Determining the AAC for
The Weyerhaeuser Edson FMA
Component#1: Yield Projections

Forest Management Agreement Area
FMA #9700035

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Report Summary

Yield equations for the Weyerhaeuser Edson FMA were developed by stratifying TSP data (sample years 1996 to 1999) by broad inventory cover group (coniferous dominated versus deciduous dominated) and applying nonlinear volume estimation procedures to the data.

Processing program and version used: SAS 8.02

Plot and spatial data overlay: Each TSP was spatially linked to an Alberta Vegetation Inventory (AVI) polygon and a SiteLogix™ ecosite classification polygon.

Site Index: When possible, each sampled stand was assigned a site index value. To be eligible as for a site index measurement a tree could not be severely damaged and had to be either dominant or co-dominant with both a valid field measured height and age.

Height prediction equations: Localized species-specific coefficients were produced for height prediction from DBH using the Chapman-Richards functional form. These calculations were conducted for individual site productivity classes based on the plot level ecosite class and natural subregion. A minimum of 20 observations were required for a valid model. If valid coefficients could not be found, provincial coefficients were used.

Plot age calculations: Plot age was assigned using the following equation:
TSP sample year – AVI inventory origin year

Tree volume compilation: Coniferous volumes were compiled based on a whole tree system at a 15/11 utilization standard. Deciduous volumes were compiled based on a short wood harvesting system and a 15/10 utilization standard. Both systems assume a 15cm stump height. These are consistent with current mill standards.

Subjective deletions and cull: All plots located in stands with a composition of 80%+ black spruce or 10%+ larch composition were assumed to be unmerchantable and removed from any yield projections. Cull was not deducted during the yield analysis. It will be addressed as a proportional reduction applied to the recommended annual allowable cut level based on historical scaling data.

Merchantable total volume: In general, total stand yields were estimated as a function of coniferous/deciduous composition dominance, AVI crown closure, site index, site quality, and stand age.

Merchantable major species volume: In general, major species volume (i.e. coniferous volume from coniferous dominated stands) was estimated as a function of natural subregion, total volume, and coniferous composition.

Merchantable incidental volume: Incidental volume (i.e. deciduous volume from coniferous dominated stands) was estimated by simply subtracting merchantable major species volume from merchantable total volume.

Deciduous mortality reductions: Although TSP data to some extent already considers mortality (as dead trees do not contribute merchantable volume) an additional mortality constant was applied to deciduous volumes.

Yield Strata:

In total 30 yield strata were used:

1. Coniferous dominated stands – Lower Foothills – Good Site – “A” Crown Closure
2. Coniferous dominated stands – Lower Foothills – Good Site – “B” Crown Closure
3. Coniferous dominated stands – Lower Foothills – Good Site – “C” Crown Closure
4. Coniferous dominated stands – Lower Foothills – Good Site – “D” Crown Closure
5. Coniferous dominated stands – Lower Foothills – Medium Site – “A” Crown Closure
6. Coniferous dominated stands – Lower Foothills – Medium Site – “B” Crown Closure
7. Coniferous dominated stands – Lower Foothills – Medium Site – “C” Crown Closure
8. Coniferous dominated stands – Lower Foothills – Medium Site – “D” Crown Closure
9. Coniferous dominated stands – Lower Foothills – Poor Site – All Crown Closures
10. Coniferous dominated stands – Upper Foothills – Good Site – “A” Crown Closure
11. Coniferous dominated stands – Upper Foothills – Good Site – “B” Crown Closure
12. Coniferous dominated stands – Upper Foothills – Good Site – “C” Crown Closure
13. Coniferous dominated stands – Upper Foothills – Good Site – “D” Crown Closure
14. Coniferous dominated stands – Upper Foothills – Medium Site – “A” Crown Closure
15. Coniferous dominated stands – Upper Foothills – Medium Site – “B” Crown Closure
16. Coniferous dominated stands – Upper Foothills – Medium Site – “C” Crown Closure
17. Coniferous dominated stands – Upper Foothills – Medium Site – “D” Crown Closure
18. Coniferous dominated stands – Upper Foothills – Poor Site – All Crown Closures
19. Coniferous dominated stands (Switch Stands Only) – Lower/Upper Foothills – Good Site – All Crown Closures*
20. Coniferous dominated stands (Switch Stands Only) – Lower/Upper Foothills – Medium Site – All Crown Closures*
21. Coniferous dominated stands (Switch Stands Only) – Lower/Upper Foothills – Poor Site – All Crown Closures*

1. Deciduous dominated stands – Lower Foothills – Good Site – “A” Crown Closure
2. Deciduous dominated stands – Lower Foothills – Good Site – “B” Crown Closure
3. Deciduous dominated stands – Lower Foothills – Good Site – “C” Crown Closure
4. Deciduous dominated stands – Lower Foothills – Good Site – “D” Crown Closure
5. Deciduous dominated stands – Upper Foothills – Good Site – “A” Crown Closure
6. Deciduous dominated stands – Upper Foothills – Good Site – “B” Crown Closure
7. Deciduous dominated stands – Upper Foothills – Good Site – “C” Crown Closure
8. Deciduous dominated stands – Upper Foothills – Good Site – “D” Crown Closure
9. Deciduous dominated stands – Lower/Upper Foothills – Poor Site – All Crown Closures**

Yield Curves – For this project the terms *Yield Curve* and *Yield Strata* are not synonymous. Each yield strata has 6 associated yield curves (except *=1 yield curve, **=2 yield curves), all of which project the same total volumes. The 6 curves differ only in the relative coniferous/deciduous volume contribution, which is based on coniferous species composition. There are 111 yield curves for coniferous dominated stands and 50 yield curves for deciduous dominated stands for a total of 161 yield curves.

Area Weighted Projections: The 111 coniferous and 50 deciduous yield curves were weighted by estimated net harvestable area to produce four yield curves to represent yields from each broad cover group (C, CD, DC, and D). Yields are based on 15/11 coniferous utilization and 15/10 deciduous utilization.

1 Introduction

Weyerhaeuser is committed to sound forest management and a thorough understanding of forest ecology. As part of this effort Weyerhaeuser has implemented sampling programs to measure various forest attributes including timber volume which provide vital information for yield projections. This document (in support of the Detailed Forest Management Plan) describes the method and final results of the Weyerhaeuser Edson FMA yield curve development process. This is the first component of a three part technical document that estimates the sustainable annual allowable cut AAC for the Weyerhaeuser Edson FMA.

Stand volume is a function of several factors, including some that are relatively easy to measure and some that are more difficult to define quantitatively. Easier to measure variables include site index, stand density, dominant species type, and age. Therefore, this report used the common approach where total volume was predicted as a function of site quality, AVI crown closure, coniferous or deciduous dominated stand type, and age.

Stochastic events (fire, significant insect infestations, or disease outbreaks) are more difficult to measure (and predict) but can also significantly impact stand volume. Except for large-scale fires, (which must be addressed through a post disturbance timber supply analysis) it was assumed that over the timber supply analysis planning horizon the average occurrence of stochastic events will remain the same. Therefore, the impact on current stand volume due to stochastic events that was expressed in the field collected data was assumed to be representative of the impact on future stand volume.

Obviously, management activities can also impact stand volume. However, the purpose of this report is to provide an estimate of volume in forest stands that have not experienced extensive management intervention. Therefore, as much as possible, plots were not placed in stands that had recent management intervention.

To summarize, the major objectives of this report are:

1. Explain the methods used to produce the Edson FMA yield functions.
2. Present the final Edson FMA yield functions and curves that will be used during the timber supply modeling process.

2 Methods

The supporting information used for constructing the yield curves was based to a large extent on documents written by Huang (see references – Section 5). The overall procedure was subdivided into six tasks. Six separate SAS (version 8.02) programs were written to address each individual task.

Table 2-1. Summary of six tasks (and associated SAS code) used to produce yield curves

Task Number	Task Description	SAS Program
1	Prepare data (amalgamate and clean the temporary sample plot data)	*01mergetsp*
2	Analyze site index relationships	*02si1*
3	Produce height/DBH functions	*03ht_dbh*
4	Compile plot volumes	*04volume*
5	Develop coniferous yield curves	*05total_yield_con*
6	Develop deciduous yield curves	*06total_yield_dec*

Figure 2-1 provides a flowchart summary of the process. Each SAS program number indicates the order of execution (the program number is equal to the task number). In an attempt to assist the auditing process, each of the following sections addresses issues in close to the same order as presented in the programs.

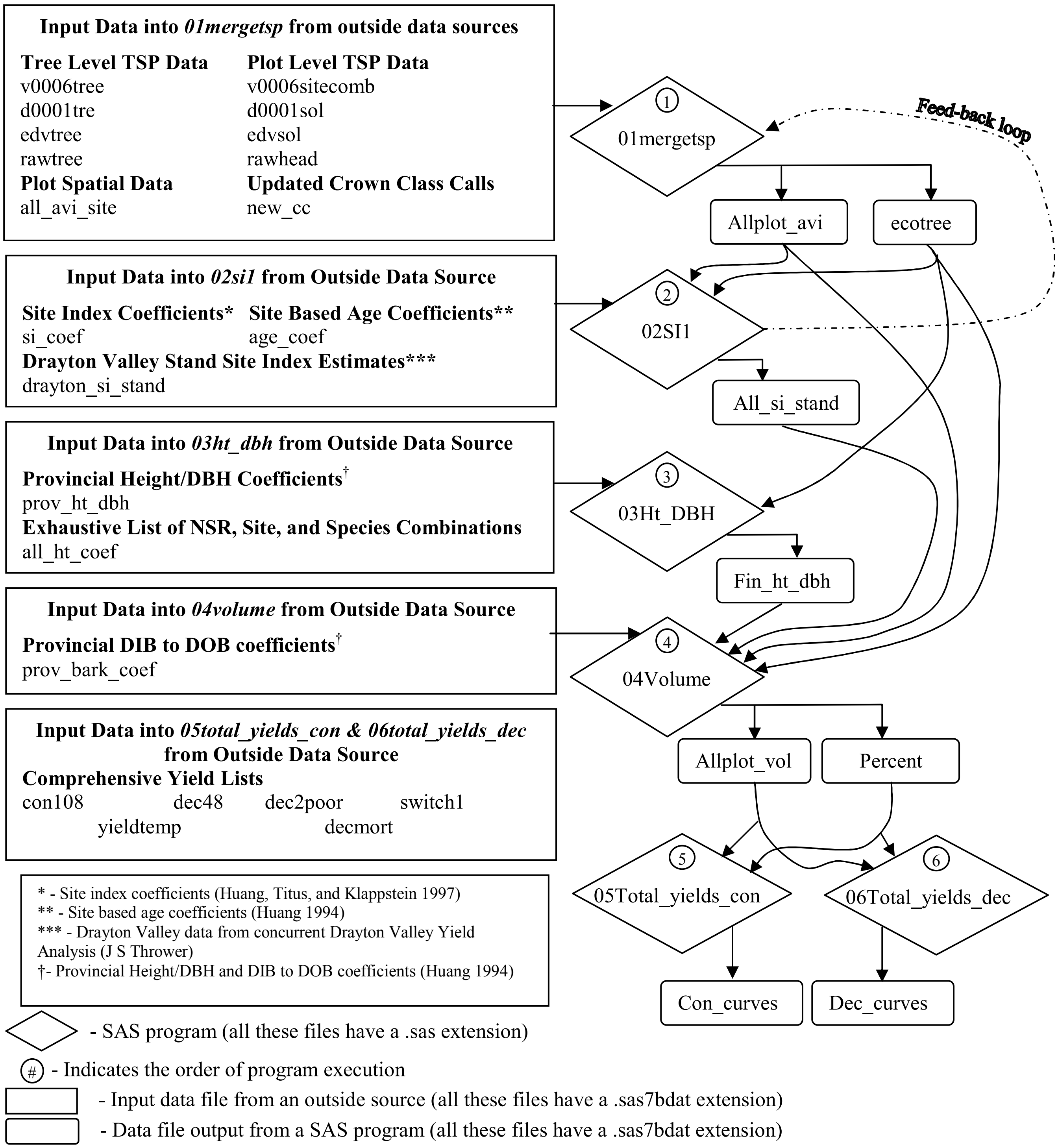


Figure 2-1. Schematic flowchart of overall yield curve production process

2.1 Overview of temporary sample plot raw data

A total of 3,221 temporary sample plots were measured from 1996 to 1999 (Table 2-2). The 1996, 1997, and 1999 cruises focused on sampling mostly merchantable stands, while the 1998 cruise sampled only low density stands (defined as having an 'A' density AVI crown closure).

The 1997 and 1999 cruises were completed entirely by Weyerhaeuser, while the 1998 low density cruise was completed by Alberta Lands and Forest Service. The 1996 data was obtained through a cooperative sampling program that included contributions from Weyerhaeuser, Blue Ridge Lumber, the Alberta government, and the Lobstick Loggers Association (for a summary of the TSP sampling protocol see Appendix 6.7).

Table 2-2. Summary of TSP programs from 1996 to 1999

TSP Sampling Year	TSP Program Code	Number of Plots Sampled	Number of Trees* Sampled
1996	*Rawtree*	785	17,570
1997	*Edvsamp*	789	19,110
1998	*d0001*	231	2,899
1999	*v0006*	1,416	31,917
Totals		**3,221**	**71,496**

*Includes both dead and living trees and 46 null plot place holders.

2.1.1 Raw data compatibility

To ensure that all four years of data were appropriately analyzed together, all sampling programs were evaluated for consistency. All trees measured during the TSP programs were assigned a qualitative description of tree vigor. However from 1996 to 1999 the standard used for tree vigor had changed. In 1997, 1998, and 1999 a specific measure called "tree condition code" was used, which was comprised of a detailed numbering system where specific qualitative tree characteristics were identified. Whereas, in 1996 (file *rawtree)* a relatively course variable called "cull suspect class" was used (see data library – appendix 6.1).

In the yield curve production process tree vigor descriptors were used primarily to identify severely damaged or dead trees. This designation was important as poor quality trees were not included in both the height/DBH and the site index (SI) model estimations (see respective sections for more detail). Although "cull class" and "tree condition code" were not fully compatible, it was assumed that both types of data identified poor condition trees similarly (see section 2.2.3 for a description of tree selection process). This option was considered superior to removing all 1996 data from the analysis.

Due to the more subjective nature of assigning tree vigor descriptors, it was recognized that these calls were not 100% clean. In 1997, 8 spruce trees were erroneously assigned a tree condition code of 91 (dwarf mistletoe – *Arceuthobium sp.*) which was presumed to be witch's broom *(Chrysomyxa arctostaphyli Diet.)* and treated as condition code 33. Four other non-valid condition codes of 38, 38, 43 and 46 were assigned. The original intent with these codes could not be determined and they were assumed to be not indicative of any severe (section 2.2.3) damage. Additionally, 1996 TSP data (*rawtree* file) had a single invalid value ("I") in the cull suspect class. This tree along with all other trees not assigned a cull suspect class were assumed to have a cull suspect class of "N" (non-suspect).

2.1.2 Stand transitions

Stand transitions were of little concern during this exercise as the only transition that is assumed is that harvested stands will regenerate as the same cover type at fully stocked status (as represented by the "C" crown closure fire origin yield projections).

2.2 Task 1: Data amalgamation and preparation

Program: *01Mergetsp.sas*

Objective:

Amalgamate all TSP field tally data into two files, one listing individual plot measurements and another listing each individual tree measured. Both files undergo preliminary processing and are linked to AVI and SiteLogix ecosite data.

Input Files:
v0006tree.sas7bdat – 1999 TSP individual tree data (31,917 records).
d0001tre.sas7bdat – 1998 TSP individual tree data (2,899 records).
edvtree.sas7bdat – 1997 TSP individual tree data (19,113 records).
rawtree.sas7bdat – 1996 TSP individual tree data (17,570 records).

v0006sitecomb.sas7bdat - 1999 TSP plot data (1,416 records).
d0001sol.sas7bdat - 1998 TSP plot data (231 records).
edvsol.sas7bdat - 1997 TSP plot data (789 records).
rawhead.sas7bdat - 1996 TSP plot data (785 records).

all_avi_site.sas7bat – plot spatial data – includes SiteLogix and AVI attributes.
new_cc.sas7bat – new crown class calls.

2.2.1 Amalgamate plot level and tree level TSP data (Step 1)

The four years of TSP individual tree level data were amalgamated into one file (alltree.sas7bat). Each tree is uniquely identified by the fields: source, plotid, and tree. Likewise, all four years of plot level data were also amalgamated into one file (allplot.sas7bat) and then spatially merged to inventory and SiteLogix data. Each plot is uniquely identified by the fields: source and plotid.

Reconciling TSP data to spatial data

The point location of each plot was spatially linked to an AVI and a SiteLogix polygon. The plot sample year (or sample year code name) and plot id were then used to link plot spatial data to TSP field tally data (Table 2-3).

Table 2-3. Summary of TSP plots and plots with spatial GIS location

TSP Sampling Year	Sample Year Code Name	Number of Digitally Entered TSPs Sampled*	Number of GIS TSP Point Locations	Number of Valid TSPs with GIS point locations
1996	*Rawtree*	785	785	781
1997	*Edvsamp*	789	789	789
1998	*d0001*	231	232†	231
1999	*v0006*	1,416	1,416	1,416
Totals		**3,221**	**3,222**	**3,217**

* - As indicated from the digitally entered raw tally sheet data.

† - The 1998 spatial data had one plot located in twp 51, rge 14, m 5, stand 610 – the raw tally sheets were checked and no plot was placed at this location. This plot was considered an erroneous entry and was ignored.

Of the 3,221 plots measured 3,217 could be linked to the representative spatial polygons. The only difficulty arose with eight plots sampled in 1996. Four plots (8A, 8B, 8C, and 175A) were not assigned a GIS point location. Normally, township, range and stand number could have been used to link these plots to the AVI stand attributes. However, this was not possible because the inventory stands were renumbered after the field data collection. Four additional plots (225C, 226A, 226B, and 226C) had a GIS plot location but no valid tally data. The raw tally sheets were examined and these plots were located in stands where recent harvesting (not reflected in the AVI stand call) had occurred. Therefore these stands were considered to be non-valid plots and had been correctly removed from the TSP digital file during the data entry stage.

2.2.2 Data cleaning (Step 2)

The TSP data had some invalid or missing crown class calls. Reconciling these records was important because only dominant and co-dominant trees were used for determining stand site index (SI). Invalid calls included one record which was assigned a crown class of ‘N’ (1996 plot 9C, Tree 14). By comparing the DBH of this tree to others in the plot, it was determined that the tree was clearly not co-dominant or dominant. In total 6,092 trees did not have a crown class call and there were 22 “O” crown class (CC) calls (indicating “open grown”) which appear to have been misapplied. For example, 1996 plot 111A had two trees assigned an “O” crown class designation; however this was not possible because there were a total of 14 trees that averaged approximately 20m in a 160m^2 plot. While having 6,114 trees with incorrect/missing calls may appear to be a problem, after removing severely damaged trees, dead trees, and trees without a breast height age, there were only 11 trees (potentially valid for estimating plot SI) that had either no CC call or an ‘O’ designation. These trees (Table 2-4) were individually checked and a crown class was assigned based on comparing height and diameters of the trees within the plot. When the crown class could not be determined, no call was made and these trees remained out of the SI analysis.

Table 2-4. Individual trees that had crown class manually checked (due to field being blank or an 'O' value assigned)

Case	TSP Year	Twp	Rge	M	Stand	Plot	Tree	SP	DBH	HT	New CC*
1	1996	50	11	5	320	105C	13	SB	10.0	6.6	D
2	1996	51	10	5	912	157A	1	PB	61.7	28.5	D
3	1996	51	10	5	912	157A	2	PB	60.0	28.3	D
4	1997	51	18	5	262	182	21	AW	28.8	23.1	D
5	1996	52	10	5	691	183B	1	SB	25.0	16.6	No call
6	1996	52	10	5	691	183B	2	SB	19.9	13.3	No call
7	1998	52	12	5	640	1	5	AW	26.7	18.6	No call
8	1997	56	12	5	179	505	1	AW	20.5	16.5	I
9	1999	50	14	5	184	271B	19	PL	23.1	19.0	C
10	1997	56	13	5	182	551	1	SW	20.5	7.5	No call
11	1997	56	13	5	6	564	2	AW	31.1	23.1	No call

*The rationale for new CC calls is as follows:
Case 1 – The average height of dominant trees in the plot was 6.23m.
Cases 2 and 3 – No tree in this block was assigned a CC call. However, they both had by far the largest measured DBH and Height values in the plot. No indications of harvest activity making “Veteran” status uncertain.
Case 4 – The average height of dominant trees in the plot was 22.9m.
Cases 5, 6, 7 – Evidence was not strong enough to justify a new CC call.
Case 8 – The shortest tree on the block that was assigned a ‘C’ was 18.4m tall (over 2m taller than the tree in case 8).
Case 9 – The measured co-dominants in the plot range from 16.7m to 25.6m.
Cases 10 and 11 – Evidence was not strong enough to justify a new CC call.

2.2.3 Assigning plots to landbase attributes (Step 3)

Assigning plots to landbase attributes such as ecosites, natural subregion, and AVI covertype call was required to begin the process of defining yield strata. The AVI attributes assigned to a plot were based upon the same logic used to define the net landbase *(*see *Technical Report Component#2 Landbase Allocations* for more detail*)*.

Assigning AVI attributes

During the netdown process each stand within the FMA was assigned to a landbase category. The term *landbase* is an administrative assignment of the volume type (coniferous or deciduous) that a stand is to be primarily managed for. As landbase sometimes does not reflect a stand’s expressed biological/ecological attributes, it is of no consequence during yield curve process. Instead the expressed attributes of the story of primary management (defined as the story for which a stand is managed for) either overstory or understory were used to stratify the data and provide the variables for the yield functions.

The rules for determining the story of primary management (SoPM) differ by FMU. In most cases the SoPM of non-horizontal polygons was designated on the overstory. The following are the two exceptions:

1. Across the Edson FMA (including W6), stands were assigned to the understory AVI attributes when a polygon had a pure deciduous "A" crown closure overstory with an understory with a crown closure greater than "A".
2. For W6 only, the understory AVI attributes were used when non-horizontal polygons had a pure deciduous overstory with a coniferous or mixedwood understory of "B", "C", or "D" crown closure.

When understory AVI attributes were used, the stand is referred to as a "Switch" stand.

Author's note on using understory attributes in yield functions

Alberta SRD has traditionally insisted that the AVI attributes assigned to plots (and subsequently used in the yield functions) mirror the landbase netdown method. Thus, (as described above) the overstory AVI attributes must only be used for plots located in stands that are to be managed based on the overstory. While the understory attributes must be used for "Switch" stands. The yield curve development process in this report adheres to this traditional method.

In the author's opinion this traditional method violates some rules of sampling and statistics. Rather the yield curves should have been built based on overstory attributes only. The rationale is as follows:

- **TSP volumes are very poorly represented by AVI understory attributes -** As volume has a close relationship with tree size and overstory trees are obviously larger than understory trees, TSP volumes are best represented by the AVI overstory call. Even if a sound objective method of estimating understory volume only could be devised, this volume would not fairly represent the "release" that the understory trees would experience as the overstory trees die. Therefore, in "switch" stands the overstory is more closely tied to volume. The potential for bias is quite significant when estimating individual coniferous and deciduous volumes because "switch" stands typically have deciduous overstory with a coniferous understory. Therefore, plots with predominately deciduous TSP volumes are assigned to coniferous understory AVI attributes.

- It is reasonable to assume that a significant number of **non-switch stands were switch stands in the past** - Therefore, "switch" stands do not require a unique category but are better estimated simply from non-switch stands.

The above caveat aside the author has agreed to develop the yield relationships under the traditional method.

Horizontal Stands

Horizontal stands are defined in the *Alberta Vegetation Inventory Standards Manual* 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 covertype for both the overstory and understory fields:

a. if the overstory proportion of the stand was 50% or greater, the overstory was defined as the SoPM.
b. 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 covertype:

a. if the overstory was the only valid forest covertype then the SoPM was defined as the overstory.
b. if the understory was the only valid forest covertype then the SoPM was defined as the understory.

Stand level vegetation attributes (species composition, density, and age)

The coniferous and deciduous composition for the SoPM of each sampled stand was used to define if a plot was included in coniferous and/or deciduous yield projections (see section 2.6.1 for more detail).
Deciduous species – AW, BW, and PB

Coniferous species – SW, SB, PL, P, PJ, FB, FD, and LT

In addition, each plot was assigned a stand age by the following formula:
Total Stand Age = Year TSP Sampled – AVI origin

Stand natural subregion, ecosite and site quality assignment

The Edson FMA includes two natural sub-regions (NSR), the lower foothills and upper foothills. Each plot was assigned to an NSR as defined by the provincial natural subregion boundaries spatial coverage.

Site quality can be a strong determining factor of future yield. Each plot was assigned to an ecosite class by referencing a spatial data coverage developed for the Weyerhaeuser Edson FMA in July 2000 (called – SiteLogix, Geographic Dynamics Corporation, 2000). SiteLogix ecosite classifications were based on the *Field Guide to Ecosites of West-central Alberta (Beckingham et al. 1996)*. To maintain consistency, SiteLogix ecosite calls were used for all plots (field calls were ignored).

Based on ecosite, plots were assigned both a coniferous and deciduous site quality category of good, medium or poor. Some ecosite categories (for example C, D, and I) result in a different site quality ratings for both the coniferous or deciduous species types (Table 2-5). Site quality groupings were determined by comparing mean plot SI and confidence interval for each ecosite (see Appendix 6.3 and section 2.3.4). To strengthen these relationships both Edson and Drayton Valley FMA data were used. Final site categories were assigned by referencing both the boxplots and the *Field Guide to Ecosites of West-central Alberta (Beckingham et al. 1996)* as well as utilizing personal knowledge of the Edson FMA from a Weyerhaeuser professional forester with expertise in ecosite classification.

Table 2-5. Summary of assumed site quality for coniferous and deciduous stands by SiteLogix ecosite call

Species Type	NSR	Site Quality	Ecosite Categories
Coniferous	LF	Good	E, F
		Medium	C, D, I
		Poor	A, B, G, H, J, K, L, M, N
	UF	Good	D, E, F
		Medium	C, H, J
		Poor	A, B, G, I, K, L, M, N
Deciduous	LF	Good	E, F, I
		Medium	-
		Poor	A, B, C, D, G, H, J, K, L, M, N
	UF	Good	E, F
		Medium	-
		Poor	A, B, C, D, G, H, I, J, K, L, M, N

Problem of different ecosites within a single stand

The Sitelogix coverage in the Edson FMA was raster based, which made for numerous slivers when overlaid with the AVI coverage. This made it possible to have 2 plots located within the same stand to be assigned to different Ecosite categories. Of the small number of times it occurred (12), ¾ of those instances differentiated between two ecosite categories of the same site quality (i.e. the difference between E and F, Table 2-5) and thus does not change the yield curve process. For the 3 remaining plots it was decided that the difference in ecosite within a stand accurately reflects the transitional nature of the stand and the calls must remain as is. While this issue makes for a less "clean" process, due to the very low number of plots affected, it has no real impact on the yield projections.

Identify dead and severely damaged trees

Dead trees located within a plot were recorded however they did not contribute volume. Two methods were used to identify dead trees:

- a tree condition code of 25 or 26

or

- a species type of 'DC' or 'DD'.

Severely damaged trees are included in volume compilations however they were not permitted for estimating stand site index. Two methods were used to identify severely damaged trees:

- for the 1997, 1998, and 1999 sample years a 13, 19, 24, 28, 34, or 35 tree condition code

or

- for the 1996 sample year an ‘O’ or ‘F’ cull suspect class.

Removing plots located in unmerchantable stands

All plots located in stands that had 10% or greater overstory larch composition (based on the SoPM) and/or 80% or greater black spruce composition (based on the SoPM) were deemed unmerchantable and removed from the yield analysis. Plots located in areas removed from the net landbase for reasons other than merchantability were considered relevant for estimating the volume on other stands grouped within the same stratum and remained in the yield analysis. However, a follow-up analysis was performed to ensure no bias in this assumption (appendix 6.2.4).

2.2.4 Summary of results – plot netdown

The output files from the *mergetsp.sas* program were *ecotree.sas7bdat* (tree level data) and *Allplot_avi.sas7bdat* (plot level data). After removing all plots without a spatial location or located in unmerchantable stands, a total of 2,885 plots with 61,534 trees were used to construct the yield relationships (Table 2-7).

Table 2-6. Plot netdown summary

Category	Number of Plots	Number of Trees
Starting point – All digitally entered data	3,221	71,496
Plots without GIS spatial location	-4	-46
Plots in subjective deletion stands	-332	-9,871
Totals used to construct yield relationship	**2,885**	**61,579***

* - Number of sampled trees includes 45 place holders for null plots (1 null plot was located in a removed stand).

Table 2-7. Summary of net data by sample year

TSP Sampling Year	Sample Year Code Name	Total Number of Plots	Number of Null Plots	Total Number of Trees Sampled
1996	*Rawtree*	684	6	14,312
1997	*Edvsamp*	698	7	16,302
1998	*d0001*	230	9	2,890
1999	*v0006*	1,273	23	28,075
Totals		**2,885**	**45**	**61,579***

* - Number of sampled trees includes 45 place holders for null plots (1 null plot was located in a removed stand).

2.3 Task 2: Analyze site index relationships

Program: *02si1.sas*

Objective:

Calculate coniferous and deciduous stand site index (50 year based).

Input Files:

Ecotree. sas7bdat- individual tree data - output from *01Mergetsp.sas*.

age_coef.sas7bdat- a listing of coefficients used to calculate stump age based on breast height age and site index (coefficients are stratified by natural subregion and species).

si_coef.sas7bdat- a listing of coefficients used to calculate site index (coefficients are stratified by natural subregion and species).

2.3.1. Counting maximum number of required site trees in individual stands and identifying eligible site trees (Step 1)

Site index is a standard method of estimating the site quality where a stand is located. More specifically, it is the based on the total height attained by "site index trees" at a defined age (traditionally 50 years breast height in Alberta). A number of slightly different definitions have been used for site index trees. This report used the common definition of the largest dominant and co-dominant non-defect 100 trees per hectare (veterans were not included).

During yield estimation, stand level SI was used rather than individual plot level SI. The rationale being that plots in deciduous or low density stands often do not have a tree that can be successfully aged. Thus, overall this approach allows for more plots to be used to fit yield functions and should improve the estimates of volume on all strata and especially for deciduous and low density stands.

Ideally, enough site trees should have been sampled in each stand to meet the 100 largest trees per hectare criteria. For example if 5 plots of 160 m^2 were located in *stand A*, a maximum of 8 trees would be used to estimate SI in *stand A*. In high density stands there were sometimes an over abundance of eligible SI trees. Therefore, the largest trees (based on DBH) were selected in order until the 100 largest trees per hectare criteria was met. This was done to ensure that the site index values of high density stands were compatible to the SI estimate of lower density stands. If too many trees were used for a SI estimate it becomes a measure of stand mean height growth rather the an estimate of site quality and therefore an estimate of expressed mean height growth which can be impacted by other factors such as competition, disease, insect, and climate. By selecting the largest trees the impact of confounding factors should be reduced. Alternatively, in low density stands there was often not enough SI trees to make the minimum 100 per ha requirement. When this occurred the SI estimate was based as normal on the fewer number of trees. This was considered a superior option to removing these stands.

Individual trees were considered valid for predicting SI if the following were true:

1. Tree had both a field-measured height and a breast height age count.
2. Tree was assigned to a natural subregion.
3. Tree was not dead or severely damaged.
4. Tree was assigned to either a dominant or co-dominant crown class.
5. Tree was not birch or larch.
6. Coniferous trees were not older than 180 years breast height.
7. Deciduous trees were not older than 150 years breast height.

When the above criteria were applied, there were a total of 5,917 valid SI trees.

2.3.2 Calculating individual tree SI and stump height age (Step 2)

The iterative process suggested by Huang et al. (1997) was used to calculate a site index value for each individual tree. The following SAS code was used:

```
si0=20;
do until(abs(si0-si1)<0.00000001);
x1= (1+b0*(si0-1.3)+exp(b1+b2*log(bhage+b3)+b4*log(bhage+b5)**2-log(si0-1.3)));
x2= (1+b0*(si0-1.3)+exp(b1+b2*log(50   +b3)+b4*log(50   +b5)**2-log(si0-1.3)));
si1=1.3+(ht-1.3)*x1/x2;
si0=(si0+si1)/2;
end;
```

where:

si0, si1 = the site index values converged to estimate site index.
bhage = breast height age (years)
ht = tree height (m)

Tree stump age (at 30cm) was estimated based on breast height age and site index. The equation used was (Huang, 1994):

$T_s = a + b\,T_b + c / SI$ *Equation 1*

where:

T_s	= Stump height age (years)
T_b	= Breast height age (years)
SI	= Site index
a, b, and c	= parameters to be estimated

Total tree age was calculated by adding years to stump height to the stump height age (Table 2-8).

Table 2-8. Number of years to stump height by species

Species	Years to Stump Height (30cm)
AW	1
PB	1
PL	5
PJ	5
SW	8
SB	8
FB	8
FA	8

2.3.3 Calculating and assigning stand site index (Step 3)

Ideally, SI should be estimated based on individual trees species. However, for simplicity only a general coniferous and deciduous SI were calculated for each stand (where possible) by averaging all coniferous (excluding larch) and all deciduous (excluding birch) tree species respectively.

- deciduous species group - trembling aspen and balsam poplar
- coniferous species group – white spruce, black spruce, balsam fir, alpine fir, lodgepole pine, and jack pine

2.3.4 Evaluation of ecosite versus SI (the feed-back loop – Step 4)

The Edson stand SI data was combined with the Drayton Valley stand SI data (an output from concurrent Drayton Valley yield curve process being completed by JS Thrower) to produce boxplots showing the mean, median, 25th quartile, and 75th quartile SI for each ecosites (Appendix 6.3). This information was used to validate the assumptions on site quality and used as a feed-back loop for the *mergetsp.sas* program (section 2.2.3). If there was an indication that the assignment of site quality classification (good, medium, poor) was incorrect the necessary changes were made to the *mergetsp.sas* program and it was re-run.

2.4 Tasks 3: Produce height/diameter function coefficients

Program: *03Ht_DBH.sas*

Objective: Model height/DBH relationships stratified by species and site quality. This relationship was used to estimate height for trees that did not have a field measured height taken.

Input Files:

Ecotree.sas7bdat – individual trees data - derived from *01Mergetsp.sas*.
Prov_ht_dbh.sas7bdat – provincial height/DBH coefficients, as per Huang, 1994.
All_ht_coef.sas7bdat – a complete listing of all possible natural subregion, site quality and species combinations.

2.4.1 Identifying trees eligible for height/DBH regression analysis (Step 1)

The individual tree records with the following attributes were not included in a height/DBH relationship:

- either the height or the DBH measurement was missing
- there was no natural sub-region or species call assigned
- tree was dead or severely damaged (see section 2.2.3 for definition)

This protocol resulted in a total of 10,248 records for estimating the height/DBH coefficients.

2.4.2 Estimating coefficients through Richards-type non-linear regression analysis (Step 2)

All eligible tree records were stratified into groups based on natural subregion, site quality, and species. Huang (1994) suggests that a Richards-type non-linear model can be used to estimate total height from DBH measurements for major Alberta tree species. The following model was used:

$$H = 1.3 + a(1 - e^{-bD})^{c} \qquad \textit{Equation 2}$$

where:

H = total tree height (m)

D = diameter a breast height outside bark (cm)

e = base of the natural logarithm

a, b, c = parameters to be estimated

2.4.3 Output coefficients

Each stratum required a minimum of 20 observations for a valid height/DBH model to be constructed (Table 2-9). Otherwise, the provincial coefficients (by natural subregion) were assumed to be more trustworthy (Huang 1994). The graphical output of this data was displayed within the SAS program, however due to space the graphs are not presented in this report.

Table 2-9. Height to DBH coefficients output from regression analysis of stratum with 20 or more observations

Nsr	Site Quality	Sp	Number of Observations	R^2	a	b	c
LF	LFG	AW	2215	0.6838	26.1324	0.0640	1.1487
LF	LFG	BW	572	0.4610	57.3119	0.0034	0.5094
LF	LFG	FB	113	0.8126	25.8726	0.0669	1.5756
LF	LFG	PB	1086	0.7403	25.8085	0.0559	1.1637
LF	LFG	PL	652	0.7205	26.5698	0.0659	1.3408
LF	LFG	SB	381	0.7426	24.9787	0.0579	1.3360
LF	LFG	SW	1230	0.8233	35.7343	0.0308	1.1695
LF	LFM	PL	1176	0.7316	25.3153	0.0666	1.3203
LF	LFM	SB	475	0.7224	55.9936	0.0108	0.8126
LF	LFM	SW	132	0.7802	32.1327	0.0453	1.3778
LF	LFP	AW	154	0.8372	28.4938	0.0470	1.0080
LF	LFP	LT	21	0.8599	29.7424	0.0361	1.0504
LF	LFP	PL	101	0.4036	19.0840	0.2028	8.9780
LF	LFP	SB	219	0.6879	18.4948	0.1209	2.1936
LF	LFP	SW	54	0.7241	26.0952	0.0556	1.4444
UF	UFG	AW	218	0.5364	25.2710	0.0640	1.2489
UF	UFG	FB	24	0.5373	19.9430	0.0626	1.2294
UF	UFG	PB	54	0.4868	25.5395	0.0478	1.0915
UF	UFG	PL	850	0.7146	26.4530	0.0703	1.5208
UF	UFG	SB	206	0.6528	22.9259	0.0550	1.0736
UF	UFG	SW	82	0.7186	29.3605	0.0413	1.2552
UF	UFM	PL	51	0.8161	23.3839	0.0772	1.4783
UF	UFM	SB	53	0.8243	20.0154	0.0932	1.5475

2.5 Task 4: Compile plot volumes

Program: *04volume.sas*

Objective:

Use Huang's (1994) protocol to estimate the volume of each individual tree and compile into plot level estimates of m^3/ha volume.

Input Files:

Prov_bark_coef.sas7bdat – provincial DIB to DOB coefficients, as per Huang, 1994.
Ecotree. sas7bdat- individual tree data - output from *01Mergetsp.sas*.
Fin_ht_dbh.sas7bdat- height/DBH coefficients used in estimating tree heights – output from *03Ht_DBH.sas*.

Allplot_avi.sas7bdat- plot data linked to spatial data - output from *01Mergetsp.sas*.
All_SI_stand.sas7bdat- stand SI estimates – output from *02SI.sas*.

2.5.1 Merge coefficients to individual tree data (Step 1)

Provincial coefficients for taper, DBH/stump height diameter, DIB to DOB, and height/DBH were merged directly to individual tree records file *(Ecotree.sas7bdat)*. The taper and DBH/stump height coefficients (Huang 1994) were entered directly in the *volume.sas* program file. The DIB to DOB, taper and DBH/stump height diameter coefficients (Huang 1994) were entered via SAS data sets.

2.5.2 Individual tree volume (Step 2)

Estimating total tree height and stump height diameter

Calculating tree volume requires an estimate of total tree height and stump height diameter. Tree heights were estimated by equation 2. If a tree had both a field-measured height and an equation-estimated height, the field-measured height took precedence. Tree volumes were estimated at a 15cm stump height where the stump height diameter (inside bark) was estimated by using Kozak's variable-exponent taper equation (Equation 5) the results of which were fed into:

$$\mathrm{DOB} = \mathrm{a} + \mathrm{bDIB}$$ *Equation 3*

where:

DOB = diameter outside bark at any point on the stem(cm)
DIB = diameter inside bark at any point on the stem(cm)
a, b = parameters to be estimated

Calculating coniferous and deciduous volumes

Coniferous volumes were calculated based on the whole tree method and deciduous volumes were calculated based on the shortwood method. In total 36,235 coniferous trees and 19,727 deciduous trees were considered valid for volume compilation (Table 2-10).

Table 2-10. Summary of individual coniferous and deciduous trees used in volume compilation

Data used in coniferous and deciduous volume compilation	**Number of Valid Records**
Input all TSP individual tree observations (*Ecotree2.sas7bdat)*	**61,579***
Coniferous volume compilation – tree must be a living coniferous tree with a valid NSR and site call (i.e. (sptype='pine' or sptype='conif') and site<>'XXX' and dead='N')	**36,235**
Deciduous volume compilation – tree must be a living deciduous tree with a valid NSR and site call (i.e. sptype='decid' and site<>'XXX' and dead<>'N')	**19,727**

* - File included 45 null plot place holders as indicated by a "NO" species code.

Utilization standard and calculating merchantable length

Merchantable coniferous tree volumes were calculated at 15/11 utilization standard; whereas 15/10 was used for deciduous trees. The merchantable length of both deciduous and coniferous trees was calculated using Kozak's variable taper equation (Equation 5) through the following iterative process:

```
g0=0.9;

  do until(abs(g0-g1)<0.00000001);
    c=b1*(g0)**2+b2*log(g0+0.001)+b3*SQRT(g0)+b4*exp(g0)+b5*(DBH/ht);
   g1=(1-((TOPDIAM /(a0*DBH**a1*a2**DBH))**(1/c))*(1-SQRT(0.225)))**2;
   g0=(g0+g1)/2;
  end;
```

where:
g0 = h/ht (essentially the Z variable from Kozak's variable taper equation)
TOPDIAM= top diameter limit for the utilization standard (11cm for coniferous, and 10cm for deciduous)
DBH = diameter at breast height outside bark (cm)
SQRT = square root
a0, a1, a2, b1, b2, b3, b4, b5 = taper coefficients

The final solved value for g0 equals the location on the tree stem where diameter inside bark (DIB) is equal to the top diameter limit of the utilization standard. The following equation was then used to estimate the actual height off the ground of the top diameter limit:

$$HI = g0 * HT \qquad \textit{Equation 4}$$

where;

HI = merchantable height
g0 = final solved g0 value from the iterative process
HT = total tree height

Total merchantable length of the tree was calculated by simply subtracting the stump height (0.15m) from the total height (merchantable length=HI-0.15).

Sectioning coniferous trees (whole tree system)

The merchantable length of each coniferous tree was divided into 10 equal length sections (merchantable length/10). To aid in volume calculation, the DIB was estimated at the bottom, middle and top of each section. The first point of measurement was at stump height, then in total there were an additional 20 DIB measurements all equal distance apart (measurement distance = total merchantable length / 20).

Sectioning deciduous trees (shortwood system)

Deciduous tree volume was calculated based on the shortwood system used in the Edson FMA. The total merchantable length of each individual deciduous tree was divided into 2.5654m (101 inches) logs. The last segment was allowed to have some variability in length from 2.1336m (84 inches) to 2.6924m (106 inches). DIB was estimated at the bottom, middle, and top of each log.

Calculating DIB

Using taper models can increase volume projection accuracy (Huang, 1994). Kozak's variable taper equation was used:

$$\mathrm{DIB} = a_0 \mathrm{DBH}^{a_1} \bullet a_2^{\mathrm{DBH}} \bullet X^{b_1 Z^2 + b_2 \ln(Z+0.001) + b_3 \sqrt{Z} + b_4 e^{Z} + b_5 \left(\frac{DBH}{H}\right)}$$

Equation 5

where:

DIB	= diameter inside bark (cm) at height h (m)
DBH	= diameter at breast height outside bark (cm)
H	= total tree height (m)
h	= height above ground that DIB is to be estimated at (m)
Z	= h/H
X	$= \frac{1-\sqrt{h/H}}{1-\sqrt{p}}$
p	= location of the inflection point (assume to be 0.225 or 22.5% of total tree height)

a_0, a_1, a_2, b_1, b_2, b_3, b_4, b_5 = parameters to be estimated

Individual Tree Volume Compilation

Newton's equation was used to calculate the volume for each section by the following formula:

$$VM = \frac{ML/10}{6}(0.00007854) \bullet (d_b^2 + 4d_m^2 + d_t^2) \qquad \textit{Equation 6}$$

VM	= Merchantable volume (m^3)
ML	= Merchantable length (m)
d_b	= diameter inside bark at the bottom of the section (cm)
d_m	= diameter inside bark at the middle of the section (cm)
d_t	= diameter inside bark at the middle of the section (cm)

Each section's volume was added together to obtain the merchantable volume for the entire tree.

