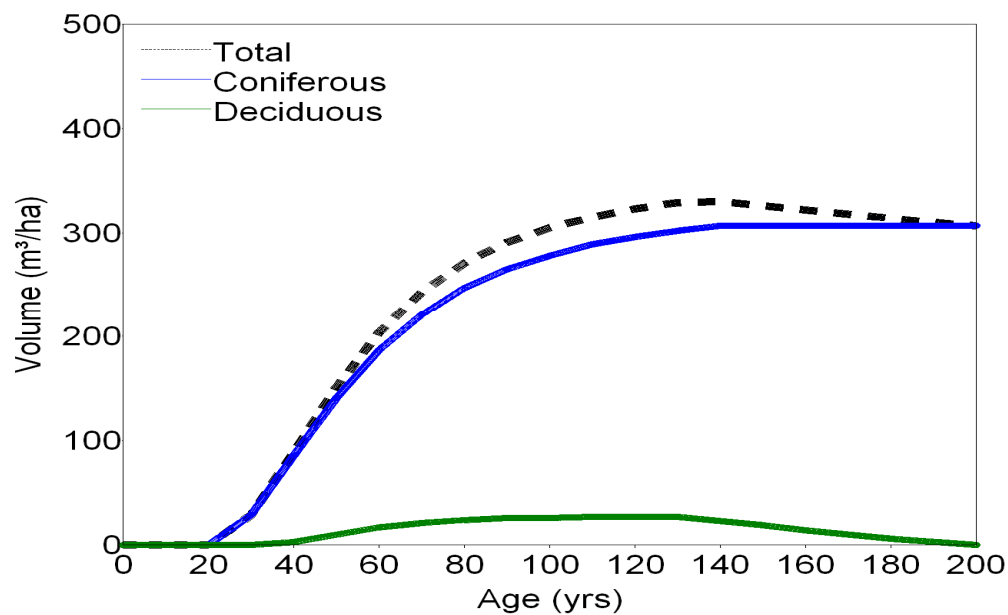
Yield group: 11 Description: [PI-Sb,Sb-PI]-CD NSR: CMW/DMW Area (ha): 198 (%) : 0.02

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	20	0.7	20	0.7	0	0.0
40	72	1.8	71	1.8	2	0.0
50	130	2.6	123	2.5	8	0.2
60	181	3.0	167	2.8	14	0.2
70	222	3.2	203	2.9	19	0.3
80	252	3.1	229	2.9	22	0.3
90	274	3.0	249	2.8	24	0.3
100	290	2.9	264	2.6	26	0.3
110	302	2.7	276	2.5	26	0.2
120	311	2.6	285	2.4	26	0.2
130	318	2.4	292	2.2	26	0.2
140	320	2.3	297	2.1	22	0.2
150	316	2.1	297	2.0	18	0.1
160	312	1.9	297	1.9	14	0.1
170	308	1.8	297	1.7	11	0.1
180	304	1.7	297	1.7	7	0.0
190	300	1.6	297	1.6	3	0.0
200	297	1.5	297	1.5	0	0.0



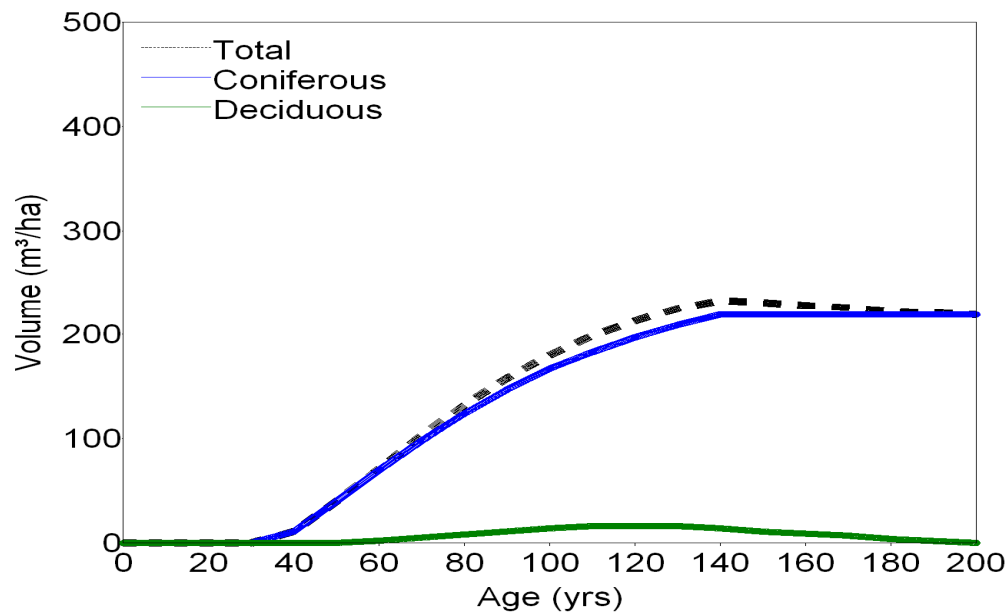
Yield group: 11 Description: [PI-Sb,Sb-PI]-CD NSR: LF Area (ha): 3111 (%): 0.36

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	29	1.0	29	1.0	0	0.0
40	89	2.2	86	2.1	3	0.1
50	151	3.0	141	2.8	10	0.2
60	204	3.4	187	3.1	17	0.3
70	243	3.5	221	3.2	21	0.3
80	271	3.4	247	3.1	24	0.3
90	291	3.2	265	2.9	26	0.3
100	305	3.0	278	2.8	26	0.3
110	315	2.9	289	2.6	27	0.2
120	323	2.7	296	2.5	27	0.2
130	329	2.5	302	2.3	27	0.2
140	330	2.4	307	2.2	23	0.2
150	326	2.2	307	2.0	19	0.1
160	322	2.0	307	1.9	14	0.1
170	318	1.9	307	1.8	10	0.1
180	314	1.7	307	1.7	6	0.0
190	310	1.6	307	1.6	3	0.0
200	307	1.5	307	1.5	0	0.0



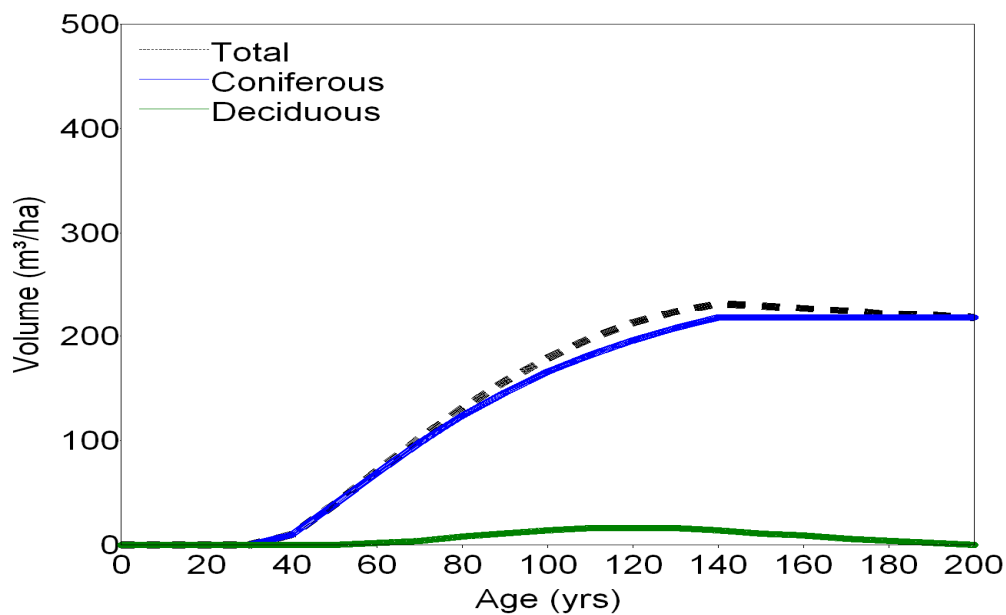
Yield group: 11 Description: [PI-Sb,Sb-PI]-CD NSR: M/SA/A Area (ha): 741 (%): 0.09

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	0	0.0	0	0.0	0	0.0
40	11	0.3	11	0.3	0	0.0
50	40	0.8	40	0.8	0	0.0
60	71	1.2	70	1.2	2	0.0
70	103	1.5	98	1.4	5	0.1
80	132	1.7	124	1.6	8	0.1
90	158	1.8	147	1.6	11	0.1
100	180	1.8	167	1.7	14	0.1
110	199	1.8	183	1.7	16	0.1
120	213	1.8	197	1.6	16	0.1
130	225	1.7	209	1.6	16	0.1
140	233	1.7	219	1.6	14	0.1
150	231	1.5	219	1.5	11	0.1
160	228	1.4	219	1.4	9	0.1
170	226	1.3	219	1.3	7	0.0
180	223	1.2	219	1.2	4	0.0
190	221	1.2	219	1.2	2	0.0
200	219	1.1	219	1.1	0	0.0



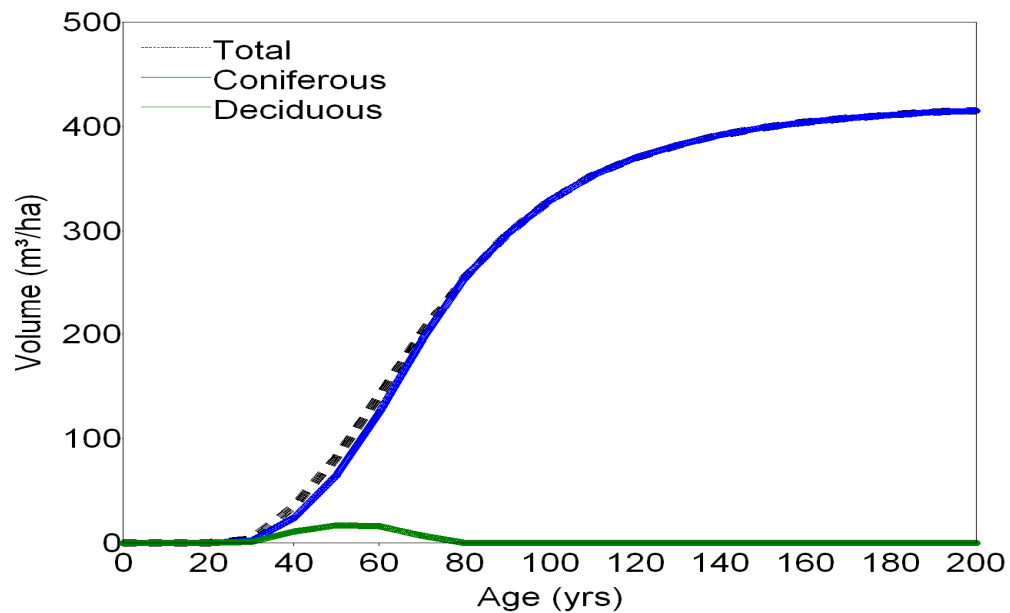
Yield group: 11 Description: [PI-Sb,Sb-PI]-CD NSR: UF Area (ha): 6362 (%): 0.74

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	0	0.0	0	0.0	0	0.0
40	10	0.3	10	0.3	0	0.0
50	39	0.8	39	0.8	0	0.0
60	71	1.2	69	1.2	2	0.0
70	102	1.5	98	1.4	4	0.1
80	131	1.6	124	1.5	8	0.1
90	157	1.7	146	1.6	11	0.1
100	179	1.8	166	1.7	14	0.1
110	198	1.8	182	1.7	16	0.1
120	213	1.8	196	1.6	16	0.1
130	224	1.7	208	1.6	16	0.1
140	232	1.7	218	1.6	14	0.1
150	230	1.5	218	1.5	11	0.1
160	227	1.4	218	1.4	9	0.1
170	225	1.3	218	1.3	6	0.0
180	222	1.2	218	1.2	4	0.0
190	220	1.2	218	1.1	2	0.0
200	218	1.1	218	1.1	0	0.0



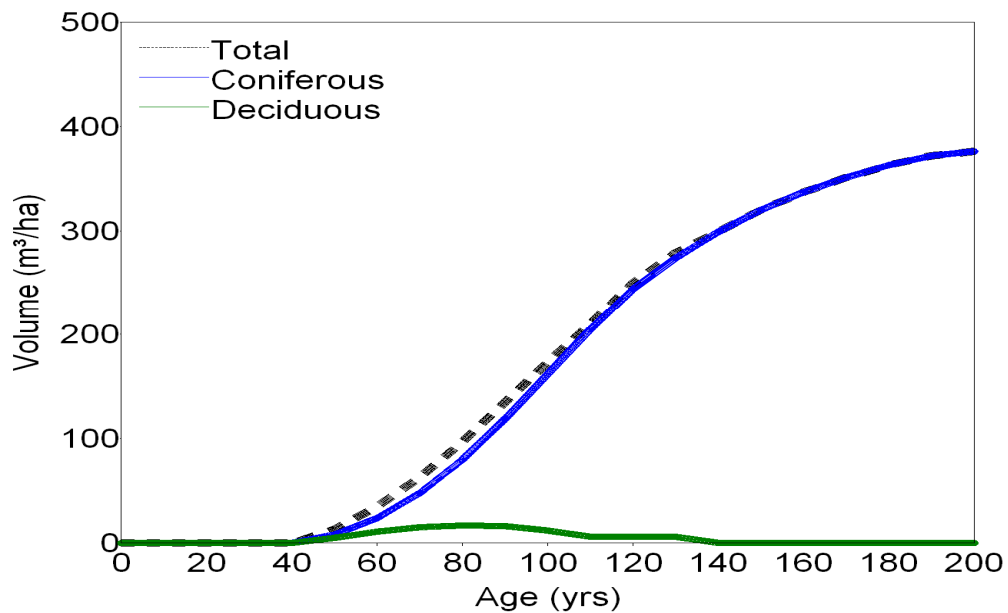
Yield group: 12 Description: [Sw-Sb,Sb-Sw]-ABCD NSR: CMW/DMW Area (ha): 1654 (%): 0.19

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	4	0.1	2	0.1	1	0.0
40	35	0.9	24	0.6	11	0.3
50	82	1.6	65	1.3	17	0.3
60	141	2.3	125	2.1	16	0.3
70	201	2.9	194	2.8	7	0.1
80	255	3.2	255	3.2	0	0.0
90	297	3.3	297	3.3	0	0.0
100	329	3.3	329	3.3	0	0.0
110	353	3.2	353	3.2	0	0.0
120	370	3.1	370	3.1	0	0.0
130	382	2.9	382	2.9	0	0.0
140	392	2.8	392	2.8	0	0.0
150	399	2.7	399	2.7	0	0.0
160	404	2.5	404	2.5	0	0.0
170	408	2.4	408	2.4	0	0.0
180	411	2.3	411	2.3	0	0.0
190	414	2.2	414	2.2	0	0.0
200	415	2.1	415	2.1	0	0.0



Yield group: 12 Description: [Sw-Sb,Sb-Sw]-ABCD NSR: LF Area (ha): 6784 (%): 0.79

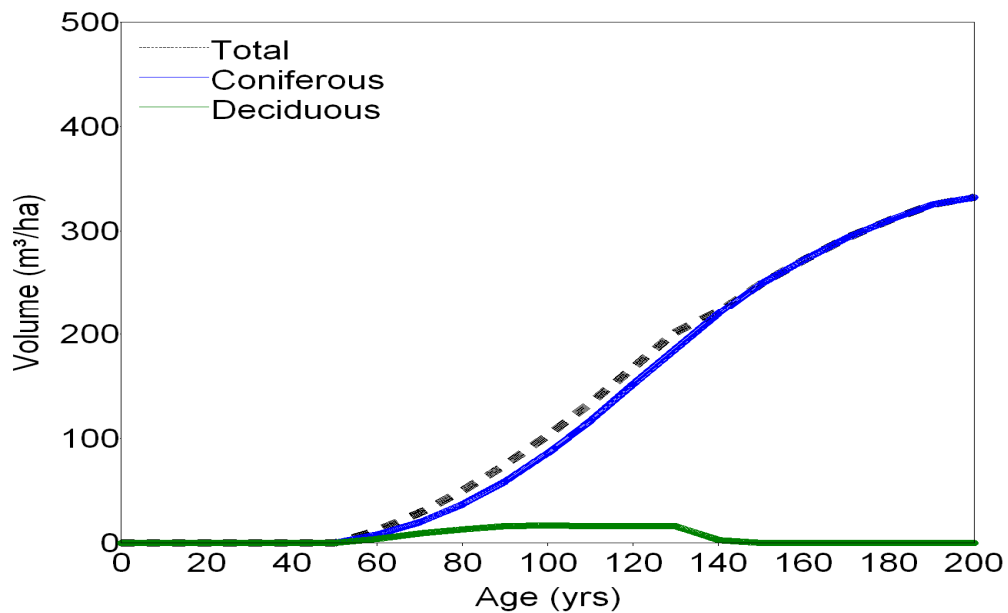
Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	0	0.0	0	0.0	0	0.0
40	0	0.0	0	0.0	0	0.0
50	13	0.3	8	0.2	5	0.1
60	35	0.6	24	0.4	11	0.2
70	63	0.9	48	0.7	15	0.2
80	97	1.2	80	1.0	17	0.2
90	135	1.5	119	1.3	16	0.2
100	173	1.7	162	1.6	12	0.1
110	210	1.9	205	1.9	6	0.1
120	250	2.1	244	2.0	6	0.0
130	279	2.1	274	2.1	6	0.0
140	299	2.1	299	2.1	0	0.0
150	320	2.1	320	2.1	0	0.0
160	337	2.1	337	2.1	0	0.0
170	351	2.1	351	2.1	0	0.0
180	363	2.0	363	2.0	0	0.0
190	372	2.0	372	2.0	0	0.0
200	376	1.9	376	1.9	0	0.0





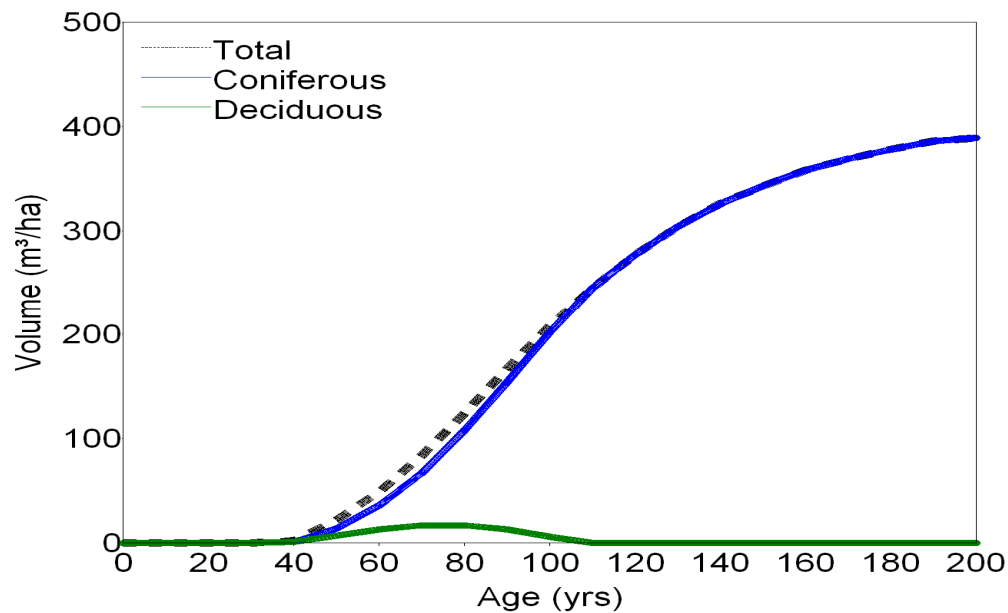
Yield group: 12 Description: [Sw-Sb,Sb-Sw]-ABCD NSR: M/SA/A Area (ha): 1622 (%): 0.19

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	0	0.0	0	0.0	0	0.0
40	0	0.0	0	0.0	0	0.0
50	0	0.0	0	0.0	0	0.0
60	12	0.2	8	0.1	4	0.1
70	29	0.4	20	0.3	9	0.1
80	50	0.6	37	0.5	13	0.2
90	75	0.8	59	0.7	16	0.2
100	103	1.0	86	0.9	17	0.2
110	134	1.2	117	1.1	16	0.1
120	168	1.4	152	1.3	16	0.1
130	202	1.6	186	1.4	16	0.1
140	222	1.6	220	1.6	3	0.0
150	249	1.7	249	1.7	0	0.0
160	272	1.7	272	1.7	0	0.0
170	293	1.7	293	1.7	0	0.0
180	310	1.7	310	1.7	0	0.0
190	325	1.7	325	1.7	0	0.0
200	332	1.7	332	1.7	0	0.0



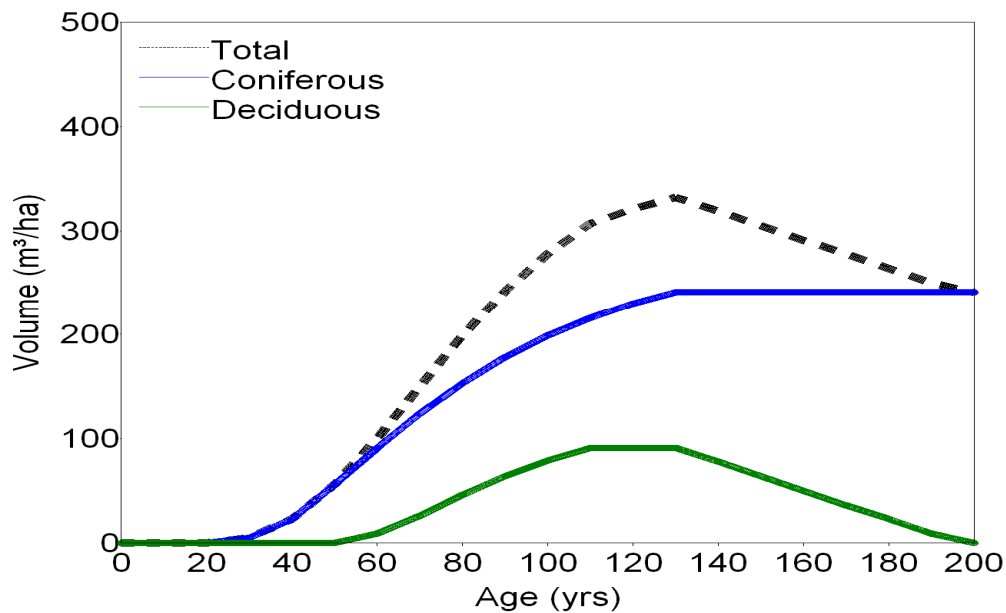
Yield group: 12 Description: [Sw-Sb,Sb-Sw]-ABCD NSR: UF Area (ha): 5579 (%): 0.65

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	0	0.0	0	0.0	0	0.0
40	2	0.1	1	0.0	1	0.0
50	22	0.4	14	0.3	7	0.1
60	49	0.8	36	0.6	13	0.2
70	84	1.2	67	1.0	17	0.2
80	124	1.6	108	1.3	17	0.2
90	167	1.9	154	1.7	13	0.1
100	208	2.1	202	2.0	6	0.1
110	245	2.2	245	2.2	0	0.0
120	277	2.3	277	2.3	0	0.0
130	304	2.3	304	2.3	0	0.0
140	326	2.3	326	2.3	0	0.0
150	343	2.3	343	2.3	0	0.0
160	358	2.2	358	2.2	0	0.0
170	369	2.2	369	2.2	0	0.0
180	378	2.1	378	2.1	0	0.0
190	386	2.0	386	2.0	0	0.0
200	389	1.9	389	1.9	0	0.0



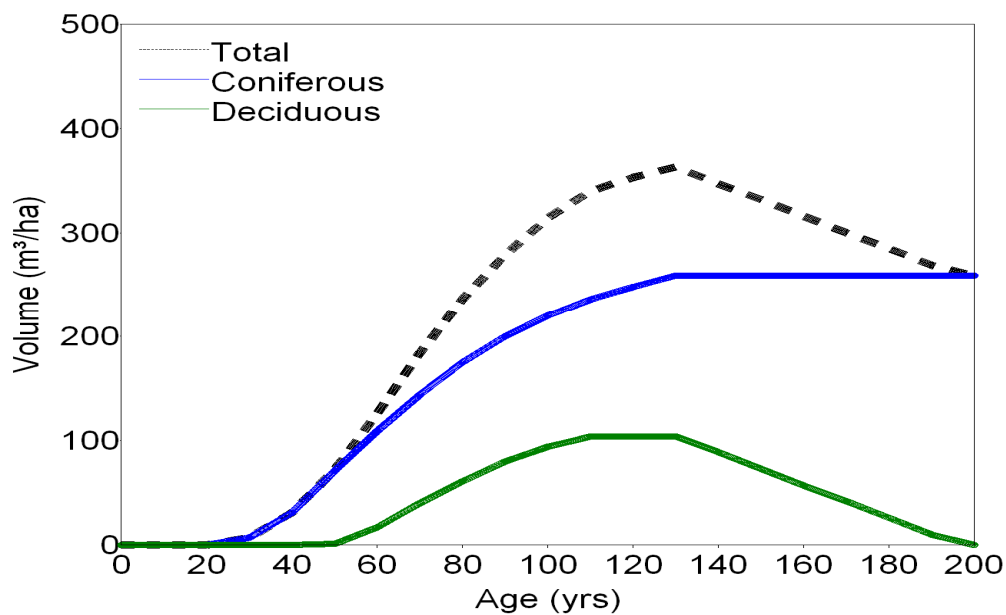
Yield group: 13 Description: PI-hwd-ABCD NSR: CMW/DMW Area (ha): 762 (%): 0.09

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	5	0.2	5	0.2	0	0.0
40	23	0.6	23	0.6	0	0.0
50	56	1.1	56	1.1	0	0.0
60	100	1.7	91	1.5	9	0.1
70	150	2.1	124	1.8	26	0.4
80	199	2.5	153	1.9	46	0.6
90	242	2.7	178	2.0	64	0.7
100	278	2.8	199	2.0	79	0.8
110	307	2.8	216	2.0	91	0.8
120	321	2.7	230	1.9	91	0.8
130	332	2.6	241	1.9	91	0.7
140	319	2.3	241	1.7	78	0.6
150	305	2.0	241	1.6	64	0.4
160	291	1.8	241	1.5	50	0.3
170	278	1.6	241	1.4	36	0.2
180	264	1.5	241	1.3	23	0.1
190	250	1.3	241	1.3	9	0.0
200	241	1.2	241	1.2	0	0.0



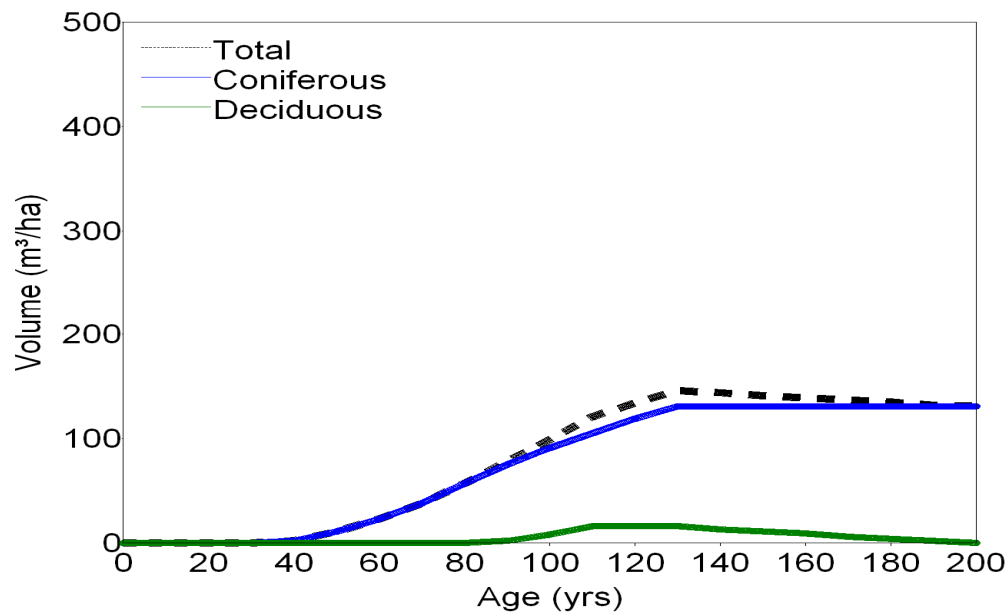
Yield group: 13 Description: PI-hwd-ABCD NSR: LF Area (ha): 5092 (%): 0.59

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	7	0.2	7	0.2	0	0.0
40	31	0.8	31	0.8	0	0.0
50	72	1.4	71	1.4	1	0.0
60	126	2.1	109	1.8	17	0.3
70	184	2.6	144	2.1	40	0.6
80	236	3.0	175	2.2	61	0.8
90	279	3.1	200	2.2	80	0.9
100	314	3.1	220	2.2	94	0.9
110	340	3.1	236	2.1	104	0.9
120	353	2.9	248	2.1	104	0.9
130	363	2.8	259	2.0	104	0.8
140	347	2.5	259	1.8	89	0.6
150	332	2.2	259	1.7	73	0.5
160	316	2.0	259	1.6	57	0.4
170	300	1.8	259	1.5	42	0.2
180	285	1.6	259	1.4	26	0.1
190	269	1.4	259	1.4	10	0.1
200	259	1.3	259	1.3	0	0.0



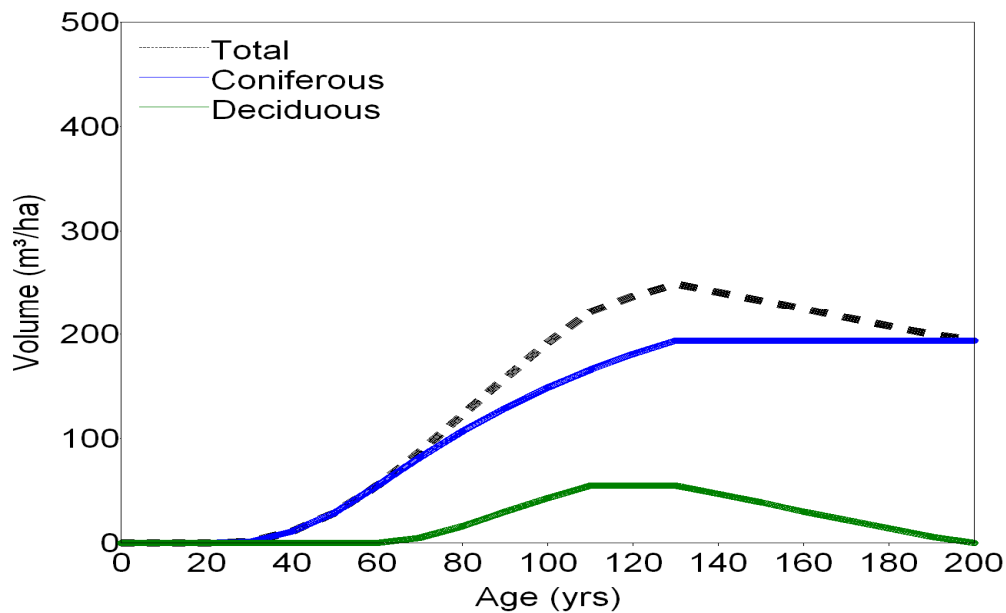
Yield group: 13 Description: PI-hwd-ABCD NSR: M/SA/A Area (ha): 655 (%) : 0.08

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	0	0.0	0	0.0	0	0.0
40	2	0.1	2	0.1	0	0.0
50	11	0.2	11	0.2	0	0.0
60	23	0.4	23	0.4	0	0.0
70	38	0.5	38	0.5	0	0.0
80	57	0.7	57	0.7	0	0.0
90	78	0.9	75	0.8	2	0.0
100	99	1.0	91	0.9	8	0.1
110	121	1.1	105	1.0	16	0.1
120	134	1.1	119	1.0	16	0.1
130	146	1.1	131	1.0	16	0.1
140	144	1.0	131	0.9	13	0.1
150	141	0.9	131	0.9	11	0.1
160	139	0.9	131	0.8	9	0.1
170	137	0.8	131	0.8	6	0.0
180	135	0.7	131	0.7	4	0.0
190	132	0.7	131	0.7	2	0.0
200	131	0.7	131	0.7	0	0.0



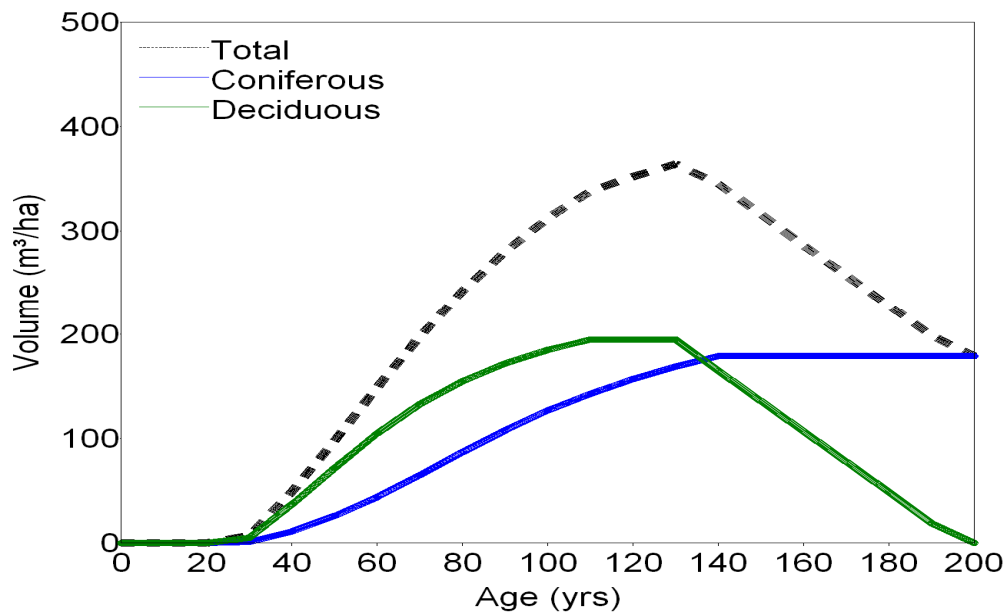
Yield group: 13 Description: PI-hwd-ABCD NSR: UF Area (ha): 2394 (%): 0.28

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	1	0.0	1	0.0	0	0.0
40	11	0.3	11	0.3	0	0.0
50	29	0.6	29	0.6	0	0.0
60	55	0.9	55	0.9	0	0.0
70	87	1.2	82	1.2	5	0.1
80	123	1.5	107	1.3	16	0.2
90	158	1.8	129	1.4	30	0.3
100	192	1.9	149	1.5	43	0.4
110	222	2.0	166	1.5	55	0.5
120	237	2.0	181	1.5	55	0.5
130	249	1.9	194	1.5	55	0.4
140	241	1.7	194	1.4	47	0.3
150	233	1.6	194	1.3	39	0.3
160	225	1.4	194	1.2	30	0.2
170	216	1.3	194	1.1	22	0.1
180	208	1.2	194	1.1	14	0.1
190	200	1.1	194	1.0	6	0.0
200	194	1.0	194	1.0	0	0.0



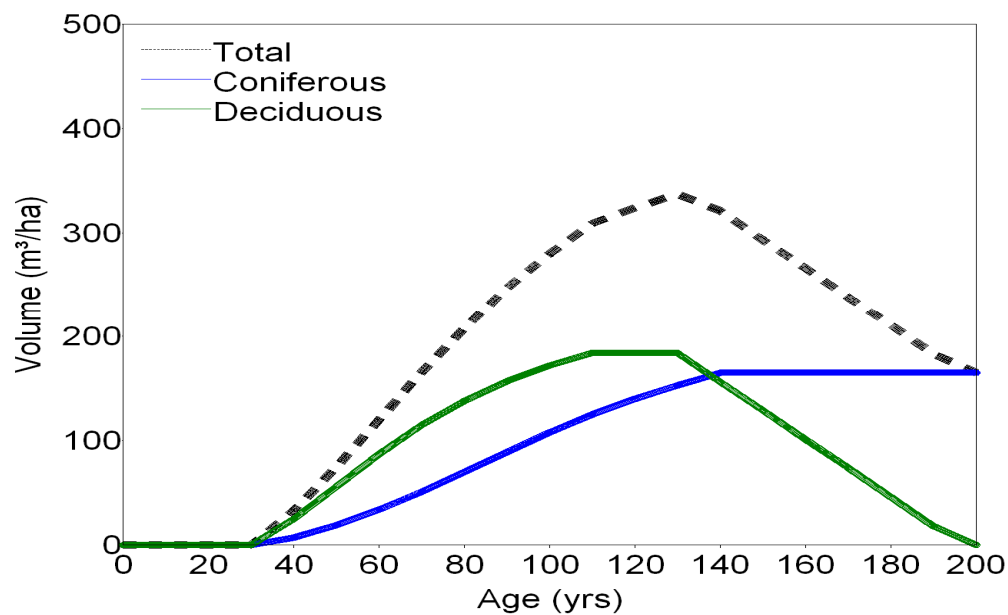
Yield group: 14 Description: [Sw-Sb]-hwd-AB NSR: CMW/DMW Area (ha): 2302 (%): 0.27

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	7	0.2	1	0.0	5	0.2
40	49	1.2	11	0.3	37	0.9
50	98	2.0	26	0.5	72	1.4
60	149	2.5	44	0.7	105	1.7
70	198	2.8	65	0.9	133	1.9
80	242	3.0	87	1.1	155	1.9
90	280	3.1	108	1.2	172	1.9
100	312	3.1	127	1.3	185	1.8
110	338	3.1	143	1.3	195	1.8
120	352	2.9	157	1.3	195	1.6
130	364	2.8	169	1.3	195	1.5
140	345	2.5	179	1.3	165	1.2
150	316	2.1	179	1.2	136	0.9
160	286	1.8	179	1.1	107	0.7
170	257	1.5	179	1.1	78	0.5
180	228	1.3	179	1.0	49	0.3
190	199	1.0	179	0.9	19	0.1
200	179	0.9	179	0.9	0	0.0



Yield group: 14 Description: [Sw-Sb]-hwd-AB NSR: LF Area (ha): 6460 (%): 0.75

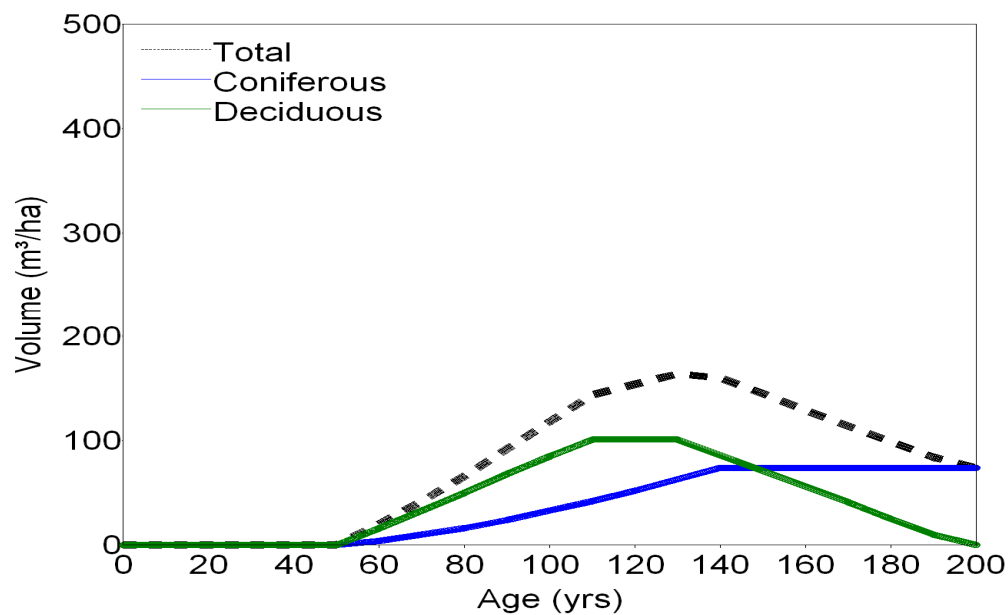
Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	0	0.0	0	0.0	0	0.0
40	33	0.8	7	0.2	25	0.6
50	75	1.5	19	0.4	56	1.1
60	120	2.0	34	0.6	87	1.4
70	166	2.4	51	0.7	115	1.6
80	208	2.6	70	0.9	138	1.7
90	247	2.7	89	1.0	157	1.7
100	280	2.8	108	1.1	172	1.7
110	309	2.8	125	1.1	184	1.7
120	324	2.7	140	1.2	184	1.5
130	337	2.6	153	1.2	184	1.4
140	321	2.3	165	1.2	156	1.1
150	293	2.0	165	1.1	129	0.9
160	266	1.7	165	1.0	101	0.6
170	238	1.4	165	1.0	74	0.4
180	211	1.2	165	0.9	46	0.3
190	183	1.0	165	0.9	18	0.1
200	165	0.8	165	0.8	0	0.0





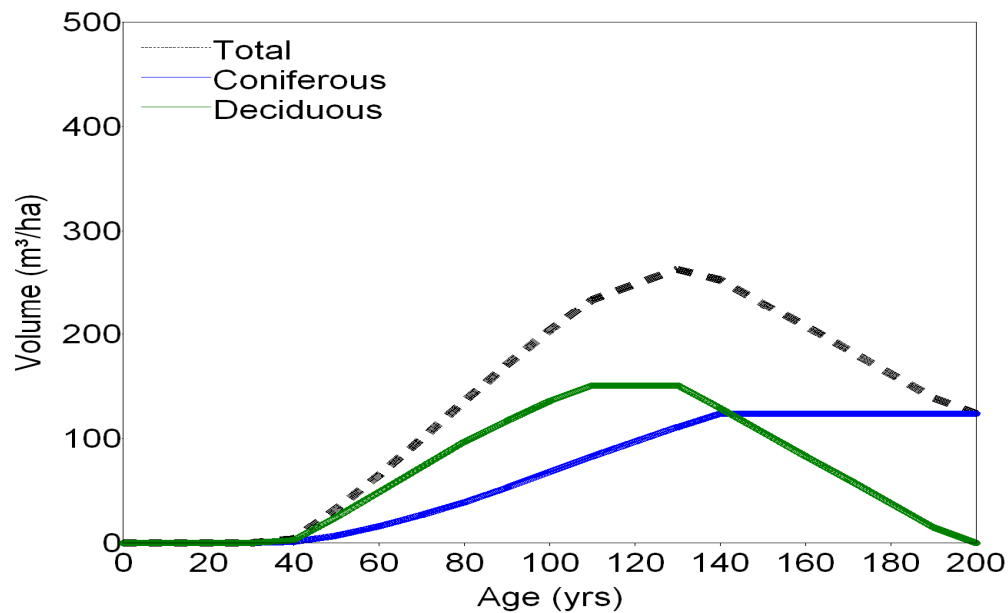
Yield group: 14 Description: [Sw-Sb]-hwd-AB NSR: M/SA/A Area (ha): 116 (%) : 0.01

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	0	0.0	0	0.0	0	0.0
40	0	0.0	0	0.0	0	0.0
50	0	0.0	0	0.0	0	0.0
60	20	0.3	4	0.1	16	0.3
70	42	0.6	10	0.1	33	0.5
80	66	0.8	16	0.2	50	0.6
90	92	1.0	24	0.3	68	0.8
100	118	1.2	33	0.3	85	0.9
110	144	1.3	42	0.4	101	0.9
120	154	1.3	52	0.4	101	0.8
130	164	1.3	63	0.5	101	0.8
140	160	1.1	74	0.5	86	0.6
150	145	1.0	74	0.5	71	0.5
160	129	0.8	74	0.5	56	0.3
170	114	0.7	74	0.4	41	0.2
180	99	0.6	74	0.4	25	0.1
190	84	0.4	74	0.4	10	0.1
200	74	0.4	74	0.4	0	0.0



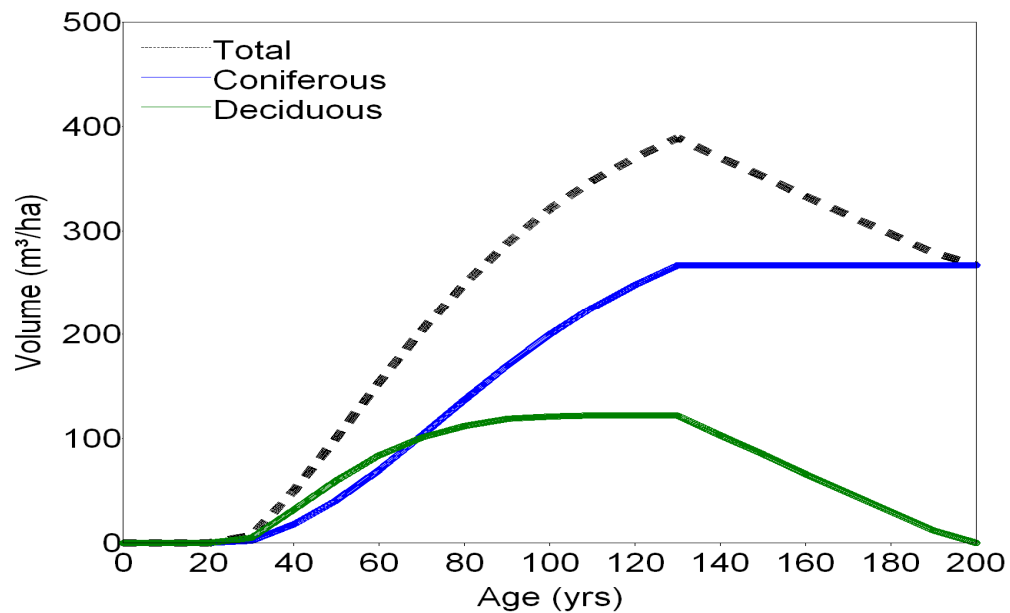
Yield group: 14 Description: [Sw-Sb]-hwd-AB NSR: UF Area (ha): 1085 (%): 0.13

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	0	0.0	0	0.0	0	0.0
40	4	0.1	1	0.0	3	0.1
50	33	0.7	7	0.1	25	0.5
60	65	1.1	16	0.3	49	0.8
70	100	1.4	27	0.4	73	1.0
80	136	1.7	39	0.5	97	1.2
90	171	1.9	53	0.6	117	1.3
100	204	2.0	68	0.7	136	1.4
110	234	2.1	83	0.8	151	1.4
120	249	2.1	97	0.8	151	1.3
130	263	2.0	111	0.9	151	1.2
140	253	1.8	124	0.9	129	0.9
150	230	1.5	124	0.8	106	0.7
160	208	1.3	124	0.8	83	0.5
170	185	1.1	124	0.7	61	0.4
180	162	0.9	124	0.7	38	0.2
190	139	0.7	124	0.7	15	0.1
200	124	0.6	124	0.6	0	0.0



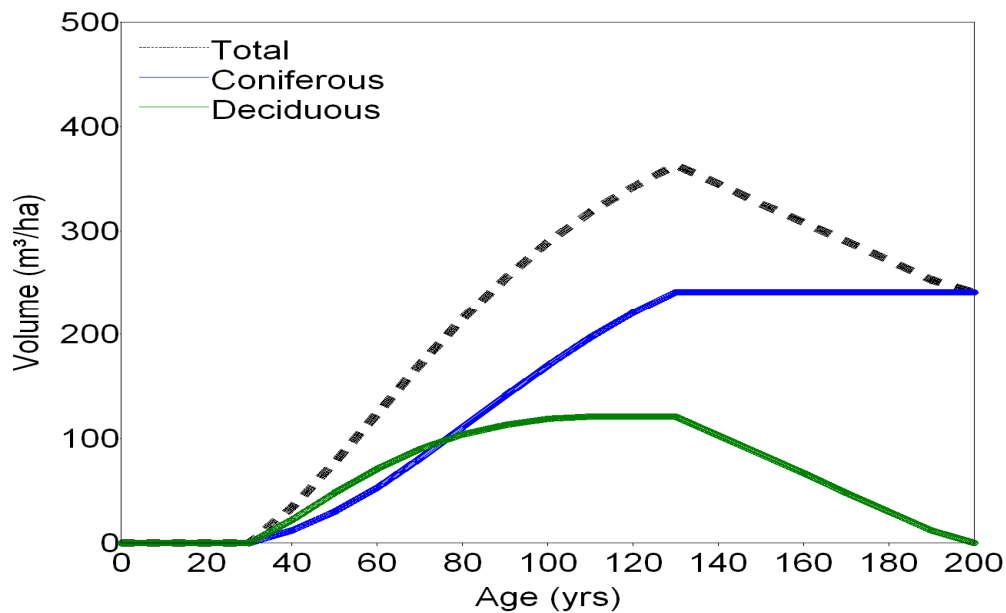
Yield group: 15 Description: [Sw-Sb]-hwd-CD NSR: CMW/DMW Area (ha): 980 (%): 0.11

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	7	0.2	2	0.1	5	0.2
40	50	1.3	18	0.5	32	0.8
50	101	2.0	41	0.8	60	1.2
60	154	2.6	70	1.2	84	1.4
70	204	2.9	103	1.5	101	1.4
80	249	3.1	137	1.7	112	1.4
90	288	3.2	170	1.9	119	1.3
100	321	3.2	200	2.0	121	1.2
110	348	3.2	226	2.1	122	1.1
120	370	3.1	248	2.1	122	1.0
130	389	3.0	267	2.1	122	0.9
140	370	2.6	267	1.9	103	0.7
150	352	2.3	267	1.8	85	0.6
160	333	2.1	267	1.7	66	0.4
170	315	1.9	267	1.6	48	0.3
180	297	1.6	267	1.5	30	0.2
190	279	1.5	267	1.4	12	0.1
200	267	1.3	267	1.3	0	0.0



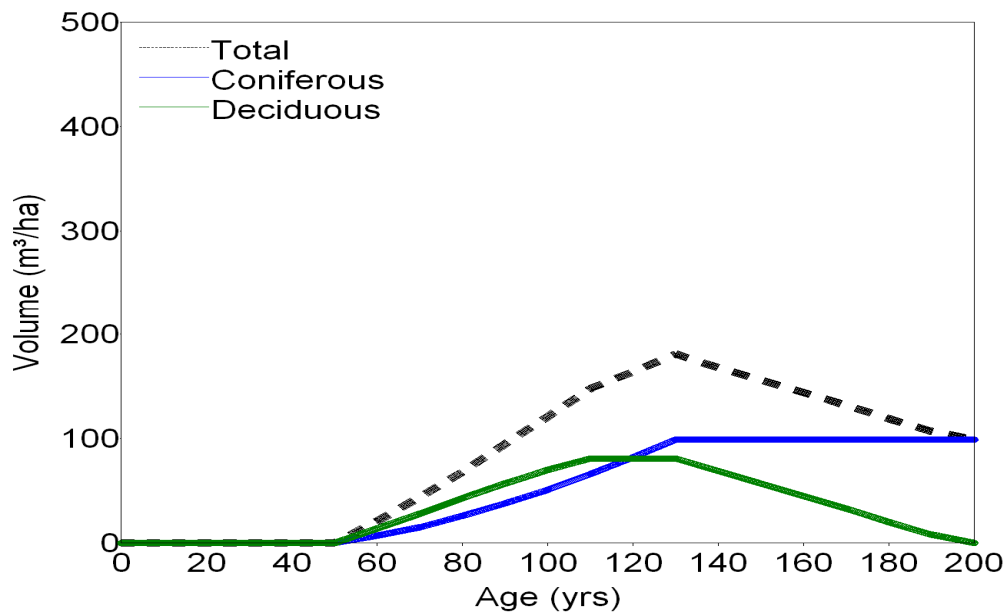
Yield group: 15 Description: [Sw-Sb]-hwd-CD NSR: LF Area (ha): 6321 (%): 0.73

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	0	0.0	0	0.0	0	0.0
40	34	0.8	12	0.3	22	0.5
50	77	1.5	30	0.6	48	1.0
60	124	2.1	53	0.9	71	1.2
70	171	2.4	81	1.2	90	1.3
80	215	2.7	111	1.4	104	1.3
90	254	2.8	141	1.6	113	1.3
100	289	2.9	170	1.7	119	1.2
110	318	2.9	197	1.8	121	1.1
120	342	2.8	221	1.8	121	1.0
130	363	2.8	241	1.9	121	0.9
140	345	2.5	241	1.7	103	0.7
150	326	2.2	241	1.6	85	0.6
160	308	1.9	241	1.5	67	0.4
170	290	1.7	241	1.4	48	0.3
180	272	1.5	241	1.3	30	0.2
190	253	1.3	241	1.3	12	0.1
200	241	1.2	241	1.2	0	0.0



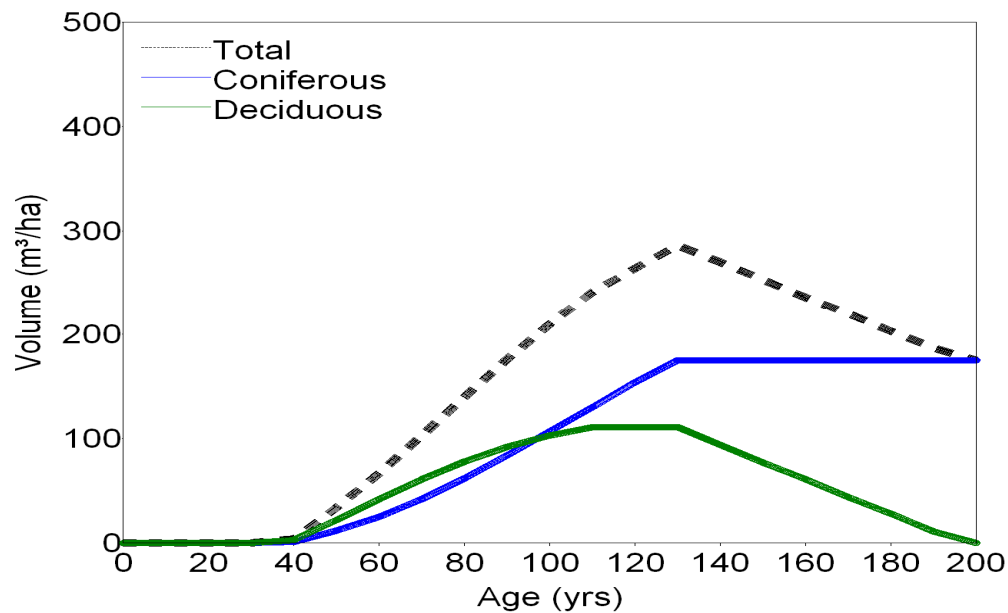
Yield group: 15 Description: [Sw-Sb]-hwd-CD NSR: M/SA/A Area (ha): 23 (%): 0

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	0	0.0	0	0.0	0	0.0
40	0	0.0	0	0.0	0	0.0
50	0	0.0	0	0.0	0	0.0
60	21	0.3	7	0.1	14	0.2
70	44	0.6	15	0.2	28	0.4
80	68	0.9	26	0.3	43	0.5
90	95	1.1	38	0.4	57	0.6
100	121	1.2	51	0.5	70	0.7
110	148	1.3	66	0.6	81	0.7
120	164	1.4	82	0.7	81	0.7
130	181	1.4	99	0.8	81	0.6
140	168	1.2	99	0.7	69	0.5
150	156	1.0	99	0.7	57	0.4
160	144	0.9	99	0.6	45	0.3
170	132	0.8	99	0.6	33	0.2
180	119	0.7	99	0.6	20	0.1
190	107	0.6	99	0.5	8	0.0
200	99	0.5	99	0.5	0	0.0



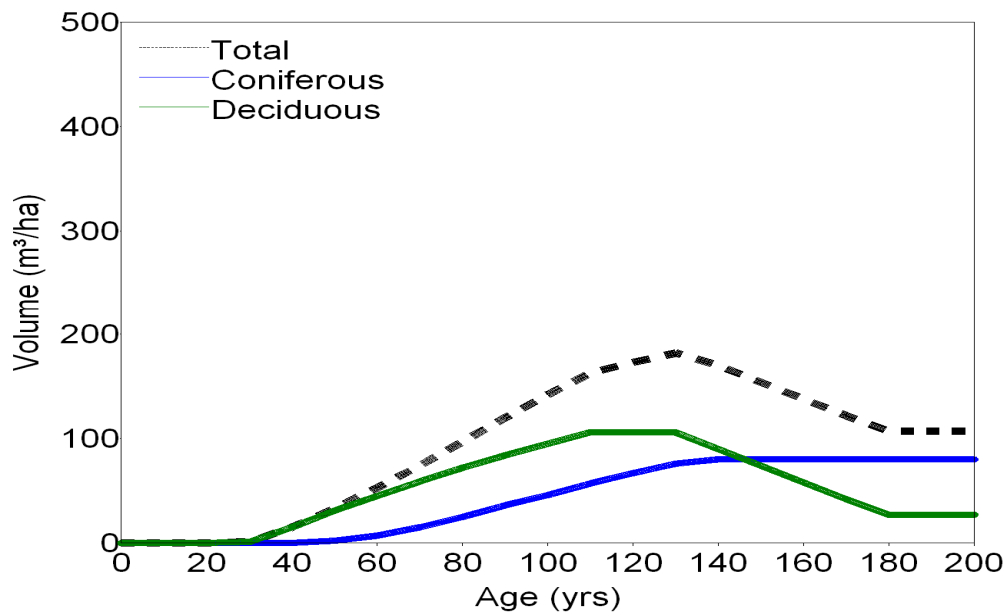
Yield group: 15 Description: [Sw-Sb]-hwd-CD NSR: UF Area (ha): 322 (%): 0.04

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	0	0.0	0	0.0	0	0.0
40	4	0.1	1	0.0	3	0.1
50	34	0.7	12	0.2	22	0.4
60	67	1.1	25	0.4	42	0.7
70	103	1.5	42	0.6	61	0.9
80	140	1.7	62	0.8	78	1.0
90	176	2.0	84	0.9	92	1.0
100	210	2.1	107	1.1	103	1.0
110	241	2.2	130	1.2	111	1.0
120	264	2.2	154	1.3	111	0.9
130	286	2.2	175	1.3	111	0.9
140	270	1.9	175	1.3	94	0.7
150	253	1.7	175	1.2	77	0.5
160	236	1.5	175	1.1	61	0.4
170	220	1.3	175	1.0	44	0.3
180	203	1.1	175	1.0	28	0.2
190	187	1.0	175	0.9	11	0.1
200	175	0.9	175	0.9	0	0.0



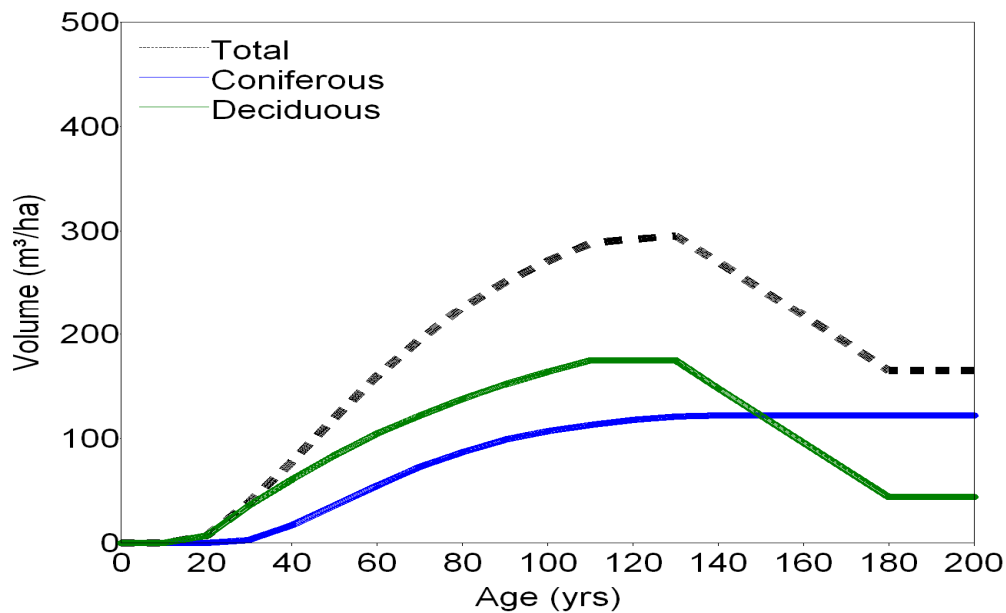
Yield group: 16 Description: hwd-swd-AB NSR: CMW/DMW Area (ha): 4784 (%): 0.55

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	1	0.0	0	0.0	1	0.0
40	15	0.4	0	0.0	15	0.4
50	33	0.7	2	0.0	31	0.6
60	53	0.9	7	0.1	45	0.8
70	74	1.1	15	0.2	59	0.8
80	97	1.2	25	0.3	72	0.9
90	120	1.3	36	0.4	84	0.9
100	142	1.4	46	0.5	95	1.0
110	163	1.5	57	0.5	106	1.0
120	173	1.4	67	0.6	106	0.9
130	182	1.4	76	0.6	106	0.8
140	170	1.2	80	0.6	90	0.6
150	154	1.0	80	0.5	74	0.5
160	138	0.9	80	0.5	58	0.4
170	122	0.7	80	0.5	42	0.2
180	107	0.6	80	0.4	27	0.1
190	107	0.6	80	0.4	27	0.1
200	107	0.5	80	0.4	27	0.1



Yield group: 16 Description: hwd-swd-AB NSR: LF Area (ha): 12308 (%): 1.43

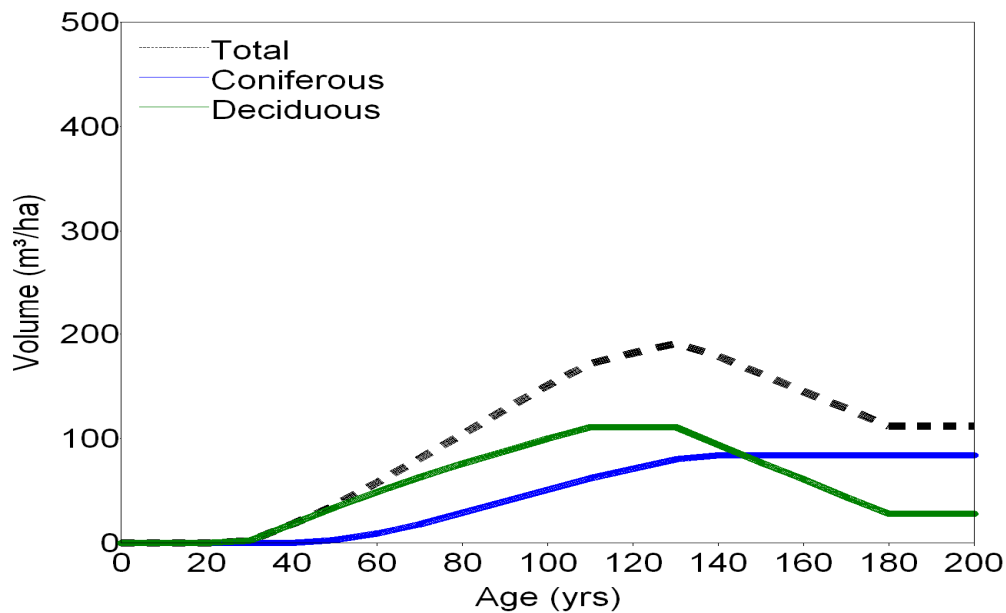
Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	7	0.4	0	0.0	7	0.4
30	39	1.3	3	0.1	36	1.2
40	78	2.0	17	0.4	61	1.5
50	120	2.4	36	0.7	84	1.7
60	160	2.7	55	0.9	105	1.7
70	195	2.8	73	1.0	122	1.7
80	226	2.8	87	1.1	138	1.7
90	251	2.8	99	1.1	152	1.7
100	271	2.7	107	1.1	164	1.6
110	288	2.6	113	1.0	175	1.6
120	292	2.4	118	1.0	175	1.5
130	295	2.3	121	0.9	175	1.3
140	270	1.9	122	0.9	148	1.1
150	244	1.6	122	0.8	122	0.8
160	218	1.4	122	0.8	96	0.6
170	192	1.1	122	0.7	70	0.4
180	165	0.9	122	0.7	44	0.2
190	165	0.9	122	0.6	44	0.2
200	165	0.8	122	0.6	44	0.2





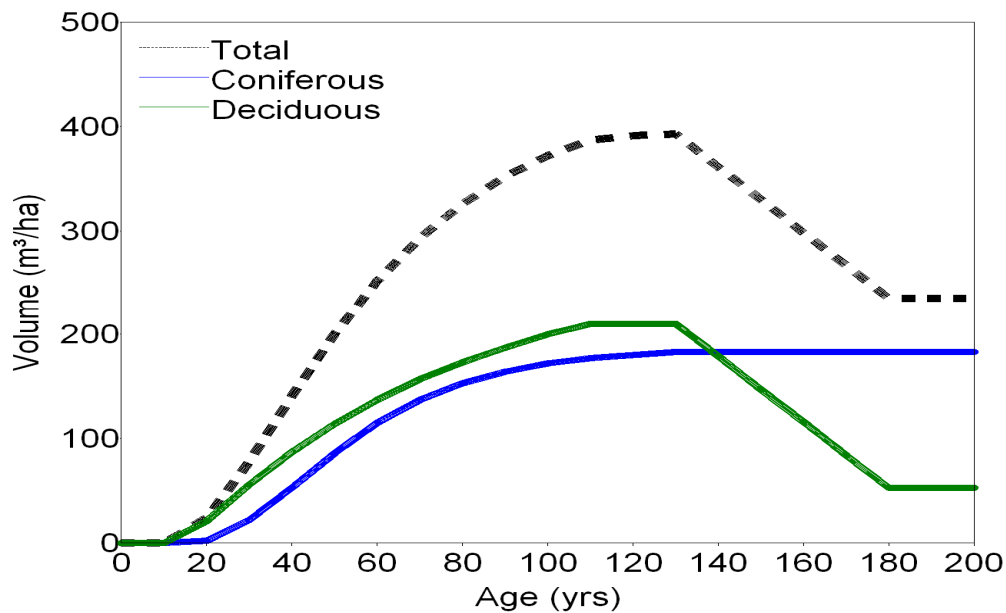
Yield group: 16 Description: hwd-swd-AB NSR: UF Area (ha): 4016 (%): 0.47

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	2	0.1	0	0.0	2	0.1
40	18	0.4	0	0.0	18	0.4
50	36	0.7	3	0.1	34	0.7
60	58	1.0	9	0.2	49	0.8
70	81	1.2	18	0.3	63	0.9
80	104	1.3	29	0.4	76	0.9
90	128	1.4	40	0.4	88	1.0
100	151	1.5	51	0.5	100	1.0
110	172	1.6	62	0.6	111	1.0
120	182	1.5	71	0.6	111	0.9
130	191	1.5	80	0.6	111	0.9
140	179	1.3	84	0.6	94	0.7
150	162	1.1	84	0.6	77	0.5
160	145	0.9	84	0.5	61	0.4
170	129	0.8	84	0.5	44	0.3
180	112	0.6	84	0.5	28	0.2
190	112	0.6	84	0.4	28	0.1
200	112	0.6	84	0.4	28	0.1



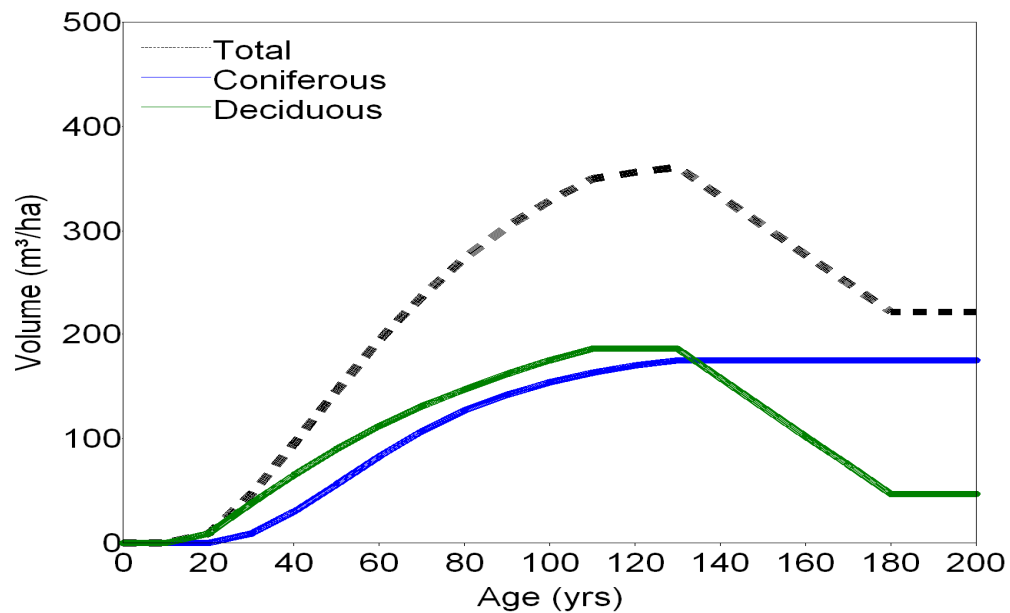
Yield group: 17 Description: hwd-swd-CD NSR: CMW/DMW Area (ha): 1916 (%): 0.22

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	24	1.2	2	0.1	21	1.1
30	78	2.6	22	0.7	56	1.9
40	141	3.5	53	1.3	87	2.2
50	200	4.0	86	1.7	114	2.3
60	252	4.2	115	1.9	137	2.3
70	293	4.2	137	2.0	157	2.2
80	326	4.1	153	1.9	173	2.2
90	352	3.9	164	1.8	187	2.1
100	372	3.7	172	1.7	200	2.0
110	387	3.5	177	1.6	210	1.9
120	391	3.3	180	1.5	210	1.8
130	393	3.0	183	1.4	210	1.6
140	361	2.6	183	1.3	179	1.3
150	330	2.2	183	1.2	147	1.0
160	298	1.9	183	1.1	116	0.7
170	267	1.6	183	1.1	84	0.5
180	235	1.3	183	1.0	53	0.3
190	235	1.2	183	1.0	53	0.3
200	235	1.2	183	0.9	53	0.3



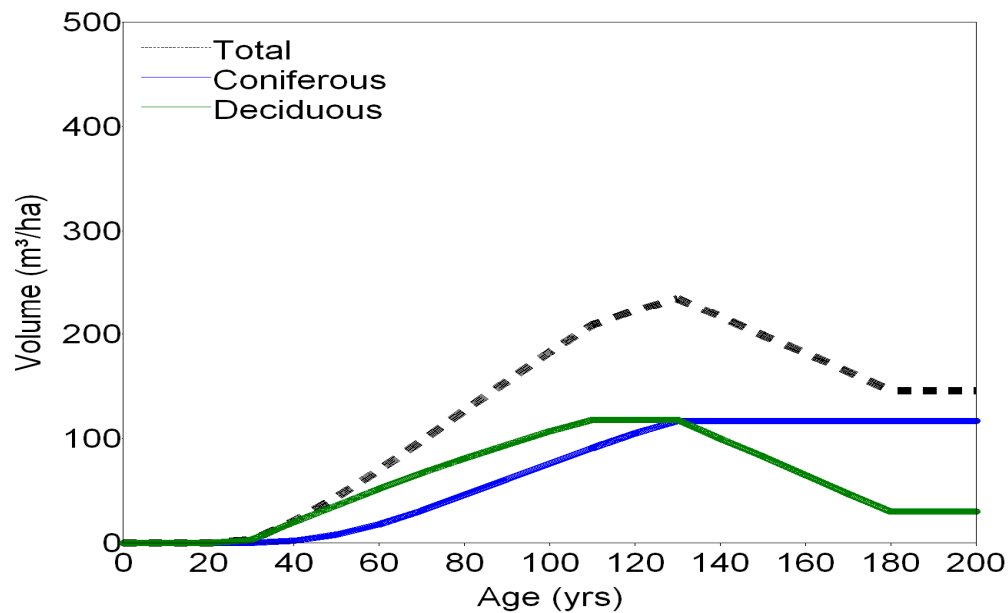
Yield group: 17 Description: hwd-swd-CD NSR: LF Area (ha): 7477 (%): 0.87

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	9	0.5	0	0.0	9	0.5
30	47	1.6	9	0.3	38	1.3
40	95	2.4	30	0.7	65	1.6
50	146	2.9	56	1.1	90	1.8
60	194	3.2	83	1.4	112	1.9
70	237	3.4	107	1.5	131	1.9
80	274	3.4	127	1.6	147	1.8
90	304	3.4	142	1.6	162	1.8
100	329	3.3	154	1.5	175	1.7
110	350	3.2	163	1.5	186	1.7
120	356	3.0	170	1.4	186	1.6
130	361	2.8	175	1.3	186	1.4
140	333	2.4	175	1.2	158	1.1
150	305	2.0	175	1.2	130	0.9
160	277	1.7	175	1.1	102	0.6
170	250	1.5	175	1.0	75	0.4
180	222	1.2	175	1.0	47	0.3
190	222	1.2	175	0.9	47	0.2
200	222	1.1	175	0.9	47	0.2



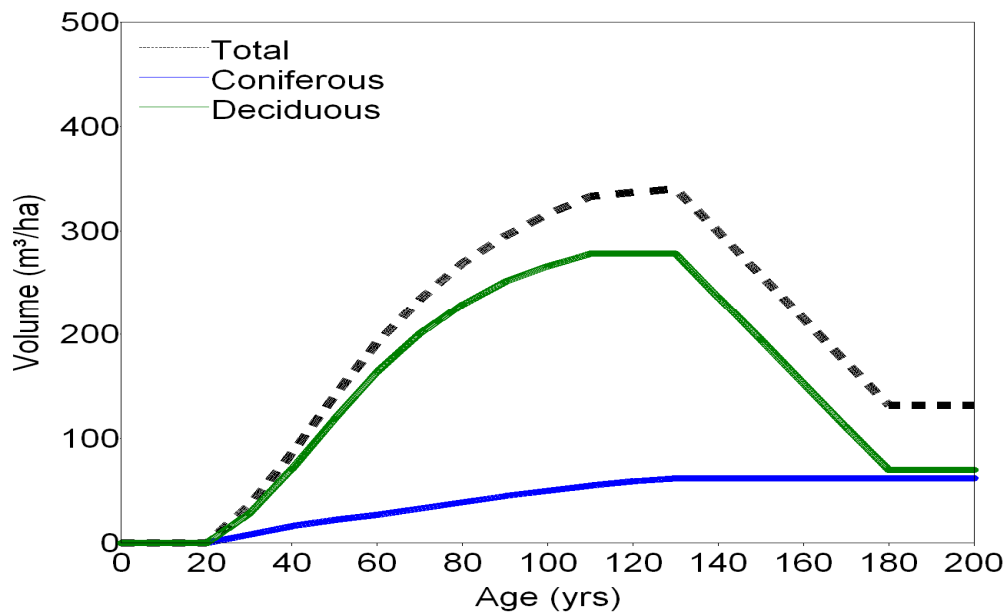
Yield group: 17 Description: hwd-swd-CD NSR: UF Area (ha): 2647 (%): 0.31

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	3	0.1	0	0.0	3	0.1
40	21	0.5	2	0.0	20	0.5
50	44	0.9	8	0.2	36	0.7
60	70	1.2	18	0.3	52	0.9
70	98	1.4	31	0.4	67	1.0
80	127	1.6	46	0.6	81	1.0
90	155	1.7	61	0.7	94	1.0
100	183	1.8	76	0.8	107	1.1
110	209	1.9	91	0.8	118	1.1
120	223	1.9	105	0.9	118	1.0
130	235	1.8	117	0.9	118	0.9
140	217	1.6	117	0.8	100	0.7
150	199	1.3	117	0.8	83	0.6
160	182	1.1	117	0.7	65	0.4
170	164	1.0	117	0.7	47	0.3
180	146	0.8	117	0.6	30	0.2
190	146	0.8	117	0.6	30	0.2
200	146	0.7	117	0.6	30	0.1



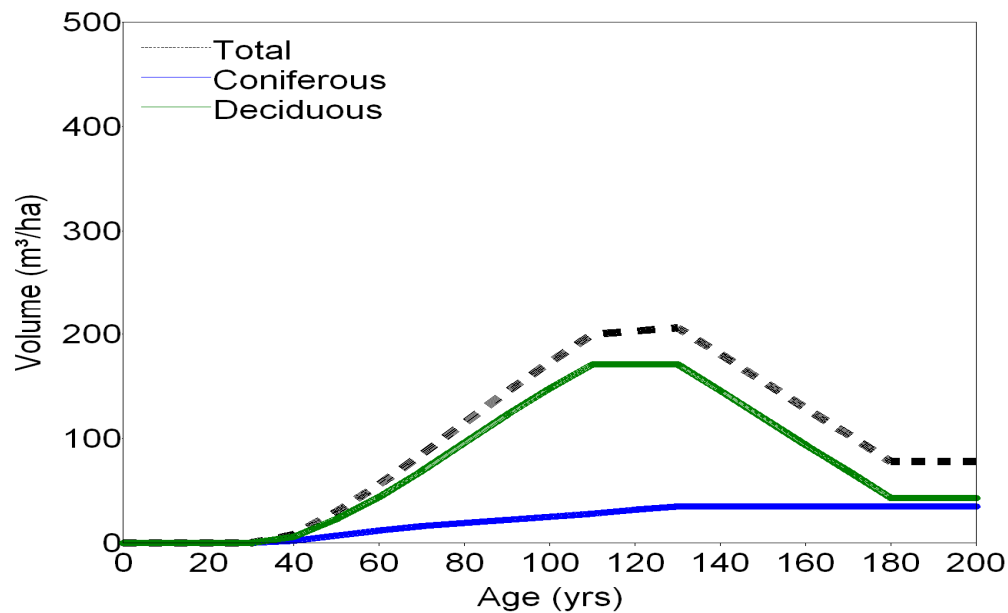
Yield group: 18 Description: hwd-A NSR: CMW/DMW Area (ha): 540 (%): 0.06

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	36	1.2	8	0.3	28	0.9
40	86	2.2	16	0.4	71	1.8
50	141	2.8	22	0.4	119	2.4
60	192	3.2	27	0.5	164	2.7
70	234	3.3	33	0.5	201	2.9
80	269	3.4	39	0.5	229	2.9
90	295	3.3	45	0.5	251	2.8
100	316	3.2	50	0.5	266	2.7
110	333	3.0	55	0.5	278	2.5
120	337	2.8	59	0.5	278	2.3
130	340	2.6	62	0.5	278	2.1
140	299	2.1	62	0.4	236	1.7
150	257	1.7	62	0.4	195	1.3
160	215	1.3	62	0.4	153	1.0
170	173	1.0	62	0.4	111	0.7
180	132	0.7	62	0.3	70	0.4
190	132	0.7	62	0.3	70	0.4
200	132	0.7	62	0.3	70	0.3



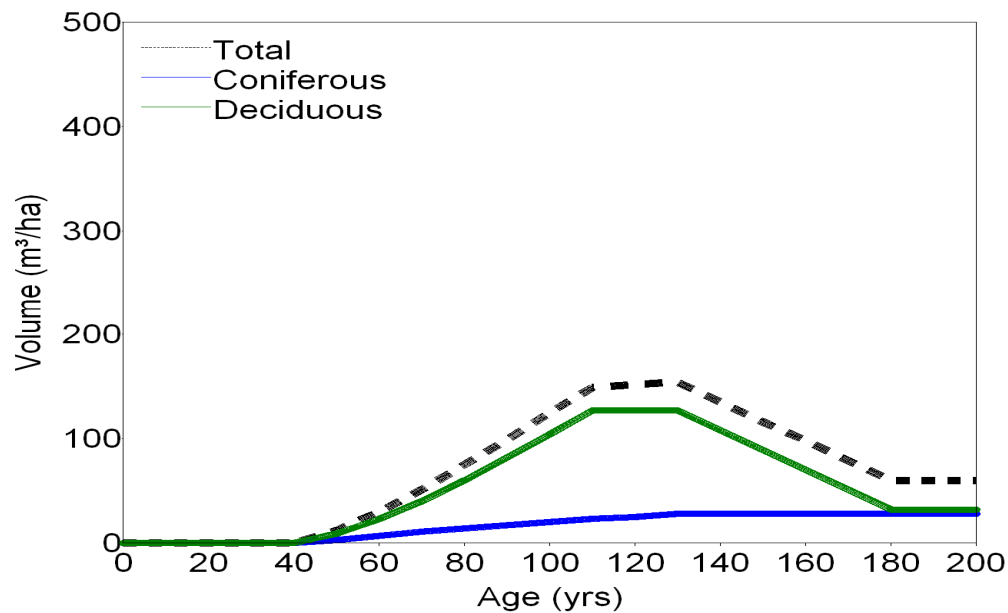
Yield group: 18 Description: hwd-A NSR: LF Area (ha): 865 (%) : 0.1

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	0	0.0	0	0.0	0	0.0
40	8	0.2	2	0.1	6	0.2
50	30	0.6	7	0.1	23	0.5
60	56	0.9	12	0.2	44	0.7
70	85	1.2	16	0.2	69	1.0
80	115	1.4	19	0.2	96	1.2
90	145	1.6	22	0.2	123	1.4
100	173	1.7	25	0.3	148	1.5
110	200	1.8	28	0.3	171	1.6
120	203	1.7	32	0.3	171	1.4
130	206	1.6	35	0.3	171	1.3
140	181	1.3	35	0.3	146	1.0
150	155	1.0	35	0.2	120	0.8
160	129	0.8	35	0.2	94	0.6
170	104	0.6	35	0.2	69	0.4
180	78	0.4	35	0.2	43	0.2
190	78	0.4	35	0.2	43	0.2
200	78	0.4	35	0.2	43	0.2



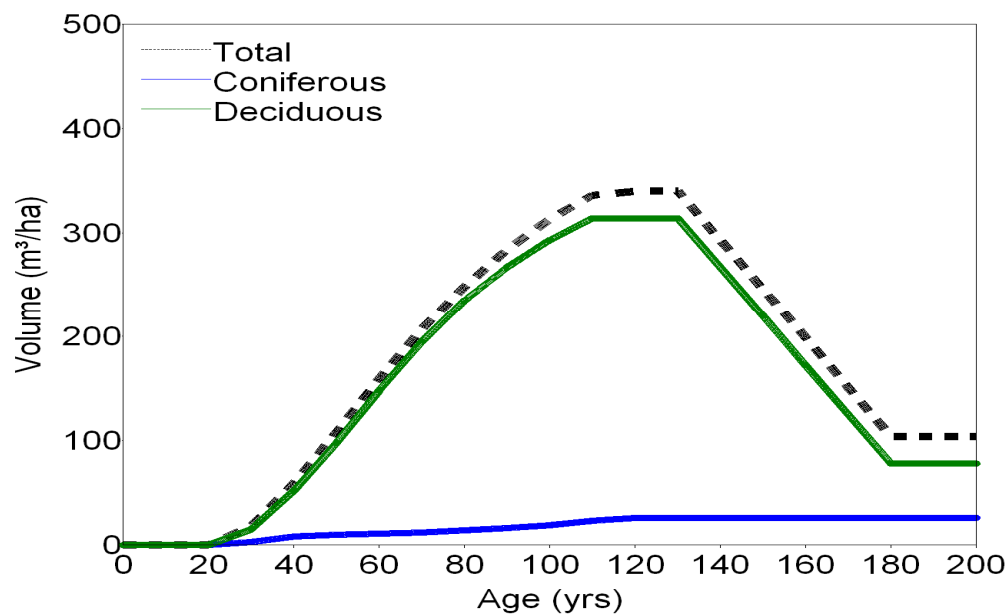
Yield group: 18 Description: hwd-A NSR: UF Area (ha): 41 (%): 0

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	0	0.0	0	0.0	0	0.0
40	0	0.0	0	0.0	0	0.0
50	12	0.2	3	0.1	9	0.2
60	30	0.5	7	0.1	23	0.4
70	51	0.7	11	0.2	40	0.6
80	75	0.9	14	0.2	60	0.8
90	99	1.1	17	0.2	82	0.9
100	125	1.2	20	0.2	104	1.0
110	149	1.4	23	0.2	127	1.2
120	152	1.3	25	0.2	127	1.1
130	154	1.2	28	0.2	127	1.0
140	135	1.0	28	0.2	108	0.8
150	116	0.8	28	0.2	89	0.6
160	98	0.6	28	0.2	70	0.4
170	79	0.5	28	0.2	51	0.3
180	60	0.3	28	0.2	32	0.2
190	60	0.3	28	0.1	32	0.2
200	60	0.3	28	0.1	32	0.2



Yield group: 19 Description: hwd-B NSR: CMW/DMW Area (ha): 14617 (%): 1.69

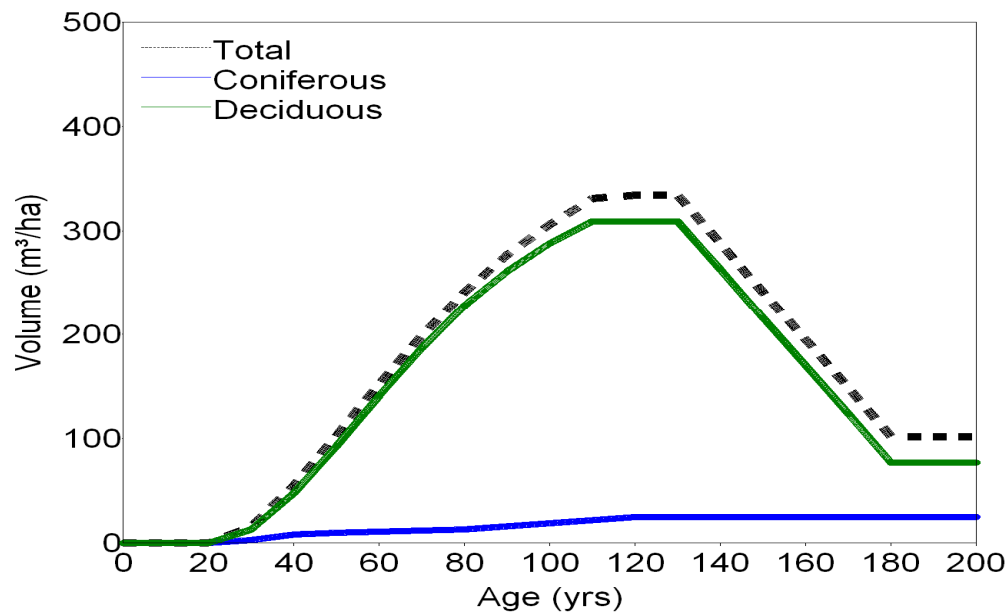
Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	18	0.6	3	0.1	15	0.5
40	59	1.5	8	0.2	52	1.3
50	108	2.2	10	0.2	98	2.0
60	159	2.7	11	0.2	148	2.5
70	207	3.0	12	0.2	195	2.8
80	248	3.1	14	0.2	235	2.9
90	284	3.2	16	0.2	267	3.0
100	313	3.1	19	0.2	293	2.9
110	336	3.1	23	0.2	314	2.9
120	340	2.8	26	0.2	314	2.6
130	340	2.6	26	0.2	314	2.4
140	293	2.1	26	0.2	267	1.9
150	246	1.6	26	0.2	220	1.5
160	199	1.2	26	0.2	172	1.1
170	151	0.9	26	0.2	125	0.7
180	104	0.6	26	0.1	78	0.4
190	104	0.5	26	0.1	78	0.4
200	104	0.5	26	0.1	78	0.4





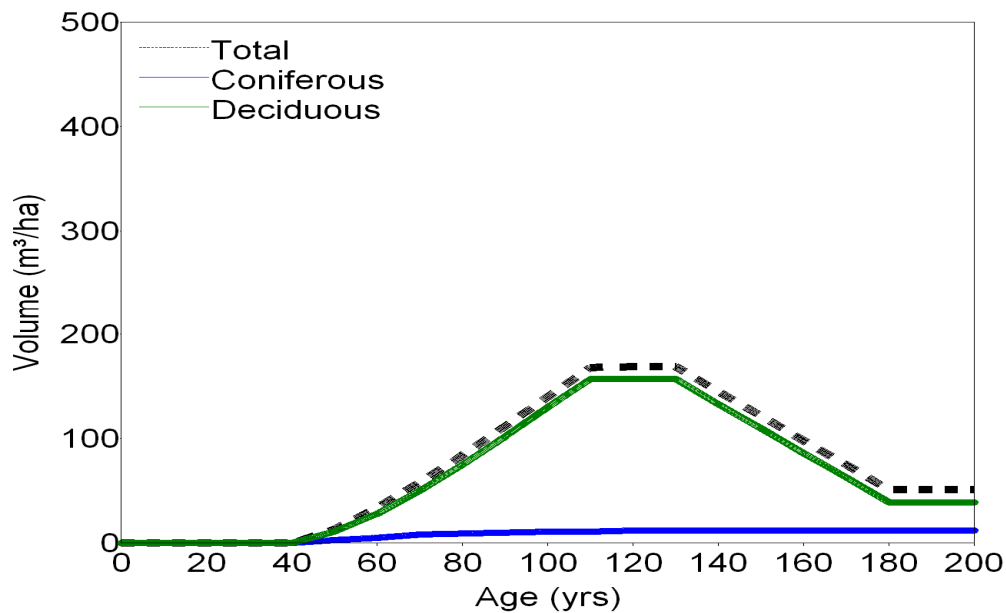
Yield group: 19 Description: hwd-B NSR: LF Area (ha): 30170 (%): 3.5

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	16	0.5	3	0.1	13	0.4
40	55	1.4	8	0.2	48	1.2
50	103	2.1	10	0.2	93	1.9
60	152	2.5	11	0.2	141	2.4
70	199	2.8	12	0.2	187	2.7
80	241	3.0	13	0.2	228	2.8
90	277	3.1	16	0.2	261	2.9
100	306	3.1	19	0.2	288	2.9
110	331	3.0	22	0.2	309	2.8
120	334	2.8	25	0.2	309	2.6
130	334	2.6	25	0.2	309	2.4
140	288	2.1	25	0.2	263	1.9
150	241	1.6	25	0.2	216	1.4
160	195	1.2	25	0.2	170	1.1
170	149	0.9	25	0.1	124	0.7
180	102	0.6	25	0.1	77	0.4
190	102	0.5	25	0.1	77	0.4
200	102	0.5	25	0.1	77	0.4



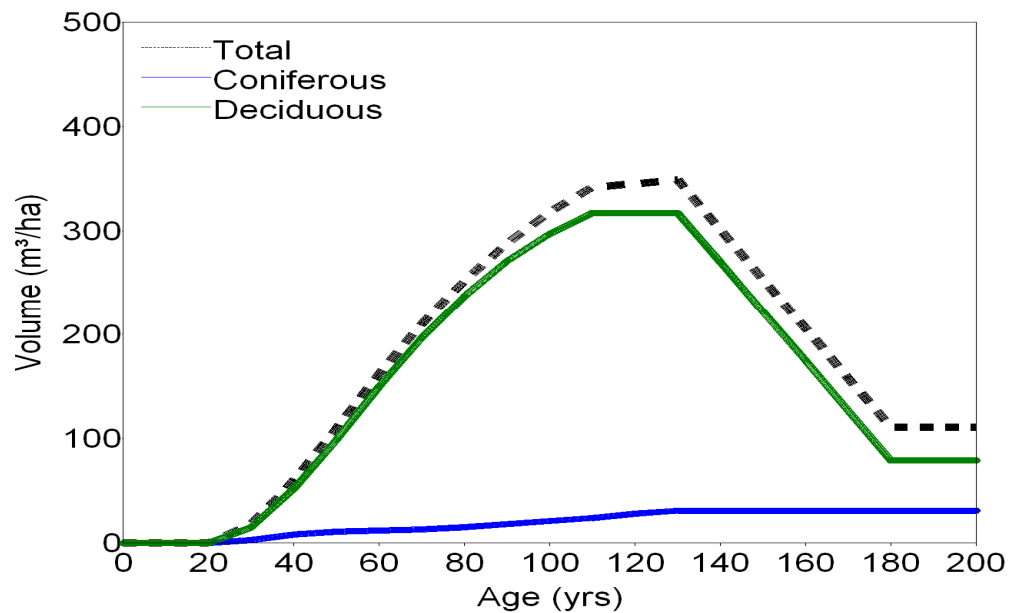
Yield group: 19 Description: hwd-B NSR: UF Area (ha): 3751 (%): 0.43

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	0	0.0	0	0.0	0	0.0
40	0	0.0	0	0.0	0	0.0
50	13	0.3	3	0.1	11	0.2
60	34	0.6	5	0.1	28	0.5
70	58	0.8	8	0.1	50	0.7
80	84	1.1	9	0.1	75	0.9
90	112	1.2	10	0.1	102	1.1
100	140	1.4	11	0.1	130	1.3
110	168	1.5	11	0.1	157	1.4
120	169	1.4	12	0.1	157	1.3
130	169	1.3	12	0.1	157	1.2
140	145	1.0	12	0.1	133	1.0
150	122	0.8	12	0.1	110	0.7
160	98	0.6	12	0.1	86	0.5
170	75	0.4	12	0.1	63	0.4
180	51	0.3	12	0.1	39	0.2
190	51	0.3	12	0.1	39	0.2
200	51	0.3	12	0.1	39	0.2



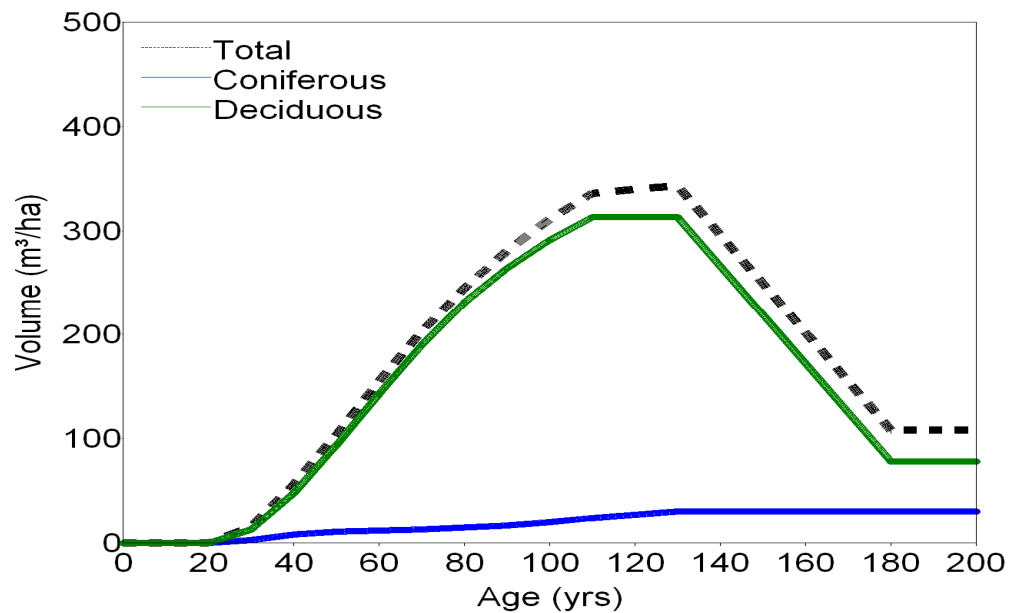
Yield group: 20 Description: hwd-C NSR: CMW/DMW Area (ha): 23690 (%): 2.75

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	18	0.6	3	0.1	15	0.5
40	60	1.5	8	0.2	52	1.3
50	110	2.2	11	0.2	99	2.0
60	162	2.7	12	0.2	150	2.5
70	210	3.0	13	0.2	197	2.8
80	252	3.2	15	0.2	237	3.0
90	288	3.2	18	0.2	271	3.0
100	318	3.2	21	0.2	297	3.0
110	342	3.1	24	0.2	317	2.9
120	345	2.9	28	0.2	317	2.6
130	349	2.7	31	0.2	317	2.4
140	301	2.2	31	0.2	270	1.9
150	253	1.7	31	0.2	222	1.5
160	206	1.3	31	0.2	175	1.1
170	158	0.9	31	0.2	127	0.7
180	111	0.6	31	0.2	79	0.4
190	111	0.6	31	0.2	79	0.4
200	111	0.6	31	0.2	79	0.4



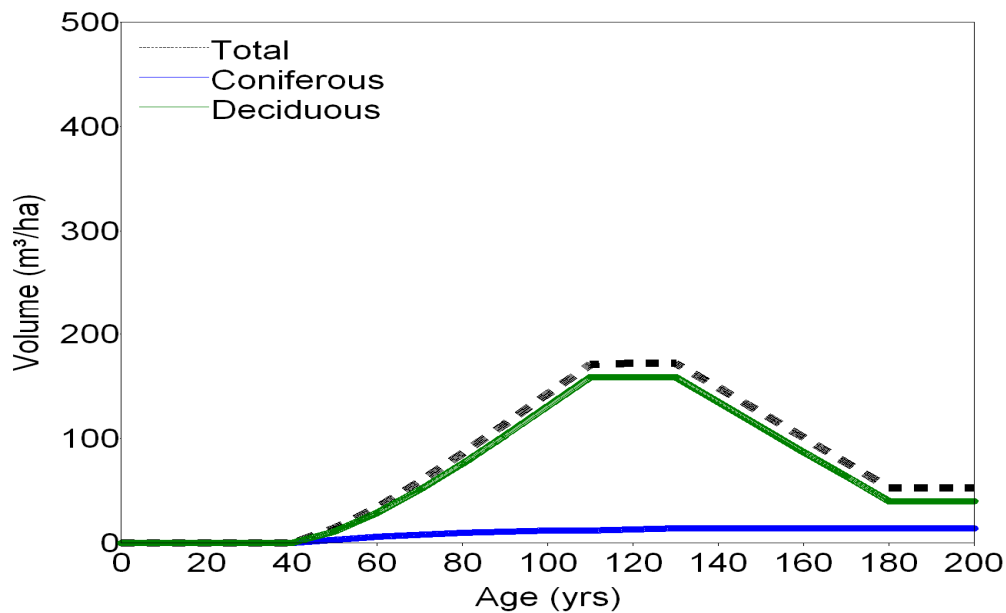
Yield group: 20 Description: hwd-C NSR: LF Area (ha): 66786 (%): 7.74

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	16	0.5	3	0.1	13	0.4
40	56	1.4	8	0.2	48	1.2
50	104	2.1	11	0.2	94	1.9
60	155	2.6	12	0.2	143	2.4
70	203	2.9	13	0.2	190	2.7
80	245	3.1	15	0.2	231	2.9
90	281	3.1	17	0.2	264	2.9
100	311	3.1	20	0.2	291	2.9
110	336	3.1	24	0.2	313	2.8
120	340	2.8	27	0.2	313	2.6
130	343	2.6	30	0.2	313	2.4
140	296	2.1	30	0.2	266	1.9
150	249	1.7	30	0.2	219	1.5
160	202	1.3	30	0.2	172	1.1
170	155	0.9	30	0.2	125	0.7
180	108	0.6	30	0.2	78	0.4
190	108	0.6	30	0.2	78	0.4
200	108	0.5	30	0.2	78	0.4



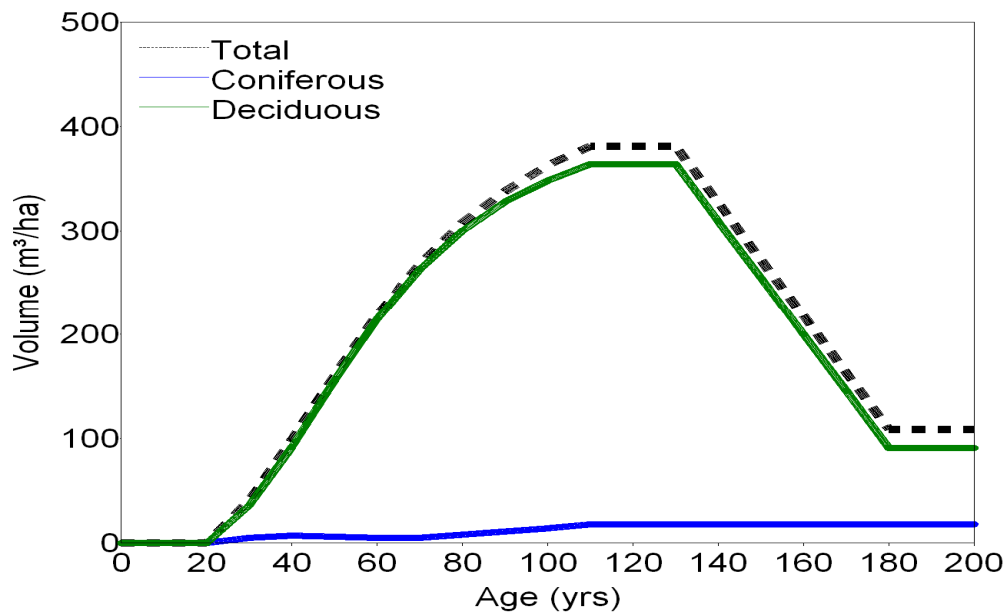
Yield group: 20 Description: hwd-C NSR: UF Area (ha): 6198 (%): 0.72

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	0	0.0	0	0.0	0	0.0
40	0	0.0	0	0.0	0	0.0
50	14	0.3	3	0.1	11	0.2
60	34	0.6	6	0.1	29	0.5
70	59	0.8	8	0.1	51	0.7
80	86	1.1	10	0.1	76	0.9
90	114	1.3	11	0.1	103	1.1
100	143	1.4	12	0.1	131	1.3
110	171	1.6	12	0.1	159	1.4
120	172	1.4	13	0.1	159	1.3
130	172	1.3	14	0.1	159	1.2
140	149	1.1	14	0.1	135	1.0
150	125	0.8	14	0.1	111	0.7
160	101	0.6	14	0.1	87	0.5
170	77	0.5	14	0.1	64	0.4
180	53	0.3	14	0.1	40	0.2
190	53	0.3	14	0.1	40	0.2
200	53	0.3	14	0.1	40	0.2



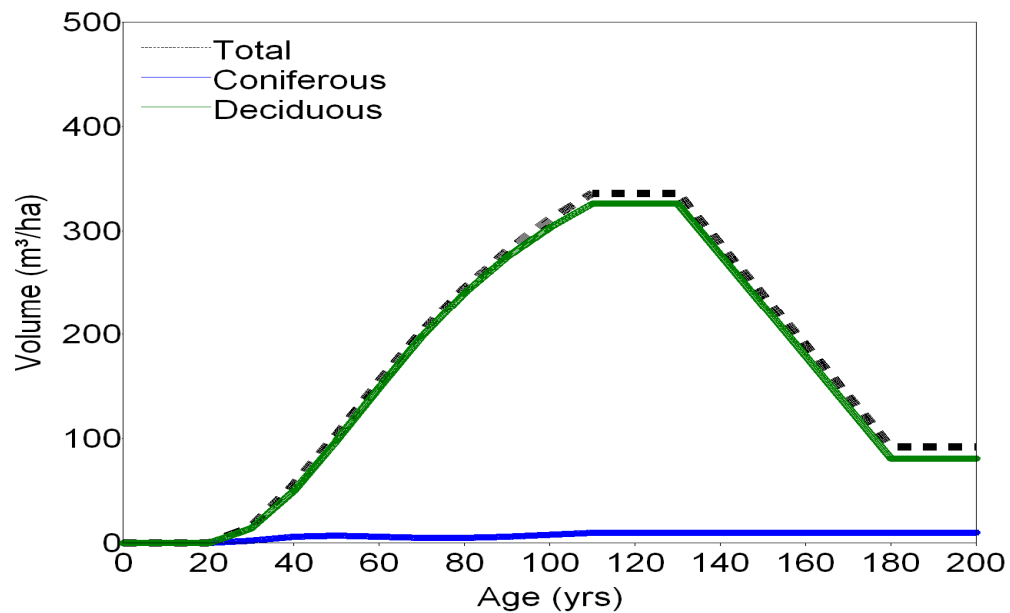
Yield group: 21 Description: hwd-D NSR: CMW/DMW Area (ha): 8653 (%): 1

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	41	1.4	5	0.2	36	1.2
40	99	2.5	7	0.2	92	2.3
50	161	3.2	6	0.1	156	3.1
60	219	3.7	5	0.1	215	3.6
70	268	3.8	5	0.1	263	3.8
80	308	3.8	8	0.1	300	3.7
90	338	3.8	11	0.1	328	3.6
100	363	3.6	14	0.1	348	3.5
110	381	3.5	18	0.2	364	3.3
120	381	3.2	18	0.1	364	3.0
130	381	2.9	18	0.1	364	2.8
140	327	2.3	18	0.1	309	2.2
150	272	1.8	18	0.1	255	1.7
160	218	1.4	18	0.1	200	1.3
170	163	1.0	18	0.1	146	0.9
180	109	0.6	18	0.1	91	0.5
190	109	0.6	18	0.1	91	0.5
200	109	0.5	18	0.1	91	0.5



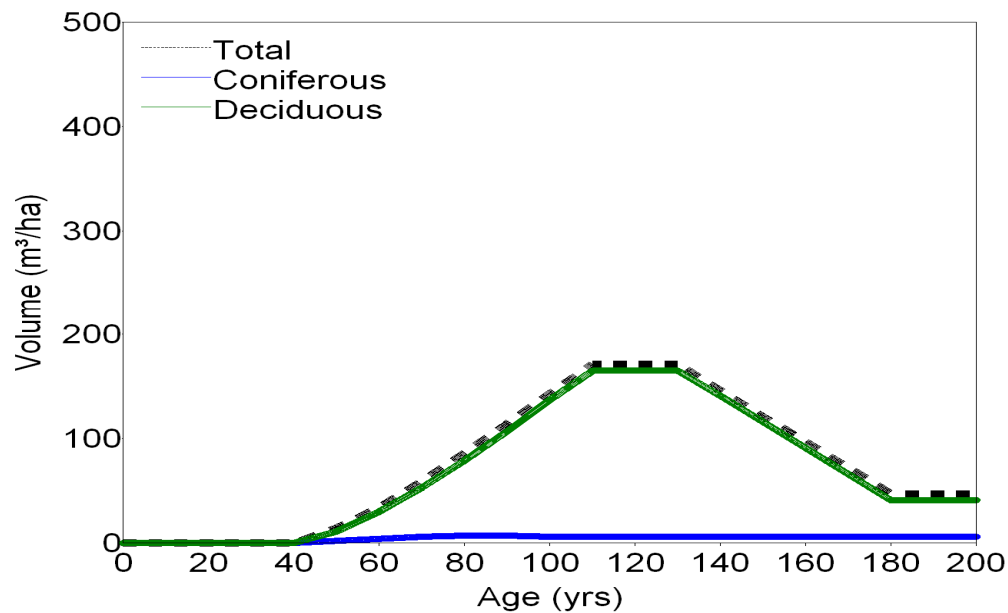
Yield group: 21 Description: hwd-D NSR: LF Area (ha): 28299 (%): 3.28

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	16	0.5	2	0.1	14	0.5
40	56	1.4	6	0.1	50	1.3
50	104	2.1	7	0.1	98	2.0
60	155	2.6	6	0.1	149	2.5
70	203	2.9	5	0.1	198	2.8
80	245	3.1	5	0.1	240	3.0
90	281	3.1	6	0.1	275	3.1
100	311	3.1	8	0.1	303	3.0
110	336	3.1	10	0.1	326	3.0
120	336	2.8	10	0.1	326	2.7
130	336	2.6	10	0.1	326	2.5
140	287	2.1	10	0.1	277	2.0
150	238	1.6	10	0.1	228	1.5
160	190	1.2	10	0.1	179	1.1
170	141	0.8	10	0.1	130	0.8
180	92	0.5	10	0.1	81	0.5
190	92	0.5	10	0.1	81	0.4
200	92	0.5	10	0.1	81	0.4



Yield group: 21 Description: hwd-D NSR: UF Area (ha): 1605 (%): 0.19

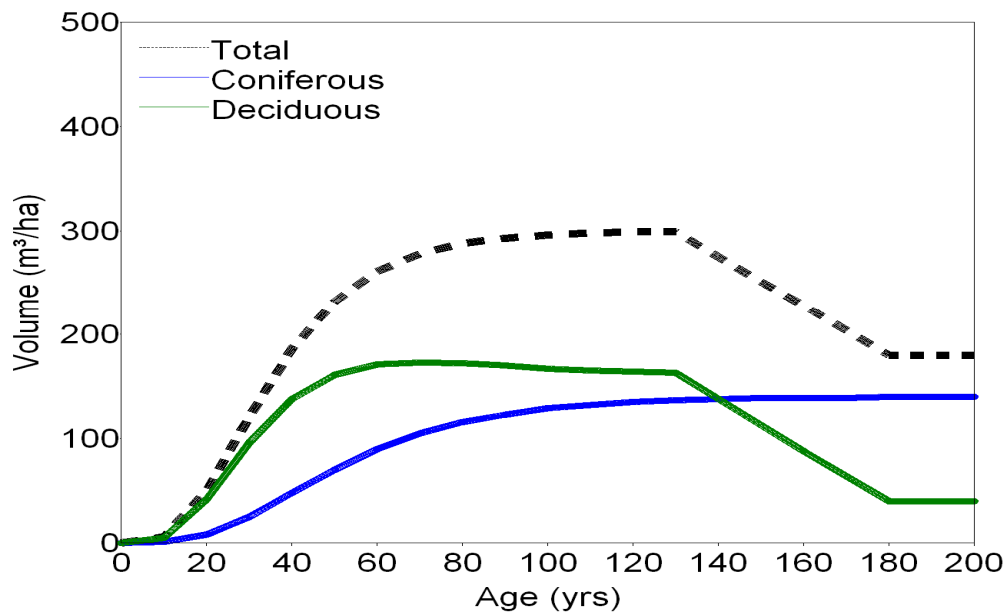
Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	0	0.0	0	0.0	0	0.0
40	0	0.0	0	0.0	0	0.0
50	14	0.3	2	0.0	11	0.2
60	34	0.6	4	0.1	30	0.5
70	59	0.8	6	0.1	53	0.8
80	86	1.1	7	0.1	79	1.0
90	114	1.3	7	0.1	107	1.2
100	143	1.4	6	0.1	137	1.4
110	171	1.6	6	0.1	165	1.5
120	171	1.4	6	0.0	165	1.4
130	171	1.3	6	0.0	165	1.3
140	146	1.0	6	0.0	141	1.0
150	121	0.8	6	0.0	116	0.8
160	97	0.6	6	0.0	91	0.6
170	72	0.4	6	0.0	66	0.4
180	47	0.3	6	0.0	41	0.2
190	47	0.2	6	0.0	41	0.2
200	47	0.2	6	0.0	41	0.2





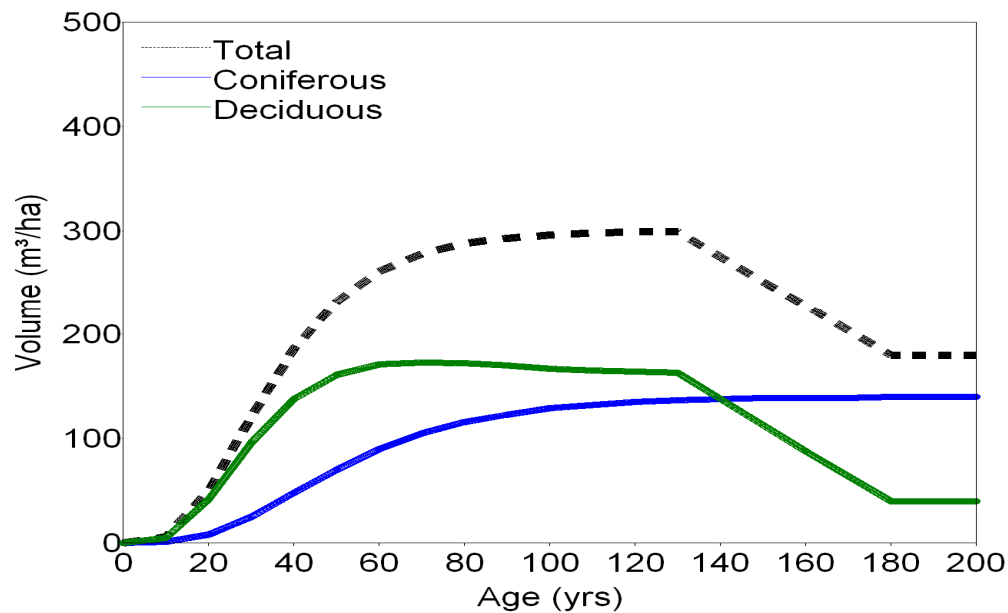
Yield group: 40 Description: conifer-US NSR: CMW/DMW Area (ha): 22369 (%): 2.59

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	6	0.6	1	0.1	5	0.5
20	50	2.5	8	0.4	42	2.1
30	121	4.0	25	0.8	96	3.2
40	186	4.6	48	1.2	138	3.5
50	232	4.6	70	1.4	161	3.2
60	261	4.3	90	1.5	171	2.9
70	278	4.0	105	1.5	173	2.5
80	288	3.6	116	1.4	172	2.2
90	293	3.3	123	1.4	170	1.9
100	296	3.0	129	1.3	167	1.7
110	298	2.7	132	1.2	165	1.5
120	299	2.5	135	1.1	164	1.4
130	299	2.3	137	1.1	163	1.3
140	275	2.0	138	1.0	138	1.0
150	251	1.7	139	0.9	113	0.8
160	228	1.4	139	0.9	88	0.6
170	204	1.2	139	0.8	64	0.4
180	180	1.0	140	0.8	40	0.2
190	180	0.9	140	0.7	40	0.2
200	180	0.9	140	0.7	40	0.2



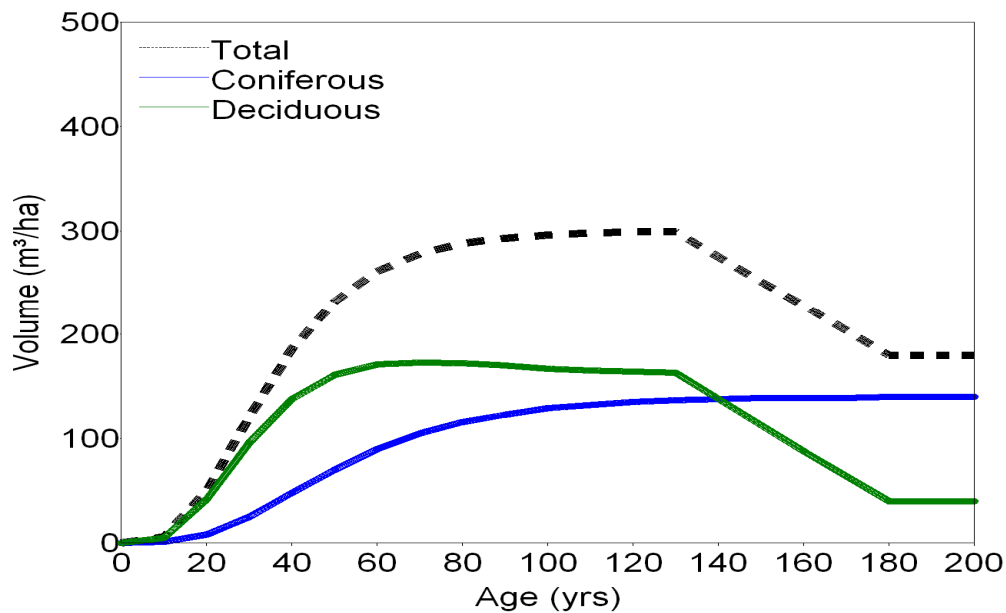
Yield group: 40 Description: conifer-US NSR: LF Area (ha): 29237 (%): 3.39

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	6	0.6	1	0.1	5	0.5
20	50	2.5	8	0.4	42	2.1
30	121	4.0	25	0.8	96	3.2
40	186	4.6	48	1.2	138	3.5
50	232	4.6	70	1.4	161	3.2
60	261	4.3	90	1.5	171	2.9
70	278	4.0	105	1.5	173	2.5
80	288	3.6	116	1.4	172	2.2
90	293	3.3	123	1.4	170	1.9
100	296	3.0	129	1.3	167	1.7
110	298	2.7	132	1.2	165	1.5
120	299	2.5	135	1.1	164	1.4
130	299	2.3	137	1.1	163	1.3
140	275	2.0	138	1.0	138	1.0
150	251	1.7	139	0.9	113	0.8
160	228	1.4	139	0.9	88	0.6
170	204	1.2	139	0.8	64	0.4
180	180	1.0	140	0.8	40	0.2
190	180	0.9	140	0.7	40	0.2
200	180	0.9	140	0.7	40	0.2



Yield group: 40 Description: conifer-US NSR: UF Area (ha): 367 (%): 0.04

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	6	0.6	1	0.1	5	0.5
20	50	2.5	8	0.4	42	2.1
30	121	4.0	25	0.8	96	3.2
40	186	4.6	48	1.2	138	3.5
50	232	4.6	70	1.4	161	3.2
60	261	4.3	90	1.5	171	2.9
70	278	4.0	105	1.5	173	2.5
80	288	3.6	116	1.4	172	2.2
90	293	3.3	123	1.4	170	1.9
100	296	3.0	129	1.3	167	1.7
110	298	2.7	132	1.2	165	1.5
120	299	2.5	135	1.1	164	1.4
130	299	2.3	137	1.1	163	1.3
140	275	2.0	138	1.0	138	1.0
150	251	1.7	139	0.9	113	0.8
160	228	1.4	139	0.9	88	0.6
170	204	1.2	139	0.8	64	0.4
180	180	1.0	140	0.8	40	0.2
190	180	0.9	140	0.7	40	0.2
200	180	0.9	140	0.7	40	0.2

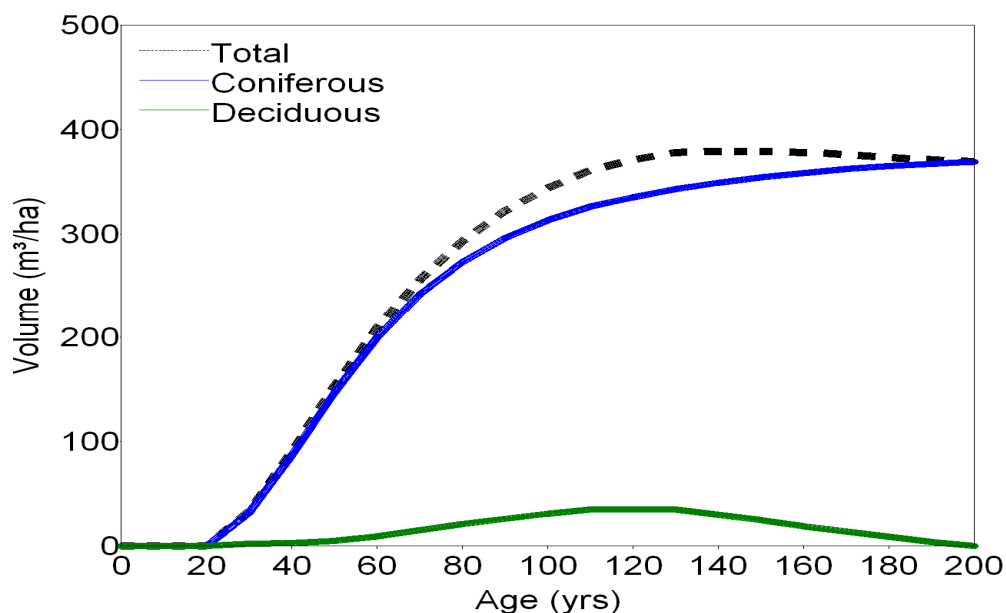


## APPENDIX VIII – MANAGED YIELD CURVES (MGD)

Gross merchantable volume excluding cull

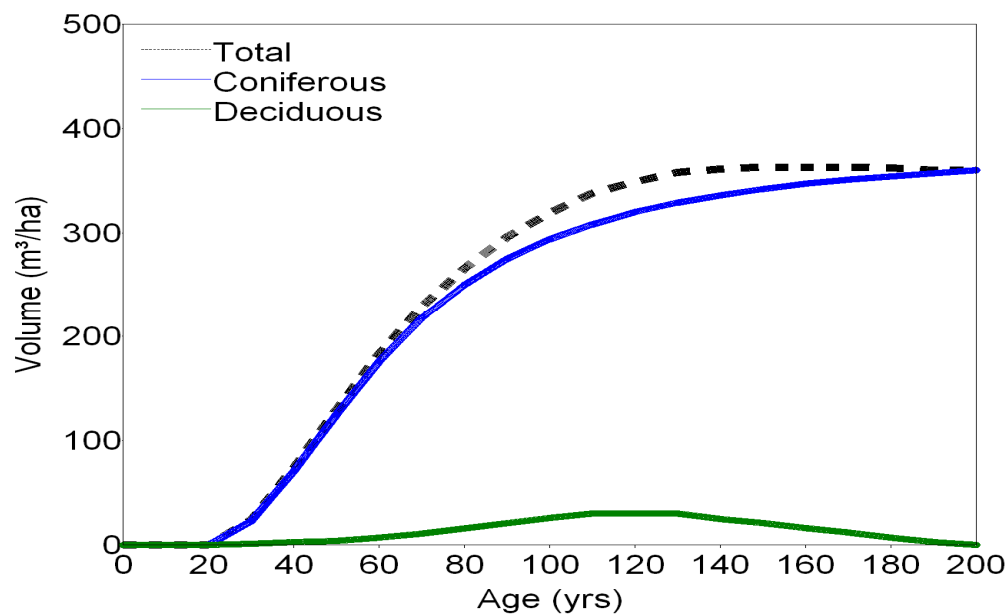
Yield group: 1 Description: PI-AB NSR: CMW/DMW Area (ha): 473 (%): 0.05

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	33	1.1	32	1.1	2	0.1
40	90	2.3	87	2.2	3	0.1
50	153	3.1	147	2.9	5	0.1
60	209	3.5	200	3.3	9	0.2
70	256	3.7	242	3.5	15	0.2
80	293	3.7	273	3.4	21	0.3
90	322	3.6	296	3.3	26	0.3
100	344	3.4	313	3.1	31	0.3
110	361	3.3	326	3.0	35	0.3
120	371	3.1	335	2.8	35	0.3
130	378	2.9	343	2.6	35	0.3
140	379	2.7	349	2.5	30	0.2
150	379	2.5	354	2.4	25	0.2
160	378	2.4	358	2.2	19	0.1
170	376	2.2	362	2.1	14	0.1
180	373	2.1	365	2.0	9	0.0
190	371	2.0	367	1.9	4	0.0
200	369	1.8	369	1.8	0	0.0



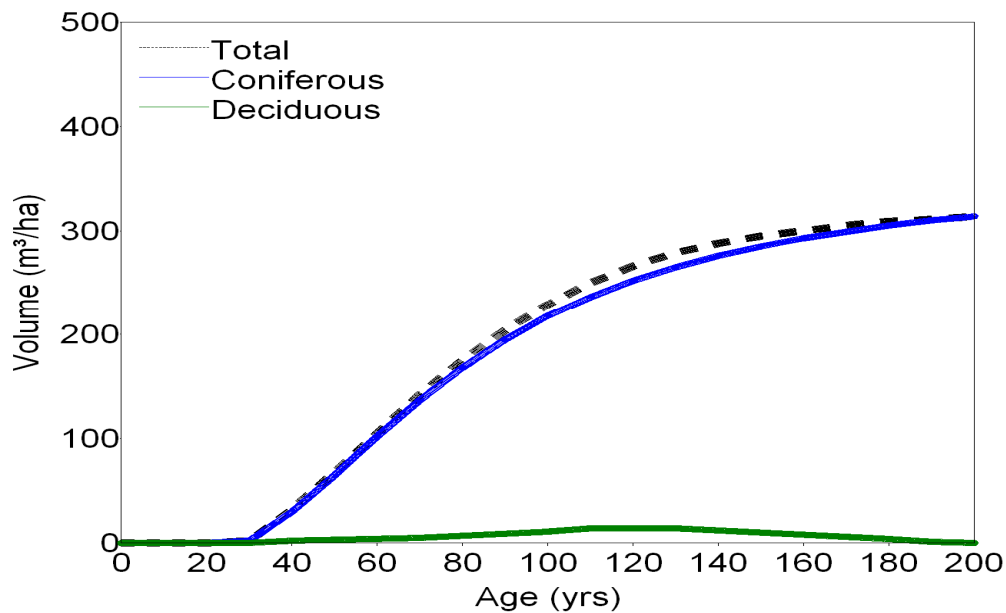
Yield group: 1 Description: PI-AB NSR: LF Area (ha): 2059 (%): 0.24

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	24	0.8	23	0.8	1	0.0
40	74	1.9	71	1.8	3	0.1
50	130	2.6	125	2.5	4	0.1
60	183	3.1	176	2.9	7	0.1
70	229	3.3	218	3.1	11	0.2
80	266	3.3	250	3.1	16	0.2
90	296	3.3	275	3.1	21	0.2
100	319	3.2	294	2.9	26	0.3
110	338	3.1	308	2.8	30	0.3
120	349	2.9	320	2.7	30	0.2
130	358	2.8	329	2.5	30	0.2
140	361	2.6	336	2.4	25	0.2
150	363	2.4	342	2.3	21	0.1
160	363	2.3	347	2.2	16	0.1
170	363	2.1	351	2.1	12	0.1
180	362	2.0	354	2.0	7	0.0
190	360	1.9	357	1.9	3	0.0
200	360	1.8	360	1.8	0	0.0



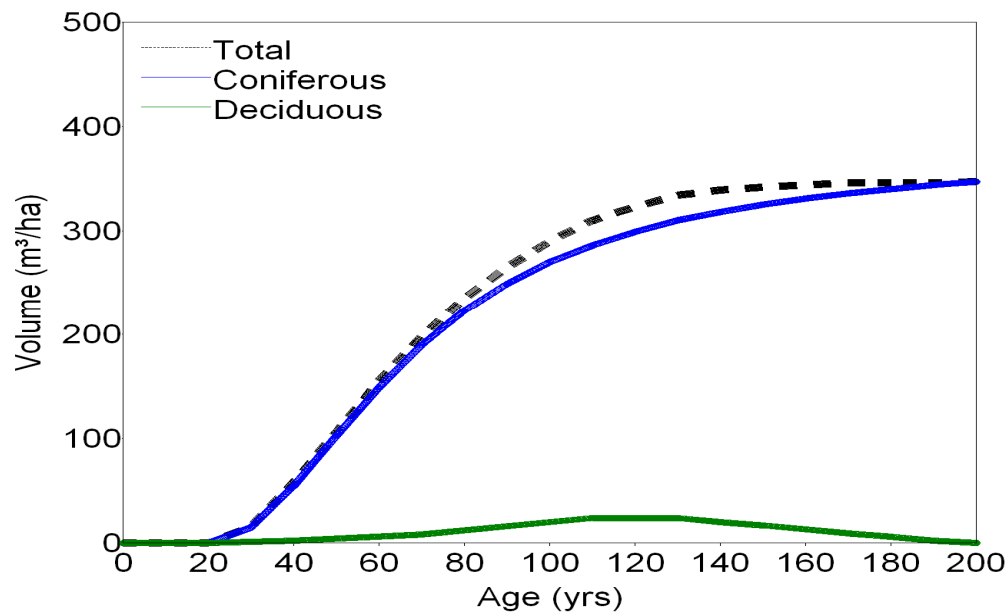
Yield group: 1 Description: PI-AB NSR: M/SA/A Area (ha): 584 (%): 0.07