2.5.3 Plot level compilation (Step 3)

Various plot level volumes were calculated by summing individual tree volumes. Volumes calculated include:

- total coniferous volume - 15/11 utilization (all coniferous species – does not include LT)
- total coniferous + larch volume - 15/11 utilization (all coniferous species – includes LT)
- total deciduous volume - 15/10 utilization (all deciduous species)
- total spruce volume - 15/11 utilization (defined as 'SW' and 'SB' species only)
- total fir volume - 15/11 utilization (defined as 'FB' and 'FA' species only)
- total pine volume - 15/11 utilization (defined as 'PL' and 'PJ' species only)
- total larch volume - 15/11 utilization (defined as 'LT' species only)
- total aspen volume - 15/10 utilization (defined as 'AW' species only)
- total balsam poplar volume - 15/10 utilization (defined as 'PB' species only)
- total birch volume - 15/11 utilization (defined as 'BW' species only)

Total plot volume was converted to volume per hectare by multiplying by 10,000/plot size. Volume compilations were output to the SAS data file *Allplot_vol.sas7dbat* file. In addition, the relative volume each tree species contributes to coniferous and deciduous volumes were calculated and stored in the files *Conpercent.sas7dbat, Swtpercent.sas7dbat* and *Decpercent.sas7dbat* (see section 2.6.5).

2.6 Tasks 5 and 6: Coniferous and deciduous yield model development

Programs:

05total_yields_con.sas – evaluates coniferous yield form
06total_yields_dec.sas – evaluates deciduous yield form

Objective:

To produce the final yield projections for coniferous and deciduous dominated stands.

Input Files:

Allplot_vol.sas7bdat – Compiled plot volume data (output from *04Volume.sas*).

Percent.sas7bdat - summary of relative contributions each species makes to total deciduous and coniferous volume (stratified by natural subregion and site quality).

con108.sas7bdat – an exhaustive list of all 108 possible coniferous yield curves.

dec48.sas7bdat – an exhaustive list of all 48 possible deciduous good site yield curves.

dec2poor.sas7bdat – an exhaustive list of the 2 possible deciduous poor site yield curves.

switch1.sas7bdat – an exhaustive list of the 1 possible switch stand yield curve.

decmort.sas7bdat – proportion of deciduous volume to be retained from mortality as stand ages (Table 2-14).

yieldtemp.sas7bdat – an exhaustive list of all possible stands ages from 0 to 200 (by 5 year increments).

2.6.1 Selecting plots to be included in yield groups (Step 1)

Plot compiled volumes were placed in four yield groups.

1. Coniferous dominated stands (switch stands not included)
2. Deciduous dominated stands on good sites (includes both switch and non-switch stands)
3. Coniferous dominated switch stands on good sites
4. Stands with greater than 10% Deciduous composition on poor sites

One SAS program estimated coniferous stand yields (Yield Groups #1 and #3) and another SAS program was used to estimate deciduous dominated stand yields (Yield Groups #2 and #4) (Figure 2-2). The vast majority of the Edson FMA harvestable area is estimated within Yield Groups #1 and #2, both of which used a similar method of yield projection. The methods used for yield group #3 and #4 are discussed separately at the end of the section.

The procedure of grouping pine and white spruce species types into a single coniferous covertype may cause concern due to the different growth trajectories that pine and spruce follow. However, the impact this will have on the projected AAC should be minimal because the distribution of plots located in white spruce and pine leading species coniferous stands is in almost exactly the same proportion as the net landbase area (Plots - 72% pine leading, 28% white spruce leading versus Net landbase area – 71% pine leading, 29% white spruce leading).

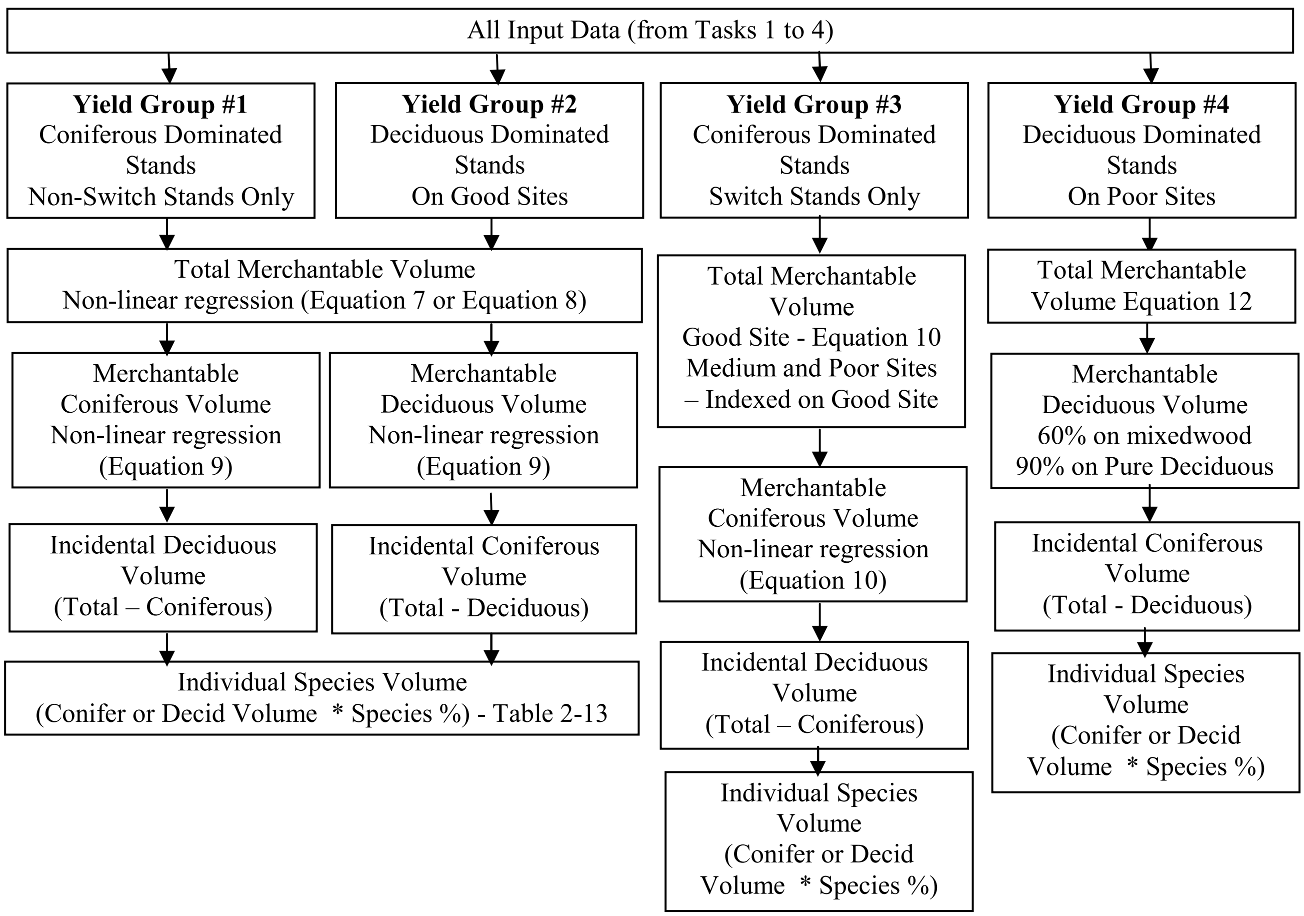


Figure 2-2. Flowchart summary of fitting yield curves

The majority of the 2,885 valid plots sampled were used to estimate volumes for yield group #1 and #2 (Table 2-11). Due to the significant number of plots sampled the yield projections for groups 1 and 2 were primarily data driven (considered in association with biological/ecological theory). Plots with 40%, 50%, or 60% coniferous stand composition were used in both the coniferous (non-switch stands) and deciduous good site models. This allowed for an increased range of data to assist volume predictions for mixedwood stands.

Due to a lack of plots, yield groups 3 and 4 had to incorporate assumptions based on educated “guesses”. It was recognized that this was not an ideal situation, therefore the yield projections for groups 3 and 4 were carefully examined to ensure a reasonable result. Over 96% of the net landbase area is assigned to either yield group 1 or 2 therefore any concerns about the reliability of the yield projections for groups 3 and 4 should be assuaged as the impact on the projected AAC will be minimal.

Table 2-11. Number of plots used to estimate yields on coniferous and deciduous dominated stands

Yield Group	**Yield Model**	**Coniferous Composition**	**Number of plots by natural subregion**		
			Lower Foothills	**Upper Foothills**	
1	Coniferous Switch stands not included	70%, 80%, 90%, or 100%	920	303	
		40%, 50%, or 60%	177	53	
	Total	40% to 100%	1,097	356	1,453
2	Deciduous Good Site Switch and Non-switch stands included	0%, 10%, 20%, 30%	1,143	91	
		40%, 50%, or 60%	220	53	
	Totals	0% to 60%	1,363	144	1,507
3	Coniferous switch stand	50% to 100%	125	5	130
4	Deciduous Poor Site Switch and Non-switch stands included	>10% Deciduous composition on Poor Sites only	*10	0	10

Note: 27 plots did not have an AVI cover type and could not be assigned
* - Due to insufficient plots, 7 plots used for this relationship were also used in yield group 1 or 3.

2.6.2 Modeling yields for yield groups 1 and 2 (Step 2)

Total stand volume is frequently estimated as a function of site quality, density, and species composition (Husch et al. 2003). Similarly, total yield volumes for yield groups 1 and 2 (Table 2-11) were derived as:

Total Gross Volume = *f* {species dominance, site quality, site index, age, stand density}

More specifically, total gross merchantable volume (15/11 utilization for coniferous trees, 15/10 utilization for deciduous trees) model was fit to the following non-linear model:

$$\text{Total Volume} = (t0 + t1 \bullet CC\_B + T5 \bullet CC\_C + T6 \bullet CC\_D + t2 \bullet SSI) \bullet SAGE \bullet \exp(t4 \bullet SAGE) + t3$$

Equation 7

where:

SSI – stand level site index

SAGE – AVI stand age (see section 2.2.3)

CC_B – Dummy variable used to identify stands assigned a "B" AVI crown closure

CC_C – Dummy variable used to identify stands assigned a "C" AVI crown closure

CC_D – Dummy variable used to identify stands assigned a "D" AVI crown closure

t0, t1, t2, t3, t4, t5, and t6 – Coefficients output from the modeling process (see Table 3-1 for the final values of these parameters).

Site index, plot age, and crown closure (CC_B, CC_C, and CC_D) were directly fit as independent variables within the total volume function. Species dominance and site quality were addressed as strata variables. Stratification by species dominance (or yield group) has already been discussed (Table 2-11). Yield group #1 (Coniferous dominated (non-switch) stands) was further stratified into two site categories. Good and medium site plots were grouped separately from poor site plots (site quality as defined by Table 2-5) for the following three reasons: First, greater similarity was observed between good and medium sites (in terms of moisture and species type) than with poor sites. Second, the expressed form of the curve fit for good and medium sites was different from poor site curves (see appendix 6.2). Third, crown closure parameters were significant (α=0.05) predictors of total volume on good and medium sites, but were not significant for poor sites. For these reasons the crown closure parameters were dropped (t1=0, t5=0, t6=0) from the function used to estimate total volume on coniferous dominated poor site stands. Equation 7 was modified to estimate total volume on poor site conifer dominated stands:

$$\text{Total Volume} = (t0 + t2 \bullet SSI) \bullet SAGE \bullet \exp(t4 \bullet SAGE) + t3$$

Equation 8

Coniferous and deciduous SI measurements were not obtained in all sampled stands (due to rot or lack of qualifying trees). For coniferous yields (yield group 1, Table 2-11) 109 plots did not have a valid coniferous SI measurement and for deciduous dominated stands on good sites 252 plots did not have a valid deciduous SI. To ensure no bias, these plots could not simply be dropped from the process but rather an SI value was assigned to those plots equal to the mean SI value by site quality classification (Table 2-5).

Using site index directly in Equation 7 (or Equation 8) recognizes the inherent range of variability of site quality within each stratum. Theoretically, it should be possible to estimate the volume of individual stands with more accuracy by applying a stand-specific SI value to Equation 7 rather than using the "mean" curve for a given strata. However, as SI was not estimated for each stand in the inventory, mean SI (calculated by natural subregion and site quality classification (Table 2-12)) was used to produce the final yield curves.

There are 30 total volume yield strata for the Edson FMA (Table 2-12). Over 95% of the Edson FMA net harvestable land area is located in the lower foothills, thus significantly more plots were located in the Lower Foothills.

Table 2-12. Number plots used for each total yield stratum

Stratum Number	Yield Group Number and Description	NSR	Site	Mean SI	CC	Net Area (ha)*	Number of Plots
1	**1 Coniferous Switch Stands Not included**	LF	G	16.2	A	13,289	109
2					B	10,410	113
3					C	37,846	277
4					D	5,615	38
5			M	14.7	A	4,502	44
6					B	8,500	92
7					C	31,937	242
8					D	8,642	85
9			P	12.1	A to D	11,556	97
10		UF	G	16.2	A	914	24
11					B	2,000	50
12					C	8,805	199
13					D	2,409	47
14			M	14.5	A	606	18
15					B	118	3
16					C	608	10
17					D	86	2
18			P	11.1	A to D	13,289	3
Coniferous Non-Switch Stand Totals						**147,997**	**1,453**
19	**3 Coniferous Switch Stands**	LF/UF	G	NA	A to D	9,607	130
20			M	NA	A to D	196	0†
21			P	NA	A to D	81	0†
Coniferous Totals						**9,884**	**130**
1	**2 Deciduous Good Site Switch and Non-switch stands**	LF	G	17.7	A	7,631	109
2					B	19,276	259
3					C	75,217	828
4					D	14,089	167
5		UF	G	17.1	A	422	12
6					B	1,010	28
7					C	3,361	101
8					D	374	3
Deciduous Good Site Non-Switch and Switch Stand Totals						**123,381**	**1,507**
9	**4 Deciduous Poor Site Switch and Non-**	LF/UF	P	NA	A to D	852	10‡

Stratum Number	Yield Group Number and Description	NSR	Site	Mean SI	CC	Net Area (ha)*	Number of Plots
	switch stands						
Deciduous Totals						**852**	**10**

* The areas presented are close approximations. In instance of conflict, values presented in technical report *Component #2: Landbase Allocations* take precedence.

† - Coniferous Yield Strata 20 and 21 were not directly estimated through plot data but with an adjustment factor see section 2.6.8.

‡ - Deciduous Yield Strata 9 includes 7 coniferous poor site plots. Additionally, three poor site deciduous plots were dropped because they unrealistically inflated projected volumes.

2.6.3 Determining major species volume – Yield Groups 1 and 2 (Step 3)

"Major species group" was defined as the species for which a stand is primarily managed (i.e. coniferous trees from coniferous dominated stands and deciduous trees from deciduous dominated stands). Proper strategic management necessitates a reasonable estimate of major species volume. The following general model was used:

Major species gross merchantable volume = f {natural sub-region, percentage coniferous, plot age, and total gross merchantable volume}

The 1,453 coniferous plots and 1,507 deciduous plots were stratified by natural subregion (Table 2-11) and both sets of plots were used to fit the following function:

$$\text{Major species merchantable volume} = (c0 + c1 \bullet \text{PC}) \bullet \text{TOTVOLFM}$$

Equation 9

where:

PC – percent coniferous composition

TOTVOLFM – Total gross merchantable volume (field measured)

c0, and c1 – Coefficients output from the modeling process (see Table 3-1 for the final values of these parameters)

This equation simply estimates major species volume as a proportion of total volume based upon the percentage of coniferous composition (Figure 6-27).

2.6.4 Determining incidental volumes

Incidental volumes were estimated by the following simple formula:
Incidental volume = Total Volume – Major species volume (as per Equation 9)

2.6.5 Calculating volumes by species type and preparing data for output (Step 4)

The contribution of individual trees species (coniferous and deciduous) was estimated by assuming each species would contribute the same proportion to the projected volume as the plot observed volumes. For both coniferous and deciduous dominated stands, volumes were compiled by natural subregion and site (Table 2-13). The contribution percentages were then applied against the respective estimated coniferous or deciduous volumes to predict stand volume by species.

For the most part, the Edson FMA deciduous volume was dominated by trembling aspen (*Populus tremuloides* Michx.) the only exception was on coniferous dominated stands on medium/poor sites in the upper foothills where balsam poplar (*Populus balsamifera* L.) provided the majority of volume. The majority of the coniferous volume was split between lodgepole pine (*Pinus contorta* Doug. ex. Loud. var. *latifolia* Engelm.) and both black and white spruce (*Picea mariana* (Mill.) BSP and *Picea glauca* (Moench) Voss). Lodgepole pine was more prevalent on good sites in the upper foothills and medium sites in the lower foothills, whereas spruce species were more likely to dominate good sites in the lower foothills and poor sites in general.

Table 2-13. Percentage contribution of merchantable volume by species, natural subregion and site quality for deciduous and non-switch coniferous stands

Stand Species Dominance	NSR and Site	Deciduous (15/10 utilization)				Coniferous (15/11 utilization)			
		Aspen	Balsam Poplar	White Birch	Totals	Pine	Spruce	Fir	Totals
Coniferous (Switch stands not included)	LFG	68%	29%	3%	100%	41%	57%	2%	100%
	LFM	79%	20%	1%	100%	71%	29%	0%	100%
	LFP	84%	11%	5%	100%	44%	56%	0%	100%
	UFG	83%	15%	1%	100%	82%	16%	2%	100%
	UFM	25%	74%	1%	100%	50%	50%	0%	100%
	UFP	25%*	74%*	1%*	100%	0%	100%	0%	100%
Deciduous	LFG	64%	32%	4%	100%	28%	70%	2%	100%
	LFP/UFP	52%	48%	0%	100%	92%	6%	2%	100%
	UFG	70%	29%	1%	100%	56%	38%	6%	100%

Note: Due to a lack of data the deciduous species volume proportions for UFP coniferous dominated stands were assumed to be equal to UFM.

2.6.6 Mortality in deciduous volumes

When field sampled TSPs are used to estimate yield, losses due to mortality are reflected because dead trees are removed from volume compilations. However, deciduous mortality typically accelerates as stands age. Due to a lack of plots in the older age classes (few plots greater than 140 years) it is possible the empirical yield curves under-represent the mortality loss to deciduous volumes. Therefore, an age-based mortality constant (Huang 1999) was applied to the deciduous volumes in an attempt to more fully capture this loss (Figure 2-3). Deciduous volumes were reduced by an estimated percentage volume loss due to mortality (Table 2-14, Figure 2-3). Volume reduction due to mortality is applied to deciduous species only, therefore the more deciduous volume predicted in a stand the greater the decrease in projected total volume projected as a stand ages.

Table 2-14. Estimated rate of deciduous volume retention due to mortality

Stand Age (yrs)	0 to 100	105	110	115	120	125	130	135	140	145	150	155	160	165	170	175	180+
Deciduous Retention Rate	1.000	0.980	0.941	0.884	0.814	0.732	0.644	0.544	0.465	0.382	0.305	0.238	0.181	0.134	0.096	0.068	0.046

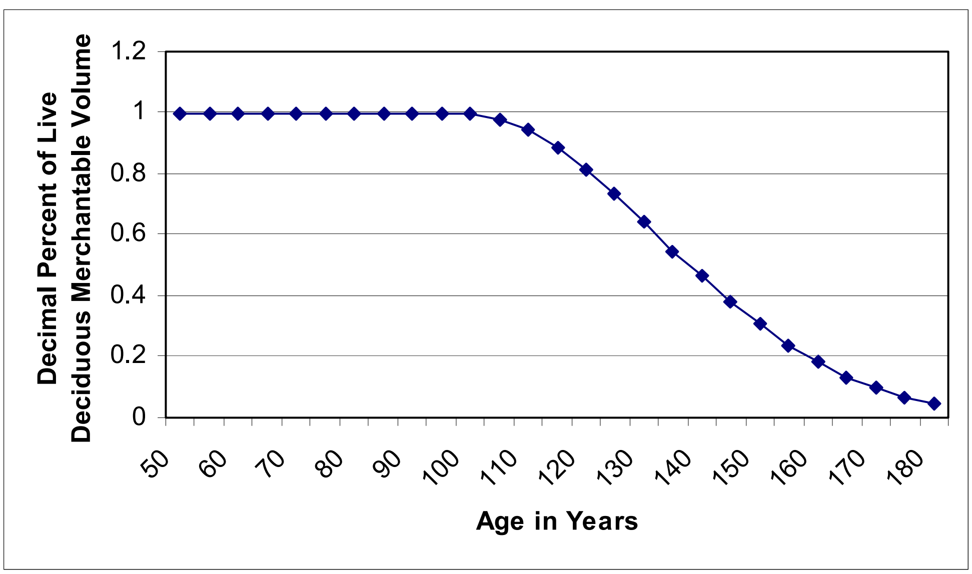


Figure 2-3. Estimated rate of deciduous volume retention versus stand age

After applying the mortality constants it might be expected that deciduous volumes will be more accurate. However, losses in volume due to mortality are to some extent offset by ingrowth (often of coniferous species) and growth release (of surviving trees) (Husch et al. 2003). Currently, no information is available to reliably estimate the rate of ingrowth and release. As these potential volume variables are not included it must be acknowledged that after applying the mortality constant, it is quite possible that total volumes at older ages (especially 125+ years) are underestimated.

2.6.7 Verifying yields and bias check (Step 4)

Yield projections were verified versus field observed plots (See Appendix 6.2).

2.6.8 Yields from coniferous "switch" stands - yield group 3 (Step 5)

Volumes for coniferous switch stands (yield group 3 - Table 2-12) were estimated as a separate coniferous strata. There were sufficient plots (130) to develop a yield relationship for good site coniferous stands but not for medium and poor sites.

$$\text{Total Volume Coniferous Switch Stands} = t0 \bullet SAGE \bullet \exp(t4 \bullet SAGE) + t3$$

Equation 10

Total volumes from medium and poor site switch stands were estimated by developing a site conversion factor by comparing the following yield group #1 yield curves (see section 3.1 below):

1. Yield Curve 18 – Good site, Lower Foothills, C crown closure, 100% coniferous composition
2. Yield Curve 42 – Medium site, Lower Foothills, C crown closure, 100% coniferous composition
3. Yield Curve 54 – Poor site, Lower Foothills, All crown closures, 100% coniferous composition

Lower Foothills yield curves were used to develop the relationships because all but 5 switch stand plots occurred in the lower foothills. Likewise, stands with a crown closure of "C" were also sampled with the greatest frequency and provided the strongest set of data to develop the relationship. Yield curves with 100% coniferous composition were used because they show the truest relative difference to volume caused by site (the least impacted by the deciduous mortality constant). The index was developed to reflect the changes as a stand ages (Table 2-15) and a conversion factor was calculated for every 5 year age class from 0 to 200 years.

Table 2-15 Estimate of relative volume compared to Good site projections for coniferous switch stands

Age	Relative difference in volume compared to Good site		
	Good Site	Medium Site	Poor Site
50	100%	79%	0%
100	100%	92%	49%
150	100%	93%	65%

For switch stands there was no relationship between the AVI coniferous composition and the coniferous volume. The major species volume was estimated by removing the C1 parameter in Equation 9:

$$\text{Major species merchantable volume} = c0 \bullet \text{TOTVOLFM}$$

Equation 11

Individual species volumes were then estimated using Table 2-16.

Table 2-16. Percentage contribution of merchantable volume by species, natural subregion and site quality for deciduous and non-switch coniferous stands

Stand Species Dominance	NSR and Site	Deciduous (15/10 utilization)				Coniferous (15/11 utilization)			
		Aspen	Balsam Poplar	White Birch	Totals	Pine	Spruce	Fir	Totals
Coniferous (Switch Stands only)	All	72%	25%	3%	100%	20%	75%	5%	100%

2.6.9 Yields from deciduous dominated stands on "Poor" sites – yield group 4 (Step 5)

In the Edson FMA, merchantable deciduous stands do not occur across as wide a band of ecosites as do coniferous stands. Therefore, deciduous stands were grouped into "good" and "poor" ecosite categories only (Table 2-5). The vast majority of deciduous merchantable stands were located on "good" sites (Table 2-12). In fact, deciduous stands on "poor" sites will almost always be considered non-merchantable and removed from the harvestable land area. However, due to multiple operators in the Edson FMA, stands can be assigned to a "landbase" which does not necessarily correspond to the BCG. This makes it possible for a stand to be identified as coniferous landbase but have a deciduous BCG which will require a poor site deciduous yield curve to estimate volume.

As seen above, constructing "good" site deciduous curves was a relatively straight forward data-driven process. However "poor" site deciduous curves were difficult to construct as there were only 6 deciduous "poor" site plots (in 2 stands) sampled. Three of those plots (all sampled in 1997 and located in one stand - plot numbers 235, 236, and 237) were considered outliers and removed from the analysis as they had volumes uncharacteristic of a poor site (326, 385, and 330 m^3/ha). In an attempt to construct a reasonable relationship for poor site deciduous curves, poor site coniferous plots that had at least 20% deciduous composition were added to the relationship. This resulted in a total of 10 plots (7 coniferous stands and 3 deciduous stands). The modest numbers of coniferous poor site plots added to the data ensure that the model was still strongly influenced by the deciduous plots. It would be correct to argue that 10 points is too few to fit a yield curve, however this is such a small area (850 ha) that it is not vital that the curve be statistically valid but rather that the results are theoretically reasonable (as deciduous yield curves #49 and #50 suggest) (section 3.2). The total volume equation used for deciduous dominated stands on poor sites was similar to the equation used for poor site coniferous stands (Equation 8), the only difference being SI was not used in the equation.

$$\text{Deciduous Dominated Stands on Poor Sites Total Volume} = t0 \bullet SAGE \bullet \exp(t4 \bullet SAGE) + t3$$

Equation 12

It was not possible to produce a valid major species volume estimate for this yield curve. Therefore, a simple method was used where major species volume was estimated based on BCG. All deciduous dominated mixedwood stands were assumed to have a 60/40 deciduous to coniferous volume split and similarly all pure deciduous stands were assumed to have a 90/10 deciduous to coniferous volume split. Species volumes and deciduous mortality were calculated as sections 2.6.5 and 2.6.5 describe above.

2.6.10 Cull deductions

Cull deductions will be applied as a percentage reduction to the final AAC volume.

2.6.11 Application of yield curves to the landbase

See technical document #2 *Landbase Assignment* provides a explanation as to how the yield curves were assigned to individual stands.

3 Results and Discussion

Yield groups #1 and #2

Three total volume models were fit for yield groups #1 and #2 (Table 3-1):

1. Coniferous dominated stands on good and medium sites
2. Coniferous dominated stands on poor sites
3. Deciduous dominated stands on good sites

The results were similar for all three models. As crown closure was not a significant indicator parameter of merchantable volume on poor sites, the t1, t5, and t6 coefficients were not fit for Equation 8. However, crown closure showed a significant (at 95% confidence) positive relationship with total volume for the good/medium site coniferous model and the good site deciduous model. Plots with an “A” crown closure predicted the lowest total volume, followed by “B”, then “D” and finally “C” (which predicted the largest total volume). This relationship was (for the most part) expected. A reasonable response as to why “C” crown closure plots indicate a greater total volume than those located in “D” stands is to suggest that some “D” crown closure stands were over-stocked and thus show slightly less merchantable volume than “C” crown closure stands (Smith 1962). Site index was also shown to be a significant explanatory variable (t2) with all three models showing an increase in SI resulting in an increase in predicted volume.

The t0 and t4 parameters show that age significantly impacts volume. All three models also had similar results with t0 showing a significant positive relationship and t4 showing a significant negative with total volume. This indicates as a stand ages total volume increases, however late-mature to over-mature stands experience increasing downward pressure on stand volume (t4 parameter) perhaps due to stagnation and/or mortality. This relationship between stand age and total volume is somewhat expected, however the loss of volume at the older ages in coniferous dominated stands appears to be more rapid than what would be anticipated. For example, coniferous yield curve number 18 (see section 3.1) losses over 50 m^3/ha from age 150 to 200 years, this results in a 22% loss in stand coniferous volume in that time period. This decrease might be caused by having only 2 plots present in coniferous stands greater than 160 years old, meaning that the older age yields are based on extrapolation. While this potential weakness must be recognized, there is no direct empirical evidence to adjust the yield projections (therefore none was applied). This potential short coming of the yield projections can be addressed in future forest management plans by ensuring that a greater number of plots are placed in stands 150 years and greater. Other than the above potential problem, the estimates for total volume are reasonable from a statistical and biological stand point.

When both coniferous and deciduous major species volumes were modeled (Table 3-2 - models 4 to 7) all parameters were significant. In all four models there was a positive relationship between total volume and major species volume. Additionally, as expected, an increased coniferous composition was shown to significantly increase the coniferous volume in coniferous dominated stands and to significantly decrease the deciduous volume in deciduous dominated stands.

Yield groups #3

The model for estimating total volume from good site coniferous dominated switch stands had no significant parameters (Table 3-3). However, the results were comparable to the volumes predicted from good, medium and poor sites from yield groups #1 and #2. These yield predictions will be applied to a relatively small area, about 3.5% of the entire net harvestable landbase. Therefore, these projections can be used with some caution. Interestingly, the model for predicting coniferous volume as a function of total volume was shown to be significant at 95% confidence (Table 3-4).

Yield groups #4

The model for deciduous dominated stands on poor sites was not significant for any of the parameters (Table 3-5). However, the results are what would be expected theoretically and the area these yield projections will be applied to is small (850 ha). Therefore, it is expected that these yield projections can be used with some caution but with the understanding that there will be little impact on the final AAC.

Table 3-1. Summary of total volume model (Yield Group #1 and #2) coefficients for Edson DFMP yield curves

Model Type	N	E#	Major Species	Natural Subregion	Site Quality	Function	t0	t1	t2	t3	t4	t5	t6
Total Volume	1	7	Coniferous (switch stands not included)	LF/UF	Good & Medium	TGMVOL	**8.4197**	**1.1564**	**0.2873**	**-428.6**	**-0.00756**	**1.4477**	**1.3094**
	2	8			Poor		**4.1953**	NA	**0.1891**	-252.7	**-0.00543**	NA	NA
	3	7	Deciduous	LF/UF	Good	TGMVOL	**2.7648**	**0.9312**	**0.0649**	-83.7085	**-0.00463**	**1.4910**	**1.4214**

Note: Bolding indicates parameter is significant at 95% confidence
N – Model number
E# - Equation number
TGMVOL = (t0+t1•CC_B+t5•CC_C+t6•CC_D+t2•SSI)•SAGE•*exp*(t4•SAGE)+t3
where:
TGMVOL – Total Gross Merchantable Volume
CC_B – Dummy variable signifying "B" crown closure
CC_C – Dummy variable signifying "C" crown closure
CC_D – Dummy variable signifying "D" crown closure
SSI – Stand Site Index (Conifer SI used when major species = conifer, Deciduous SI used when major species = deciduous)
SAGE – AVI stand age

Table 3-2. Summary of major species volume model (Yield Group #1 and #2) coefficients for Edson DFMP yield curves

Model Type	N	E#	Major Species	Natural Subregion	Site Quality	Function	c0	c1
Coniferous Volume	4	9	Coniferous	LF	ALL	CGMVOL	0.0162	**0.0860**
	5	9	Coniferous	UF			**0.2833**	**0.0639**
Deciduous Volume	6	9	Deciduous	LF	ALL	DGMVOL	**0.8878**	**-0.0721**
	7	9	Deciduous	UF			**0.9351**	**-0.1057**

Note: Bolding indicates parameter is significant at 95% confidence
N – Model Number
E# - Equation number
CGMVOL= (c0+c1•PC)•TGMVOLFM
DGMVOL= (c0+c1•PC)•TGMVOLFM
where:
CGMVOL – Gross Coniferous Merchantable Volume
DGMVOL – Deciduous Merchantable Volume
PC – Stand percentage coniferous composition (from AVI)
TGMVOLFM – Field Measured Total Gross Merchantable Volume

Table 3-3 Summary of total volume model (Yield Group #3) coefficients for Edson DFMP yield curves

Model Type	N	E#	Major Species	Natural Subregion	Site Quality	Function	t0	t3	t4
Total Volume	8	10	Coniferous Switch	LF/UF	Good	TVOLSWT	8.0159	-155.3	-0.00602

N – Model number
E# - Equation number
TVOLSWT = t0•SAGE•*exp*(t4•SAGE)+t3
where:
TVOLSWT – Total Gross Merchantable Volume (Switch Stands)
SAGE – AVI stand age

Table 3-4 Summary of major species model (Yield Group #3) coefficients for Edson DFMP yield curves

Model Type	N	E#	Major Species	Natural Subregion	Site Quality	Function	c0
Coniferous Volume	9	11	Coniferous Switch	LF/UF	All	CONVOLSWT	**0.3595**

N – Model number
E# - Equation number
CONVOLSWT = c0•TOTVOLFM
where:
TVOLSWT – Total Gross Merchantable Volume (Switch Stands)
SAGE – AVI stand age
TGMVOLFM – Field Measured Total Gross Merchantable Volume

Table 3-5. Summary of total yield model (Yield Group #4) and major species model coefficients for poor site deciduous dominated stands Edson DFMP yield curves

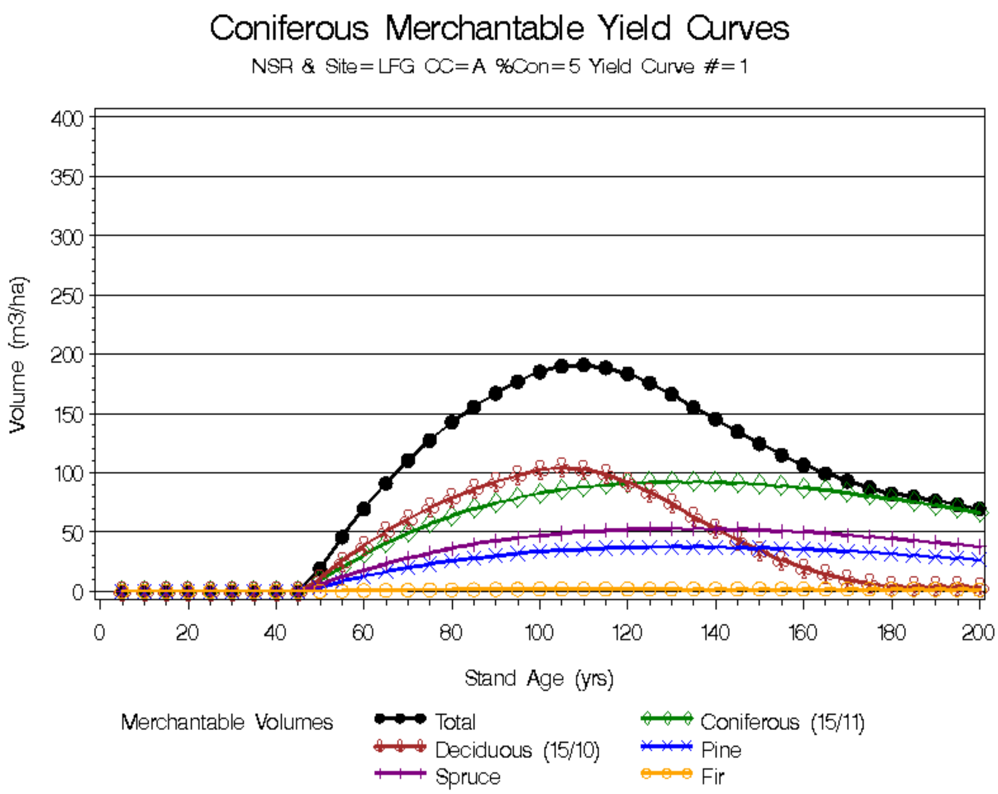
Model Type	N	E#	Major Species	Natural Subregion	Site Quality	Function	t0	t3	t4
Total Volume	10	12	Deciduous	LF/UF	Poor	TVOLPD	17.6016	-639.9	-0.00831

Note: None of the parameters were significant at 95% confidence.
N – Model Number
TVOLPD = t0•SAGE•*exp*(t4•SAGE)+t3
where:
SAGE – AVI stand age

3.1 Coniferous Yield Curves (15 / 11 Utilization and 15cm Stump Height)

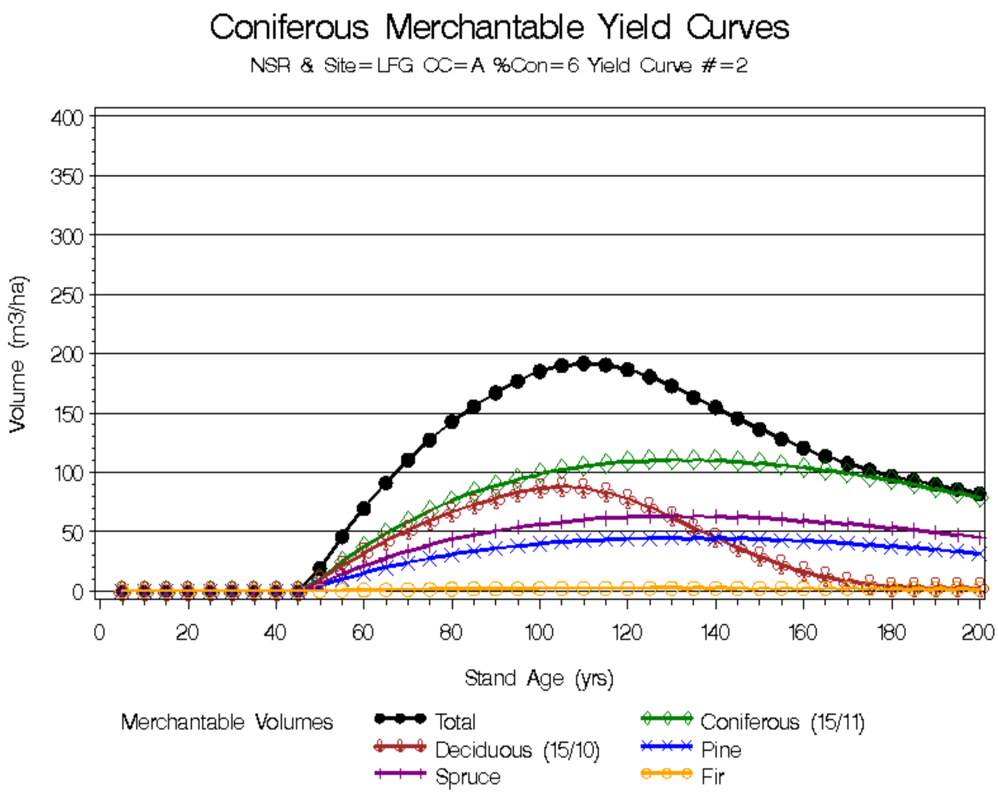
NSR & Site=LFG CC=A %Con=5 Yield Curve #=1

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	19	0.4	9	0.2	11	0.2
60	70	1.2	31	0.5	39	0.6
70	110	1.6	49	0.7	61	0.9
80	143	1.8	64	0.8	79	1.0
90	167	1.9	75	0.8	93	1.0
100	185	1.9	83	0.8	103	1.0
110	191	1.7	88	0.8	103	0.9
120	184	1.5	91	0.8	92	0.8
130	167	1.3	93	0.7	74	0.6
140	145	1.0	92	0.7	53	0.4
150	125	0.8	90	0.6	34	0.2
160	107	0.7	87	0.5	20	0.1
170	93	0.5	83	0.5	10	0.1
180	83	0.5	78	0.4	4	0.0
190	76	0.4	72	0.4	4	0.0
200	70	0.3	66	0.3	4	0.0



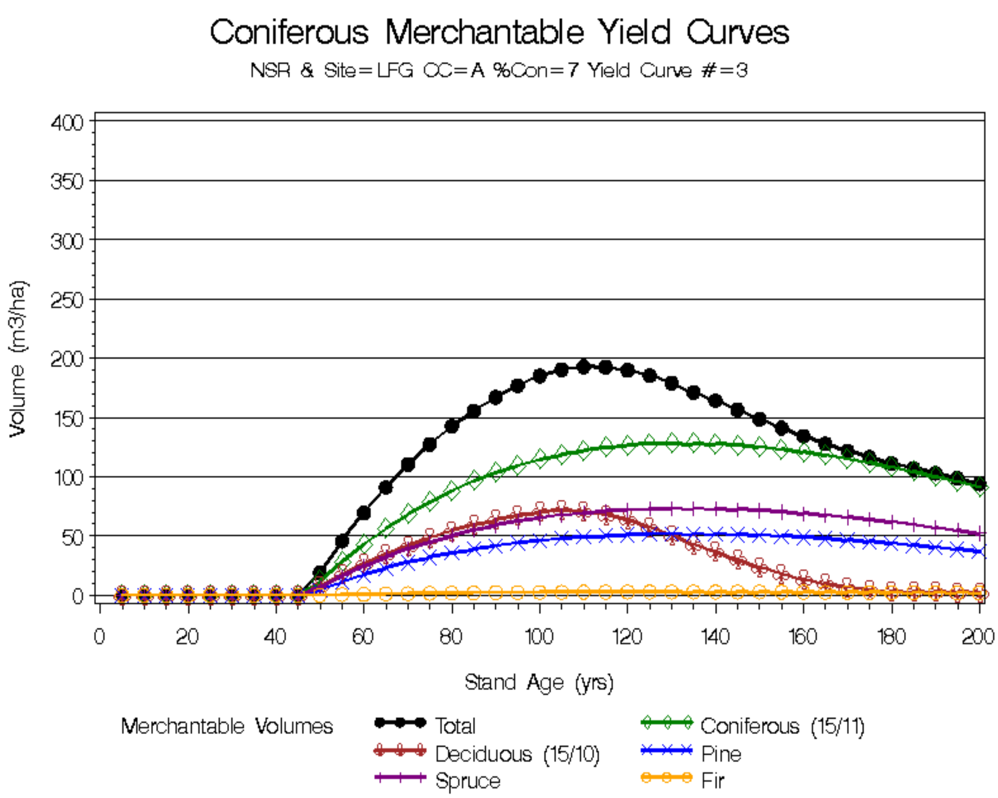
NSR & Site=LFG CC=A %Con=6 Yield Curve #=2

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	19	0.4	10	0.2	9	0.2
60	70	1.2	37	0.6	33	0.5
70	110	1.6	59	0.8	52	0.7
80	143	1.8	76	0.9	67	0.8
90	167	1.9	89	1.0	78	0.9
100	185	1.9	99	1.0	87	0.9
110	192	1.7	105	1.0	87	0.8
120	187	1.6	109	0.9	78	0.6
130	173	1.3	110	0.8	63	0.5
140	155	1.1	110	0.8	45	0.3
150	137	0.9	108	0.7	29	0.2
160	121	0.8	104	0.7	17	0.1
170	107	0.6	99	0.6	8	0.0
180	97	0.5	93	0.5	4	0.0
190	90	0.5	86	0.5	3	0.0
200	82	0.4	79	0.4	3	0.0



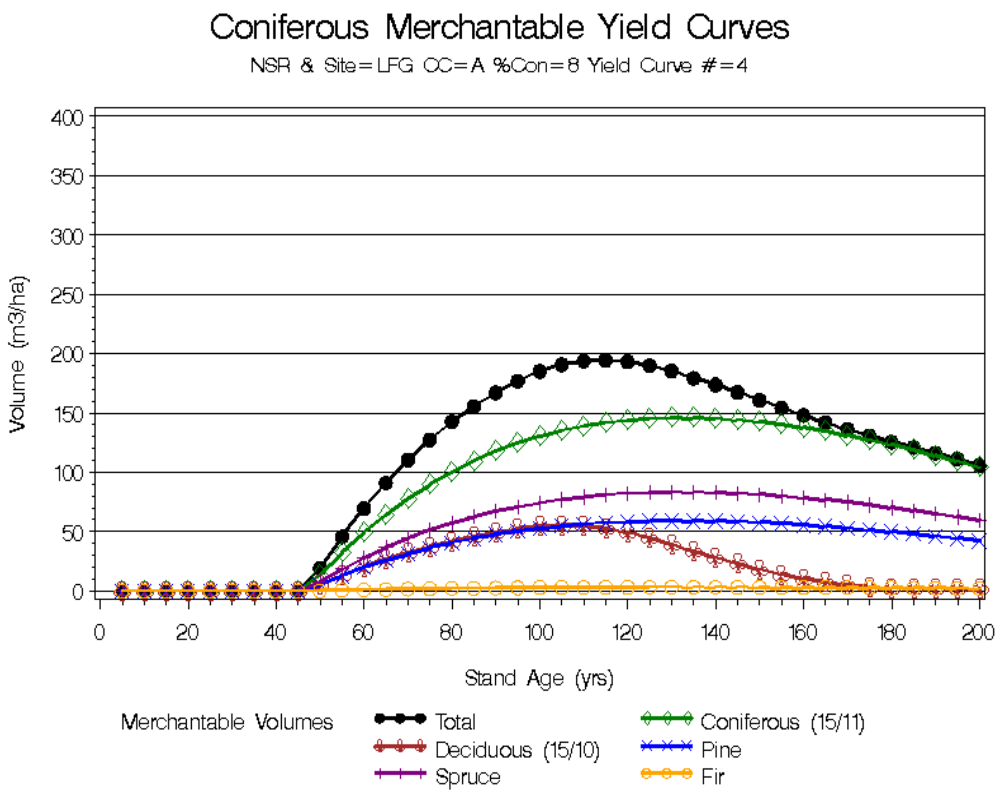
NSR & Site=LFG CC=A %Con=7 Yield Curve #=3

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	19	0.4	12	0.2	7	0.1
60	70	1.2	43	0.7	27	0.4
70	110	1.6	68	1.0	42	0.6
80	143	1.8	88	1.1	54	0.7
90	167	1.9	103	1.1	64	0.7
100	185	1.9	114	1.1	71	0.7
110	193	1.8	122	1.1	71	0.6
120	190	1.6	127	1.1	64	0.5
130	179	1.4	128	1.0	51	0.4
140	164	1.2	128	0.9	37	0.3
150	149	1.0	125	0.8	24	0.2
160	134	0.8	121	0.8	14	0.1
170	122	0.7	115	0.7	7	0.0
180	111	0.6	108	0.6	3	0.0
190	103	0.5	100	0.5	3	0.0
200	94	0.5	92	0.5	3	0.0



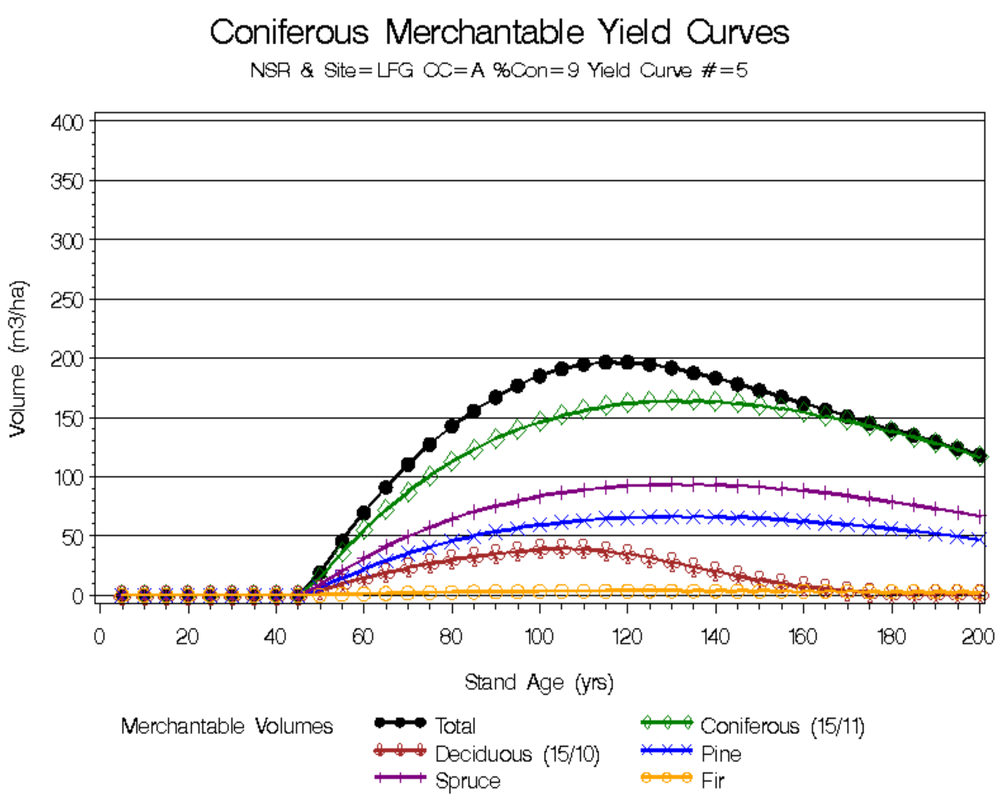
NSR & Site=LFG CC=A %Con=8 Yield Curve #=4

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	19	0.4	14	0.3	6	0.1
60	70	1.2	49	0.8	21	0.3
70	110	1.6	78	1.1	33	0.5
80	143	1.8	100	1.3	42	0.5
90	167	1.9	118	1.3	49	0.5
100	185	1.9	130	1.3	55	0.5
110	194	1.8	139	1.3	55	0.5
120	193	1.6	144	1.2	49	0.4
130	186	1.4	146	1.1	40	0.3
140	174	1.2	145	1.0	28	0.2
150	161	1.1	143	1.0	18	0.1
160	148	0.9	138	0.9	10	0.1
170	136	0.8	131	0.8	5	0.0
180	126	0.7	123	0.7	2	0.0
190	116	0.6	114	0.6	2	0.0
200	106	0.5	104	0.5	2	0.0



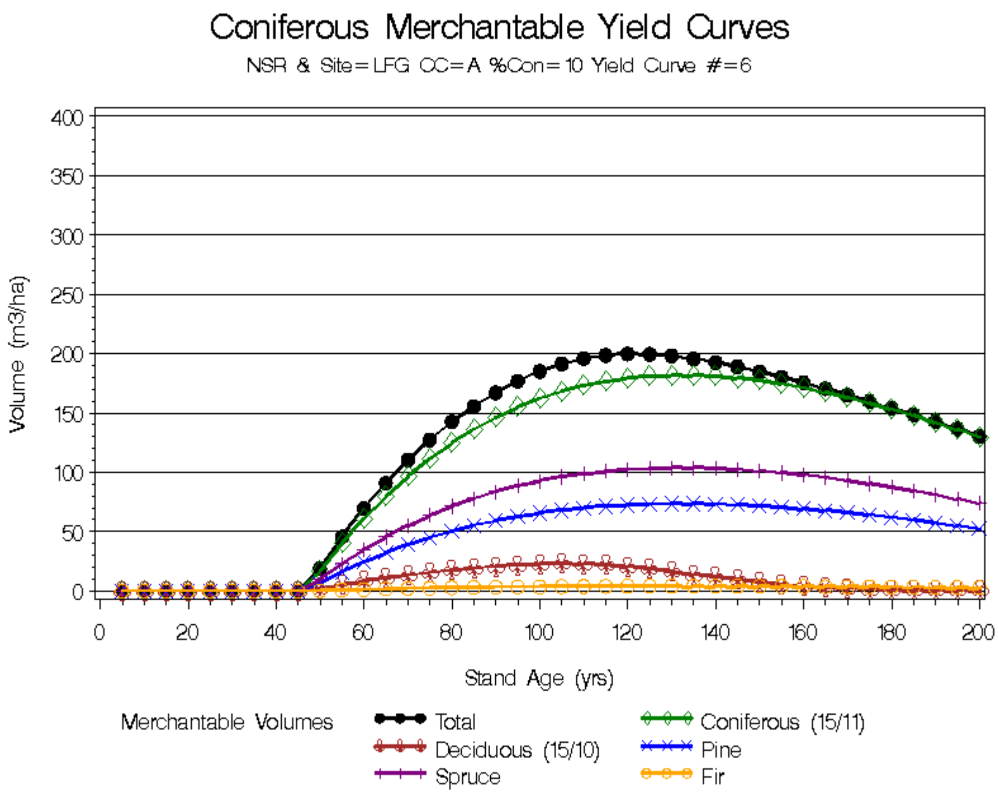
NSR & Site=LFG CC=A %Con=9 Yield Curve #=5

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	19	0.4	15	0.3	4	0.1
60	70	1.2	55	0.9	15	0.2
70	110	1.6	87	1.2	23	0.3
80	143	1.8	113	1.4	30	0.4
90	167	1.9	132	1.5	35	0.4
100	185	1.9	146	1.5	39	0.4
110	195	1.8	156	1.4	39	0.4
120	197	1.6	162	1.3	35	0.3
130	192	1.5	164	1.3	28	0.2
140	183	1.3	163	1.2	20	0.1
150	173	1.2	160	1.1	13	0.1
160	162	1.0	154	1.0	7	0.0
170	151	0.9	147	0.9	4	0.0
180	140	0.8	138	0.8	2	0.0
190	130	0.7	128	0.7	2	0.0
200	118	0.6	117	0.6	1	0.0



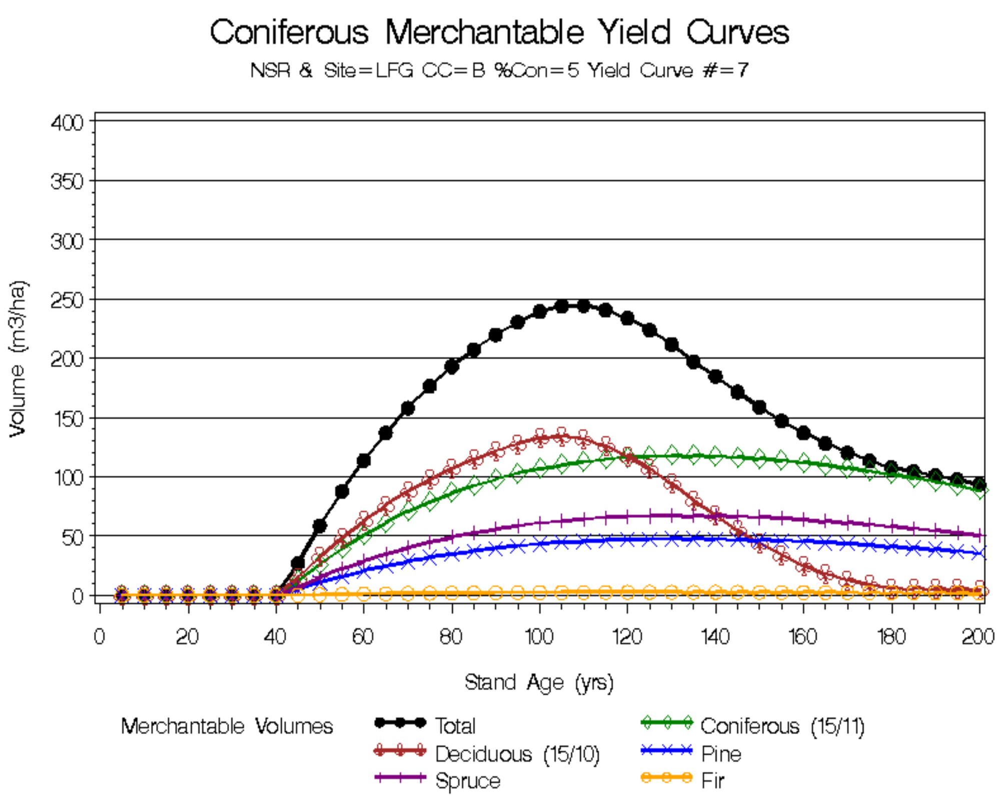
NSR & Site=LFG CC=A %Con=10 Yield Curve #=6

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	19	0.4	17	0.3	2	0.0
60	70	1.2	61	1.0	9	0.1
70	110	1.6	97	1.4	14	0.2
80	143	1.8	125	1.6	18	0.2
90	167	1.9	146	1.6	21	0.2
100	185	1.9	162	1.6	23	0.2
110	196	1.8	173	1.6	23	0.2
120	200	1.7	179	1.5	21	0.2
130	198	1.5	182	1.4	17	0.1
140	193	1.4	181	1.3	12	0.1
150	185	1.2	177	1.2	8	0.1
160	176	1.1	171	1.1	4	0.0
170	165	1.0	163	1.0	2	0.0
180	154	0.9	153	0.9	1	0.0
190	143	0.8	142	0.7	1	0.0
200	131	0.7	130	0.6	1	0.0



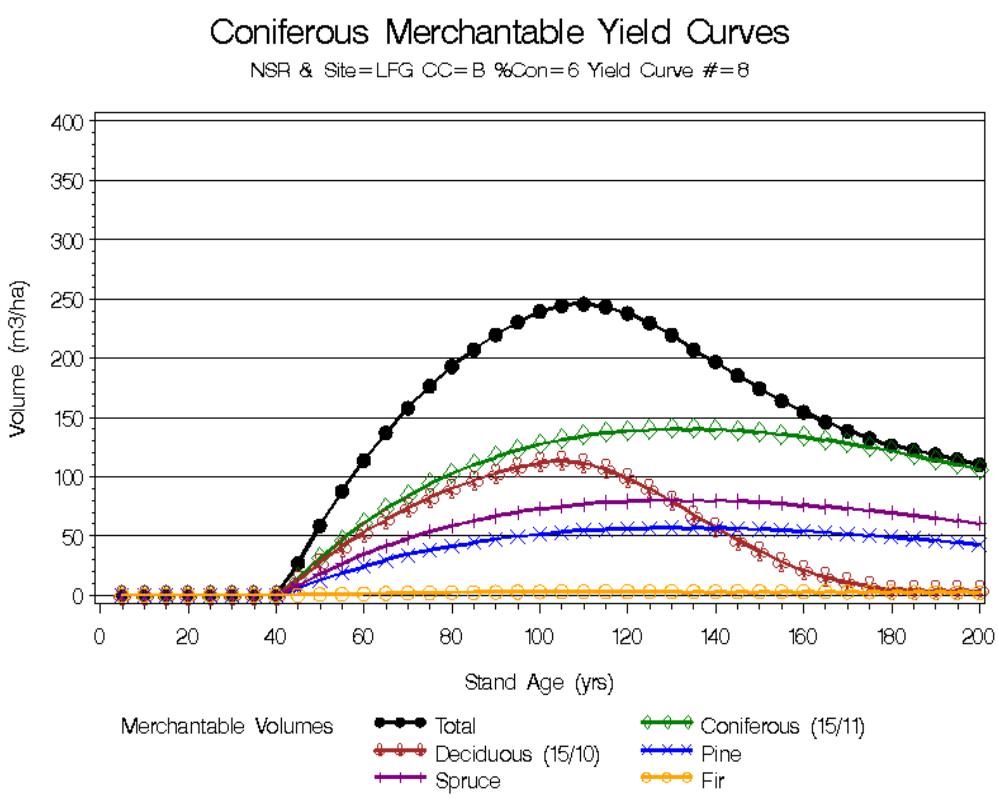
NSR & Site=LFG CC=B %Con=5 Yield Curve #=7

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	59	1.2	26	0.5	33	0.7
60	114	1.9	51	0.8	63	1.1
70	158	2.3	71	1.0	88	1.3
80	193	2.4	86	1.1	107	1.3
90	220	2.4	98	1.1	122	1.4
100	240	2.4	107	1.1	133	1.3
110	245	2.2	113	1.0	132	1.2
120	234	1.9	116	1.0	118	1.0
130	212	1.6	118	0.9	94	0.7
140	185	1.3	117	0.8	68	0.5
150	159	1.1	115	0.8	44	0.3
160	137	0.9	112	0.7	25	0.2
170	120	0.7	107	0.6	13	0.1
180	108	0.6	102	0.6	6	0.0
190	101	0.5	96	0.5	5	0.0
200	94	0.5	89	0.4	5	0.0



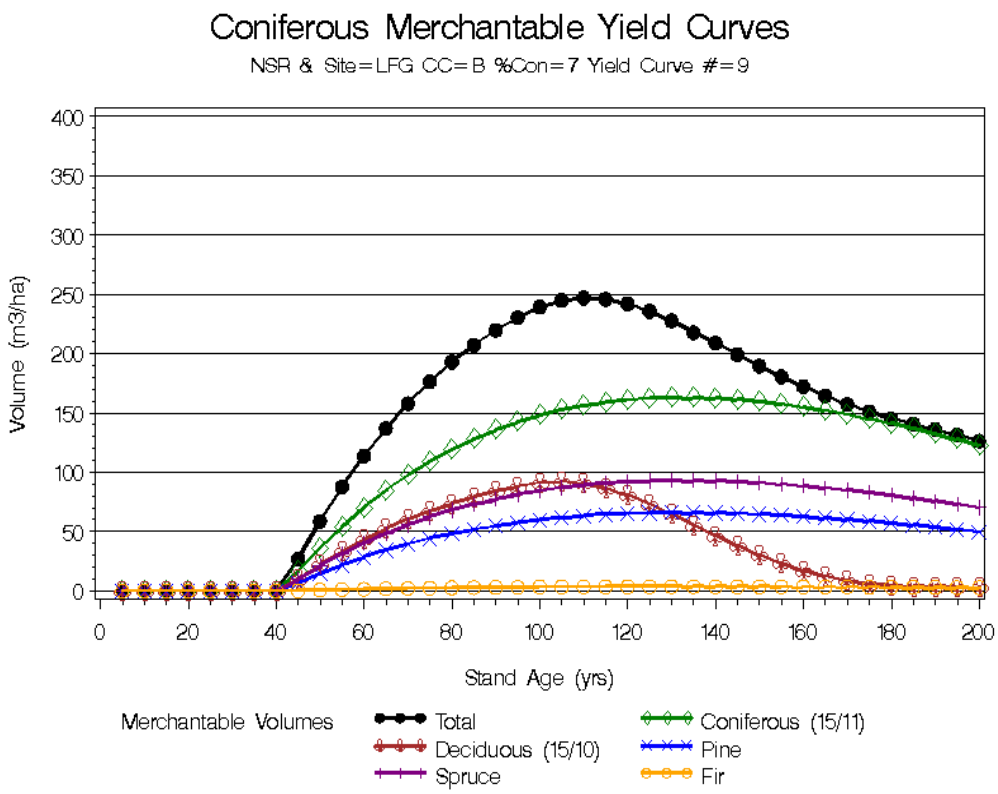
NSR & Site=LFG CC=B %Con=6 Yield Curve #=8

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	59	1.2	31	0.6	28	0.6
60	114	1.9	61	1.0	53	0.9
70	158	2.3	84	1.2	74	1.1
80	193	2.4	103	1.3	90	1.1
90	220	2.4	117	1.3	103	1.1
100	240	2.4	127	1.3	112	1.1
110	246	2.2	135	1.2	111	1.0
120	238	2.0	139	1.2	99	0.8
130	220	1.7	140	1.1	79	0.6
140	197	1.4	140	1.0	57	0.4
150	174	1.2	137	0.9	37	0.2
160	155	1.0	133	0.8	21	0.1
170	139	0.8	128	0.8	11	0.1
180	126	0.7	122	0.7	5	0.0
190	119	0.6	114	0.6	5	0.0
200	110	0.6	106	0.5	4	0.0



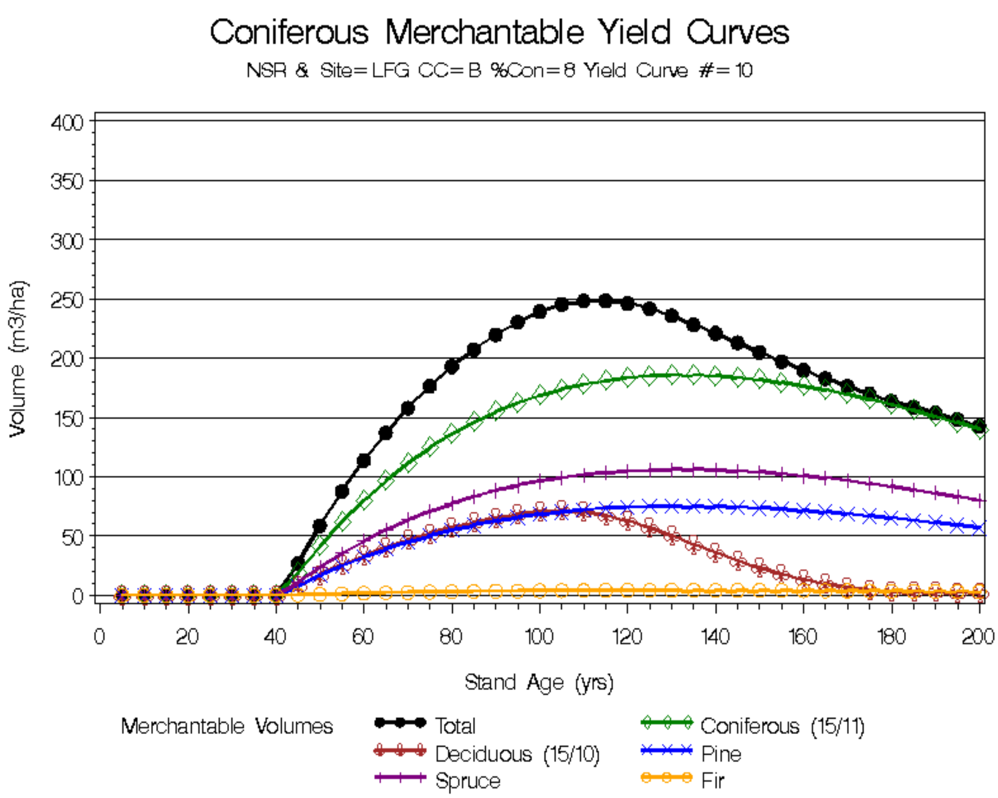
NSR & Site=LFG CC=B %Con=7 Yield Curve #=9

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	59	1.2	36	0.7	22	0.4
60	114	1.9	70	1.2	43	0.7
70	158	2.3	98	1.4	60	0.9
80	193	2.4	119	1.5	74	0.9
90	220	2.4	136	1.5	84	0.9
100	240	2.4	148	1.5	91	0.9
110	247	2.2	156	1.4	91	0.8
120	242	2.0	161	1.3	81	0.7
130	228	1.8	163	1.3	65	0.5
140	209	1.5	162	1.2	47	0.3
150	190	1.3	160	1.1	30	0.2
160	172	1.1	155	1.0	17	0.1
170	158	0.9	149	0.9	9	0.1
180	145	0.8	141	0.8	4	0.0
190	136	0.7	133	0.7	4	0.0
200	127	0.6	123	0.6	3	0.0



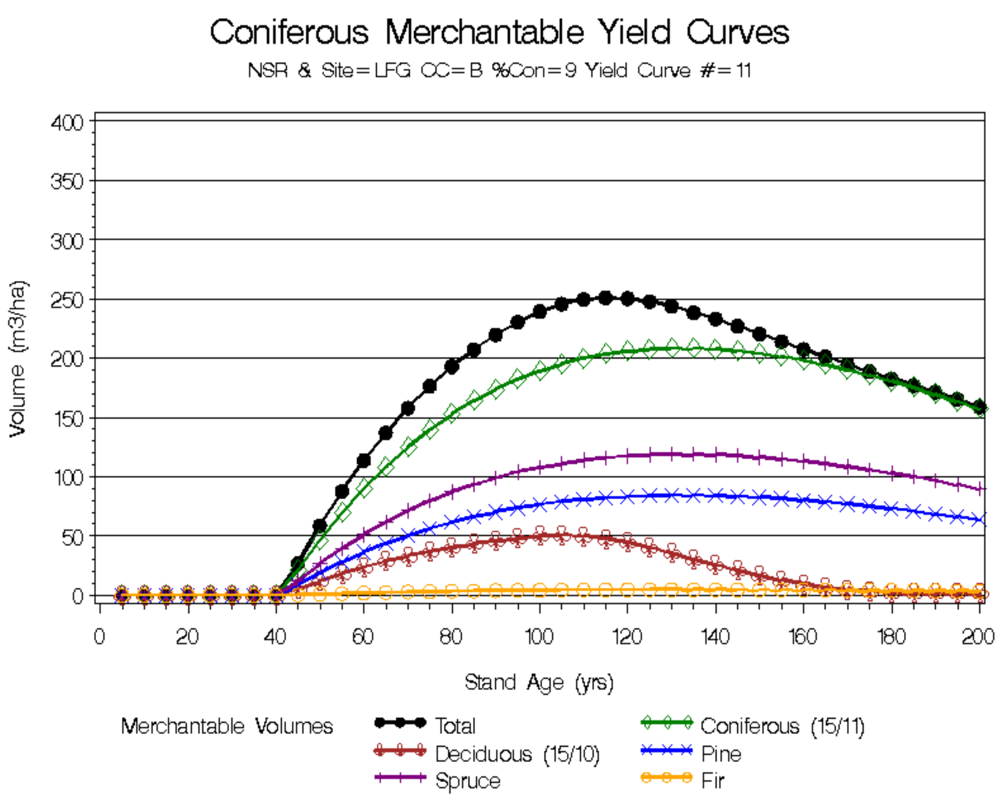
NSR & Site=LFG CC=B %Con=8 Yield Curve #=10

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	59	1.2	41	0.8	17	0.3
60	114	1.9	80	1.3	34	0.6
70	158	2.3	111	1.6	47	0.7
80	193	2.4	136	1.7	57	0.7
90	220	2.4	155	1.7	65	0.7
100	240	2.4	169	1.7	71	0.7
110	248	2.3	178	1.6	70	0.6
120	246	2.1	184	1.5	63	0.5
130	236	1.8	186	1.4	50	0.4
140	221	1.6	185	1.3	36	0.3
150	205	1.4	182	1.2	23	0.2
160	190	1.2	177	1.1	13	0.1
170	176	1.0	169	1.0	7	0.0
180	164	0.9	161	0.9	3	0.0
190	154	0.8	151	0.8	3	0.0
200	143	0.7	140	0.7	3	0.0



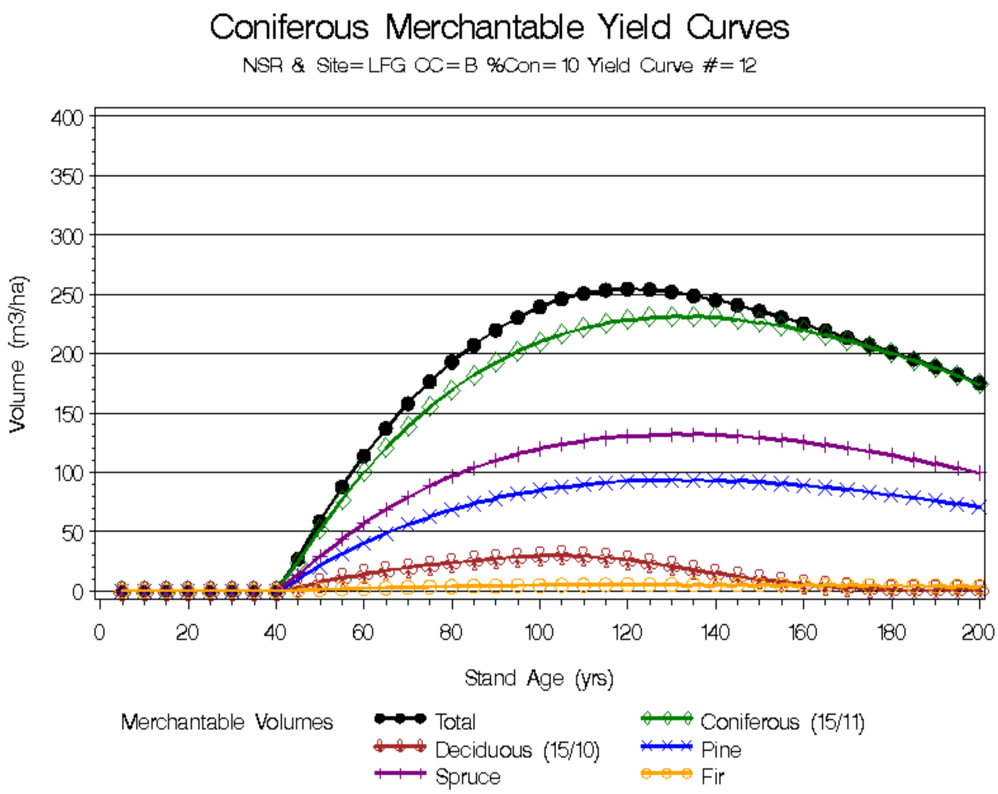
NSR & Site=LFG CC=B %Con=9 Yield Curve #=11

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	59	1.2	47	0.9	12	0.2
60	114	1.9	90	1.5	24	0.4
70	158	2.3	125	1.8	33	0.5
80	193	2.4	153	1.9	41	0.5
90	220	2.4	174	1.9	46	0.5
100	240	2.4	189	1.9	50	0.5
110	250	2.3	200	1.8	50	0.5
120	251	2.1	206	1.7	45	0.4
130	244	1.9	208	1.6	36	0.3
140	233	1.7	208	1.5	26	0.2
150	221	1.5	204	1.4	17	0.1
160	208	1.3	198	1.2	10	0.1
170	195	1.1	190	1.1	5	0.0
180	183	1.0	181	1.0	2	0.0
190	172	0.9	169	0.9	2	0.0
200	159	0.8	157	0.8	2	0.0



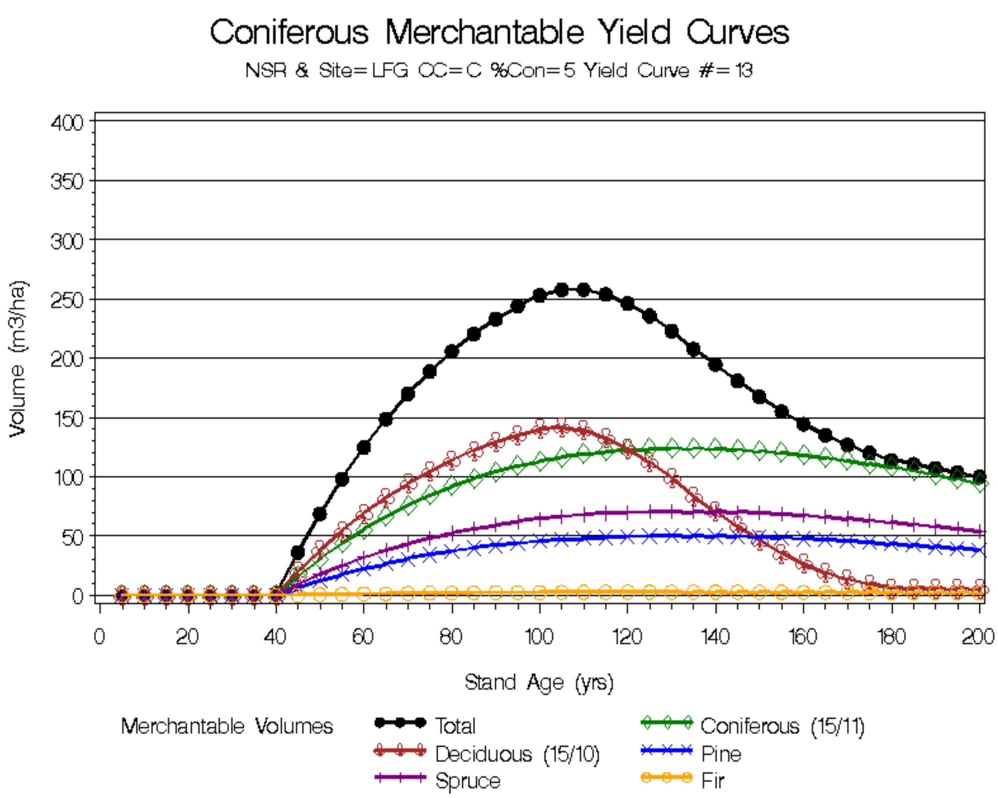
NSR & Site=LFG CC=B %Con=10 Yield Curve #=12

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	59	1.2	52	1.0	7	0.1
60	114	1.9	100	1.7	14	0.2
70	158	2.3	139	2.0	20	0.3
80	193	2.4	169	2.1	24	0.3
90	220	2.4	193	2.1	27	0.3
100	240	2.4	210	2.1	30	0.3
110	251	2.3	222	2.0	29	0.3
120	255	2.1	228	1.9	26	0.2
130	252	1.9	231	1.8	21	0.2
140	245	1.8	230	1.6	15	0.1
150	236	1.6	226	1.5	10	0.1
160	225	1.4	220	1.4	6	0.0
170	214	1.3	211	1.2	3	0.0
180	201	1.1	200	1.1	1	0.0
190	189	1.0	188	1.0	1	0.0
200	176	0.9	174	0.9	1	0.0



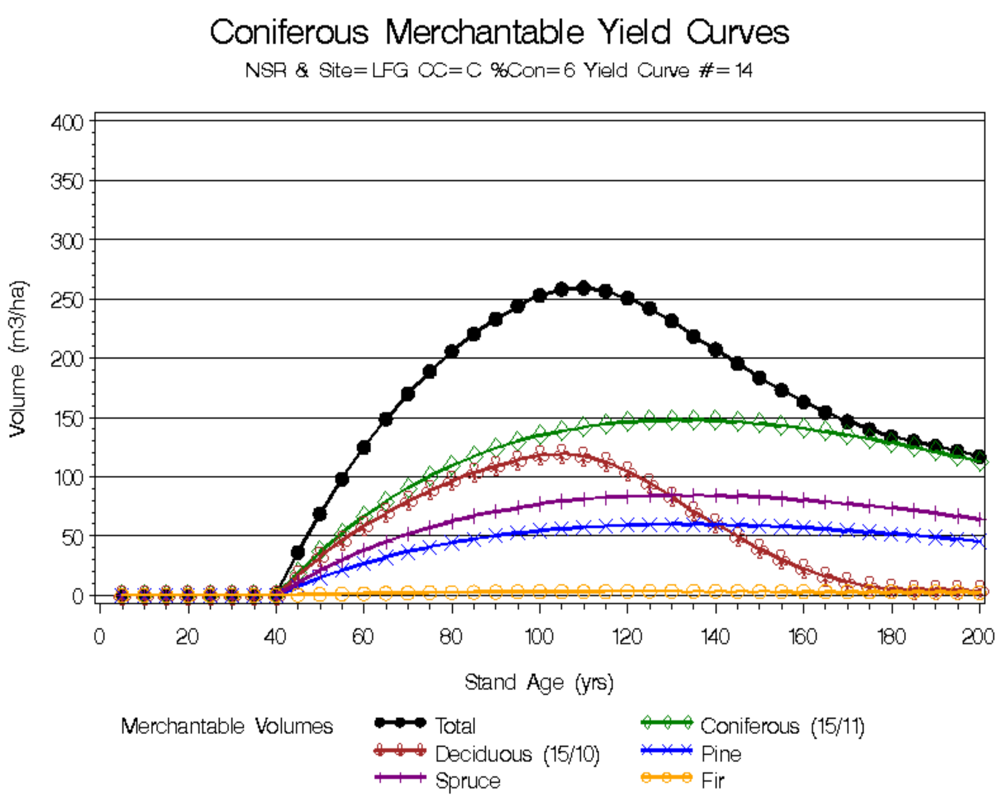
NSR & Site=LFG CC=C %Con=5 Yield Curve #=13

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	0	0.0	0	0.0
50	69	1.4	31	0.6	38	0.8
60	125	2.1	56	0.9	69	1.2
70	170	2.4	76	1.1	94	1.3
80	206	2.6	92	1.1	114	1.4
90	233	2.6	104	1.2	129	1.4
100	253	2.5	113	1.1	140	1.4
110	258	2.3	119	1.1	139	1.3
120	247	2.1	123	1.0	124	1.0
130	223	1.7	124	1.0	99	0.8
140	195	1.4	124	0.9	71	0.5
150	168	1.1	121	0.8	46	0.3
160	145	0.9	118	0.7	27	0.2
170	127	0.7	113	0.7	14	0.1
180	114	0.6	108	0.6	6	0.0
190	107	0.6	102	0.5	6	0.0
200	100	0.5	95	0.5	5	0.0



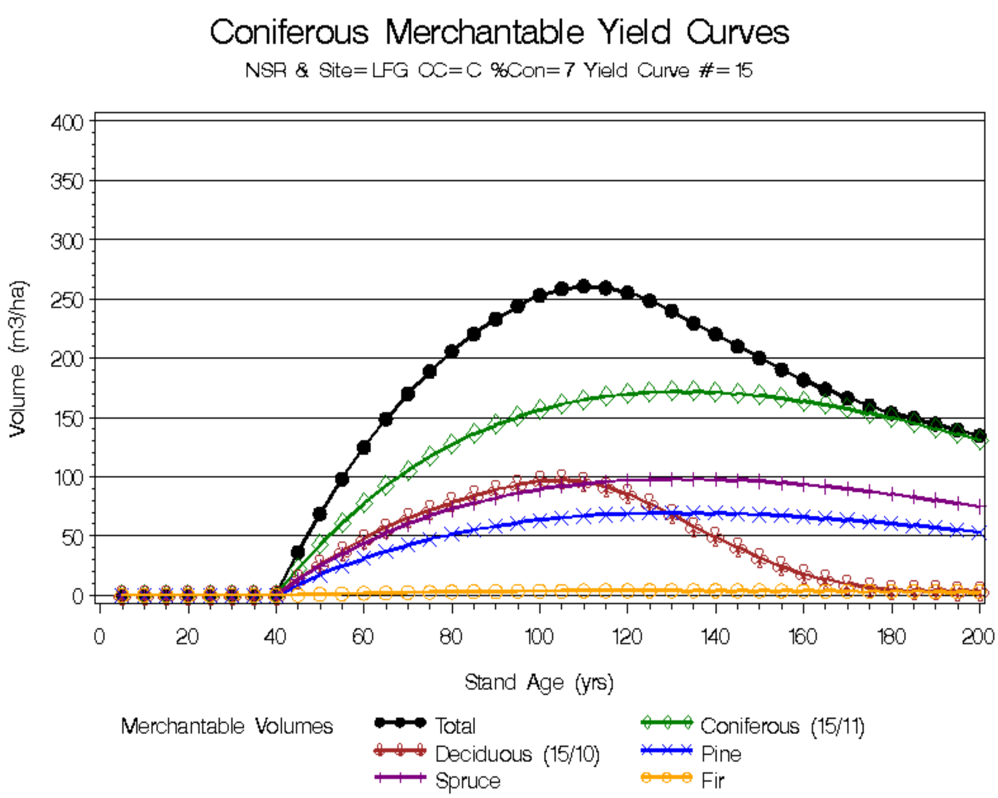
NSR & Site=LFG CC=C %Con=6 Yield Curve #=14

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	0	0.0	0	0.0
50	69	1.4	37	0.7	32	0.6
60	125	2.1	66	1.1	58	1.0
70	170	2.4	91	1.3	80	1.1
80	206	2.6	110	1.4	96	1.2
90	233	2.6	124	1.4	109	1.2
100	253	2.5	135	1.3	118	1.2
110	259	2.4	142	1.3	117	1.1
120	251	2.1	146	1.2	105	0.9
130	232	1.8	148	1.1	84	0.6
140	208	1.5	147	1.1	60	0.4
150	184	1.2	145	1.0	39	0.3
160	163	1.0	141	0.9	22	0.1
170	147	0.9	135	0.8	11	0.1
180	134	0.7	129	0.7	5	0.0
190	126	0.7	121	0.6	5	0.0
200	117	0.6	113	0.6	5	0.0



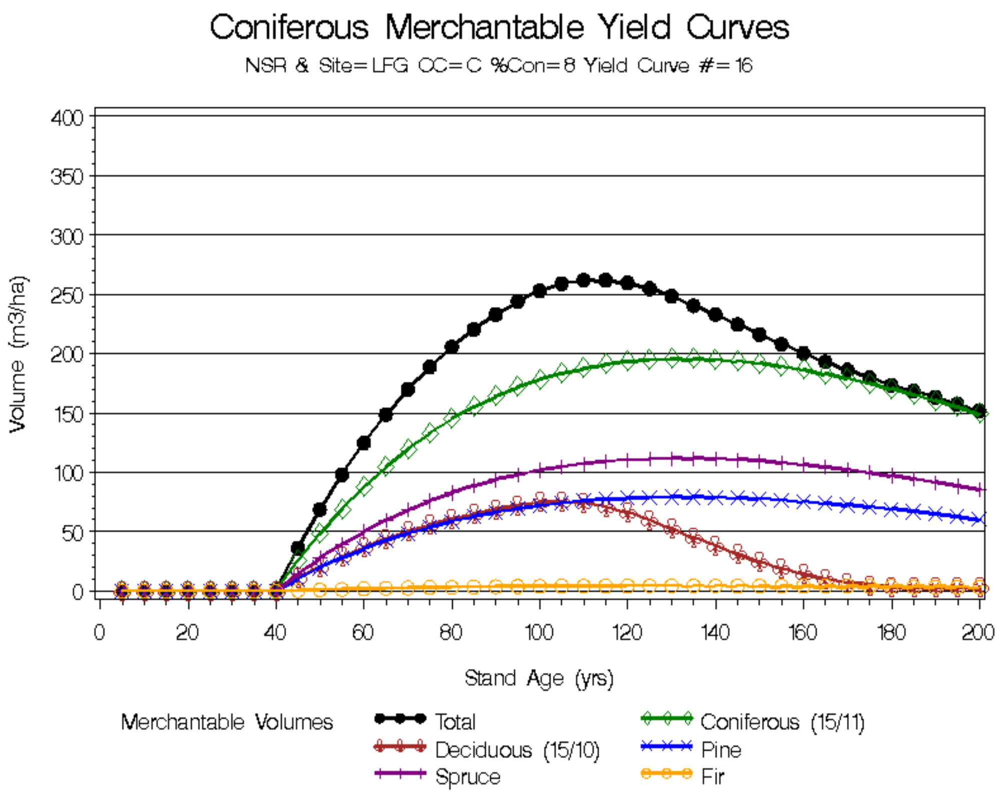
NSR & Site=LFG CC=C %Con=7 Yield Curve #=15

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	0	0.0	0	0.0
50	69	1.4	43	0.9	26	0.5
60	125	2.1	77	1.3	48	0.8
70	170	2.4	105	1.5	65	0.9
80	206	2.6	127	1.6	79	1.0
90	233	2.6	144	1.6	89	1.0
100	253	2.5	157	1.6	97	1.0
110	261	2.4	165	1.5	96	0.9
120	255	2.1	170	1.4	85	0.7
130	240	1.8	172	1.3	68	0.5
140	220	1.6	171	1.2	49	0.4
150	200	1.3	168	1.1	32	0.2
160	182	1.1	164	1.0	18	0.1
170	167	1.0	157	0.9	9	0.1
180	154	0.9	150	0.8	4	0.0
190	145	0.8	141	0.7	4	0.0
200	135	0.7	131	0.7	4	0.0



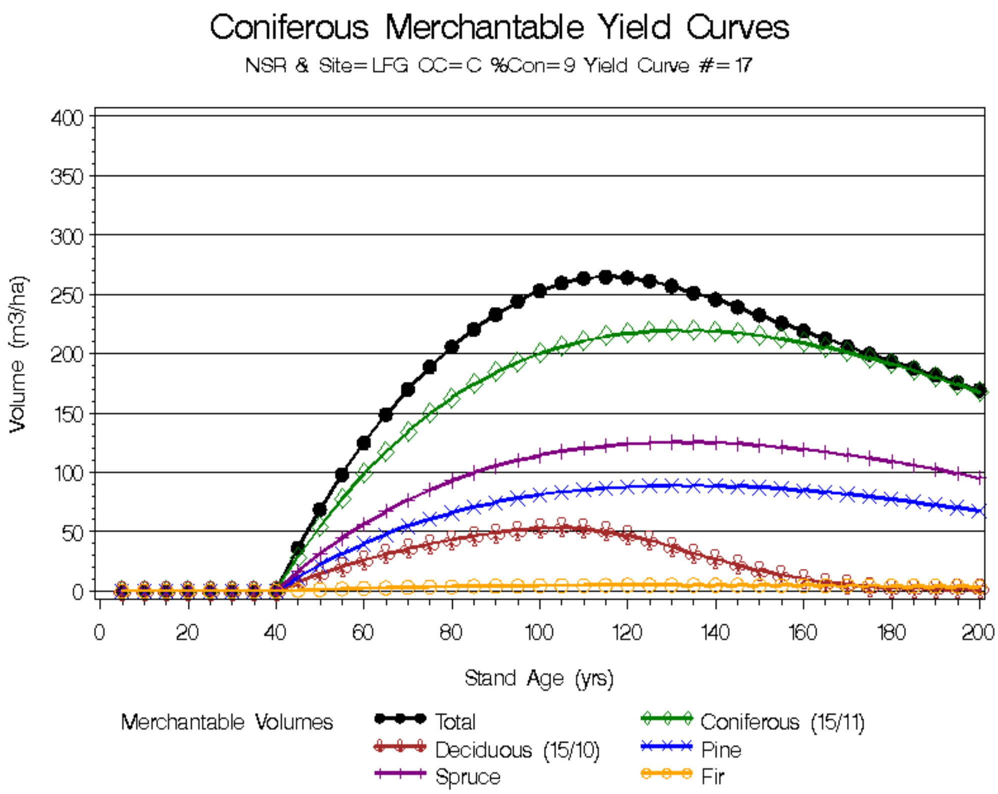
NSR & Site=LFG CC=C %Con=8 Yield Curve #=16