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	2	0.1	2	0.1	0	0.0
40	32	0.8	30	0.8	2	0.0
50	68	1.4	65	1.3	3	0.1
60	105	1.8	102	1.7	4	0.1
70	142	2.0	137	2.0	5	0.1
80	175	2.2	168	2.1	7	0.1
90	204	2.3	195	2.2	9	0.1
100	229	2.3	218	2.2	11	0.1
110	250	2.3	236	2.1	14	0.1
120	266	2.2	252	2.1	14	0.1
130	279	2.1	265	2.0	14	0.1
140	288	2.1	276	2.0	12	0.1
150	295	2.0	285	1.9	10	0.1
160	300	1.9	293	1.8	8	0.0
170	305	1.8	299	1.8	6	0.0
180	309	1.7	305	1.7	4	0.0
190	311	1.6	310	1.6	1	0.0
200	314	1.6	314	1.6	0	0.0



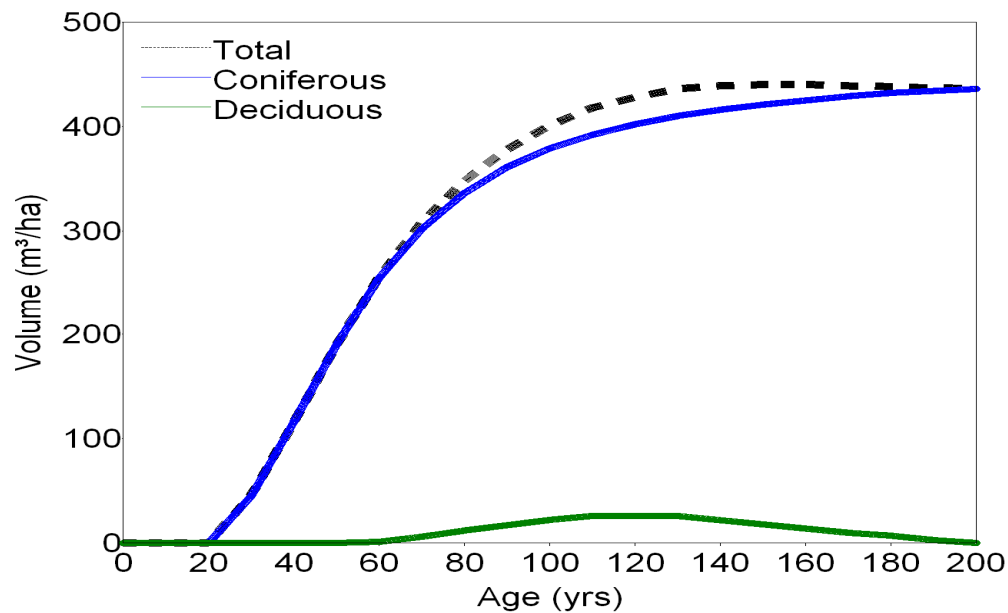
Yield group: 1 Description: PI-AB NSR: UF Area (ha): 2776 (%): 0.32

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	16	0.5	15	0.5	1	0.0
40	58	1.4	55	1.4	2	0.1
50	106	2.1	103	2.1	4	0.1
60	155	2.6	149	2.5	6	0.1
70	198	2.8	190	2.7	8	0.1
80	235	2.9	223	2.8	12	0.2
90	265	2.9	249	2.8	16	0.2
100	290	2.9	270	2.7	20	0.2
110	310	2.8	286	2.6	24	0.2
120	323	2.7	299	2.5	24	0.2
130	334	2.6	310	2.4	24	0.2
140	339	2.4	318	2.3	20	0.1
150	342	2.3	325	2.2	17	0.1
160	344	2.2	331	2.1	13	0.1
170	346	2.0	336	2.0	9	0.1
180	346	1.9	340	1.9	6	0.0
190	346	1.8	344	1.8	2	0.0
200	347	1.7	347	1.7	0	0.0



Yield group: 2 Description: PI-C NSR: CMW/DMW Area (ha): 2621 (%): 0.3

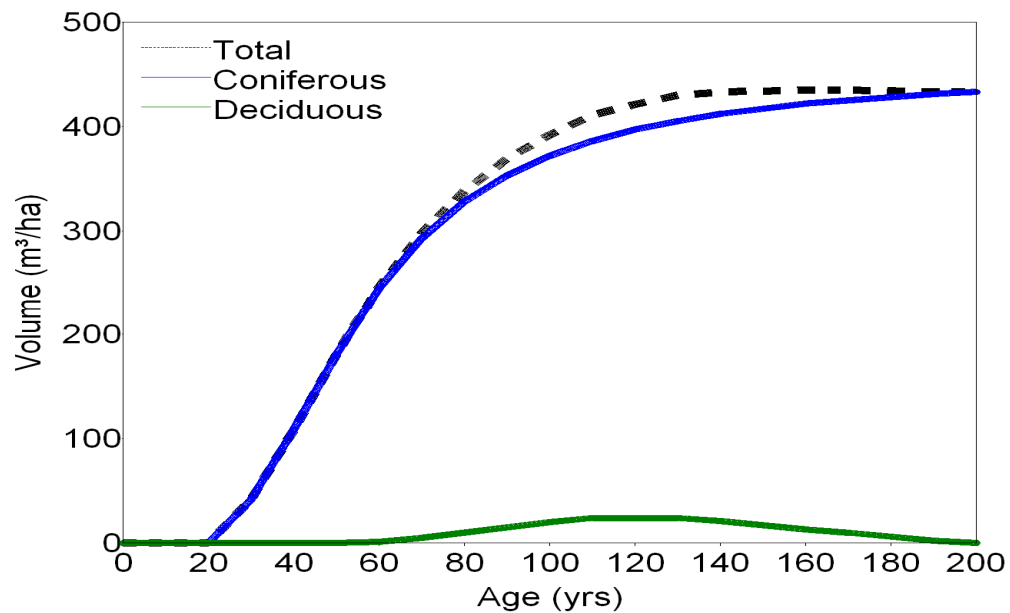
Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	46	1.5	45	1.5	0	0.0
40	116	2.9	116	2.9	0	0.0
50	190	3.8	190	3.8	0	0.0
60	256	4.3	255	4.2	1	0.0
70	308	4.4	302	4.3	6	0.1
80	348	4.4	336	4.2	12	0.1
90	378	4.2	361	4.0	17	0.2
100	401	4.0	379	3.8	22	0.2
110	418	3.8	392	3.6	26	0.2
120	428	3.6	402	3.4	26	0.2
130	436	3.4	410	3.2	26	0.2
140	439	3.1	416	3.0	22	0.2
150	440	2.9	421	2.8	18	0.1
160	440	2.7	425	2.7	14	0.1
170	439	2.6	429	2.5	10	0.1
180	438	2.4	432	2.4	7	0.0
190	437	2.3	434	2.3	3	0.0
200	436	2.2	436	2.2	0	0.0





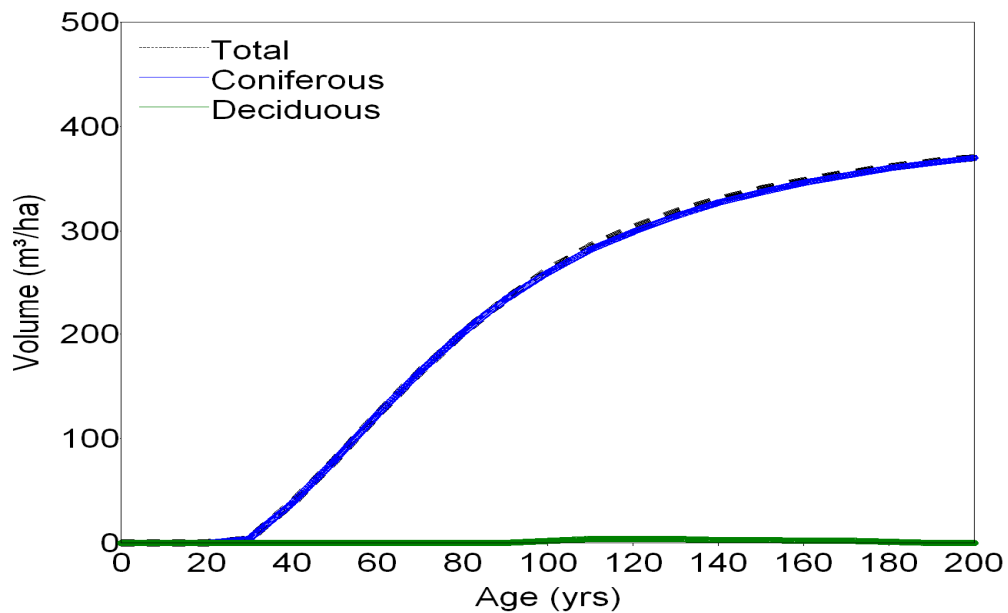
Yield group: 2 Description: PI-C NSR: LF Area (ha): 22534 (%): 2.61

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	42	1.4	42	1.4	0	0.0
40	109	2.7	109	2.7	0	0.0
50	181	3.6	181	3.6	0	0.0
60	246	4.1	245	4.1	1	0.0
70	298	4.3	293	4.2	5	0.1
80	338	4.2	328	4.1	10	0.1
90	369	4.1	353	3.9	15	0.2
100	392	3.9	372	3.7	20	0.2
110	411	3.7	386	3.5	24	0.2
120	421	3.5	397	3.3	24	0.2
130	430	3.3	405	3.1	24	0.2
140	433	3.1	412	2.9	21	0.1
150	434	2.9	417	2.8	17	0.1
160	435	2.7	422	2.6	13	0.1
170	435	2.6	425	2.5	10	0.1
180	434	2.4	428	2.4	6	0.0
190	433	2.3	431	2.3	2	0.0
200	433	2.2	433	2.2	0	0.0



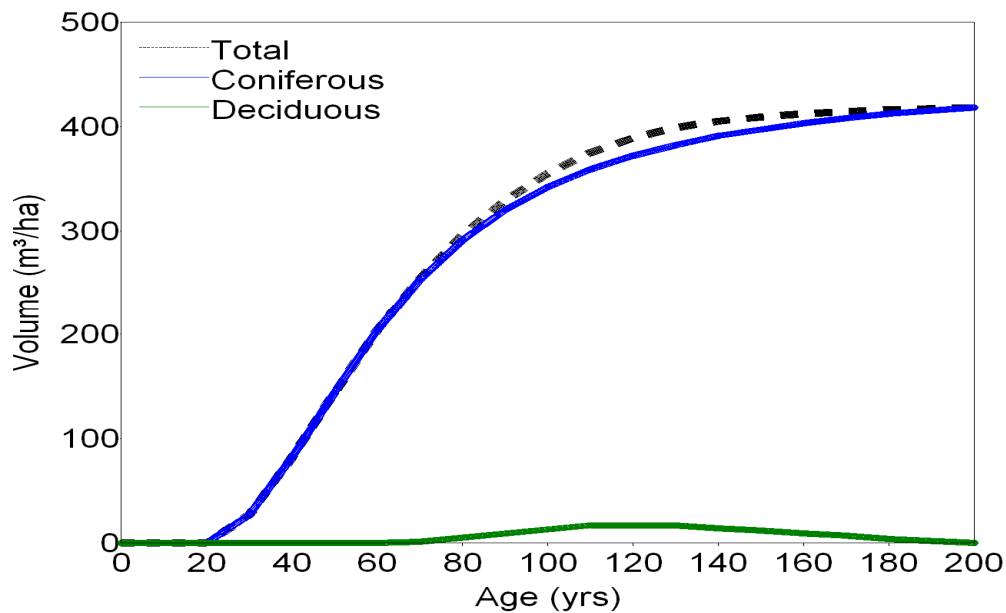
Yield group: 2 Description: PI-C NSR: M/SA/A Area (ha): 6797 (%): 0.79

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0
10	0	0.0	0	0.0	0	0
20	0	0.0	0	0.0	0	0
30	4	0.1	4	0.1	0	0
40	38	1.0	38	1.0	0	0
50	79	1.6	79	1.6	0	0
60	123	2.0	123	2.0	0	0
70	164	2.3	164	2.3	0	0
80	201	2.5	201	2.5	0	0
90	234	2.6	234	2.6	0	0
100	262	2.6	260	2.6	2	0
110	285	2.6	282	2.6	4	0
120	303	2.5	299	2.5	4	0
130	318	2.4	314	2.4	4	0
140	330	2.4	327	2.3	3	0
150	340	2.3	337	2.2	3	0
160	348	2.2	346	2.2	2	0
170	355	2.1	353	2.1	2	0
180	361	2.0	360	2.0	1	0
190	366	1.9	365	1.9	0	0
200	370	1.9	370	1.9	0	0



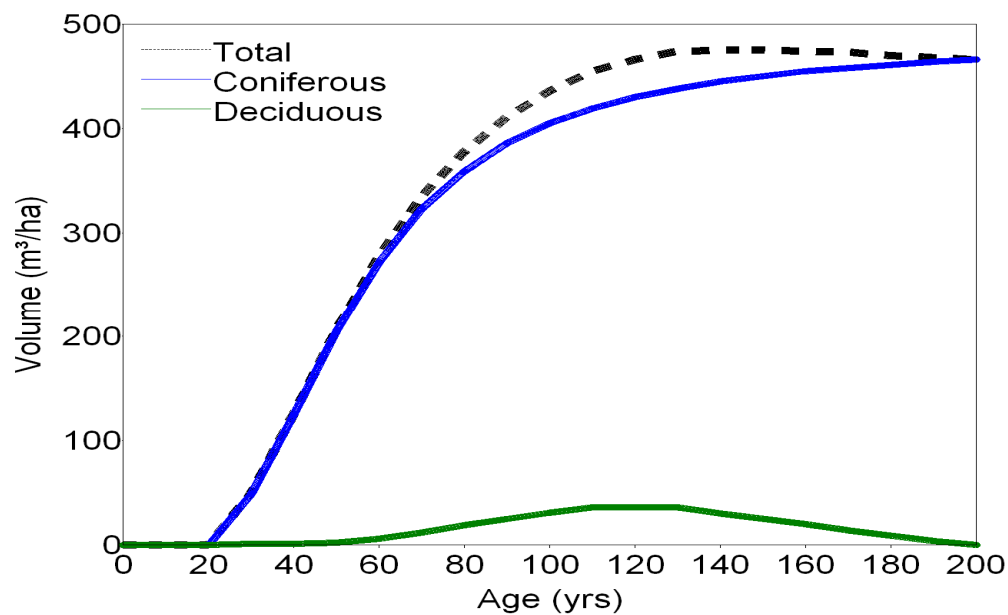
Yield group: 2 Description: PI-C NSR: UF Area (ha): 27451 (%): 3.18

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	27	0.9	27	0.9	0	0.0
40	82	2.1	82	2.1	0	0.0
50	144	2.9	144	2.9	0	0.0
60	204	3.4	204	3.4	0	0.0
70	254	3.6	253	3.6	1	0.0
80	296	3.7	291	3.6	5	0.1
90	329	3.7	320	3.6	9	0.1
100	355	3.5	342	3.4	13	0.1
110	375	3.4	359	3.3	17	0.2
120	389	3.2	372	3.1	17	0.1
130	399	3.1	382	2.9	17	0.1
140	405	2.9	391	2.8	14	0.1
150	409	2.7	397	2.6	12	0.1
160	412	2.6	403	2.5	9	0.1
170	414	2.4	408	2.4	7	0.0
180	416	2.3	412	2.3	4	0.0
190	417	2.2	415	2.2	2	0.0
200	418	2.1	418	2.1	0	0.0



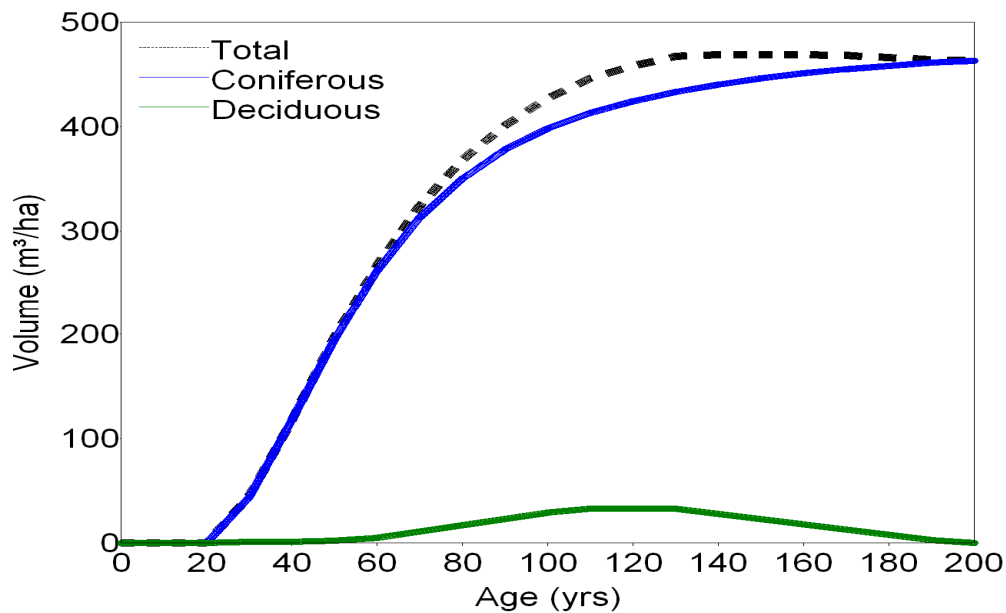
Yield group: 3 Description: PI-D NSR: CMW/DMW Area (ha): 0 (%): 0

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	50	1.7	49	1.6	1	0.0
40	126	3.2	125	3.1	1	0.0
50	207	4.1	205	4.1	2	0.0
60	278	4.6	272	4.5	6	0.1
70	335	4.8	323	4.6	12	0.2
80	378	4.7	359	4.5	19	0.2
90	411	4.6	386	4.3	25	0.3
100	436	4.4	405	4.0	31	0.3
110	455	4.1	419	3.8	36	0.3
120	466	3.9	430	3.6	36	0.3
130	474	3.6	438	3.4	36	0.3
140	475	3.4	445	3.2	30	0.2
150	475	3.2	450	3.0	25	0.2
160	474	3.0	455	2.8	20	0.1
170	473	2.8	458	2.7	14	0.1
180	470	2.6	461	2.6	9	0.0
190	468	2.5	464	2.4	4	0.0
200	466	2.3	466	2.3	0	0.0



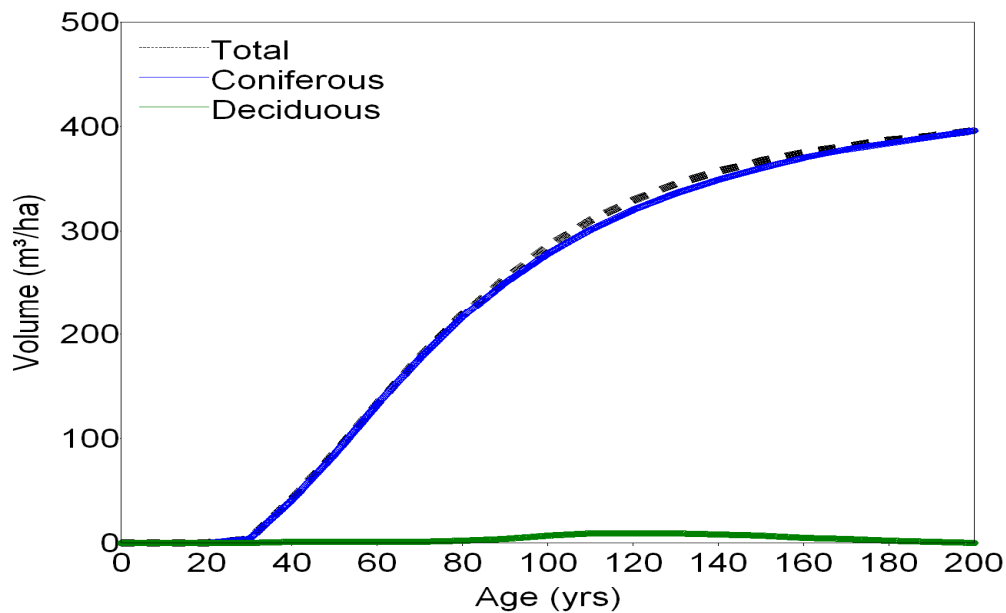
Yield group: 3 Description: PI-D NSR: LF Area (ha): 1970 (%): 0.23

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	45	1.5	44	1.5	1	0.0
40	118	3.0	118	2.9	1	0.0
50	197	3.9	195	3.9	2	0.0
60	267	4.5	262	4.4	5	0.1
70	324	4.6	313	4.5	11	0.2
80	368	4.6	350	4.4	17	0.2
90	401	4.5	378	4.2	23	0.3
100	427	4.3	398	4.0	29	0.3
110	446	4.1	413	3.8	33	0.3
120	458	3.8	424	3.5	33	0.3
130	467	3.6	433	3.3	33	0.3
140	469	3.3	440	3.1	28	0.2
150	469	3.1	446	3.0	23	0.2
160	469	2.9	451	2.8	18	0.1
170	468	2.8	455	2.7	13	0.1
180	466	2.6	458	2.5	8	0.0
190	464	2.4	461	2.4	3	0.0
200	463	2.3	463	2.3	0	0.0



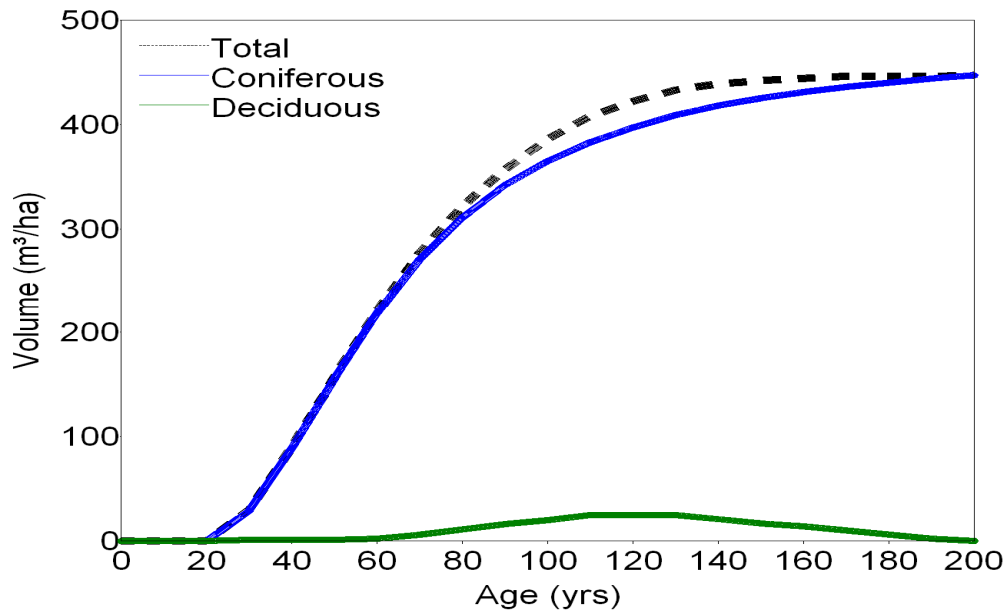
Yield group: 3 Description: PI-D NSR: M/SA/A Area (ha): 18 (%): 0

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	4	0.1	4	0.1	0	0.0
40	42	1.0	41	1.0	1	0.0
50	86	1.7	85	1.7	1	0.0
60	133	2.2	133	2.2	1	0.0
70	178	2.5	177	2.5	1	0.0
80	219	2.7	217	2.7	2	0.0
90	254	2.8	250	2.8	4	0.0
100	285	2.8	278	2.8	7	0.1
110	310	2.8	301	2.7	9	0.1
120	329	2.7	320	2.7	9	0.1
130	345	2.7	336	2.6	9	0.1
140	357	2.5	349	2.5	8	0.1
150	367	2.4	360	2.4	7	0.0
160	375	2.3	370	2.3	5	0.0
170	381	2.2	378	2.2	4	0.0
180	387	2.1	384	2.1	2	0.0
190	391	2.1	390	2.1	1	0.0
200	396	2.0	396	2.0	0	0.0



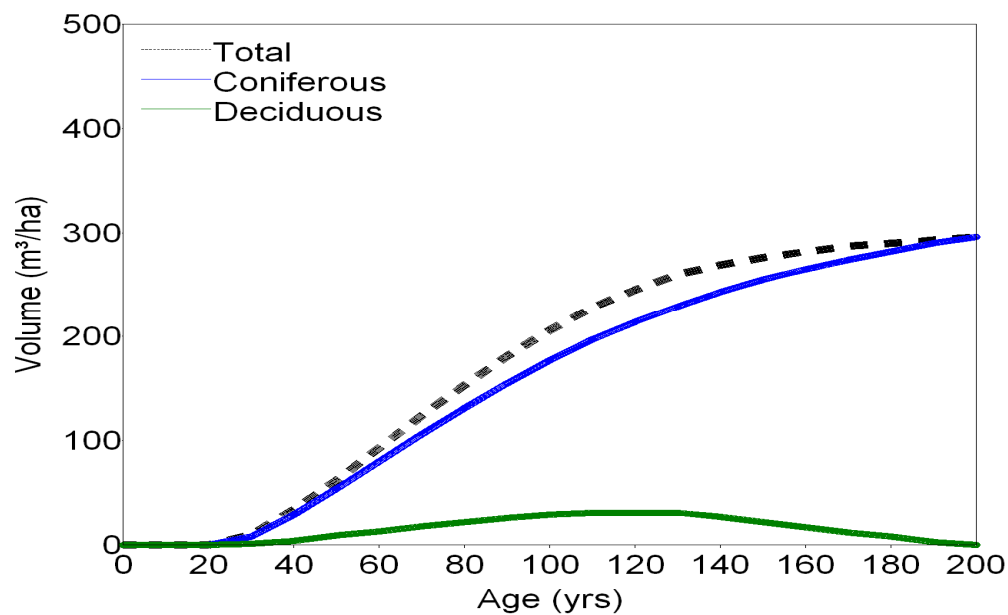
Yield group: 3 Description: PI-D NSR: UF Area (ha): 2577 (%): 0.3

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	30	1.0	29	1.0	1	0.0
40	90	2.2	89	2.2	1	0.0
50	157	3.1	156	3.1	1	0.0
60	221	3.7	219	3.6	2	0.0
70	277	4.0	271	3.9	6	0.1
80	322	4.0	311	3.9	11	0.1
90	357	4.0	342	3.8	16	0.2
100	386	3.9	365	3.7	20	0.2
110	408	3.7	383	3.5	25	0.2
120	422	3.5	397	3.3	25	0.2
130	433	3.3	409	3.1	25	0.2
140	439	3.1	418	3.0	21	0.2
150	442	2.9	425	2.8	17	0.1
160	444	2.8	431	2.7	14	0.1
170	446	2.6	436	2.6	10	0.1
180	446	2.5	440	2.4	6	0.0
190	446	2.3	444	2.3	2	0.0
200	447	2.2	447	2.2	0	0.0



Yield group: 4 Description: [Sw,Fa]-AB NSR: CMW/DMW Area (ha): 921 (%) : 0.11

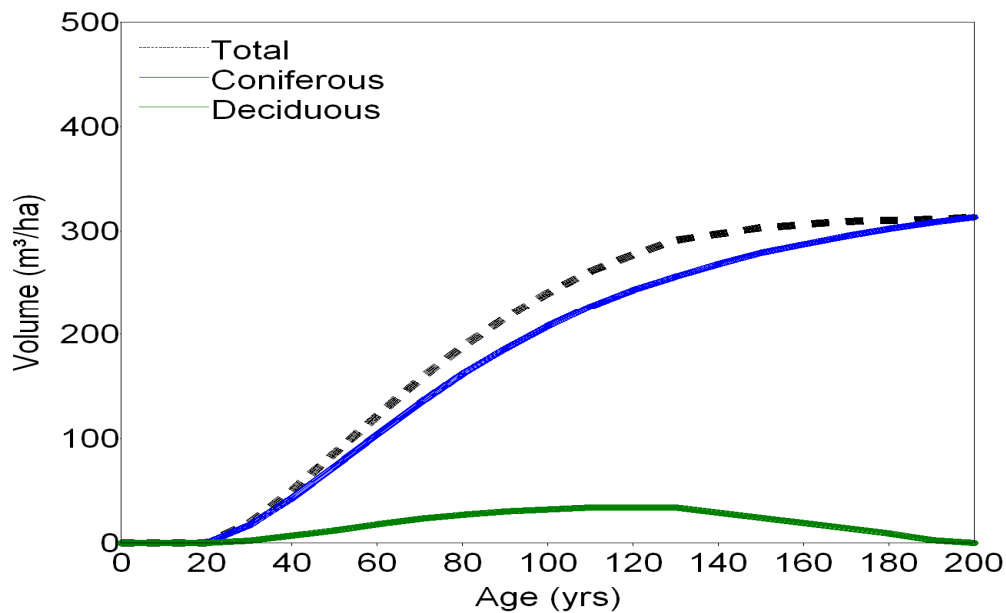
Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	10	0.3	8	0.3	1	0.0
40	34	0.8	29	0.7	4	0.1
50	62	1.2	54	1.1	9	0.2
60	93	1.5	80	1.3	13	0.2
70	124	1.8	106	1.5	18	0.3
80	153	1.9	131	1.6	22	0.3
90	181	2.0	155	1.7	26	0.3
100	206	2.1	177	1.8	29	0.3
110	228	2.1	197	1.8	31	0.3
120	245	2.0	214	1.8	31	0.3
130	260	2.0	229	1.8	31	0.2
140	269	1.9	243	1.7	27	0.2
150	276	1.8	255	1.7	22	0.1
160	282	1.8	265	1.7	17	0.1
170	287	1.7	274	1.6	12	0.1
180	290	1.6	282	1.6	8	0.0
190	293	1.5	290	1.5	3	0.0
200	296	1.5	296	1.5	0	0.0





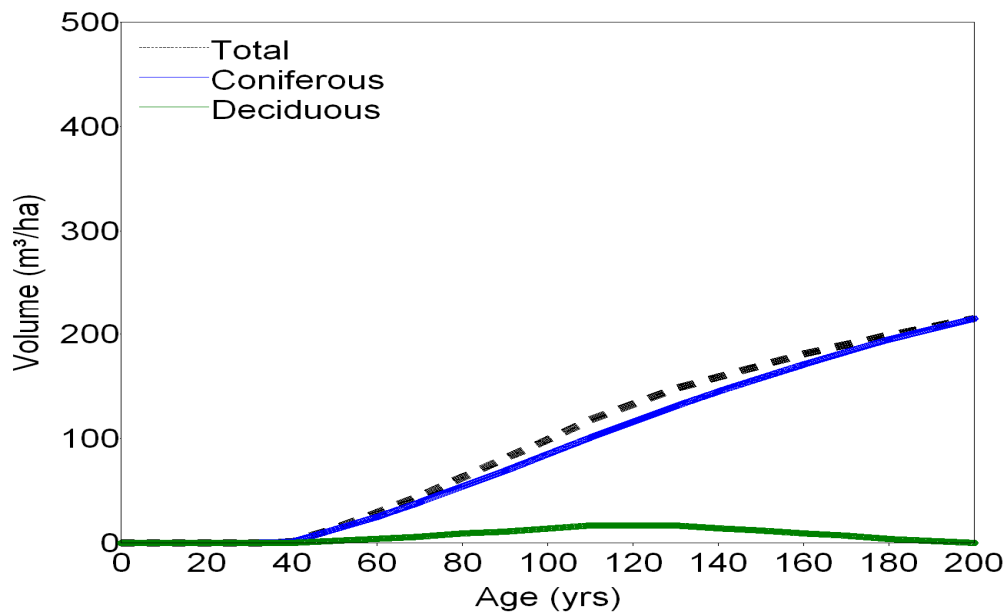
Yield group: 4 Description: [Sw,Fa]-AB NSR: LF Area (ha): 4821 (%): 0.56

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	19	0.6	17	0.6	2	0.1
40	50	1.3	43	1.1	7	0.2
50	86	1.7	73	1.5	12	0.2
60	122	2.0	104	1.7	18	0.3
70	157	2.2	134	1.9	23	0.3
80	188	2.4	162	2.0	27	0.3
90	216	2.4	186	2.1	30	0.3
100	240	2.4	208	2.1	32	0.3
110	261	2.4	227	2.1	34	0.3
120	277	2.3	243	2.0	34	0.3
130	291	2.2	256	2.0	34	0.3
140	297	2.1	268	1.9	29	0.2
150	303	2.0	279	1.9	24	0.2
160	306	1.9	287	1.8	19	0.1
170	309	1.8	295	1.7	14	0.1
180	310	1.7	302	1.7	9	0.0
190	311	1.6	308	1.6	3	0.0
200	313	1.6	313	1.6	0	0.0



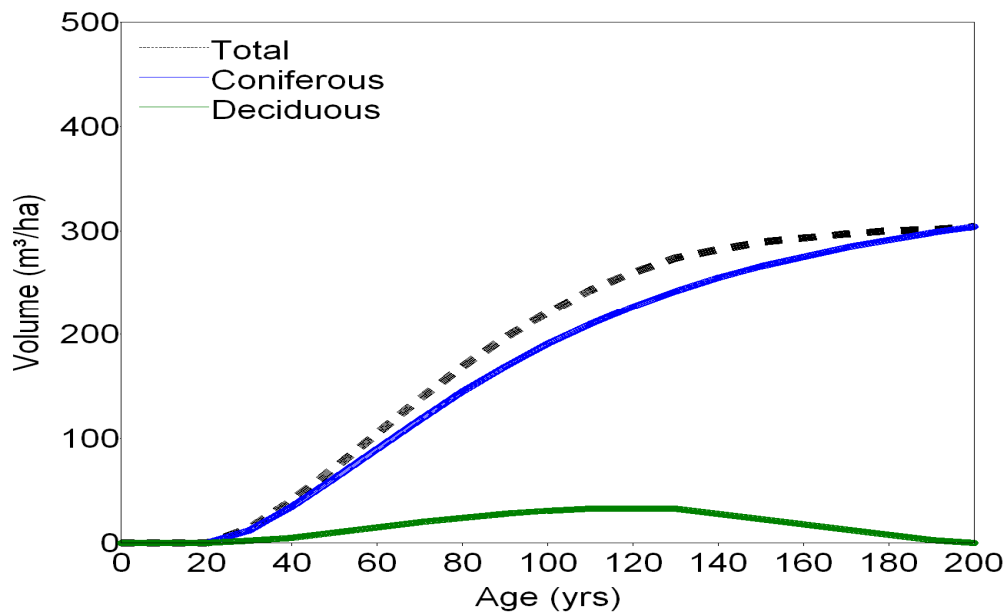
Yield group: 4 Description: [Sw,Fa]-AB NSR: M/SA/A Area (ha): 39 (%): 0

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	0	0.0	0	0.0	0	0.0
40	1	0.0	1	0.0	0	0.0
50	14	0.3	13	0.3	2	0.0
60	29	0.5	25	0.4	4	0.1
70	45	0.6	39	0.6	6	0.1
80	63	0.8	54	0.7	9	0.1
90	81	0.9	69	0.8	11	0.1
100	99	1.0	85	0.9	14	0.1
110	118	1.1	101	0.9	17	0.2
120	133	1.1	116	1.0	17	0.1
130	148	1.1	131	1.0	17	0.1
140	159	1.1	145	1.0	14	0.1
150	170	1.1	158	1.1	12	0.1
160	181	1.1	171	1.1	9	0.1
170	190	1.1	183	1.1	7	0.0
180	199	1.1	195	1.1	4	0.0
190	207	1.1	205	1.1	2	0.0
200	215	1.1	215	1.1	0	0.0



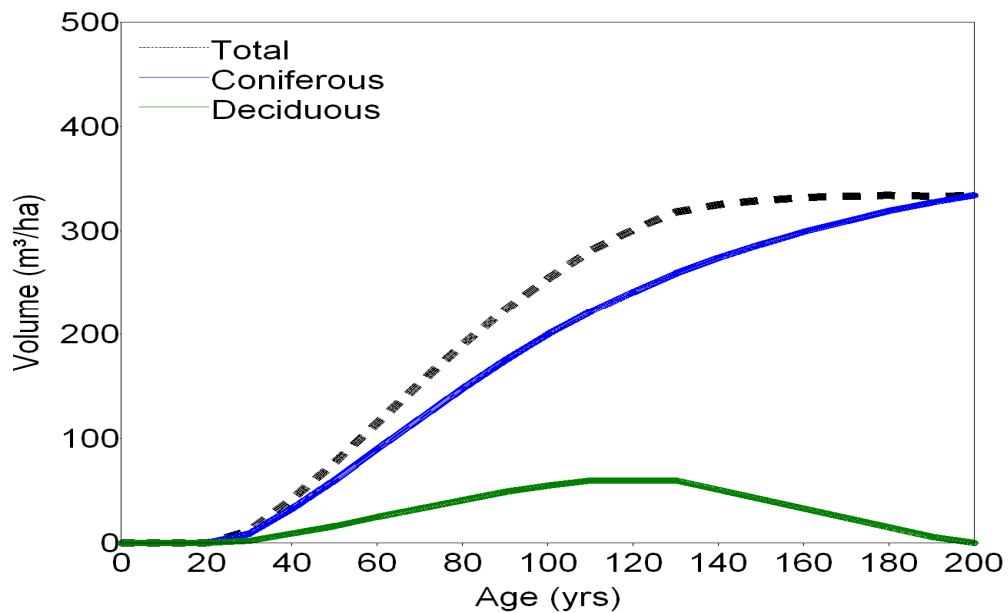
Yield group: 4 Description: [Sw,Fa]-AB NSR: UF Area (ha): 506 (%): 0.06

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	14	0.5	12	0.4	2	0.1
40	41	1.0	35	0.9	5	0.1
50	72	1.4	62	1.2	10	0.2
60	105	1.8	90	1.5	15	0.3
70	138	2.0	118	1.7	20	0.3
80	169	2.1	145	1.8	24	0.3
90	197	2.2	169	1.9	28	0.3
100	221	2.2	191	1.9	31	0.3
110	243	2.2	210	1.9	33	0.3
120	260	2.2	227	1.9	33	0.3
130	274	2.1	242	1.9	33	0.3
140	282	2.0	255	1.8	28	0.2
150	289	1.9	266	1.8	23	0.2
160	293	1.8	275	1.7	18	0.1
170	297	1.7	284	1.7	13	0.1
180	300	1.7	291	1.6	8	0.0
190	301	1.6	298	1.6	3	0.0
200	304	1.5	304	1.5	0	0.0



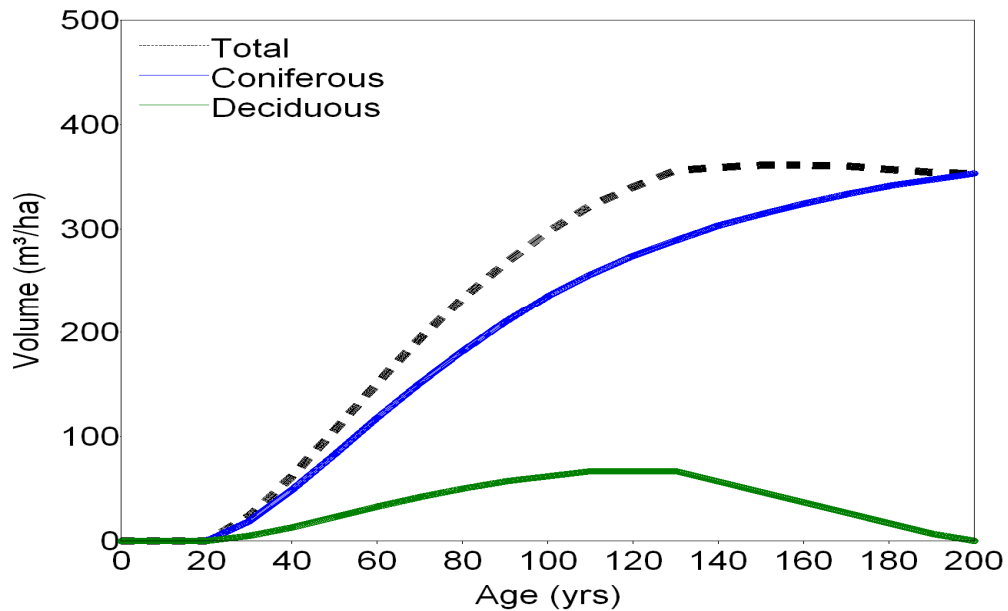
Yield group: 5 Description: [Sw,Fa]-CD NSR: CMW/DMW Area (ha): 3900 (%): 0.45

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	12	0.4	9	0.3	2	0.1
40	42	1.0	33	0.8	9	0.2
50	77	1.5	60	1.2	16	0.3
60	115	1.9	90	1.5	25	0.4
70	153	2.2	119	1.7	33	0.5
80	190	2.4	148	1.9	41	0.5
90	224	2.5	175	1.9	49	0.5
100	254	2.5	200	2.0	55	0.5
110	281	2.6	222	2.0	60	0.5
120	301	2.5	241	2.0	60	0.5
130	318	2.4	259	2.0	60	0.5
140	325	2.3	274	2.0	51	0.4
150	329	2.2	287	1.9	42	0.3
160	332	2.1	299	1.9	33	0.2
170	333	2.0	309	1.8	24	0.1
180	334	1.9	319	1.8	15	0.1
190	333	1.8	327	1.7	6	0.0
200	334	1.7	334	1.7	0	0.0



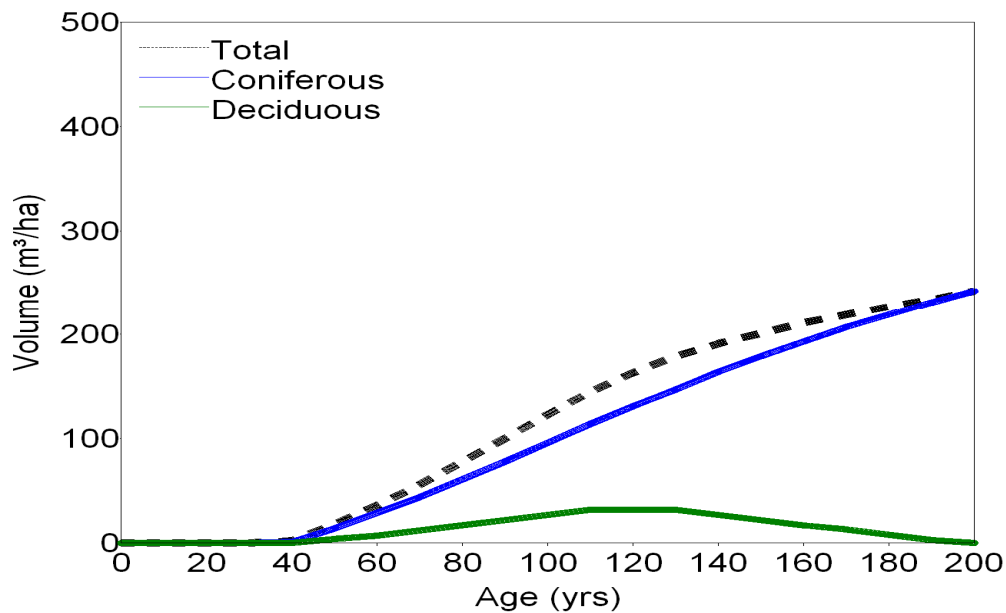
Yield group: 5 Description: [Sw,Fa]-CD NSR: LF Area (ha): 29609 (%): 3.43

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	24	0.8	19	0.6	5	0.2
40	62	1.6	49	1.2	13	0.3
50	106	2.1	83	1.7	23	0.5
60	151	2.5	118	2.0	33	0.5
70	194	2.8	151	2.2	42	0.6
80	233	2.9	182	2.3	50	0.6
90	267	3.0	210	2.3	57	0.6
100	297	3.0	235	2.3	62	0.6
110	322	2.9	256	2.3	67	0.6
120	340	2.8	274	2.3	67	0.6
130	356	2.7	289	2.2	67	0.5
140	359	2.6	303	2.2	57	0.4
150	361	2.4	314	2.1	47	0.3
160	361	2.3	324	2.0	37	0.2
170	360	2.1	333	2.0	27	0.2
180	357	2.0	341	1.9	17	0.1
190	354	1.9	347	1.8	7	0.0
200	353	1.8	353	1.8	0	0.0



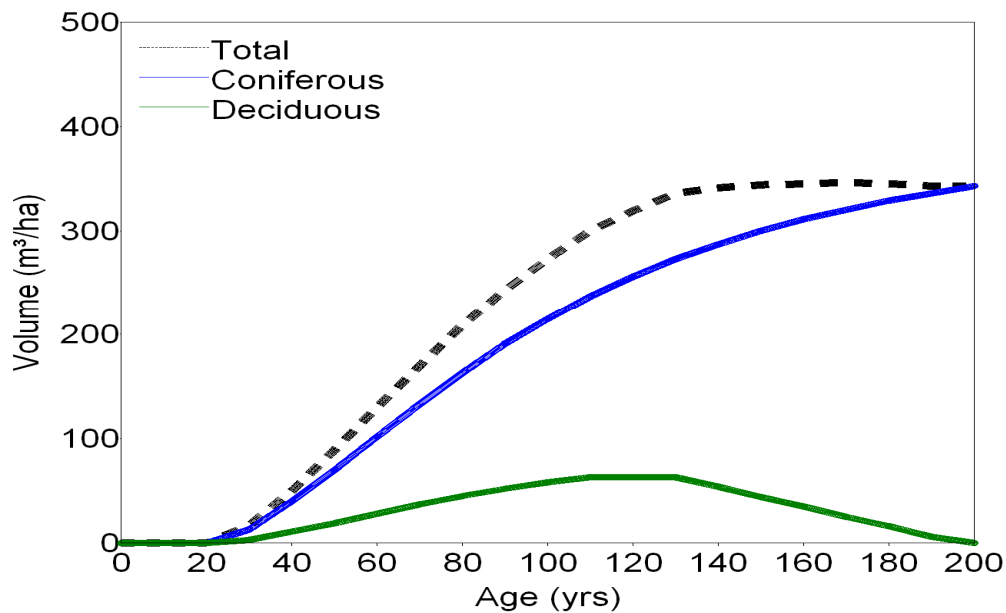
Yield group: 5 Description: [Sw,Fa]-CD NSR: M/SA/A Area (ha): 1322 (%): 0.15

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	0	0.0	0	0.0	0	0.0
40	2	0.0	1	0.0	0	0.0
50	18	0.4	14	0.3	4	0.1
60	36	0.6	29	0.5	7	0.1
70	56	0.8	44	0.6	12	0.2
80	78	1.0	61	0.8	17	0.2
90	100	1.1	78	0.9	22	0.2
100	123	1.2	96	1.0	27	0.3
110	145	1.3	114	1.0	32	0.3
120	163	1.4	131	1.1	32	0.3
130	179	1.4	147	1.1	32	0.2
140	191	1.4	164	1.2	27	0.2
150	201	1.3	179	1.2	22	0.1
160	211	1.3	193	1.2	17	0.1
170	219	1.3	207	1.2	13	0.1
180	227	1.3	219	1.2	8	0.0
190	234	1.2	231	1.2	3	0.0
200	242	1.2	242	1.2	0	0.0



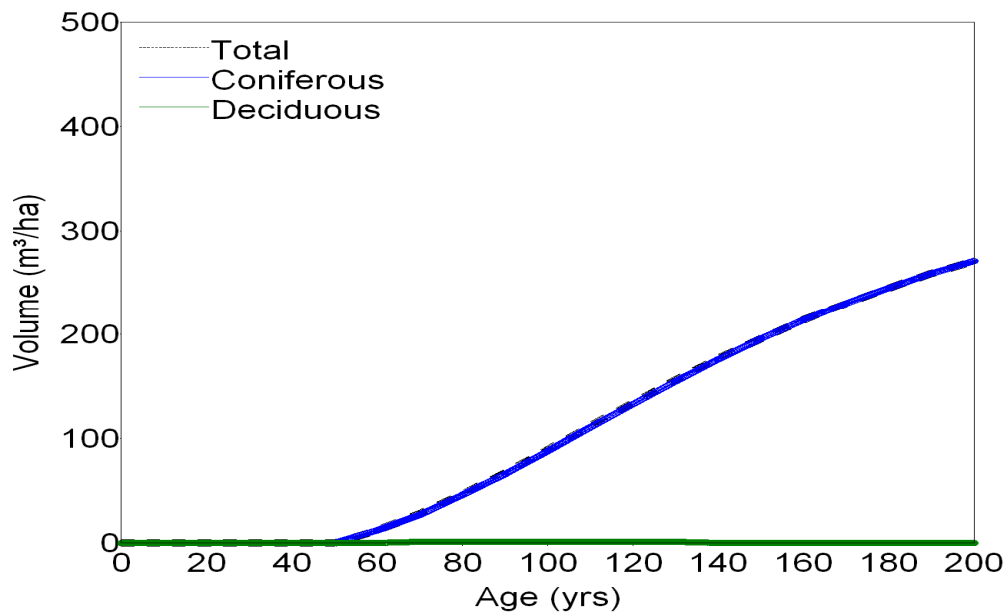
Yield group: 5 Description: [Sw,Fa]-CD NSR: UF Area (ha): 9160 (%): 1.06

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	17	0.6	13	0.4	3	0.1
40	50	1.3	40	1.0	11	0.3
50	89	1.8	70	1.4	19	0.4
60	130	2.2	102	1.7	28	0.5
70	170	2.4	133	1.9	37	0.5
80	209	2.6	163	2.0	45	0.6
90	243	2.7	191	2.1	52	0.6
100	273	2.7	215	2.2	58	0.6
110	300	2.7	237	2.2	63	0.6
120	319	2.7	256	2.1	63	0.5
130	336	2.6	273	2.1	63	0.5
140	341	2.4	287	2.1	54	0.4
150	344	2.3	300	2.0	44	0.3
160	345	2.2	311	1.9	35	0.2
170	346	2.0	320	1.9	25	0.1
180	345	1.9	329	1.8	16	0.1
190	343	1.8	336	1.8	6	0.0
200	343	1.7	343	1.7	0	0.0



Yield group: 6 Description: [Sb,Lt]-AB NSR: LF Area (ha): 272 (%): 0.03

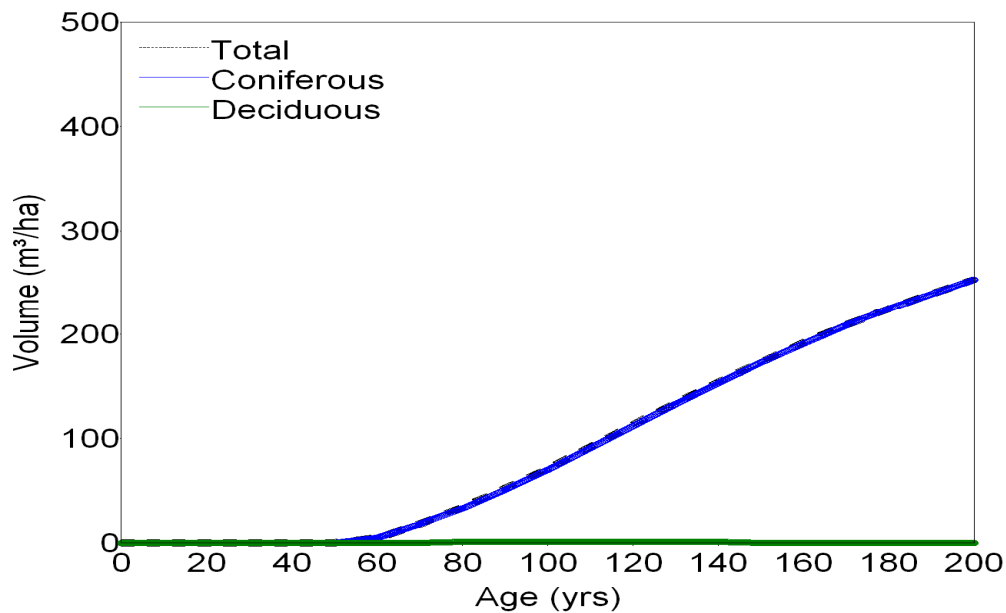
Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0
10	0	0.0	0	0.0	0	0
20	0	0.0	0	0.0	0	0
30	0	0.0	0	0.0	0	0
40	0	0.0	0	0.0	0	0
50	0	0.0	0	0.0	0	0
60	12	0.2	12	0.2	0	0
70	28	0.4	27	0.4	1	0
80	47	0.6	46	0.6	1	0
90	67	0.7	66	0.7	1	0
100	89	0.9	88	0.9	1	0
110	112	1.0	111	1.0	1	0
120	134	1.1	133	1.1	1	0
130	156	1.2	155	1.2	1	0
140	177	1.3	176	1.3	0	0
150	196	1.3	196	1.3	0	0
160	214	1.3	214	1.3	0	0
170	230	1.4	230	1.4	0	0
180	245	1.4	245	1.4	0	0
190	259	1.4	259	1.4	0	0
200	271	1.4	271	1.4	0	0





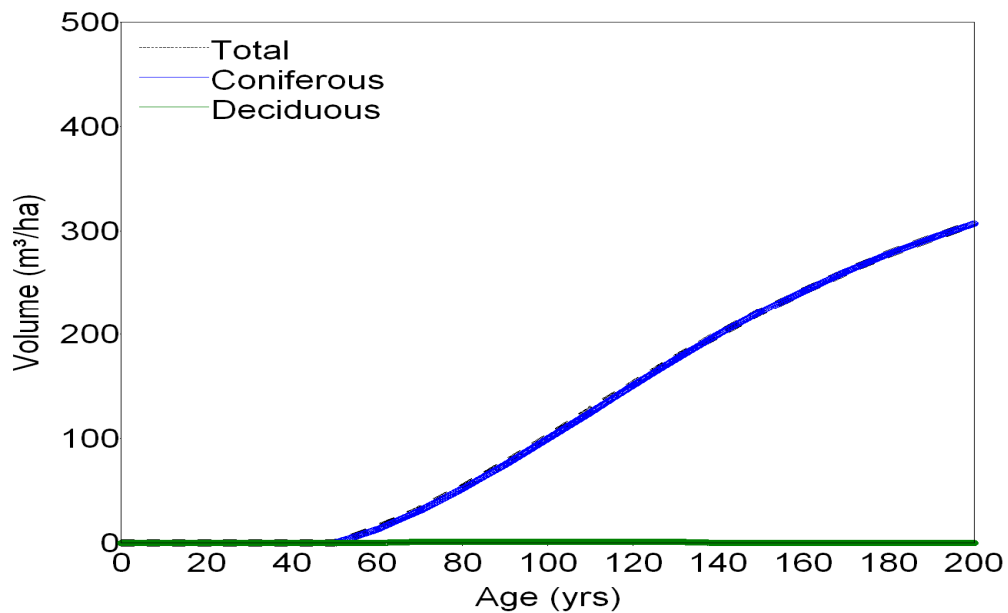
Yield group: 6 Description: [Sb,Lt]-AB NSR: UF Area (ha): 135 (%): 0.02

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0
10	0	0.0	0	0.0	0	0
20	0	0.0	0	0.0	0	0
30	0	0.0	0	0.0	0	0
40	0	0.0	0	0.0	0	0
50	0	0.0	0	0.0	0	0
60	5	0.1	5	0.1	0	0
70	18	0.3	18	0.3	0	0
80	34	0.4	33	0.4	1	0
90	52	0.6	51	0.6	1	0
100	71	0.7	70	0.7	1	0
110	92	0.8	91	0.8	1	0
120	113	0.9	112	0.9	1	0
130	134	1.0	133	1.0	1	0
140	154	1.1	153	1.1	1	0
150	173	1.2	173	1.2	0	0
160	192	1.2	191	1.2	0	0
170	209	1.2	209	1.2	0	0
180	225	1.2	225	1.2	0	0
190	239	1.3	239	1.3	0	0
200	253	1.3	253	1.3	0	0



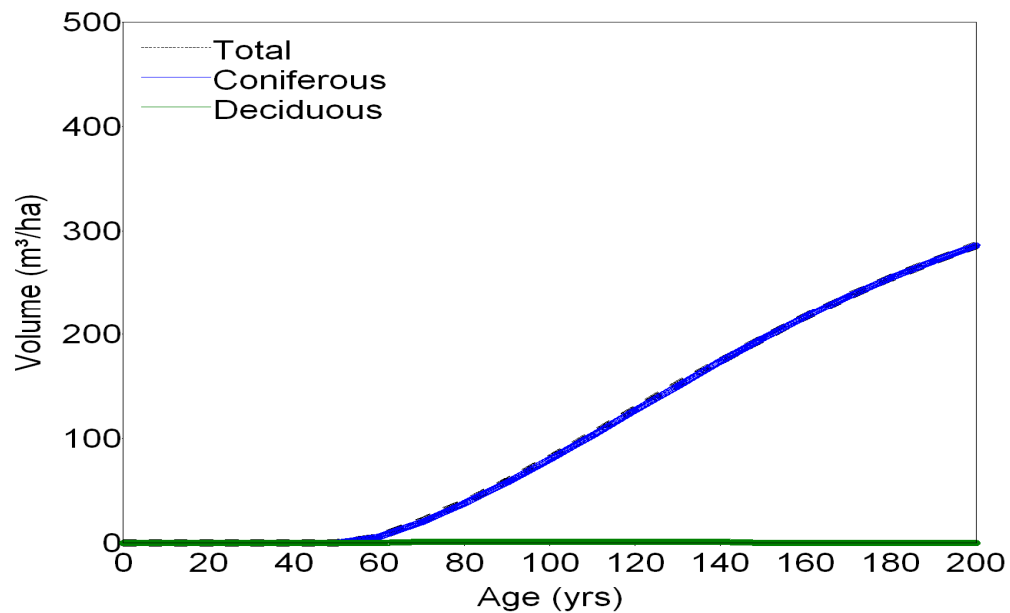
Yield group: 7 Description: [Sb,Lt]-CD NSR: LF Area (ha): 120 (%): 0.01

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0
10	0	0.0	0	0.0	0	0
20	0	0.0	0	0.0	0	0
30	0	0.0	0	0.0	0	0
40	0	0.0	0	0.0	0	0
50	0	0.0	0	0.0	0	0
60	14	0.2	13	0.2	0	0
70	32	0.5	31	0.4	1	0
80	53	0.7	52	0.6	1	0
90	76	0.8	75	0.8	1	0
100	101	1.0	100	1.0	1	0
110	127	1.2	125	1.1	1	0
120	152	1.3	151	1.3	1	0
130	177	1.4	176	1.4	1	0
140	200	1.4	200	1.4	0	0
150	222	1.5	222	1.5	0	0
160	242	1.5	242	1.5	0	0
170	261	1.5	261	1.5	0	0
180	278	1.5	278	1.5	0	0
190	293	1.5	293	1.5	0	0
200	307	1.5	307	1.5	0	0



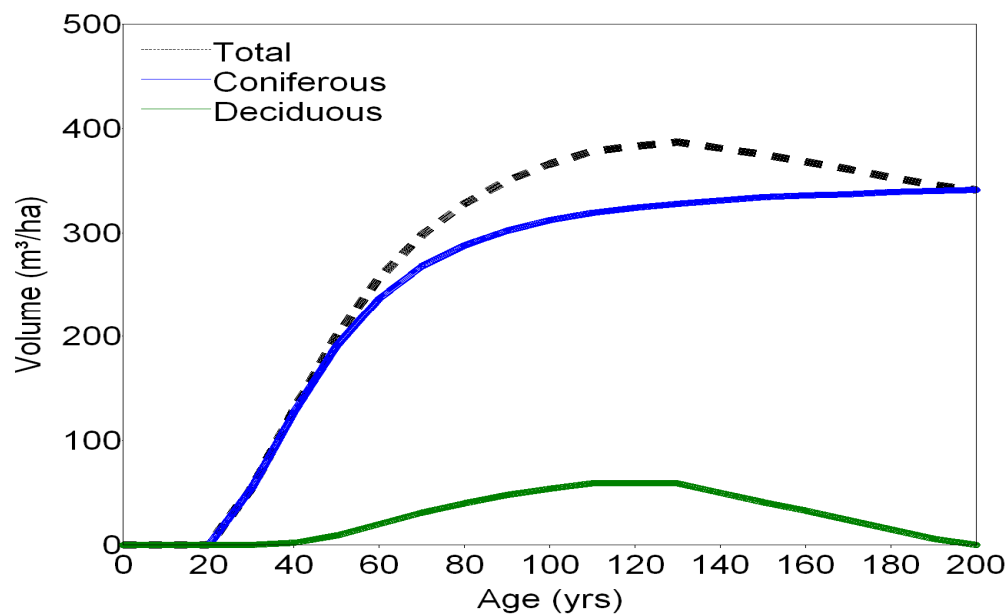
Yield group: 7 Description: [Sb,Lt]-CD NSR: UF Area (ha): 34 (%): 0

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0
10	0	0.0	0	0.0	0	0
20	0	0.0	0	0.0	0	0
30	0	0.0	0	0.0	0	0
40	0	0.0	0	0.0	0	0
50	0	0.0	0	0.0	0	0
60	6	0.1	6	0.1	0	0
70	21	0.3	20	0.3	1	0
80	39	0.5	38	0.5	1	0
90	59	0.7	58	0.6	1	0
100	81	0.8	80	0.8	1	0
110	104	0.9	103	0.9	1	0
120	128	1.1	127	1.1	1	0
130	152	1.2	150	1.2	1	0
140	174	1.2	174	1.2	1	0
150	196	1.3	196	1.3	0	0
160	217	1.4	217	1.4	0	0
170	237	1.4	237	1.4	0	0
180	255	1.4	255	1.4	0	0
190	271	1.4	271	1.4	0	0
200	286	1.4	286	1.4	0	0