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	0	0.0	0	0.0
50	69	1.4	48	1.0	20	0.4
60	125	2.1	88	1.5	37	0.6
70	170	2.4	120	1.7	50	0.7
80	206	2.6	145	1.8	61	0.8
90	233	2.6	164	1.8	69	0.8
100	253	2.5	178	1.8	75	0.7
110	262	2.4	188	1.7	74	0.7
120	260	2.2	194	1.6	66	0.6
130	249	1.9	196	1.5	53	0.4
140	233	1.7	195	1.4	38	0.3
150	216	1.4	192	1.3	25	0.2
160	201	1.3	186	1.2	14	0.1
170	186	1.1	179	1.1	7	0.0
180	174	1.0	170	0.9	3	0.0
190	163	0.9	160	0.8	3	0.0
200	152	0.8	149	0.7	3	0.0



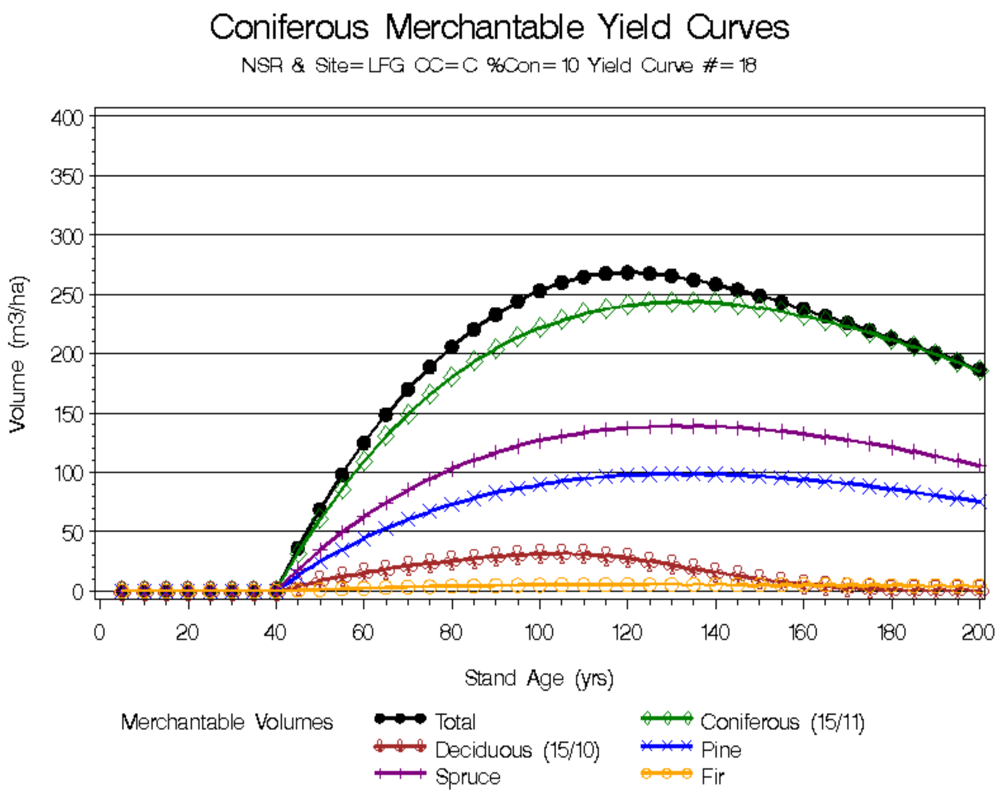
NSR & Site=LFG CC=C %Con=9 Yield Curve #=17

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	0	0.0	0	0.0
50	69	1.4	54	1.1	14	0.3
60	125	2.1	99	1.6	26	0.4
70	170	2.4	134	1.9	36	0.5
80	206	2.6	163	2.0	43	0.5
90	233	2.6	184	2.0	49	0.5
100	253	2.5	200	2.0	53	0.5
110	264	2.4	211	1.9	53	0.5
120	264	2.2	217	1.8	47	0.4
130	257	2.0	220	1.7	38	0.3
140	246	1.8	219	1.6	27	0.2
150	233	1.6	215	1.4	17	0.1
160	219	1.4	209	1.3	10	0.1
170	206	1.2	201	1.2	5	0.0
180	193	1.1	191	1.1	2	0.0
190	182	1.0	180	0.9	2	0.0
200	169	0.8	167	0.8	2	0.0



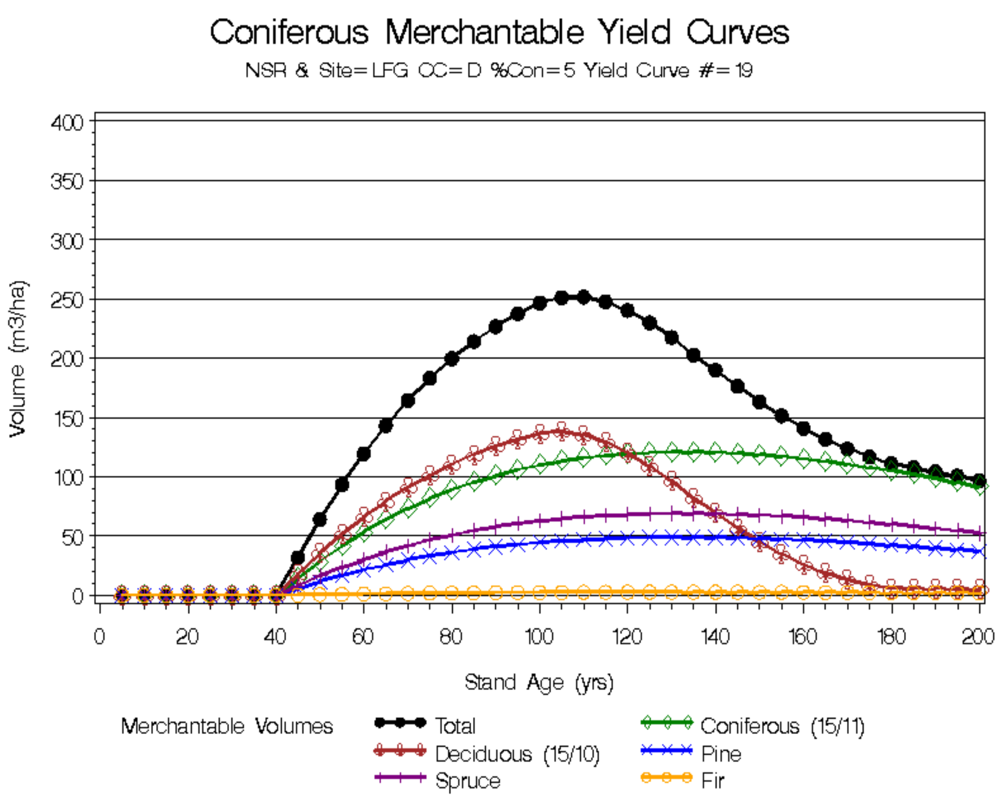
NSR & Site=LFG CC=C %Con=10 Yield Curve #=18

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	69	1.4	60	1.2	9	0.2
60	125	2.1	109	1.8	15	0.3
70	170	2.4	149	2.1	21	0.3
80	206	2.6	180	2.3	26	0.3
90	233	2.6	204	2.3	29	0.3
100	253	2.5	222	2.2	31	0.3
110	265	2.4	234	2.1	31	0.3
120	268	2.2	241	2.0	28	0.2
130	266	2.0	244	1.9	22	0.2
140	259	1.8	243	1.7	16	0.1
150	249	1.7	239	1.6	10	0.1
160	238	1.5	232	1.4	6	0.0
170	226	1.3	223	1.3	3	0.0
180	213	1.2	212	1.2	1	0.0
190	201	1.1	199	1.0	1	0.0
200	187	0.9	186	0.9	1	0.0



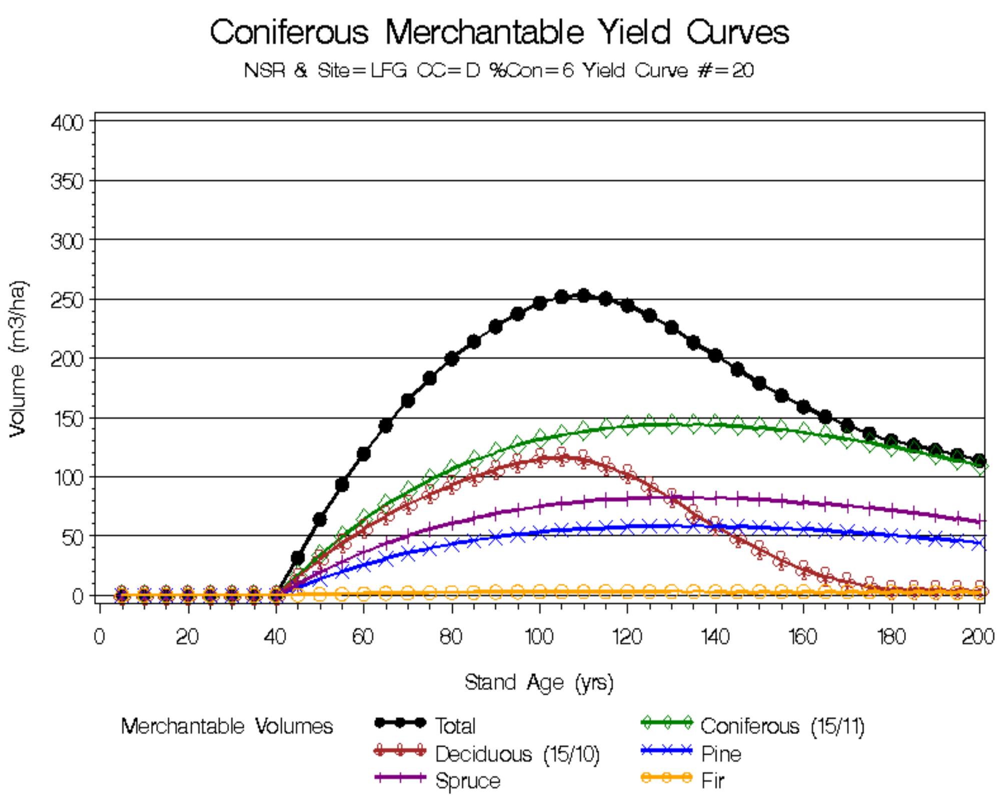
NSR & Site=LFG CC=D %Con=5 Yield Curve #=19

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	64	1.3	29	0.6	36	0.7
60	120	2.0	53	0.9	66	1.1
70	164	2.3	73	1.0	91	1.3
80	200	2.5	89	1.1	111	1.4
90	227	2.5	101	1.1	126	1.4
100	247	2.5	110	1.1	137	1.4
110	252	2.3	116	1.1	136	1.2
120	241	2.0	120	1.0	121	1.0
130	218	1.7	121	0.9	97	0.7
140	190	1.4	121	0.9	70	0.5
150	163	1.1	119	0.8	45	0.3
160	141	0.9	115	0.7	26	0.2
170	124	0.7	111	0.7	13	0.1
180	111	0.6	105	0.6	6	0.0
190	104	0.5	99	0.5	6	0.0
200	97	0.5	92	0.5	5	0.0



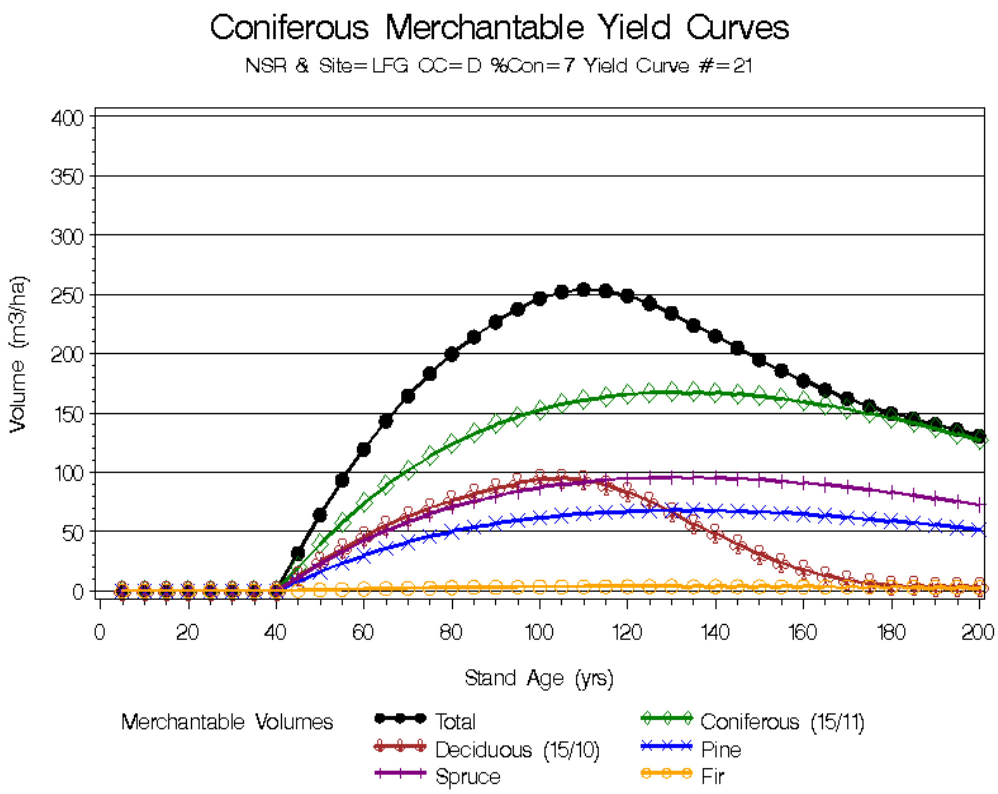
NSR & Site=LFG CC=D %Con=6 Yield Curve #=20

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	64	1.3	34	0.7	30	0.6
60	120	2.0	64	1.1	56	0.9
70	164	2.3	87	1.2	77	1.1
80	200	2.5	106	1.3	93	1.2
90	227	2.5	121	1.3	106	1.2
100	247	2.5	131	1.3	115	1.2
110	253	2.3	138	1.3	115	1.0
120	245	2.0	143	1.2	102	0.9
130	226	1.7	144	1.1	82	0.6
140	203	1.4	144	1.0	59	0.4
150	179	1.2	141	0.9	38	0.3
160	159	1.0	137	0.9	22	0.1
170	143	0.8	132	0.8	11	0.1
180	130	0.7	125	0.7	5	0.0
190	123	0.6	118	0.6	5	0.0
200	114	0.6	110	0.5	4	0.0



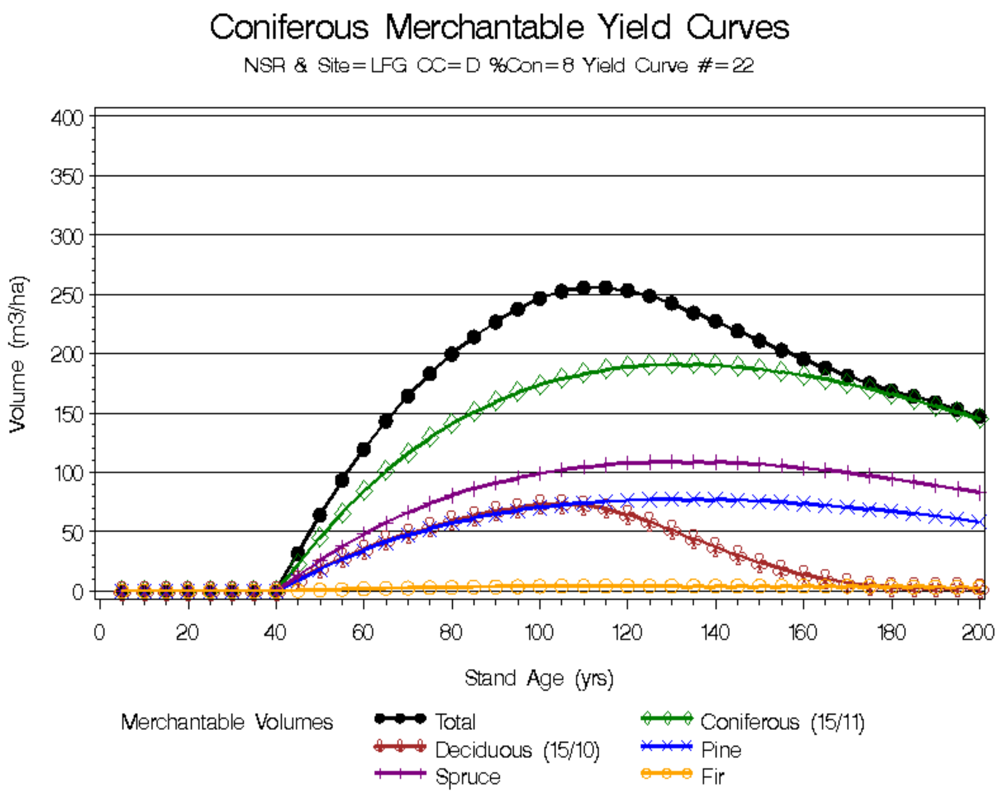
NSR & Site=LFG CC=D %Con=7 Yield Curve #=21

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	64	1.3	40	0.8	24	0.5
60	120	2.0	74	1.2	46	0.8
70	164	2.3	102	1.5	63	0.9
80	200	2.5	124	1.5	76	1.0
90	227	2.5	140	1.6	87	1.0
100	247	2.5	153	1.5	94	0.9
110	254	2.3	161	1.5	94	0.9
120	249	2.1	166	1.4	83	0.7
130	234	1.8	168	1.3	67	0.5
140	215	1.5	167	1.2	48	0.3
150	195	1.3	164	1.1	31	0.2
160	177	1.1	160	1.0	18	0.1
170	162	1.0	153	0.9	9	0.1
180	150	0.8	146	0.8	4	0.0
190	141	0.7	137	0.7	4	0.0
200	131	0.7	127	0.6	4	0.0



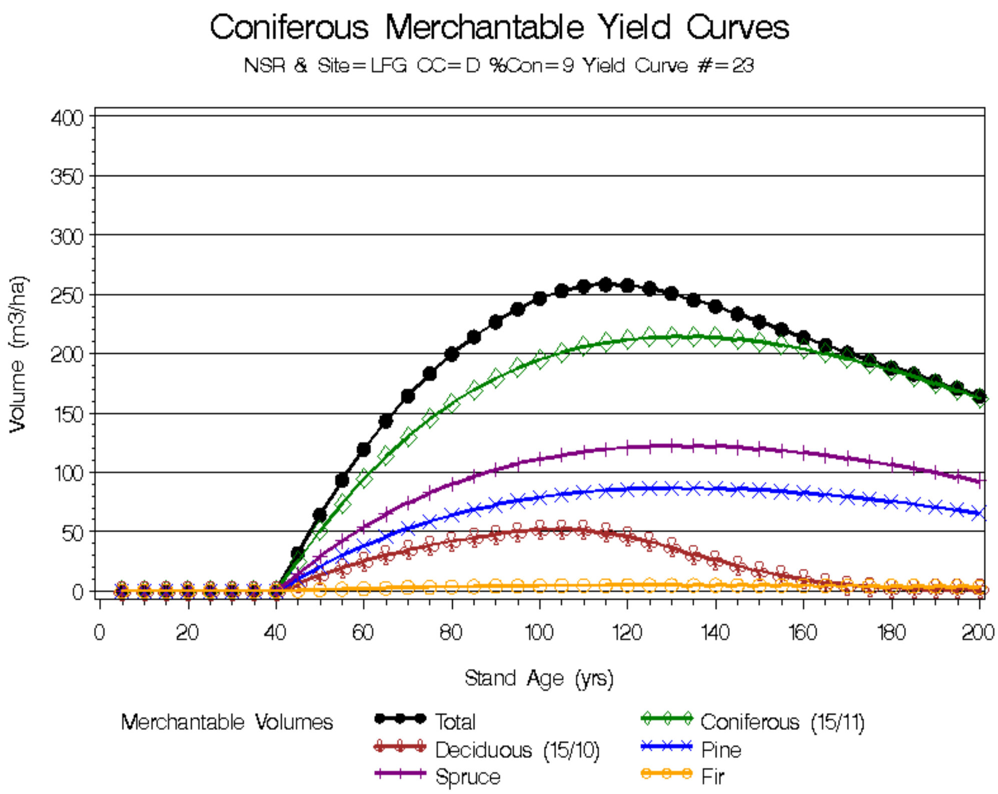
NSR & Site=LFG CC=D %Con=8 Yield Curve #=22

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	64	1.3	45	0.9	19	0.4
60	120	2.0	84	1.4	35	0.6
70	164	2.3	116	1.7	49	0.7
80	200	2.5	141	1.8	59	0.7
90	227	2.5	160	1.8	67	0.7
100	247	2.5	174	1.7	73	0.7
110	256	2.3	183	1.7	72	0.7
120	253	2.1	189	1.6	65	0.5
130	243	1.9	191	1.5	52	0.4
140	227	1.6	190	1.4	37	0.3
150	211	1.4	187	1.2	24	0.2
160	196	1.2	182	1.1	14	0.1
170	182	1.1	175	1.0	7	0.0
180	169	0.9	166	0.9	3	0.0
190	159	0.8	156	0.8	3	0.0
200	148	0.7	145	0.7	3	0.0



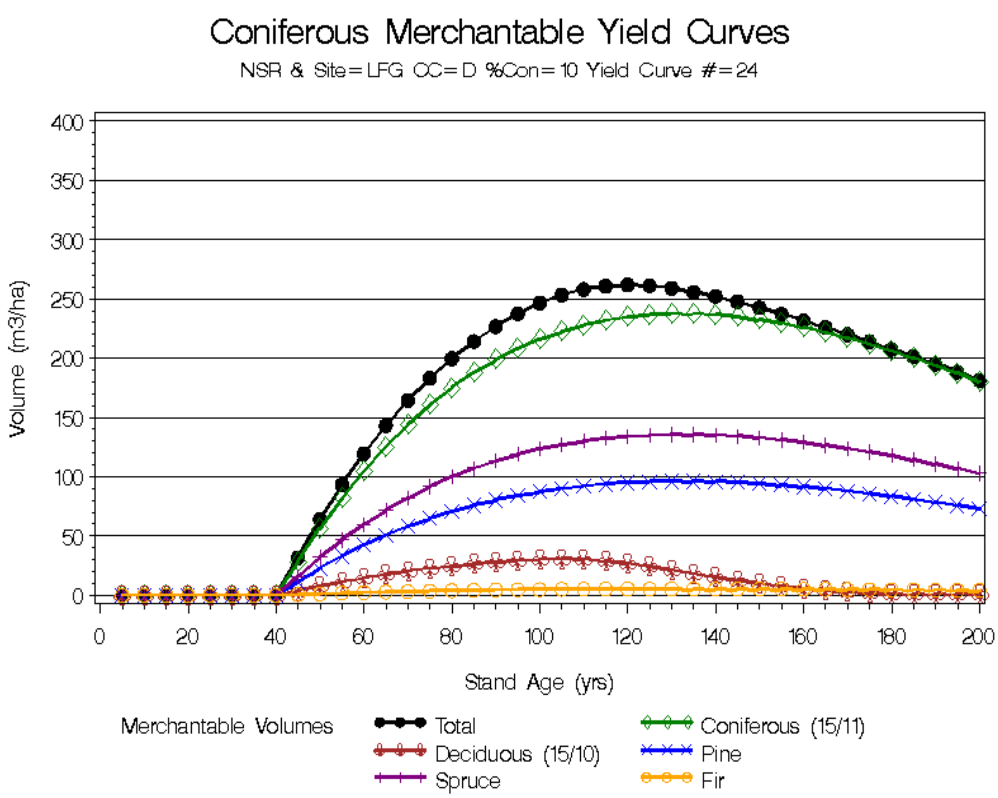
NSR & Site=LFG CC=D %Con=9 Yield Curve #=23

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	64	1.3	51	1.0	13	0.3
60	120	2.0	94	1.6	25	0.4
70	164	2.3	130	1.9	35	0.5
80	200	2.5	158	2.0	42	0.5
90	227	2.5	179	2.0	48	0.5
100	247	2.5	195	1.9	52	0.5
110	257	2.3	206	1.9	51	0.5
120	258	2.1	212	1.8	46	0.4
130	251	1.9	214	1.6	37	0.3
140	240	1.7	214	1.5	26	0.2
150	227	1.5	210	1.4	17	0.1
160	214	1.3	204	1.3	10	0.1
170	201	1.2	196	1.2	5	0.0
180	188	1.0	186	1.0	2	0.0
190	177	0.9	175	0.9	2	0.0
200	165	0.8	163	0.8	2	0.0



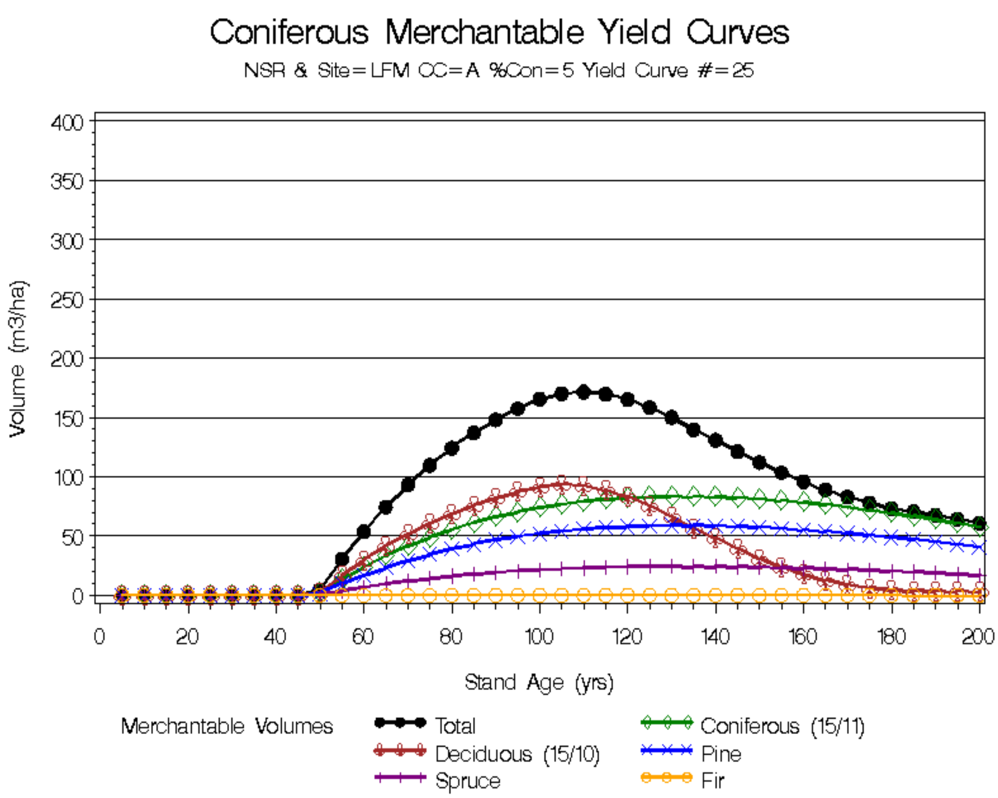
NSR & Site=LFG CC=D %Con=10 Yield Curve #=24

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	64	1.3	56	1.1	8	0.2
60	120	2.0	105	1.7	15	0.2
70	164	2.3	144	2.1	20	0.3
80	200	2.5	175	2.2	25	0.3
90	227	2.5	199	2.2	28	0.3
100	247	2.5	216	2.2	31	0.3
110	258	2.3	228	2.1	30	0.3
120	262	2.2	235	2.0	27	0.2
130	259	2.0	238	1.8	22	0.2
140	252	1.8	237	1.7	16	0.1
150	243	1.6	233	1.6	10	0.1
160	232	1.4	226	1.4	6	0.0
170	220	1.3	217	1.3	3	0.0
180	208	1.2	206	1.1	1	0.0
190	195	1.0	194	1.0	1	0.0
200	181	0.9	180	0.9	1	0.0



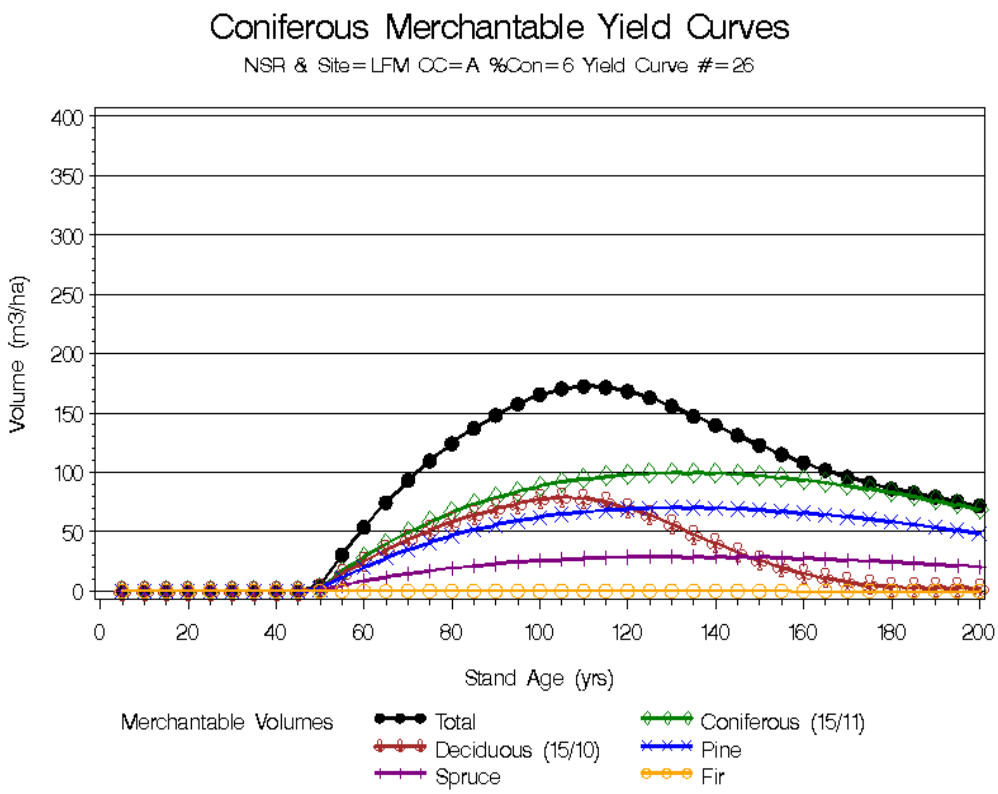
NSR & Site=LFM CC=A %Con=5 Yield Curve #=25

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	5	0.1	2	0.0	3	0.1
60	54	0.9	24	0.4	30	0.5
70	93	1.3	42	0.6	52	0.7
80	124	1.6	55	0.7	69	0.9
90	148	1.6	66	0.7	82	0.9
100	166	1.7	74	0.7	92	0.9
110	172	1.6	79	0.7	92	0.8
120	165	1.4	82	0.7	83	0.7
130	150	1.2	84	0.6	67	0.5
140	131	0.9	83	0.6	48	0.3
150	112	0.7	81	0.5	31	0.2
160	96	0.6	78	0.5	18	0.1
170	83	0.5	74	0.4	9	0.1
180	73	0.4	69	0.4	4	0.0
190	68	0.4	64	0.3	4	0.0
200	61	0.3	58	0.3	3	0.0



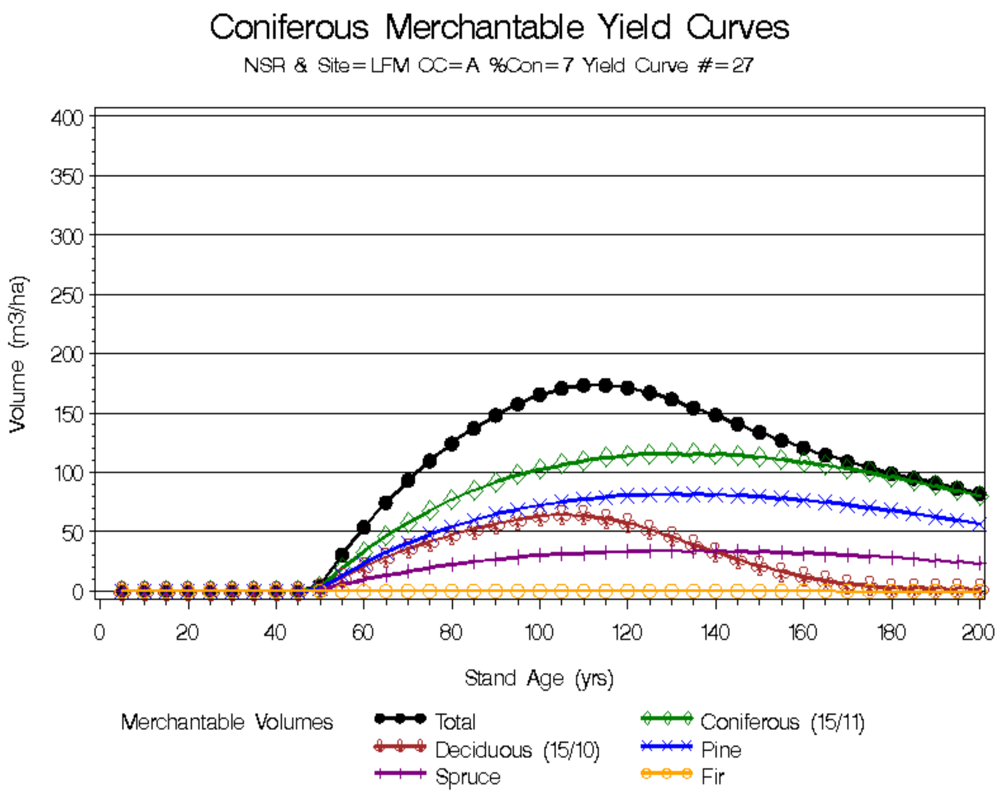
NSR & Site=LFM CC=A %Con=6 Yield Curve #=26

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	5	0.1	3	0.1	2	0.0
60	54	0.9	29	0.5	25	0.4
70	93	1.3	50	0.7	44	0.6
80	124	1.6	66	0.8	58	0.7
90	148	1.6	79	0.9	69	0.8
100	166	1.7	88	0.9	77	0.8
110	173	1.6	94	0.9	78	0.7
120	168	1.4	98	0.8	70	0.6
130	156	1.2	100	0.8	56	0.4
140	140	1.0	99	0.7	41	0.3
150	123	0.8	97	0.6	26	0.2
160	108	0.7	93	0.6	15	0.1
170	96	0.6	89	0.5	7	0.0
180	86	0.5	83	0.5	3	0.0
190	79	0.4	76	0.4	3	0.0
200	72	0.4	69	0.3	3	0.0



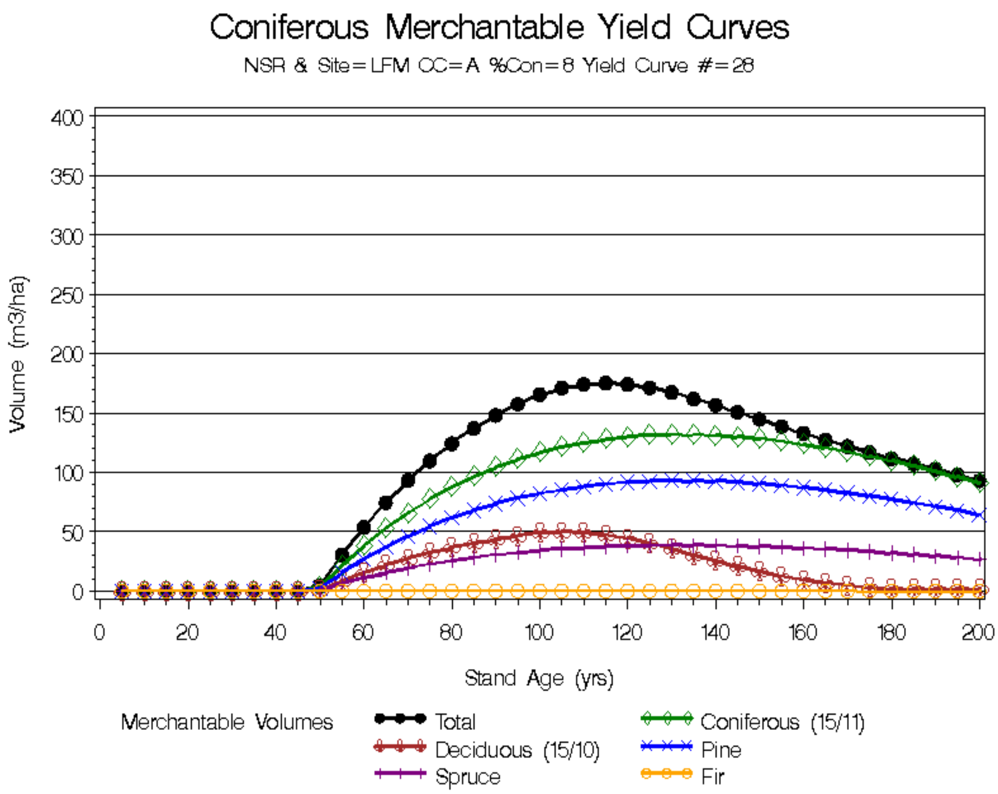
NSR & Site=LFM CC=A %Con=7 Yield Curve #=27

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	5	0.1	3	0.1	2	0.0
60	54	0.9	33	0.6	21	0.3
70	93	1.3	58	0.8	36	0.5
80	124	1.6	77	1.0	47	0.6
90	148	1.6	92	1.0	57	0.6
100	166	1.7	102	1.0	63	0.6
110	173	1.6	110	1.0	64	0.6
120	171	1.4	114	0.9	57	0.5
130	162	1.2	116	0.9	46	0.4
140	148	1.1	115	0.8	33	0.2
150	134	0.9	113	0.8	21	0.1
160	121	0.8	109	0.7	12	0.1
170	109	0.6	103	0.6	6	0.0
180	99	0.6	96	0.5	3	0.0
190	91	0.5	89	0.5	3	0.0
200	82	0.4	80	0.4	2	0.0



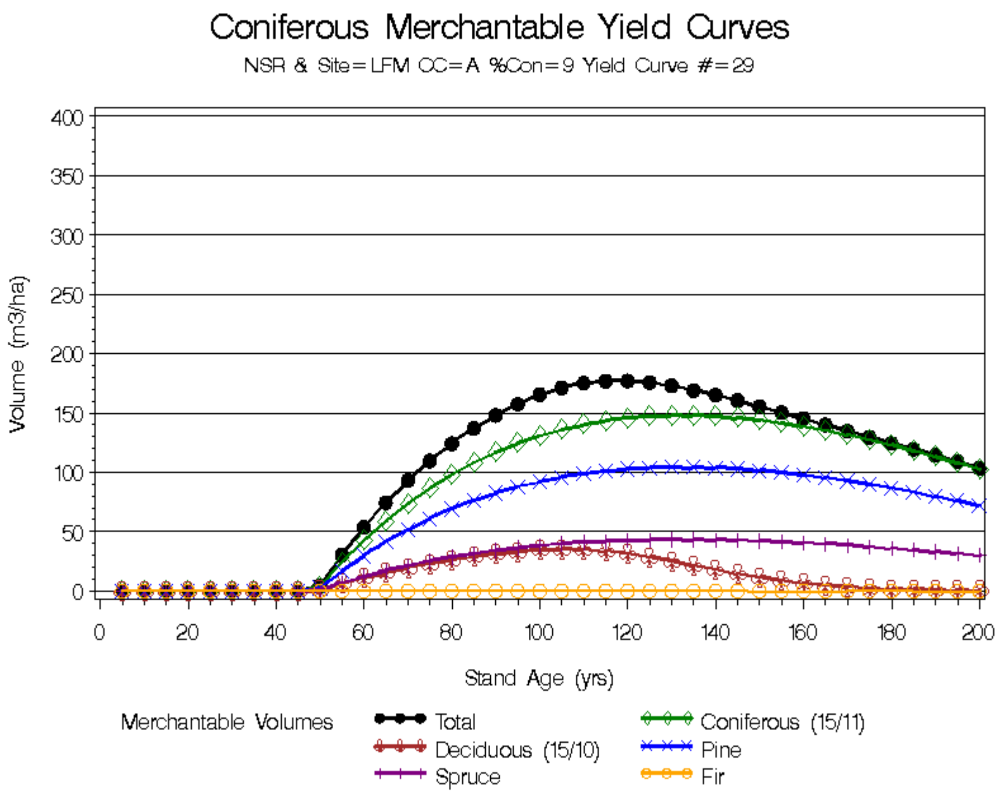
NSR & Site=LFM CC=A %Con=8 Yield Curve #=28

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	5	0.1	3	0.1	1	0.0
60	54	0.9	38	0.6	16	0.3
70	93	1.3	66	0.9	28	0.4
80	124	1.6	88	1.1	37	0.5
90	148	1.6	104	1.2	44	0.5
100	166	1.7	117	1.2	49	0.5
110	174	1.6	125	1.1	49	0.4
120	174	1.5	130	1.1	44	0.4
130	167	1.3	132	1.0	36	0.3
140	157	1.1	131	0.9	26	0.2
150	145	1.0	128	0.9	16	0.1
160	133	0.8	124	0.8	9	0.1
170	122	0.7	117	0.7	5	0.0
180	112	0.6	110	0.6	2	0.0
190	103	0.5	101	0.5	2	0.0
200	93	0.5	91	0.5	2	0.0



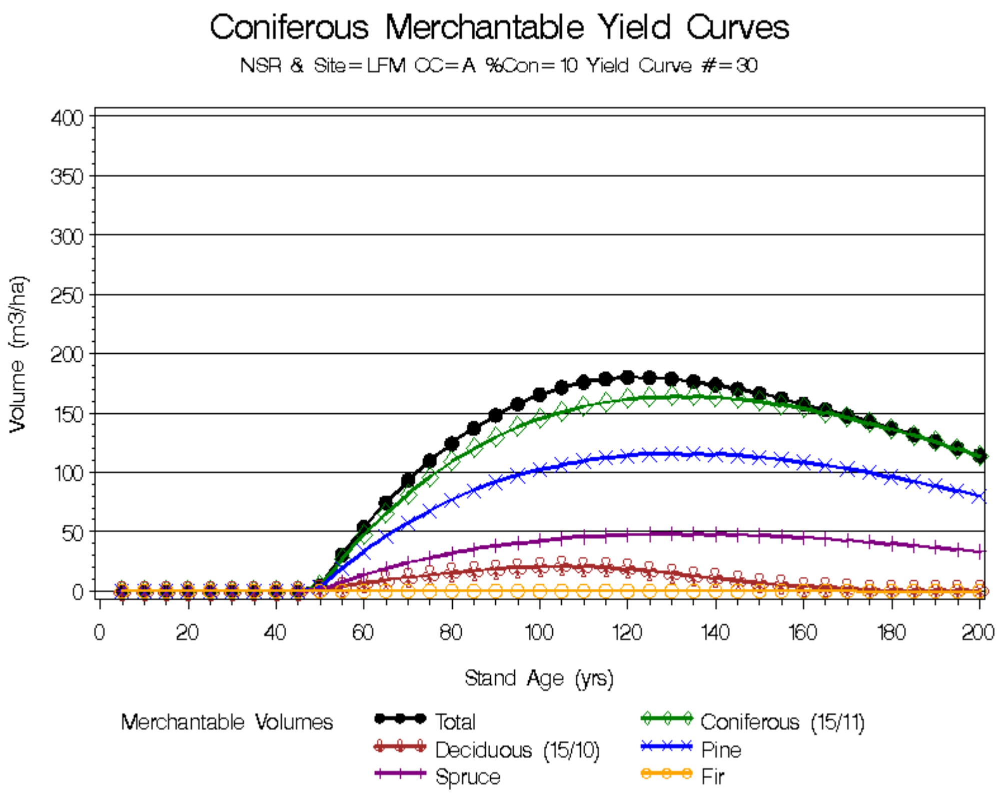
NSR & Site=LFM CC=A %Con=9 Yield Curve #=29

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	5	0.1	4	0.1	1	0.0
60	54	0.9	42	0.7	11	0.2
70	93	1.3	74	1.1	20	0.3
80	124	1.6	98	1.2	26	0.3
90	148	1.6	117	1.3	31	0.3
100	166	1.7	131	1.3	35	0.3
110	175	1.6	140	1.3	35	0.3
120	177	1.5	146	1.2	32	0.3
130	173	1.3	148	1.1	25	0.2
140	165	1.2	147	1.1	18	0.1
150	156	1.0	144	1.0	12	0.1
160	145	0.9	139	0.9	7	0.0
170	135	0.8	132	0.8	3	0.0
180	125	0.7	123	0.7	2	0.0
190	115	0.6	113	0.6	1	0.0
200	104	0.5	102	0.5	1	0.0



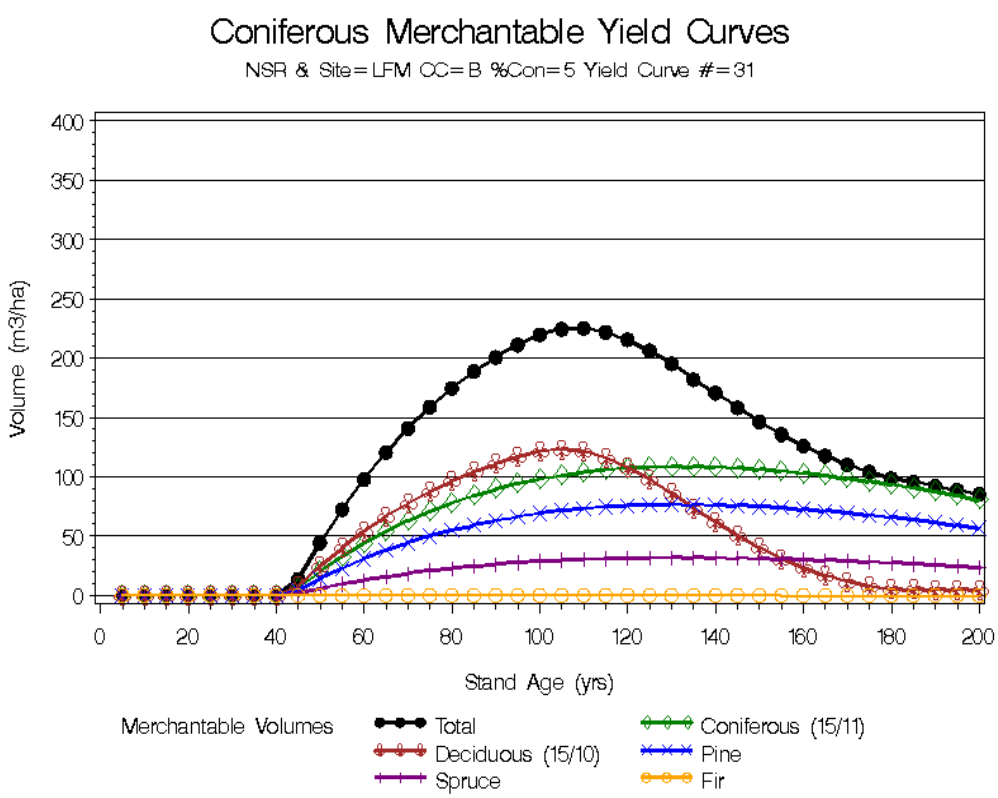
NSR & Site=LFM CC=A %Con=10 Yield Curve #=30

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	5	0.1	4	0.1	1	0.0
60	54	0.9	47	0.8	7	0.1
70	93	1.3	82	1.2	12	0.2
80	124	1.6	109	1.4	15	0.2
90	148	1.6	130	1.4	18	0.2
100	166	1.7	145	1.5	21	0.2
110	176	1.6	155	1.4	21	0.2
120	180	1.5	162	1.3	19	0.2
130	179	1.4	164	1.3	15	0.1
140	174	1.2	163	1.2	11	0.1
150	167	1.1	160	1.1	7	0.0
160	158	1.0	154	1.0	4	0.0
170	148	0.9	146	0.9	2	0.0
180	137	0.8	136	0.8	1	0.0
190	126	0.7	126	0.7	1	0.0
200	114	0.6	114	0.6	1	0.0



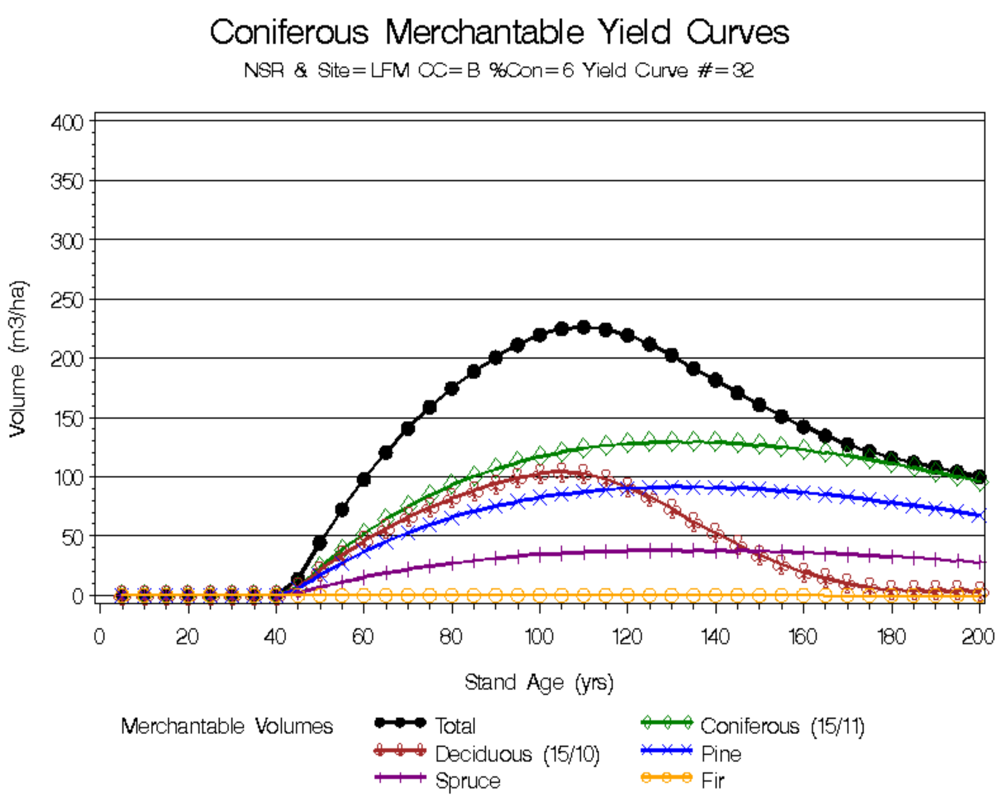
NSR & Site=LFM CC=B %Con=5 Yield Curve #=31

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	45	0.9	20	0.4	25	0.5
60	98	1.6	44	0.7	54	0.9
70	141	2.0	63	0.9	78	1.1
80	175	2.2	78	1.0	97	1.2
90	201	2.2	90	1.0	111	1.2
100	220	2.2	98	1.0	122	1.2
110	225	2.0	104	0.9	121	1.1
120	216	1.8	107	0.9	108	0.9
130	195	1.5	109	0.8	87	0.7
140	171	1.2	108	0.8	62	0.4
150	146	1.0	106	0.7	40	0.3
160	126	0.8	103	0.6	23	0.1
170	110	0.6	99	0.6	12	0.1
180	99	0.5	93	0.5	5	0.0
190	92	0.5	87	0.5	5	0.0
200	85	0.4	81	0.4	5	0.0



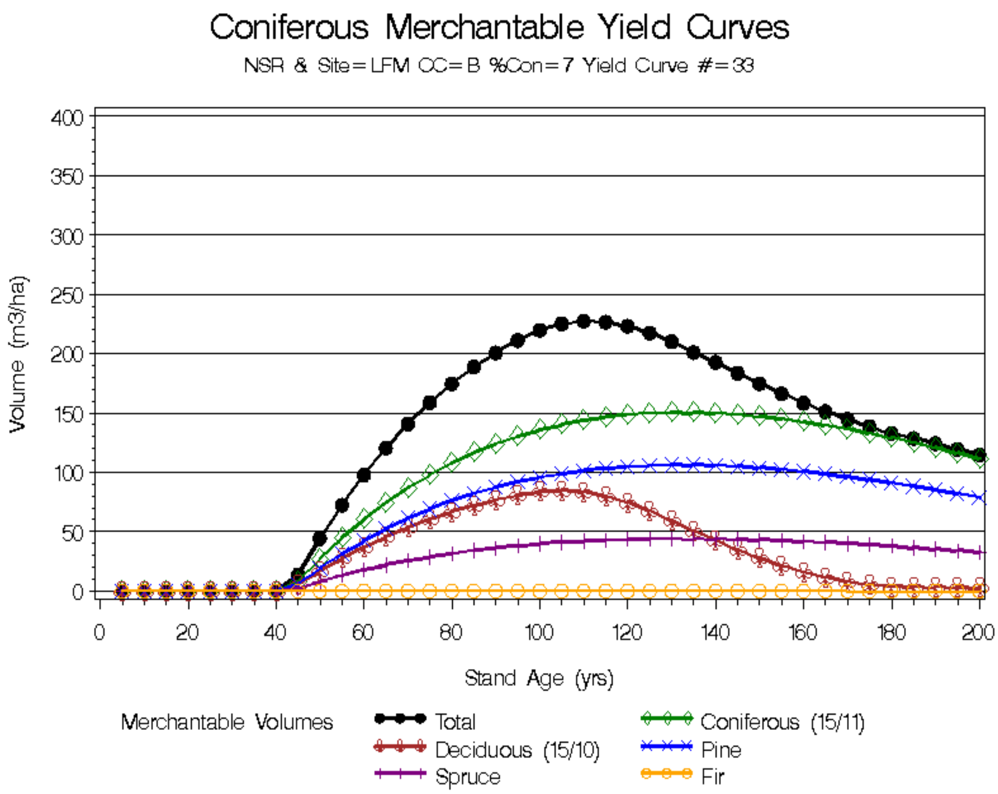
NSR & Site=LFM CC=B %Con=6 Yield Curve #=32

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	45	0.9	24	0.5	21	0.4
60	98	1.6	52	0.9	46	0.8
70	141	2.0	75	1.1	66	0.9
80	175	2.2	93	1.2	82	1.0
90	201	2.2	107	1.2	94	1.0
100	220	2.2	117	1.2	103	1.0
110	226	2.1	124	1.1	103	0.9
120	220	1.8	128	1.1	92	0.8
130	203	1.6	130	1.0	73	0.6
140	182	1.3	129	0.9	53	0.4
150	161	1.1	127	0.8	34	0.2
160	142	0.9	123	0.8	20	0.1
170	128	0.8	118	0.7	10	0.1
180	116	0.6	111	0.6	5	0.0
190	108	0.6	104	0.5	4	0.0
200	100	0.5	96	0.5	4	0.0



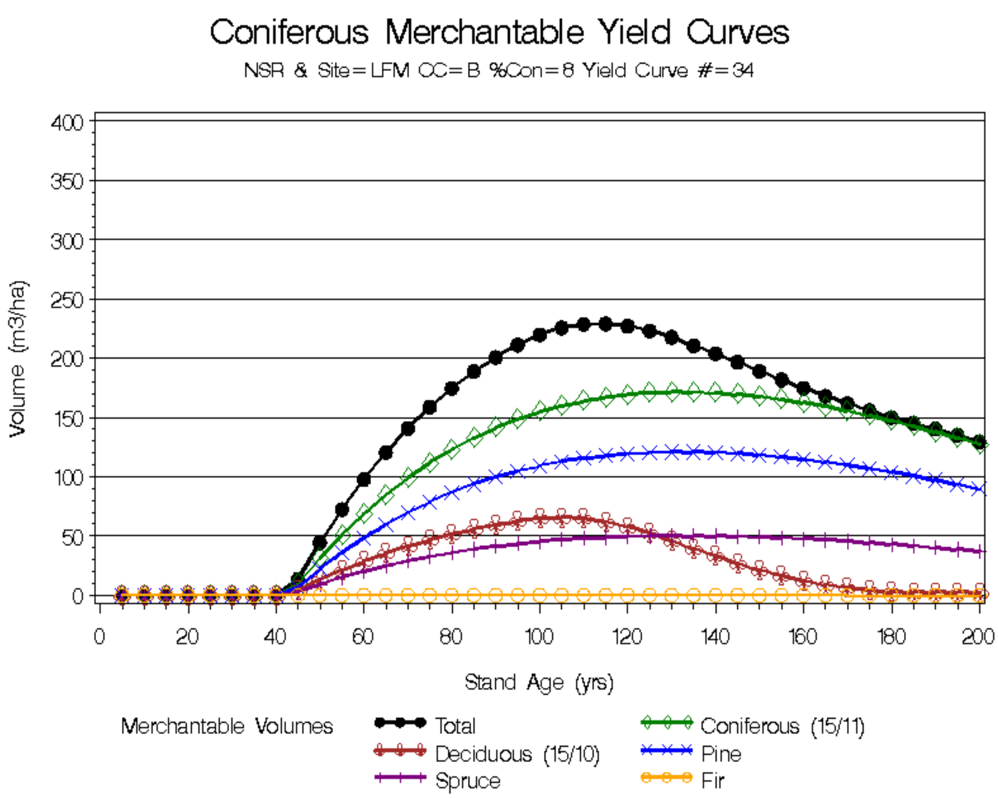
NSR & Site=LFM CC=B %Con=7 Yield Curve #=33

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	45	0.9	28	0.6	17	0.3
60	98	1.6	60	1.0	37	0.6
70	141	2.0	87	1.2	54	0.8
80	175	2.2	108	1.4	67	0.8
90	201	2.2	124	1.4	77	0.9
100	220	2.2	136	1.4	84	0.8
110	228	2.1	144	1.3	84	0.8
120	223	1.9	149	1.2	75	0.6
130	210	1.6	150	1.2	60	0.5
140	193	1.4	150	1.1	43	0.3
150	175	1.2	147	1.0	28	0.2
160	159	1.0	143	0.9	16	0.1
170	145	0.9	137	0.8	8	0.0
180	133	0.7	129	0.7	4	0.0
190	124	0.7	121	0.6	3	0.0
200	115	0.6	112	0.6	3	0.0



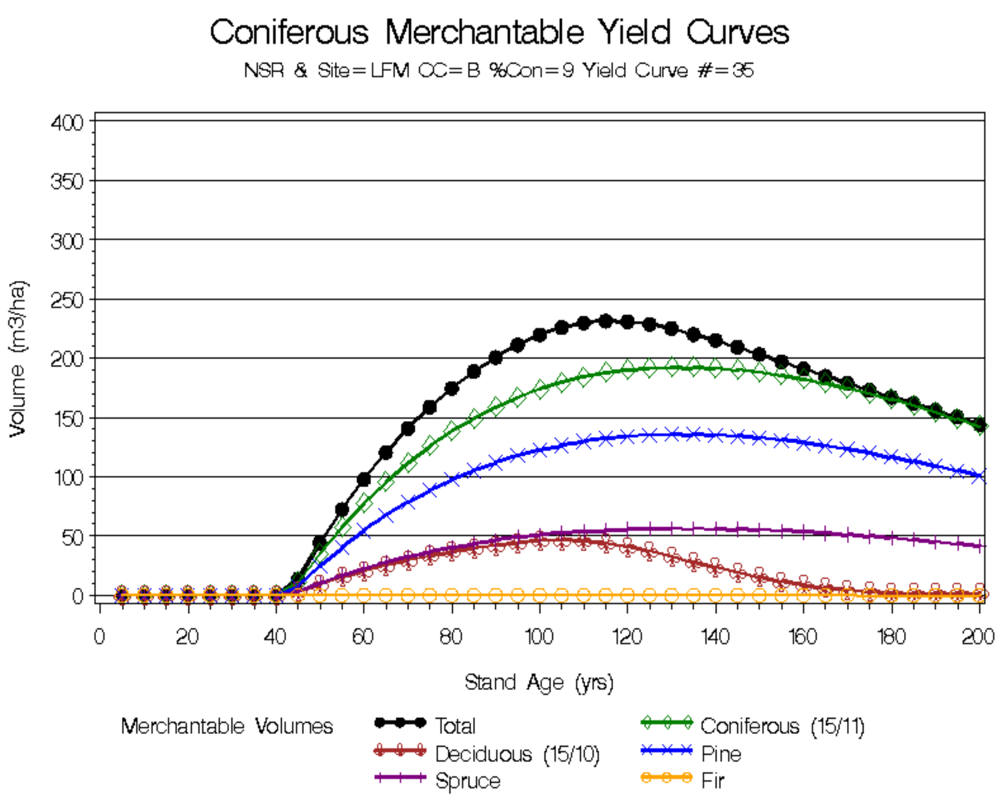
NSR & Site=LFM CC=B %Con=8 Yield Curve #=34

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	45	0.9	31	0.6	13	0.3
60	98	1.6	69	1.1	29	0.5
70	141	2.0	99	1.4	42	0.6
80	175	2.2	123	1.5	52	0.6
90	201	2.2	141	1.6	59	0.7
100	220	2.2	155	1.5	65	0.7
110	229	2.1	164	1.5	65	0.6
120	227	1.9	169	1.4	58	0.5
130	218	1.7	171	1.3	46	0.4
140	204	1.5	171	1.2	33	0.2
150	189	1.3	168	1.1	21	0.1
160	175	1.1	162	1.0	12	0.1
170	162	1.0	156	0.9	6	0.0
180	150	0.8	147	0.8	3	0.0
190	140	0.7	138	0.7	3	0.0
200	130	0.6	127	0.6	2	0.0



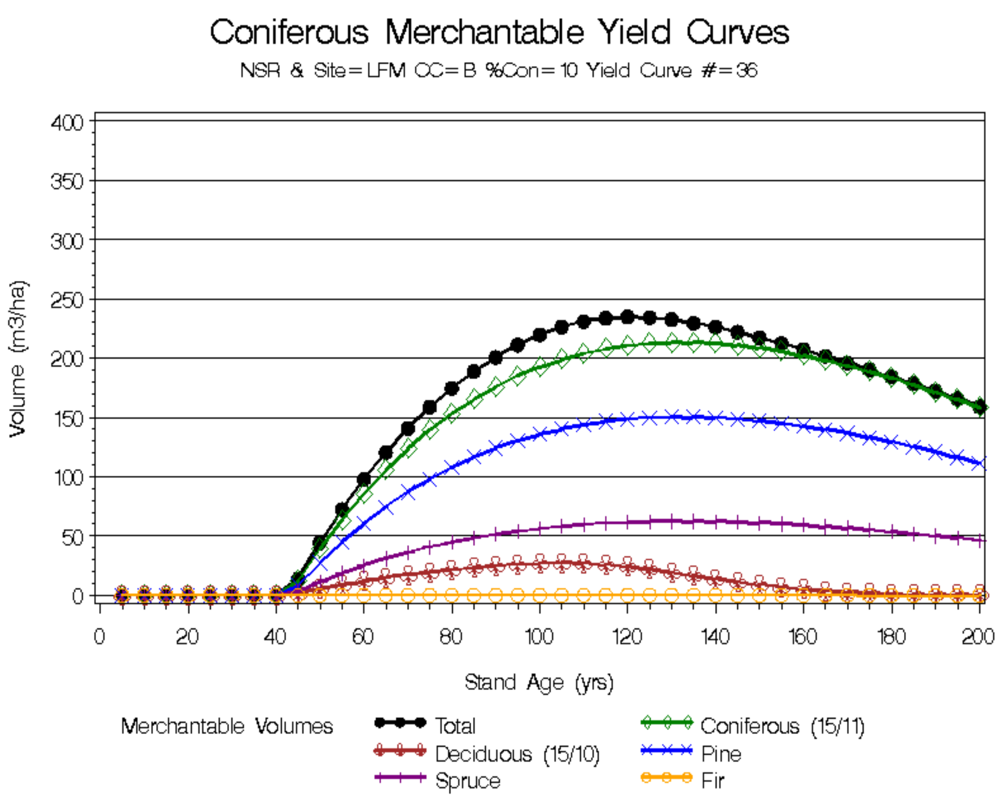
NSR & Site=LFM CC=B %Con=9 Yield Curve #=35

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	45	0.9	35	0.7	9	0.2
60	98	1.6	77	1.3	21	0.3
70	141	2.0	111	1.6	30	0.4
80	175	2.2	138	1.7	37	0.5
90	201	2.2	159	1.8	42	0.5
100	220	2.2	174	1.7	46	0.5
110	230	2.1	184	1.7	46	0.4
120	231	1.9	190	1.6	41	0.3
130	225	1.7	192	1.5	33	0.3
140	215	1.5	192	1.4	24	0.2
150	203	1.4	188	1.3	15	0.1
160	191	1.2	182	1.1	9	0.1
170	179	1.1	175	1.0	4	0.0
180	167	0.9	165	0.9	2	0.0
190	156	0.8	155	0.8	2	0.0
200	144	0.7	143	0.7	2	0.0



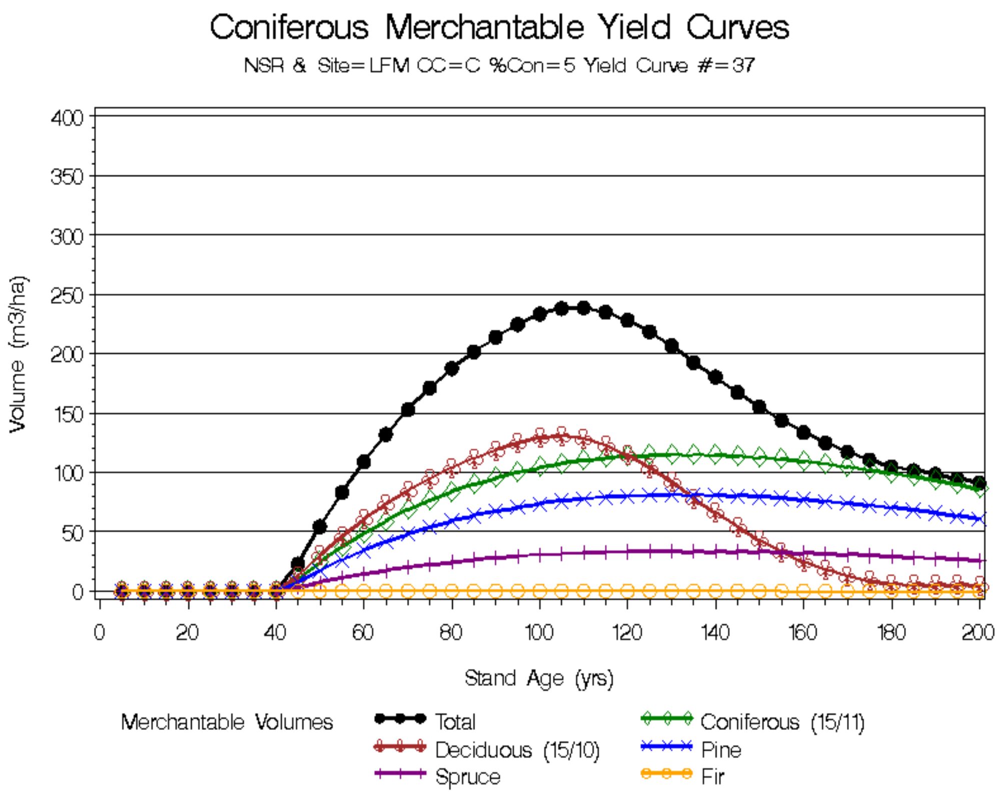
NSR & Site=LFM CC=B %Con=10 Yield Curve #=36

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	45	0.9	39	0.8	6	0.1
60	98	1.6	86	1.4	12	0.2
70	141	2.0	123	1.8	17	0.2
80	175	2.2	153	1.9	22	0.3
90	201	2.2	176	2.0	25	0.3
100	220	2.2	193	1.9	27	0.3
110	231	2.1	204	1.9	27	0.2
120	235	2.0	211	1.8	24	0.2
130	233	1.8	213	1.6	19	0.1
140	226	1.6	212	1.5	14	0.1
150	218	1.5	209	1.4	9	0.1
160	207	1.3	202	1.3	5	0.0
170	196	1.2	194	1.1	3	0.0
180	184	1.0	183	1.0	1	0.0
190	172	0.9	171	0.9	1	0.0
200	159	0.8	158	0.8	1	0.0



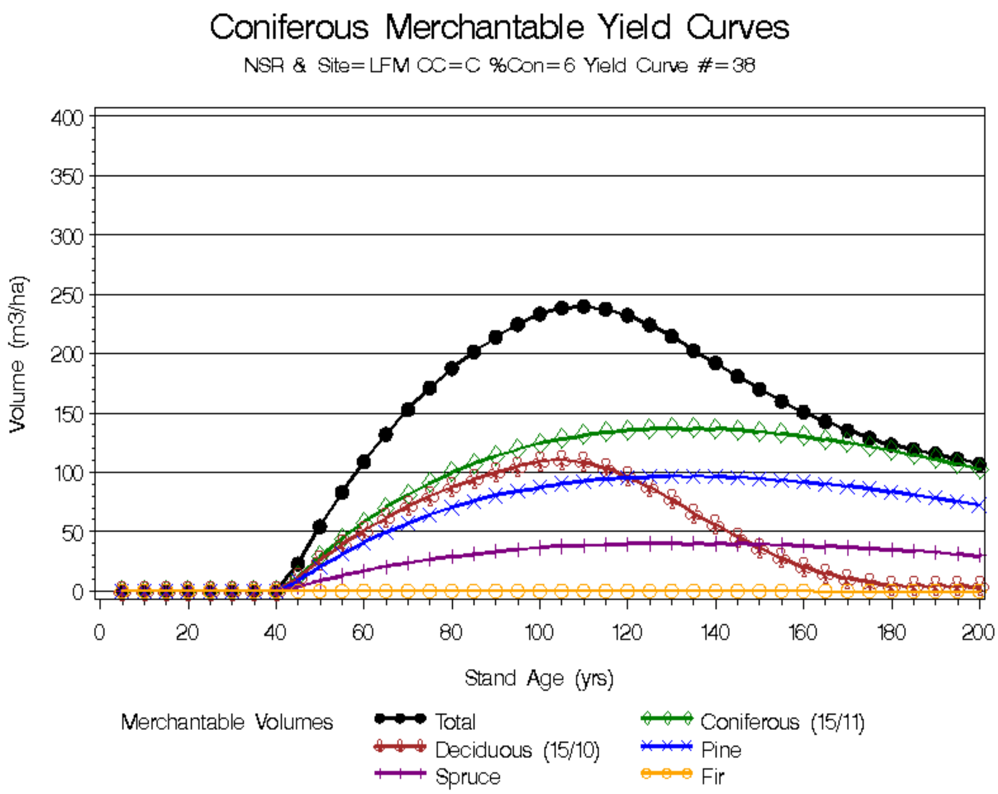
NSR & Site=LFM CC=C %Con=5 Yield Curve #=37

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	55	1.1	24	0.5	30	0.6
60	109	1.8	49	0.8	60	1.0
70	153	2.2	68	1.0	85	1.2
80	188	2.3	84	1.0	104	1.3
90	214	2.4	96	1.1	119	1.3
100	234	2.3	104	1.0	129	1.3
110	239	2.2	110	1.0	129	1.2
120	228	1.9	114	0.9	115	1.0
130	207	1.6	115	0.9	92	0.7
140	181	1.3	114	0.8	66	0.5
150	155	1.0	112	0.7	43	0.3
160	134	0.8	109	0.7	25	0.2
170	117	0.7	105	0.6	12	0.1
180	105	0.6	99	0.6	6	0.0
190	98	0.5	93	0.5	5	0.0
200	91	0.5	86	0.4	5	0.0



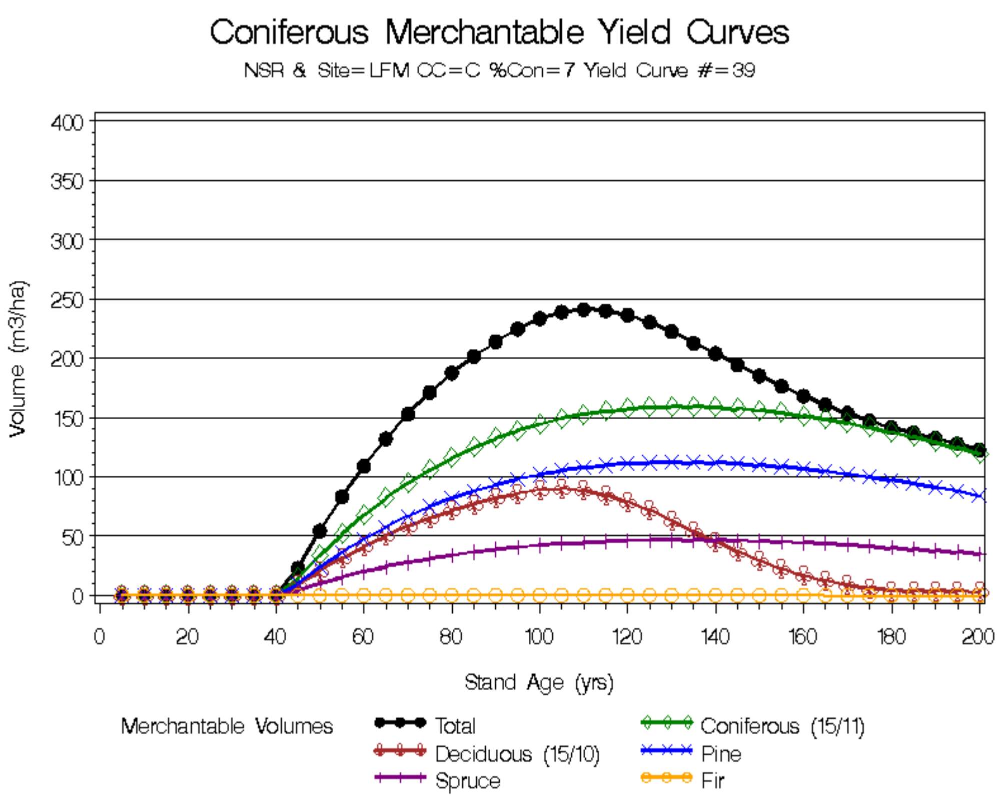
NSR & Site=LFM CC=C %Con=6 Yield Curve #=38

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	55	1.1	29	0.6	26	0.5
60	109	1.8	58	1.0	51	0.8
70	153	2.2	81	1.2	72	1.0
80	188	2.3	100	1.2	88	1.1
90	214	2.4	114	1.3	100	1.1
100	234	2.3	124	1.2	109	1.1
110	240	2.2	131	1.2	109	1.0
120	232	1.9	135	1.1	97	0.8
130	215	1.7	137	1.1	78	0.6
140	192	1.4	137	1.0	56	0.4
150	170	1.1	134	0.9	36	0.2
160	151	0.9	130	0.8	21	0.1
170	135	0.8	125	0.7	11	0.1
180	123	0.7	118	0.7	5	0.0
190	116	0.6	111	0.6	4	0.0
200	107	0.5	103	0.5	4	0.0



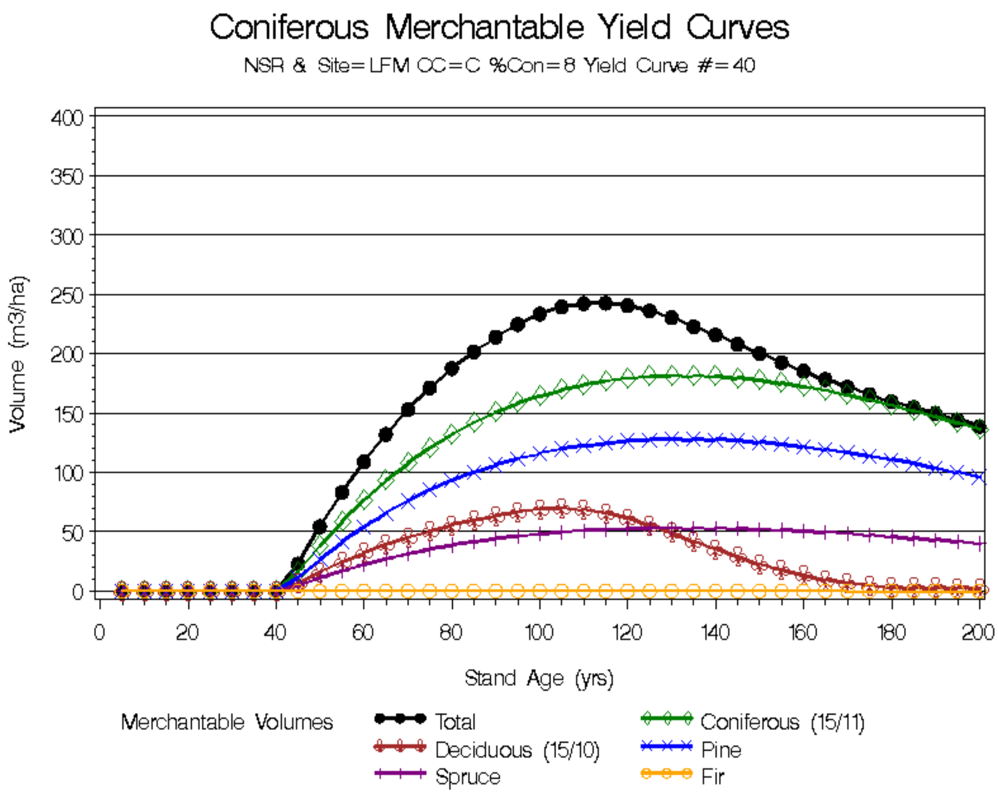
NSR & Site=LFM CC=C %Con=7 Yield Curve #=39

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	55	1.1	34	0.7	21	0.4
60	109	1.8	67	1.1	42	0.7
70	153	2.2	95	1.4	58	0.8
80	188	2.3	116	1.4	72	0.9
90	214	2.4	132	1.5	82	0.9
100	234	2.3	144	1.4	89	0.9
110	241	2.2	153	1.4	89	0.8
120	236	2.0	157	1.3	79	0.7
130	223	1.7	159	1.2	63	0.5
140	204	1.5	159	1.1	46	0.3
150	185	1.2	156	1.0	29	0.2
160	168	1.1	151	0.9	17	0.1
170	154	0.9	145	0.9	9	0.1
180	142	0.8	138	0.8	4	0.0
190	133	0.7	129	0.7	4	0.0
200	123	0.6	120	0.6	3	0.0



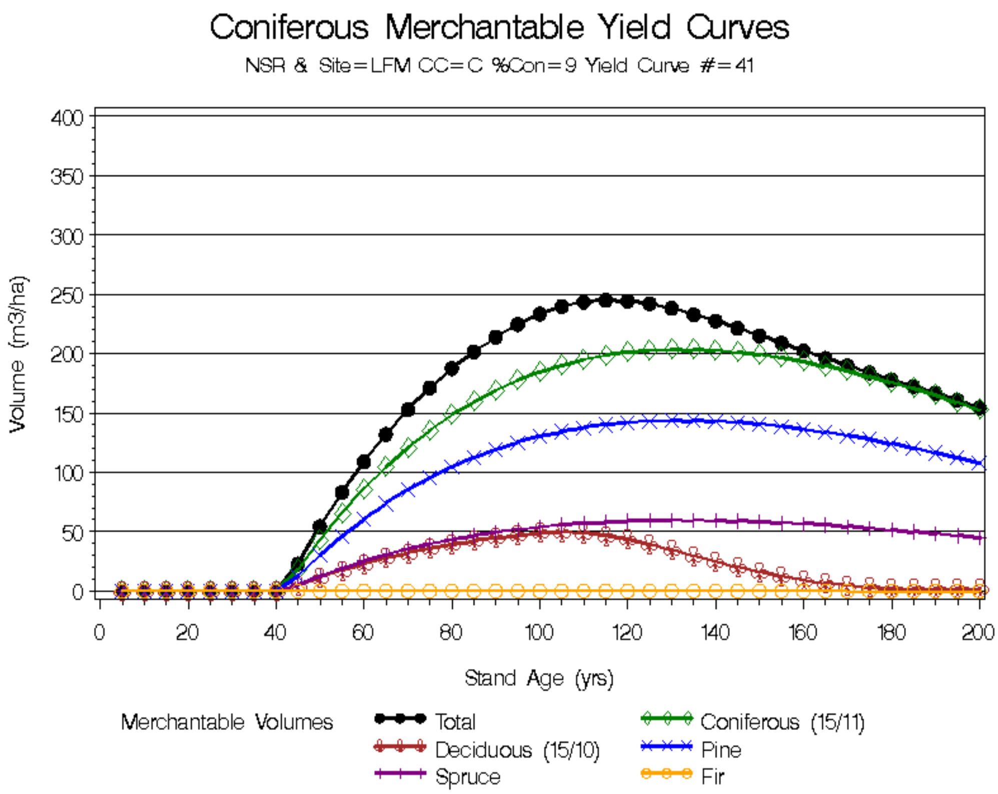
NSR & Site=LFM CC=C %Con=8 Yield Curve #=40

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	55	1.1	38	0.8	16	0.3
60	109	1.8	77	1.3	32	0.5
70	153	2.2	108	1.5	45	0.6
80	188	2.3	132	1.7	56	0.7
90	214	2.4	151	1.7	63	0.7
100	234	2.3	164	1.6	69	0.7
110	242	2.2	174	1.6	69	0.6
120	241	2.0	179	1.5	61	0.5
130	231	1.8	181	1.4	49	0.4
140	216	1.5	181	1.3	35	0.3
150	200	1.3	178	1.2	23	0.2
160	185	1.2	172	1.1	13	0.1
170	172	1.0	165	1.0	7	0.0
180	160	0.9	157	0.9	3	0.0
190	150	0.8	147	0.8	3	0.0
200	139	0.7	136	0.7	3	0.0



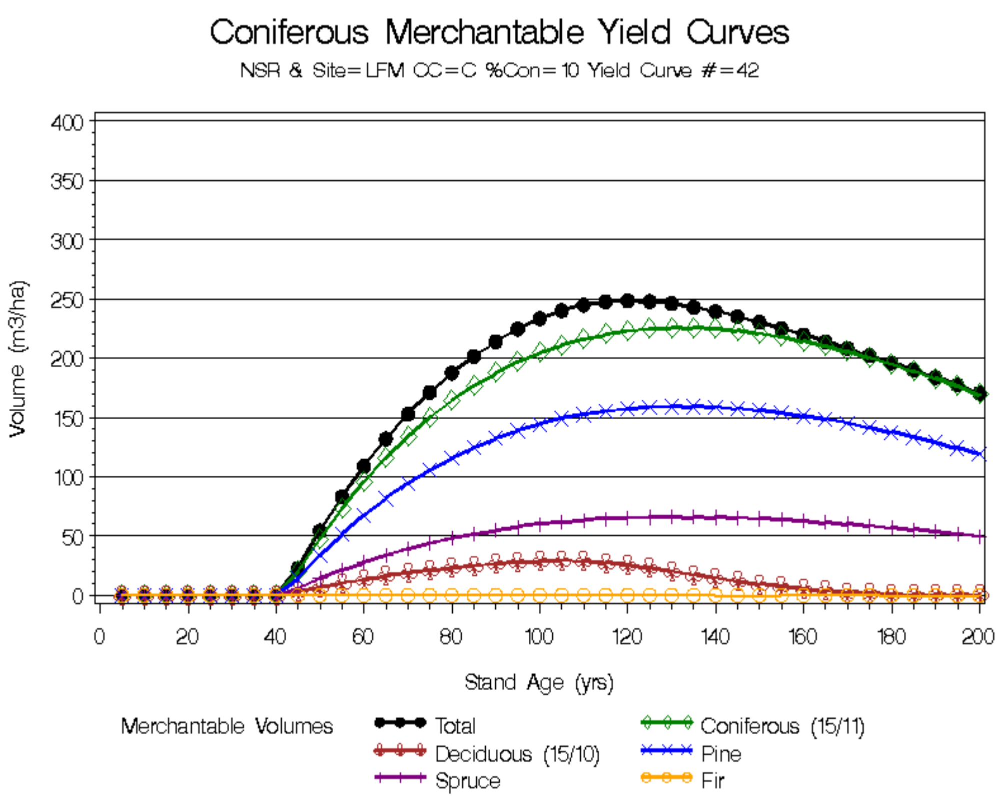
NSR & Site=LFM CC=C %Con=9 Yield Curve #=41

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	55	1.1	43	0.9	11	0.2
60	109	1.8	86	1.4	23	0.4
70	153	2.2	121	1.7	32	0.5
80	188	2.3	148	1.9	39	0.5
90	214	2.4	169	1.9	45	0.5
100	234	2.3	185	1.8	49	0.5
110	244	2.2	195	1.8	49	0.4
120	245	2.0	201	1.7	43	0.4
130	238	1.8	204	1.6	35	0.3
140	228	1.6	203	1.4	25	0.2
150	215	1.4	199	1.3	16	0.1
160	203	1.3	193	1.2	9	0.1
170	190	1.1	185	1.1	5	0.0
180	178	1.0	176	1.0	2	0.0
190	167	0.9	165	0.9	2	0.0
200	155	0.8	153	0.8	2	0.0



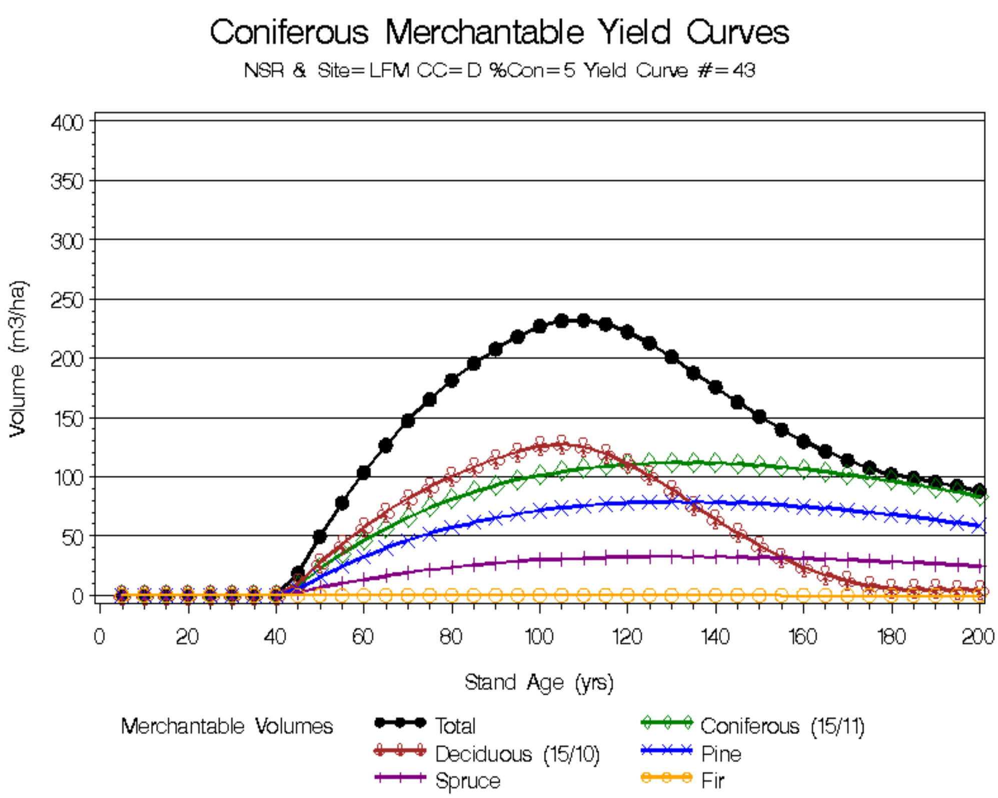
NSR & Site=LFM CC=C %Con=10 Yield Curve #=42