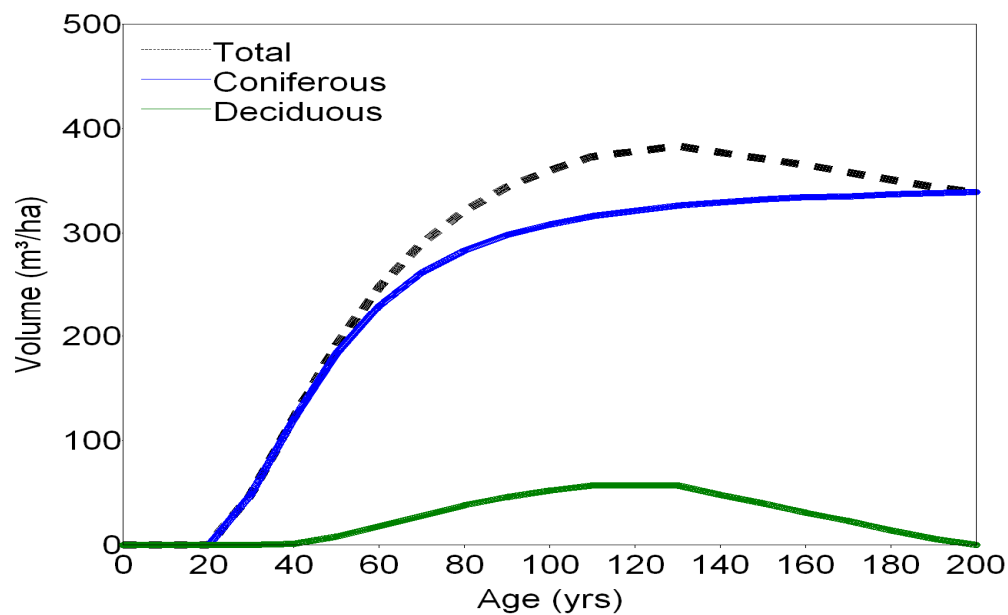
Yield group: 8 Description: PI-Sw-ABCD NSR: CMW/DMW Area (ha): 84 (%) : 0.01

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	54	1.8	54	1.8	0	0.0
40	129	3.2	127	3.2	2	0.0
50	200	4.0	191	3.8	9	0.2
60	257	4.3	237	3.9	20	0.3
70	298	4.3	268	3.8	31	0.4
80	328	4.1	288	3.6	40	0.5
90	350	3.9	302	3.4	48	0.5
100	366	3.7	312	3.1	54	0.5
110	378	3.4	319	2.9	59	0.5
120	383	3.2	324	2.7	59	0.5
130	387	3.0	328	2.5	59	0.5
140	381	2.7	331	2.4	50	0.4
150	375	2.5	334	2.2	41	0.3
160	368	2.3	336	2.1	33	0.2
170	361	2.1	337	2.0	24	0.1
180	353	2.0	339	1.9	15	0.1
190	346	1.8	340	1.8	6	0.0
200	341	1.7	341	1.7	0	0.0



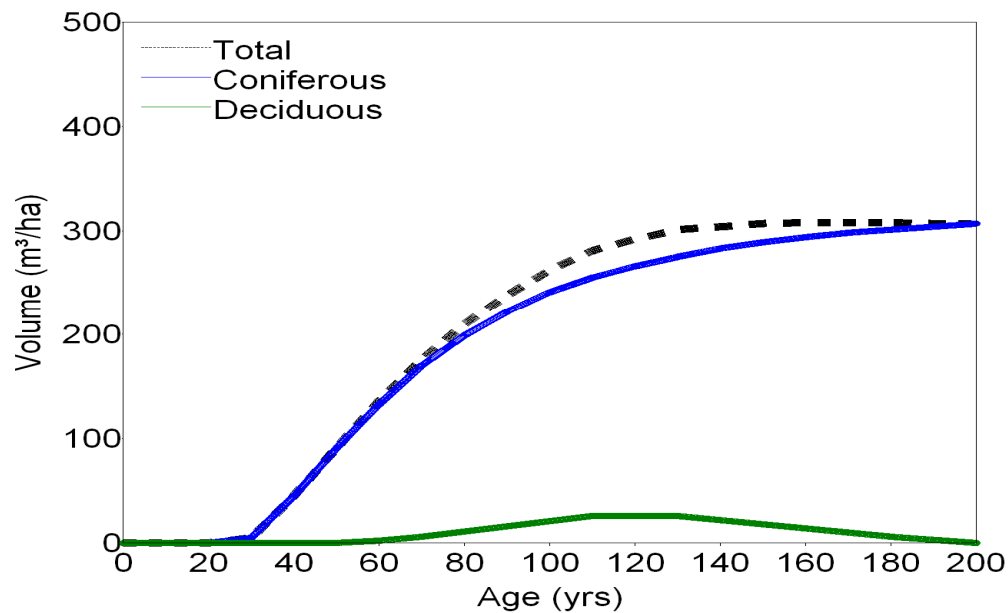
Yield group: 8 Description: PI-Sw-ABCD NSR: LF Area (ha): 3261 (%): 0.38

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	49	1.6	49	1.6	0	0.0
40	122	3.0	121	3.0	1	0.0
50	192	3.8	184	3.7	8	0.2
60	248	4.1	230	3.8	18	0.3
70	290	4.1	262	3.7	28	0.4
80	321	4.0	283	3.5	38	0.5
90	344	3.8	298	3.3	46	0.5
100	360	3.6	308	3.1	52	0.5
110	373	3.4	316	2.9	57	0.5
120	378	3.2	321	2.7	57	0.5
130	383	2.9	326	2.5	57	0.4
140	377	2.7	329	2.3	48	0.3
150	371	2.5	332	2.2	40	0.3
160	365	2.3	334	2.1	31	0.2
170	358	2.1	335	2.0	23	0.1
180	351	2.0	337	1.9	14	0.1
190	344	1.8	338	1.8	6	0.0
200	339	1.7	339	1.7	0	0.0



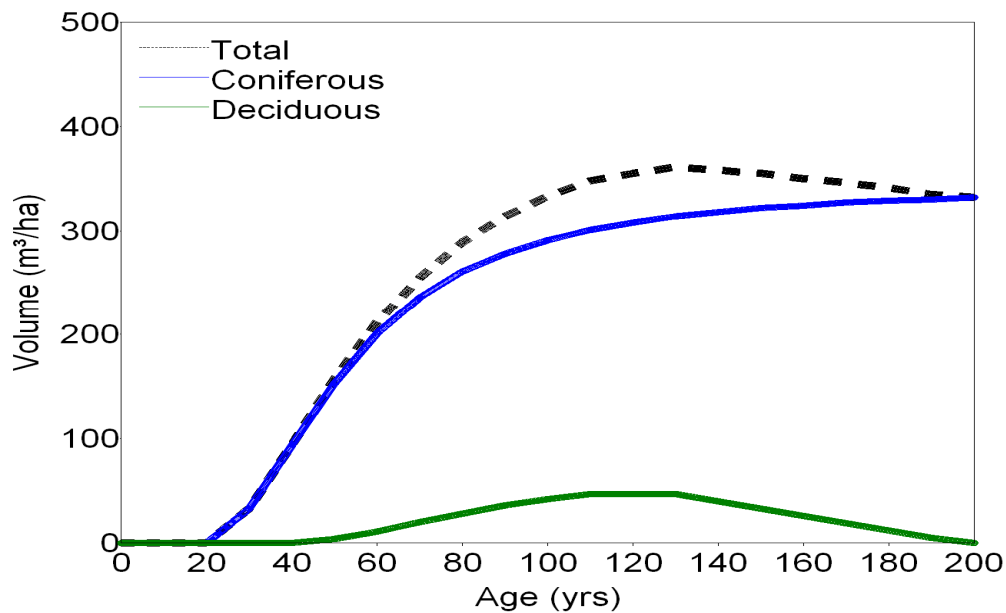
Yield group: 8 Description: PI-Sw-ABCD NSR: M/SA/A Area (ha): 1182 (%): 0.14

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	5	0.2	5	0.2	0	0.0
40	45	1.1	45	1.1	0	0.0
50	91	1.8	91	1.8	0	0.0
60	136	2.3	133	2.2	2	0.0
70	176	2.5	170	2.4	6	0.1
80	210	2.6	199	2.5	11	0.1
90	238	2.6	222	2.5	16	0.2
100	262	2.6	241	2.4	21	0.2
110	281	2.6	255	2.3	26	0.2
120	292	2.4	266	2.2	26	0.2
130	301	2.3	275	2.1	26	0.2
140	304	2.2	283	2.0	22	0.2
150	307	2.0	289	1.9	18	0.1
160	308	1.9	294	1.8	14	0.1
170	308	1.8	298	1.8	10	0.1
180	308	1.7	301	1.7	6	0.0
190	307	1.6	304	1.6	3	0.0
200	307	1.5	307	1.5	0	0.0



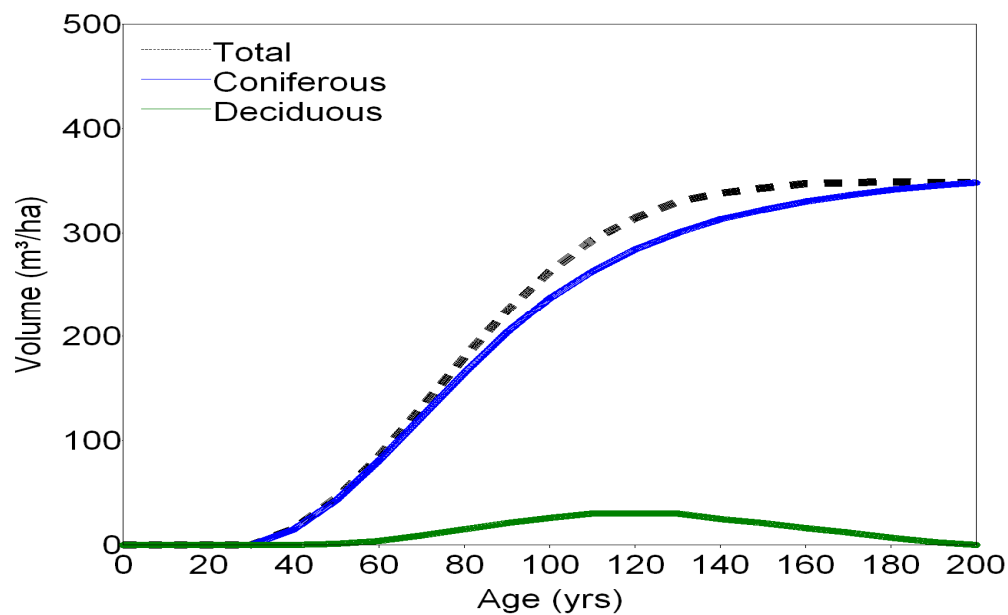
Yield group: 8 Description: PI-Sw-ABCD NSR: UF Area (ha): 4906 (%): 0.57

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	33	1.1	33	1.1	0	0.0
40	94	2.4	94	2.3	0	0.0
50	157	3.1	153	3.1	4	0.1
60	212	3.5	201	3.3	11	0.2
70	255	3.6	236	3.4	20	0.3
80	289	3.6	261	3.3	28	0.4
90	314	3.5	278	3.1	36	0.4
100	333	3.3	291	2.9	42	0.4
110	348	3.2	301	2.7	47	0.4
120	355	3.0	308	2.6	47	0.4
130	361	2.8	314	2.4	47	0.4
140	358	2.6	318	2.3	40	0.3
150	355	2.4	322	2.1	33	0.2
160	350	2.2	324	2.0	26	0.2
170	346	2.0	327	1.9	19	0.1
180	341	1.9	329	1.8	12	0.1
190	335	1.8	330	1.7	5	0.0
200	332	1.7	332	1.7	0	0.0



Yield group: 9 Description: Sw-PI-ABCD NSR: CMW/DMW Area (ha): 76 (%) : 0.01

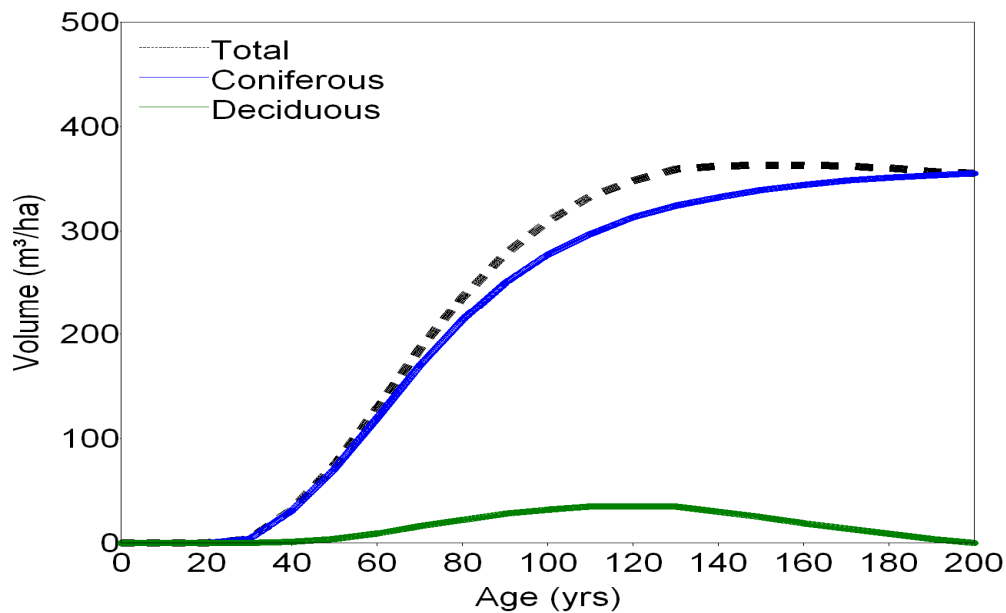
Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	0	0.0	0	0.0	0	0.0
40	16	0.4	15	0.4	0	0.0
50	45	0.9	43	0.9	1	0.0
60	85	1.4	81	1.3	4	0.1
70	132	1.9	123	1.8	9	0.1
80	180	2.3	165	2.1	15	0.2
90	225	2.5	204	2.3	21	0.2
100	263	2.6	237	2.4	26	0.3
110	293	2.7	263	2.4	30	0.3
120	314	2.6	284	2.4	30	0.2
130	330	2.5	300	2.3	30	0.2
140	338	2.4	313	2.2	25	0.2
150	343	2.3	322	2.1	21	0.1
160	347	2.2	330	2.1	16	0.1
170	348	2.0	336	2.0	12	0.1
180	349	1.9	341	1.9	7	0.0
190	348	1.8	345	1.8	3	0.0
200	348	1.7	348	1.7	0	0.0





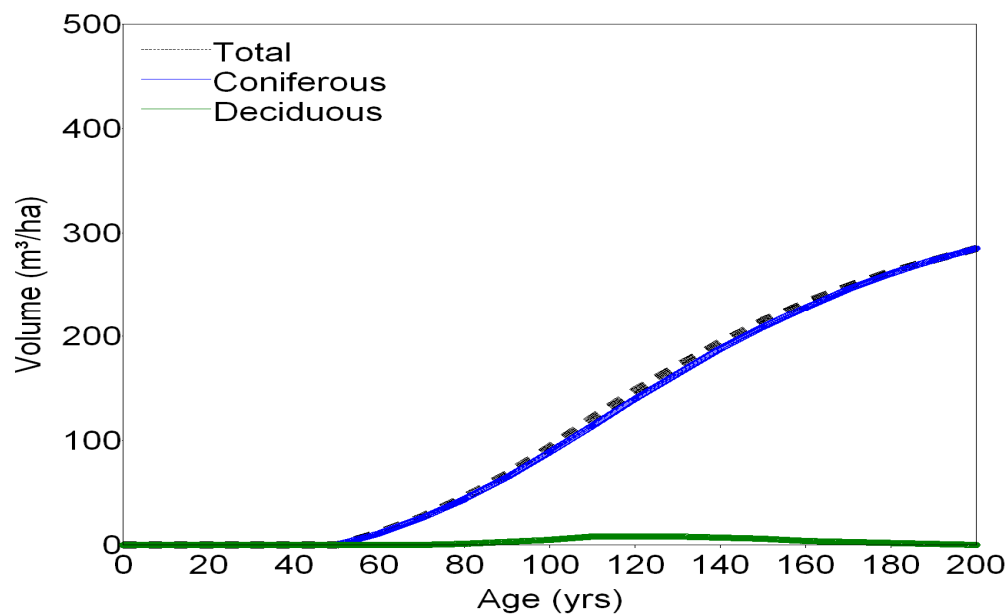
Yield group: 9 Description: Sw-PI-ABCD NSR: LF Area (ha): 1432 (%): 0.17

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	4	0.1	4	0.1	0	0.0
40	32	0.8	31	0.8	1	0.0
50	75	1.5	71	1.4	4	0.1
60	129	2.1	120	2.0	9	0.1
70	186	2.7	170	2.4	16	0.2
80	236	3.0	214	2.7	22	0.3
90	278	3.1	250	2.8	28	0.3
100	309	3.1	277	2.8	32	0.3
110	333	3.0	297	2.7	35	0.3
120	348	2.9	313	2.6	35	0.3
130	359	2.8	324	2.5	35	0.3
140	362	2.6	332	2.4	30	0.2
150	363	2.4	339	2.3	25	0.2
160	363	2.3	344	2.1	19	0.1
170	362	2.1	348	2.0	14	0.1
180	360	2.0	351	1.9	9	0.0
190	357	1.9	353	1.9	4	0.0
200	355	1.8	355	1.8	0	0.0



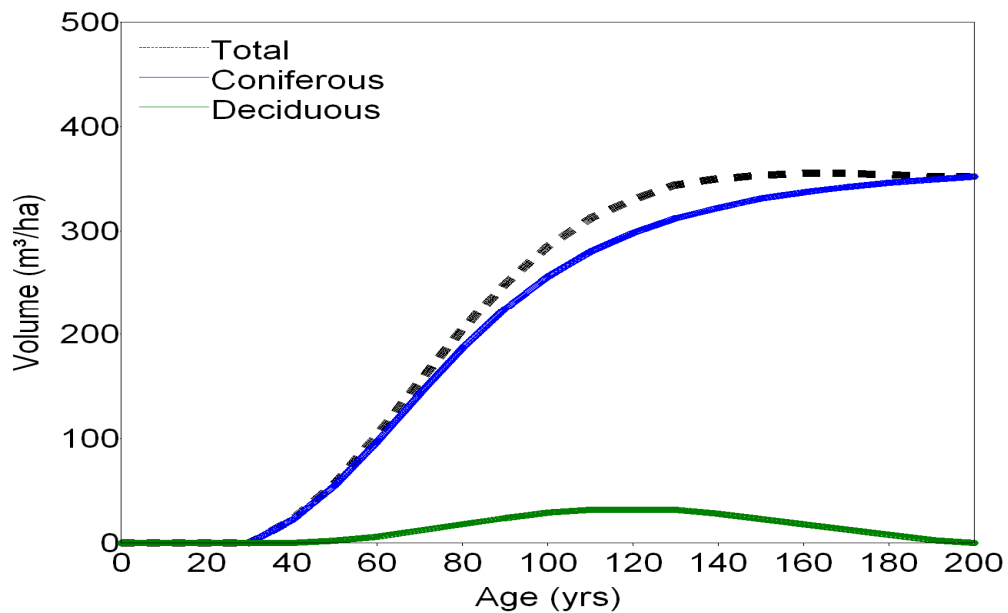
Yield group: 9 Description: Sw-PI-ABCD NSR: M/SA/A Area (ha): 127 (%) : 0.01

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	0	0.0	0	0.0	0	0.0
40	0	0.0	0	0.0	0	0.0
50	0	0.0	0	0.0	0	0.0
60	12	0.2	11	0.2	0	0.0
70	27	0.4	26	0.4	0	0.0
80	46	0.6	44	0.6	1	0.0
90	68	0.8	65	0.7	3	0.0
100	94	0.9	89	0.9	5	0.1
110	122	1.1	114	1.0	8	0.1
120	148	1.2	140	1.2	8	0.1
130	172	1.3	164	1.3	8	0.1
140	194	1.4	188	1.3	7	0.0
150	215	1.4	209	1.4	6	0.0
160	233	1.5	228	1.4	4	0.0
170	249	1.5	246	1.4	3	0.0
180	263	1.5	261	1.4	2	0.0
190	274	1.4	274	1.4	1	0.0
200	285	1.4	285	1.4	0	0.0



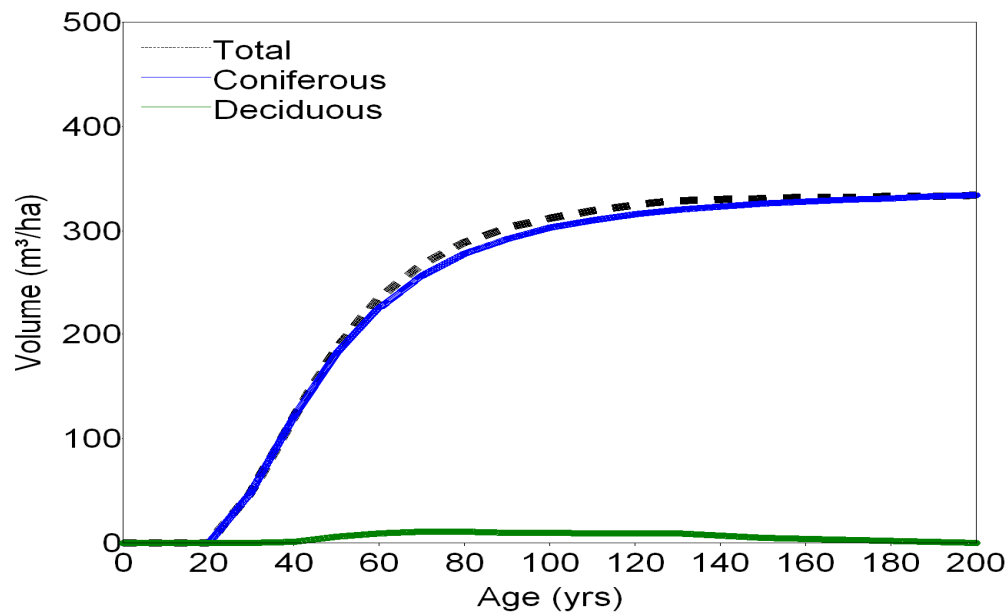
Yield group: 9 Description: Sw-PI-ABCD NSR: UF Area (ha): 1317 (%): 0.15

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	0	0.0	0	0.0	0	0.0
40	22	0.5	22	0.5	0	0.0
50	57	1.1	55	1.1	2	0.0
60	103	1.7	97	1.6	6	0.1
70	155	2.2	143	2.0	12	0.2
80	205	2.6	187	2.3	18	0.2
90	249	2.8	225	2.5	24	0.3
100	285	2.8	256	2.6	29	0.3
110	312	2.8	280	2.5	32	0.3
120	330	2.8	298	2.5	32	0.3
130	344	2.6	312	2.4	32	0.2
140	350	2.5	322	2.3	28	0.2
150	353	2.4	331	2.2	23	0.2
160	355	2.2	337	2.1	18	0.1
170	355	2.1	342	2.0	13	0.1
180	354	2.0	346	1.9	8	0.0
190	352	1.9	349	1.8	3	0.0
200	352	1.8	352	1.8	0	0.0



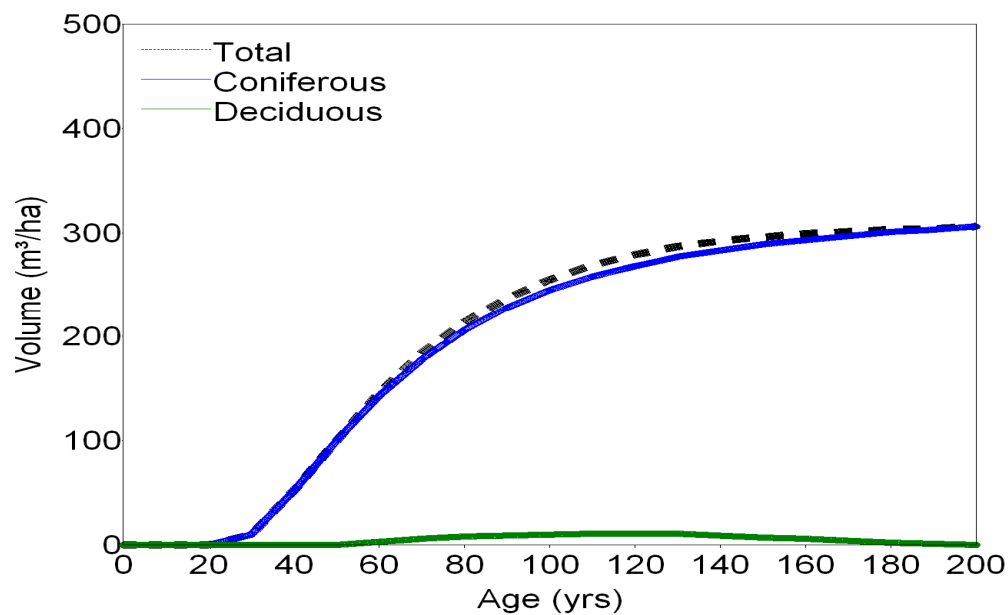
Yield group: 10 Description: [PI-Sb,Sb-PI]-AB NSR: CMW/DMW Area (ha): 2 (%): 0

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	49	1.6	49	1.6	0	0.0
40	121	3.0	121	3.0	1	0.0
50	187	3.7	182	3.6	6	0.1
60	236	3.9	226	3.8	9	0.2
70	268	3.8	257	3.7	11	0.2
80	289	3.6	278	3.5	11	0.1
90	303	3.4	292	3.2	10	0.1
100	312	3.1	303	3.0	10	0.1
110	319	2.9	310	2.8	9	0.1
120	325	2.7	316	2.6	9	0.1
130	329	2.5	320	2.5	9	0.1
140	330	2.4	323	2.3	7	0.0
150	331	2.2	326	2.2	5	0.0
160	332	2.1	328	2.0	4	0.0
170	332	2.0	330	1.9	3	0.0
180	333	1.8	331	1.8	2	0.0
190	333	1.8	333	1.8	1	0.0
200	334	1.7	334	1.7	0	0.0



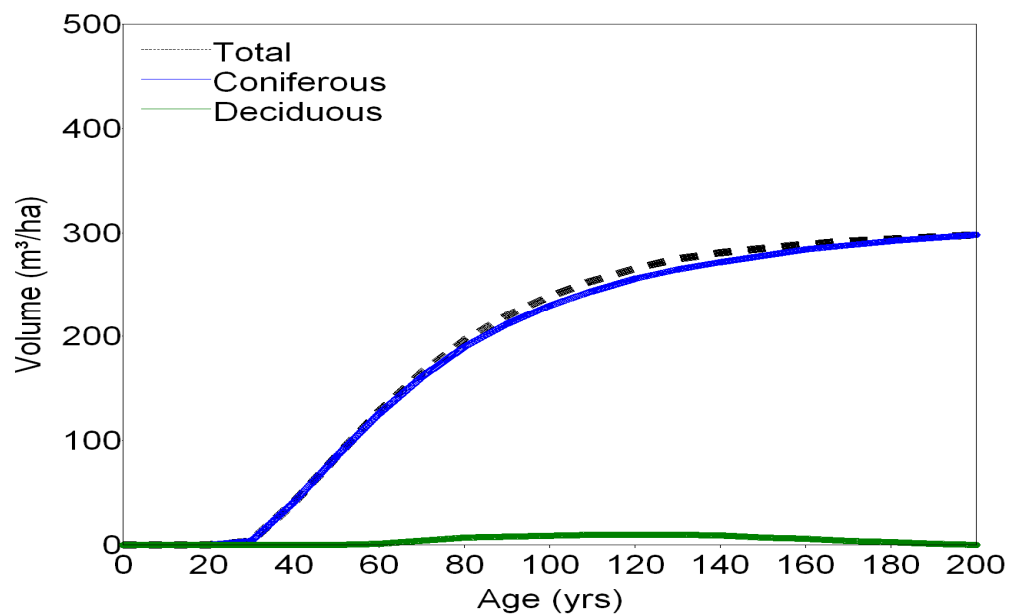
Yield group: 10 Description: [PI-Sb,Sb-PI]-AB NSR: LF Area (ha): 152 (%): 0.02

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	10	0.3	10	0.3	0	0.0
40	52	1.3	52	1.3	0	0.0
50	100	2.0	100	2.0	0	0.0
60	146	2.4	143	2.4	3	0.0
70	184	2.6	178	2.5	6	0.1
80	214	2.7	206	2.6	8	0.1
90	237	2.6	228	2.5	9	0.1
100	255	2.6	245	2.4	10	0.1
110	269	2.4	258	2.3	11	0.1
120	279	2.3	268	2.2	11	0.1
130	287	2.2	277	2.1	11	0.1
140	292	2.1	283	2.0	9	0.1
150	296	2.0	289	1.9	7	0.0
160	299	1.9	293	1.8	6	0.0
170	301	1.8	297	1.7	4	0.0
180	303	1.7	301	1.7	2	0.0
190	304	1.6	303	1.6	1	0.0
200	306	1.5	306	1.5	0	0.0



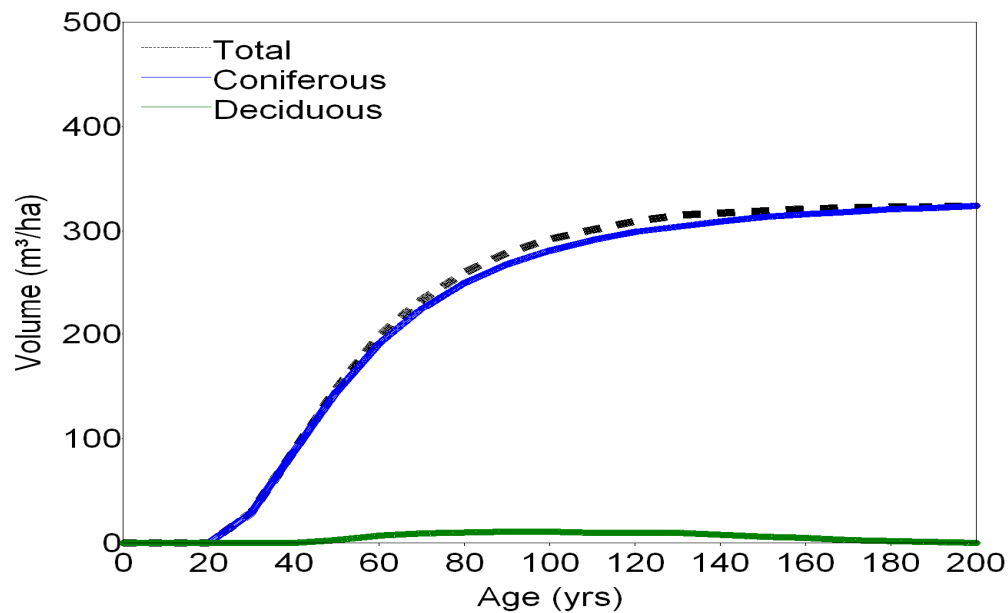
Yield group: 10 Description: [PI-Sb,Sb-PI]-AB NSR: M/SA/A Area (ha): 33 (%): 0

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	4	0.1	4	0.1	0	0.0
40	41	1.0	41	1.0	0	0.0
50	85	1.7	85	1.7	0	0.0
60	128	2.1	126	2.1	1	0.0
70	165	2.4	161	2.3	4	0.1
80	196	2.5	190	2.4	7	0.1
90	220	2.4	212	2.4	8	0.1
100	239	2.4	230	2.3	9	0.1
110	254	2.3	244	2.2	10	0.1
120	266	2.2	256	2.1	10	0.1
130	275	2.1	265	2.0	10	0.1
140	281	2.0	272	1.9	9	0.1
150	285	1.9	278	1.9	7	0.0
160	289	1.8	284	1.8	6	0.0
170	292	1.7	288	1.7	4	0.0
180	294	1.6	292	1.6	3	0.0
190	296	1.6	295	1.6	1	0.0
200	298	1.5	298	1.5	0	0.0



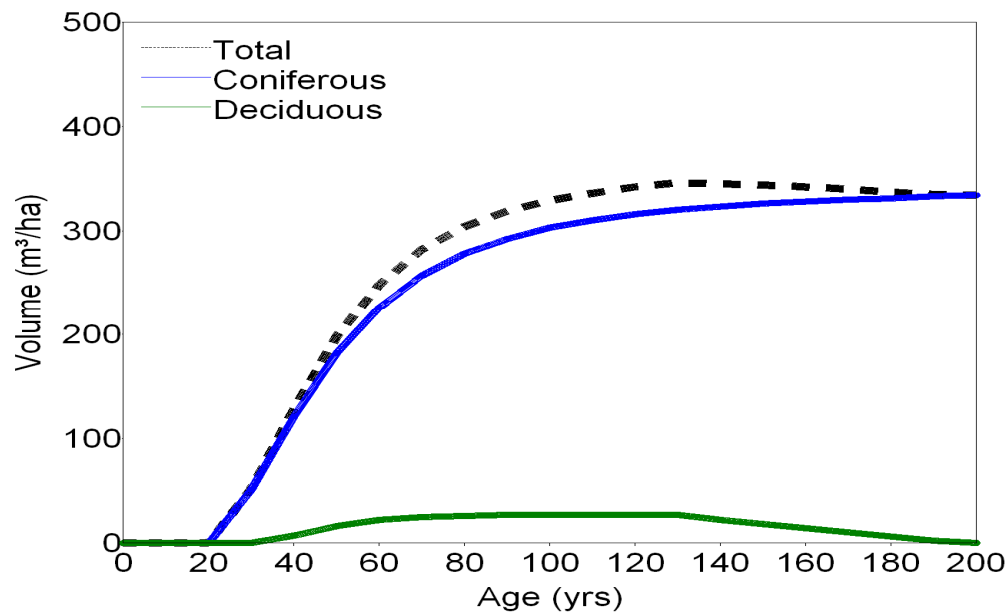
Yield group: 10 Description: [PI-Sb,Sb-PI]-AB NSR: UF Area (ha): 486 (%): 0.06

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	29	1.0	29	1.0	0	0.0
40	88	2.2	88	2.2	0	0.0
50	148	3.0	145	2.9	3	0.1
60	198	3.3	191	3.2	7	0.1
70	234	3.3	225	3.2	9	0.1
80	260	3.3	250	3.1	10	0.1
90	279	3.1	268	3.0	11	0.1
100	292	2.9	281	2.8	11	0.1
110	301	2.7	291	2.6	10	0.1
120	309	2.6	299	2.5	10	0.1
130	315	2.4	304	2.3	10	0.1
140	317	2.3	309	2.2	8	0.1
150	319	2.1	313	2.1	6	0.0
160	321	2.0	316	2.0	5	0.0
170	322	1.9	318	1.9	3	0.0
180	323	1.8	321	1.8	2	0.0
190	323	1.7	322	1.7	1	0.0
200	324	1.6	324	1.6	0	0.0



Yield group: 11 Description: [PI-Sb,Sb-PI]-CD NSR: CMW/DMW Area (ha): 7 (%): 0

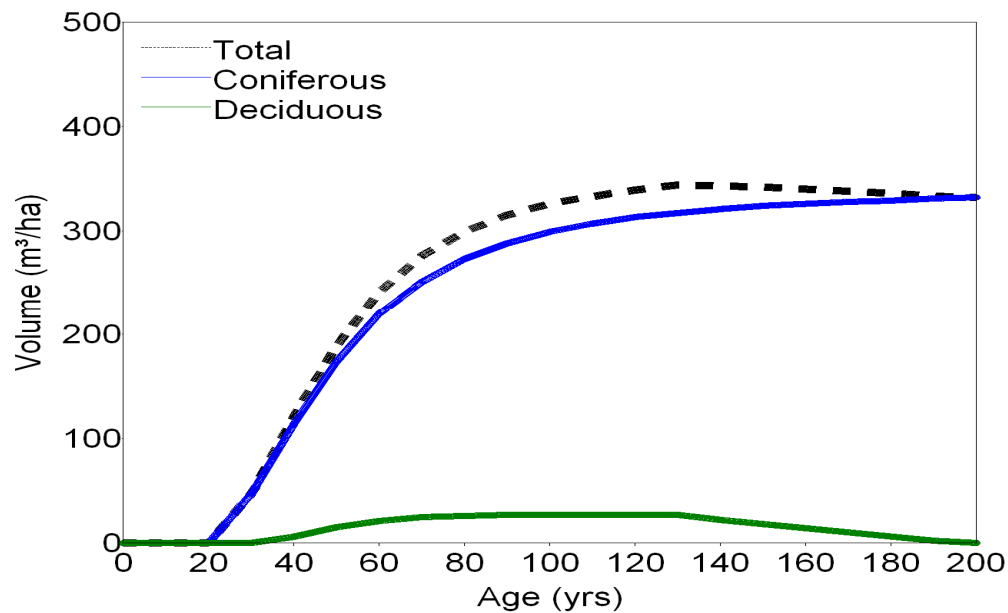
Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	52	1.7	51	1.7	0	0.0
40	128	3.2	121	3.0	7	0.2
50	198	4.0	182	3.6	16	0.3
60	248	4.1	226	3.8	22	0.4
70	282	4.0	257	3.7	25	0.4
80	304	3.8	278	3.5	26	0.3
90	319	3.5	292	3.2	27	0.3
100	329	3.3	303	3.0	27	0.3
110	336	3.1	310	2.8	27	0.2
120	342	2.9	316	2.6	27	0.2
130	346	2.7	320	2.5	27	0.2
140	345	2.5	323	2.3	22	0.2
150	344	2.3	326	2.2	18	0.1
160	342	2.1	328	2.0	14	0.1
170	340	2.0	330	1.9	10	0.1
180	337	1.9	331	1.8	6	0.0
190	335	1.8	333	1.8	2	0.0
200	334	1.7	334	1.7	0	0.0





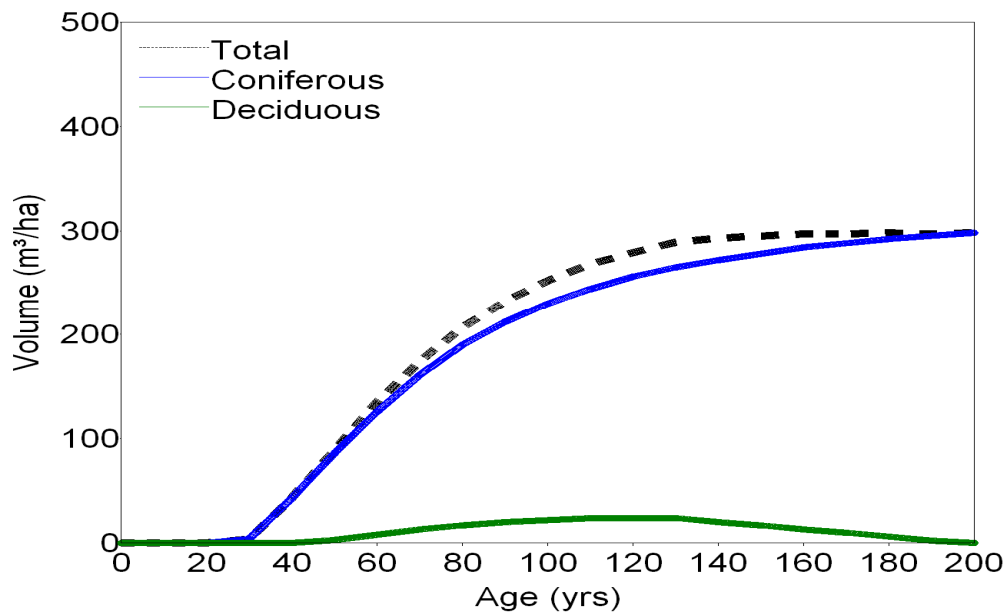
Yield group: 11 Description: [PI-Sb,Sb-PI]-CD NSR: LF Area (ha): 103 (%): 0.01

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	47	1.6	47	1.6	0	0.0
40	121	3.0	114	2.9	6	0.2
50	189	3.8	174	3.5	15	0.3
60	241	4.0	220	3.7	21	0.4
70	276	3.9	251	3.6	25	0.4
80	299	3.7	273	3.4	26	0.3
90	315	3.5	288	3.2	27	0.3
100	326	3.3	299	3.0	27	0.3
110	333	3.0	307	2.8	27	0.2
120	339	2.8	313	2.6	27	0.2
130	344	2.6	317	2.4	27	0.2
140	343	2.4	321	2.3	22	0.2
150	342	2.3	324	2.2	18	0.1
160	340	2.1	326	2.0	14	0.1
170	338	2.0	328	1.9	10	0.1
180	336	1.9	329	1.8	6	0.0
190	333	1.8	331	1.7	2	0.0
200	332	1.7	332	1.7	0	0.0



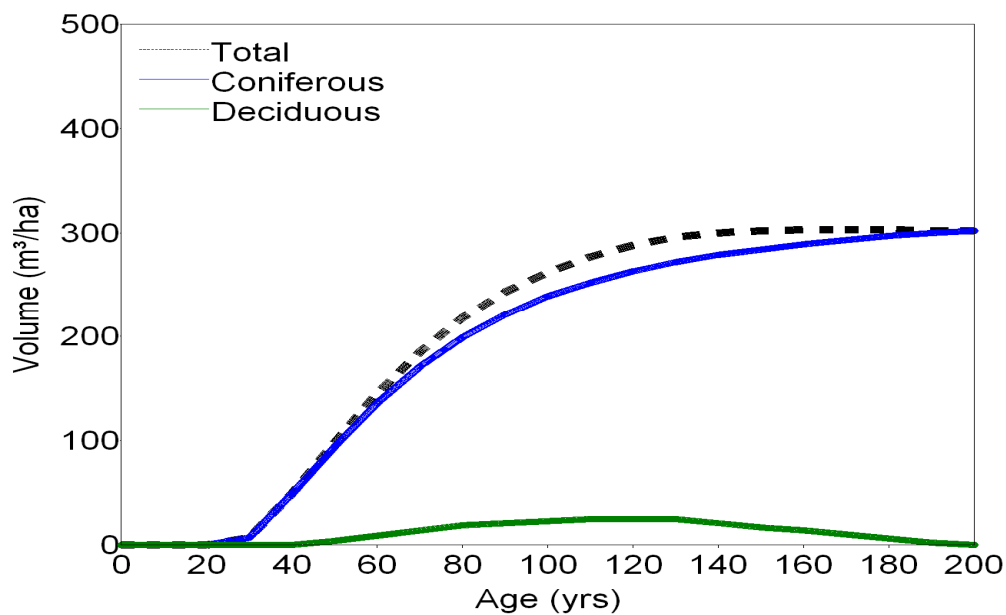
Yield group: 11 Description: [PI-Sb,Sb-PI]-CD NSR: M/SA/A Area (ha): 1 (%): 0

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	4	0.1	4	0.1	0	0.0
40	43	1.1	43	1.1	0	0.0
50	89	1.8	86	1.7	3	0.1
60	135	2.2	126	2.1	8	0.1
70	174	2.5	161	2.3	13	0.2
80	207	2.6	190	2.4	17	0.2
90	232	2.6	212	2.4	20	0.2
100	252	2.5	230	2.3	22	0.2
110	268	2.4	244	2.2	24	0.2
120	279	2.3	256	2.1	24	0.2
130	289	2.2	265	2.0	24	0.2
140	293	2.1	272	1.9	20	0.1
150	295	2.0	278	1.9	17	0.1
160	297	1.9	284	1.8	13	0.1
170	297	1.7	288	1.7	10	0.1
180	298	1.7	292	1.6	6	0.0
190	297	1.6	295	1.6	2	0.0
200	298	1.5	298	1.5	0	0.0



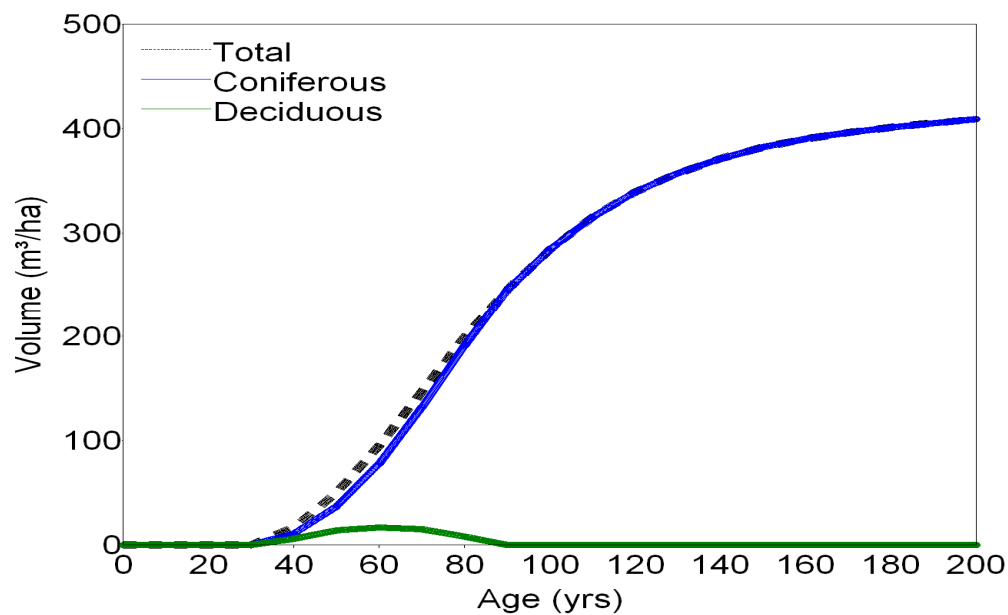
Yield group: 11 Description: [PI-Sb,Sb-PI]-CD NSR: UF Area (ha): 83 (%): 0.01

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	7	0.2	7	0.2	0	0.0
40	49	1.2	49	1.2	0	0.0
50	98	2.0	94	1.9	4	0.1
60	145	2.4	136	2.3	9	0.2
70	185	2.6	171	2.4	14	0.2
80	218	2.7	199	2.5	19	0.2
90	243	2.7	221	2.5	21	0.2
100	262	2.6	239	2.4	23	0.2
110	277	2.5	252	2.3	25	0.2
120	288	2.4	263	2.2	25	0.2
130	296	2.3	272	2.1	25	0.2
140	300	2.1	279	2.0	21	0.1
150	302	2.0	284	1.9	17	0.1
160	303	1.9	289	1.8	14	0.1
170	303	1.8	293	1.7	10	0.1
180	303	1.7	297	1.6	6	0.0
190	302	1.6	300	1.6	2	0.0
200	302	1.5	302	1.5	0	0.0



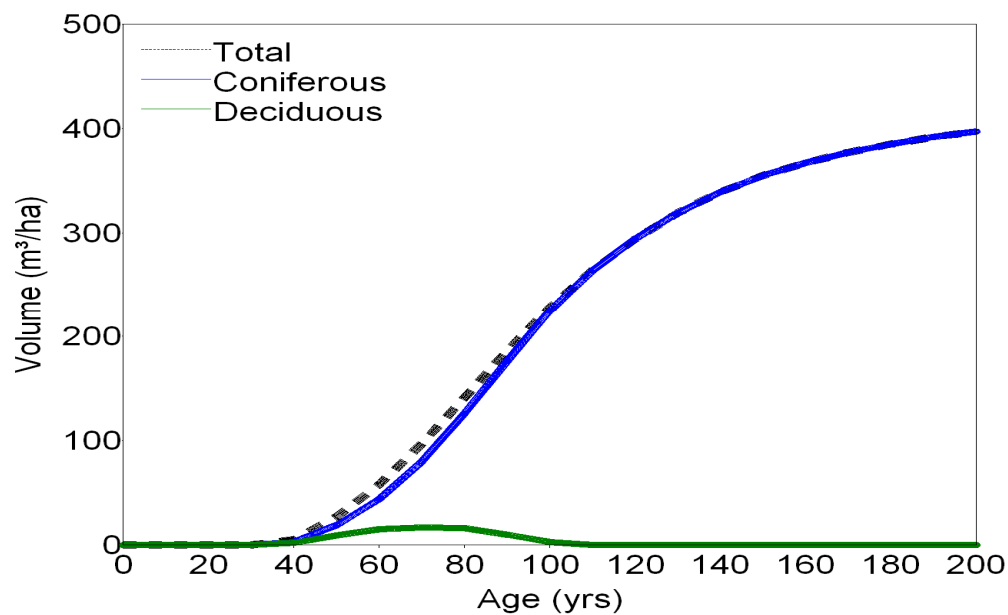
Yield group: 12 Description: [Sw-Sb,Sb-Sw]-ABCD NSR: CMW/DMW Area (ha): 158 (%): 0.02

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	0	0.0	0	0.0	0	0.0
40	17	0.4	11	0.3	6	0.2
50	50	1.0	37	0.7	14	0.3
60	95	1.6	78	1.3	17	0.3
70	147	2.1	132	1.9	15	0.2
80	199	2.5	191	2.4	8	0.1
90	245	2.7	245	2.7	0	0.0
100	284	2.8	284	2.8	0	0.0
110	315	2.9	315	2.9	0	0.0
120	339	2.8	339	2.8	0	0.0
130	357	2.7	357	2.7	0	0.0
140	371	2.7	371	2.7	0	0.0
150	382	2.5	382	2.5	0	0.0
160	390	2.4	390	2.4	0	0.0
170	396	2.3	396	2.3	0	0.0
180	401	2.2	401	2.2	0	0.0
190	405	2.1	405	2.1	0	0.0
200	409	2.0	409	2.0	0	0.0



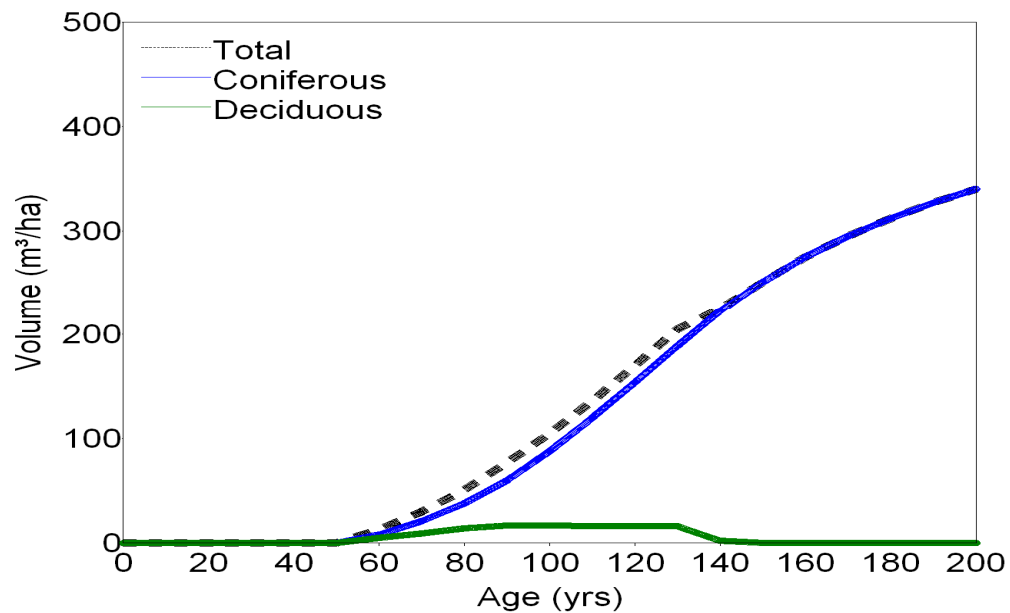
Yield group: 12 Description: [Sw-Sb,Sb-Sw]-ABCD NSR: LF Area (ha): 285 (%): 0.03

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	0	0.0	0	0.0	0	0.0
40	5	0.1	3	0.1	2	0.1
50	27	0.5	19	0.4	9	0.2
60	58	1.0	44	0.7	15	0.2
70	97	1.4	80	1.1	17	0.2
80	141	1.8	126	1.6	16	0.2
90	186	2.1	176	2.0	10	0.1
100	228	2.3	225	2.2	3	0.0
110	264	2.4	264	2.4	0	0.0
120	294	2.5	294	2.5	0	0.0
130	319	2.5	319	2.5	0	0.0
140	339	2.4	339	2.4	0	0.0
150	355	2.4	355	2.4	0	0.0
160	367	2.3	367	2.3	0	0.0
170	377	2.2	377	2.2	0	0.0
180	385	2.1	385	2.1	0	0.0
190	392	2.1	392	2.1	0	0.0
200	397	2.0	397	2.0	0	0.0



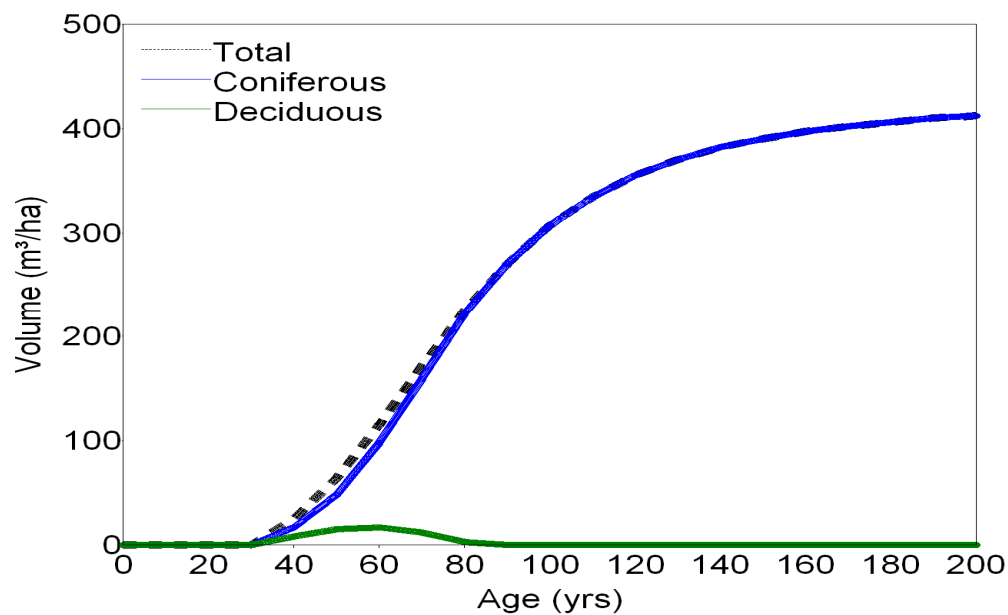
Yield group: 12 Description: [Sw-Sb,Sb-Sw]-ABCD NSR: M/SA/A Area (ha): 21 (%): 0

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	0	0.0	0	0.0	0	0.0
40	0	0.0	0	0.0	0	0.0
50	0	0.0	0	0.0	0	0.0
60	13	0.2	8	0.1	5	0.1
70	30	0.4	21	0.3	9	0.1
80	51	0.6	38	0.5	14	0.2
90	77	0.9	60	0.7	17	0.2
100	105	1.1	88	0.9	17	0.2
110	136	1.2	120	1.1	16	0.1
120	170	1.4	154	1.3	16	0.1
130	205	1.6	189	1.5	16	0.1
140	225	1.6	223	1.6	2	0.0
150	251	1.7	251	1.7	0	0.0
160	275	1.7	275	1.7	0	0.0
170	295	1.7	295	1.7	0	0.0
180	312	1.7	312	1.7	0	0.0
190	327	1.7	327	1.7	0	0.0
200	340	1.7	340	1.7	0	0.0



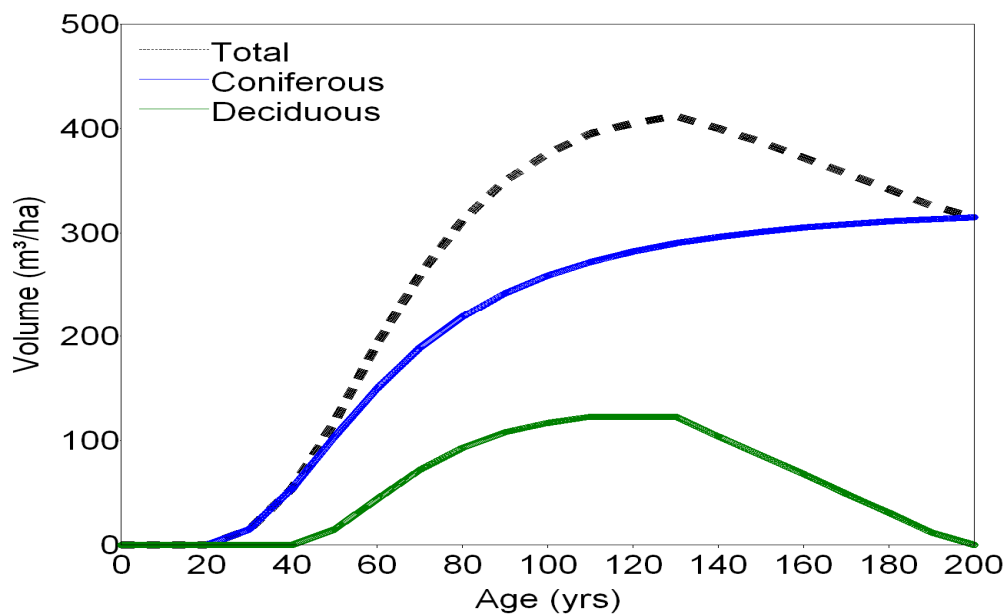
Yield group: 12 Description: [Sw-Sb,Sb-Sw]-ABCD NSR: UF Area (ha): 71 (%) : 0.01

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	0	0.0	0	0.0	0	0.0
40	25	0.6	17	0.4	8	0.2
50	64	1.3	48	1.0	15	0.3
60	115	1.9	98	1.6	17	0.3
70	171	2.4	159	2.3	12	0.2
80	225	2.8	222	2.8	3	0.0
90	270	3.0	270	3.0	0	0.0
100	307	3.1	307	3.1	0	0.0
110	334	3.0	334	3.0	0	0.0
120	355	3.0	355	3.0	0	0.0
130	370	2.8	370	2.8	0	0.0
140	382	2.7	382	2.7	0	0.0
150	390	2.6	390	2.6	0	0.0
160	397	2.5	397	2.5	0	0.0
170	402	2.4	402	2.4	0	0.0
180	406	2.3	406	2.3	0	0.0
190	410	2.2	410	2.2	0	0.0
200	412	2.1	412	2.1	0	0.0



Yield group: 13 Description: PI-hwd-ABCD NSR: CMW/DMW Area (ha): 115 (%): 0.01

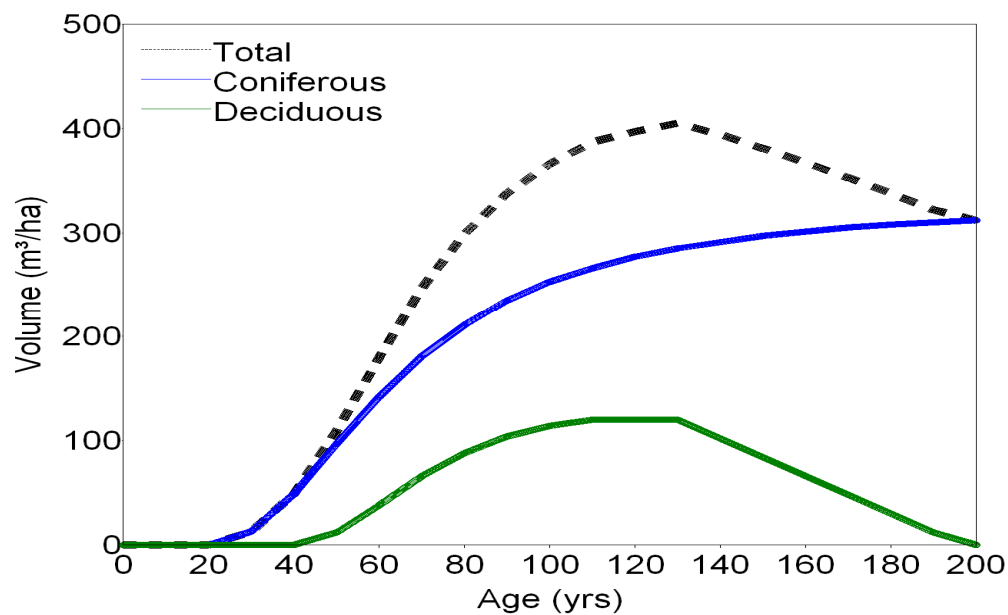
Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	15	0.5	15	0.5	0	0.0
40	54	1.4	54	1.4	0	0.0
50	118	2.4	104	2.1	15	0.3
60	193	3.2	150	2.5	44	0.7
70	260	3.7	189	2.7	72	1.0
80	312	3.9	219	2.7	93	1.2
90	350	3.9	242	2.7	108	1.2
100	376	3.8	259	2.6	117	1.2
110	395	3.6	272	2.5	123	1.1
120	405	3.4	282	2.3	123	1.0
130	412	3.2	290	2.2	123	0.9
140	400	2.9	296	2.1	104	0.7
150	387	2.6	301	2.0	86	0.6
160	372	2.3	305	1.9	68	0.4
170	357	2.1	308	1.8	49	0.3
180	342	1.9	311	1.7	31	0.2
190	326	1.7	313	1.6	12	0.1
200	315	1.6	315	1.6	0	0.0





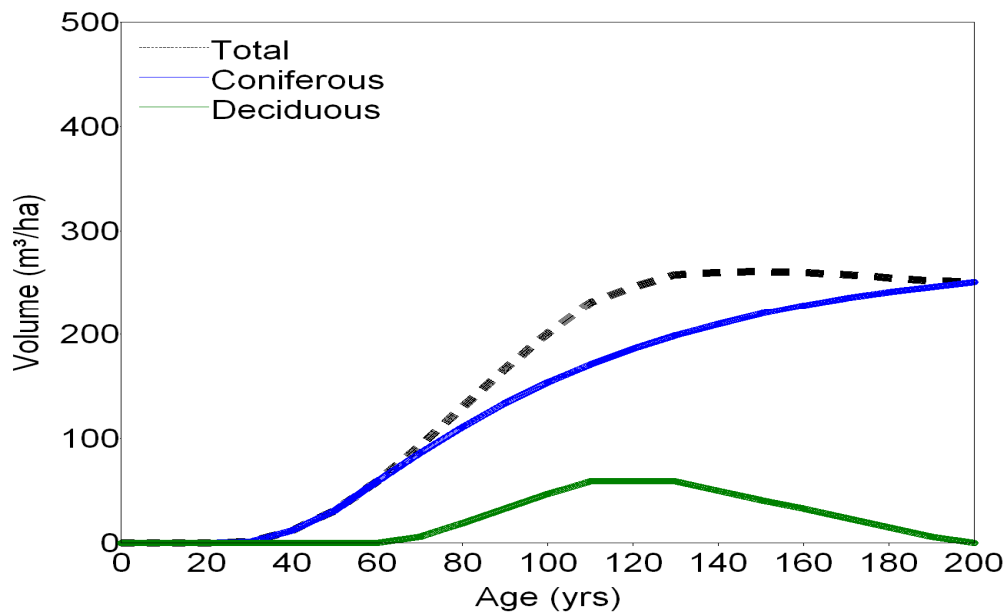
Yield group: 13 Description: PI-hwd-ABCD NSR: LF Area (ha): 2273 (%): 0.26

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	13	0.4	13	0.4	0	0.0
40	49	1.2	49	1.2	0	0.0
50	109	2.2	97	1.9	12	0.2
60	180	3.0	142	2.4	38	0.6
70	247	3.5	181	2.6	66	0.9
80	299	3.7	211	2.6	88	1.1
90	338	3.8	235	2.6	104	1.2
100	366	3.7	253	2.5	114	1.1
110	387	3.5	266	2.4	120	1.1
120	397	3.3	277	2.3	120	1.0
130	405	3.1	285	2.2	120	0.9
140	394	2.8	291	2.1	102	0.7
150	381	2.5	297	2.0	84	0.6
160	367	2.3	301	1.9	66	0.4
170	353	2.1	305	1.8	48	0.3
180	338	1.9	308	1.7	30	0.2
190	322	1.7	310	1.6	12	0.1
200	312	1.6	312	1.6	0	0.0