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	55	1.1	48	1.0	7	0.1
60	109	1.8	95	1.6	13	0.2
70	153	2.2	134	1.9	19	0.3
80	188	2.3	164	2.1	23	0.3
90	214	2.4	188	2.1	27	0.3
100	234	2.3	205	2.0	29	0.3
110	245	2.2	216	2.0	29	0.3
120	249	2.1	223	1.9	26	0.2
130	246	1.9	226	1.7	21	0.2
140	240	1.7	225	1.6	15	0.1
150	230	1.5	221	1.5	10	0.1
160	220	1.4	214	1.3	5	0.0
170	208	1.2	206	1.2	3	0.0
180	196	1.1	195	1.1	1	0.0
190	184	1.0	183	1.0	1	0.0
200	171	0.9	170	0.8	1	0.0



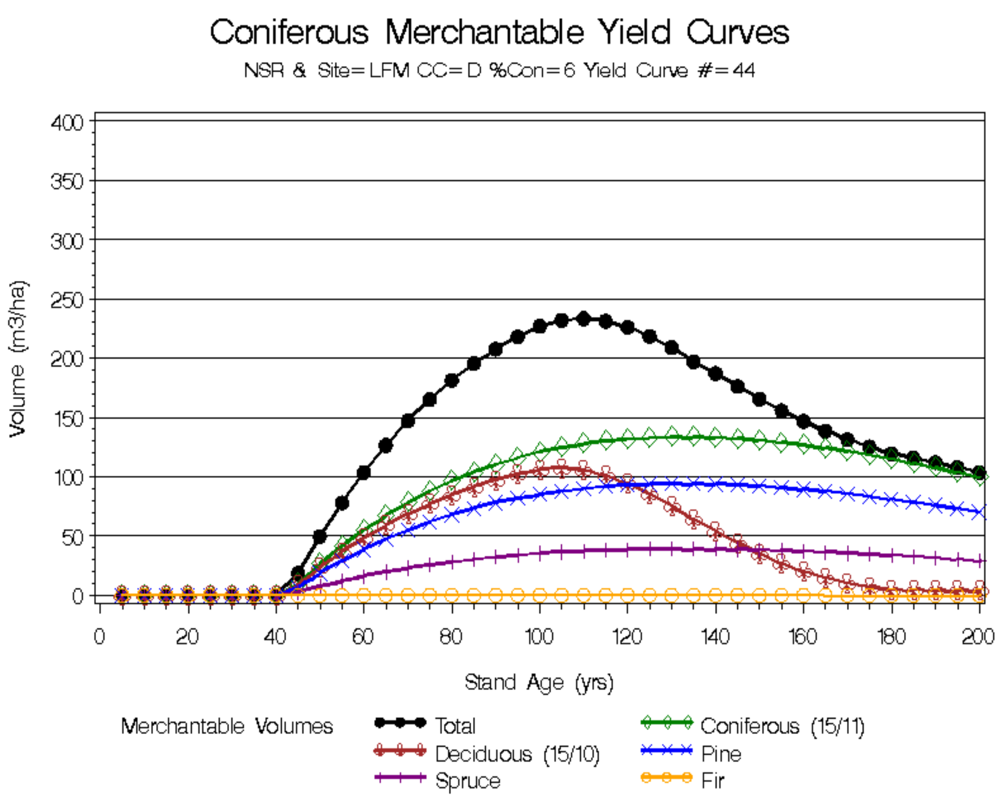
NSR & Site=LFM CC=D %Con=5 Yield Curve #=43

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	50	1.0	22	0.4	28	0.6
60	104	1.7	46	0.8	57	1.0
70	147	2.1	66	0.9	82	1.2
80	182	2.3	81	1.0	101	1.3
90	208	2.3	93	1.0	115	1.3
100	227	2.3	101	1.0	126	1.3
110	232	2.1	107	1.0	125	1.1
120	222	1.9	111	0.9	112	0.9
130	201	1.5	112	0.9	89	0.7
140	176	1.3	112	0.8	64	0.5
150	151	1.0	110	0.7	41	0.3
160	130	0.8	106	0.7	24	0.1
170	114	0.7	102	0.6	12	0.1
180	102	0.6	96	0.5	6	0.0
190	96	0.5	90	0.5	5	0.0
200	88	0.4	84	0.4	5	0.0



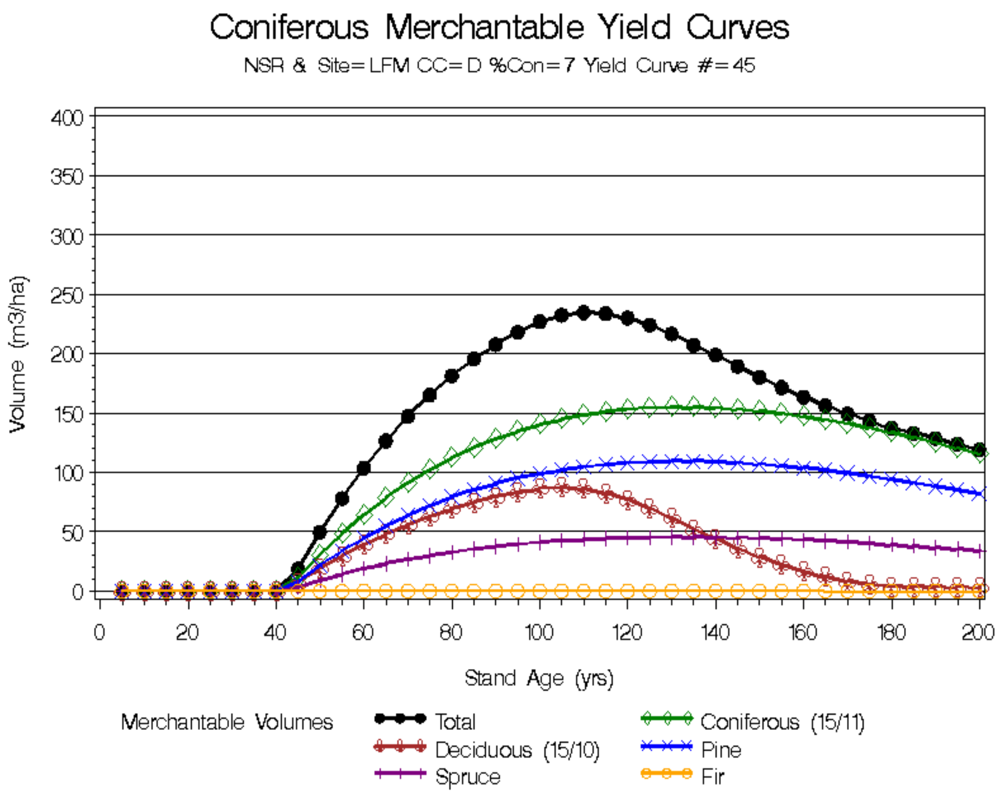
NSR & Site=LFM CC=D %Con=6 Yield Curve #=44

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	50	1.0	26	0.5	23	0.5
60	104	1.7	55	0.9	49	0.8
70	147	2.1	78	1.1	69	1.0
80	182	2.3	97	1.2	85	1.1
90	208	2.3	111	1.2	97	1.1
100	227	2.3	121	1.2	106	1.1
110	234	2.1	128	1.2	106	1.0
120	226	1.9	132	1.1	94	0.8
130	209	1.6	134	1.0	76	0.6
140	187	1.3	133	0.9	54	0.4
150	166	1.1	131	0.9	35	0.2
160	147	0.9	127	0.8	20	0.1
170	132	0.8	121	0.7	10	0.1
180	120	0.7	115	0.6	5	0.0
190	112	0.6	108	0.6	4	0.0
200	104	0.5	100	0.5	4	0.0



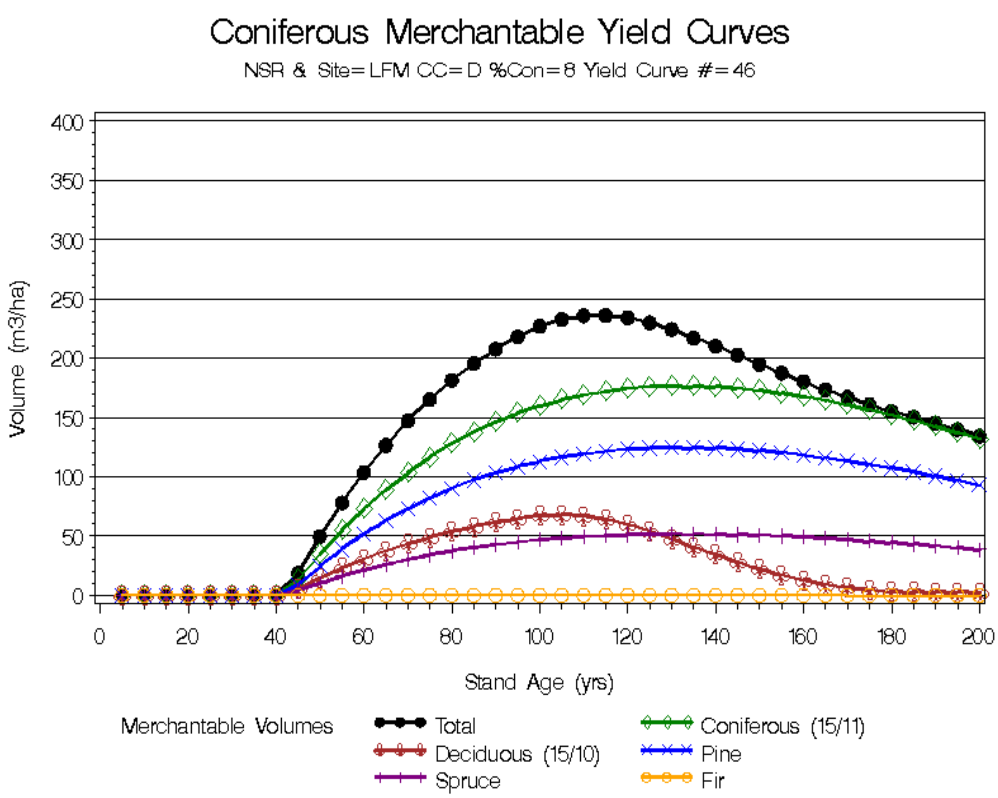
NSR & Site=LFM CC=D %Con=7 Yield Curve #=45

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	50	1.0	31	0.6	19	0.4
60	104	1.7	64	1.1	40	0.7
70	147	2.1	91	1.3	56	0.8
80	182	2.3	112	1.4	69	0.9
90	208	2.3	128	1.4	79	0.9
100	227	2.3	140	1.4	87	0.9
110	235	2.1	148	1.3	86	0.8
120	230	1.9	153	1.3	77	0.6
130	217	1.7	155	1.2	62	0.5
140	199	1.4	154	1.1	44	0.3
150	180	1.2	152	1.0	29	0.2
160	164	1.0	147	0.9	16	0.1
170	149	0.9	141	0.8	8	0.0
180	137	0.8	134	0.7	4	0.0
190	129	0.7	125	0.7	4	0.0
200	119	0.6	116	0.6	3	0.0



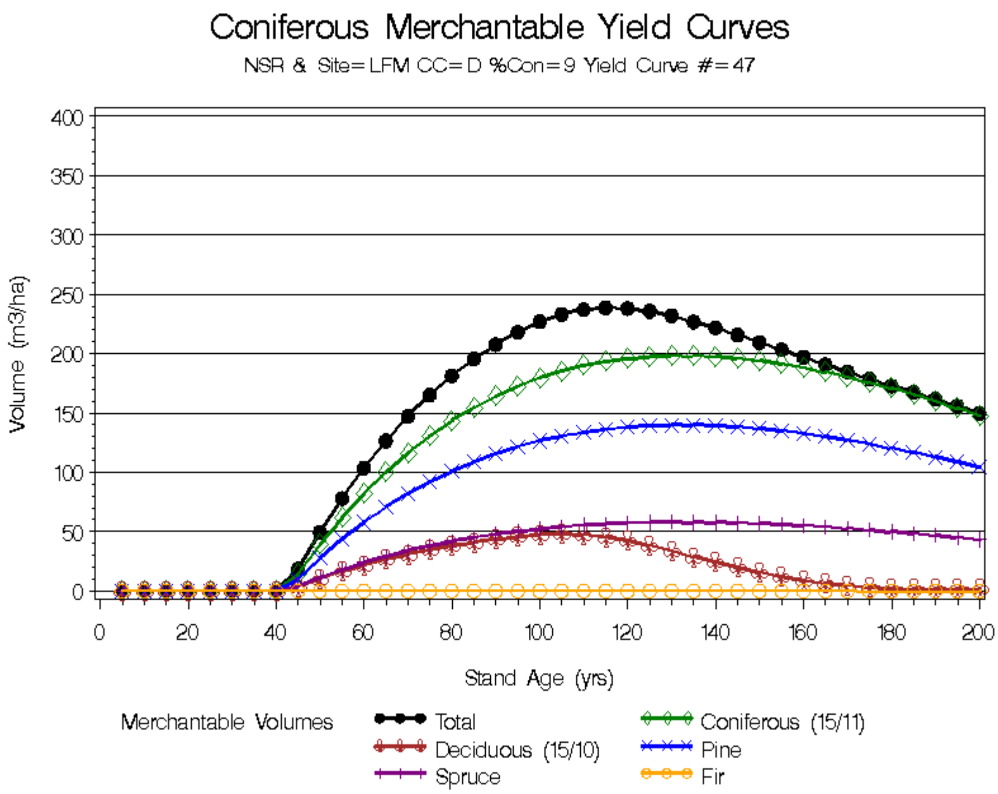
NSR & Site=LFM CC=D %Con=8 Yield Curve #=46

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	50	1.0	35	0.7	15	0.3
60	104	1.7	73	1.2	31	0.5
70	147	2.1	104	1.5	44	0.6
80	182	2.3	128	1.6	54	0.7
90	208	2.3	146	1.6	62	0.7
100	227	2.3	160	1.6	67	0.7
110	236	2.1	169	1.5	67	0.6
120	234	2.0	175	1.5	60	0.5
130	224	1.7	177	1.4	48	0.4
140	210	1.5	176	1.3	34	0.2
150	195	1.3	173	1.2	22	0.1
160	180	1.1	168	1.0	13	0.1
170	167	1.0	161	0.9	6	0.0
180	155	0.9	152	0.8	3	0.0
190	145	0.8	143	0.8	3	0.0
200	134	0.7	132	0.7	3	0.0



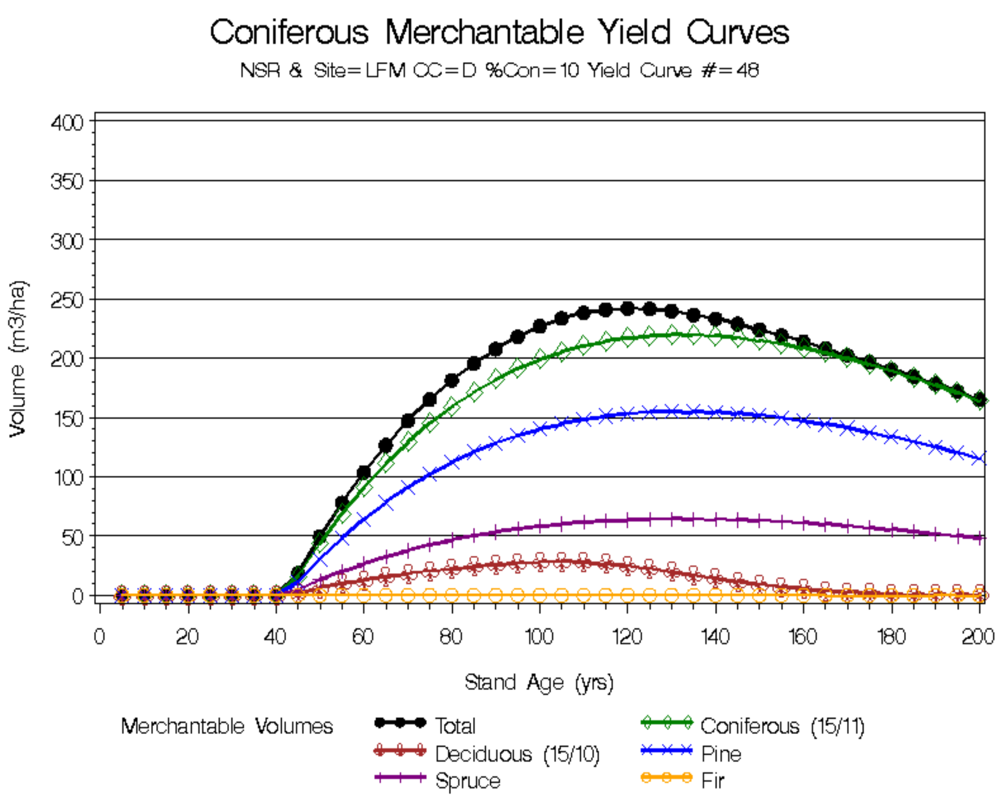
NSR & Site=LFM CC=D %Con=9 Yield Curve #=47

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	50	1.0	39	0.8	10	0.2
60	104	1.7	82	1.4	22	0.4
70	147	2.1	116	1.7	31	0.4
80	182	2.3	143	1.8	38	0.5
90	208	2.3	164	1.8	44	0.5
100	227	2.3	179	1.8	48	0.5
110	237	2.2	190	1.7	47	0.4
120	238	2.0	196	1.6	42	0.4
130	232	1.8	198	1.5	34	0.3
140	222	1.6	197	1.4	24	0.2
150	210	1.4	194	1.3	16	0.1
160	197	1.2	188	1.2	9	0.1
170	185	1.1	180	1.1	5	0.0
180	173	1.0	171	0.9	2	0.0
190	162	0.9	160	0.8	2	0.0
200	150	0.7	148	0.7	2	0.0



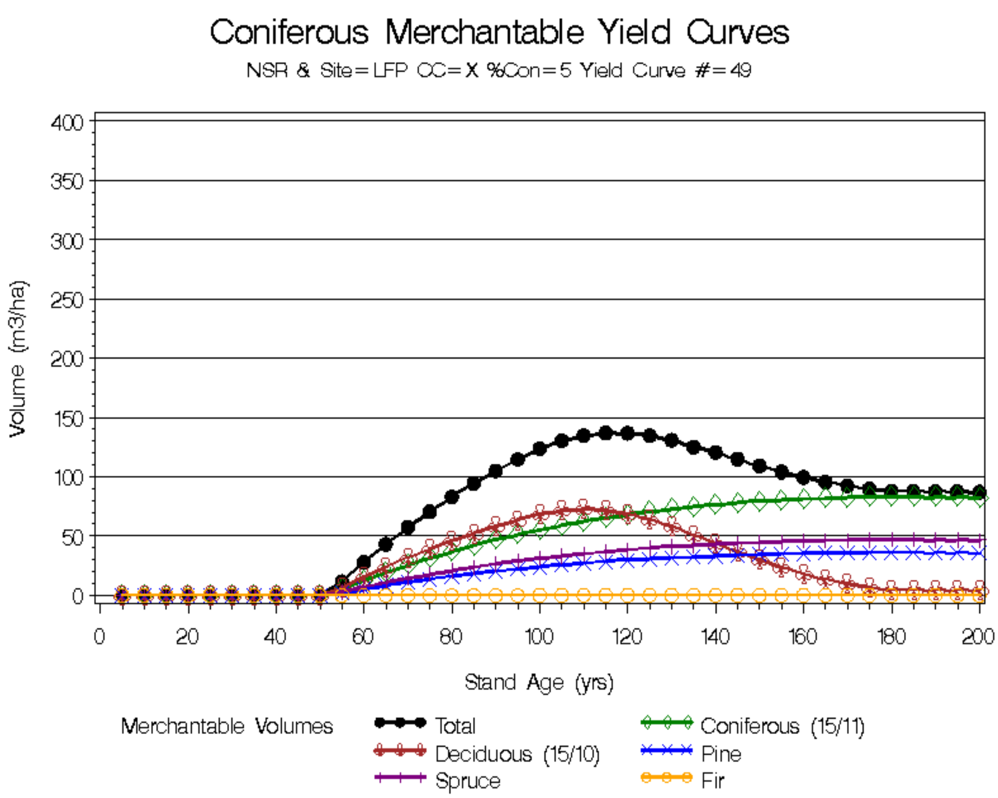
NSR & Site=LFM CC=D %Con=10 Yield Curve #=48

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	50	1.0	44	0.9	6	0.1
60	104	1.7	91	1.5	13	0.2
70	147	2.1	129	1.8	18	0.3
80	182	2.3	159	2.0	22	0.3
90	208	2.3	182	2.0	26	0.3
100	227	2.3	199	2.0	28	0.3
110	238	2.2	210	1.9	28	0.3
120	242	2.0	217	1.8	25	0.2
130	240	1.8	220	1.7	20	0.2
140	233	1.7	219	1.6	14	0.1
150	224	1.5	215	1.4	9	0.1
160	214	1.3	209	1.3	5	0.0
170	203	1.2	200	1.2	3	0.0
180	191	1.1	189	1.1	1	0.0
190	179	0.9	177	0.9	1	0.0
200	165	0.8	164	0.8	1	0.0



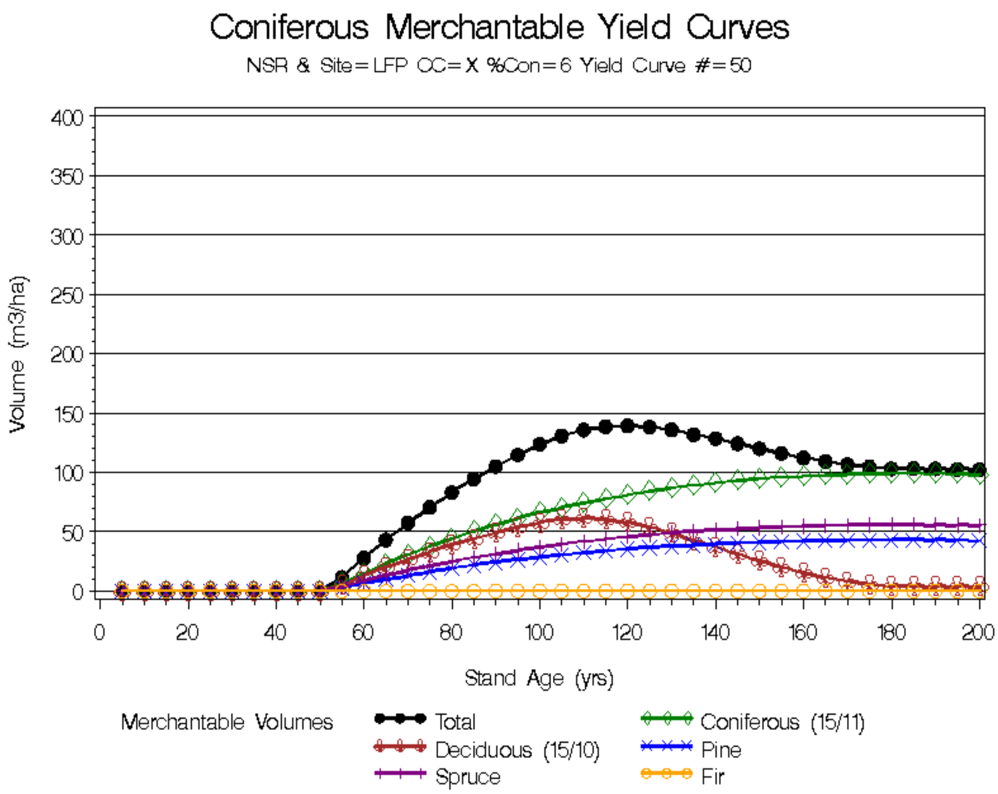
NSR & Site=LFP CC=X %Con=5 Yield Curve #=49

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	28	0.5	12	0.2	16	0.3
70	57	0.8	26	0.4	32	0.5
80	83	1.0	37	0.5	46	0.6
90	105	1.2	47	0.5	58	0.6
100	124	1.2	55	0.6	69	0.7
110	135	1.2	62	0.6	73	0.7
120	137	1.1	68	0.6	69	0.6
130	131	1.0	73	0.6	58	0.4
140	121	0.9	77	0.5	44	0.3
150	109	0.7	79	0.5	30	0.2
160	100	0.6	81	0.5	18	0.1
170	92	0.5	83	0.5	10	0.1
180	88	0.5	83	0.5	5	0.0
190	88	0.5	83	0.4	5	0.0
200	87	0.4	82	0.4	5	0.0



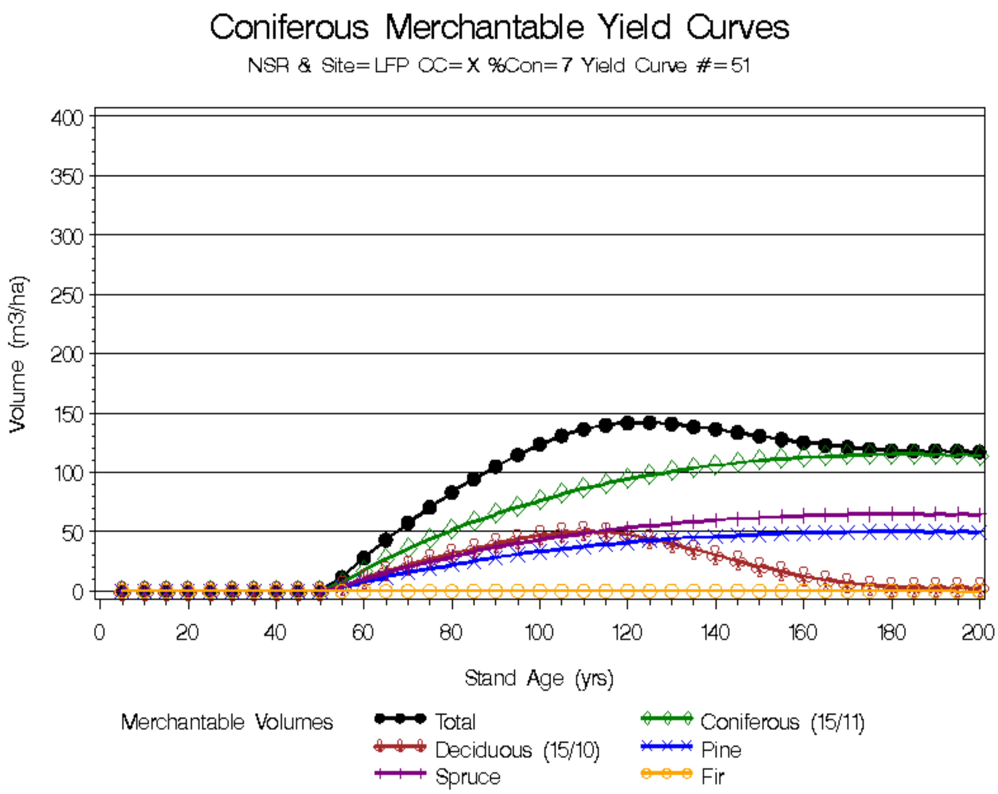
NSR & Site=LFP CC=X %Con=6 Yield Curve #=50

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	28	0.5	15	0.2	13	0.2
70	57	0.8	31	0.4	27	0.4
80	83	1.0	44	0.6	39	0.5
90	105	1.2	56	0.6	49	0.5
100	124	1.2	66	0.7	58	0.6
110	136	1.2	74	0.7	61	0.6
120	139	1.2	81	0.7	58	0.5
130	136	1.0	87	0.7	49	0.4
140	129	0.9	91	0.7	37	0.3
150	120	0.8	95	0.6	25	0.2
160	112	0.7	97	0.6	15	0.1
170	107	0.6	98	0.6	8	0.0
180	103	0.6	99	0.6	4	0.0
190	103	0.5	99	0.5	4	0.0
200	102	0.5	98	0.5	4	0.0



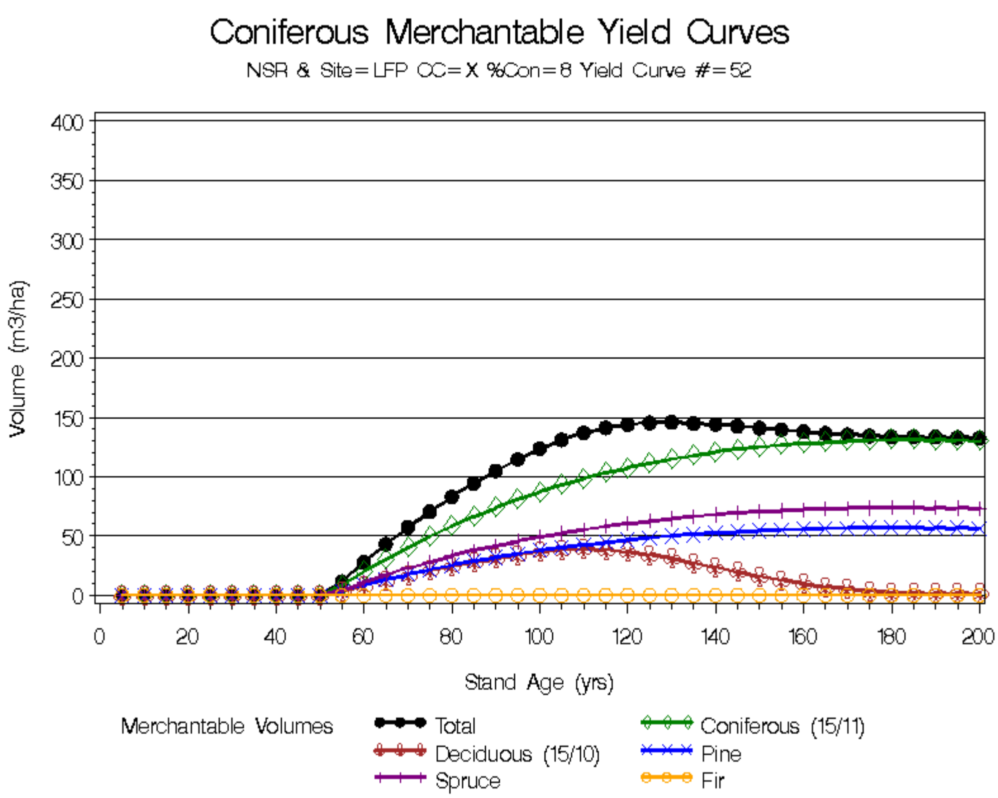
NSR & Site=LFP CC=X %Con=7 Yield Curve #=51

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	28	0.5	17	0.3	11	0.2
70	57	0.8	36	0.5	22	0.3
80	83	1.0	51	0.6	32	0.4
90	105	1.2	65	0.7	40	0.4
100	124	1.2	77	0.8	47	0.5
110	136	1.2	86	0.8	50	0.5
120	142	1.2	94	0.8	47	0.4
130	141	1.1	101	0.8	40	0.3
140	137	1.0	106	0.8	30	0.2
150	131	0.9	110	0.7	21	0.1
160	125	0.8	113	0.7	13	0.1
170	121	0.7	114	0.7	7	0.0
180	118	0.7	115	0.6	3	0.0
190	118	0.6	115	0.6	3	0.0
200	118	0.6	114	0.6	3	0.0



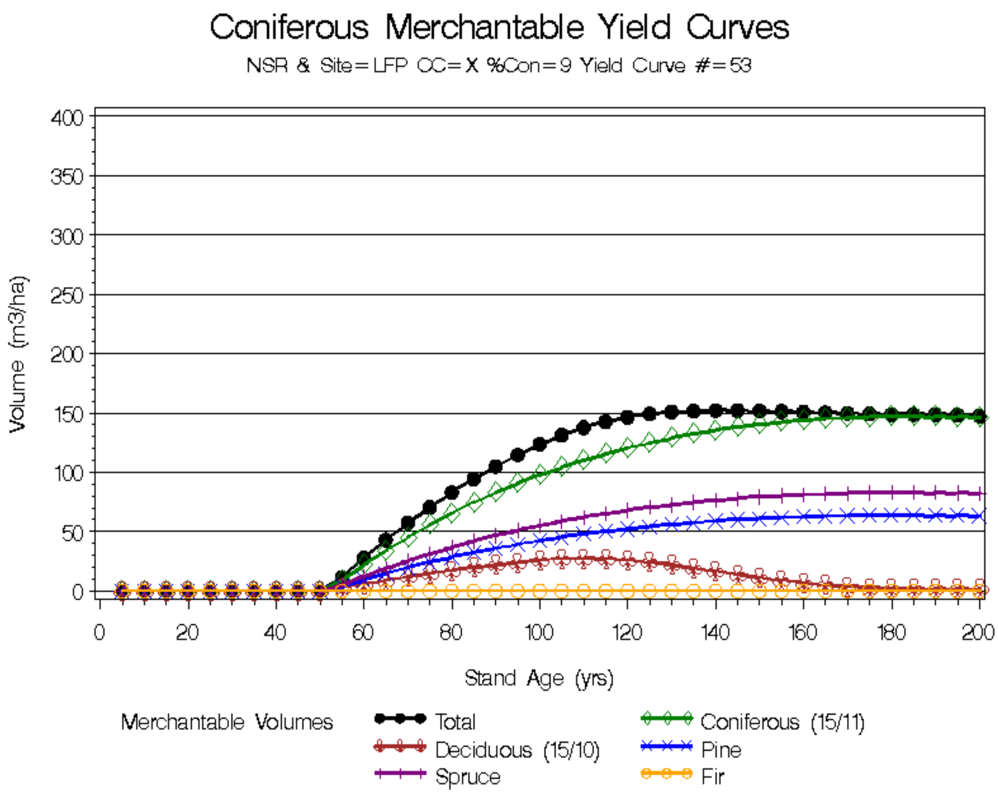
NSR & Site=LFP CC=X %Con=8 Yield Curve #=52

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	28	0.5	20	0.3	8	0.1
70	57	0.8	40	0.6	17	0.2
80	83	1.0	58	0.7	25	0.3
90	105	1.2	74	0.8	31	0.3
100	124	1.2	87	0.9	37	0.4
110	137	1.2	98	0.9	39	0.4
120	144	1.2	107	0.9	37	0.3
130	146	1.1	115	0.9	31	0.2
140	144	1.0	121	0.9	24	0.2
150	141	0.9	125	0.8	16	0.1
160	138	0.9	128	0.8	10	0.1
170	136	0.8	130	0.8	5	0.0
180	134	0.7	131	0.7	3	0.0
190	134	0.7	131	0.7	3	0.0
200	133	0.7	130	0.7	3	0.0



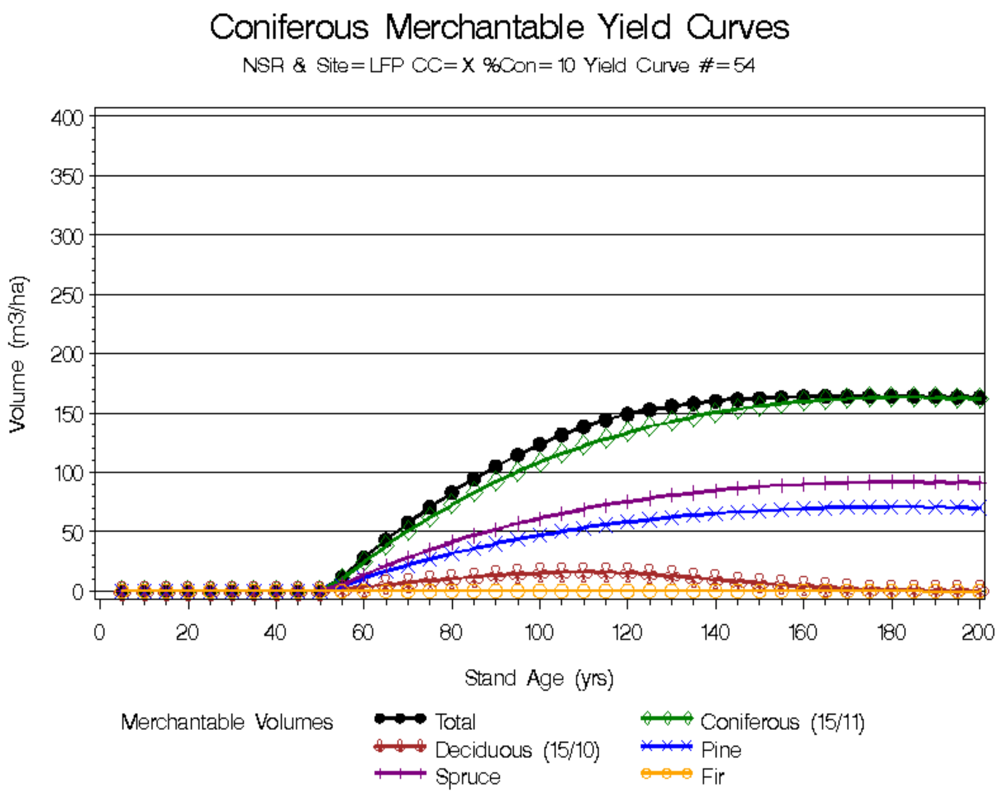
NSR & Site=LFP CC=X %Con=9 Yield Curve #=53

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	28	0.5	22	0.4	6	0.1
70	57	0.8	45	0.6	12	0.2
80	83	1.0	66	0.8	17	0.2
90	105	1.2	83	0.9	22	0.2
100	124	1.2	98	1.0	26	0.3
110	138	1.3	110	1.0	28	0.3
120	147	1.2	121	1.0	26	0.2
130	151	1.2	129	1.0	22	0.2
140	152	1.1	136	1.0	17	0.1
150	152	1.0	141	0.9	11	0.1
160	151	0.9	144	0.9	7	0.0
170	150	0.9	146	0.9	4	0.0
180	149	0.8	147	0.8	2	0.0
190	149	0.8	147	0.8	2	0.0
200	148	0.7	146	0.7	2	0.0



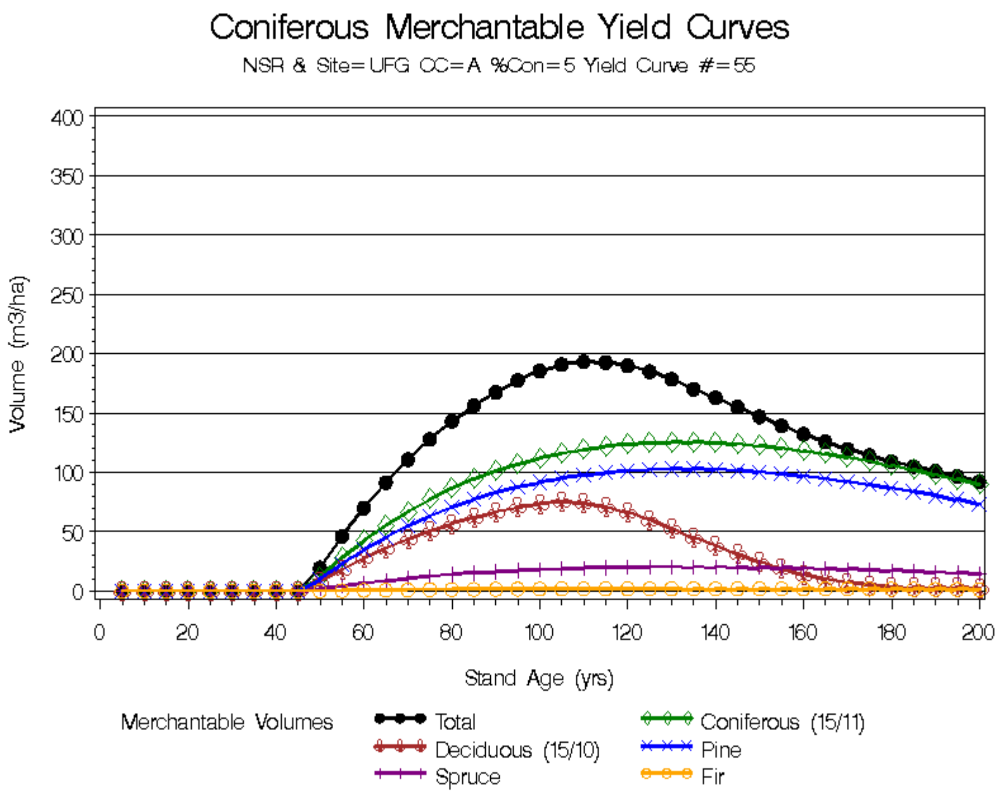
NSR & Site=LFP CC=X %Con=10 Yield Curve #=54

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	28	0.5	25	0.4	3	0.1
70	57	0.8	50	0.7	7	0.1
80	83	1.0	73	0.9	10	0.1
90	105	1.2	92	1.0	13	0.1
100	124	1.2	108	1.1	15	0.2
110	139	1.3	122	1.1	16	0.1
120	149	1.2	134	1.1	15	0.1
130	156	1.2	143	1.1	13	0.1
140	160	1.1	150	1.1	10	0.1
150	163	1.1	156	1.0	7	0.0
160	164	1.0	160	1.0	4	0.0
170	164	1.0	162	1.0	2	0.0
180	164	0.9	163	0.9	1	0.0
190	164	0.9	163	0.9	1	0.0
200	163	0.8	162	0.8	1	0.0



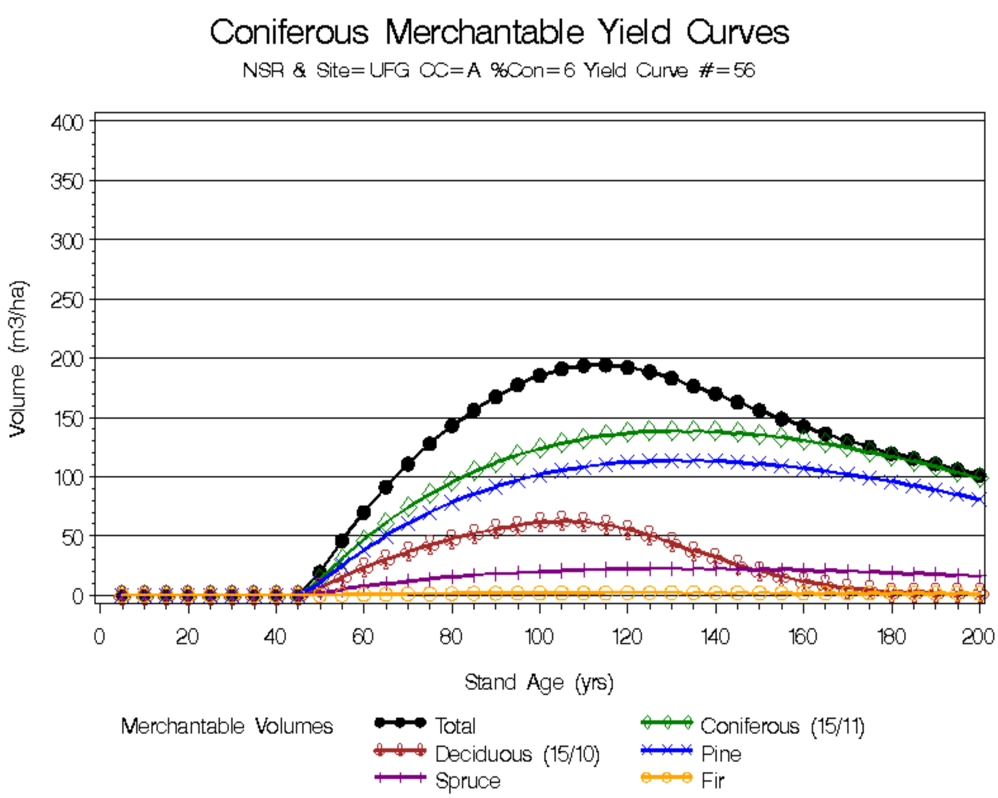
NSR & Site=UFG CC=A %Con=5 Yield Curve #=55