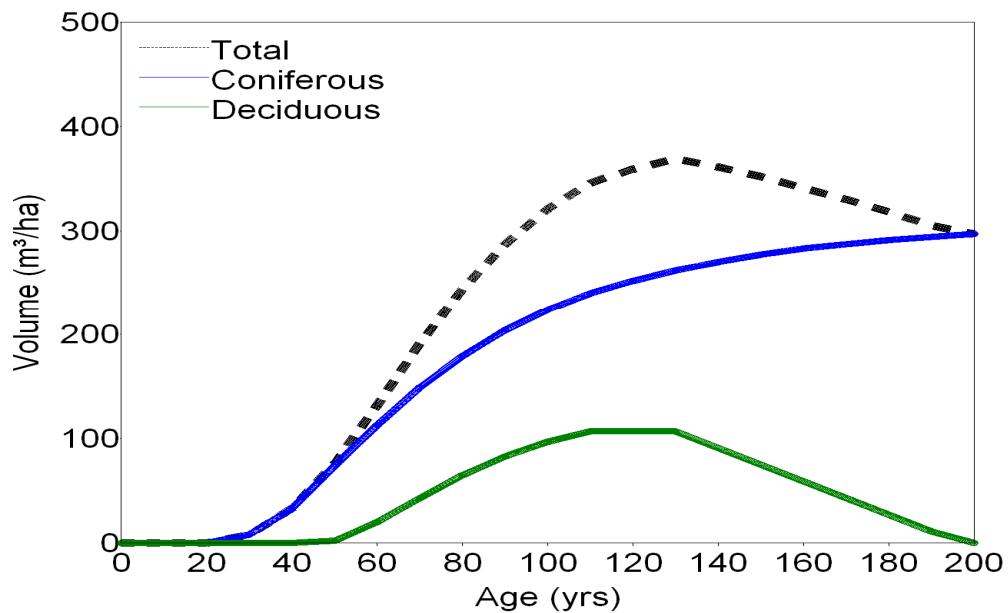
Yield group: 13 Description: PI-hwd-ABCD NSR: M/SA/A Area (ha): 0 (%): 0

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	1	0.0	1	0.0	0	0.0
40	12	0.3	12	0.3	0	0.0
50	31	0.6	31	0.6	0	0.0
60	59	1.0	59	1.0	0	0.0
70	93	1.3	86	1.2	6	0.1
80	130	1.6	111	1.4	19	0.2
90	167	1.9	134	1.5	33	0.4
100	201	2.0	154	1.5	47	0.5
110	231	2.1	171	1.6	59	0.5
120	246	2.0	186	1.6	59	0.5
130	258	2.0	199	1.5	59	0.5
140	260	1.9	210	1.5	50	0.4
150	261	1.7	220	1.5	41	0.3
160	260	1.6	228	1.4	33	0.2
170	258	1.5	235	1.4	24	0.1
180	255	1.4	241	1.3	15	0.1
190	252	1.3	246	1.3	6	0.0
200	251	1.3	251	1.3	0	0.0



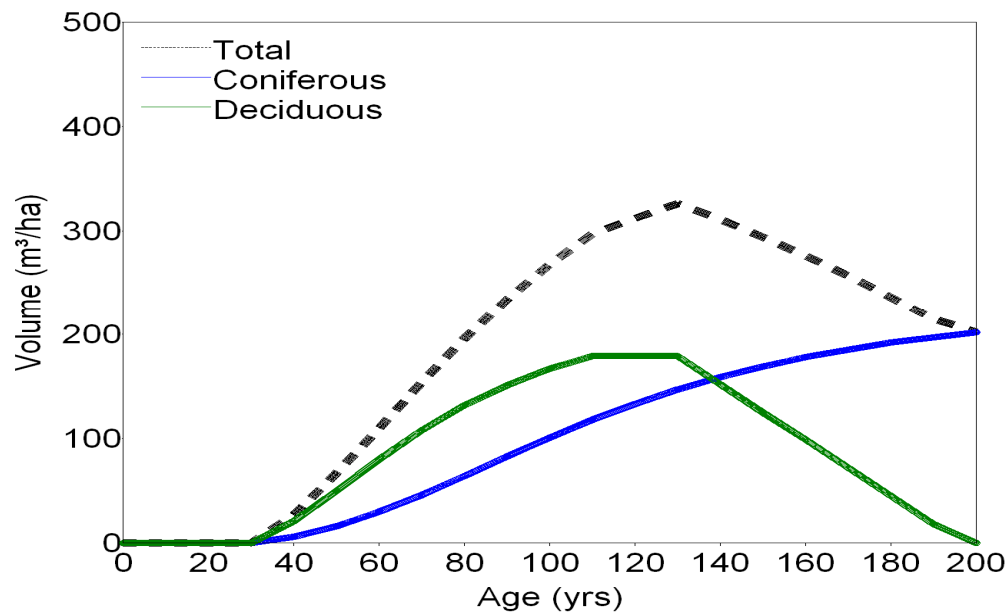
Yield group: 13 Description: Pl-hwd-ABCD NSR: UF Area (ha): 1816 (%): 0.21

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	8	0.3	8	0.3	0	0.0
40	33	0.8	33	0.8	0	0.0
50	76	1.5	74	1.5	2	0.0
60	132	2.2	113	1.9	20	0.3
70	191	2.7	149	2.1	43	0.6
80	244	3.1	179	2.2	65	0.8
90	287	3.2	204	2.3	83	0.9
100	321	3.2	224	2.2	97	1.0
110	346	3.1	240	2.2	107	1.0
120	359	3.0	252	2.1	107	0.9
130	369	2.8	262	2.0	107	0.8
140	361	2.6	270	1.9	91	0.6
150	352	2.3	277	1.8	75	0.5
160	341	2.1	283	1.8	59	0.4
170	330	1.9	287	1.7	43	0.3
180	318	1.8	291	1.6	27	0.1
190	305	1.6	294	1.5	11	0.1
200	297	1.5	297	1.5	0	0.0



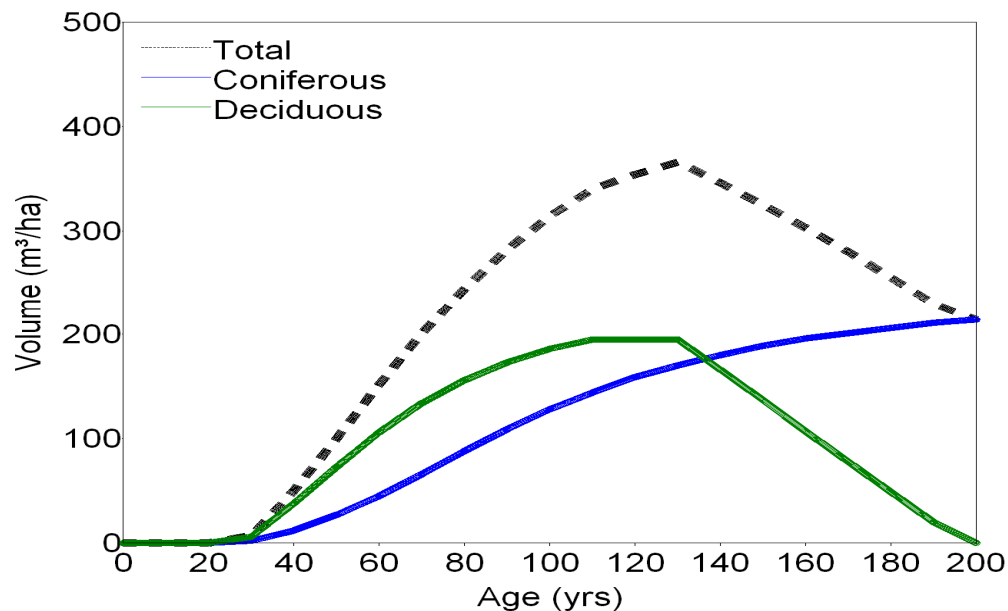
Yield group: 14 Description: [Sw-Sb]-hwd-AB NSR: CMW/DMW Area (ha): 407 (%) : 0.05

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	0	0.0	0	0.0	0	0.0
40	27	0.7	6	0.2	21	0.5
50	67	1.3	16	0.3	50	1.0
60	110	1.8	30	0.5	80	1.3
70	154	2.2	46	0.7	108	1.5
80	196	2.5	64	0.8	132	1.6
90	234	2.6	83	0.9	151	1.7
100	268	2.7	101	1.0	167	1.7
110	297	2.7	118	1.1	179	1.6
120	312	2.6	133	1.1	179	1.5
130	326	2.5	147	1.1	179	1.4
140	311	2.2	159	1.1	152	1.1
150	294	2.0	169	1.1	125	0.8
160	276	1.7	178	1.1	99	0.6
170	257	1.5	185	1.1	72	0.4
180	236	1.3	192	1.1	45	0.2
190	215	1.1	197	1.0	18	0.1
200	202	1.0	202	1.0	0	0.0



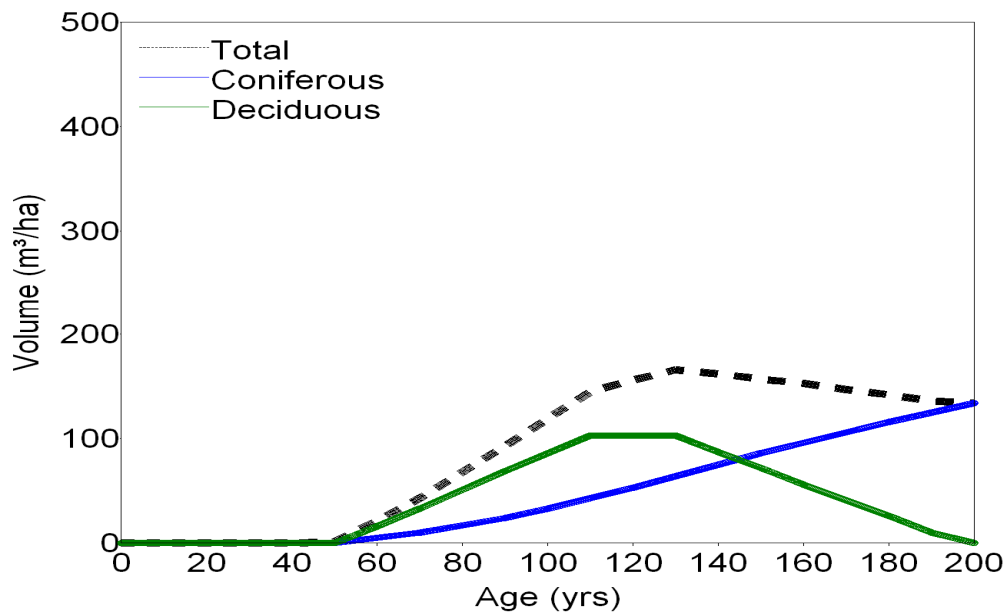
Yield group: 14 Description: [Sw-Sb]-hwd-AB NSR: LF Area (ha): 9631 (%): 1.12

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	7	0.2	2	0.1	6	0.2
40	50	1.3	12	0.3	38	1.0
50	100	2.0	27	0.5	73	1.5
60	152	2.5	45	0.8	106	1.8
70	201	2.9	66	0.9	134	1.9
80	244	3.1	88	1.1	156	2.0
90	282	3.1	109	1.2	173	1.9
100	314	3.1	128	1.3	186	1.9
110	340	3.1	144	1.3	195	1.8
120	354	2.9	159	1.3	195	1.6
130	366	2.8	170	1.3	195	1.5
140	346	2.5	180	1.3	166	1.2
150	325	2.2	189	1.3	137	0.9
160	303	1.9	196	1.2	107	0.7
170	280	1.6	201	1.2	78	0.5
180	255	1.4	206	1.1	49	0.3
190	230	1.2	211	1.1	20	0.1
200	214	1.1	214	1.1	0	0.0



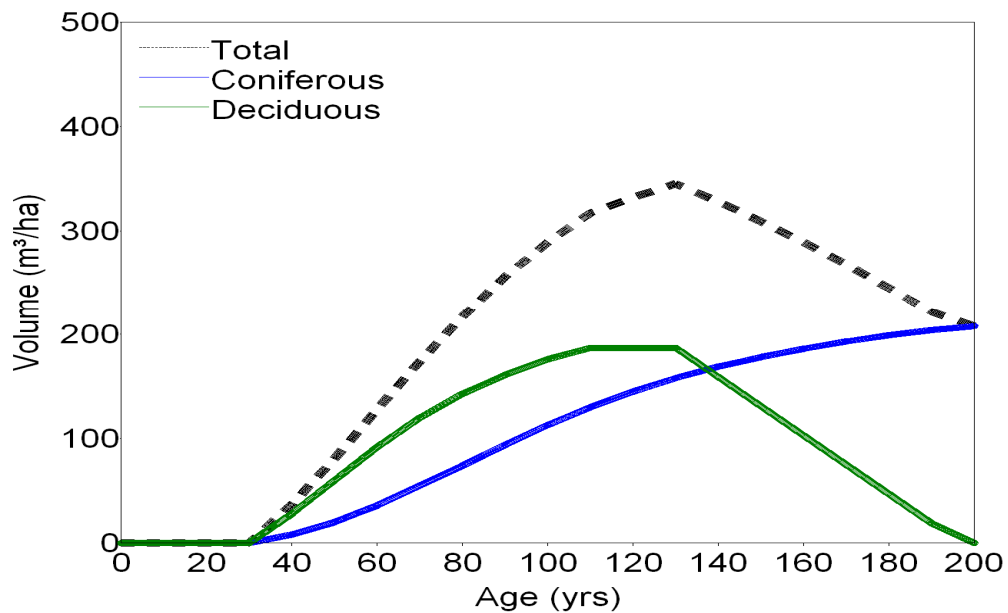
Yield group: 14 Description: [Sw-Sb]-hwd-AB NSR: M/SA/A Area (ha): 0 (%): 0

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	0	0.0	0	0.0	0	0.0
40	0	0.0	0	0.0	0	0.0
50	1	0.0	0	0.0	0	0.0
60	21	0.3	5	0.1	16	0.3
70	43	0.6	10	0.1	33	0.5
80	68	0.8	17	0.2	51	0.6
90	93	1.0	24	0.3	69	0.8
100	119	1.2	33	0.3	86	0.9
110	145	1.3	43	0.4	103	0.9
120	156	1.3	53	0.4	103	0.9
130	166	1.3	64	0.5	103	0.8
140	162	1.2	75	0.5	87	0.6
150	157	1.0	86	0.6	72	0.5
160	153	1.0	96	0.6	56	0.4
170	147	0.9	106	0.6	41	0.2
180	142	0.8	116	0.6	26	0.1
190	136	0.7	125	0.7	10	0.1
200	134	0.7	134	0.7	0	0.0



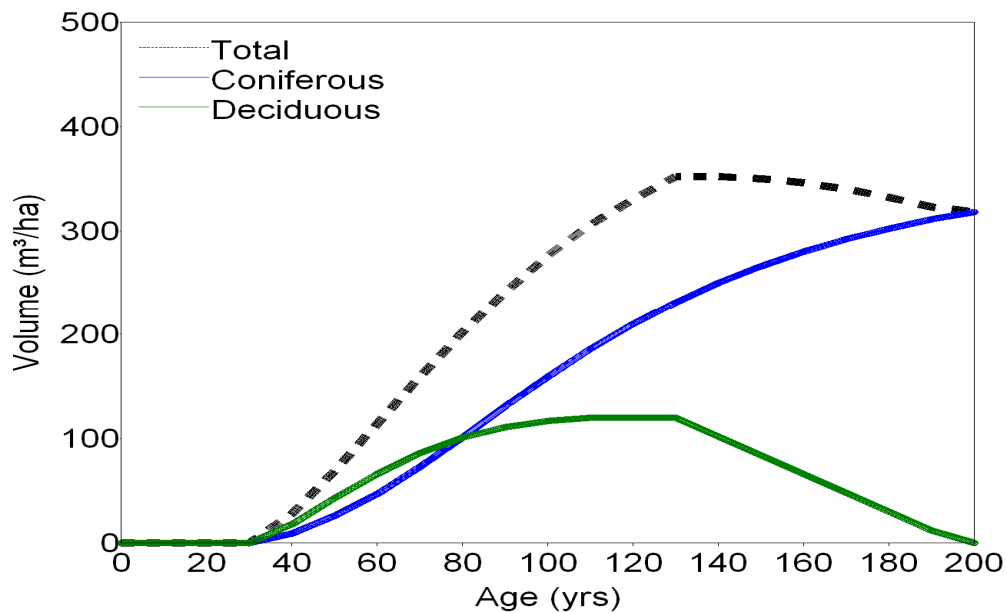
Yield group: 14 Description: [Sw-Sb]-hwd-AB NSR: UF Area (ha): 1462 (%): 0.17

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	0	0.0	0	0.0	0	0.0
40	37	0.9	8	0.2	28	0.7
50	81	1.6	20	0.4	60	1.2
60	128	2.1	36	0.6	92	1.5
70	174	2.5	55	0.8	120	1.7
80	217	2.7	74	0.9	143	1.8
90	256	2.8	94	1.0	161	1.8
100	289	2.9	113	1.1	176	1.8
110	317	2.9	130	1.2	187	1.7
120	332	2.8	145	1.2	187	1.6
130	345	2.7	158	1.2	187	1.4
140	328	2.3	169	1.2	159	1.1
150	309	2.1	178	1.2	131	0.9
160	289	1.8	186	1.2	103	0.6
170	268	1.6	193	1.1	75	0.4
180	245	1.4	199	1.1	47	0.3
190	222	1.2	204	1.1	19	0.1
200	208	1.0	208	1.0	0	0.0



Yield group: 15 Description: [Sw-Sb]-hwd-CD NSR: CMW/DMW Area (ha): 104 (%) : 0.01

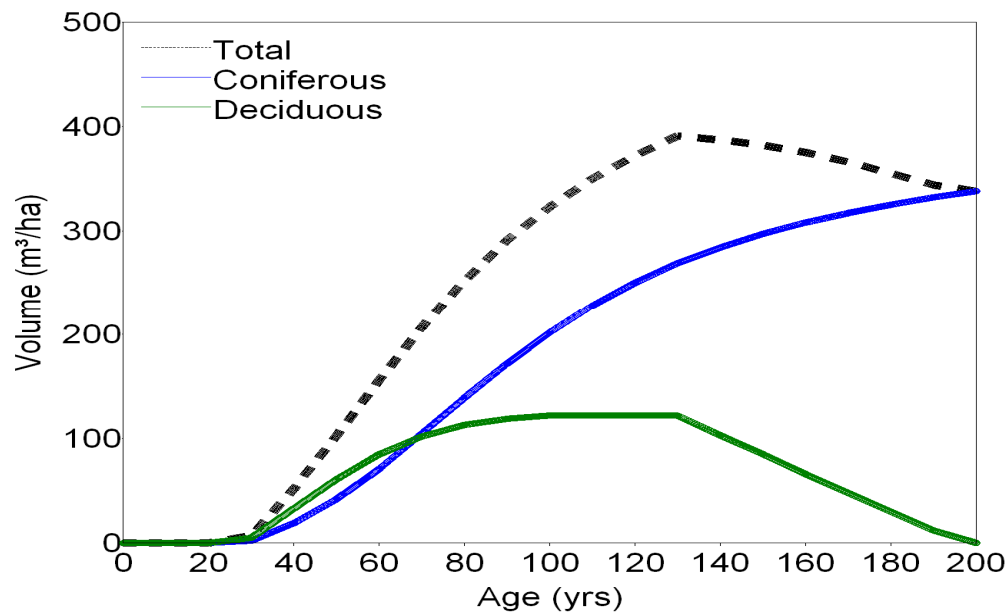
Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	0	0.0	0	0.0	0	0.0
40	28	0.7	9	0.2	18	0.5
50	69	1.4	26	0.5	43	0.9
60	114	1.9	47	0.8	66	1.1
70	159	2.3	73	1.0	86	1.2
80	202	2.5	101	1.3	101	1.3
90	241	2.7	131	1.5	111	1.2
100	276	2.8	159	1.6	117	1.2
110	306	2.8	186	1.7	120	1.1
120	330	2.8	210	1.7	120	1.0
130	352	2.7	231	1.8	120	0.9
140	352	2.5	250	1.8	102	0.7
150	350	2.3	266	1.8	84	0.6
160	346	2.2	280	1.7	66	0.4
170	340	2.0	292	1.7	48	0.3
180	332	1.8	302	1.7	30	0.2
190	323	1.7	311	1.6	12	0.1
200	318	1.6	318	1.6	0	0.0





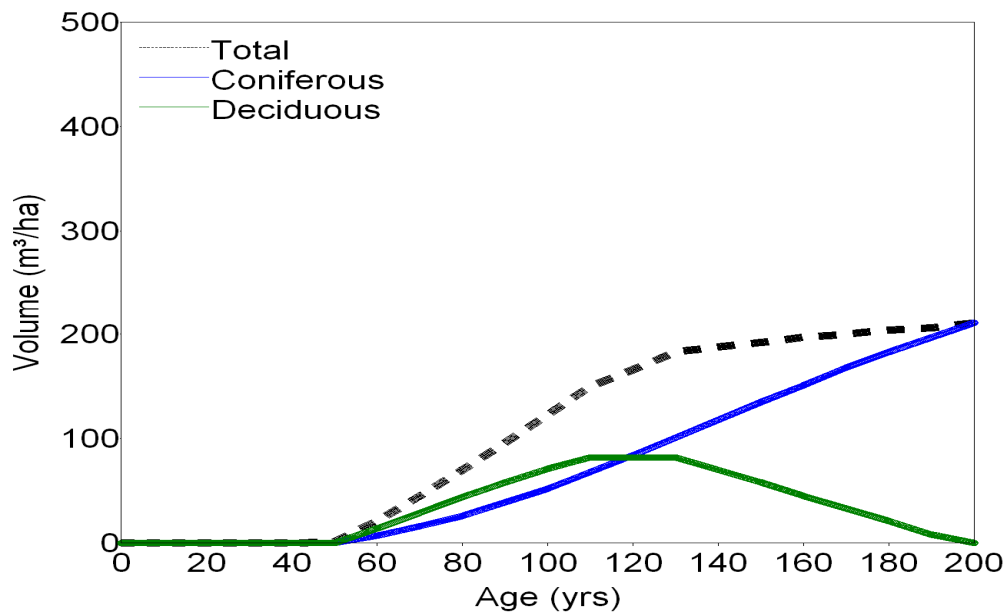
Yield group: 15 Description: [Sw-Sb]-hwd-CD NSR: LF Area (ha): 2821 (%): 0.33

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	7	0.2	2	0.1	5	0.2
40	52	1.3	19	0.5	33	0.8
50	103	2.1	42	0.8	61	1.2
60	156	2.6	71	1.2	85	1.4
70	207	3.0	105	1.5	102	1.5
80	252	3.1	139	1.7	113	1.4
90	291	3.2	172	1.9	119	1.3
100	323	3.2	202	2.0	122	1.2
110	350	3.2	228	2.1	122	1.1
120	372	3.1	250	2.1	122	1.0
130	391	3.0	269	2.1	122	0.9
140	387	2.8	284	2.0	103	0.7
150	382	2.5	297	2.0	85	0.6
160	375	2.3	308	1.9	66	0.4
170	366	2.2	317	1.9	48	0.3
180	355	2.0	325	1.8	30	0.2
190	344	1.8	332	1.7	12	0.1
200	338	1.7	338	1.7	0	0.0



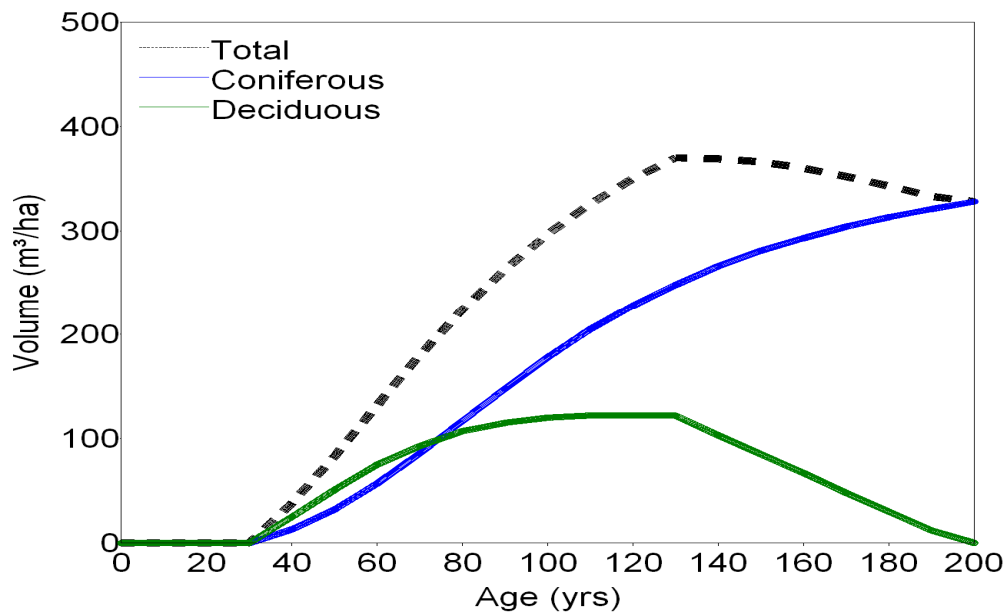
Yield group: 15 Description: [Sw-Sb]-hwd-CD NSR: M/SA/A Area (ha): 0 (%): 0

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	0	0.0	0	0.0	0	0.0
40	0	0.0	0	0.0	0	0.0
50	1	0.0	0	0.0	0	0.0
60	21	0.4	7	0.1	14	0.2
70	45	0.6	16	0.2	29	0.4
80	70	0.9	26	0.3	44	0.5
90	96	1.1	39	0.4	58	0.6
100	123	1.2	52	0.5	71	0.7
110	150	1.4	68	0.6	82	0.7
120	166	1.4	84	0.7	82	0.7
130	183	1.4	101	0.8	82	0.6
140	188	1.3	118	0.8	70	0.5
150	192	1.3	135	0.9	58	0.4
160	197	1.2	151	0.9	45	0.3
170	200	1.2	168	1.0	33	0.2
180	204	1.1	183	1.0	21	0.1
190	206	1.1	197	1.0	8	0.0
200	211	1.1	211	1.1	0	0.0



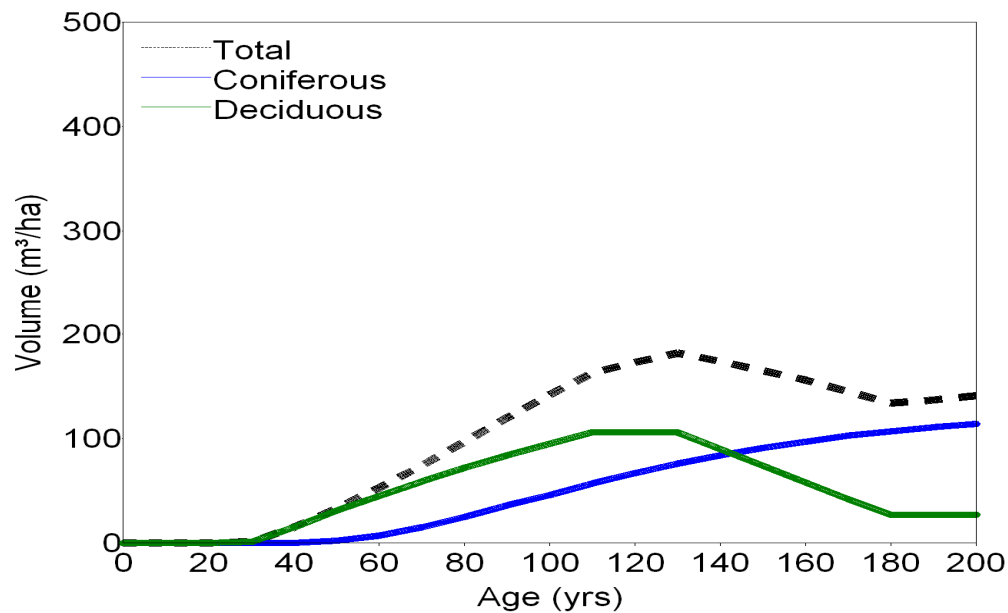
Yield group: 15 Description: [Sw-Sb]-hwd-CD NSR: UF Area (ha): 822 (%): 0.1

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	0	0.0	0	0.0	0	0.0
40	38	0.9	13	0.3	25	0.6
50	83	1.7	32	0.6	51	1.0
60	132	2.2	57	1.0	75	1.2
70	180	2.6	86	1.2	93	1.3
80	224	2.8	117	1.5	107	1.3
90	263	2.9	148	1.6	115	1.3
100	297	3.0	178	1.8	120	1.2
110	326	3.0	205	1.9	122	1.1
120	350	2.9	228	1.9	122	1.0
130	370	2.8	248	1.9	122	0.9
140	369	2.6	266	1.9	103	0.7
150	366	2.4	281	1.9	85	0.6
160	360	2.2	293	1.8	67	0.4
170	352	2.1	304	1.8	48	0.3
180	343	1.9	313	1.7	30	0.2
190	333	1.8	321	1.7	12	0.1
200	328	1.6	328	1.6	0	0.0



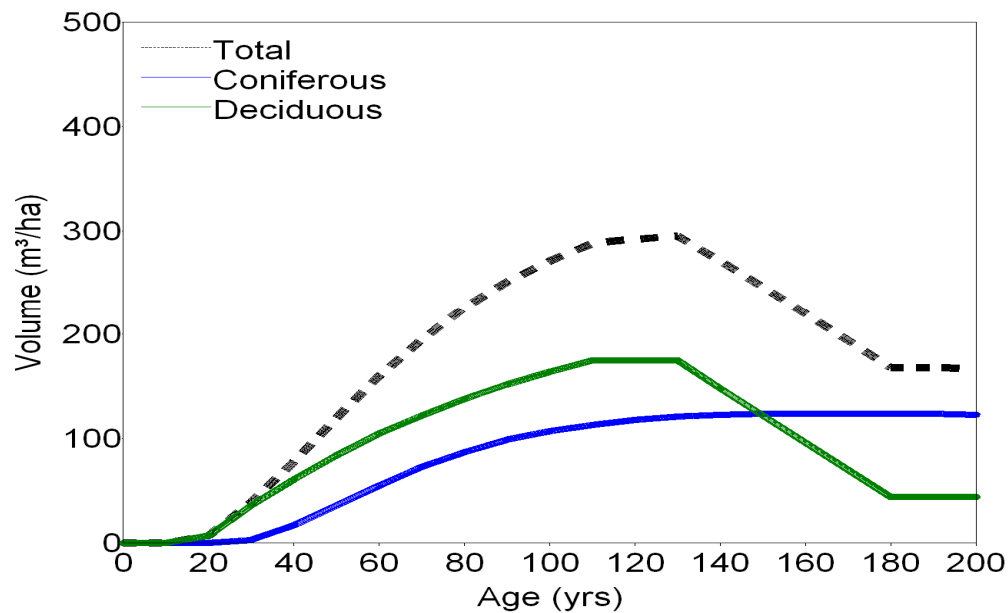
Yield group: 16 Description: hwd-swd-AB NSR: CMW/DMW Area (ha): 30 (%): 0

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	1	0.0	0	0.0	1	0.0
40	15	0.4	0	0.0	15	0.4
50	33	0.7	2	0.0	31	0.6
60	53	0.9	7	0.1	45	0.8
70	74	1.1	15	0.2	59	0.8
80	97	1.2	25	0.3	72	0.9
90	120	1.3	36	0.4	84	0.9
100	142	1.4	46	0.5	95	1.0
110	163	1.5	57	0.5	106	1.0
120	173	1.4	67	0.6	106	0.9
130	182	1.4	76	0.6	106	0.8
140	174	1.2	84	0.6	90	0.6
150	165	1.1	91	0.6	74	0.5
160	156	1.0	97	0.6	58	0.4
170	145	0.9	103	0.6	42	0.2
180	134	0.7	107	0.6	27	0.1
190	137	0.7	111	0.6	27	0.1
200	141	0.7	114	0.6	27	0.1



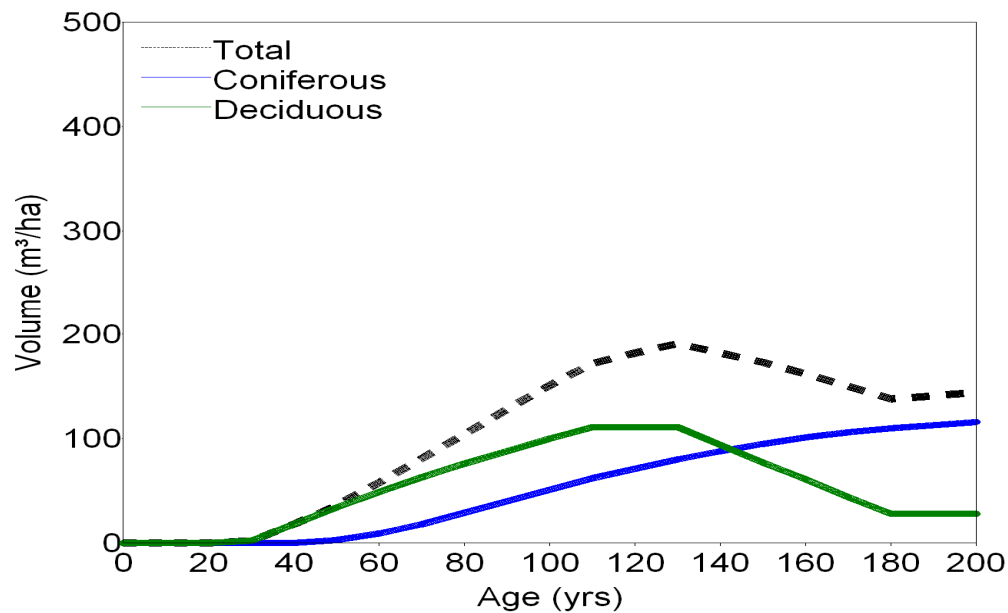
Yield group: 16 Description: hwd-swd-AB NSR: LF Area (ha): 1399 (%): 0.16

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	7	0.4	0	0.0	7	0.4
30	39	1.3	3	0.1	36	1.2
40	78	2.0	17	0.4	61	1.5
50	120	2.4	36	0.7	84	1.7
60	160	2.7	55	0.9	105	1.7
70	195	2.8	73	1.0	122	1.7
80	226	2.8	87	1.1	138	1.7
90	251	2.8	99	1.1	152	1.7
100	271	2.7	107	1.1	164	1.6
110	288	2.6	113	1.0	175	1.6
120	292	2.4	118	1.0	175	1.5
130	295	2.3	121	0.9	175	1.3
140	271	1.9	123	0.9	148	1.1
150	246	1.6	124	0.8	122	0.8
160	220	1.4	124	0.8	96	0.6
170	194	1.1	124	0.7	70	0.4
180	168	0.9	124	0.7	44	0.2
190	168	0.9	124	0.7	44	0.2
200	167	0.8	123	0.6	44	0.2



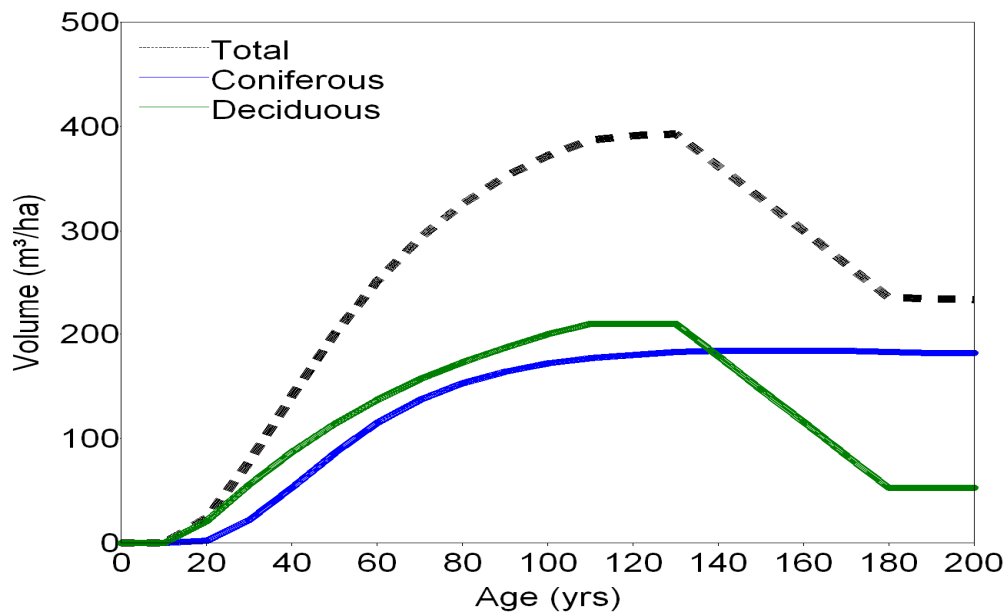
Yield group: 16 Description: hwd-swd-AB NSR: UF Area (ha): 440 (%) : 0.05

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	2	0.1	0	0.0	2	0.1
40	18	0.4	0	0.0	18	0.4
50	36	0.7	3	0.1	34	0.7
60	58	1.0	9	0.2	49	0.8
70	81	1.2	18	0.3	63	0.9
80	104	1.3	29	0.4	76	0.9
90	128	1.4	40	0.4	88	1.0
100	151	1.5	51	0.5	100	1.0
110	172	1.6	62	0.6	111	1.0
120	182	1.5	71	0.6	111	0.9
130	191	1.5	80	0.6	111	0.9
140	182	1.3	88	0.6	94	0.7
150	173	1.2	95	0.6	77	0.5
160	162	1.0	101	0.6	61	0.4
170	150	0.9	106	0.6	44	0.3
180	138	0.8	110	0.6	28	0.2
190	141	0.7	113	0.6	28	0.1
200	144	0.7	116	0.6	28	0.1



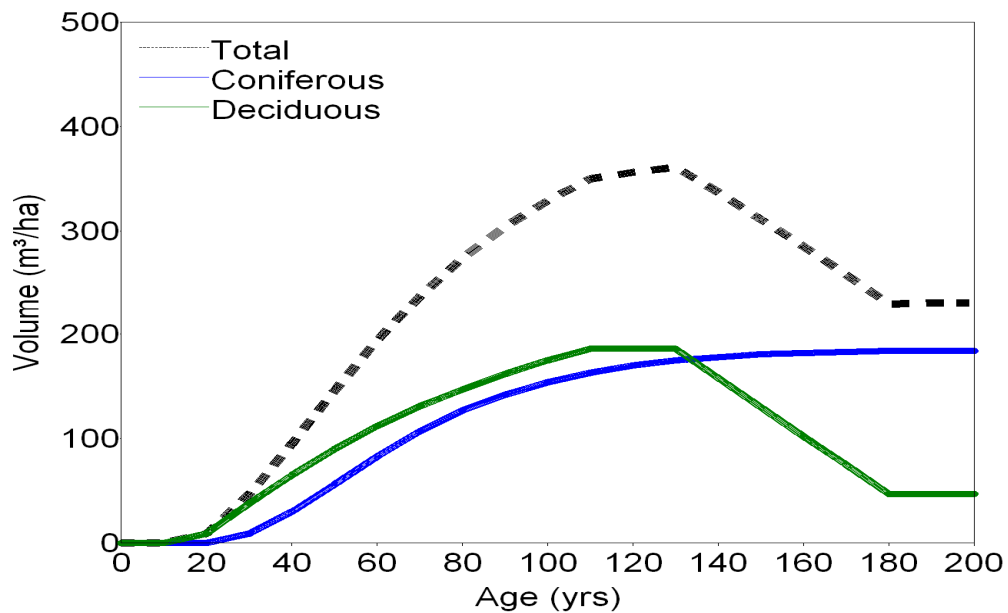
Yield group: 17 Description: hwd-swd-CD NSR: CMW/DMW Area (ha): 42 (%): 0

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	24	1.2	2	0.1	21	1.1
30	78	2.6	22	0.7	56	1.9
40	141	3.5	53	1.3	87	2.2
50	200	4.0	86	1.7	114	2.3
60	252	4.2	115	1.9	137	2.3
70	293	4.2	137	2.0	157	2.2
80	326	4.1	153	1.9	173	2.2
90	352	3.9	164	1.8	187	2.1
100	372	3.7	172	1.7	200	2.0
110	387	3.5	177	1.6	210	1.9
120	391	3.3	180	1.5	210	1.8
130	393	3.0	183	1.4	210	1.6
140	362	2.6	184	1.3	179	1.3
150	331	2.2	184	1.2	147	1.0
160	300	1.9	184	1.2	116	0.7
170	268	1.6	184	1.1	84	0.5
180	236	1.3	183	1.0	53	0.3
190	235	1.2	182	1.0	53	0.3
200	234	1.2	182	0.9	53	0.3



Yield group: 17 Description: hwd-swd-CD NSR: LF Area (ha): 827 (%): 0.1

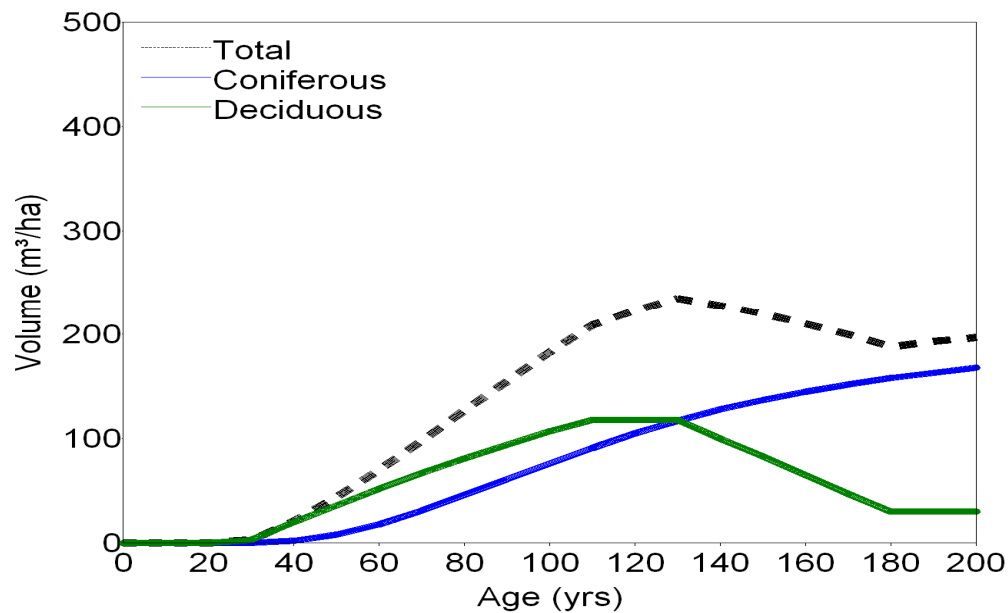
Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	9	0.5	0	0.0	9	0.5
30	47	1.6	9	0.3	38	1.3
40	95	2.4	30	0.7	65	1.6
50	146	2.9	56	1.1	90	1.8
60	194	3.2	83	1.4	112	1.9
70	237	3.4	107	1.5	131	1.9
80	274	3.4	127	1.6	147	1.8
90	304	3.4	142	1.6	162	1.8
100	329	3.3	154	1.5	175	1.7
110	350	3.2	163	1.5	186	1.7
120	356	3.0	170	1.4	186	1.6
130	361	2.8	175	1.3	186	1.4
140	337	2.4	178	1.3	158	1.1
150	311	2.1	181	1.2	130	0.9
160	285	1.8	182	1.1	102	0.6
170	258	1.5	183	1.1	75	0.4
180	230	1.3	184	1.0	47	0.3
190	231	1.2	184	1.0	47	0.2
200	231	1.2	184	0.9	47	0.2





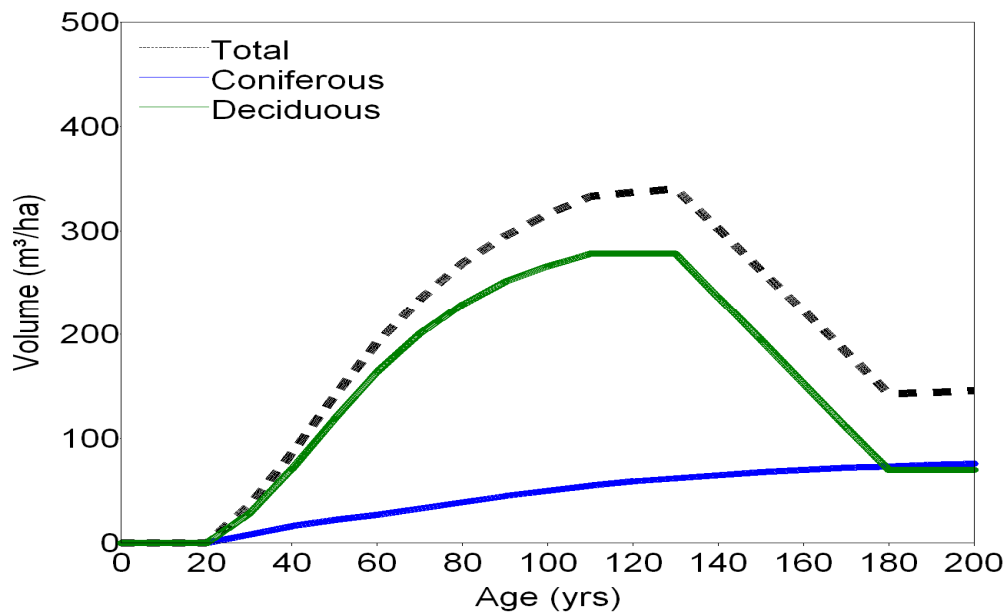
Yield group: 17 Description: hwd-swd-CD NSR: UF Area (ha): 296 (%): 0.03

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	3	0.1	0	0.0	3	0.1
40	21	0.5	2	0.0	20	0.5
50	44	0.9	8	0.2	36	0.7
60	70	1.2	18	0.3	52	0.9
70	98	1.4	31	0.4	67	1.0
80	127	1.6	46	0.6	81	1.0
90	155	1.7	61	0.7	94	1.0
100	183	1.8	76	0.8	107	1.1
110	209	1.9	91	0.8	118	1.1
120	223	1.9	105	0.9	118	1.0
130	235	1.8	117	0.9	118	0.9
140	228	1.6	128	0.9	100	0.7
150	220	1.5	137	0.9	83	0.6
160	210	1.3	145	0.9	65	0.4
170	200	1.2	152	0.9	47	0.3
180	188	1.0	158	0.9	30	0.2
190	193	1.0	163	0.9	30	0.2
200	197	1.0	168	0.8	30	0.1



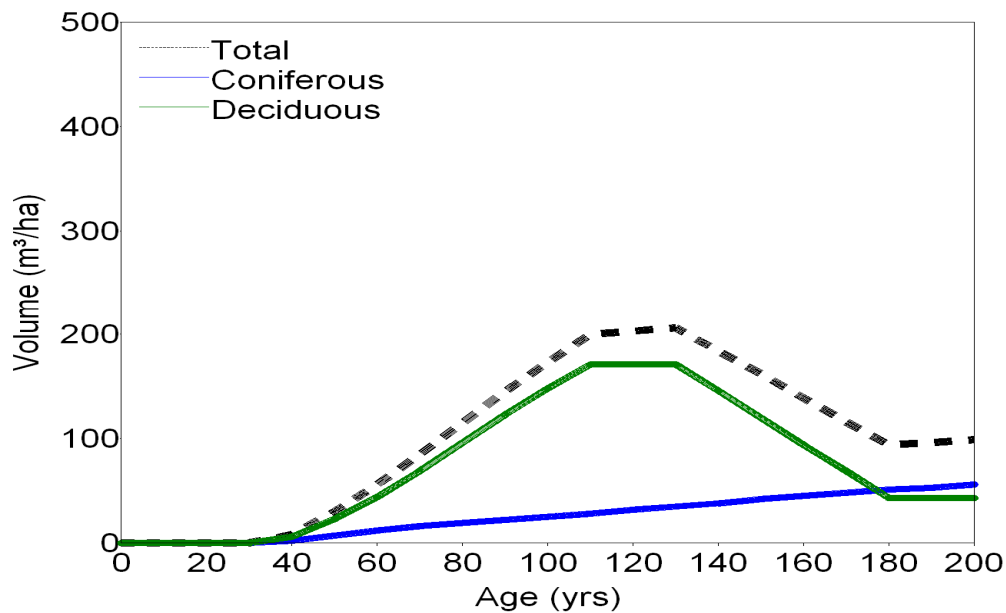
Yield group: 18 Description: hwd-A NSR: CMW/DMW Area (ha): 382 (%): 0.04

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	36	1.2	8	0.3	28	0.9
40	86	2.2	16	0.4	71	1.8
50	141	2.8	22	0.4	119	2.4
60	192	3.2	27	0.5	164	2.7
70	234	3.3	33	0.5	201	2.9
80	269	3.4	39	0.5	229	2.9
90	295	3.3	45	0.5	251	2.8
100	316	3.2	50	0.5	266	2.7
110	333	3.0	55	0.5	278	2.5
120	337	2.8	59	0.5	278	2.3
130	340	2.6	62	0.5	278	2.1
140	302	2.2	65	0.5	236	1.7
150	262	1.7	68	0.5	195	1.3
160	223	1.4	70	0.4	153	1.0
170	183	1.1	72	0.4	111	0.7
180	143	0.8	73	0.4	70	0.4
190	144	0.8	75	0.4	70	0.4
200	146	0.7	76	0.4	70	0.3



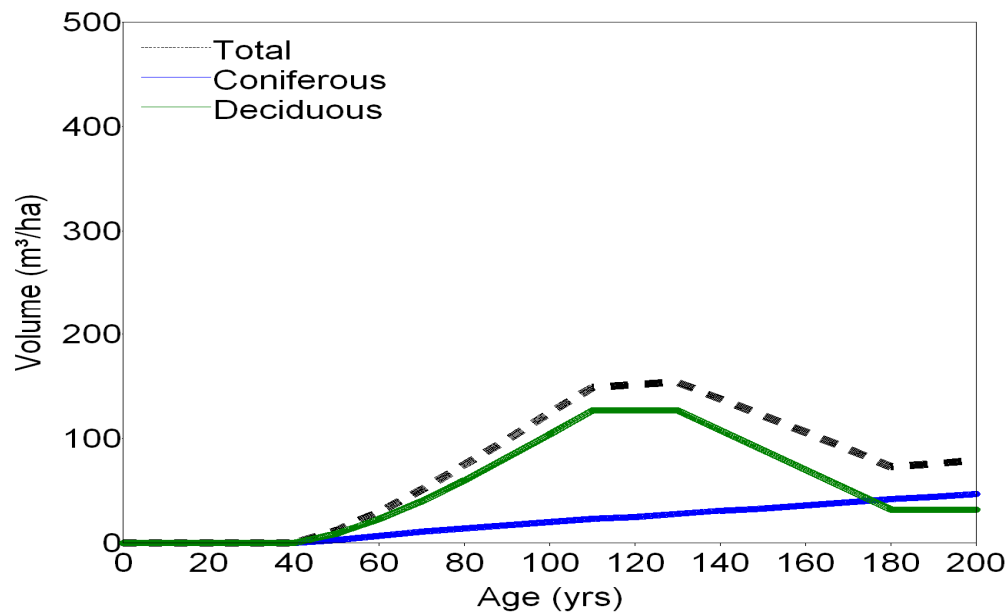
Yield group: 18 Description: hwd-A NSR: LF Area (ha): 2108 (%): 0.24

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	0	0.0	0	0.0	0	0.0
40	8	0.2	2	0.1	6	0.2
50	30	0.6	7	0.1	23	0.5
60	56	0.9	12	0.2	44	0.7
70	85	1.2	16	0.2	69	1.0
80	115	1.4	19	0.2	96	1.2
90	145	1.6	22	0.2	123	1.4
100	173	1.7	25	0.3	148	1.5
110	200	1.8	28	0.3	171	1.6
120	203	1.7	32	0.3	171	1.4
130	206	1.6	35	0.3	171	1.3
140	184	1.3	38	0.3	146	1.0
150	162	1.1	42	0.3	120	0.8
160	139	0.9	45	0.3	94	0.6
170	116	0.7	48	0.3	69	0.4
180	94	0.5	51	0.3	43	0.2
190	96	0.5	53	0.3	43	0.2
200	99	0.5	56	0.3	43	0.2



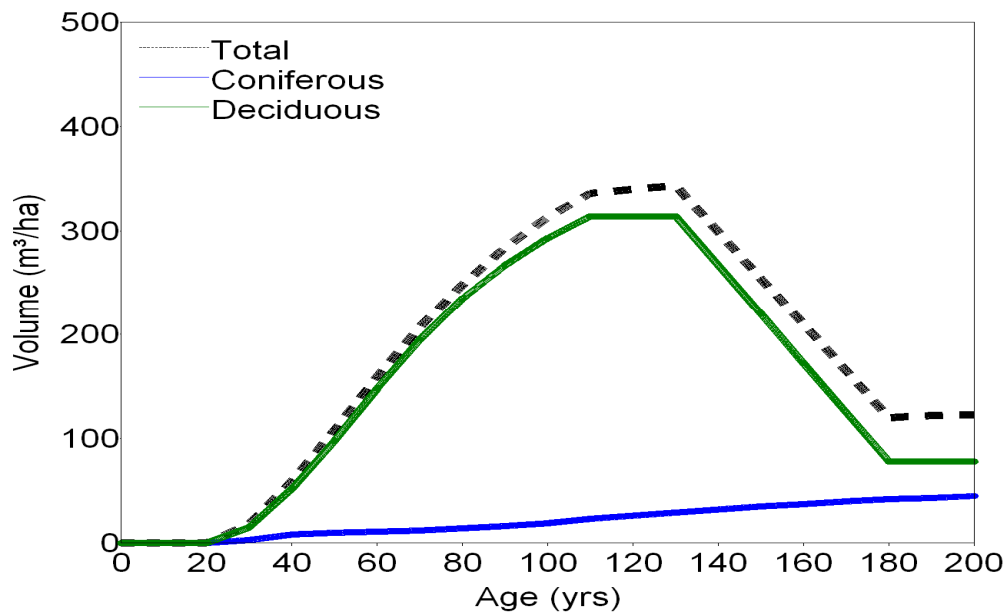
Yield group: 18 Description: hwd-A NSR: UF Area (ha): 403 (%): 0.05

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	0	0.0	0	0.0	0	0.0
40	0	0.0	0	0.0	0	0.0
50	12	0.2	3	0.1	9	0.2
60	30	0.5	7	0.1	23	0.4
70	51	0.7	11	0.2	40	0.6
80	75	0.9	14	0.2	60	0.8
90	99	1.1	17	0.2	82	0.9
100	125	1.2	20	0.2	104	1.0
110	149	1.4	23	0.2	127	1.2
120	152	1.3	25	0.2	127	1.1
130	154	1.2	28	0.2	127	1.0
140	138	1.0	31	0.2	108	0.8
150	122	0.8	33	0.2	89	0.6
160	106	0.7	36	0.2	70	0.4
170	90	0.5	39	0.2	51	0.3
180	73	0.4	42	0.2	32	0.2
190	76	0.4	44	0.2	32	0.2
200	79	0.4	47	0.2	32	0.2



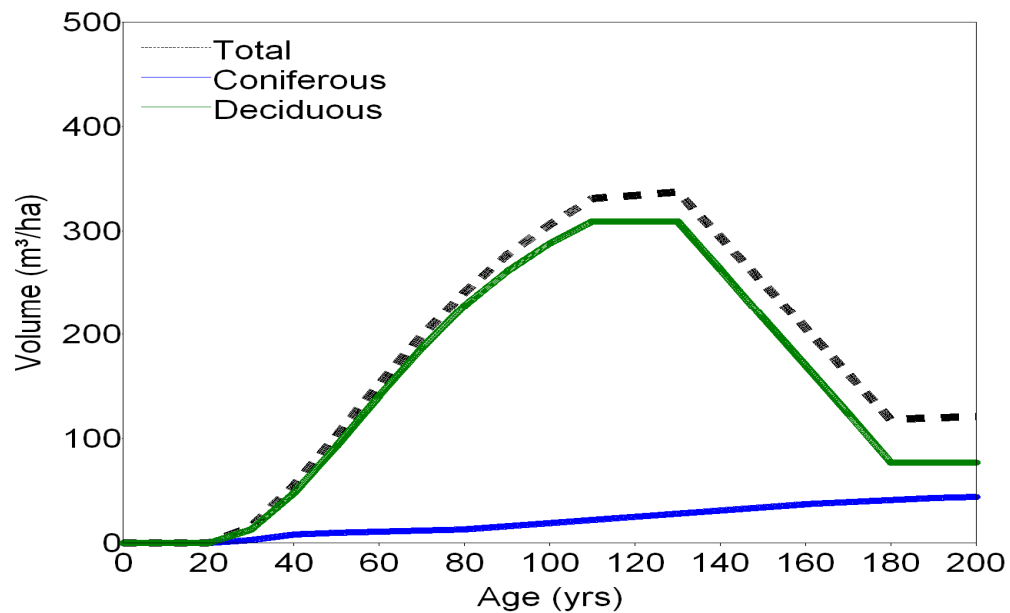
Yield group: 19 Description: hwd-B NSR: CMW/DMW Area (ha): 703 (%): 0.08

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	18	0.6	3	0.1	15	0.5
40	59	1.5	8	0.2	52	1.3
50	108	2.2	10	0.2	98	2.0
60	159	2.7	11	0.2	148	2.5
70	207	3.0	12	0.2	195	2.8
80	248	3.1	14	0.2	235	2.9
90	284	3.2	16	0.2	267	3.0
100	313	3.1	19	0.2	293	2.9
110	336	3.1	23	0.2	314	2.9
120	340	2.8	26	0.2	314	2.6
130	343	2.6	29	0.2	314	2.4
140	299	2.1	32	0.2	267	1.9
150	254	1.7	35	0.2	220	1.5
160	210	1.3	37	0.2	172	1.1
170	165	1.0	40	0.2	125	0.7
180	120	0.7	42	0.2	78	0.4
190	122	0.6	43	0.2	78	0.4
200	123	0.6	45	0.2	78	0.4



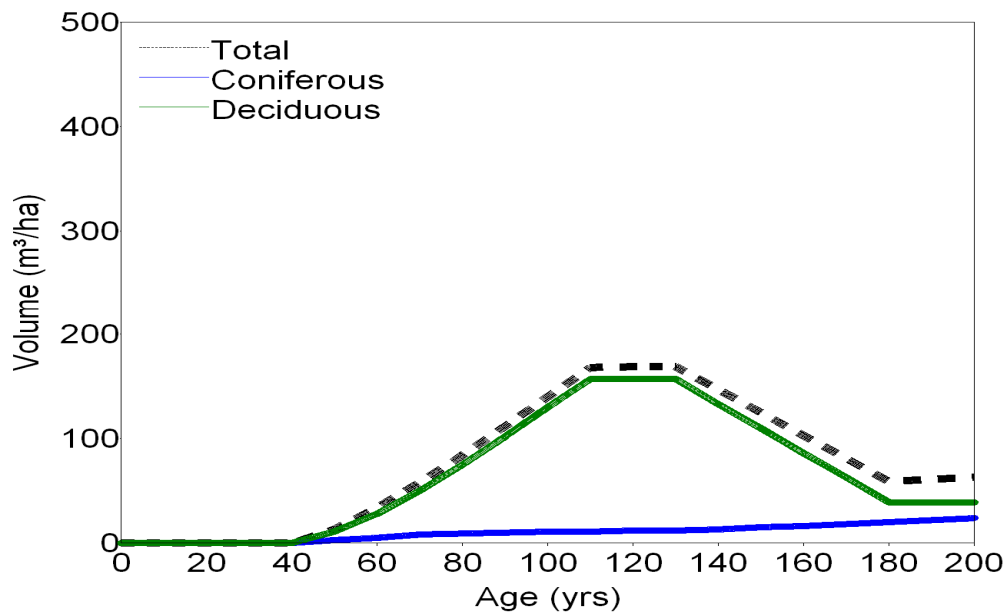
Yield group: 19 Description: hwd-B NSR: LF Area (ha): 2068 (%): 0.24

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	16	0.5	3	0.1	13	0.4
40	55	1.4	8	0.2	48	1.2
50	103	2.1	10	0.2	93	1.9
60	152	2.5	11	0.2	141	2.4
70	199	2.8	12	0.2	187	2.7
80	241	3.0	13	0.2	228	2.8
90	277	3.1	16	0.2	261	2.9
100	306	3.1	19	0.2	288	2.9
110	331	3.0	22	0.2	309	2.8
120	334	2.8	25	0.2	309	2.6
130	337	2.6	28	0.2	309	2.4
140	294	2.1	31	0.2	263	1.9
150	250	1.7	34	0.2	216	1.4
160	206	1.3	37	0.2	170	1.1
170	162	1.0	39	0.2	124	0.7
180	118	0.7	41	0.2	77	0.4
190	120	0.6	43	0.2	77	0.4
200	121	0.6	44	0.2	77	0.4



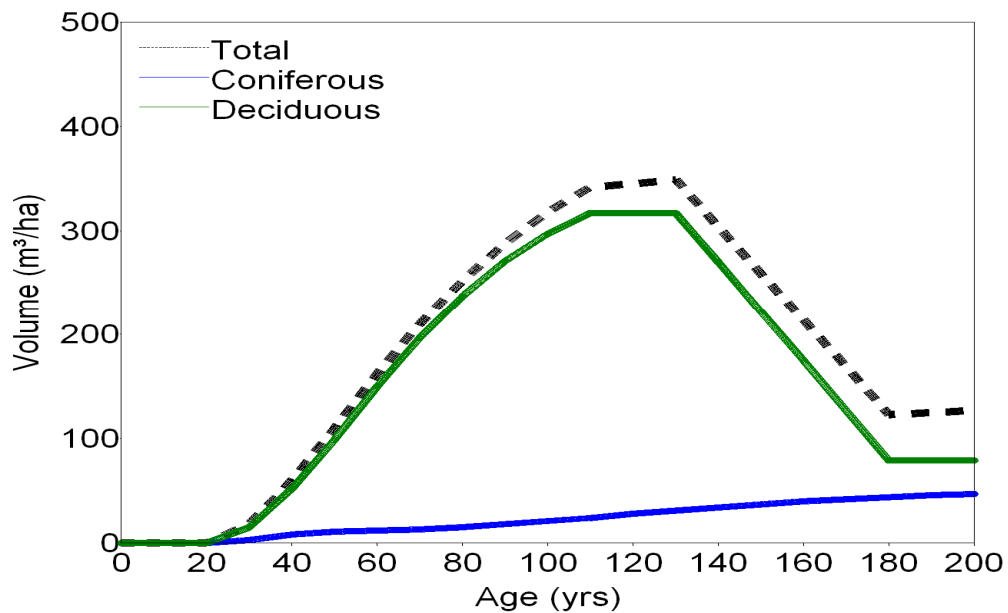
Yield group: 19 Description: hwd-B NSR: UF Area (ha): 205 (%): 0.02

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	0	0.0	0	0.0	0	0.0
40	0	0.0	0	0.0	0	0.0
50	13	0.3	3	0.1	11	0.2
60	34	0.6	5	0.1	28	0.5
70	58	0.8	8	0.1	50	0.7
80	84	1.1	9	0.1	75	0.9
90	112	1.2	10	0.1	102	1.1
100	140	1.4	11	0.1	130	1.3
110	168	1.5	11	0.1	157	1.4
120	169	1.4	12	0.1	157	1.3
130	169	1.3	12	0.1	157	1.2
140	147	1.0	13	0.1	133	1.0
150	125	0.8	15	0.1	110	0.7
160	103	0.6	16	0.1	86	0.5
170	81	0.5	18	0.1	63	0.4
180	59	0.3	20	0.1	39	0.2
190	61	0.3	22	0.1	39	0.2
200	63	0.3	24	0.1	39	0.2



Yield group: 20 Description: hwd-C NSR: CMW/DMW Area (ha): 13806 (%): 1.6

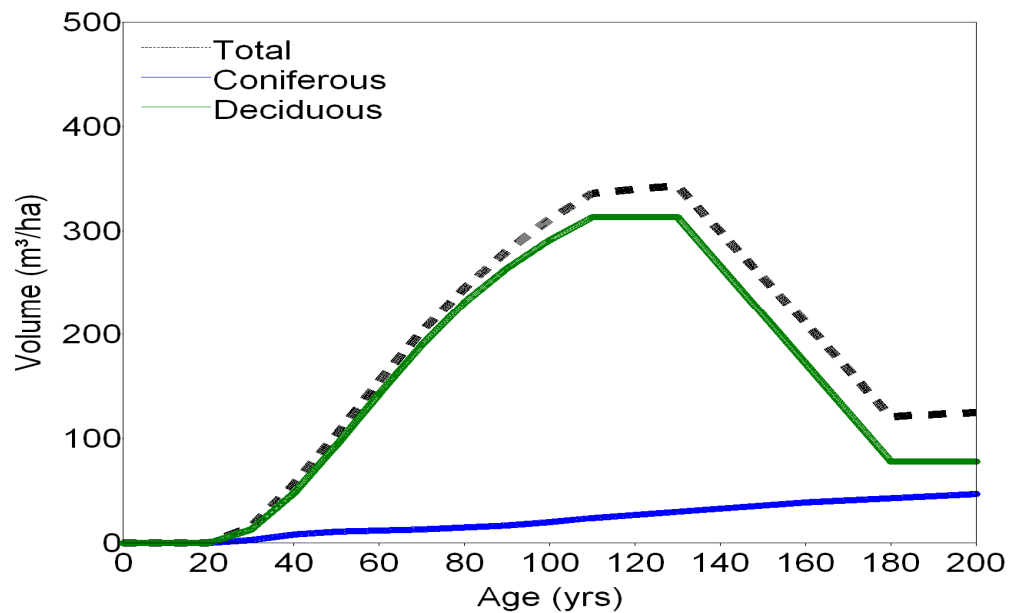
Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	18	0.6	3	0.1	15	0.5
40	60	1.5	8	0.2	52	1.3
50	110	2.2	11	0.2	99	2.0
60	162	2.7	12	0.2	150	2.5
70	210	3.0	13	0.2	197	2.8
80	252	3.2	15	0.2	237	3.0
90	288	3.2	18	0.2	271	3.0
100	318	3.2	21	0.2	297	3.0
110	342	3.1	24	0.2	317	2.9
120	345	2.9	28	0.2	317	2.6
130	349	2.7	31	0.2	317	2.4
140	304	2.2	34	0.2	270	1.9
150	259	1.7	37	0.2	222	1.5
160	214	1.3	40	0.2	175	1.1
170	169	1.0	42	0.2	127	0.7
180	123	0.7	44	0.2	79	0.4
190	125	0.7	46	0.2	79	0.4
200	127	0.6	47	0.2	79	0.4





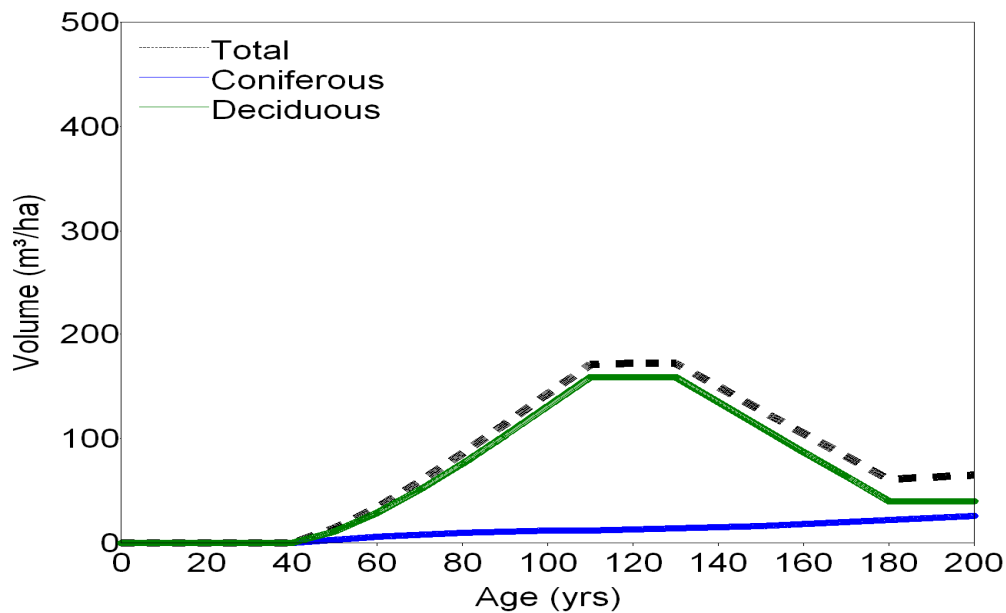
Yield group: 20 Description: hwd-C NSR: LF Area (ha): 13045 (%): 1.51

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	16	0.5	3	0.1	13	0.4
40	56	1.4	8	0.2	48	1.2
50	104	2.1	11	0.2	94	1.9
60	155	2.6	12	0.2	143	2.4
70	203	2.9	13	0.2	190	2.7
80	245	3.1	15	0.2	231	2.9
90	281	3.1	17	0.2	264	2.9
100	311	3.1	20	0.2	291	2.9
110	336	3.1	24	0.2	313	2.8
120	340	2.8	27	0.2	313	2.6
130	343	2.6	30	0.2	313	2.4
140	299	2.1	33	0.2	266	1.9
150	255	1.7	36	0.2	219	1.5
160	211	1.3	39	0.2	172	1.1
170	166	1.0	41	0.2	125	0.7
180	121	0.7	43	0.2	78	0.4
190	123	0.6	45	0.2	78	0.4
200	125	0.6	47	0.2	78	0.4



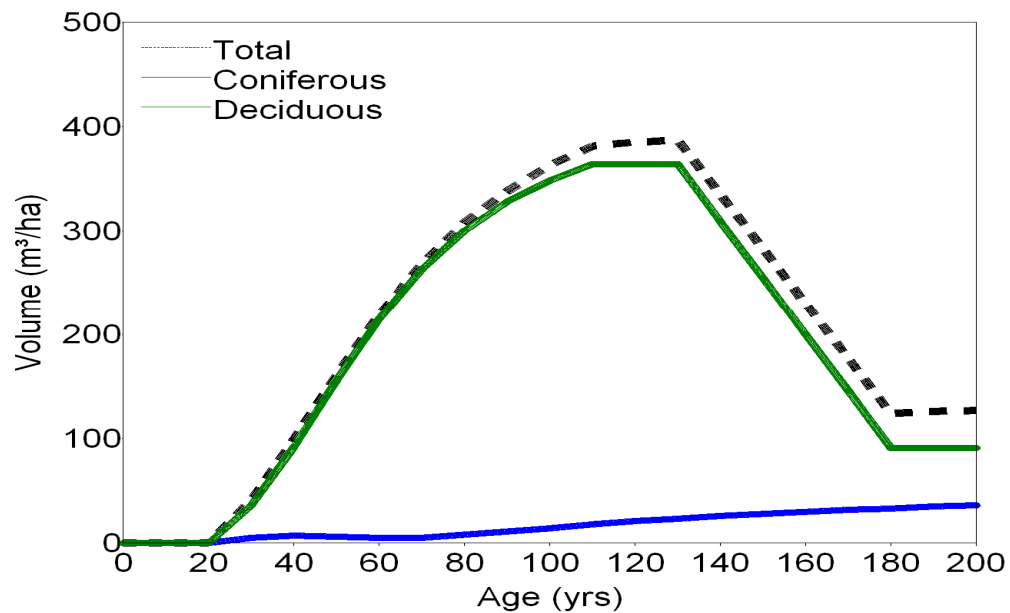
Yield group: 20 Description: hwd-C NSR: UF Area (ha): 414 (%): 0.05

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	0	0.0	0	0.0	0	0.0
40	0	0.0	0	0.0	0	0.0
50	14	0.3	3	0.1	11	0.2
60	34	0.6	6	0.1	29	0.5
70	59	0.8	8	0.1	51	0.7
80	86	1.1	10	0.1	76	0.9
90	114	1.3	11	0.1	103	1.1
100	143	1.4	12	0.1	131	1.3
110	171	1.6	12	0.1	159	1.4
120	172	1.4	13	0.1	159	1.3
130	172	1.3	14	0.1	159	1.2
140	150	1.1	15	0.1	135	1.0
150	127	0.8	16	0.1	111	0.7
160	105	0.7	18	0.1	87	0.5
170	83	0.5	20	0.1	64	0.4
180	61	0.3	22	0.1	40	0.2
190	63	0.3	24	0.1	40	0.2
200	65	0.3	26	0.1	40	0.2



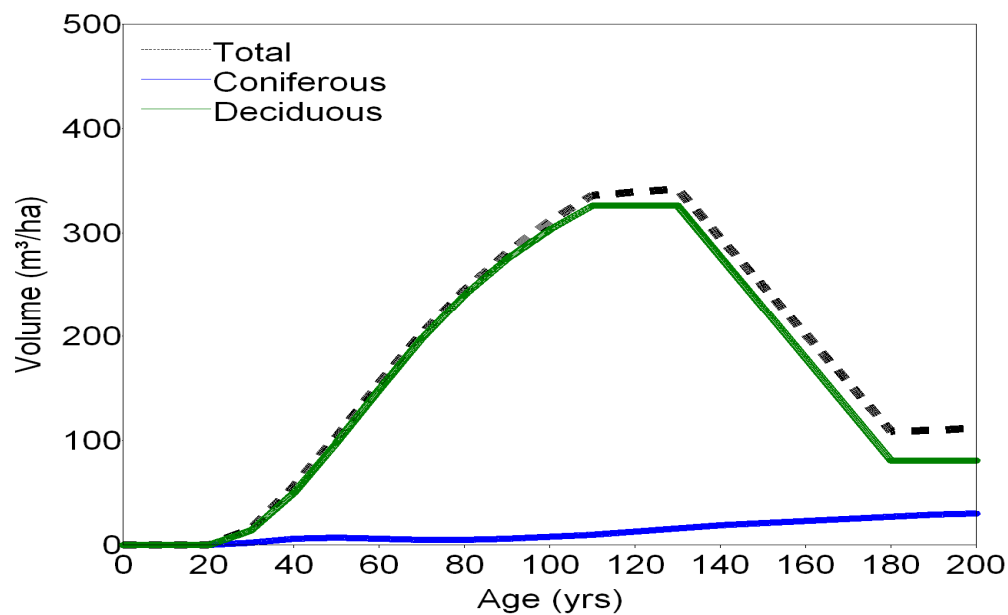
Yield group: 21 Description: hwd-D NSR: CMW/DMW Area (ha): 314 (%): 0.04

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	41	1.4	5	0.2	36	1.2
40	99	2.5	7	0.2	92	2.3
50	161	3.2	6	0.1	156	3.1
60	219	3.7	5	0.1	215	3.6
70	268	3.8	5	0.1	263	3.8
80	308	3.8	8	0.1	300	3.7
90	338	3.8	11	0.1	328	3.6
100	363	3.6	14	0.1	348	3.5
110	381	3.5	18	0.2	364	3.3
120	385	3.2	21	0.2	364	3.0
130	387	3.0	23	0.2	364	2.8
140	335	2.4	26	0.2	309	2.2
150	283	1.9	28	0.2	255	1.7
160	230	1.4	30	0.2	200	1.3
170	177	1.0	32	0.2	146	0.9
180	124	0.7	33	0.2	91	0.5
190	126	0.7	35	0.2	91	0.5
200	127	0.6	36	0.2	91	0.5



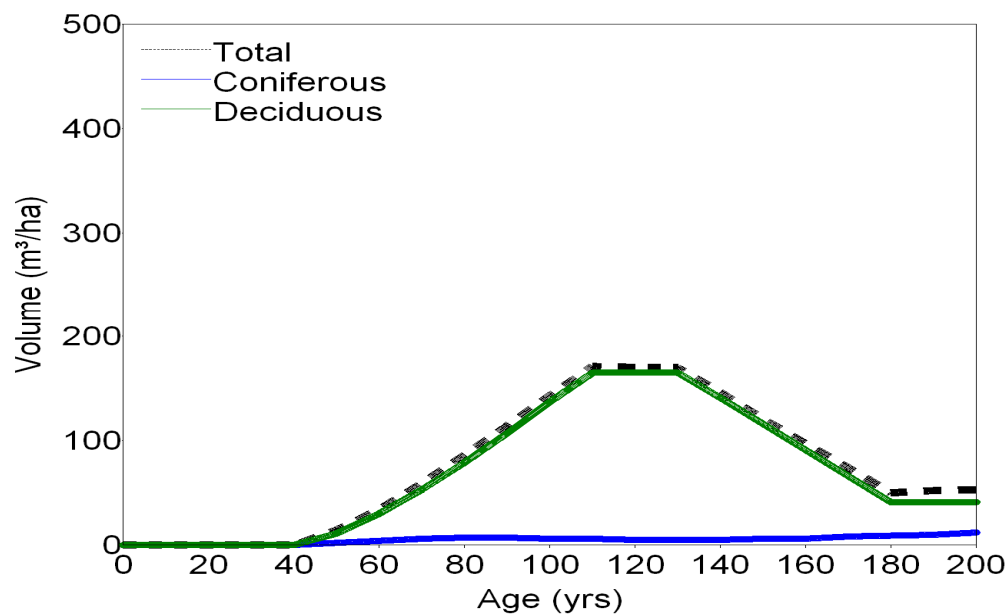
Yield group: 21 Description: hwd-D NSR: LF Area (ha): 829 (%): 0.1

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	16	0.5	2	0.1	14	0.5
40	56	1.4	6	0.1	50	1.3
50	104	2.1	7	0.1	98	2.0
60	155	2.6	6	0.1	149	2.5
70	203	2.9	5	0.1	198	2.8
80	245	3.1	5	0.1	240	3.0
90	281	3.1	6	0.1	275	3.1
100	311	3.1	8	0.1	303	3.0
110	336	3.1	10	0.1	326	3.0
120	339	2.8	13	0.1	326	2.7
130	342	2.6	16	0.1	326	2.5
140	295	2.1	19	0.1	277	2.0
150	249	1.7	21	0.1	228	1.5
160	202	1.3	23	0.1	179	1.1
170	156	0.9	25	0.1	130	0.8
180	109	0.6	27	0.2	81	0.5
190	110	0.6	29	0.2	81	0.4
200	112	0.6	30	0.2	81	0.4



Yield group: 21 Description: hwd-D NSR: UF Area (ha): 146 (%): 0.02

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	0	0.0	0	0.0	0	0.0
40	0	0.0	0	0.0	0	0.0
50	14	0.3	2	0.0	11	0.2
60	34	0.6	4	0.1	30	0.5
70	59	0.8	6	0.1	53	0.8
80	86	1.1	7	0.1	79	1.0
90	114	1.3	7	0.1	107	1.2
100	143	1.4	6	0.1	137	1.4
110	171	1.6	6	0.1	165	1.5
120	170	1.4	5	0.0	165	1.4
130	170	1.3	5	0.0	165	1.3
140	146	1.0	5	0.0	141	1.0
150	121	0.8	6	0.0	116	0.8
160	97	0.6	6	0.0	91	0.6
170	74	0.4	8	0.0	66	0.4
180	50	0.3	9	0.0	41	0.2
190	52	0.3	10	0.1	41	0.2
200	53	0.3	12	0.1	41	0.2

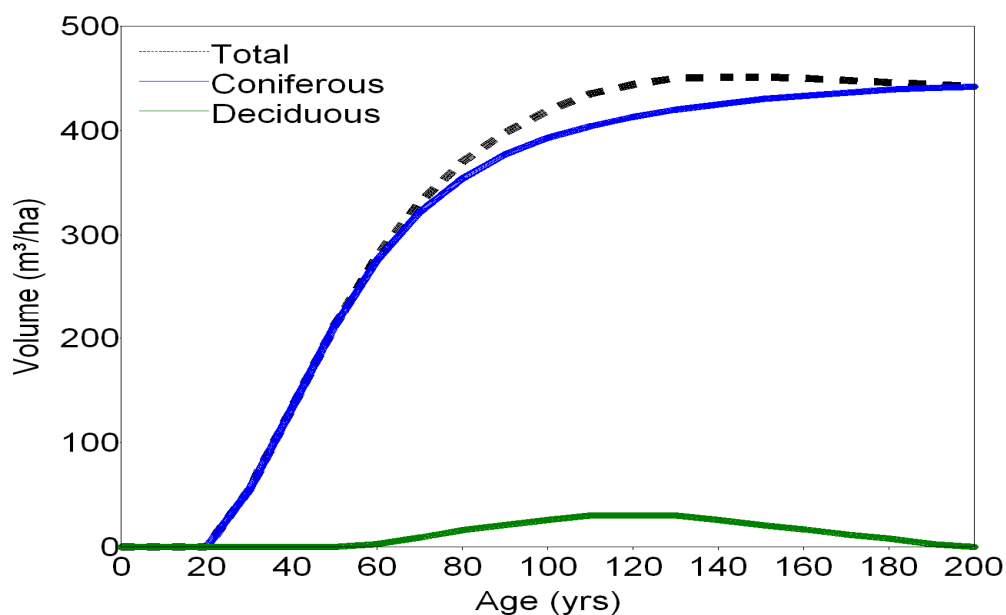


## APPENDIX IX – ENHANCED YIELD CURVES (ENH)

Gross merchantable volume excluding cull

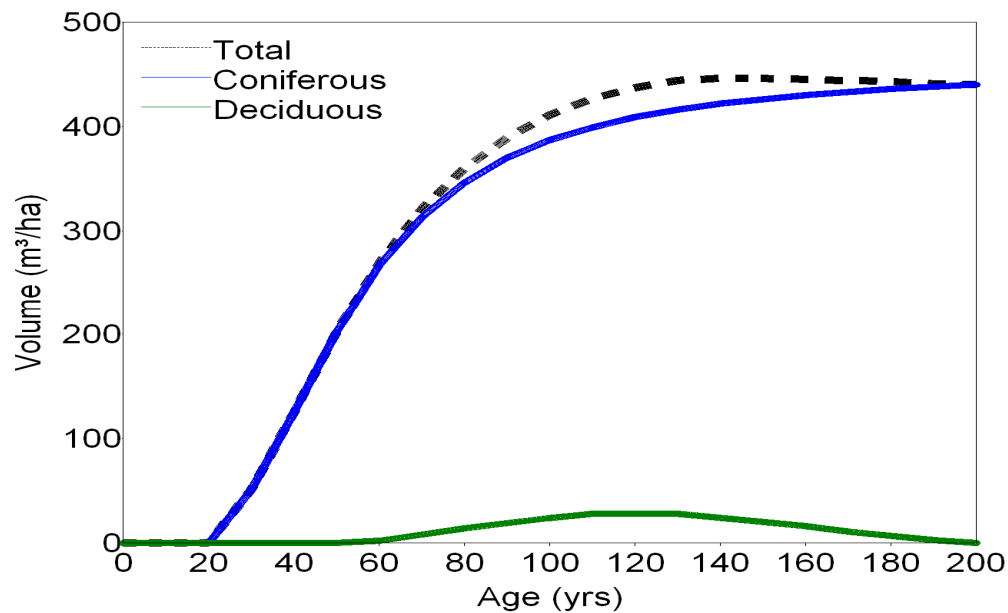
Yield group: 2 Description: PI-C NSR: CMW/DMW

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	55	1.8	55	1.8	0	0.0
40	133	3.3	133	3.3	0	0.0
50	212	4.2	212	4.2	0	0.0
60	280	4.7	276	4.6	3	0.1
70	331	4.7	322	4.6	9	0.1
80	370	4.6	354	4.4	16	0.2
90	398	4.4	377	4.2	21	0.2
100	419	4.2	393	3.9	26	0.3
110	435	4.0	404	3.7	30	0.3
120	444	3.7	413	3.4	30	0.3
130	450	3.5	420	3.2	30	0.2
140	451	3.2	425	3.0	26	0.2
150	451	3.0	430	2.9	21	0.1
160	450	2.8	433	2.7	17	0.1
170	448	2.6	436	2.6	12	0.1
180	446	2.5	439	2.4	8	0.0
190	444	2.3	441	2.3	3	0.0
200	442	2.2	442	2.2	0	0.0



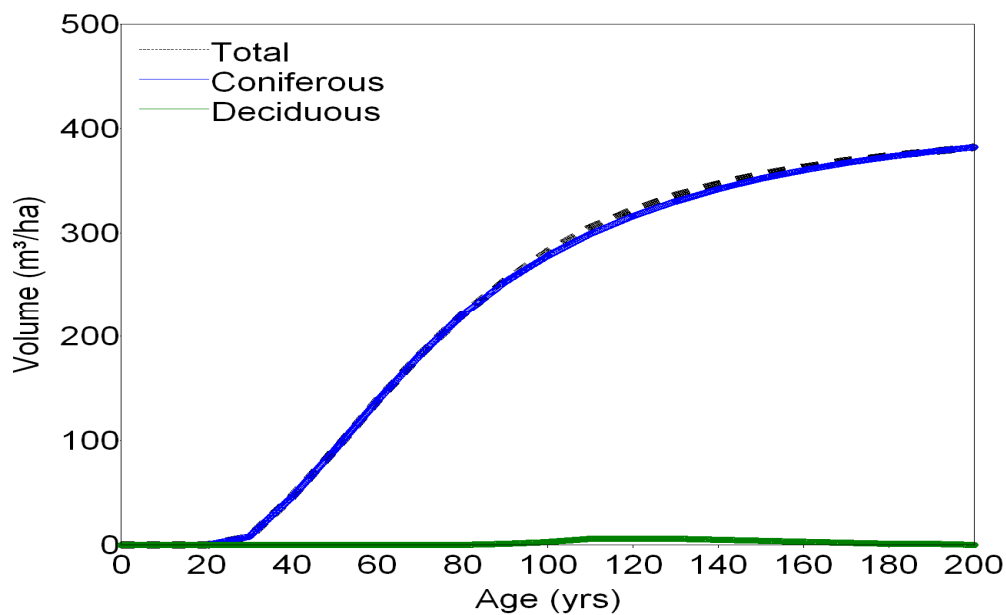
Yield group: 2 Description: PI-C NSR: LF

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	51	1.7	51	1.7	0	0.0
40	125	3.1	125	3.1	0	0.0
50	202	4.0	202	4.0	0	0.0
60	269	4.5	267	4.4	2	0.0
70	321	4.6	313	4.5	8	0.1
80	360	4.5	346	4.3	14	0.2
90	389	4.3	370	4.1	19	0.2
100	411	4.1	387	3.9	24	0.2
110	427	3.9	399	3.6	28	0.3
120	437	3.6	409	3.4	28	0.2
130	444	3.4	416	3.2	28	0.2
140	446	3.2	422	3.0	24	0.2
150	446	3.0	426	2.8	20	0.1
160	445	2.8	430	2.7	16	0.1
170	444	2.6	433	2.5	11	0.1
180	443	2.5	436	2.4	7	0.0
190	441	2.3	438	2.3	3	0.0
200	440	2.2	440	2.2	0	0.0



Yield group: 2 Description: PI-C NSR: M/SA/A

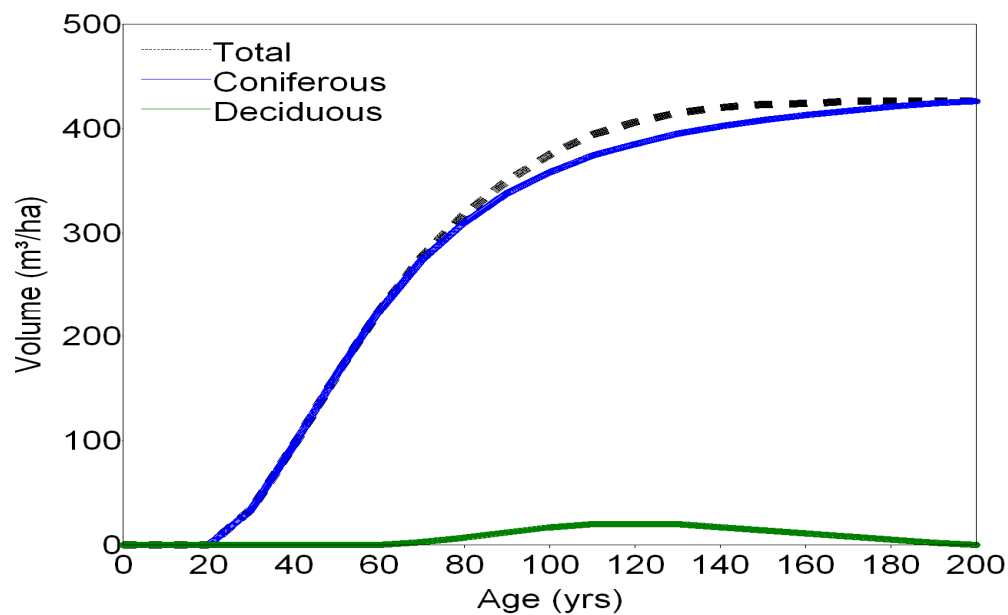
Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	8	0.3	8	0.3	0	0.0
40	46	1.2	46	1.1	0	0.0
50	91	1.8	91	1.8	0	0.0
60	138	2.3	138	2.3	0	0.0
70	182	2.6	182	2.6	0	0.0
80	221	2.8	221	2.8	0	0.0
90	254	2.8	253	2.8	1	0.0
100	282	2.8	278	2.8	3	0.0
110	305	2.8	299	2.7	6	0.1
120	322	2.7	316	2.6	6	0.0
130	336	2.6	330	2.5	6	0.0
140	347	2.5	342	2.4	5	0.0
150	356	2.4	352	2.3	4	0.0
160	363	2.3	360	2.2	3	0.0
170	369	2.2	367	2.2	2	0.0
180	374	2.1	373	2.1	1	0.0
190	378	2.0	378	2.0	1	0.0
200	382	1.9	382	1.9	0	0.0





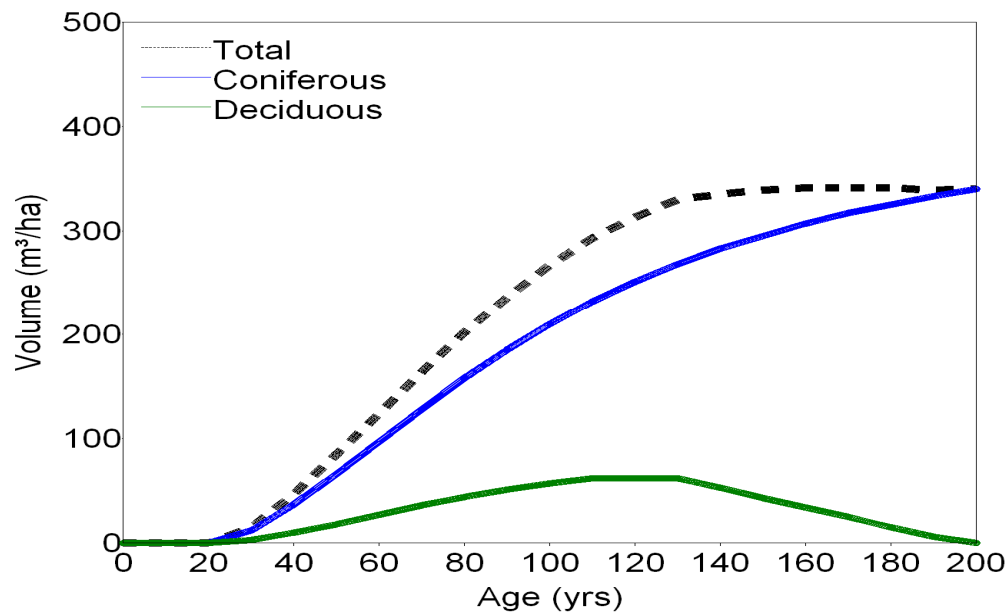
Yield group: 2 Description: PI-C NSR: UF

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	34	1.1	34	1.1	0	0.0
40	96	2.4	96	2.4	0	0.0
50	163	3.3	163	3.3	0	0.0
60	225	3.7	225	3.7	0	0.0
70	277	4.0	274	3.9	3	0.0
80	318	4.0	310	3.9	7	0.1
90	350	3.9	338	3.8	12	0.1
100	375	3.7	358	3.6	17	0.2
110	394	3.6	374	3.4	20	0.2
120	406	3.4	385	3.2	20	0.2
130	415	3.2	395	3.0	20	0.2
140	420	3.0	402	2.9	17	0.1
150	423	2.8	408	2.7	14	0.1
160	424	2.7	413	2.6	11	0.1
170	426	2.5	417	2.5	8	0.0
180	426	2.4	421	2.3	5	0.0
190	426	2.2	424	2.2	2	0.0
200	426	2.1	426	2.1	0	0.0



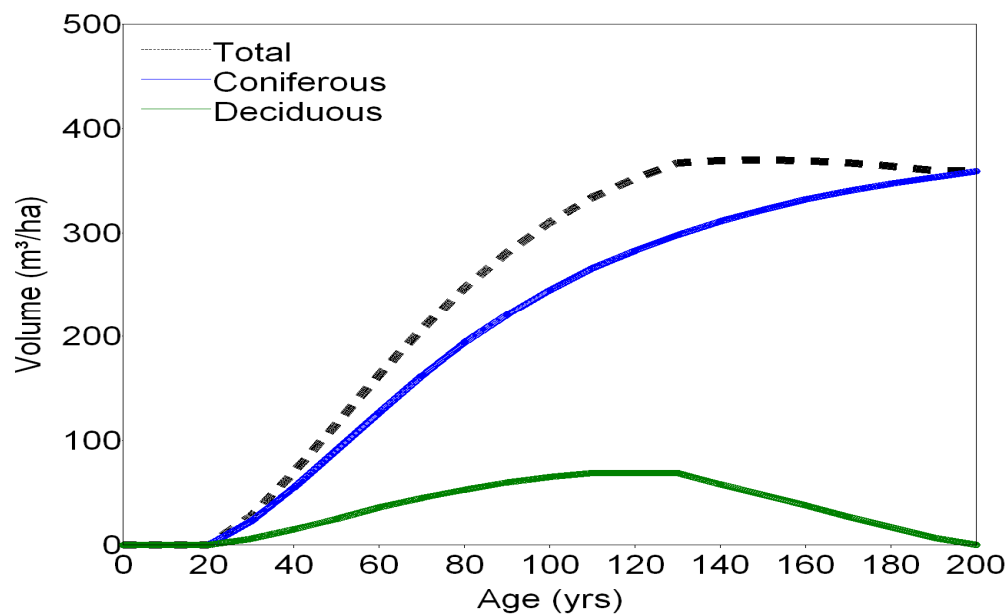
Yield group: 5 Description: [Sw,Fa]-CD NSR: CMW/DMW

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	15	0.5	12	0.4	3	0.1
40	47	1.2	37	0.9	10	0.2
50	85	1.7	66	1.3	18	0.4
60	124	2.1	97	1.6	27	0.5
70	164	2.3	128	1.8	36	0.5
80	202	2.5	158	2.0	44	0.5
90	236	2.6	185	2.1	51	0.6
100	267	2.7	210	2.1	57	0.6
110	293	2.7	232	2.1	62	0.6
120	313	2.6	251	2.1	62	0.5
130	330	2.5	268	2.1	62	0.5
140	335	2.4	283	2.0	53	0.4
150	339	2.3	295	2.0	43	0.3
160	341	2.1	307	1.9	34	0.2
170	341	2.0	317	1.9	25	0.1
180	341	1.9	325	1.8	15	0.1
190	339	1.8	333	1.8	6	0.0
200	340	1.7	340	1.7	0	0.0



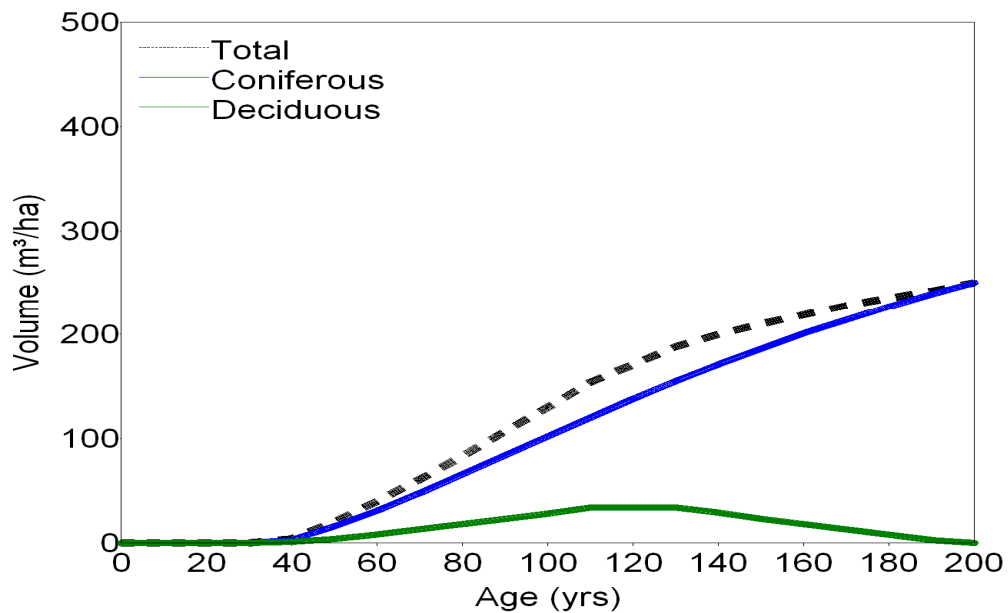
Yield group: 5 Description: [Sw,Fa]-CD NSR: LF

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	28	0.9	23	0.8	6	0.2
40	70	1.7	55	1.4	15	0.4
50	116	2.3	91	1.8	25	0.5
60	163	2.7	127	2.1	36	0.6
70	207	3.0	162	2.3	45	0.6
80	247	3.1	194	2.4	53	0.7
90	281	3.1	221	2.5	60	0.7
100	310	3.1	245	2.5	65	0.6
110	334	3.0	266	2.4	69	0.6
120	352	2.9	283	2.4	69	0.6
130	367	2.8	298	2.3	69	0.5
140	369	2.6	311	2.2	58	0.4
150	370	2.5	322	2.1	48	0.3
160	369	2.3	332	2.1	38	0.2
170	367	2.2	340	2.0	27	0.2
180	364	2.0	347	1.9	17	0.1
190	360	1.9	353	1.9	7	0.0
200	359	1.8	359	1.8	0	0.0



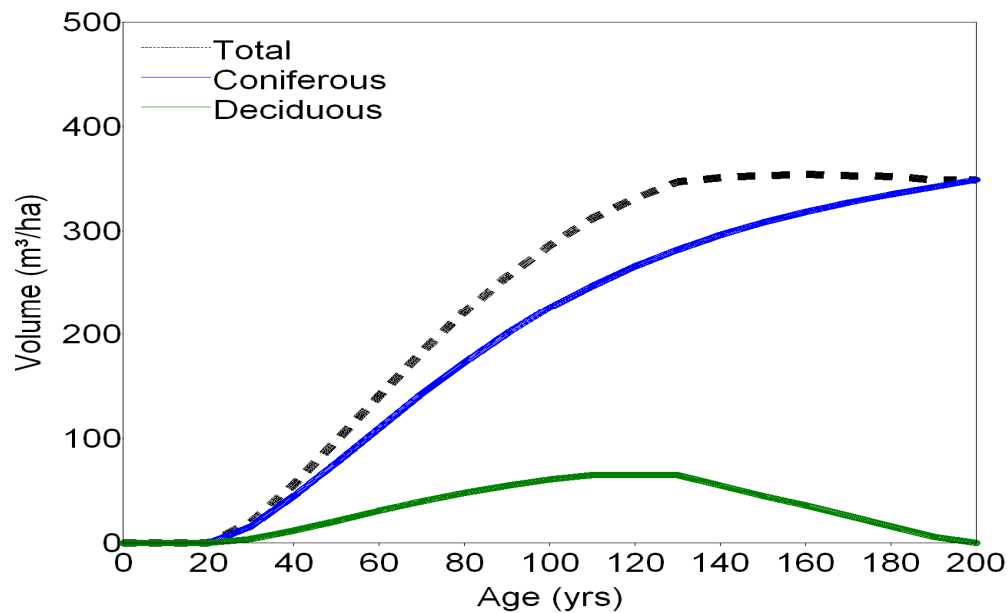
Yield group: 5 Description: [Sw,Fa]-CD NSR: M/SA/A

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	0	0.0	0	0.0	0	0.0
40	4	0.1	3	0.1	1	0.0
50	20	0.4	16	0.3	4	0.1
60	40	0.7	31	0.5	8	0.1
70	61	0.9	48	0.7	13	0.2
80	83	1.0	66	0.8	18	0.2
90	107	1.2	84	0.9	23	0.3
100	130	1.3	102	1.0	28	0.3
110	154	1.4	120	1.1	34	0.3
120	171	1.4	138	1.1	34	0.3
130	188	1.4	155	1.2	34	0.3
140	200	1.4	171	1.2	29	0.2
150	210	1.4	186	1.2	23	0.2
160	219	1.4	201	1.3	18	0.1
170	228	1.3	214	1.3	13	0.1
180	235	1.3	227	1.3	8	0.0
190	242	1.3	239	1.3	3	0.0
200	250	1.2	250	1.2	0	0.0



Yield group: 5 Description: [Sw,Fa]-CD NSR: UF

Stand Age (Years)	Total Volume (m <sup>3</sup> /ha)	Total MAI (m <sup>3</sup> /ha/yr)	Coniferous Volume (m <sup>3</sup> /ha)	Coniferous MAI (m <sup>3</sup> /ha/yr)	Deciduous Volume (m <sup>3</sup> /ha)	Deciduous MAI (m <sup>3</sup> /ha/yr)
0	0	0.0	0	0.0	0	0.0
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	20	0.7	16	0.5	4	0.1
40	56	1.4	45	1.1	12	0.3
50	98	2.0	77	1.5	21	0.4
60	141	2.3	110	1.8	31	0.5
70	183	2.6	143	2.0	40	0.6
80	222	2.8	173	2.2	48	0.6
90	256	2.8	201	2.2	55	0.6
100	286	2.9	226	2.3	61	0.6
110	312	2.8	247	2.2	65	0.6
120	331	2.8	266	2.2	65	0.5
130	347	2.7	282	2.2	65	0.5
140	351	2.5	296	2.1	55	0.4
150	353	2.4	308	2.1	45	0.3
160	354	2.2	318	2.0	36	0.2
170	353	2.1	327	1.9	26	0.2
180	352	2.0	335	1.9	16	0.1
190	349	1.8	342	1.8	6	0.0
200	349	1.7	349	1.7	0	0.0



## APPENDIX X – ESTIMATION OF PIECE SIZE

Recent planning standards require an estimate of piece size to be included in yield table development (Albert Forest Management Planning Standards). Piece size models were developed using the approved process used in the Edson<sup>33</sup> and Drayton Valley<sup>34</sup> FMAs.

### CAVEATS

This statistic is to be used as a reporting tool only; therefore, the frailty of this relationship will not impact the final results. The piece size versus age model presented here was built from PSPs located in natural and managed stands.

**Program:** 10\_Model\_Piece\_Size.sas

### DESCRIPTION OF PROCESS

The SAS program performs the following steps:

- Assign each plot to a major stratum (conifer/deciduous landbase and natural subregion group)
- Model DBHq as a function of AVI stand age

Each of the steps is described in the following sections.

### CALCULATE DBHQ FOR EVERY PLOT

DBHq for coniferous and deciduous trees was calculated separately for each PSP. Each PSP with a valid DBHq, major strata assignment, and AVI stand age was used as an observation in the modeling process.

### ASSIGNMENT TO MAJOR STRATA

All eligible observations were included regardless of whether a valid top height was present (Table 44). We identified seven preliminary strata in the Grande Prairie FMA area according to broad cover group, and natural subregion (Table 45).

Table 44. Observations eligible for piece size modeling.

Yield Stratum	PSP Type		Total
	NAT	MGD	
Obs in Net Landbase	2,092	722	2,814
Yield Stratum 40	131	-	131
Yield Stratum 50	-	16	16
Null Observation	9	15	24
Obs for Model Fitting	1,952	691	2,643

<sup>33</sup> Weyerhaeuser Company Limited. 2005. Determining the AAC for the Weyerhaeuser Edson FMA. Component#1: Yield Projections. Forest Management Agreement Area FMA #9700035. Draft Report. Submitted to ASRD.

<sup>34</sup> Weyerhaeuser Company Limited. 2005. Determining the AAC for the Weyerhaeuser Drayton Valley FMA. Component#1: Yield Projections. Forest Management Agreement Area FMA #8500023. Draft Report. Submitted to ASRD.

The coniferous model included the C + CD broad cover groups (yield groups 1-15), and the deciduous model included the DC + D broad cover groups (yield groups 16-21). Yield group 50 was assigned to the 'conifer-LF' DBHq strata (strata 2) in the timber supply model due to LF being the largest natural subregion component.

Table 45. Preliminary strata in the Grande Prairie FMA and associated number of observations.

Major Stratum	Landbase Type	NSR Group	Initial # Obs	Obs Used	
				CON	DEC
1	Conifer	CMW/DMW	136	115	94
2	Conifer	LF	766	631	459
3	Conifer	UF	672	579	241
4	Conifer	M/SA/A	393	358	20
5	Deciduous	CMW/DMW	168	118	158
6	Deciduous	LF	460	280	441
7	Deciduous	UF/M/SA/A	48	33	37
Total			2,643	2,114	1,450

### MODEL CONIFEROUS AND DECIDUOUS DBHq \* AVI AGE BY MAJOR STRATA

We modeled DBHq for coniferous and deciduous species separately for all the major strata as a function of AVI stand age:

Equation:  $DBHq = q_0 * AVI\_age * exp(q_1 * AVI\_age)$

- where = Quadratic mean
- DBHq = diameter (cm)
- AVI\_age = AVI stand age (years)
- q<sub>0</sub>, q<sub>1</sub> = Coefficients

### CONIFEROUS DBHq

While the model fit statistics were significant for each of the major strata (Table 46), there was wide variation in stand-level coniferous DBHq by AVI stand age. This is illustrated in the predicted model and residual plots

Table 46. Parameter estimates for coniferous tree DBHq model.

Piece Size Stratum	Conifer / Decid Landbase	NSR	q <sub>0</sub>	q <sub>1</sub>
1	Conifer	CMW/DMW	0.3629	-0.00737
2	Conifer	LF	0.4326	-0.00805
3	Conifer	M/SA/A	0.3525	-0.00681
4	Conifer	UF	0.4020	-0.00811
5	Deciduous	CMW/DMW	0.4598	-0.01010
6	Deciduous	LF	0.6312	-0.01170
7	Deciduous	UF/M/SA/A	0.5977	-0.01240

<sup>a</sup>Bold parameters are significant (p<0.05).

(Figure 71 - Figure 77, Table 48). This demonstrates the issue that the relationship between piece size and age is weakly related, and the resulting model should only be used for reporting purposes.

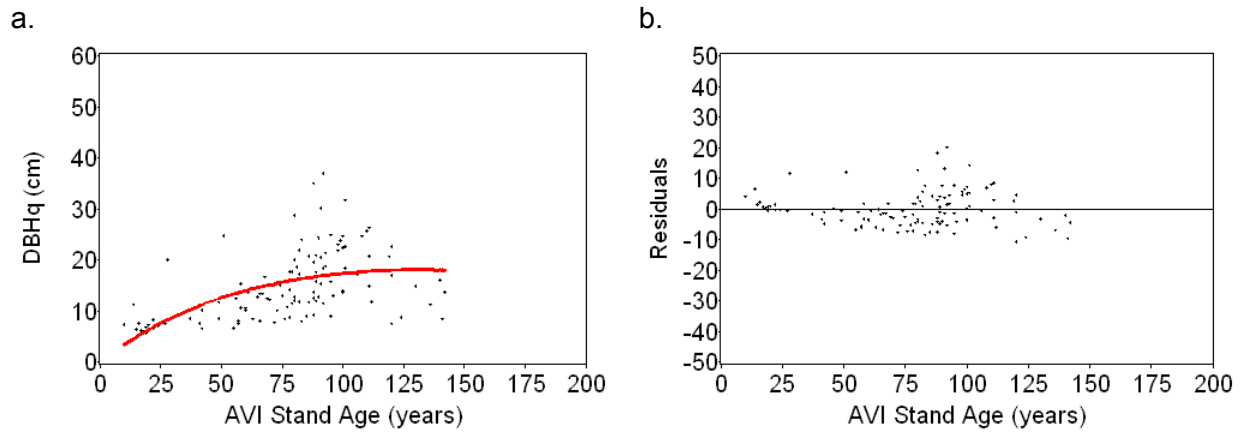


Figure 71. DBHq model (a) and residual plot (b) for Conifer-CMW/DMW stratum (coniferous trees).

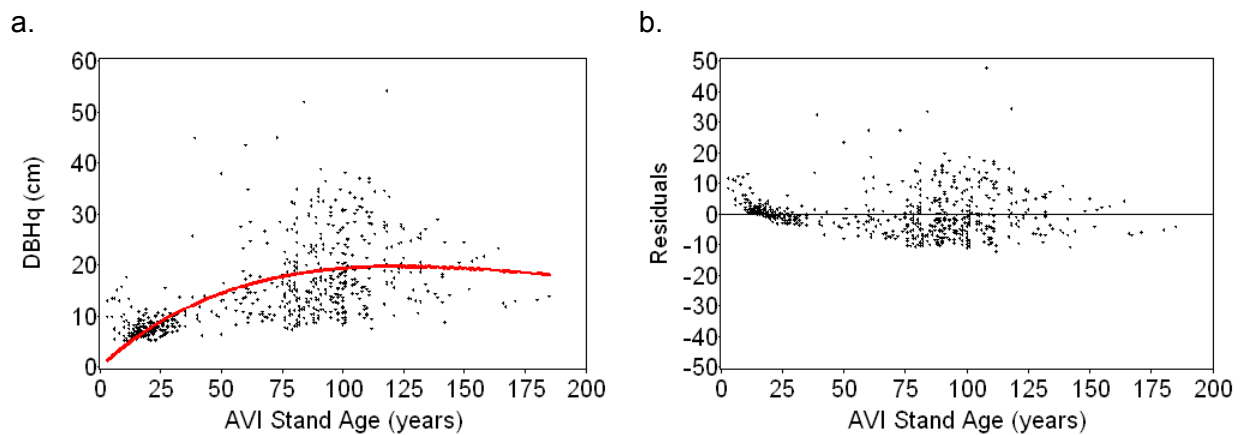


Figure 72. DBHq model (a) and residual plot (b) for Conifer-LF stratum (coniferous trees).

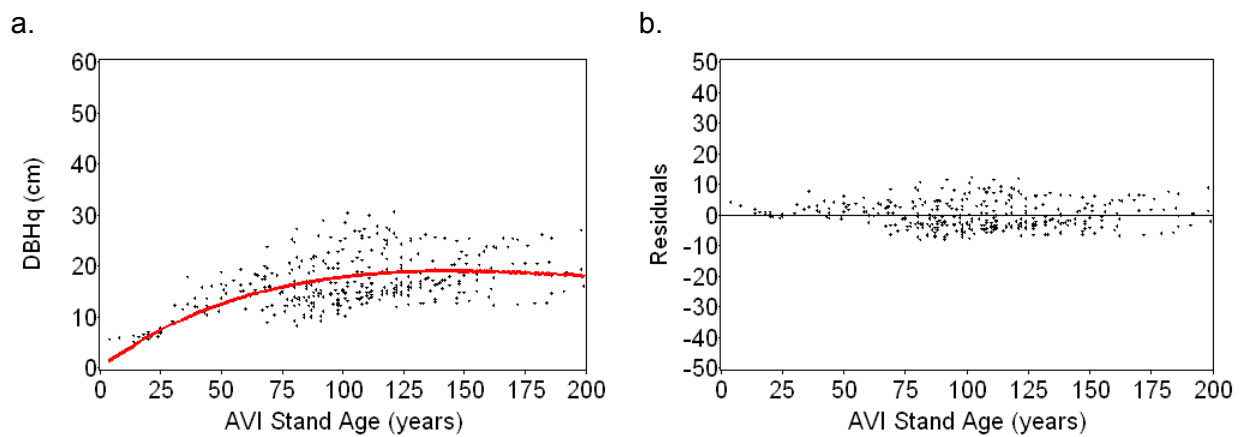


Figure 73. DBHq model (a) and residual plot (b) for Conifer-M/SA/A stratum (coniferous trees).

a. b.



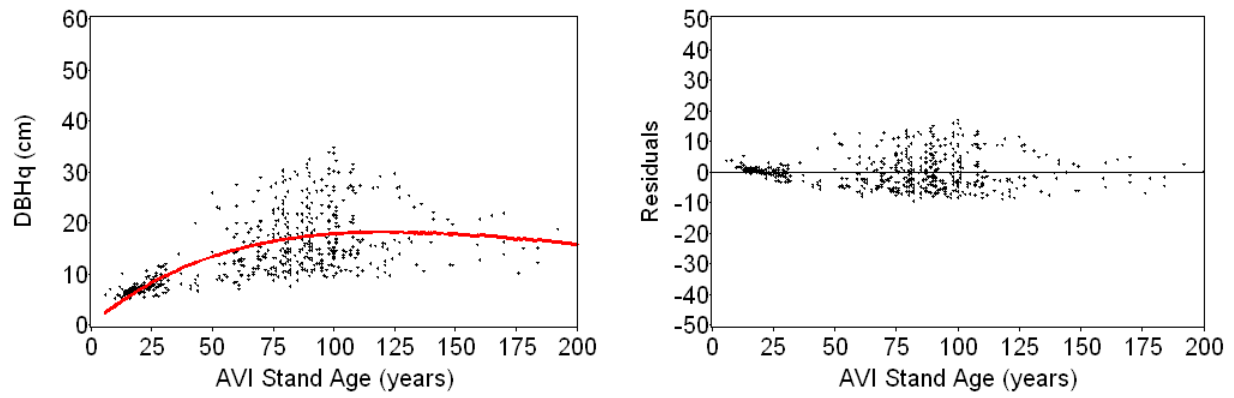


Figure 74. DBHq model (a) and residual plot (b) for Conifer-UF stratum (coniferous trees).

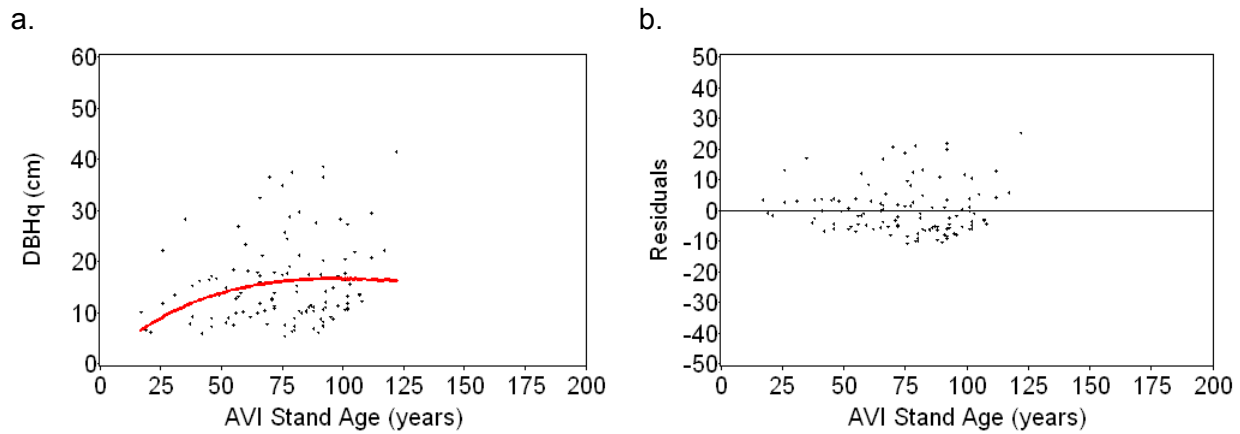


Figure 75. DBHq model (a) and residual plot (b) for Deciduous-CMW/DMW stratum (coniferous trees).

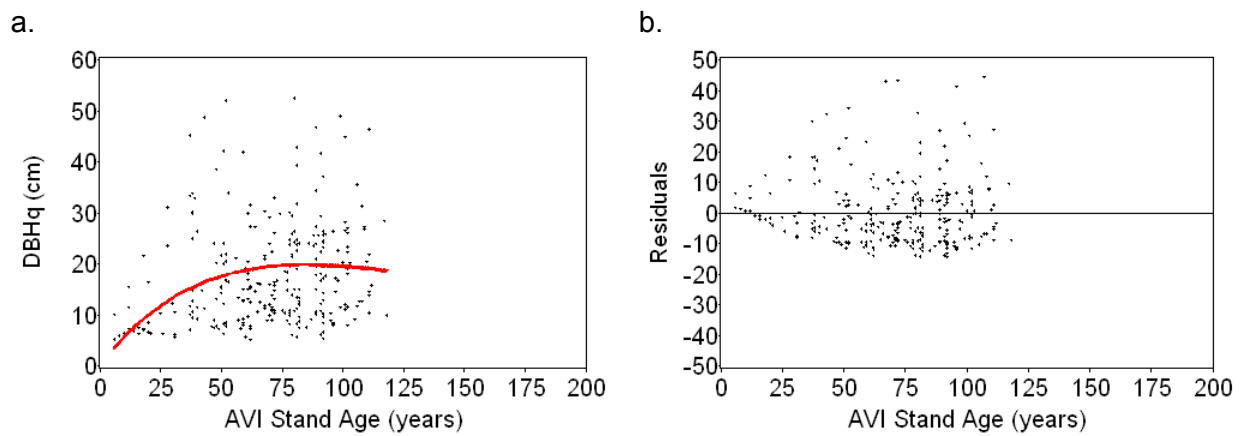


Figure 76. DBHq model (a) and residual plot (b) for Deciduous-LF stratum (coniferous trees).

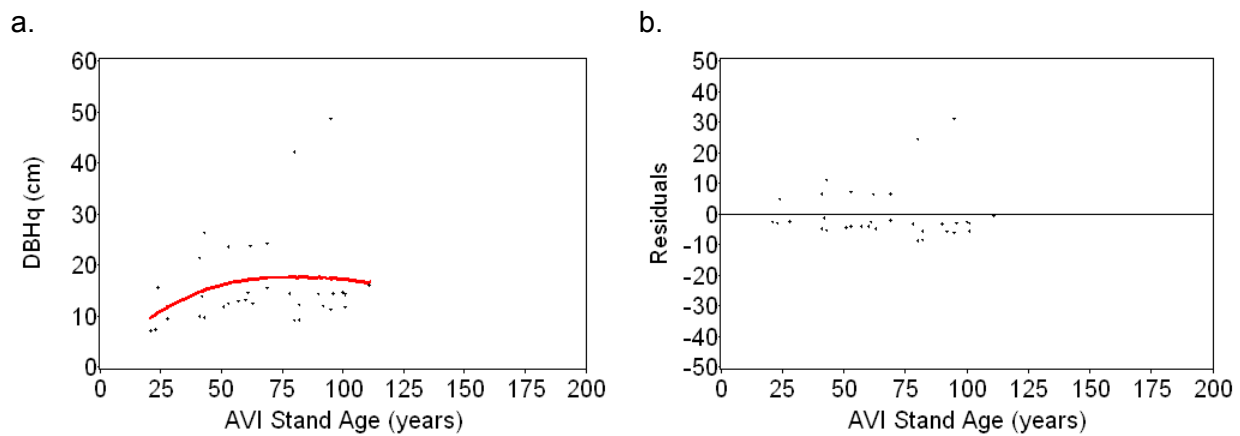


Figure 77. DBHq model (a) and residual plot (b) for Deciduous-UF/M/SA/A stratum (coniferous trees).

## DECIDUOUS DBHq

Parameter estimates for the deciduous DBHq model are provided in Table 47. Similar to the coniferous DBHq model, there was wide variation in stand-level deciduous DBHq by AVI stand age. This is illustrated in the predicted model and residual plots (Figure 78- Figure 84, Table 48). Again, the resulting model should only be used for reporting purposes.

Table 47. Parameter estimates for deciduous tree DBHq model.

Piece Size Stratum	Conifer / Decid Landbase	NSR	q <sub>0</sub>	q <sub>1</sub>
1	Conifer	CMW/DMW	<b>0.5087</b>	<b>-0.00971</b>
2	Conifer	LF	<b>0.3743</b>	<b>-0.00459</b>
3	Conifer	M/SA/A	<b>0.3654</b>	<b>-0.01320</b>
4	Conifer	UF	<b>0.3862</b>	<b>-0.00612</b>
5	Deciduous	CMW/DMW	<b>0.3991</b>	<b>-0.00499</b>
6	Deciduous	LF	<b>0.4095</b>	<b>-0.00487</b>
7	Deciduous	UF/M/SA/A	<b>0.2202</b>	-0.00220

<sup>a</sup>Bold parameters are significant (p<0.05).

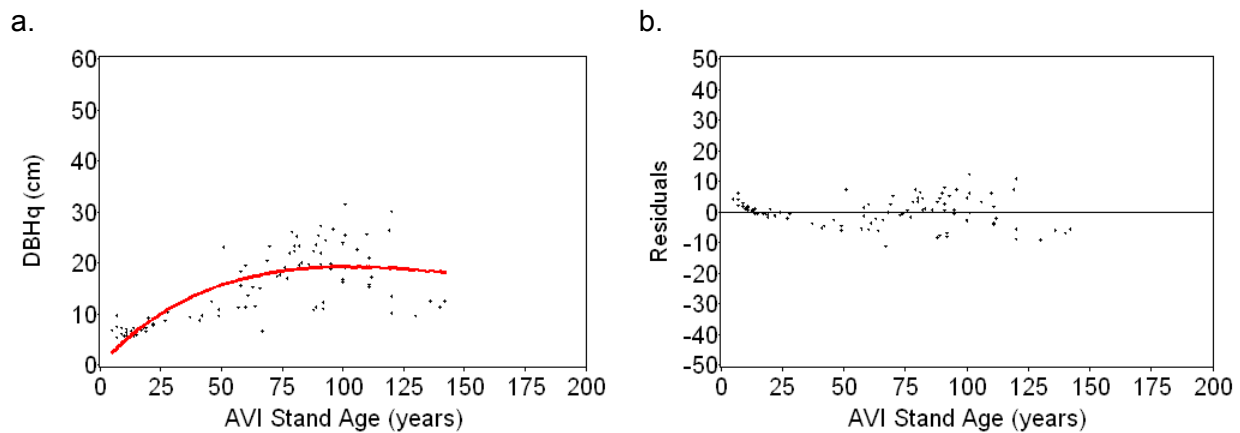


Figure 78. DBHq model (a) and residual plot (b) for Conifer-CMW/DMW stratum (deciduous trees).

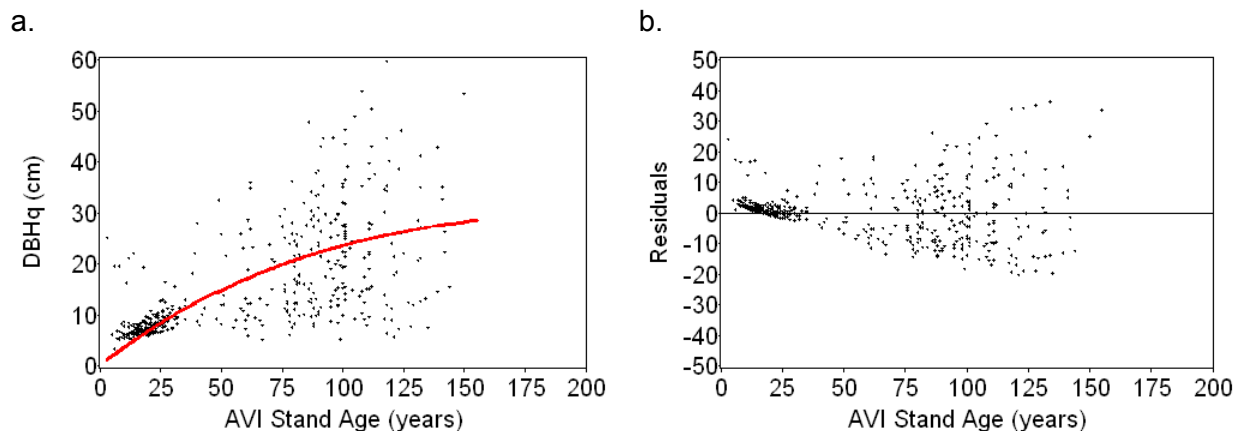


Figure 79. DBHq model (a) and residual plot (b) for Conifer-LF stratum (deciduous trees).

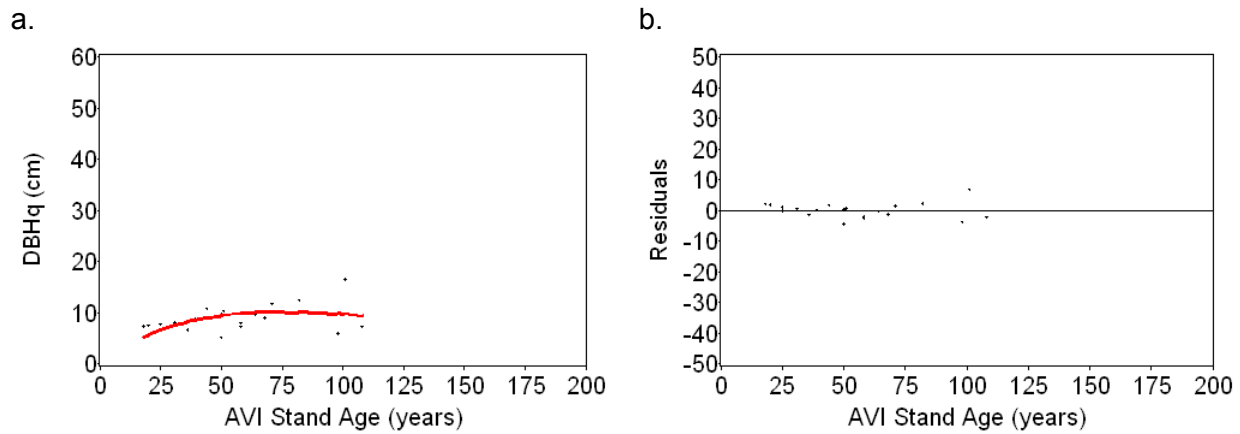


Figure 80. DBHq model (a) and residual plot (b) for Conifer-M/SA/A stratum (deciduous trees).