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	20	0.4	12	0.2	8	0.2
60	70	1.2	42	0.7	28	0.5
70	111	1.6	67	1.0	44	0.6
80	143	1.8	86	1.1	57	0.7
90	168	1.9	101	1.1	67	0.7
100	186	1.9	112	1.1	74	0.7
110	193	1.8	119	1.1	74	0.7
120	190	1.6	124	1.0	66	0.6
130	179	1.4	125	1.0	53	0.4
140	163	1.2	125	0.9	38	0.3
150	147	1.0	122	0.8	25	0.2
160	132	0.8	118	0.7	14	0.1
170	120	0.7	113	0.7	7	0.0
180	109	0.6	106	0.6	3	0.0
190	101	0.5	98	0.5	3	0.0
200	92	0.5	90	0.4	3	0.0



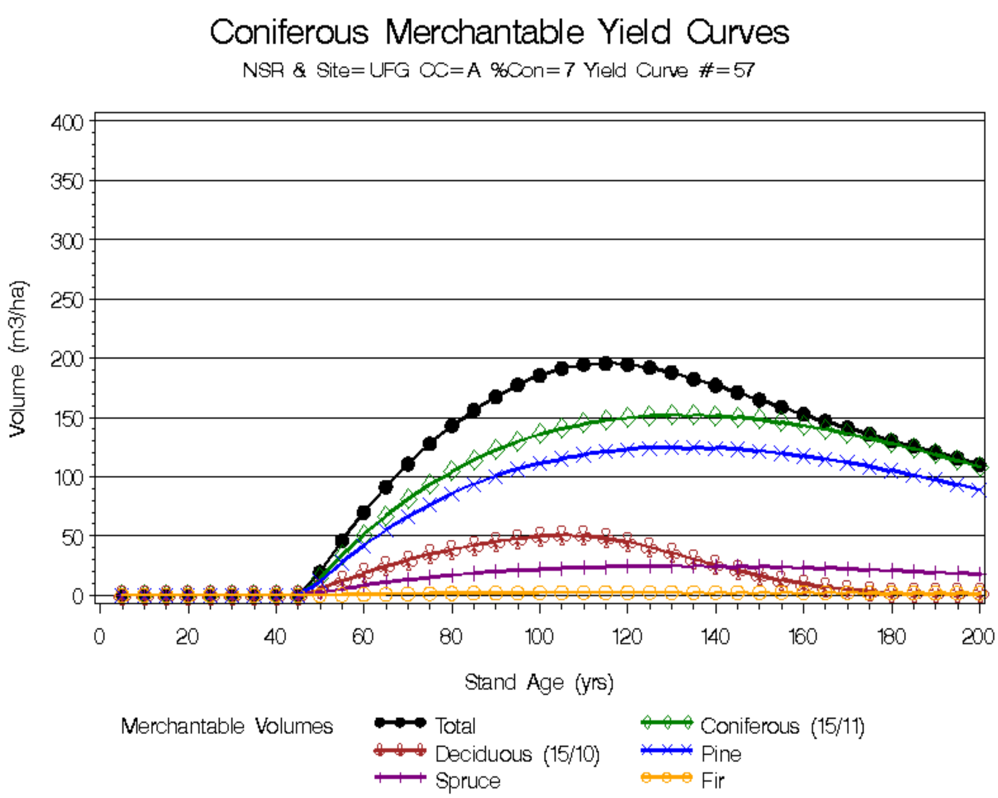
NSR & Site=UFG CC=A %Con=6 Yield Curve #=56

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	20	0.4	13	0.3	7	0.1
60	70	1.2	47	0.8	23	0.4
70	111	1.6	74	1.1	37	0.5
80	143	1.8	95	1.2	48	0.6
90	168	1.9	112	1.2	56	0.6
100	186	1.9	124	1.2	62	0.6
110	194	1.8	132	1.2	62	0.6
120	192	1.6	137	1.1	56	0.5
130	183	1.4	139	1.1	45	0.3
140	170	1.2	138	1.0	32	0.2
150	156	1.0	135	0.9	21	0.1
160	143	0.9	131	0.8	12	0.1
170	131	0.8	125	0.7	6	0.0
180	120	0.7	117	0.7	3	0.0
190	111	0.6	108	0.6	2	0.0
200	101	0.5	99	0.5	2	0.0



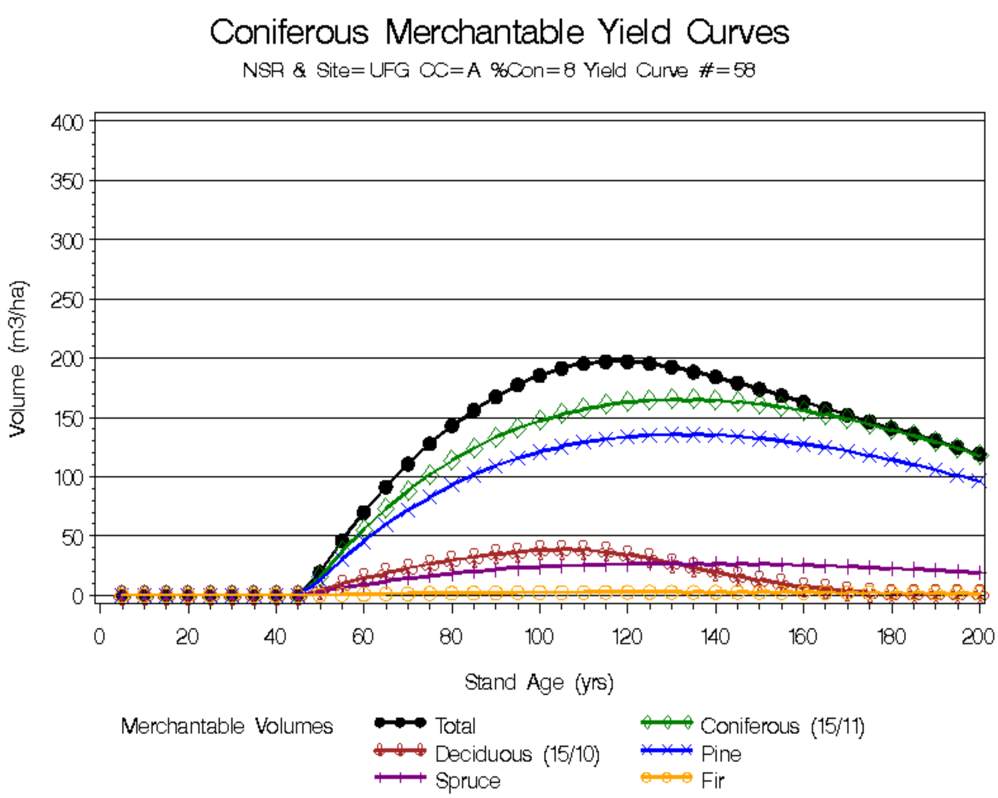
NSR & Site=UFG CC=A %Con=7 Yield Curve #=57

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	20	0.4	14	0.3	5	0.1
60	70	1.2	51	0.9	19	0.3
70	111	1.6	81	1.2	30	0.4
80	143	1.8	105	1.3	38	0.5
90	168	1.9	123	1.4	45	0.5
100	186	1.9	136	1.4	50	0.5
110	195	1.8	145	1.3	50	0.5
120	195	1.6	150	1.2	45	0.4
130	188	1.4	152	1.2	36	0.3
140	177	1.3	151	1.1	26	0.2
150	165	1.1	148	1.0	17	0.1
160	153	1.0	143	0.9	10	0.1
170	141	0.8	136	0.8	5	0.0
180	130	0.7	128	0.7	2	0.0
190	121	0.6	119	0.6	2	0.0
200	110	0.6	109	0.5	2	0.0



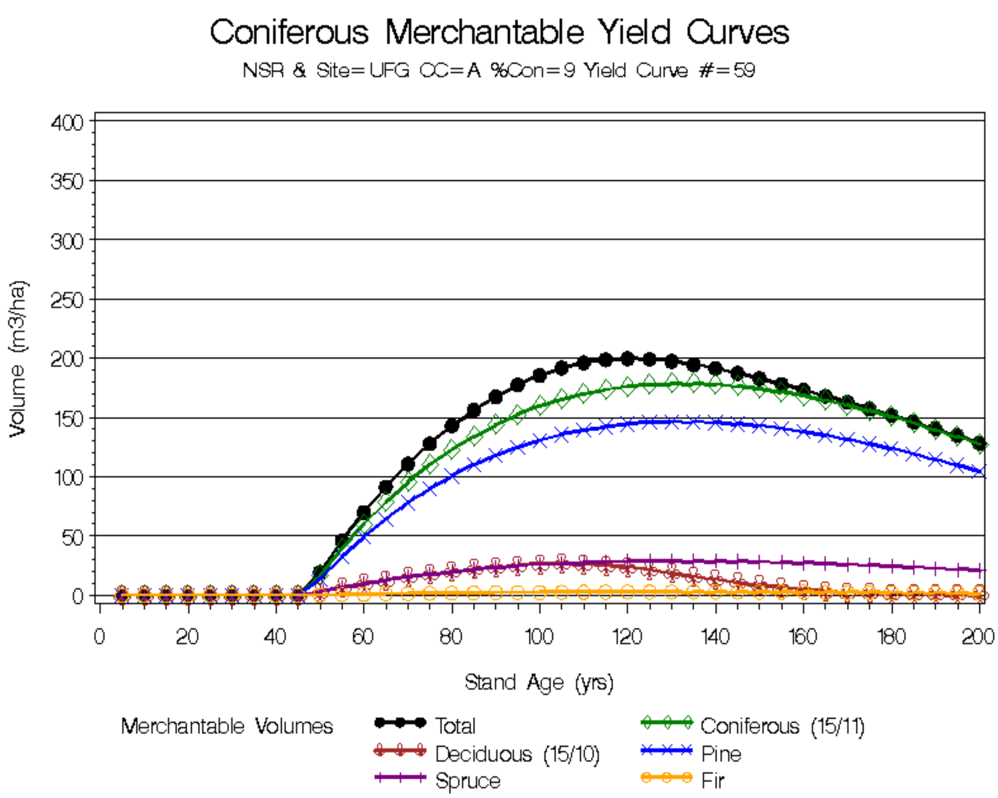
NSR & Site=UFG CC=A %Con=8 Yield Curve #=58

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	20	0.4	16	0.3	4	0.1
60	70	1.2	56	0.9	14	0.2
70	111	1.6	88	1.3	23	0.3
80	143	1.8	114	1.4	29	0.4
90	168	1.9	133	1.5	34	0.4
100	186	1.9	148	1.5	38	0.4
110	196	1.8	157	1.4	38	0.3
120	197	1.6	163	1.4	34	0.3
130	193	1.5	165	1.3	27	0.2
140	184	1.3	165	1.2	20	0.1
150	174	1.2	161	1.1	13	0.1
160	163	1.0	156	1.0	7	0.0
170	152	0.9	148	0.9	4	0.0
180	141	0.8	140	0.8	2	0.0
190	131	0.7	129	0.7	2	0.0
200	119	0.6	118	0.6	1	0.0



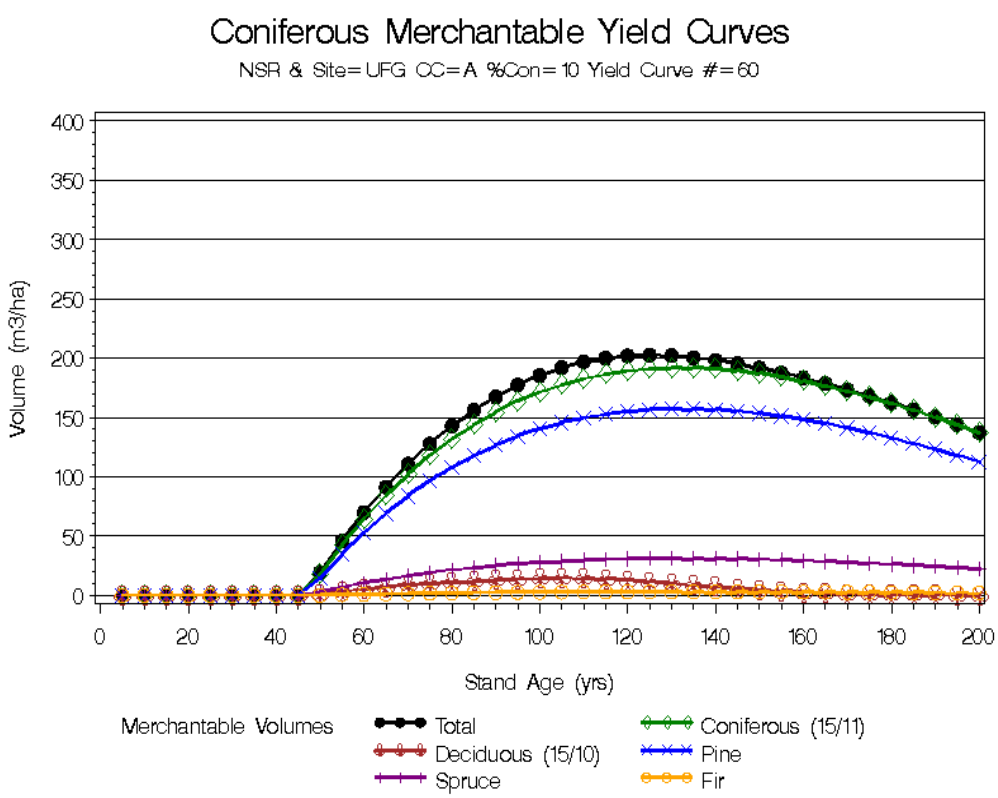
NSR & Site=UFG CC=A %Con=9 Yield Curve #=59

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	20	0.4	17	0.3	3	0.1
60	70	1.2	60	1.0	10	0.2
70	111	1.6	95	1.4	16	0.2
80	143	1.8	123	1.5	20	0.3
90	168	1.9	144	1.6	24	0.3
100	186	1.9	159	1.6	26	0.3
110	196	1.8	170	1.5	26	0.2
120	200	1.7	176	1.5	24	0.2
130	198	1.5	179	1.4	19	0.1
140	191	1.4	178	1.3	14	0.1
150	183	1.2	174	1.2	9	0.1
160	173	1.1	168	1.1	5	0.0
170	163	1.0	160	0.9	3	0.0
180	152	0.8	151	0.8	1	0.0
190	141	0.7	140	0.7	1	0.0
200	128	0.6	128	0.6	1	0.0



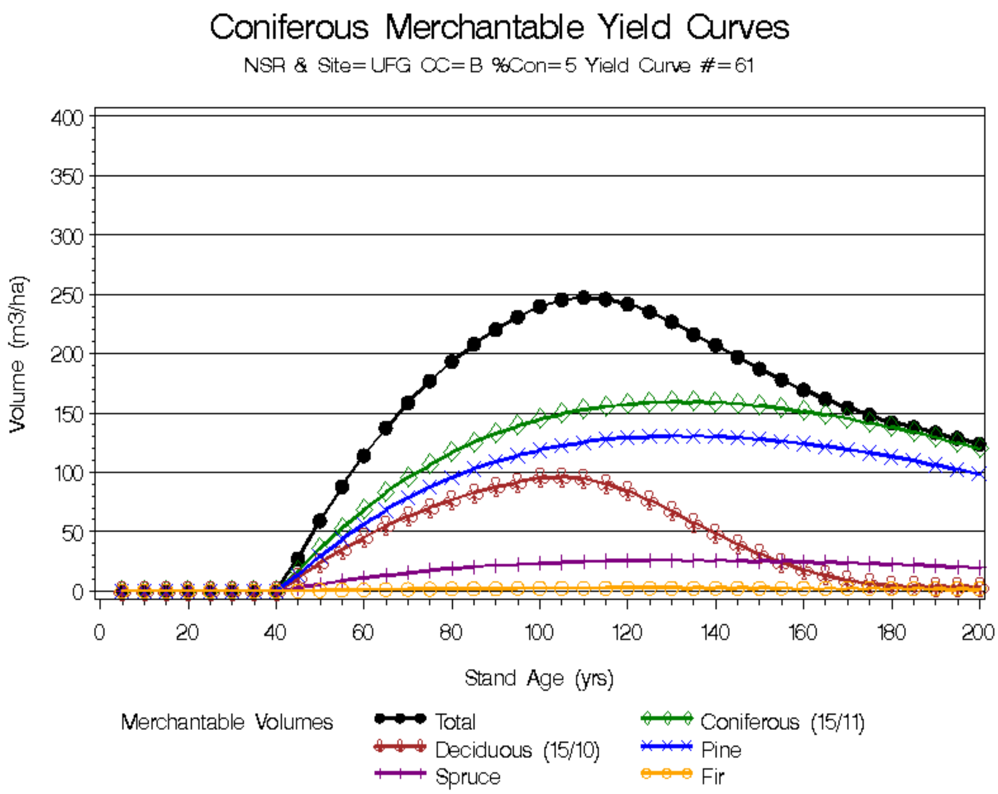
NSR & Site=UFG CC=A %Con=10 Yield Curve #=60

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	20	0.4	18	0.4	2	0.0
60	70	1.2	65	1.1	5	0.1
70	111	1.6	102	1.5	9	0.1
80	143	1.8	132	1.6	11	0.1
90	168	1.9	155	1.7	13	0.1
100	186	1.9	171	1.7	14	0.1
110	197	1.8	183	1.7	14	0.1
120	202	1.7	189	1.6	13	0.1
130	202	1.6	192	1.5	10	0.1
140	199	1.4	191	1.4	7	0.1
150	192	1.3	187	1.2	5	0.0
160	184	1.1	181	1.1	3	0.0
170	174	1.0	172	1.0	1	0.0
180	163	0.9	162	0.9	1	0.0
190	151	0.8	150	0.8	1	0.0
200	138	0.7	137	0.7	1	0.0



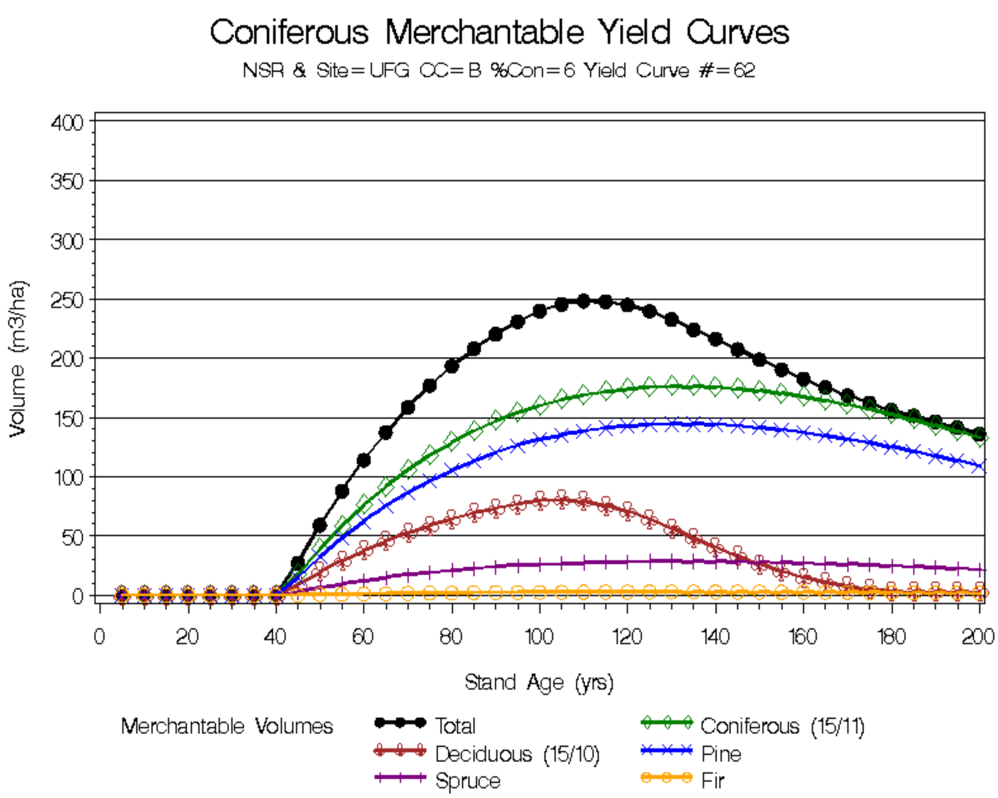
NSR & Site=UFG CC=B %Con=5 Yield Curve #=61

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	59	1.2	36	0.7	24	0.5
60	114	1.9	69	1.1	45	0.8
70	159	2.3	96	1.4	63	0.9
80	194	2.4	117	1.5	77	1.0
90	220	2.4	133	1.5	88	1.0
100	240	2.4	145	1.4	95	1.0
110	247	2.2	153	1.4	95	0.9
120	242	2.0	158	1.3	84	0.7
130	227	1.7	159	1.2	68	0.5
140	207	1.5	159	1.1	49	0.3
150	187	1.2	156	1.0	31	0.2
160	170	1.1	151	0.9	18	0.1
170	155	0.9	145	0.9	9	0.1
180	142	0.8	138	0.8	4	0.0
190	134	0.7	130	0.7	4	0.0
200	124	0.6	120	0.6	4	0.0



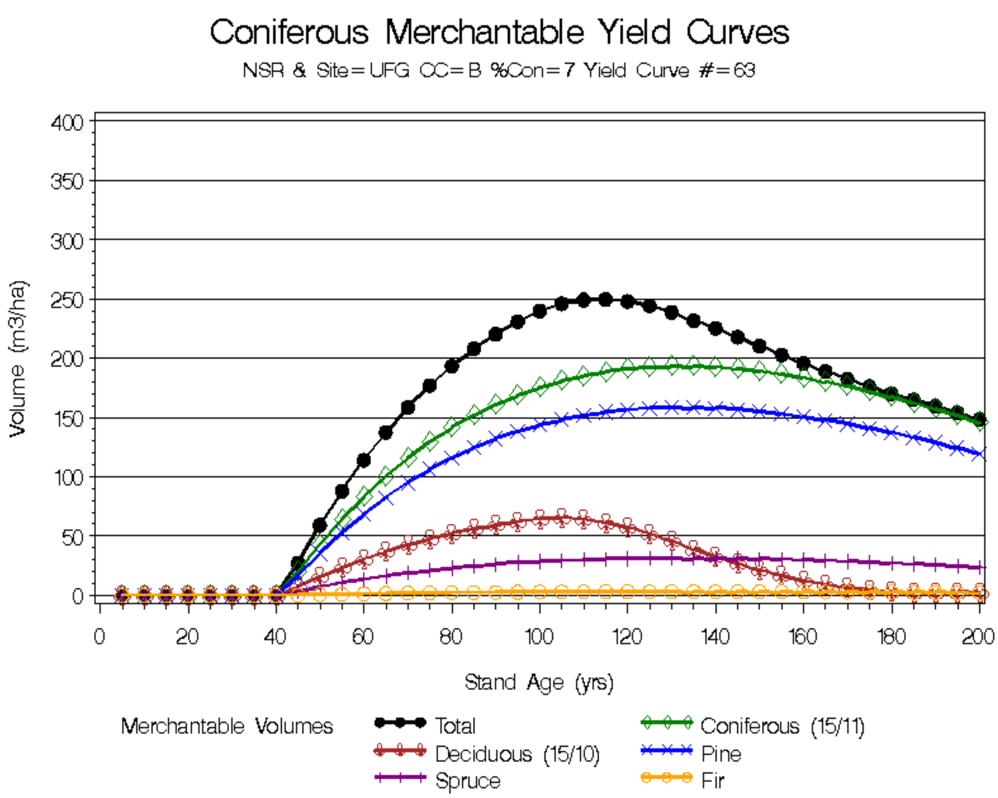
NSR & Site=UFG CC=B %Con=6 Yield Curve #=62

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	59	1.2	39	0.8	20	0.4
60	114	1.9	76	1.3	38	0.6
70	159	2.3	106	1.5	53	0.8
80	194	2.4	129	1.6	64	0.8
90	220	2.4	147	1.6	73	0.8
100	240	2.4	160	1.6	80	0.8
110	248	2.3	169	1.5	79	0.7
120	245	2.0	174	1.5	71	0.6
130	233	1.8	176	1.4	57	0.4
140	216	1.5	176	1.3	41	0.3
150	199	1.3	173	1.2	26	0.2
160	183	1.1	168	1.0	15	0.1
170	169	1.0	161	0.9	8	0.0
180	156	0.9	153	0.8	4	0.0
190	147	0.8	143	0.8	3	0.0
200	136	0.7	133	0.7	3	0.0



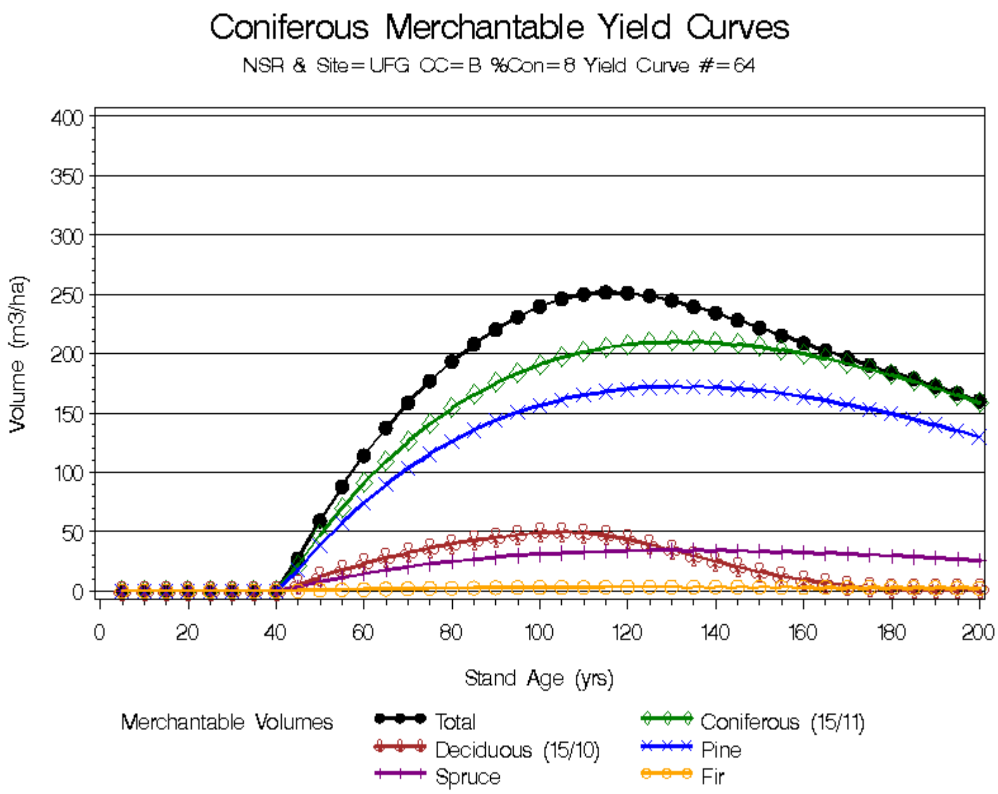
NSR & Site=UFG CC=B %Con=7 Yield Curve #=63

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	59	1.2	43	0.9	16	0.3
60	114	1.9	83	1.4	31	0.5
70	159	2.3	116	1.7	43	0.6
80	194	2.4	141	1.8	52	0.7
90	220	2.4	161	1.8	59	0.7
100	240	2.4	175	1.8	65	0.6
110	249	2.3	185	1.7	64	0.6
120	248	2.1	191	1.6	57	0.5
130	239	1.8	193	1.5	46	0.4
140	225	1.6	192	1.4	33	0.2
150	210	1.4	189	1.3	21	0.1
160	196	1.2	184	1.1	12	0.1
170	182	1.1	176	1.0	6	0.0
180	170	0.9	167	0.9	3	0.0
190	160	0.8	157	0.8	3	0.0
200	148	0.7	146	0.7	2	0.0



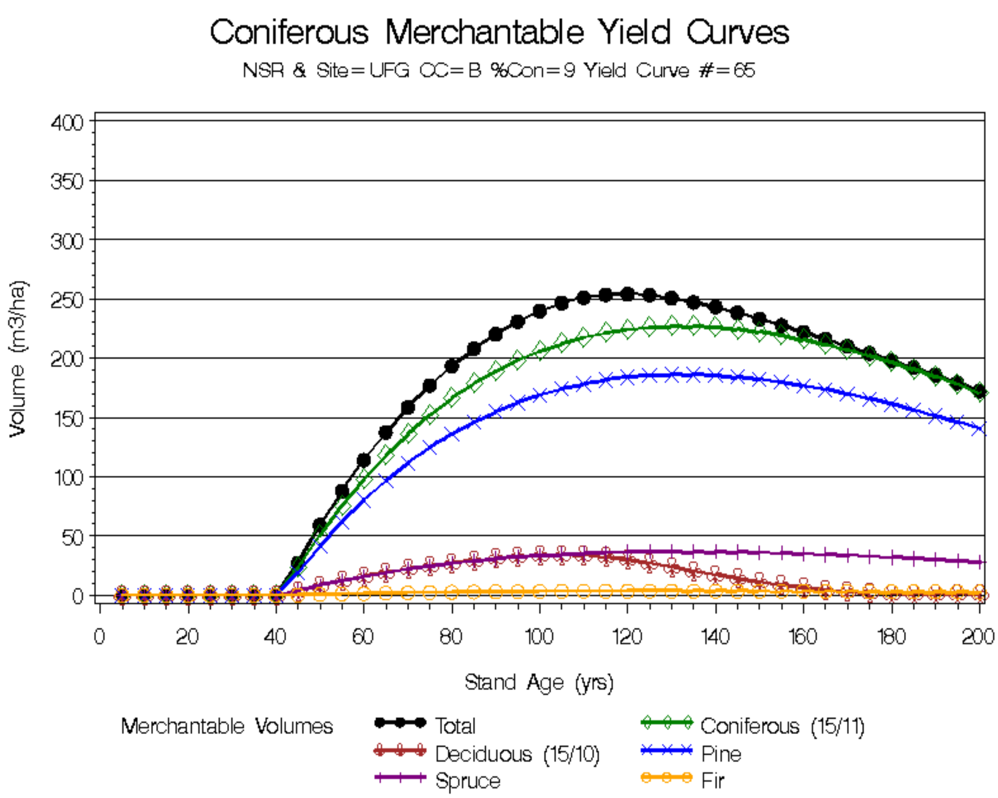
NSR & Site=UFG CC=B %Con=8 Yield Curve #=64

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	59	1.2	47	0.9	12	0.2
60	114	1.9	91	1.5	23	0.4
70	159	2.3	126	1.8	33	0.5
80	194	2.4	154	1.9	40	0.5
90	220	2.4	175	1.9	45	0.5
100	240	2.4	191	1.9	49	0.5
110	250	2.3	201	1.8	49	0.4
120	251	2.1	208	1.7	44	0.4
130	245	1.9	210	1.6	35	0.3
140	234	1.7	209	1.5	25	0.2
150	222	1.5	206	1.4	16	0.1
160	209	1.3	200	1.2	9	0.1
170	196	1.2	192	1.1	5	0.0
180	184	1.0	182	1.0	2	0.0
190	173	0.9	171	0.9	2	0.0
200	160	0.8	159	0.8	2	0.0



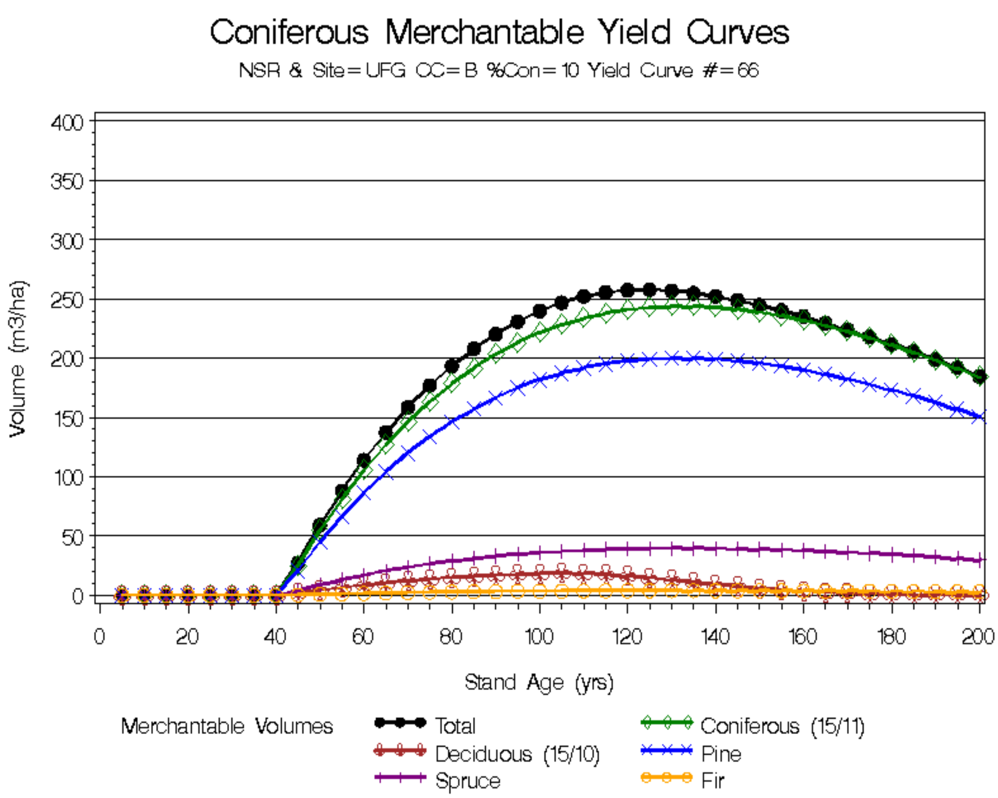
NSR & Site=UFG CC=B %Con=9 Yield Curve #=65

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	59	1.2	51	1.0	8	0.2
60	114	1.9	98	1.6	16	0.3
70	159	2.3	136	1.9	22	0.3
80	194	2.4	166	2.1	27	0.3
90	220	2.4	189	2.1	31	0.3
100	240	2.4	206	2.1	34	0.3
110	251	2.3	218	2.0	34	0.3
120	254	2.1	224	1.9	30	0.3
130	251	1.9	227	1.7	24	0.2
140	243	1.7	226	1.6	17	0.1
150	233	1.6	222	1.5	11	0.1
160	222	1.4	216	1.3	6	0.0
170	210	1.2	207	1.2	3	0.0
180	198	1.1	197	1.1	1	0.0
190	186	1.0	185	1.0	1	0.0
200	173	0.9	171	0.9	1	0.0



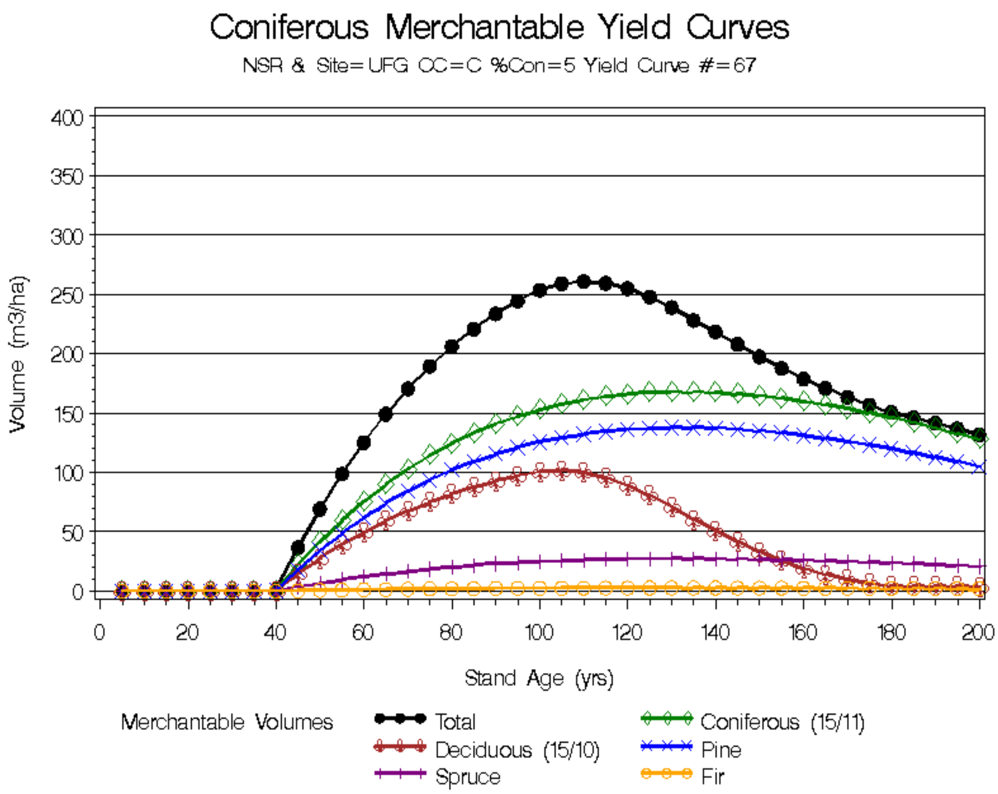
NSR & Site=UFG CC=B %Con=10 Yield Curve #=66

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	59	1.2	55	1.1	5	0.1
60	114	1.9	105	1.8	9	0.1
70	159	2.3	146	2.1	12	0.2
80	194	2.4	179	2.2	15	0.2
90	220	2.4	203	2.3	17	0.2
100	240	2.4	221	2.2	19	0.2
110	252	2.3	234	2.1	18	0.2
120	257	2.1	241	2.0	16	0.1
130	257	2.0	244	1.9	13	0.1
140	252	1.8	243	1.7	9	0.1
150	245	1.6	239	1.6	6	0.0
160	235	1.5	232	1.4	4	0.0
170	224	1.3	223	1.3	2	0.0
180	212	1.2	211	1.2	1	0.0
190	199	1.0	198	1.0	1	0.0
200	185	0.9	184	0.9	1	0.0



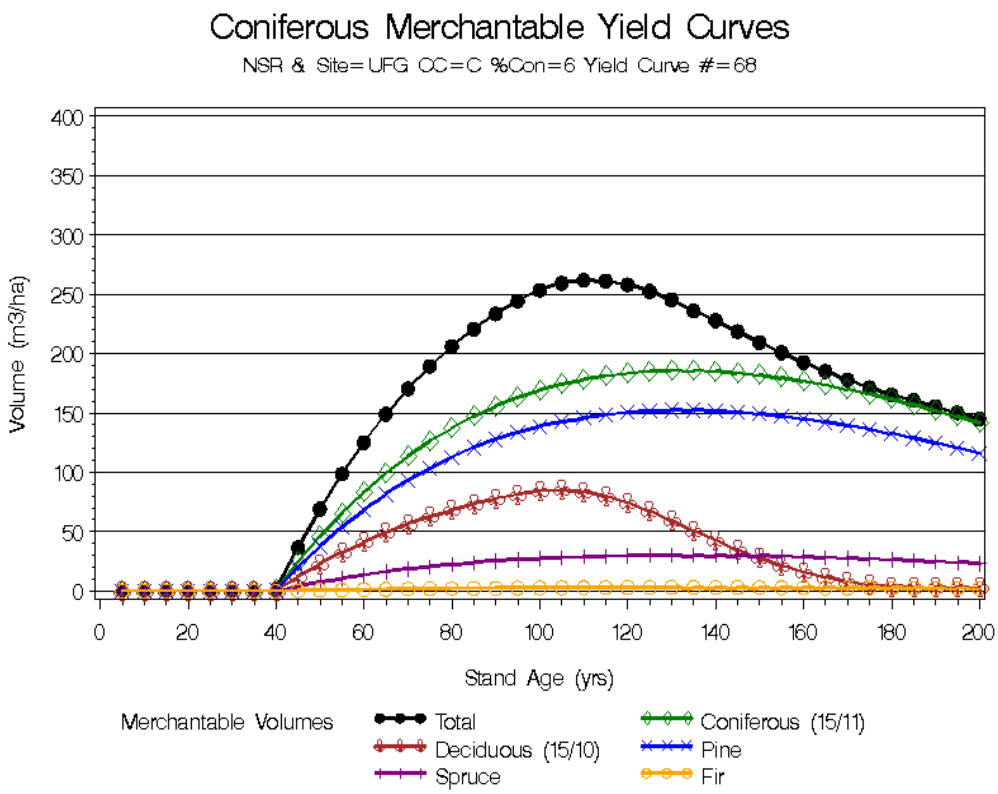
NSR & Site=UFG CC=C %Con=5 Yield Curve #=67

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	69	1.4	42	0.8	27	0.5
60	125	2.1	76	1.3	50	0.8
70	171	2.4	103	1.5	68	1.0
80	206	2.6	124	1.6	82	1.0
90	234	2.6	141	1.6	93	1.0
100	254	2.5	153	1.5	101	1.0
110	261	2.4	161	1.5	100	0.9
120	255	2.1	166	1.4	89	0.7
130	239	1.8	168	1.3	71	0.5
140	219	1.6	167	1.2	51	0.4
150	198	1.3	165	1.1	33	0.2
160	179	1.1	160	1.0	19	0.1
170	163	1.0	154	0.9	10	0.1
180	151	0.8	146	0.8	4	0.0
190	142	0.7	138	0.7	4	0.0
200	132	0.7	128	0.6	4	0.0



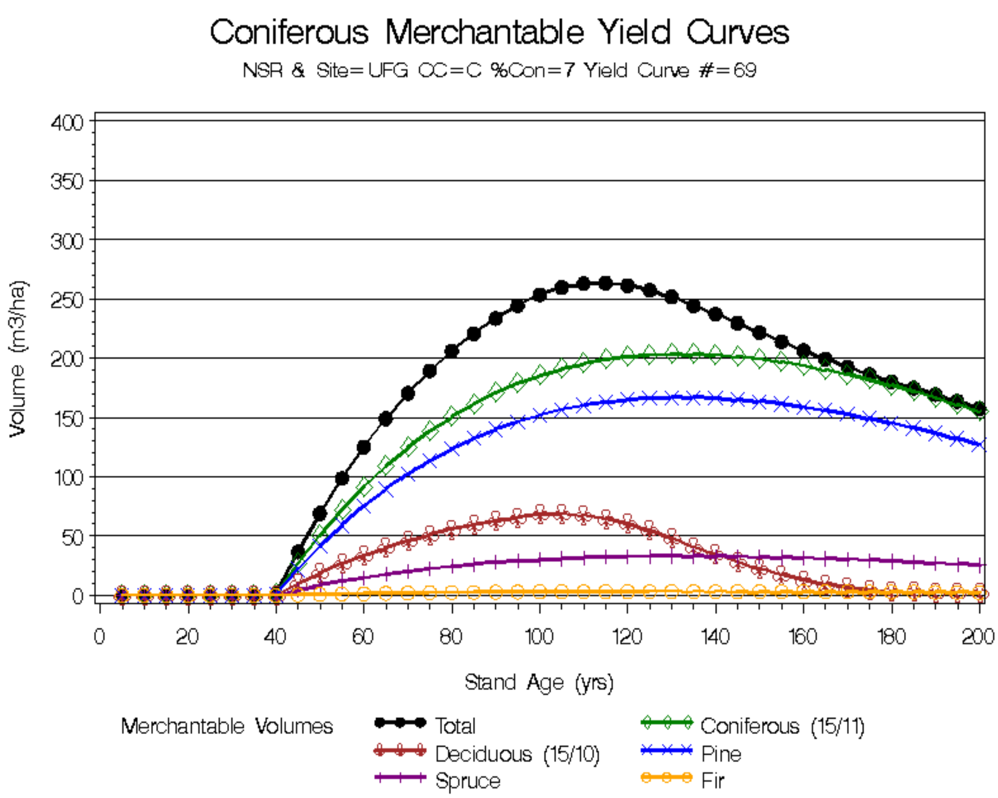
NSR & Site=UFG CC=C %Con=6 Yield Curve #=68

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	69	1.4	46	0.9	23	0.5
60	125	2.1	84	1.4	42	0.7
70	171	2.4	114	1.6	57	0.8
80	206	2.6	138	1.7	69	0.9
90	234	2.6	156	1.7	78	0.9
100	254	2.5	169	1.7	85	0.8
110	262	2.4	178	1.6	84	0.8
120	258	2.2	184	1.5	75	0.6
130	245	1.9	186	1.4	60	0.5
140	228	1.6	185	1.3	43	0.3
150	210	1.4	182	1.2	28	0.2
160	193	1.2	177	1.1	16	0.1
170	178	1.0	170	1.0	8	0.0
180	165	0.9	162	0.9	4	0.0
190	156	0.8	152	0.8	3	0.0
200	145	0.7	142	0.7	3	0.0