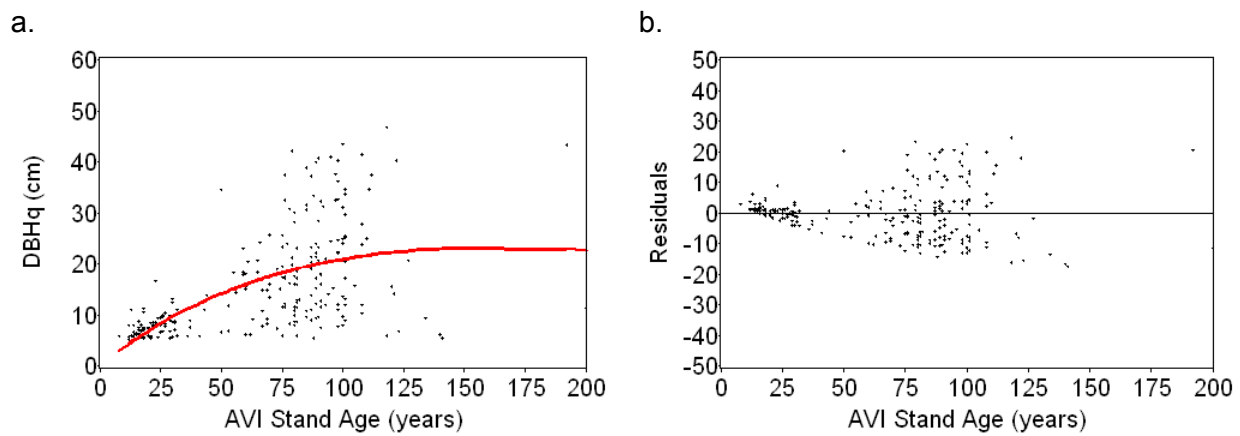


Figure 81. DBHq model (a) and residual plot (b) for Conifer-UF stratum (deciduous trees).

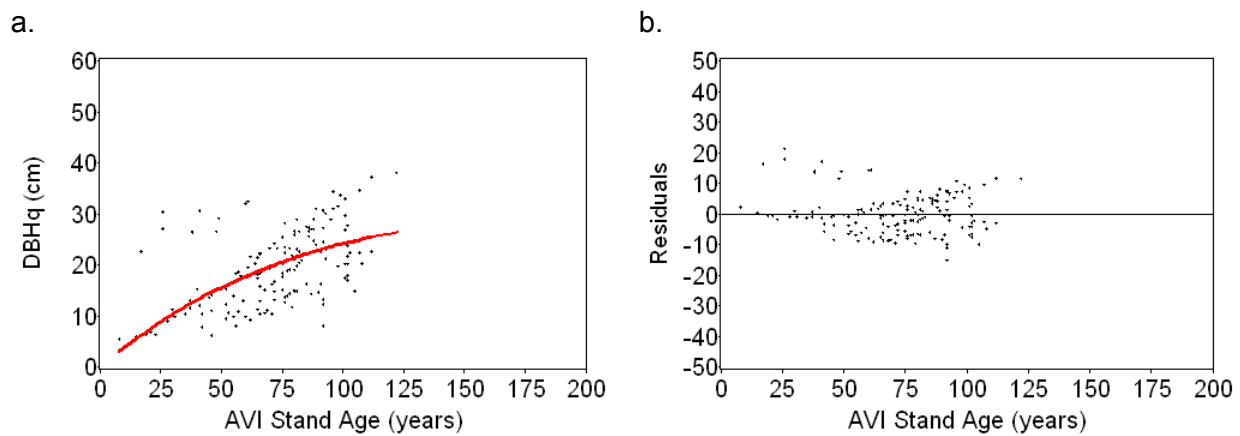


Figure 82. DBHq model (a) and residual plot (b) for Deciduous-CMW/DMW stratum (deciduous trees).

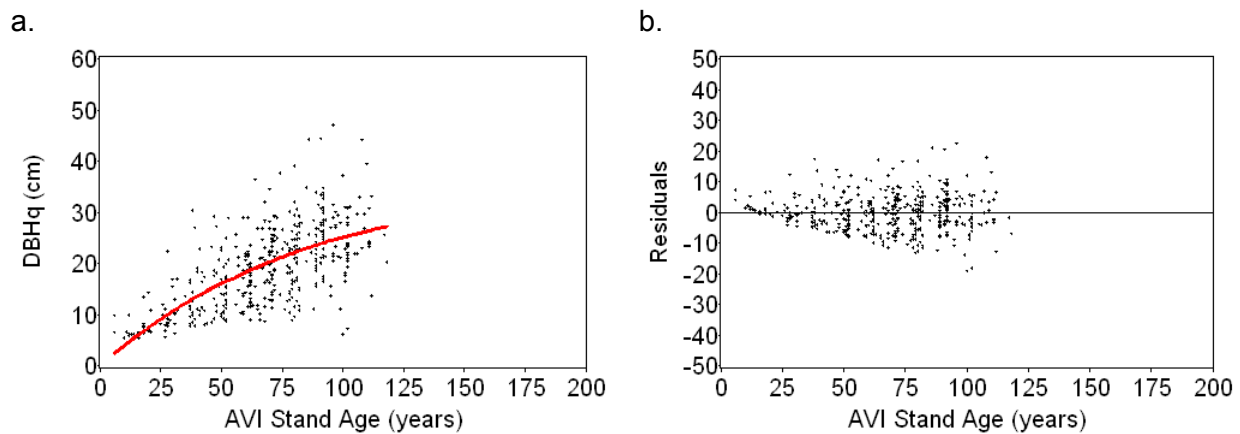


Figure 83. DBHq model (a) and residual plot (b) for Deciduous -LF stratum (deciduous trees).

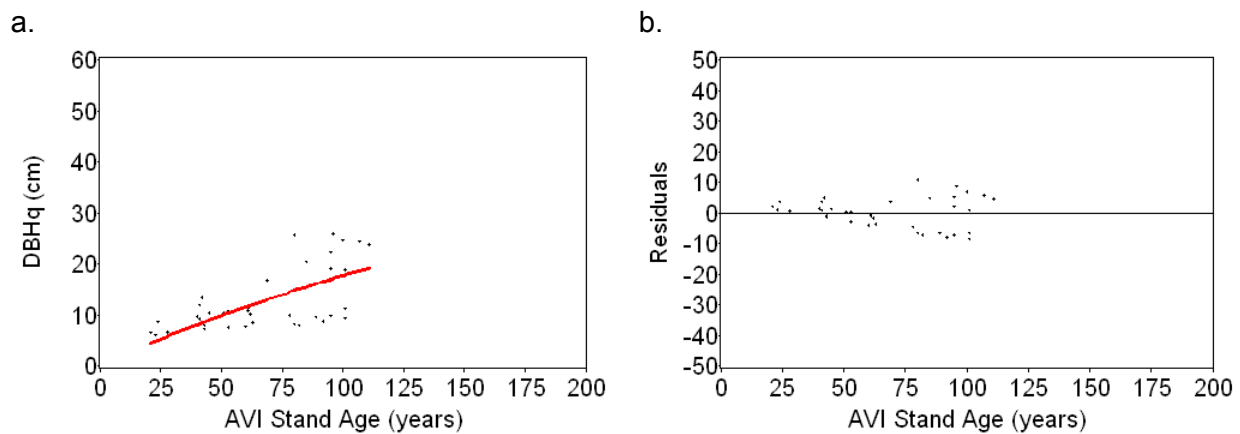


Figure 84. DBHq model (a) and residual plot (b) for Deciduous -UF/M/SA/A stratum (deciduous trees).

Table 48. DBHq estimates for conifer and deciduous dominated stands.

Stand age (yrs)	Conifer piece size strata						Deciduous piece size strata							
	1		2		3		4		5		6		7	
	Conif. DBHq (cm)	Decid. DBHq (cm)	Conif. DBHq (cm)	Decid. DBHq (cm)	Conif. DBHq (cm)	Decid. DBHq (cm)	Conif. DBHq (cm)	Decid. DBHq (cm)	Conif. DBHq (cm)	Decid. DBHq (cm)	Conif. DBHq (cm)	Decid. DBHq (cm)	Conif. DBHq (cm)	Decid. DBHq (cm)
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	2	2	2	2	2	2	2	2	2	2	3	2	3	1
10	3	5	4	4	3	3	4	4	4	4	6	4	5	2
15	5	7	6	5	5	4	5	5	6	6	8	6	7	3
20	6	8	7	7	6	6	7	7	8	7	10	7	9	4
25	8	10	9	8	7	7	8	8	9	9	12	9	11	5
30	9	11	10	10	9	7	9	10	10	10	13	11	12	6
35	10	13	11	11	10	8	11	11	11	12	15	12	14	7
40	11	14	13	12	11	9	12	12	12	13	16	13	15	8
45	12	15	14	14	12	9	13	13	13	14	17	15	15	9
50	13	16	14	15	13	9	13	14	14	16	18	16	16	10
55	13	16	15	16	13	10	14	15	14	17	18	17	17	11
60	14	17	16	17	14	10	15	16	15	18	19	18	17	12
65	15	18	17	18	15	10	15	17	15	19	19	19	17	12
70	15	18	17	19	15	10	16	18	16	20	20	20	18	13
75	16	18	18	20	16	10	16	18	16	21	20	21	18	14

Stand age (yrs)	Conifer piece size strata								Deciduous piece size strata					
	1		2		3		4		5		6		7	
	Conif. DBHq (cm)	Decid. DBHq (cm)	Conif. DBHq (cm)	Decid. DBHq (cm)	Conif. DBHq (cm)	Decid. DBHq (cm)	Conif. DBHq (cm)	Decid. DBHq (cm)	Conif. DBHq (cm)	Decid. DBHq (cm)	Conif. DBHq (cm)	Decid. DBHq (cm)	Conif. DBHq (cm)	Decid. DBHq (cm)
80	16	19	18	21	16	10	17	19	16	21	20	22	18	15
85	16	19	19	22	17	10	17	20	16	22	20	23	18	16
90	17	19	19	22	17	10	17	20	17	23	20	24	18	16
95	17	19	19	23	18	10	18	21	17	24	20	24	17	17
100	17	19	19	24	18	10	18	21	17	24	20	25	17	18
105	18	19	20	24	18	10	18	21	17	25	19	26	17	18
110	18	19	20	25	18	9	18	22	17	25	19	26	17	19
115	18	19	20	25	19	9	18	22	16	26	19	27	16	20
120	18	19	20	26	19	9	18	22	16	26	19	27	16	20
125	18	19	20	26	19	9	18	22	16	27	18	28	16	21
130	18	19	20	27	19	9	18	23	16	27	18	28	15	22
135	18	19	20	27	19	8	18	23	16	27	18	29	15	22
140	18	18	20	28	19	8	18	23	16	28	17	29	15	23
145	18	18	20	28	19	8	18	23	15	28	17	29	14	23
150	18	18	19	28	19	8	18	23	15	28	16	30	14	24
155	18	18	19	28	19	7	18	23	15	29	16	30	14	24
160	18	17	19	29	19	7	18	23	15	29	16	30	13	25
165	18	17	19	29	19	7	17	23	14	29	15	30	13	25
170	18	17	19	29	19	7	17	23	14	29	15	30	12	26
175	17	16	19	29	19	6	17	23	14	29	14	31	12	26
180	17	16	18	30	19	6	17	23	13	29	14	31	12	27
185	17	16	18	30	19	6	17	23	13	29	13	31	11	27
190	17	15	18	30	18	6	16	23	13	29	13	31	11	28
195	17	15	18	30	18	5	16	23	12	29	13	31	10	28
200	17	15	17	30	18	5	16	23	12	29	12	31	10	28

## APPENDIX XI – SITE INDEX STATISTICS

Table 49. Site index statistics by yield group and natural subregion group for the Grande Prairie FMA.

Yield group	Natural Subregion Group	NAT					MGD				
		# of PSPs	Mean SI	Min SI	Max SI	Std SI	# of PSPs	Mean SI	Min SI	Max SI	Std SI
1	CMW/DMW	7	14.4	10.2	20.7	4.2					
1	LF	11	14.6	9.1	22.0	3.4	4	16.6	15.8	17.2	0.6
1	UF	28	12.2	5.2	18.6	3.2	6	13.8	9.3	17.7	2.9
1	M/SA/A	16	10.7	4.8	15.3	3.1	1	10.1	10.1	10.1	
2	CMW/DMW	2	20.0	18.8	21.2	1.7	1	9.9	9.9	9.9	
2	LF	17	16.5	9.9	20.2	3.2	10	15.6	10.0	19.9	2.8
2	UF	25	13.8	6.6	20.5	3.9	11	14.4	12.6	15.9	1.0
2	M/SA/A	27	10.6	6.1	16.5	2.2	2	10.7	10.4	11.0	0.4
3	CMW/DMW	1	13.8	13.8	13.8						
3	LF	3	16.0	14.6	16.9	1.3	1	16.7	16.7	16.7	
3	UF	14	14.1	10.6	18.0	2.5	3	17.3	16.2	18.1	1.0
3	M/SA/A	18	12.5	9.1	19.1	2.9					
4	CMW/DMW	7	13.2	6.6	21.2	5.1	1	13.2	13.2	13.2	
4	LF	22	11.6	5.1	18.8	3.5	6	12.2	6.5	16.6	3.3
4	UF	6	9.2	5.0	12.8	2.7	1	9.6	9.6	9.6	
4	M/SA/A	9	7.1	5.4	8.9	1.3					
5	CMW/DMW	1	18.1	18.1	18.1		6	15.5	8.4	21.0	4.4
5	LF	13	13.4	6.6	18.1	3.5	16	15.0	8.8	22.7	3.5
5	UF						6	13.5	9.1	16.7	2.9
5	M/SA/A	3	8.9	5.9	13.7	4.2	2	14.6	14.0	15.2	0.8
6	CMW/DMW										
6	LF	13	7.0	4.3	11.3	2.0					
6	UF	4	7.6	2.9	11.7	3.7					
6	M/SA/A										
7	CMW/DMW										
7	LF	11	8.9	5.0	15.1	3.0					
7	UF	3	6.6	5.7	7.7	1.0					
7	M/SA/A										
8	CMW/DMW										
8	LF	11	18.0	13.0	22.3	3.3	4	17.0	13.8	18.8	2.2
8	UF	18	13.4	8.0	19.4	3.4	5	14.3	11.0	17.1	2.4
8	M/SA/A	28	10.4	5.4	14.2	2.8	3	12.2	10.6	14.7	2.2
9	CMW/DMW	2	16.7	15.9	17.4	1.1					
9	LF	13	17.7	9.3	24.6	4.3	3	14.3	10.2	18.2	4.0
9	UF	7	13.4	7.9	20.4	4.7	2	10.3	4.9	15.8	7.7
9	M/SA/A	8	8.6	4.1	14.2	3.0					
10	CMW/DMW	1	11.5	11.5	11.5						
10	LF	6	12.6	8.7	18.6	4.1					

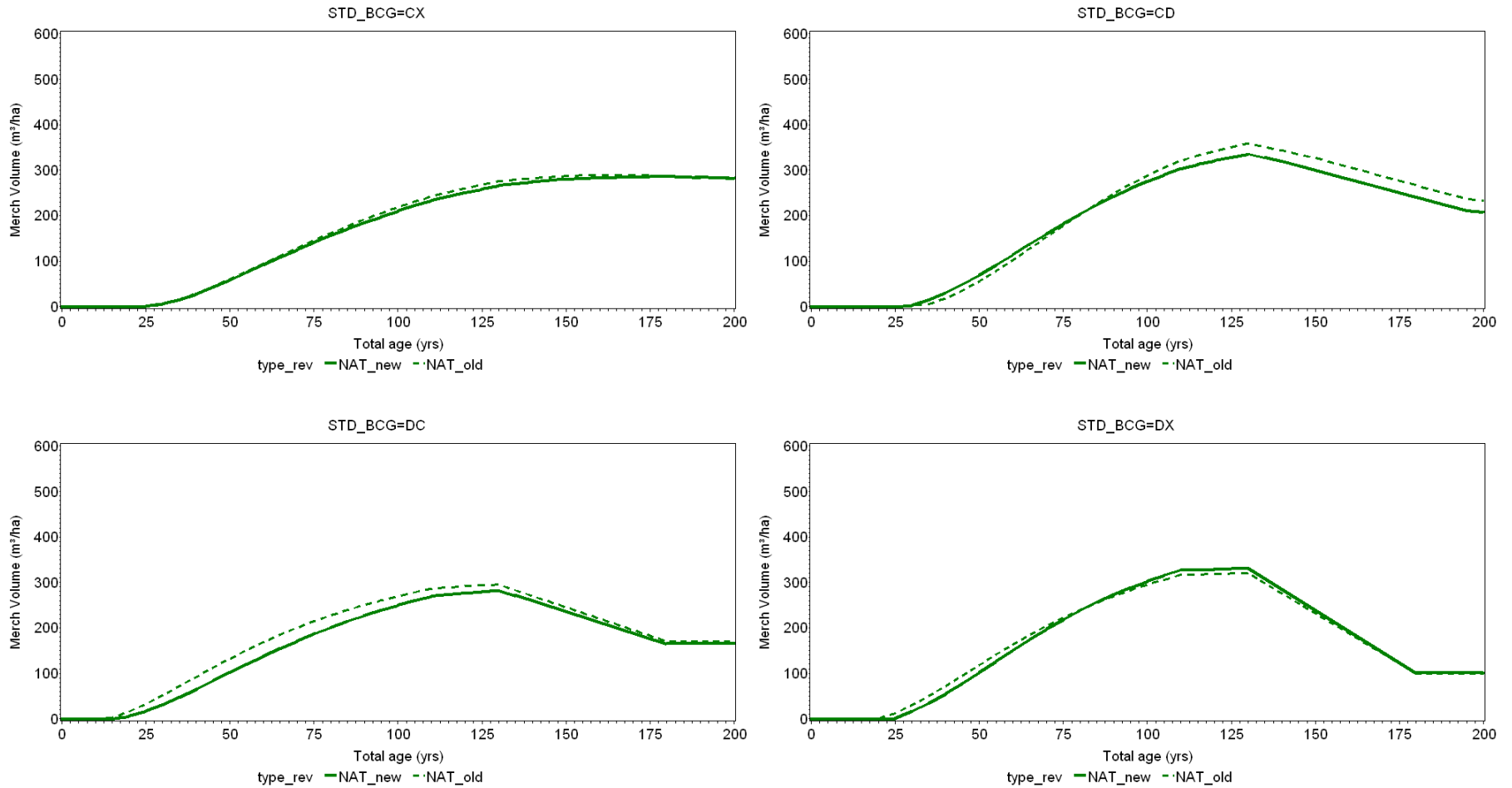
Yield group	Natural Subregion Group	NAT					MGD				
		# of PSPs	Mean SI	Min SI	Max SI	Std SI	# of PSPs	Mean SI	Min SI	Max SI	Std SI
10	UF	8	13.2	9.8	18.4	3.5	2	9.5	8.1	10.8	2.0
10	M/SA/A										
11	CMW/DMW										
11	LF	3	15.8	12.5	20.9	4.5					
11	UF	8	10.9	6.4	15.4	3.2					
11	M/SA/A										
12	CMW/DMW										
12	LF	5	9.8	6.3	16.9	4.2					
12	UF	6	9.0	7.0	12.8	2.3					
12	M/SA/A										
13	CMW/DMW										
13	LF	4	16.6	11.7	19.1	3.5	2	16.7	15.5	17.8	1.6
13	UF	5	16.9	12.3	19.5	3.5	3	16.3	14.3	17.7	1.8
13	M/SA/A										
14	CMW/DMW	3	16.0	12.6	18.5	3.1					
14	LF	2	6.4	4.1	8.6	3.2	5	15.0	7.5	26.0	7.3
14	UF										
14	M/SA/A										
15	CMW/DMW	2	13.7	11.4	15.9	3.2					
15	LF	7	15.1	8.5	21.2	4.3	2	16.3	15.2	17.3	1.5
15	UF										
15	M/SA/A										
16	CMW/DMW	3	12.1	9.3	14.4	2.6					
16	LF	13	16.4	11.6	23.9	3.4					
16	UF	3	10.3	7.8	14.3	3.5	1	16.0	16.0	16.0	
16	M/SA/A										
17	CMW/DMW	2	24.0	22.4	25.6	2.3					
17	LF	11	16.3	11.0	23.0	3.9					
17	UF	2	11.7	7.1	16.4	6.6					
17	M/SA/A										
18	CMW/DMW						1	13.8	13.8	13.8	
18	LF	2	14.1	8.3	19.9	8.2	5	14.2	7.7	16.5	3.7
18	UF										
18	M/SA/A										
19	CMW/DMW	14	18.2	8.0	25.3	5.1					
19	LF	38	17.0	6.1	27.1	4.3	2	19.5	18.2	20.8	1.8
19	UF	3	11.3	9.4	12.6	1.7					
19	M/SA/A										
20	CMW/DMW	33	20.7	13.1	30.0	3.5	3	15.3	13.5	16.9	1.7
20	LF	66	18.3	13.0	24.6	2.8					
20	UF	3	16.3	12.6	23.8	6.5					
20	M/SA/A										
21	CMW/DMW	5	20.7	17.0	24.1	3.2					



Yield group	Natural Subregion Group	NAT					MGD				
		# of PSPs	Mean SI	Min SI	Max SI	Std SI	# of PSPs	Mean SI	Min SI	Max SI	Std SI
21	LF	30	18.4	13.9	30.0	3.0	1	21.9	21.9	21.9	
21	UF										
21	M/SA/A										

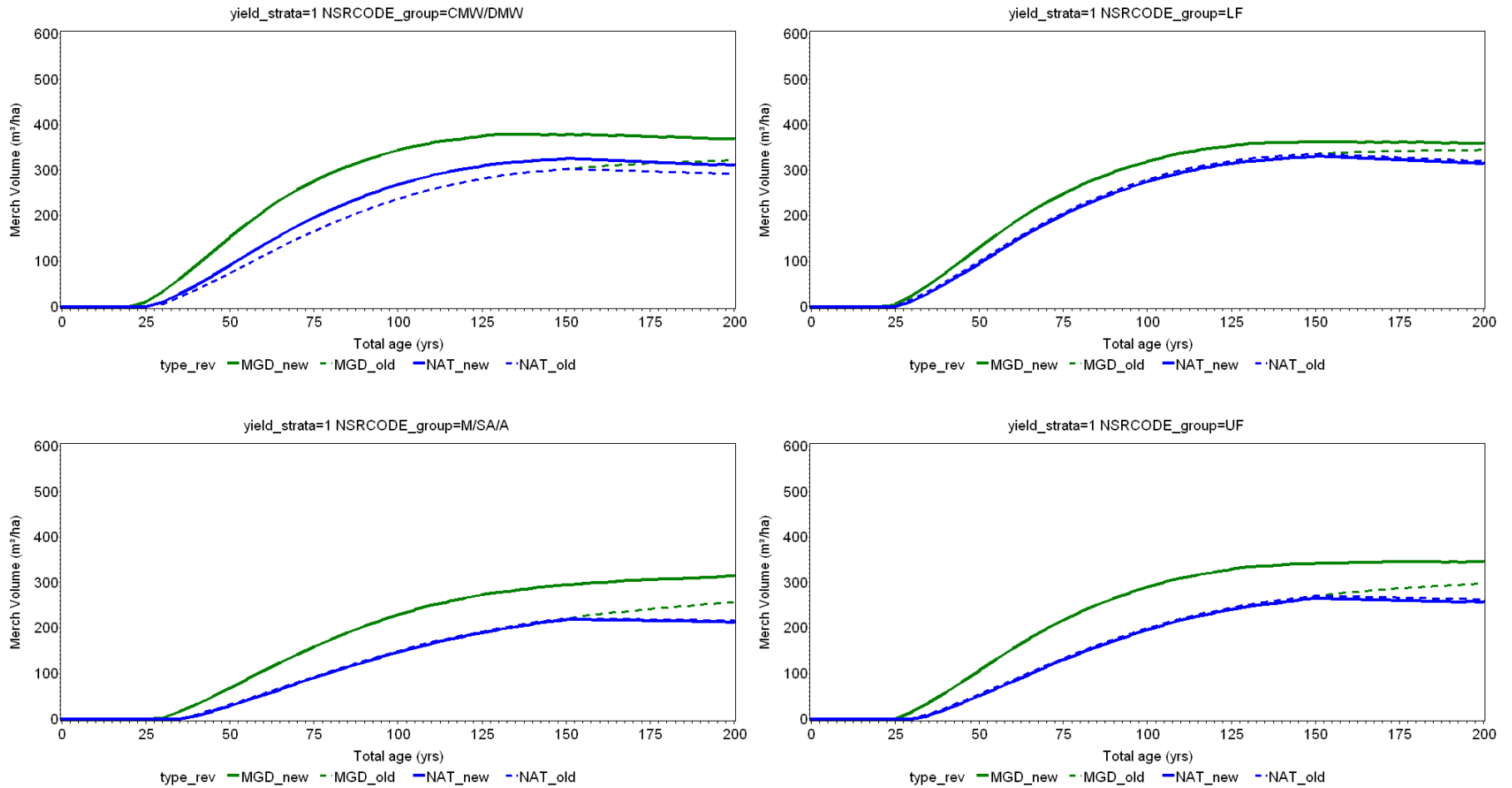
## APPENDIX XII – YIELD CURVE OVERLAYS: AREA WEIGHTED 2007 VS. 2011

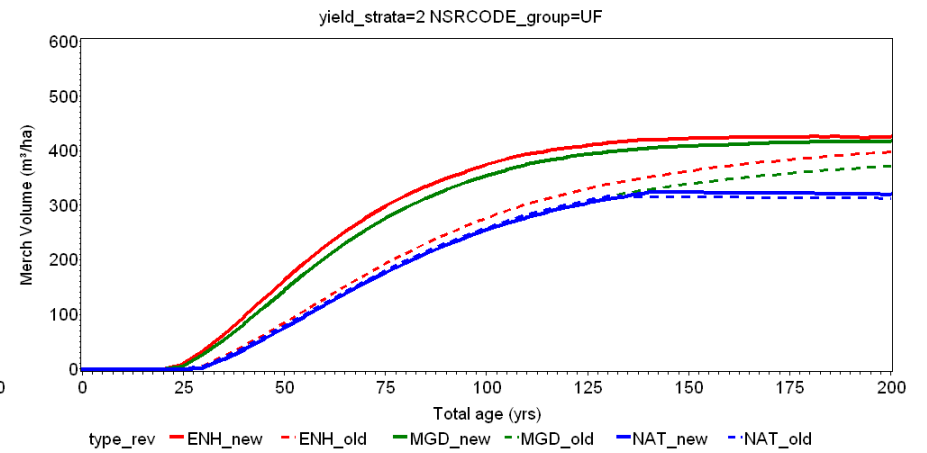
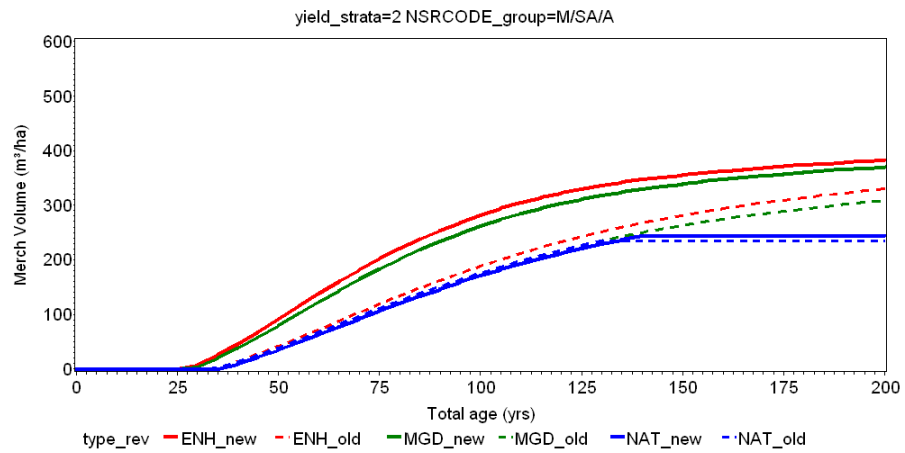
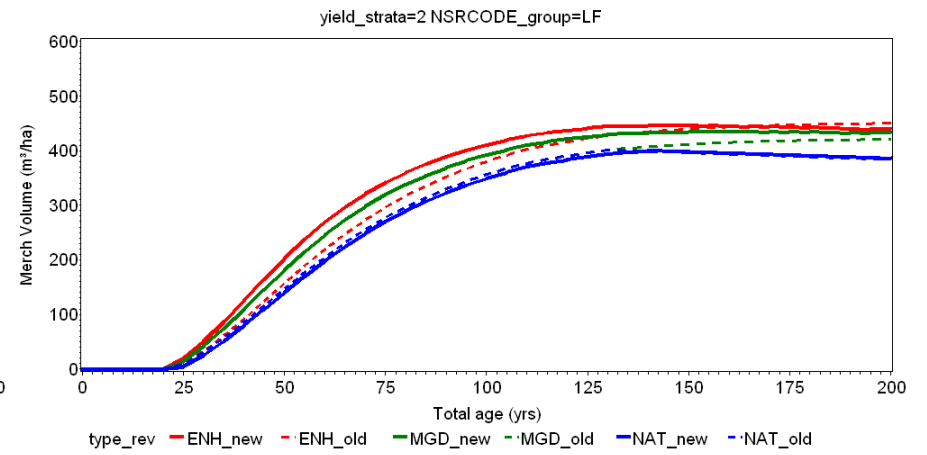
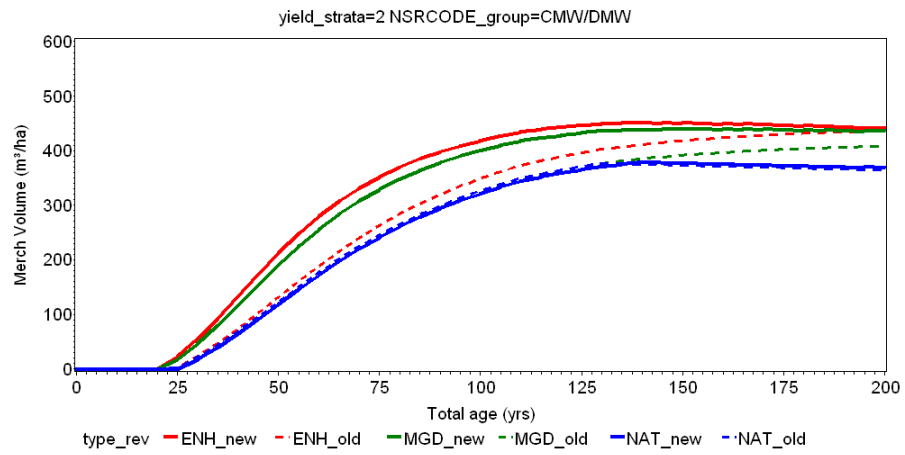
The following are overlays of gross merchantable volume (no cull) by broad cover group (area-wtd NAT curves) for the 2011 DFMP (new) vs. the 2007 DFMP amendment (old).

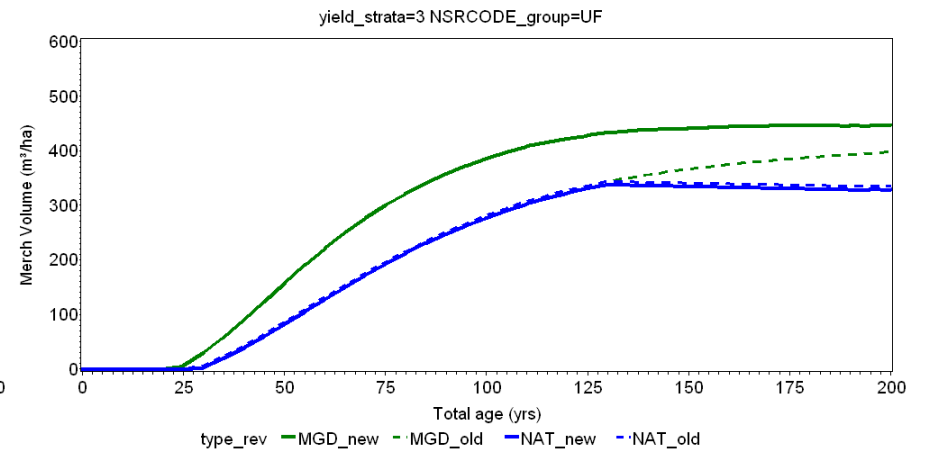
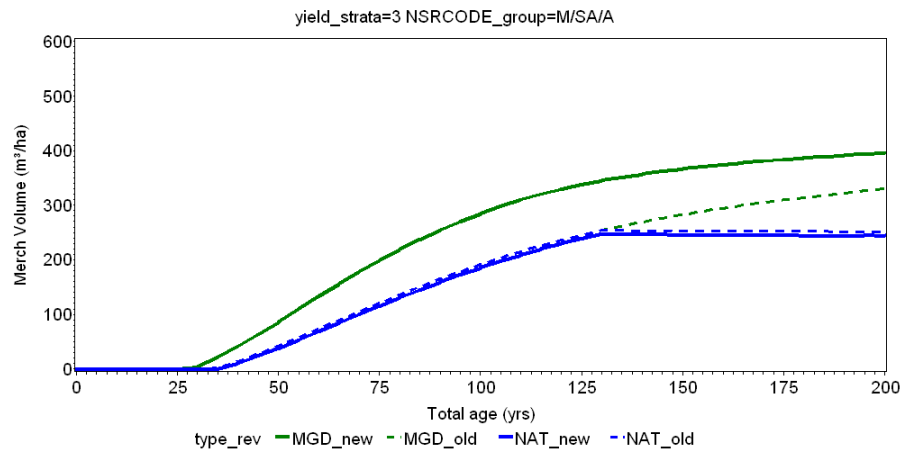
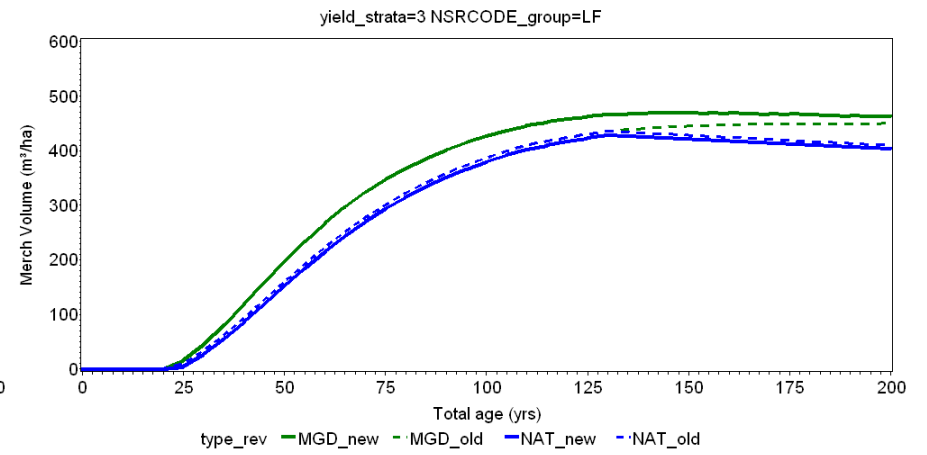
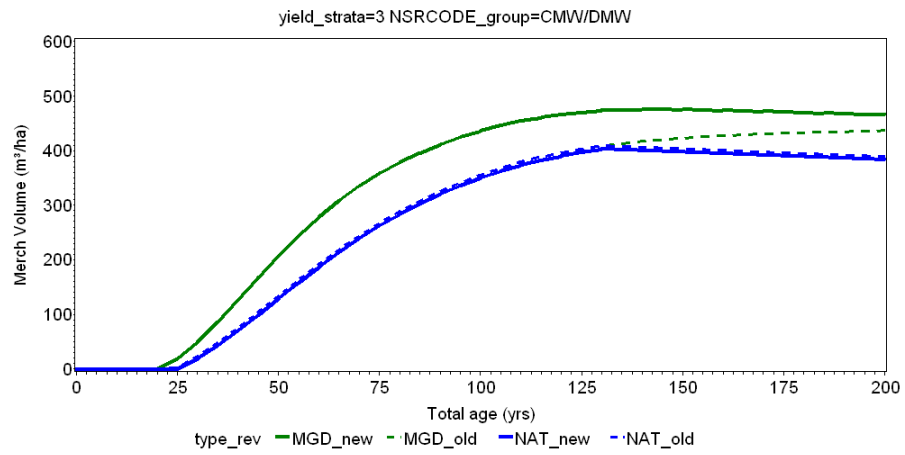


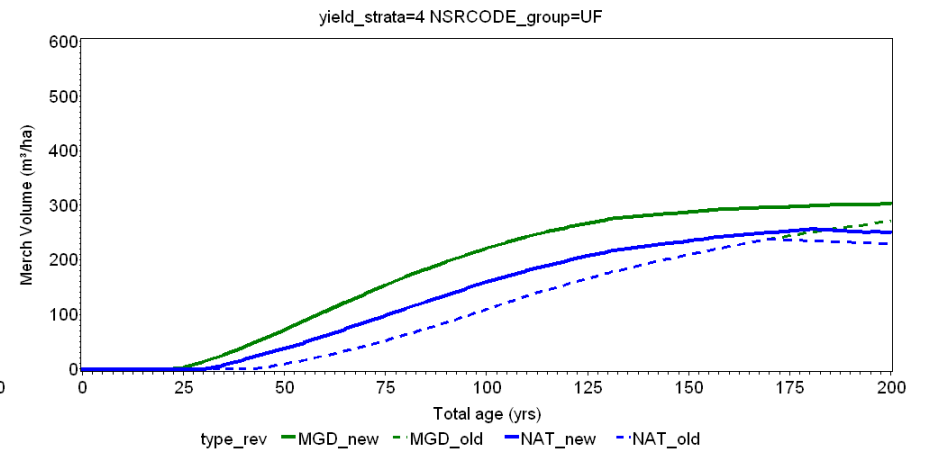
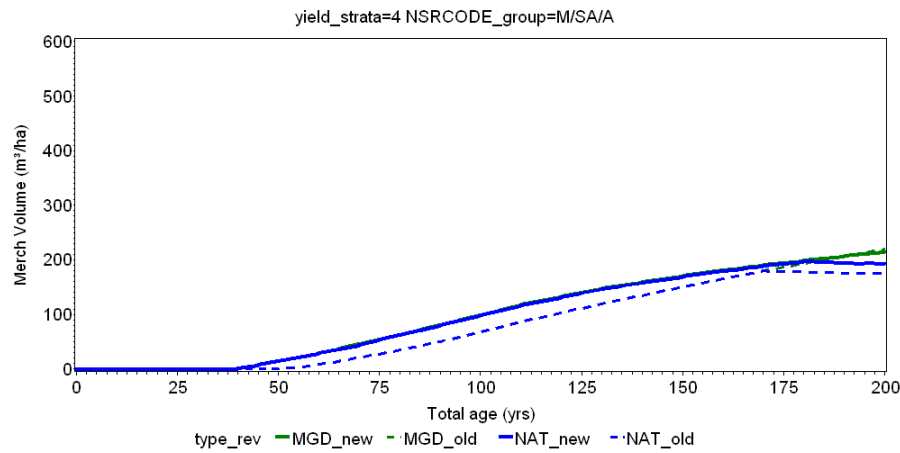
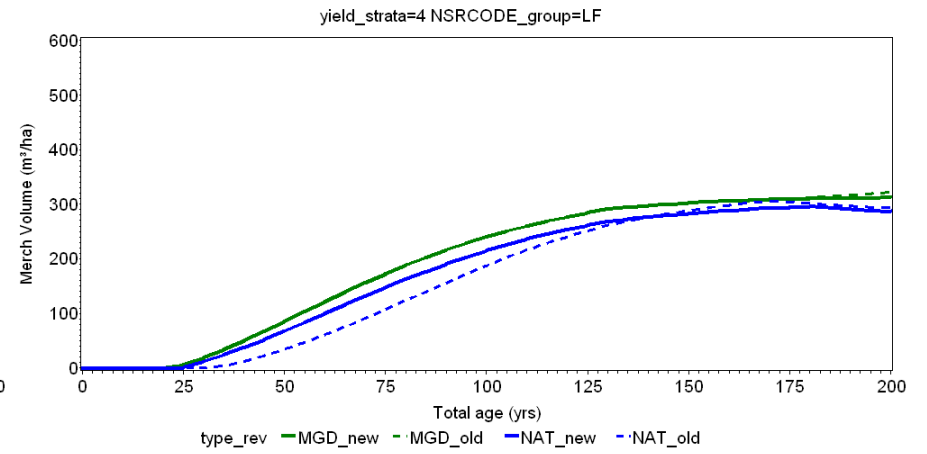
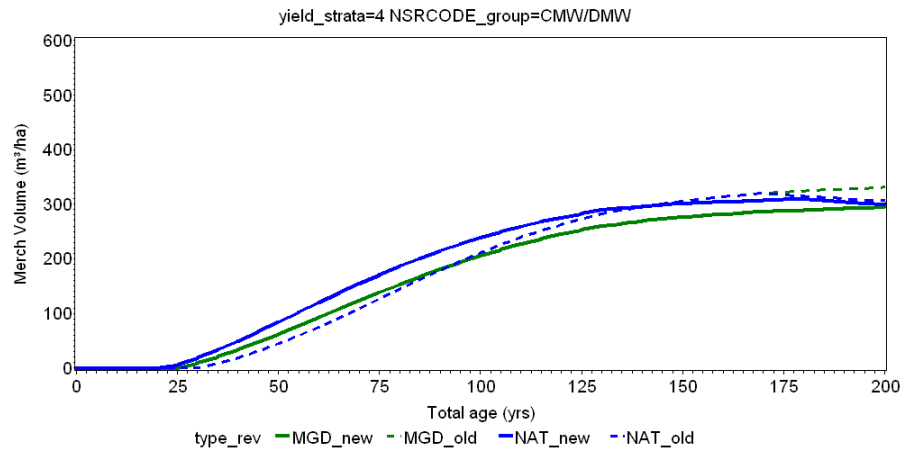
## APPENDIX XIII – YIELD CURVE OVERLAYS: NAT, MGD, ENH 2007 VS. 2011

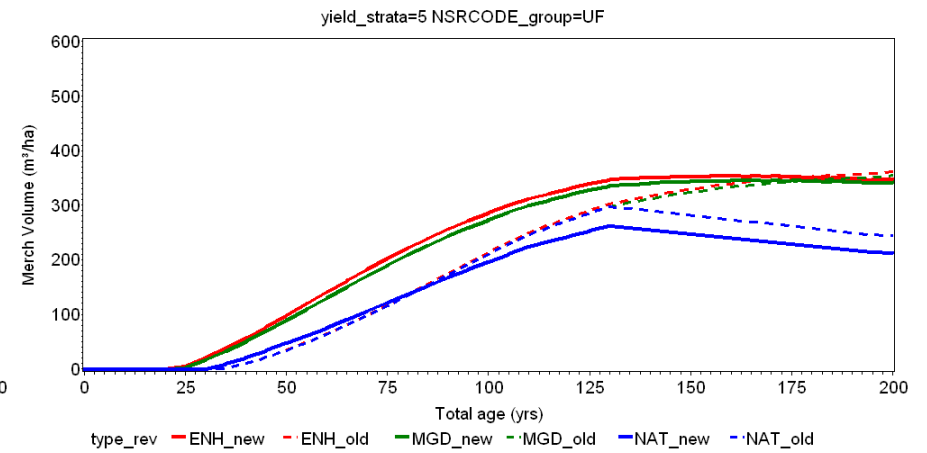
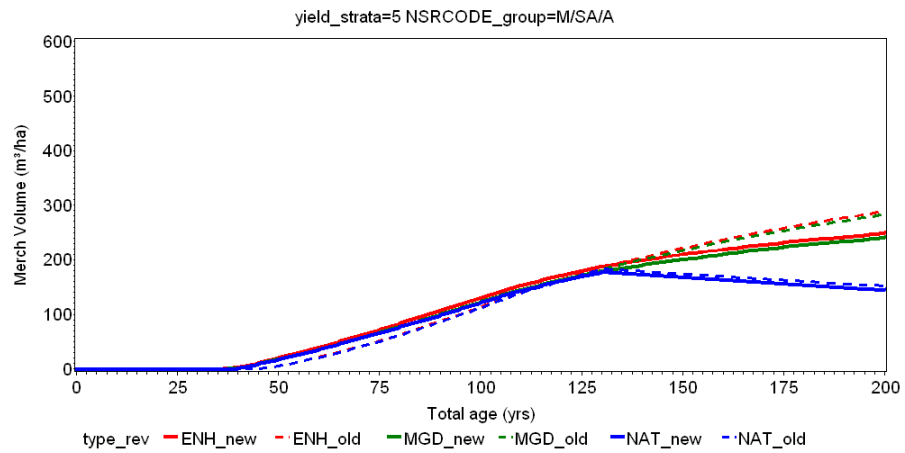
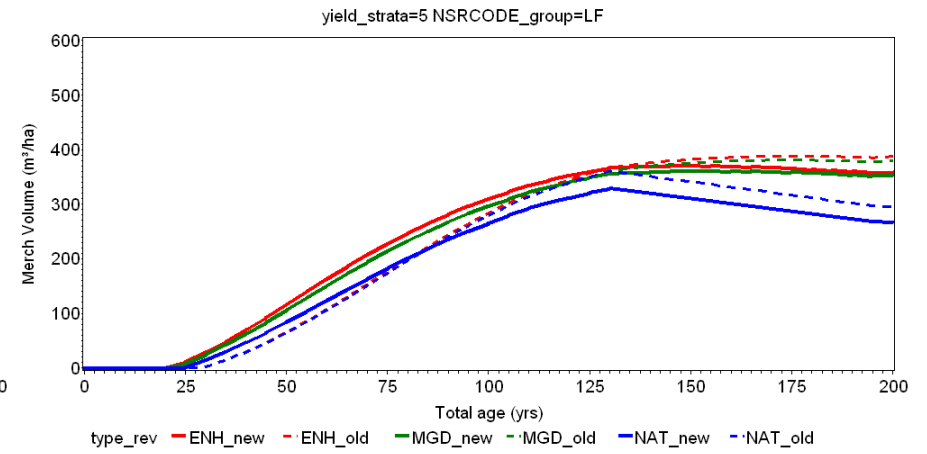
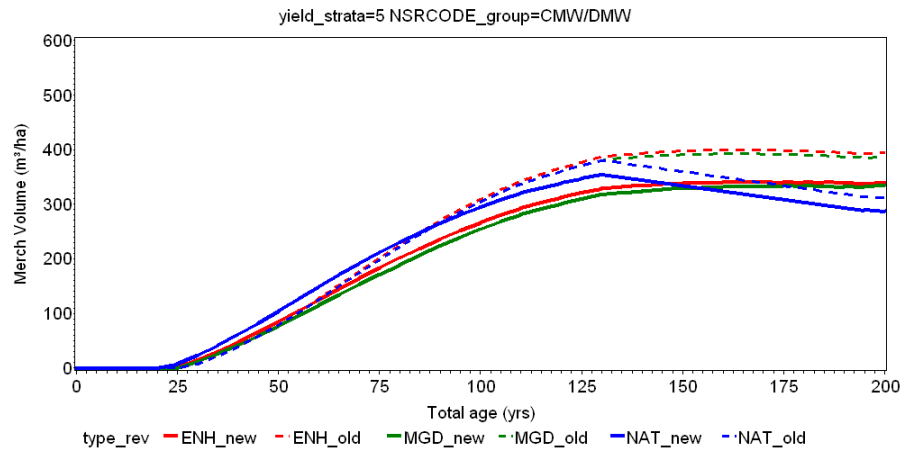
The following are overlays of gross merchantable volume (no cull) by natural subregion and yield group for the 2011 DFMP (new) vs. the 2007 DFMP amendment (old). Note that for comparison purposes, 2007 RST yield curves have been renamed to MGD and REG curves are not included.

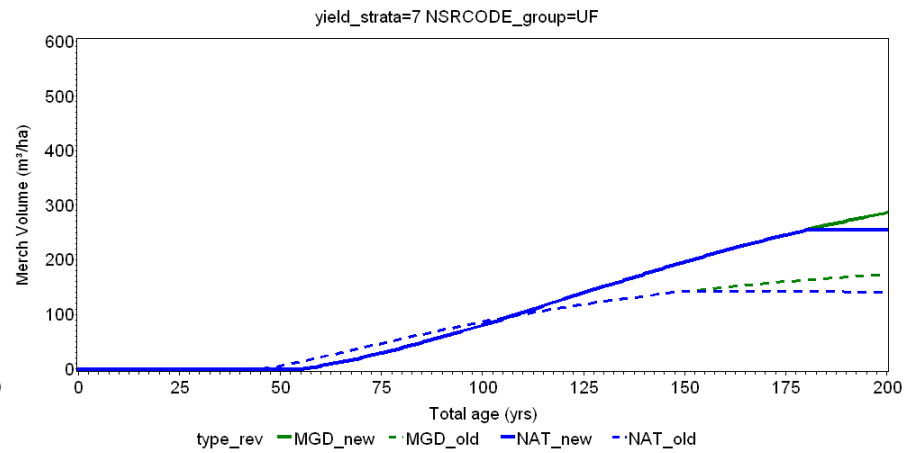
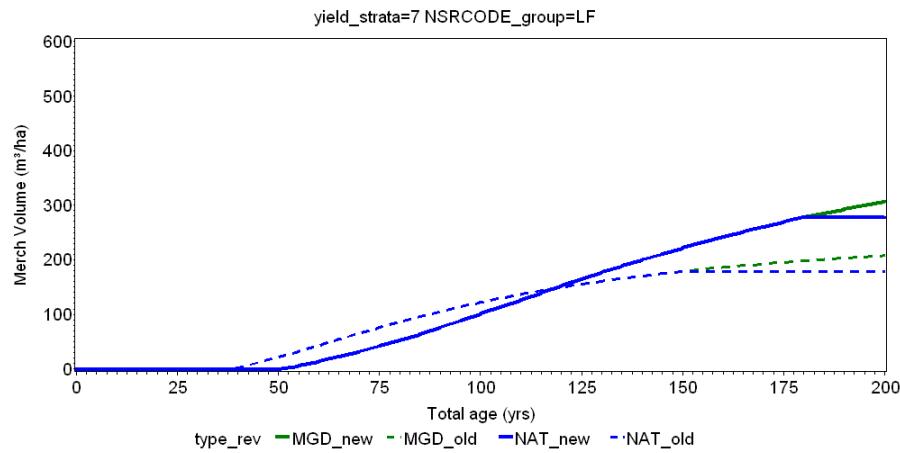
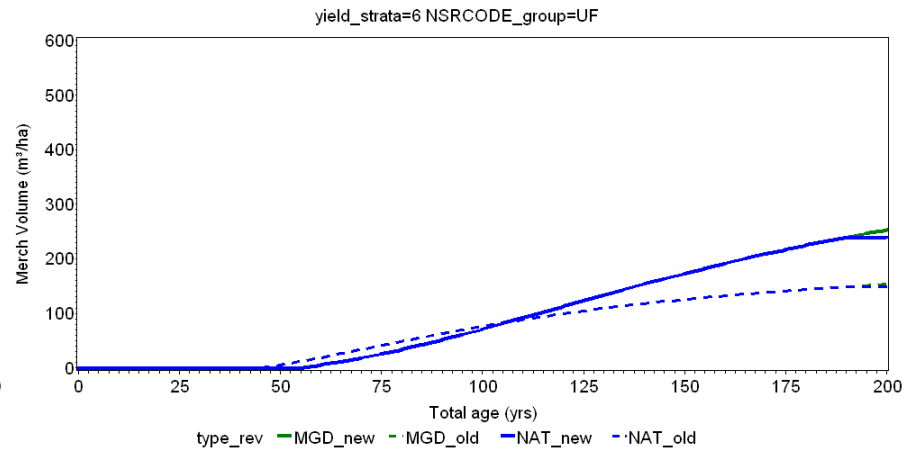
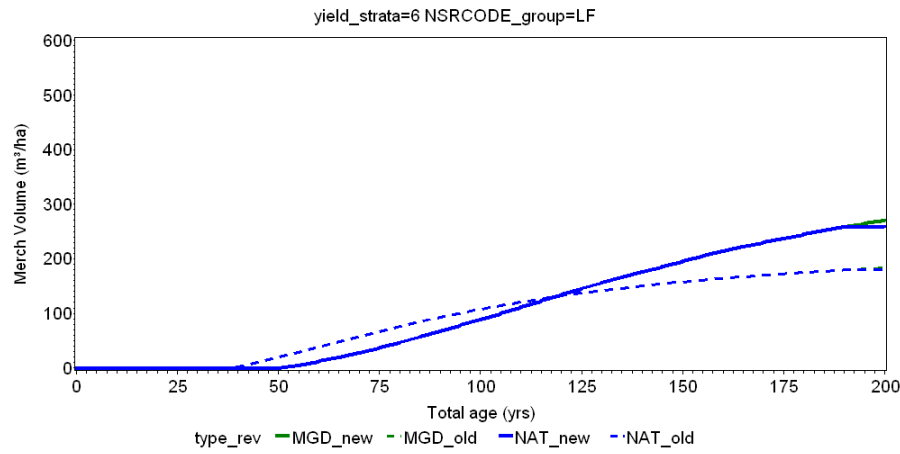




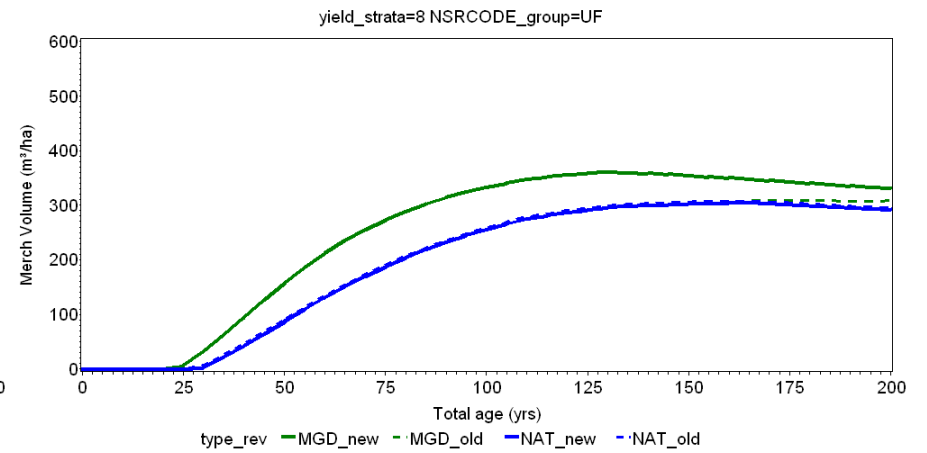
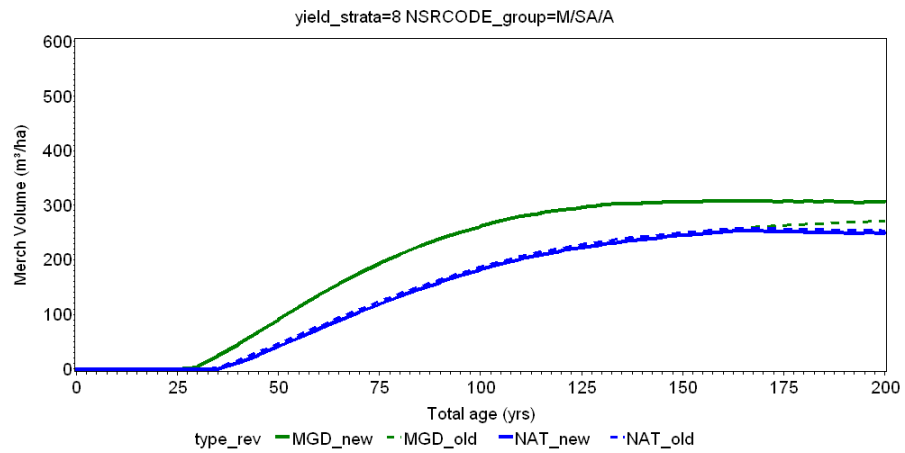
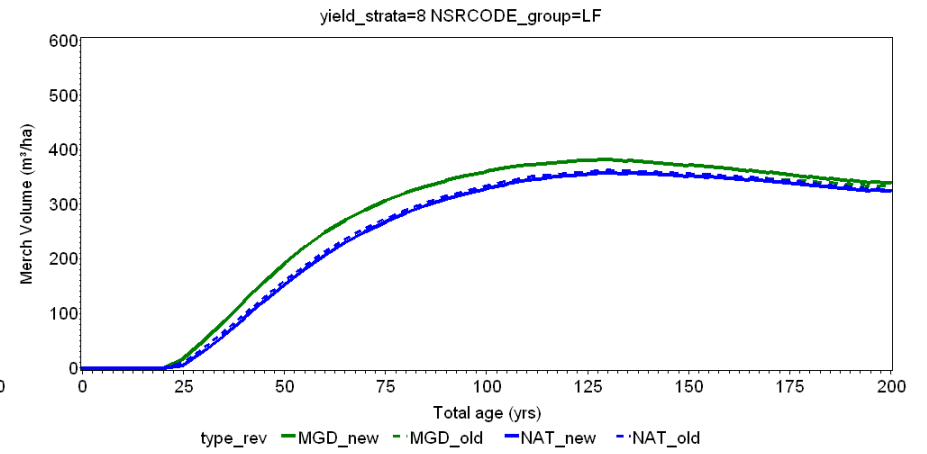
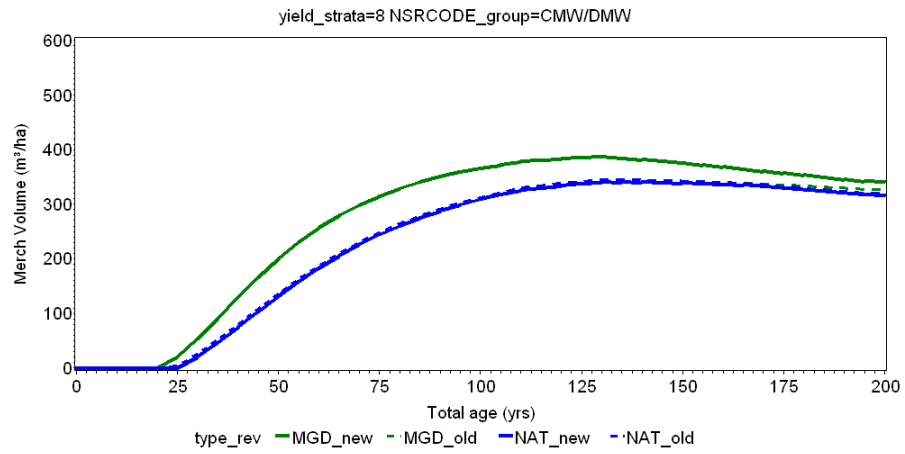


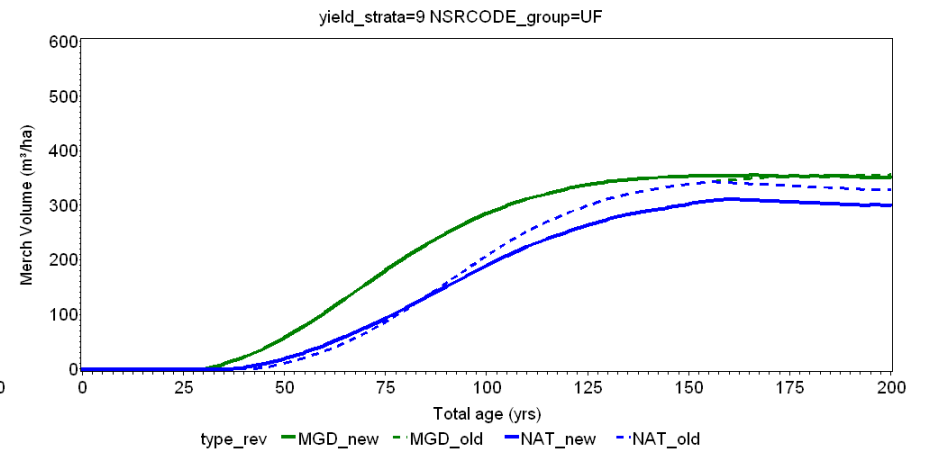
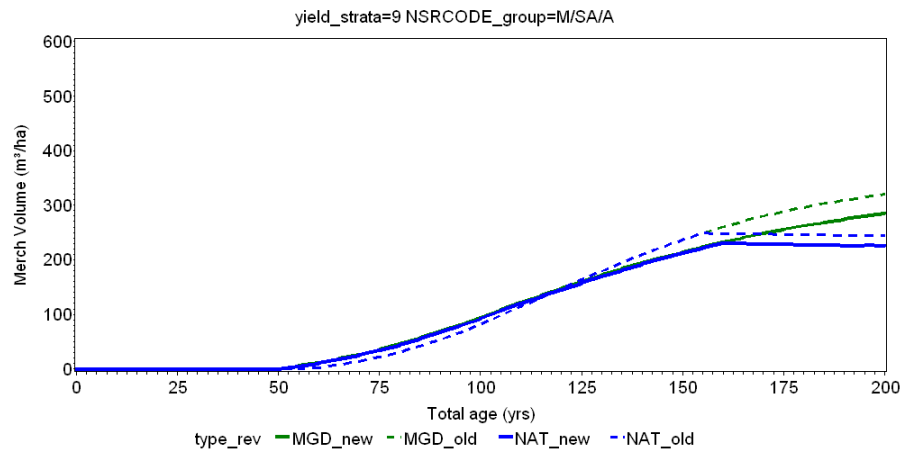
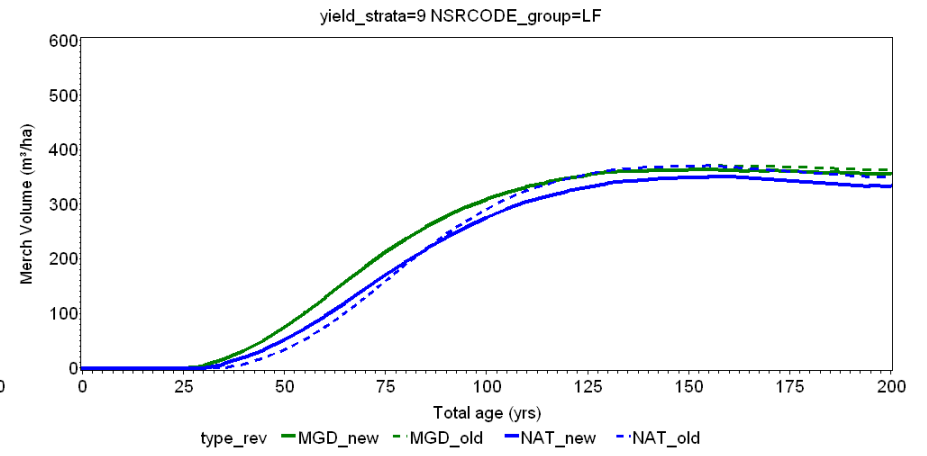
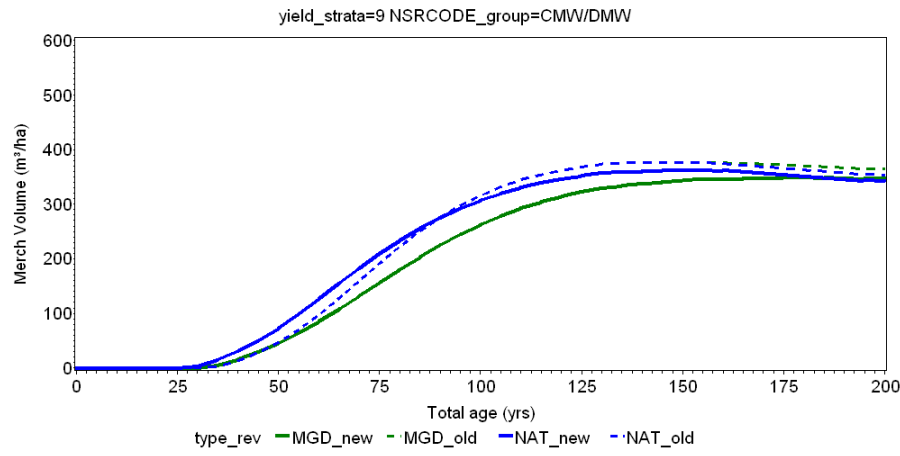


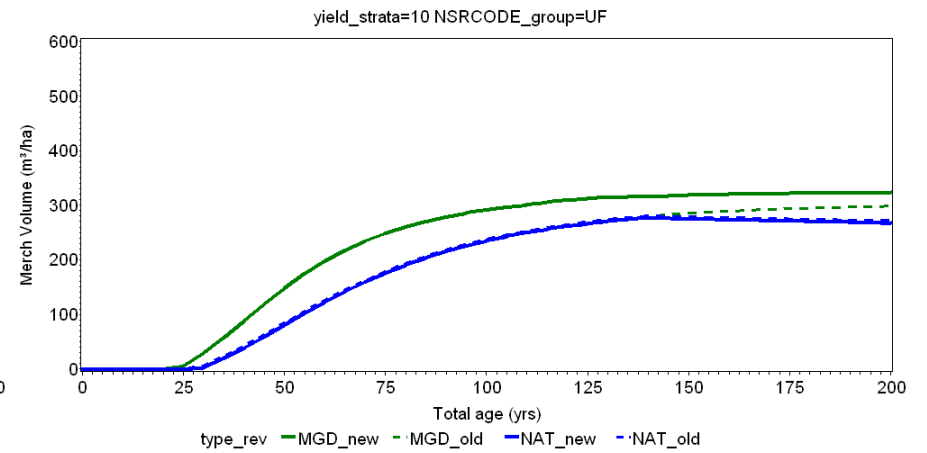
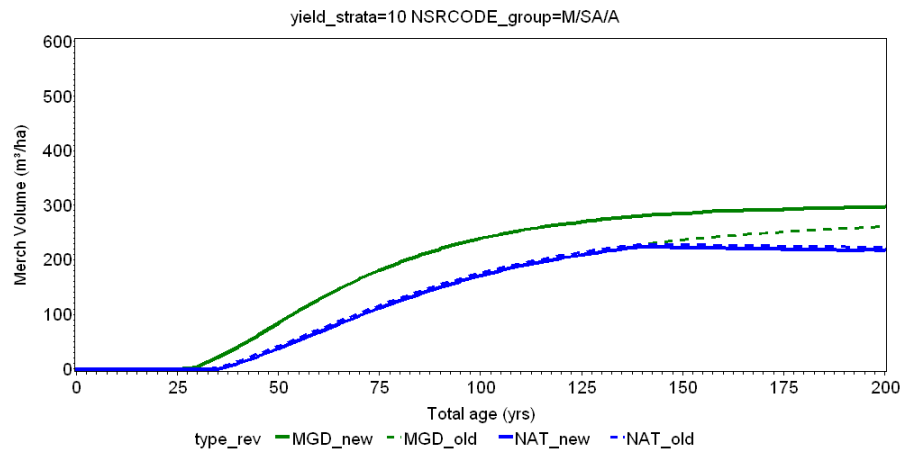
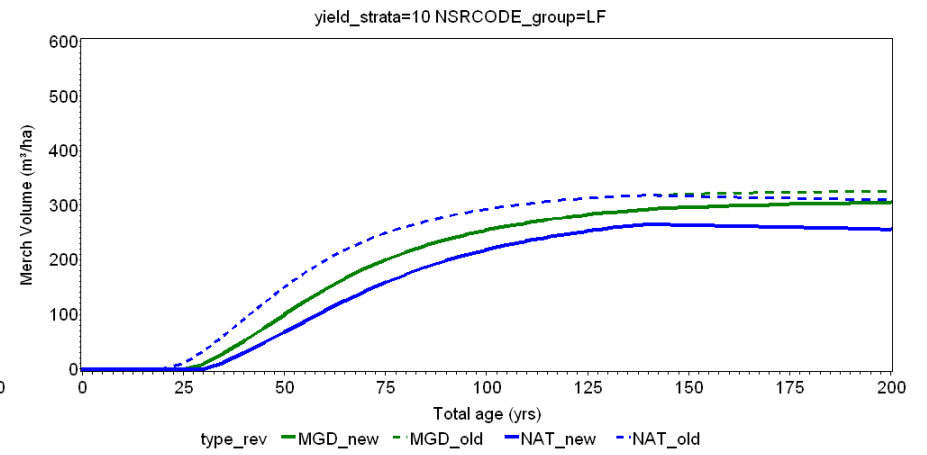
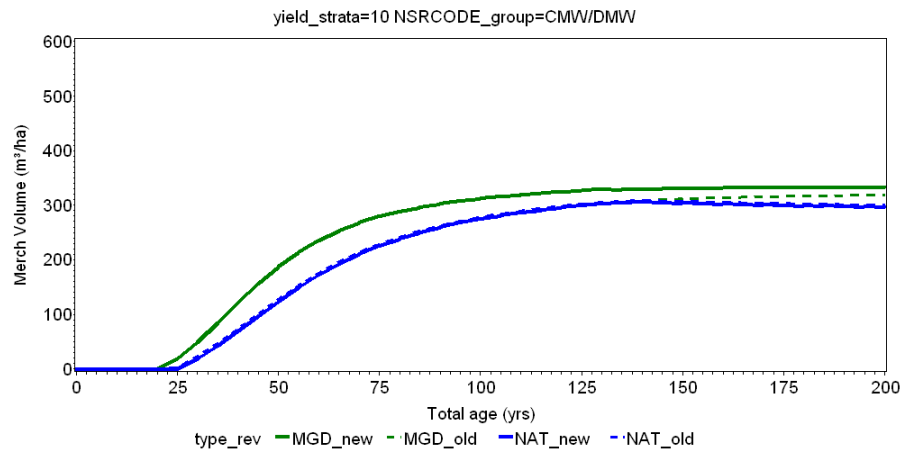


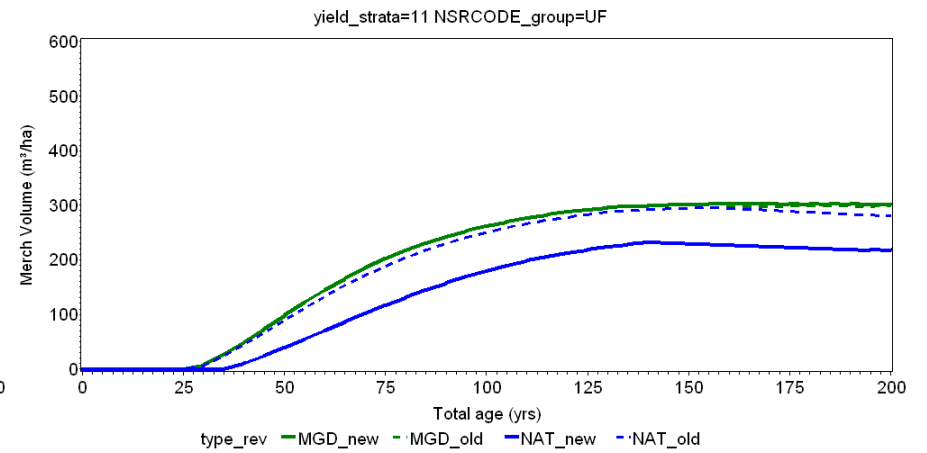
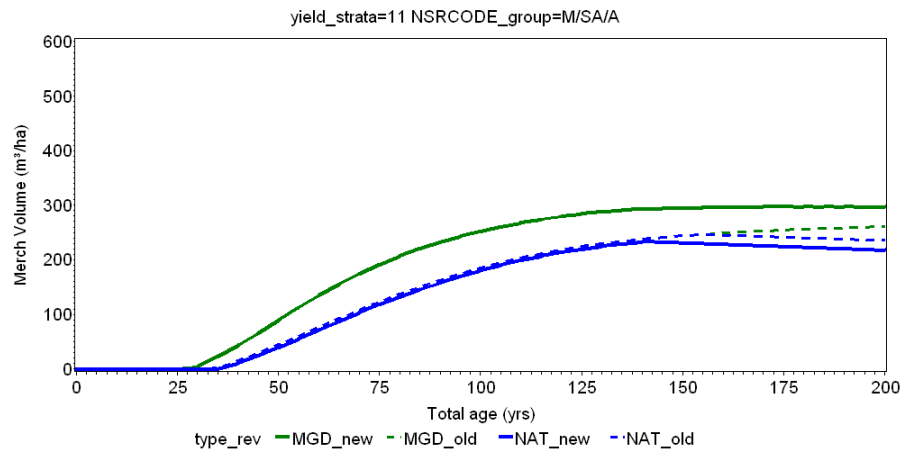
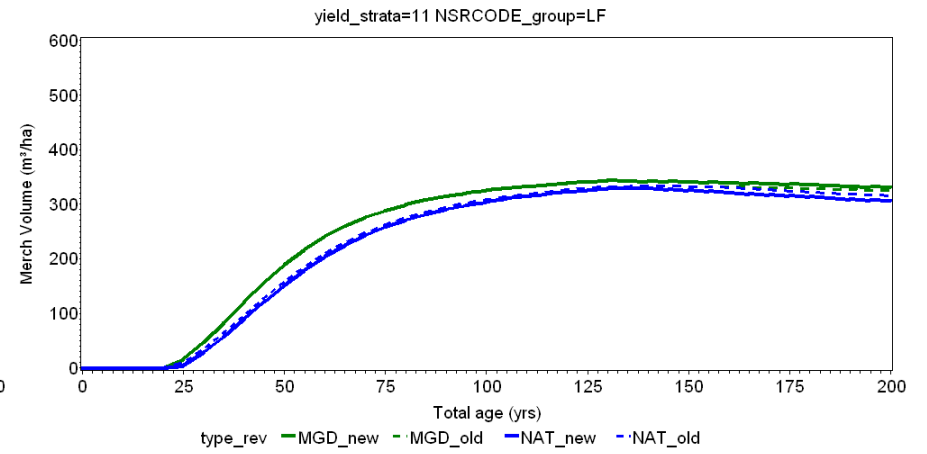
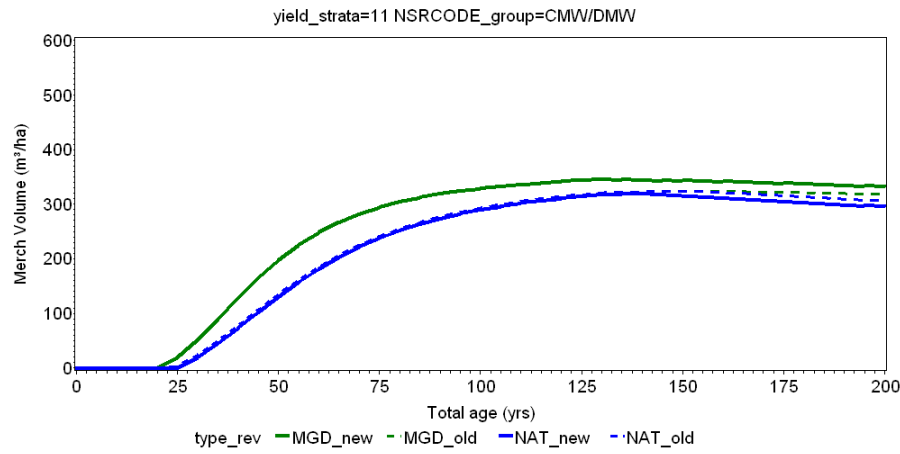


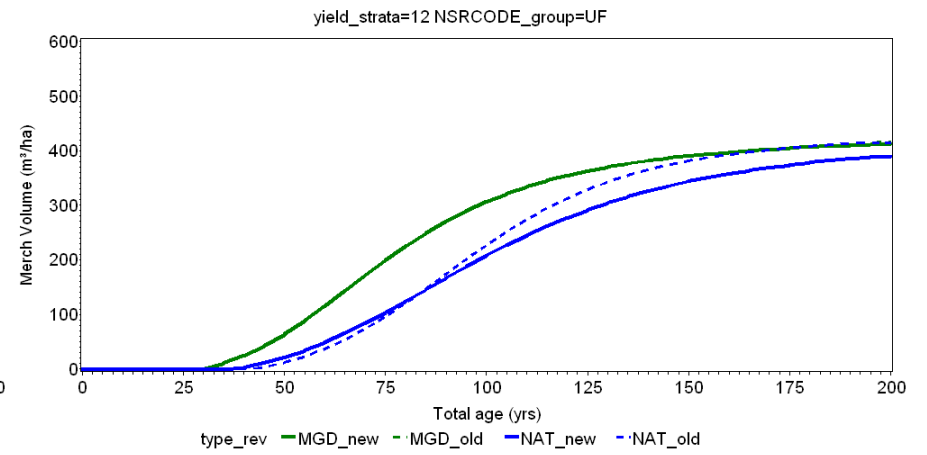
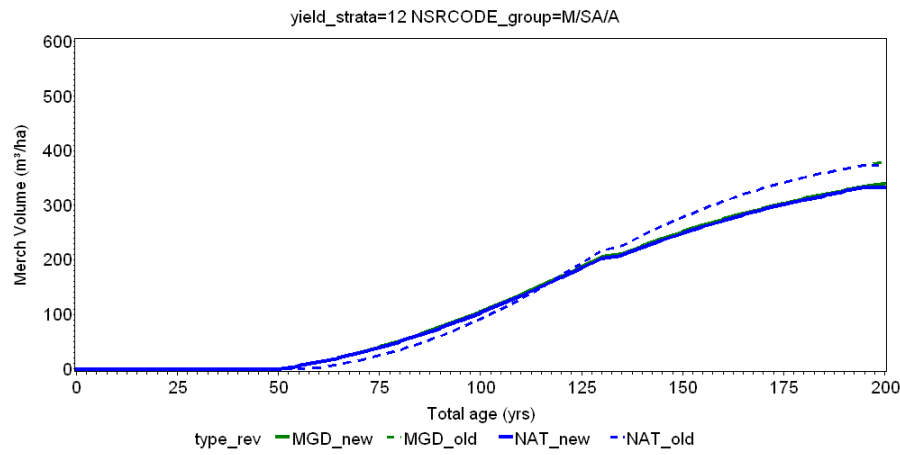
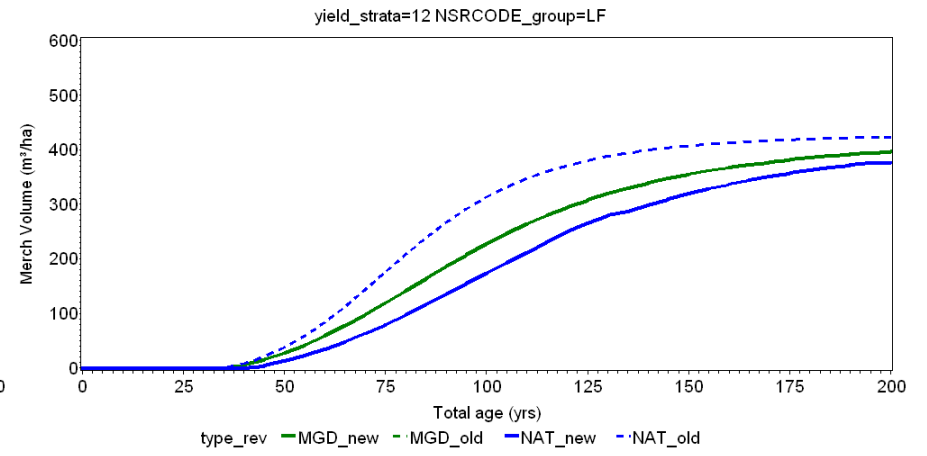
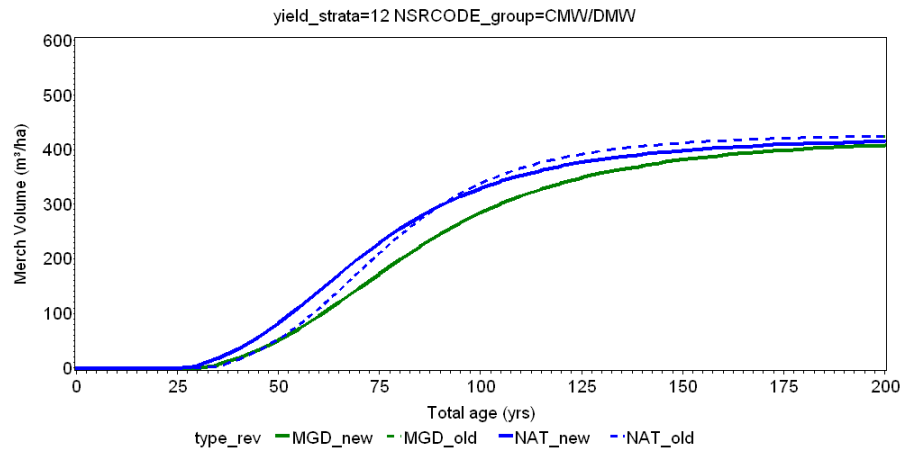


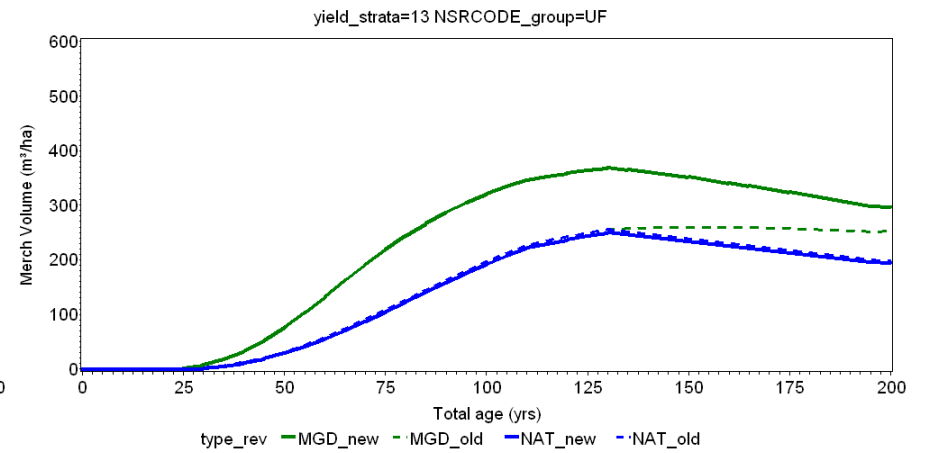
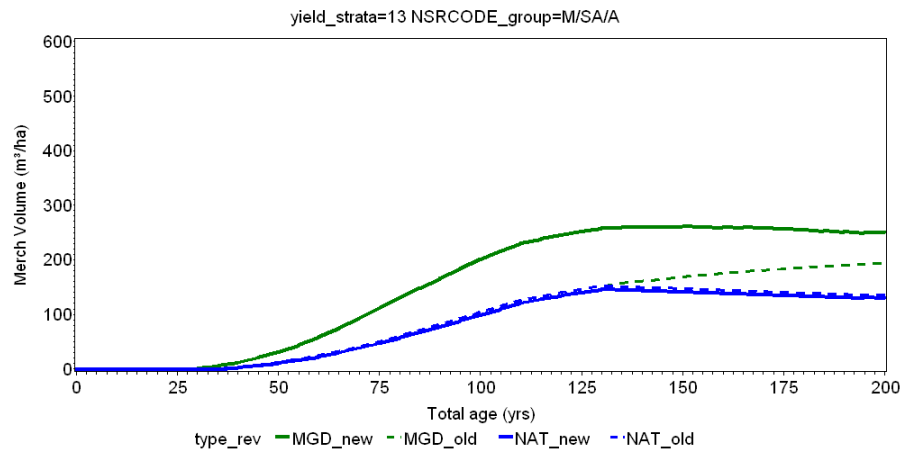
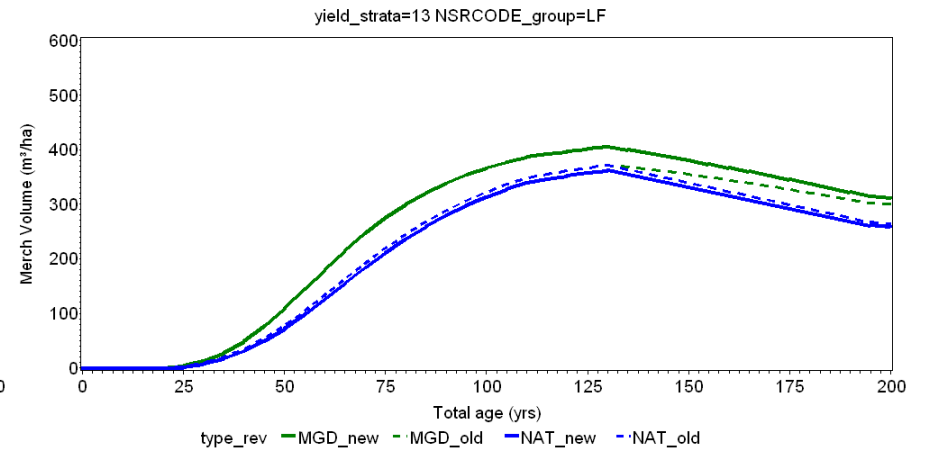
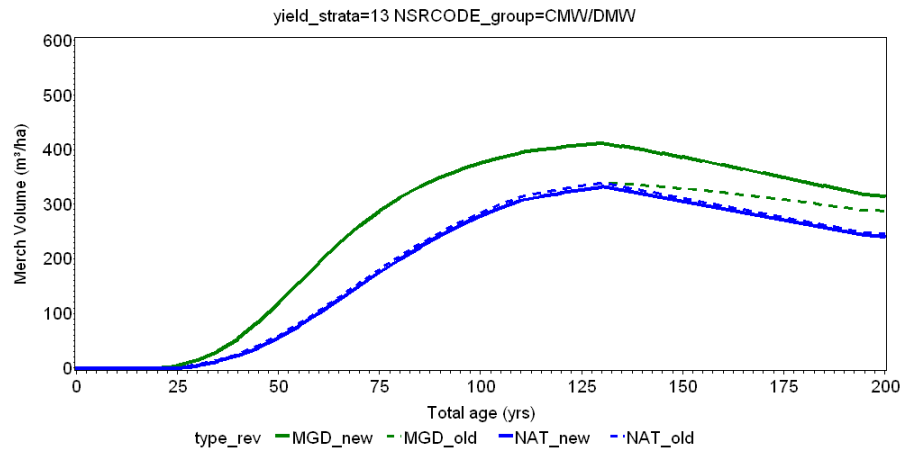


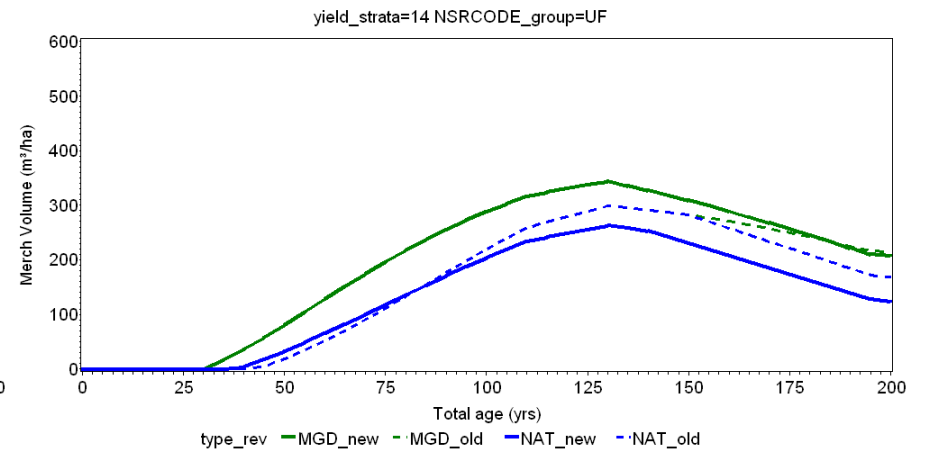
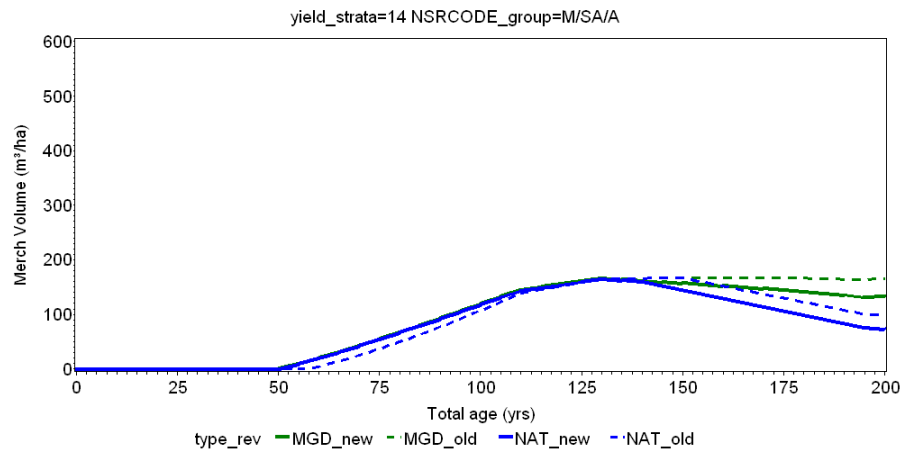
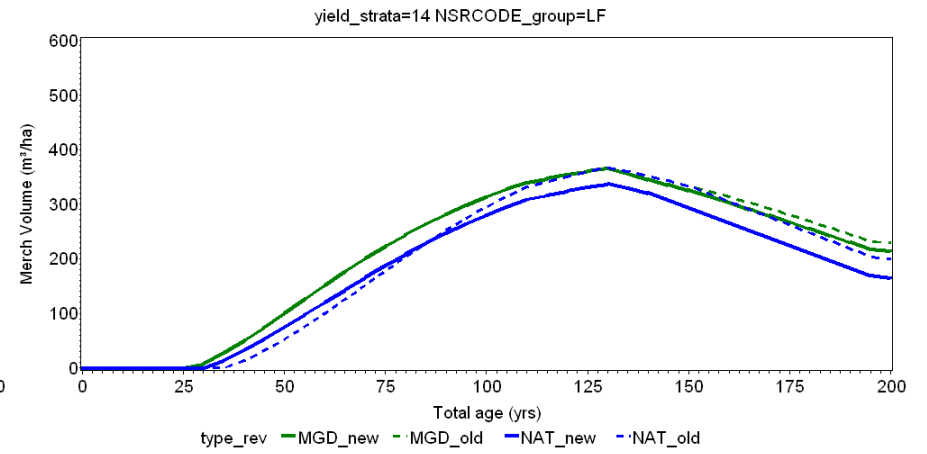
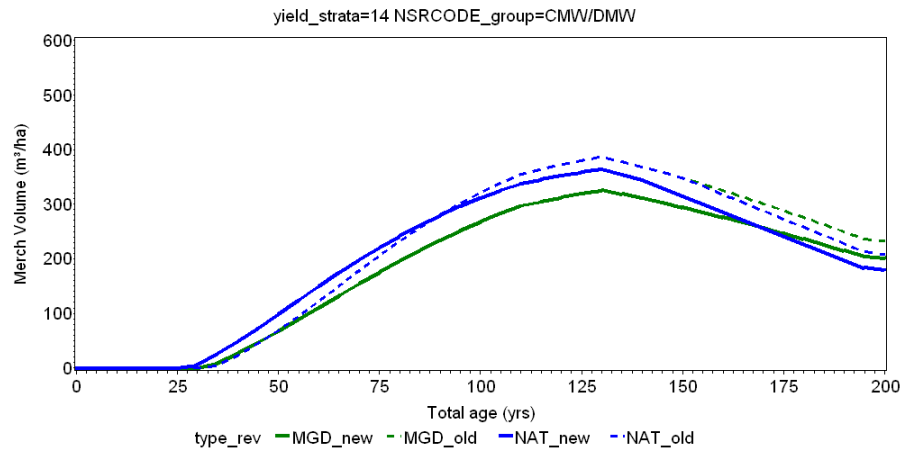


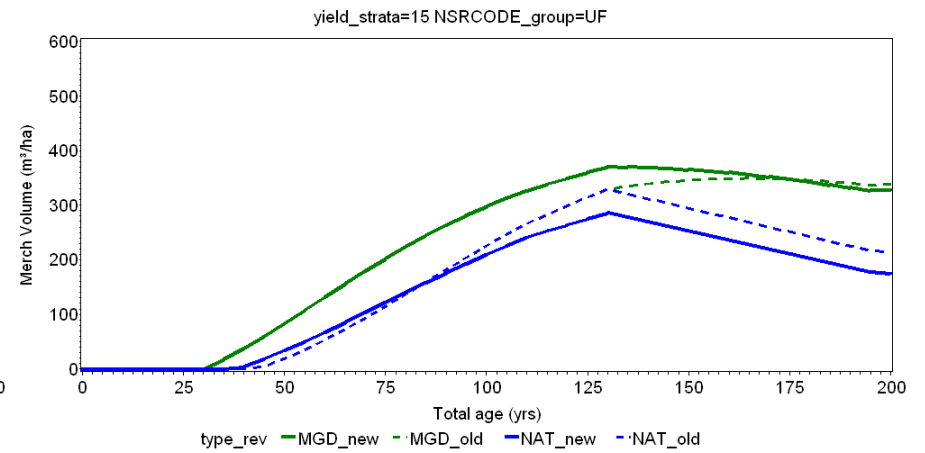
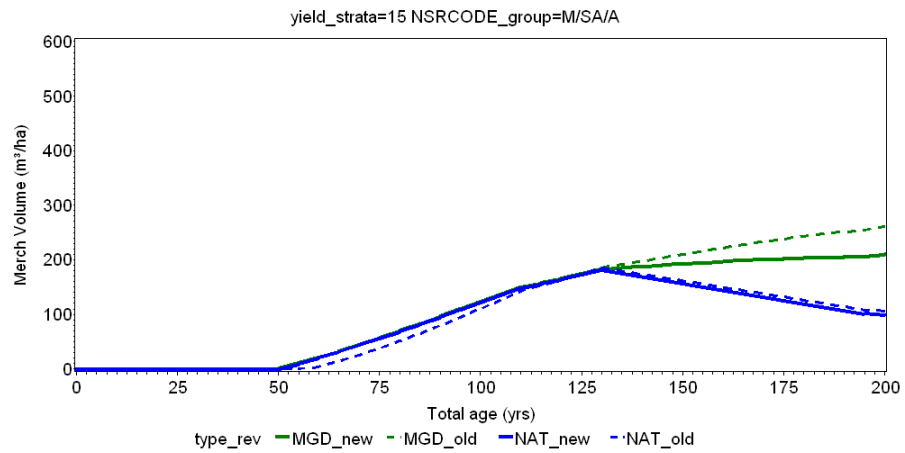
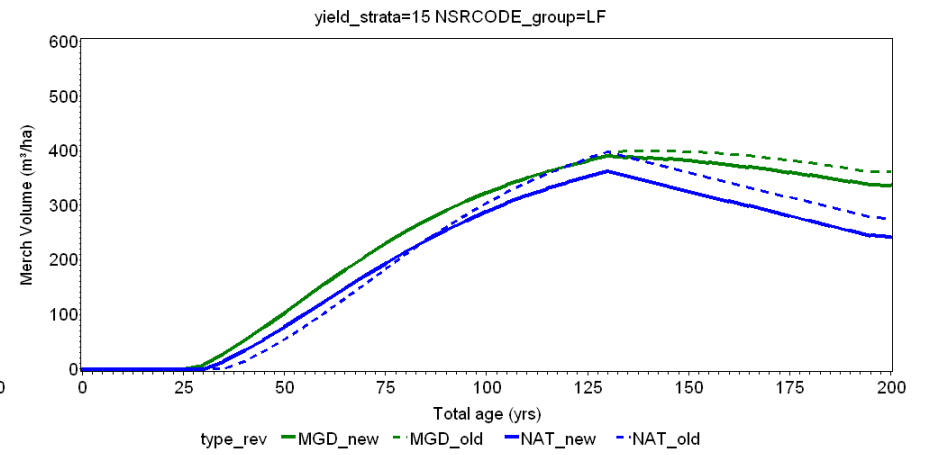
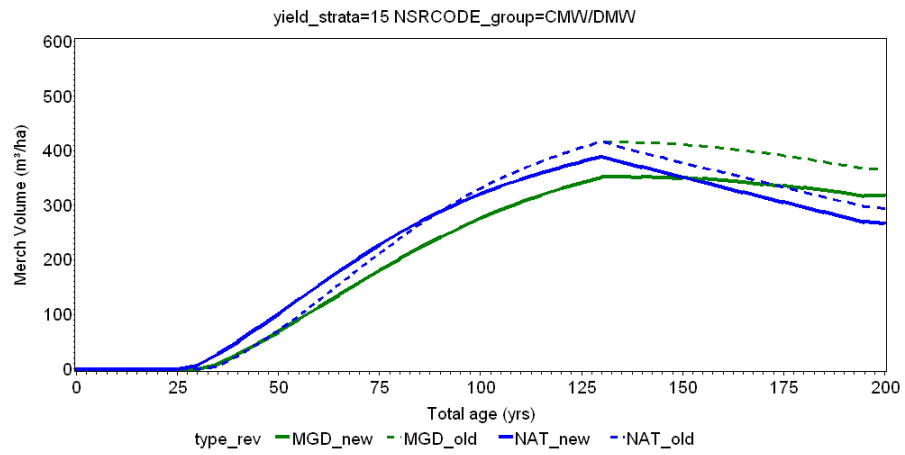




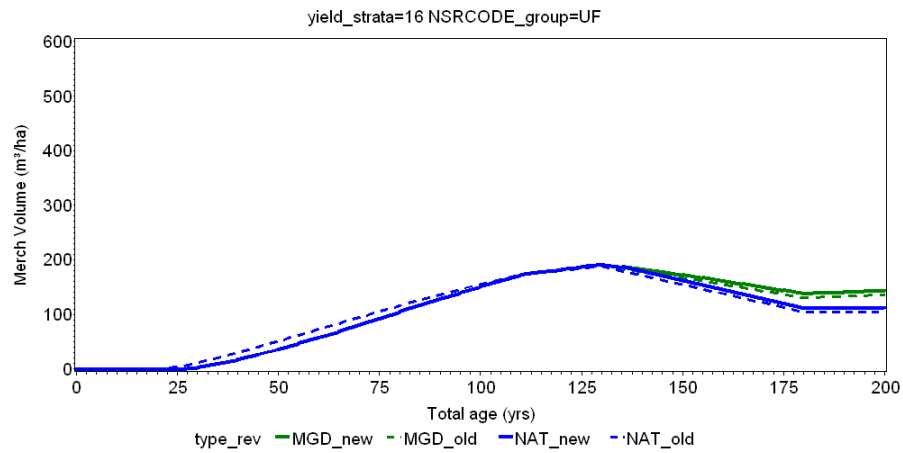
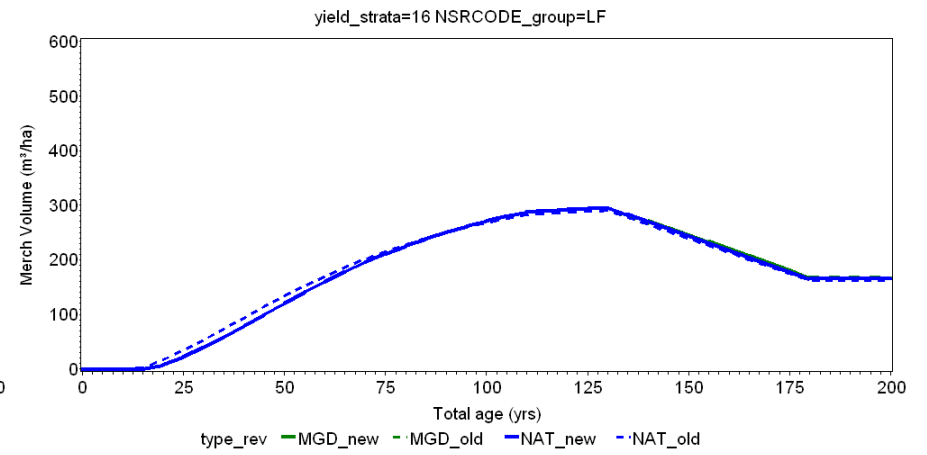
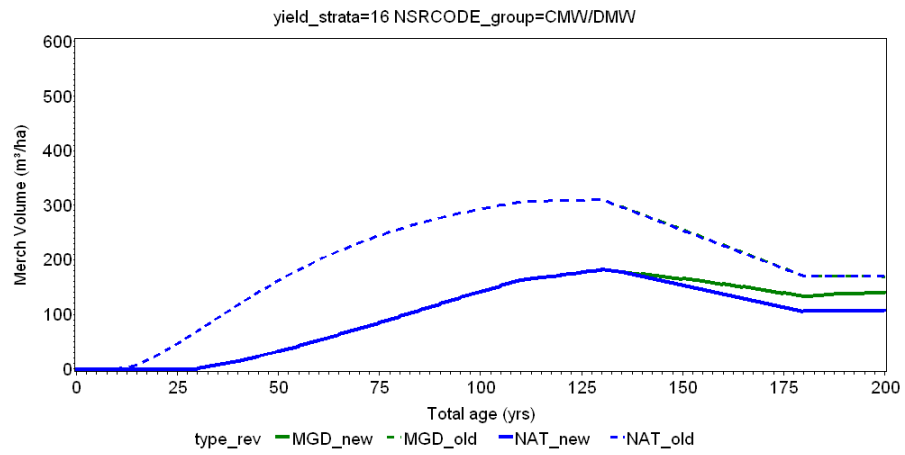


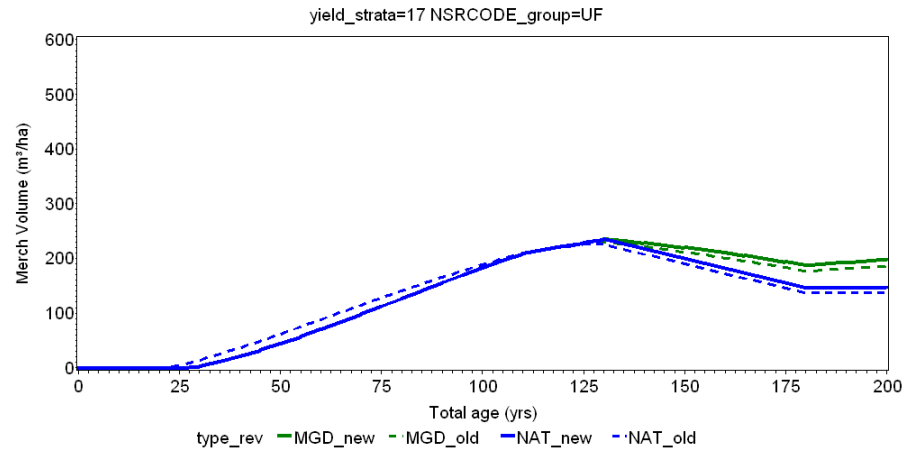
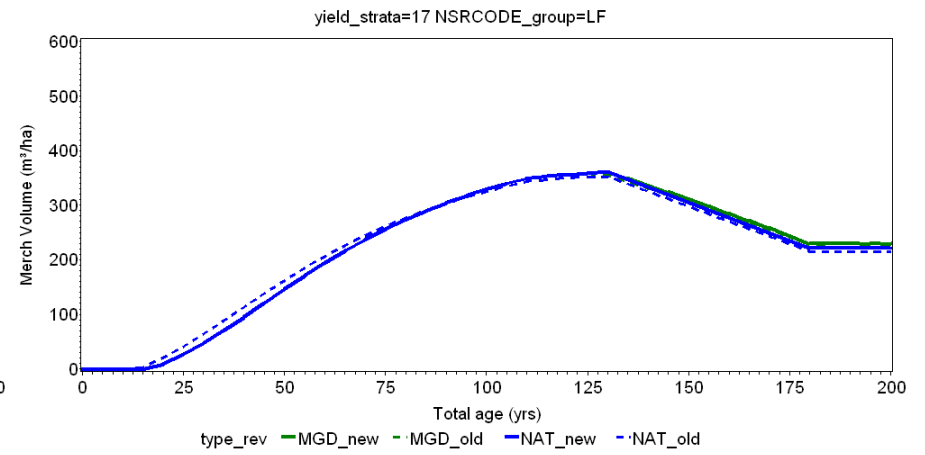
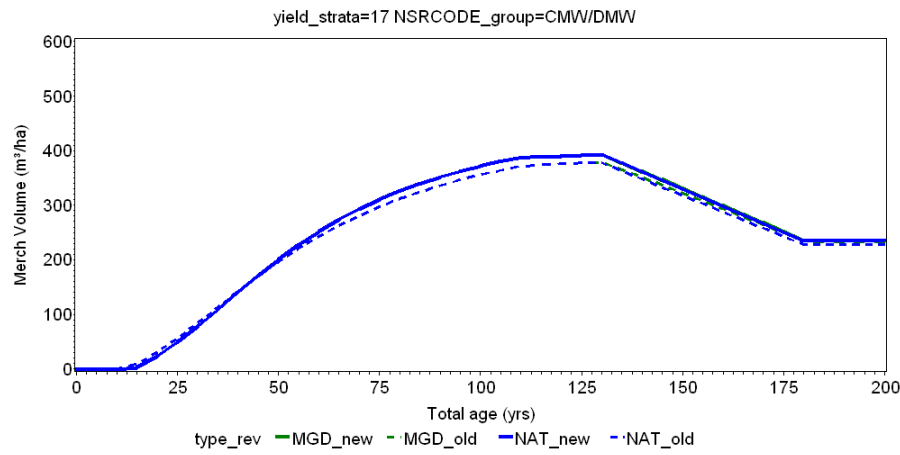


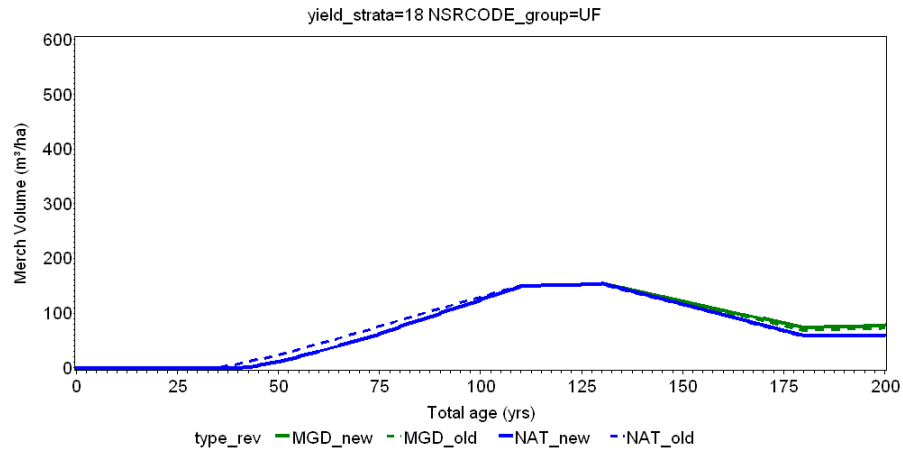
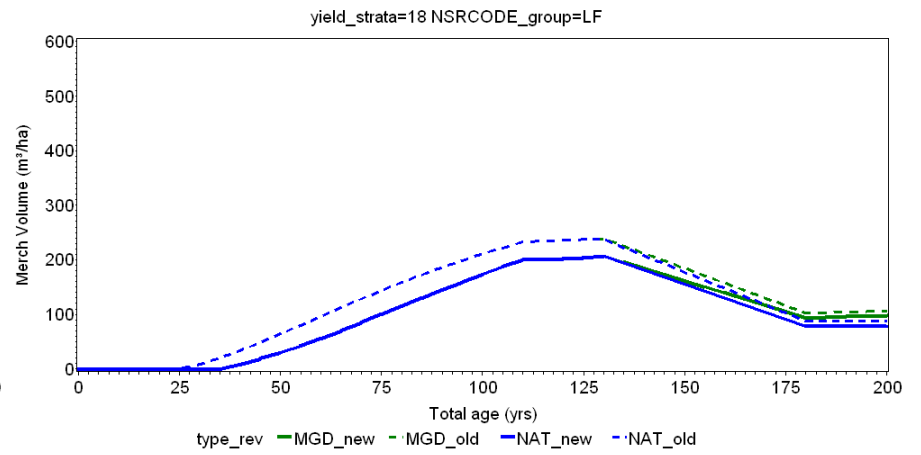
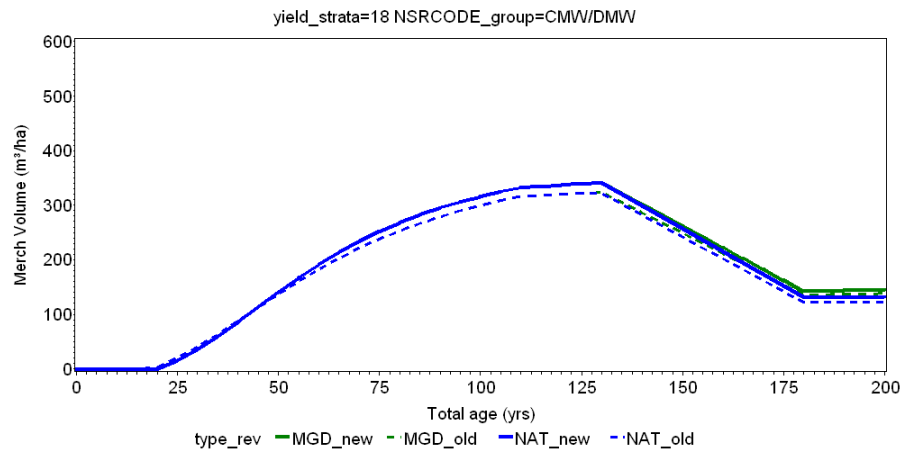


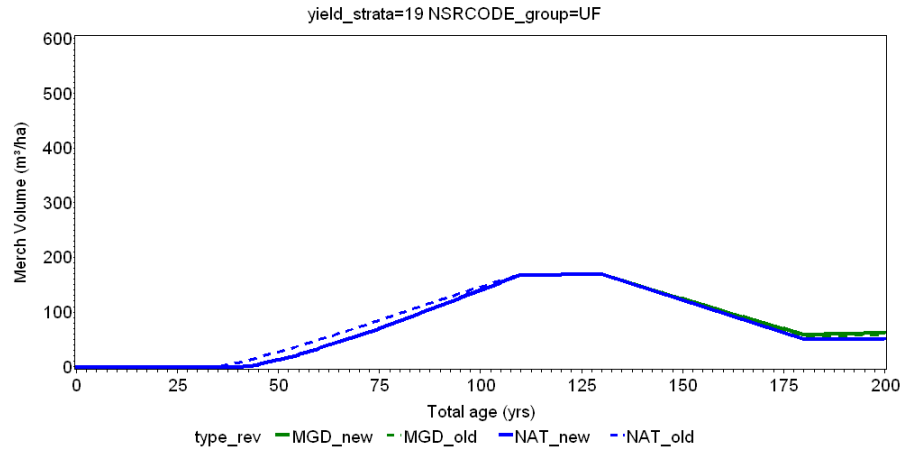
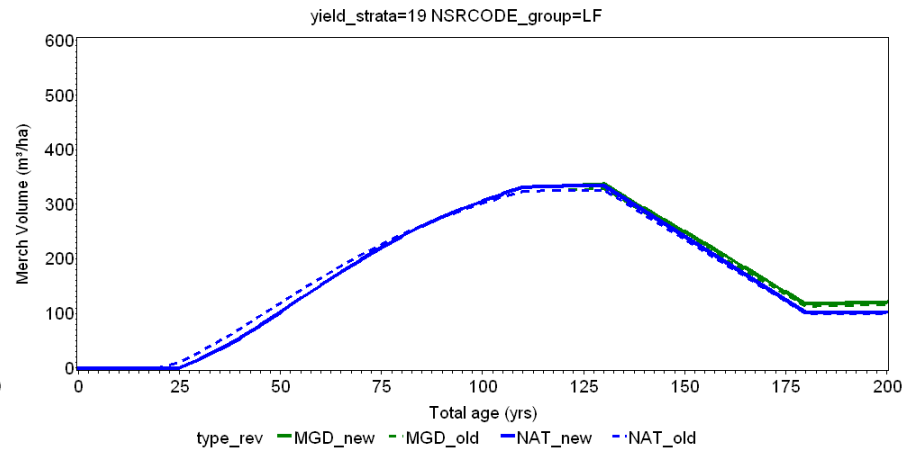
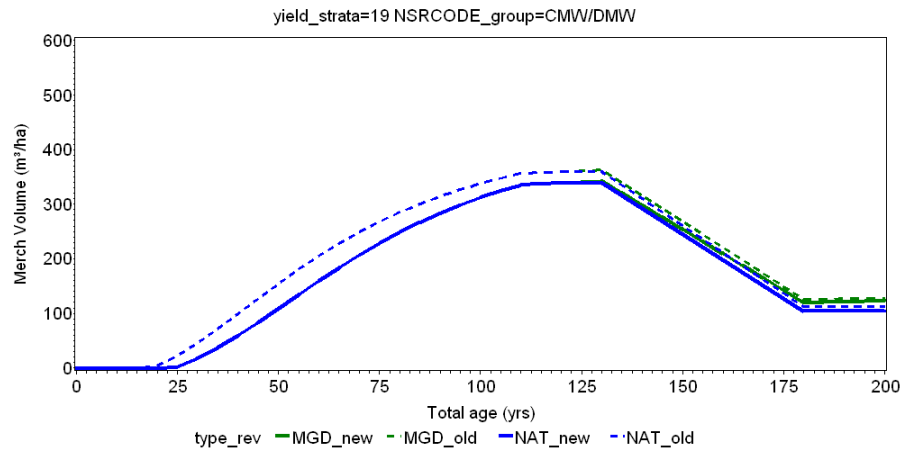


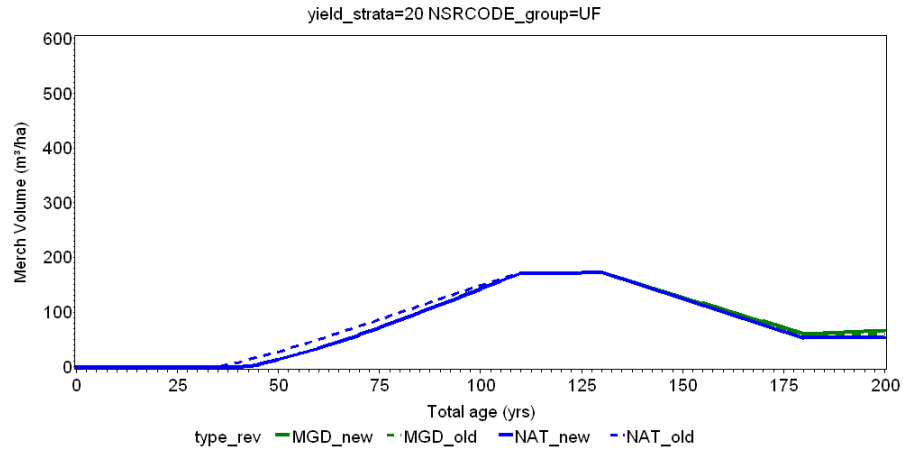
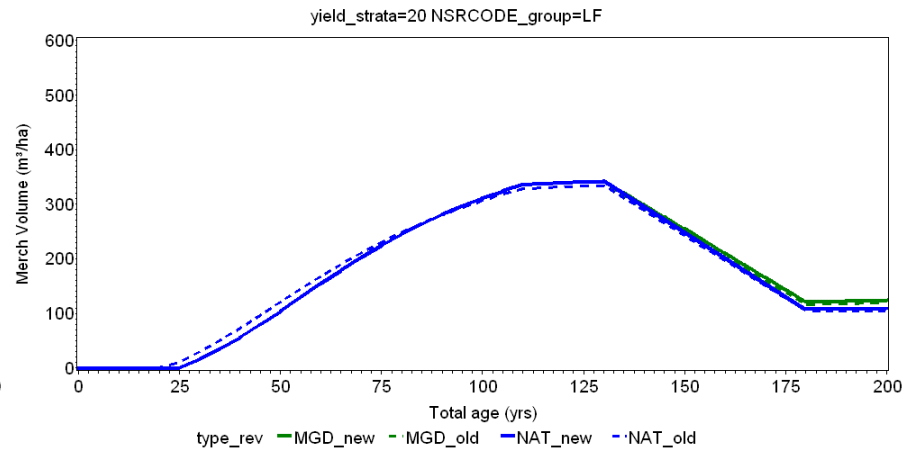
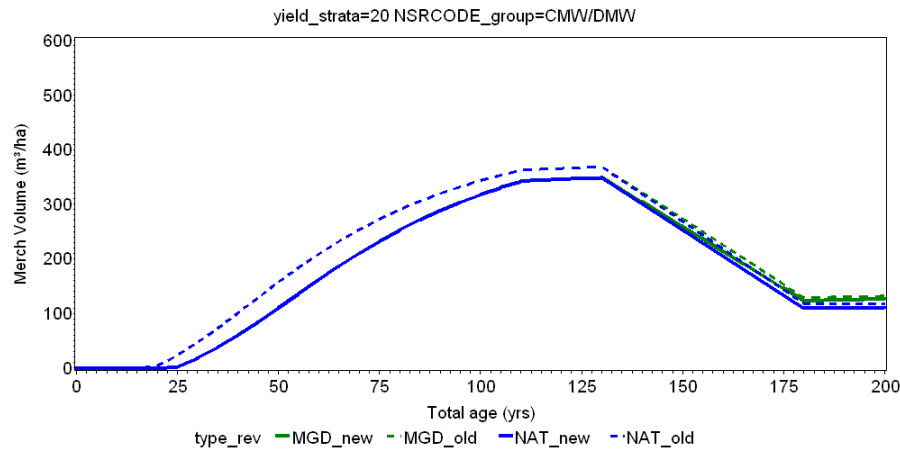


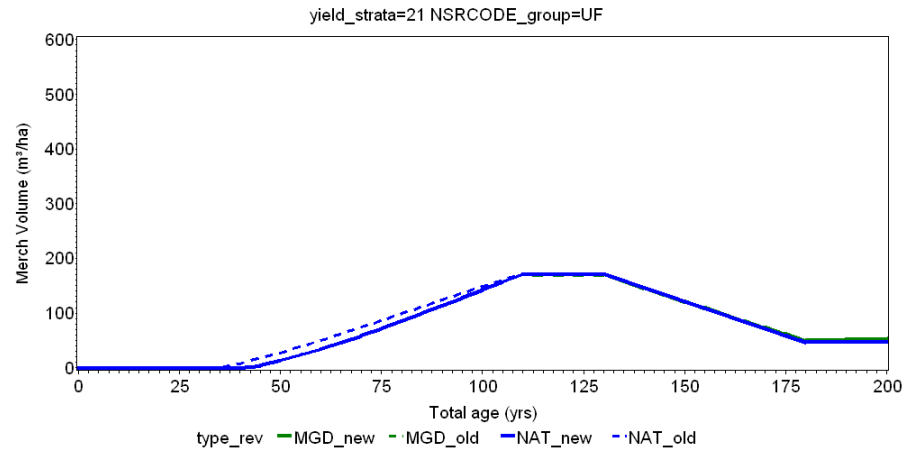
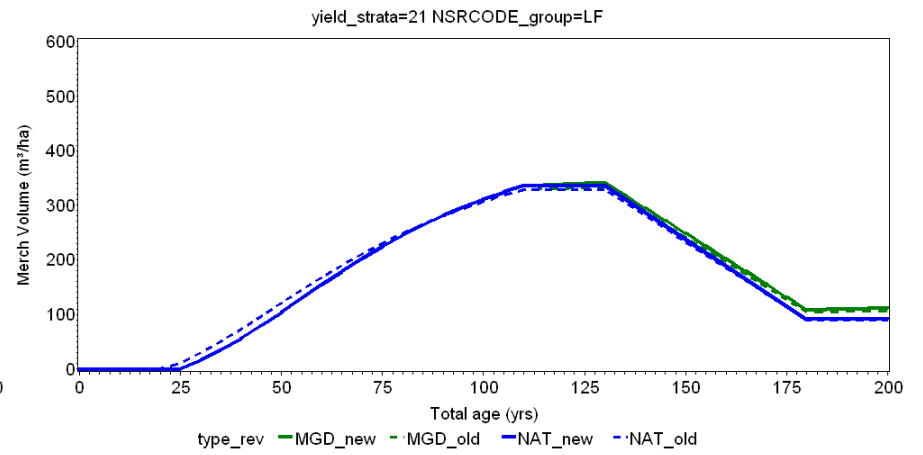
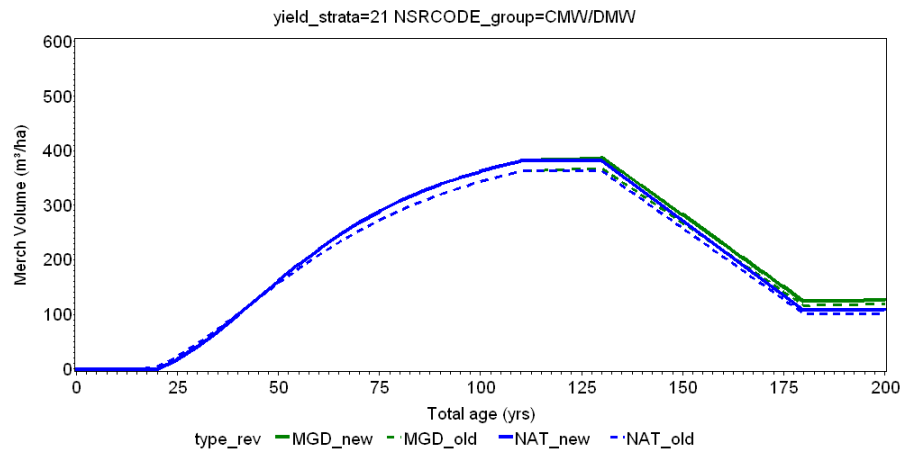


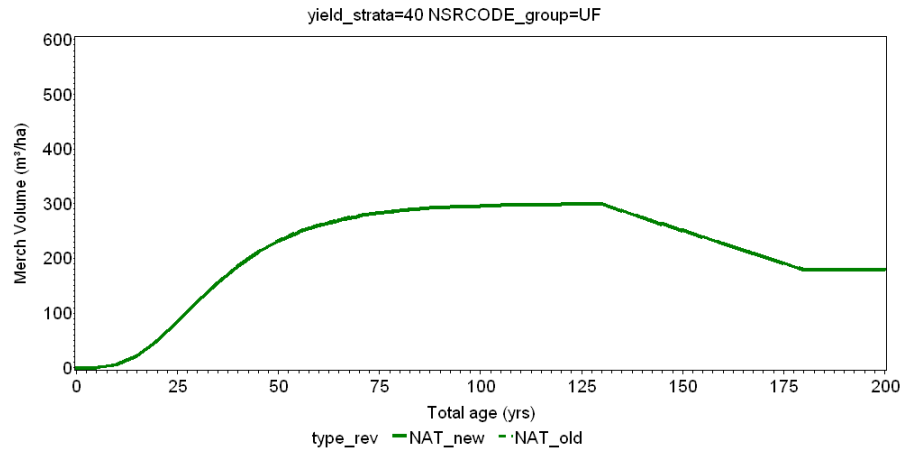
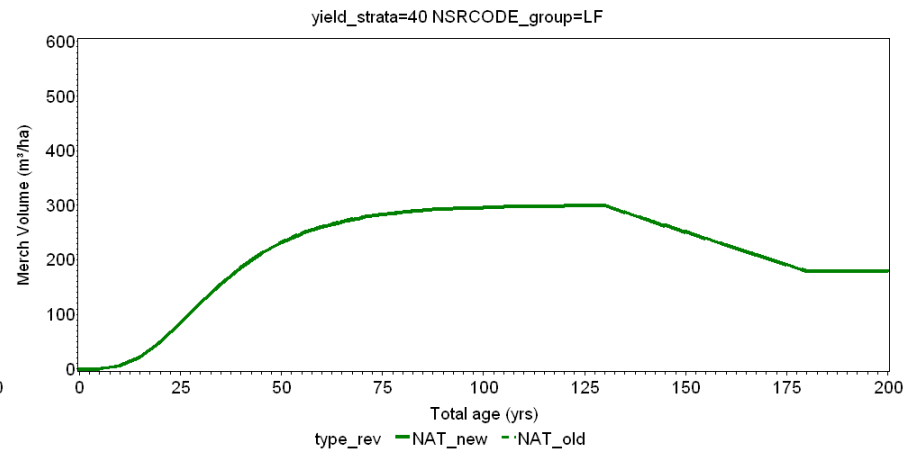
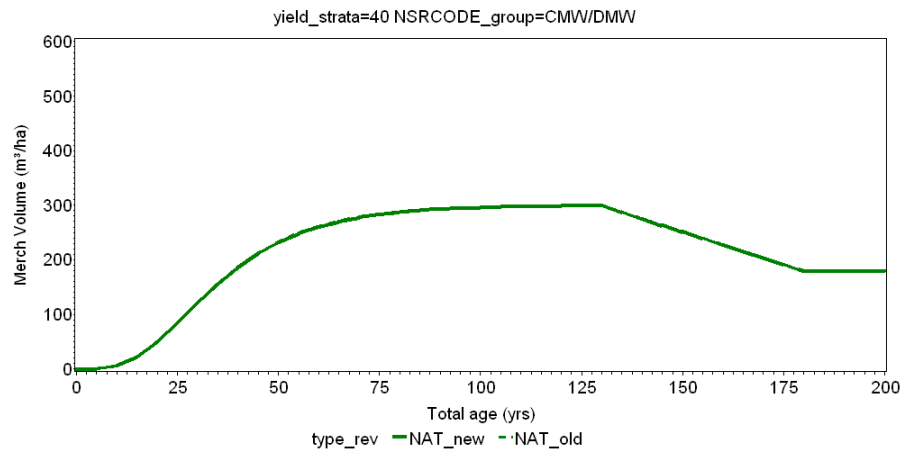












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WGP YC updated v2.doc