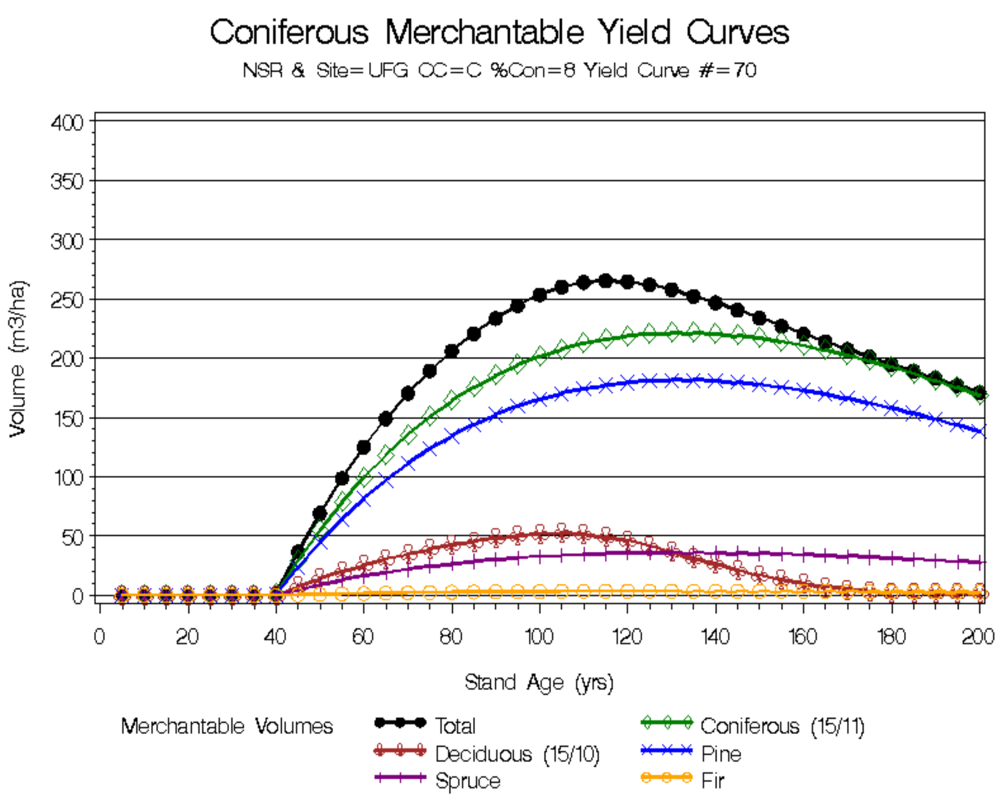
NSR & Site=UFG CC=C %Con=7 Yield Curve #=69

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	69	1.4	51	1.0	19	0.4
60	125	2.1	92	1.5	34	0.6
70	171	2.4	125	1.8	46	0.7
80	206	2.6	151	1.9	56	0.7
90	234	2.6	171	1.9	63	0.7
100	254	2.5	185	1.9	68	0.7
110	263	2.4	195	1.8	68	0.6
120	262	2.2	201	1.7	60	0.5
130	252	1.9	204	1.6	48	0.4
140	238	1.7	203	1.4	35	0.2
150	222	1.5	199	1.3	22	0.1
160	207	1.3	194	1.2	13	0.1
170	193	1.1	186	1.1	7	0.0
180	180	1.0	177	1.0	3	0.0
190	170	0.9	167	0.9	3	0.0
200	158	0.8	155	0.8	3	0.0



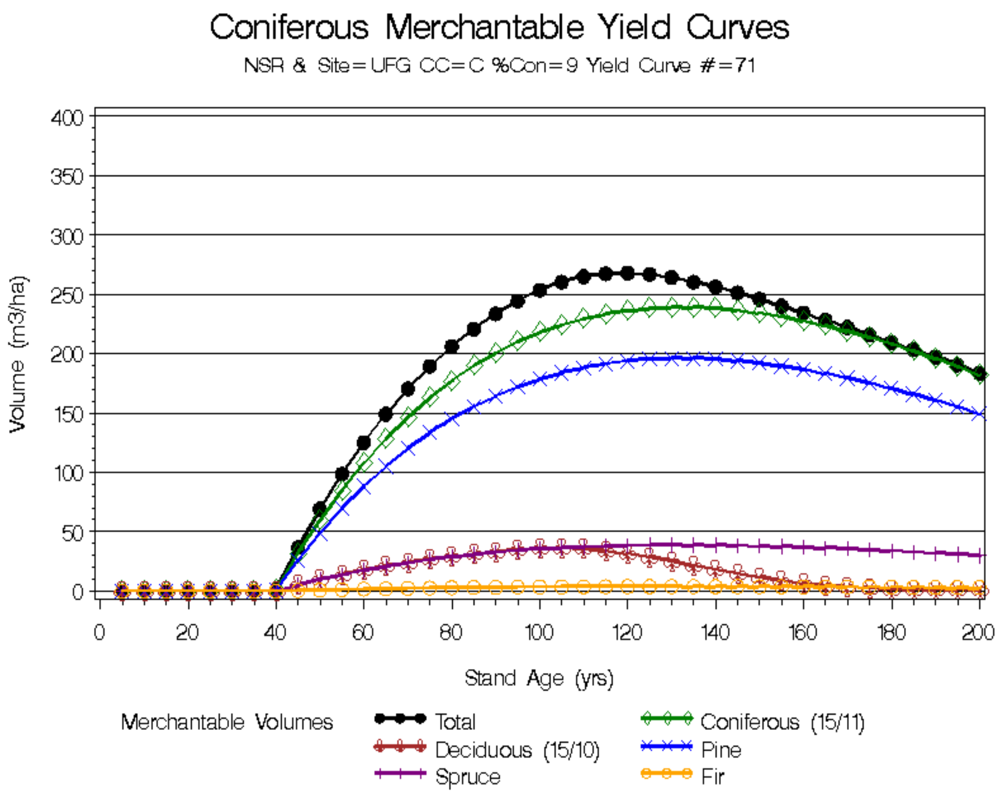
NSR & Site=UFG CC=C %Con=8 Yield Curve #=70

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	69	1.4	55	1.1	14	0.3
60	125	2.1	100	1.7	26	0.4
70	171	2.4	136	1.9	35	0.5
80	206	2.6	164	2.0	42	0.5
90	234	2.6	186	2.1	48	0.5
100	254	2.5	202	2.0	52	0.5
110	264	2.4	212	1.9	52	0.5
120	265	2.2	219	1.8	46	0.4
130	258	2.0	221	1.7	37	0.3
140	247	1.8	221	1.6	26	0.2
150	234	1.6	217	1.4	17	0.1
160	221	1.4	211	1.3	10	0.1
170	208	1.2	203	1.2	5	0.0
180	195	1.1	193	1.1	2	0.0
190	183	1.0	181	1.0	2	0.0
200	171	0.9	169	0.8	2	0.0



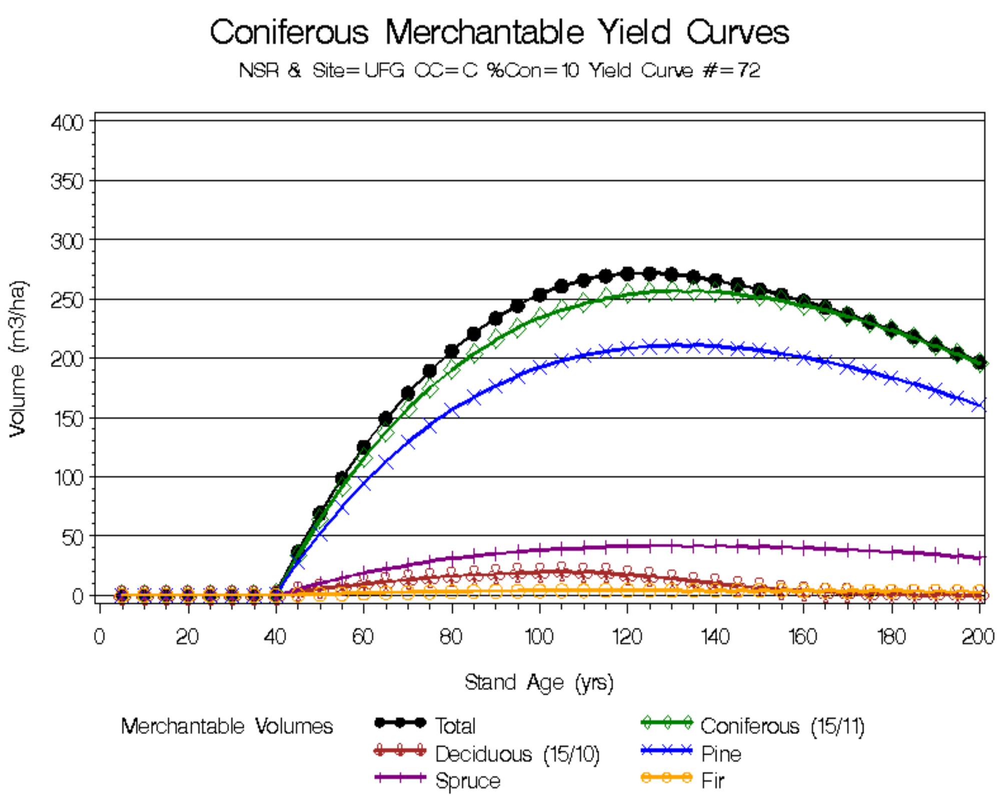
NSR & Site=UFG CC=C %Con=9 Yield Curve #=71

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	69	1.4	59	1.2	10	0.2
60	125	2.1	108	1.8	18	0.3
70	171	2.4	146	2.1	24	0.3
80	206	2.6	177	2.2	29	0.4
90	234	2.6	201	2.2	33	0.4
100	254	2.5	218	2.2	36	0.4
110	265	2.4	230	2.1	36	0.3
120	268	2.2	236	2.0	32	0.3
130	264	2.0	239	1.8	25	0.2
140	256	1.8	238	1.7	18	0.1
150	246	1.6	234	1.6	12	0.1
160	234	1.5	228	1.4	7	0.0
170	222	1.3	219	1.3	3	0.0
180	210	1.2	208	1.2	2	0.0
190	197	1.0	196	1.0	1	0.0
200	184	0.9	182	0.9	1	0.0



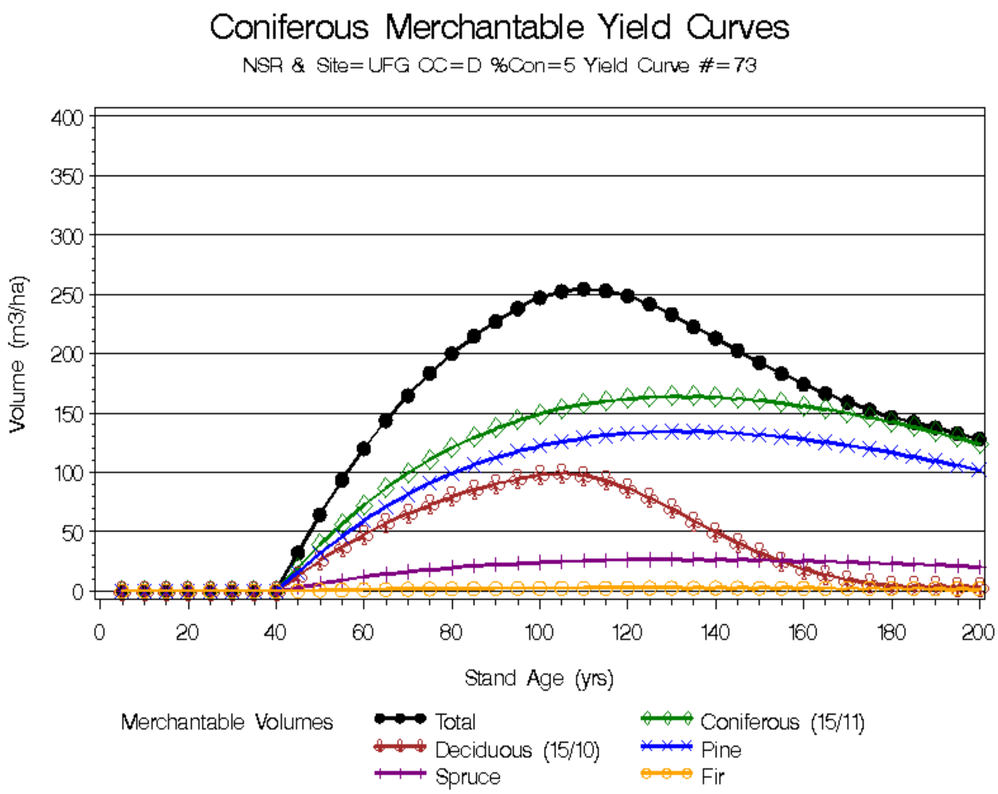
NSR & Site=UFG CC=C %Con=10 Yield Curve #=72

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	69	1.4	64	1.3	5	0.1
60	125	2.1	116	1.9	10	0.2
70	171	2.4	157	2.2	13	0.2
80	206	2.6	190	2.4	16	0.2
90	234	2.6	216	2.4	18	0.2
100	254	2.5	234	2.3	20	0.2
110	266	2.4	247	2.2	19	0.2
120	271	2.3	254	2.1	17	0.1
130	271	2.1	257	2.0	14	0.1
140	266	1.9	256	1.8	10	0.1
150	258	1.7	252	1.7	6	0.0
160	248	1.6	245	1.5	4	0.0
170	237	1.4	235	1.4	2	0.0
180	225	1.2	224	1.2	1	0.0
190	211	1.1	210	1.1	1	0.0
200	197	1.0	196	1.0	1	0.0



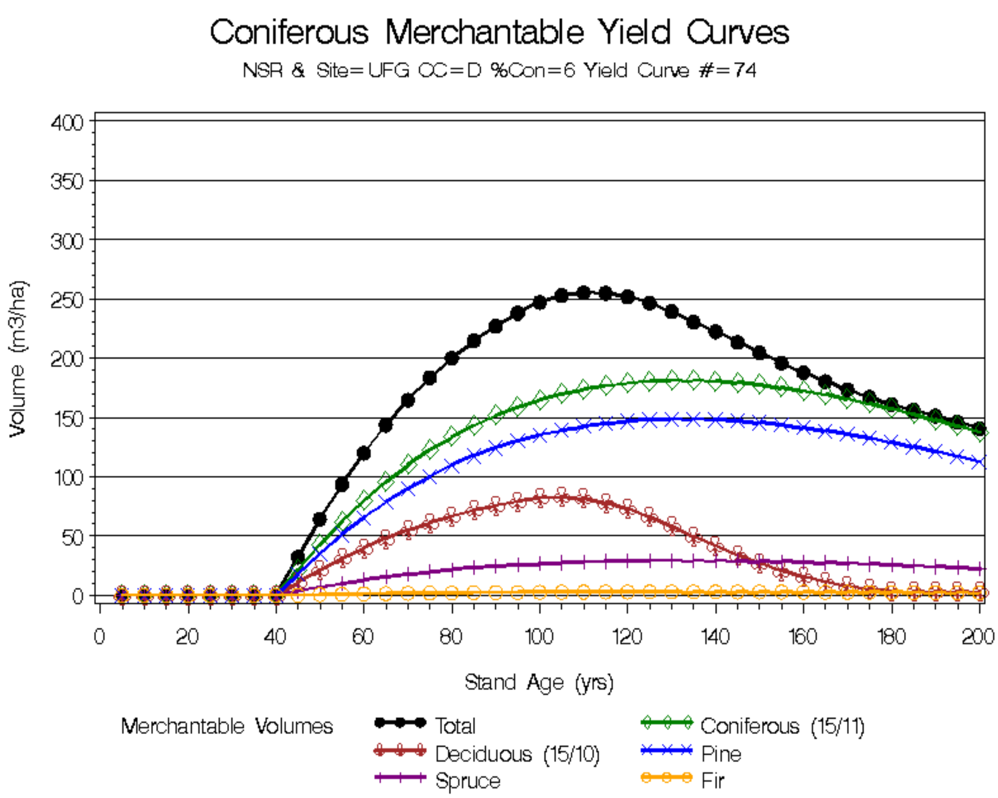
NSR & Site=UFG CC=D %Con=5 Yield Curve #=73

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	64	1.3	39	0.8	26	0.5
60	120	2.0	72	1.2	48	0.8
70	165	2.4	99	1.4	65	0.9
80	200	2.5	121	1.5	80	1.0
90	227	2.5	137	1.5	90	1.0
100	247	2.5	149	1.5	98	1.0
110	255	2.3	157	1.4	97	0.9
120	249	2.1	162	1.3	87	0.7
130	233	1.8	164	1.3	69	0.5
140	213	1.5	163	1.2	50	0.4
150	193	1.3	160	1.1	32	0.2
160	174	1.1	156	1.0	19	0.1
170	159	0.9	150	0.9	9	0.1
180	147	0.8	142	0.8	4	0.0
190	138	0.7	134	0.7	4	0.0
200	128	0.6	124	0.6	4	0.0



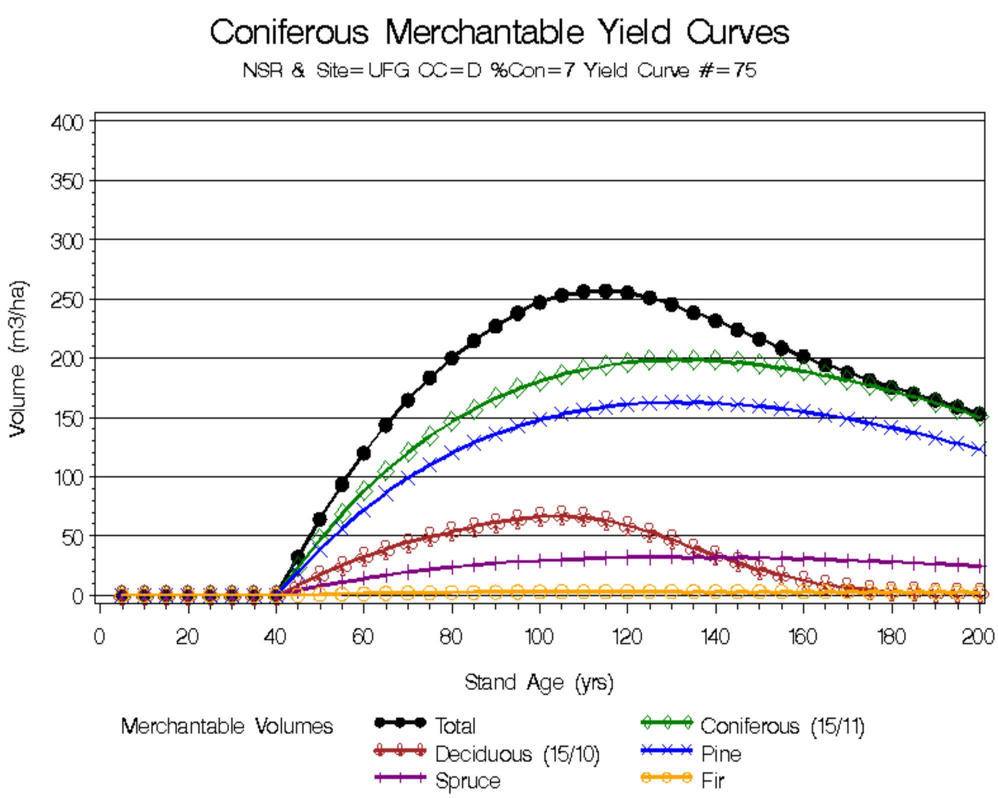
NSR & Site=UFG CC=D %Con=6 Yield Curve #=74

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	64	1.3	43	0.9	21	0.4
60	120	2.0	80	1.3	40	0.7
70	165	2.4	110	1.6	55	0.8
80	200	2.5	134	1.7	67	0.8
90	227	2.5	152	1.7	76	0.8
100	247	2.5	165	1.6	82	0.8
110	256	2.3	174	1.6	82	0.7
120	252	2.1	179	1.5	73	0.6
130	240	1.8	181	1.4	58	0.4
140	222	1.6	181	1.3	42	0.3
150	205	1.4	178	1.2	27	0.2
160	188	1.2	172	1.1	16	0.1
170	174	1.0	166	1.0	8	0.0
180	161	0.9	157	0.9	4	0.0
190	151	0.8	148	0.8	3	0.0
200	141	0.7	138	0.7	3	0.0



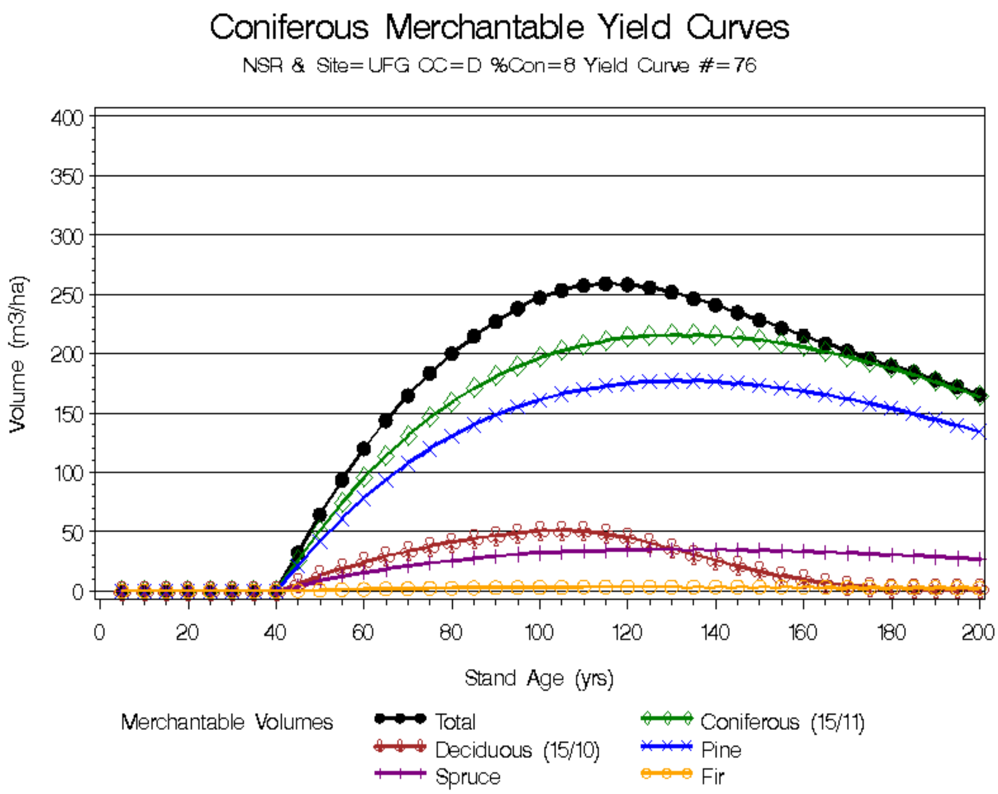
NSR & Site=UFG CC=D %Con=7 Yield Curve #=75

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	64	1.3	47	0.9	17	0.3
60	120	2.0	88	1.5	32	0.5
70	165	2.4	120	1.7	44	0.6
80	200	2.5	146	1.8	54	0.7
90	227	2.5	166	1.8	61	0.7
100	247	2.5	181	1.8	67	0.7
110	257	2.3	191	1.7	66	0.6
120	255	2.1	196	1.6	59	0.5
130	246	1.9	199	1.5	47	0.4
140	232	1.7	198	1.4	34	0.2
150	216	1.4	195	1.3	22	0.1
160	202	1.3	189	1.2	13	0.1
170	188	1.1	182	1.1	6	0.0
180	175	1.0	172	1.0	3	0.0
190	165	0.9	162	0.9	3	0.0
200	153	0.8	151	0.8	3	0.0



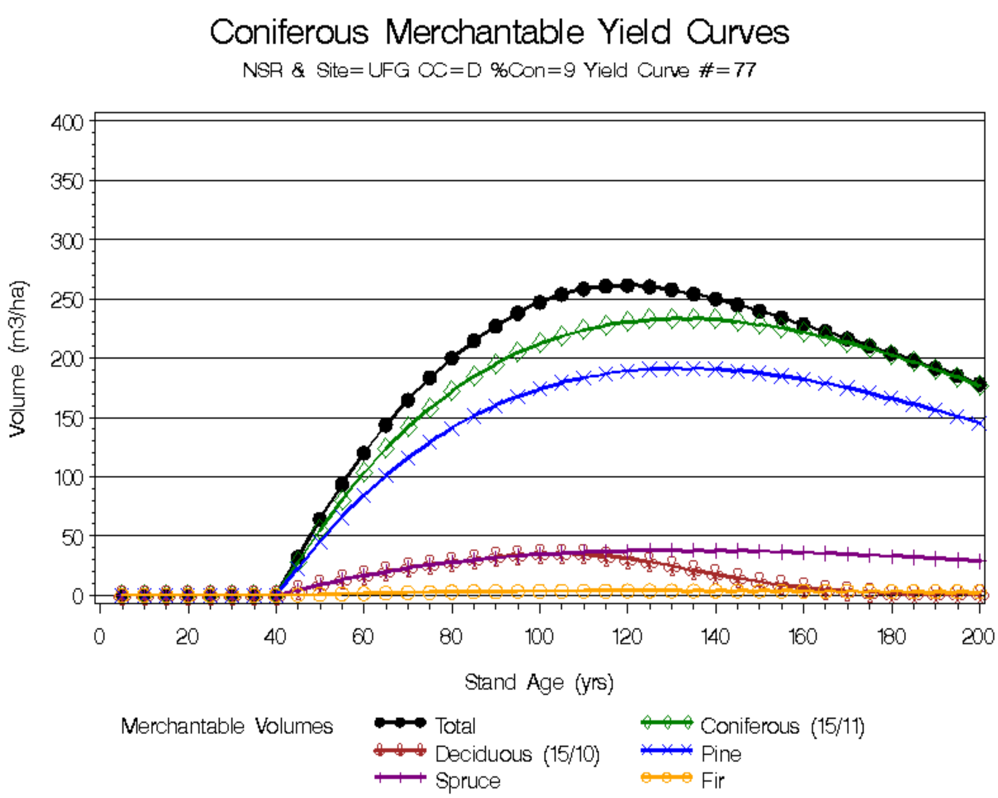
NSR & Site=UFG CC=D %Con=8 Yield Curve #=76

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	64	1.3	51	1.0	13	0.3
60	120	2.0	95	1.6	25	0.4
70	165	2.4	131	1.9	34	0.5
80	200	2.5	159	2.0	41	0.5
90	227	2.5	181	2.0	47	0.5
100	247	2.5	196	2.0	51	0.5
110	258	2.3	207	1.9	50	0.5
120	258	2.2	214	1.8	45	0.4
130	252	1.9	216	1.7	36	0.3
140	241	1.7	215	1.5	26	0.2
150	228	1.5	212	1.4	17	0.1
160	215	1.3	205	1.3	10	0.1
170	202	1.2	197	1.2	5	0.0
180	190	1.1	188	1.0	2	0.0
190	178	0.9	176	0.9	2	0.0
200	166	0.8	164	0.8	2	0.0



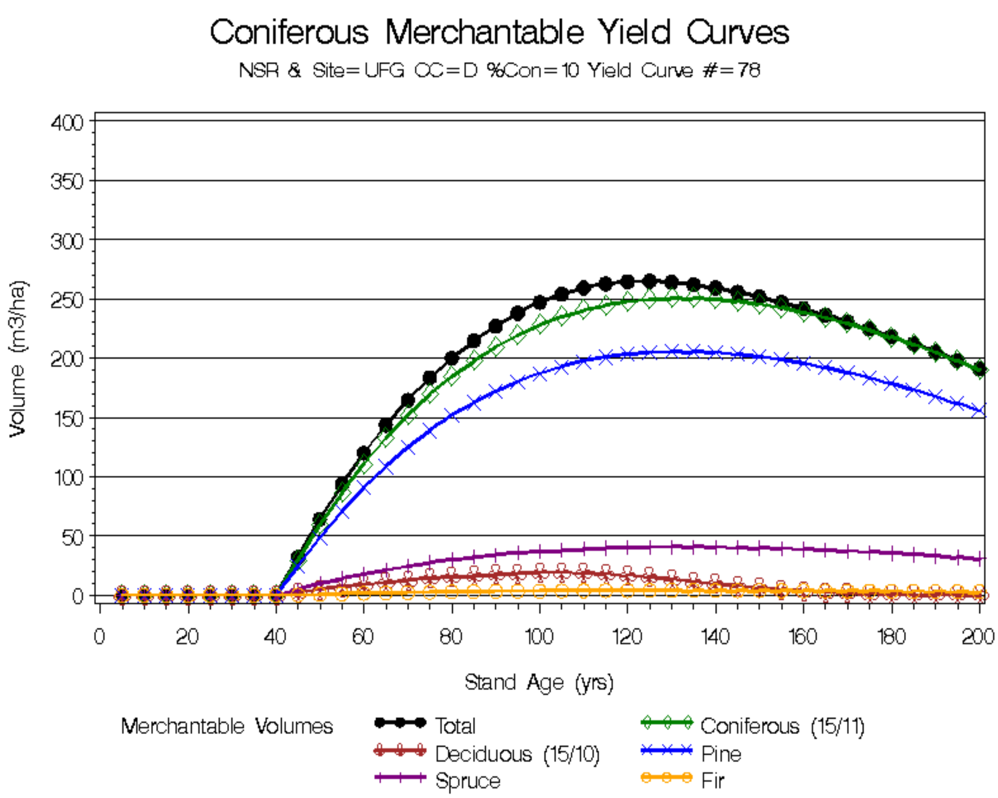
NSR & Site=UFG CC=D %Con=9 Yield Curve #=77

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	64	1.3	55	1.1	9	0.2
60	120	2.0	103	1.7	17	0.3
70	165	2.4	142	2.0	23	0.3
80	200	2.5	172	2.1	28	0.4
90	227	2.5	195	2.2	32	0.4
100	247	2.5	212	2.1	35	0.3
110	259	2.4	224	2.0	35	0.3
120	262	2.2	231	1.9	31	0.3
130	258	2.0	233	1.8	25	0.2
140	250	1.8	232	1.7	18	0.1
150	240	1.6	229	1.5	11	0.1
160	229	1.4	222	1.4	7	0.0
170	217	1.3	213	1.3	3	0.0
180	204	1.1	203	1.1	2	0.0
190	192	1.0	191	1.0	1	0.0
200	178	0.9	177	0.9	1	0.0



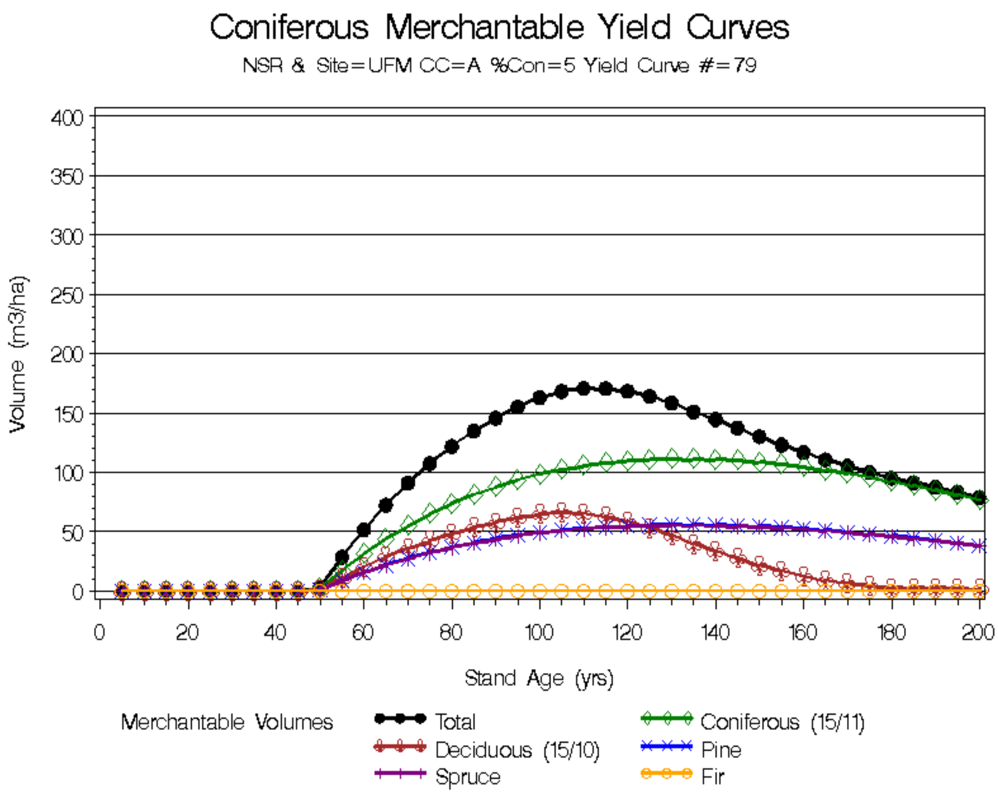
NSR & Site=UFG CC=D %Con=10 Yield Curve #=78

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	64	1.3	59	1.2	5	0.1
60	120	2.0	111	1.8	9	0.2
70	165	2.4	152	2.2	13	0.2
80	200	2.5	185	2.3	15	0.2
90	227	2.5	210	2.3	18	0.2
100	247	2.5	228	2.3	19	0.2
110	260	2.4	241	2.2	19	0.2
120	265	2.2	248	2.1	17	0.1
130	264	2.0	251	1.9	14	0.1
140	260	1.9	250	1.8	10	0.1
150	252	1.7	246	1.6	6	0.0
160	242	1.5	239	1.5	4	0.0
170	231	1.4	229	1.3	2	0.0
180	219	1.2	218	1.2	1	0.0
190	206	1.1	205	1.1	1	0.0
200	191	1.0	190	1.0	1	0.0



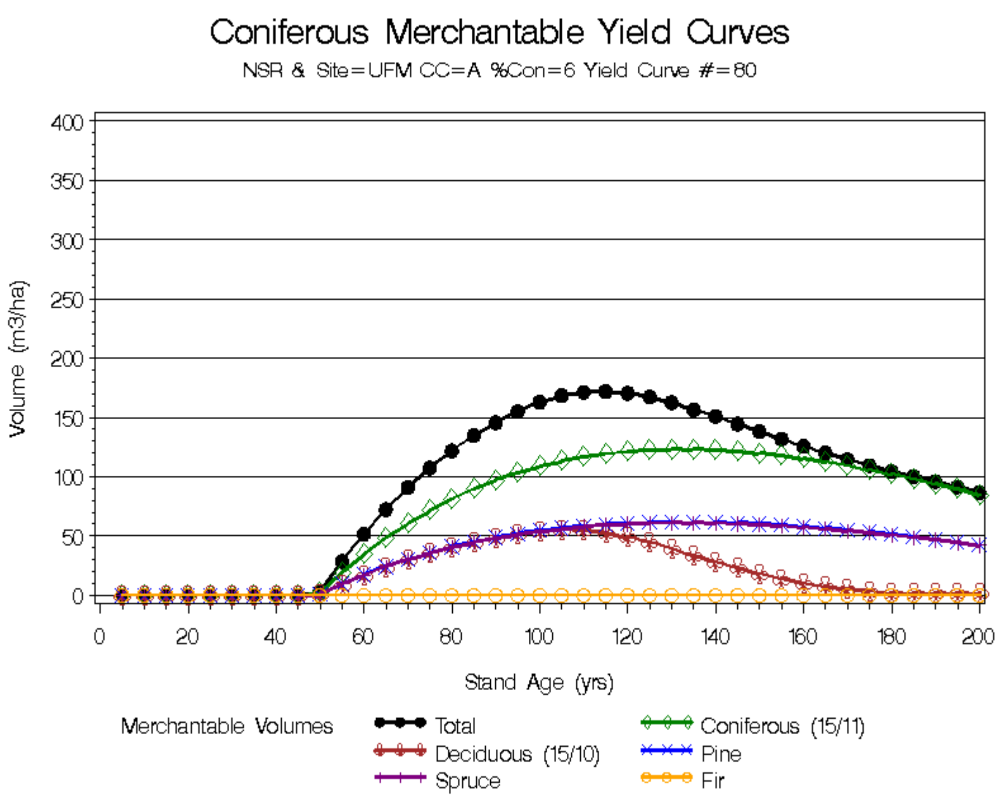
NSR & Site=UFM CC=A %Con=5 Yield Curve #=79

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	3	0.1	2	0.0	1	0.0
60	52	0.9	31	0.5	21	0.3
70	91	1.3	55	0.8	36	0.5
80	122	1.5	74	0.9	48	0.6
90	146	1.6	88	1.0	58	0.6
100	163	1.6	98	1.0	65	0.6
110	171	1.6	105	1.0	65	0.6
120	168	1.4	110	0.9	59	0.5
130	159	1.2	111	0.9	47	0.4
140	145	1.0	111	0.8	34	0.2
150	130	0.9	108	0.7	22	0.1
160	117	0.7	104	0.7	12	0.1
170	105	0.6	99	0.6	6	0.0
180	95	0.5	92	0.5	3	0.0
190	88	0.5	85	0.4	3	0.0
200	79	0.4	77	0.4	2	0.0



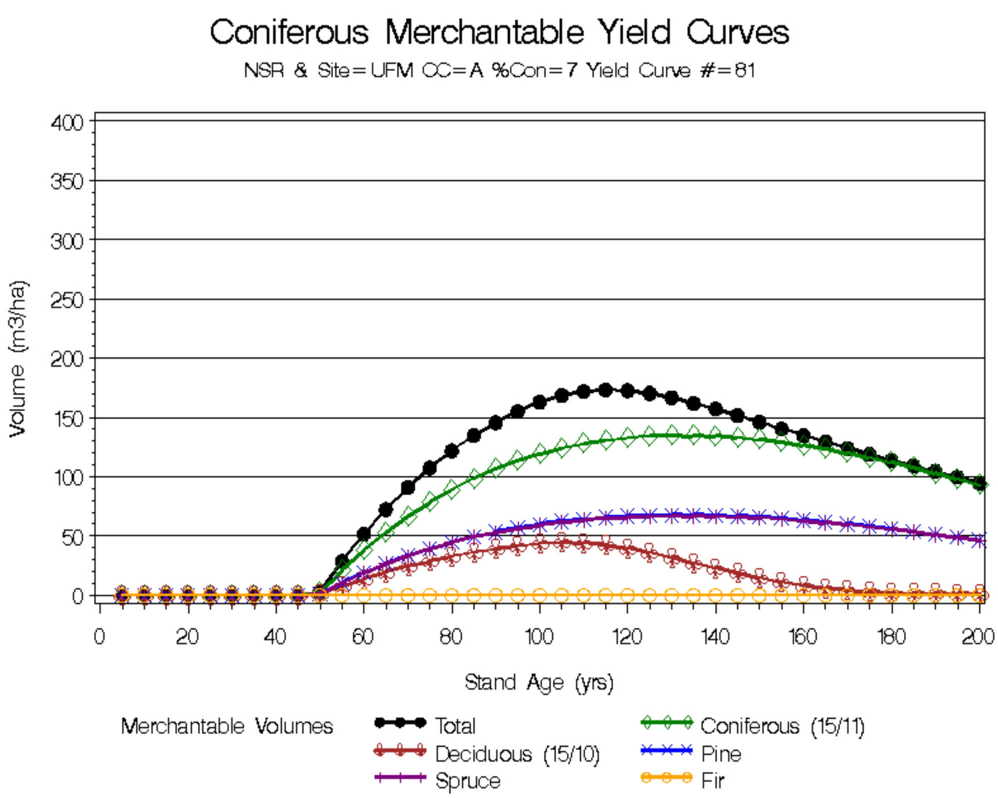
NSR & Site=UFM CC=A %Con=6 Yield Curve #=80

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	3	0.1	2	0.0	1	0.0
60	52	0.9	35	0.6	17	0.3
70	91	1.3	61	0.9	30	0.4
80	122	1.5	81	1.0	41	0.5
90	146	1.6	97	1.1	49	0.5
100	163	1.6	109	1.1	54	0.5
110	172	1.6	117	1.1	55	0.5
120	171	1.4	121	1.0	49	0.4
130	163	1.3	123	0.9	40	0.3
140	151	1.1	123	0.9	28	0.2
150	138	0.9	120	0.8	18	0.1
160	126	0.8	115	0.7	10	0.1
170	115	0.7	109	0.6	5	0.0
180	105	0.6	102	0.6	2	0.0
190	96	0.5	94	0.5	2	0.0
200	87	0.4	85	0.4	2	0.0



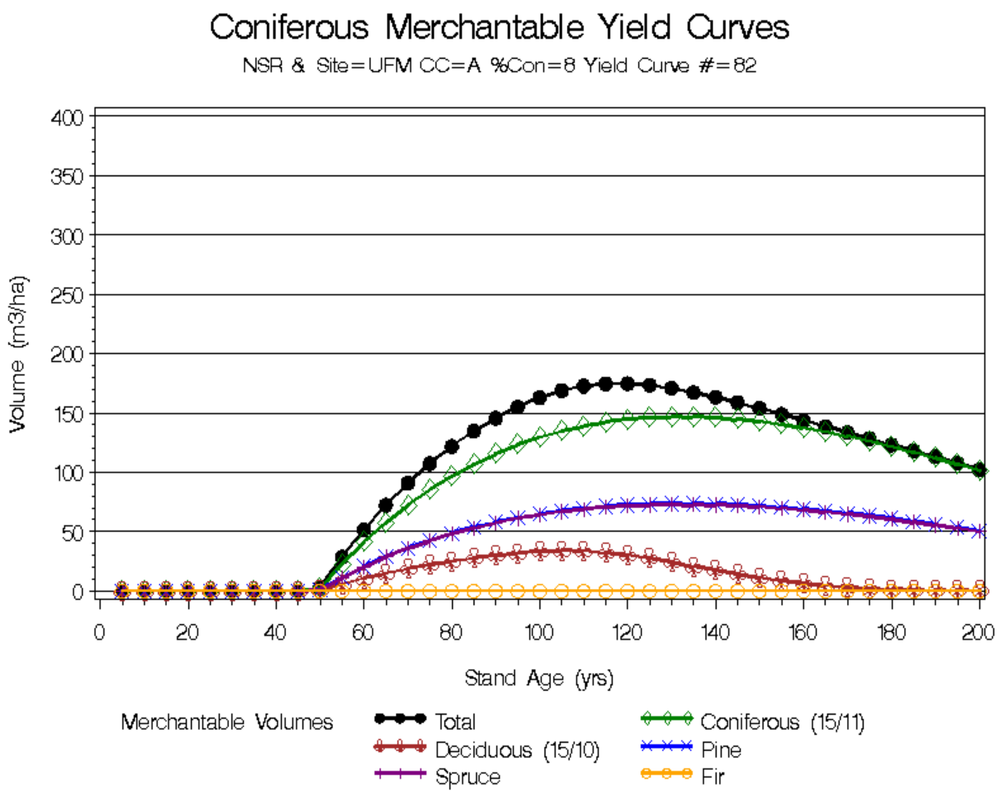
NSR & Site=UFM CC=A %Con=7 Yield Curve #=81

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	3	0.1	2	0.0	1	0.0
60	52	0.9	38	0.6	14	0.2
70	91	1.3	67	1.0	24	0.3
80	122	1.5	89	1.1	33	0.4
90	146	1.6	107	1.2	39	0.4
100	163	1.6	119	1.2	44	0.4
110	172	1.6	128	1.2	44	0.4
120	173	1.4	133	1.1	40	0.3
130	167	1.3	135	1.0	32	0.2
140	157	1.1	134	1.0	23	0.2
150	146	1.0	131	0.9	15	0.1
160	135	0.8	126	0.8	8	0.1
170	124	0.7	120	0.7	4	0.0
180	114	0.6	112	0.6	2	0.0
190	105	0.6	103	0.5	2	0.0
200	95	0.5	93	0.5	2	0.0



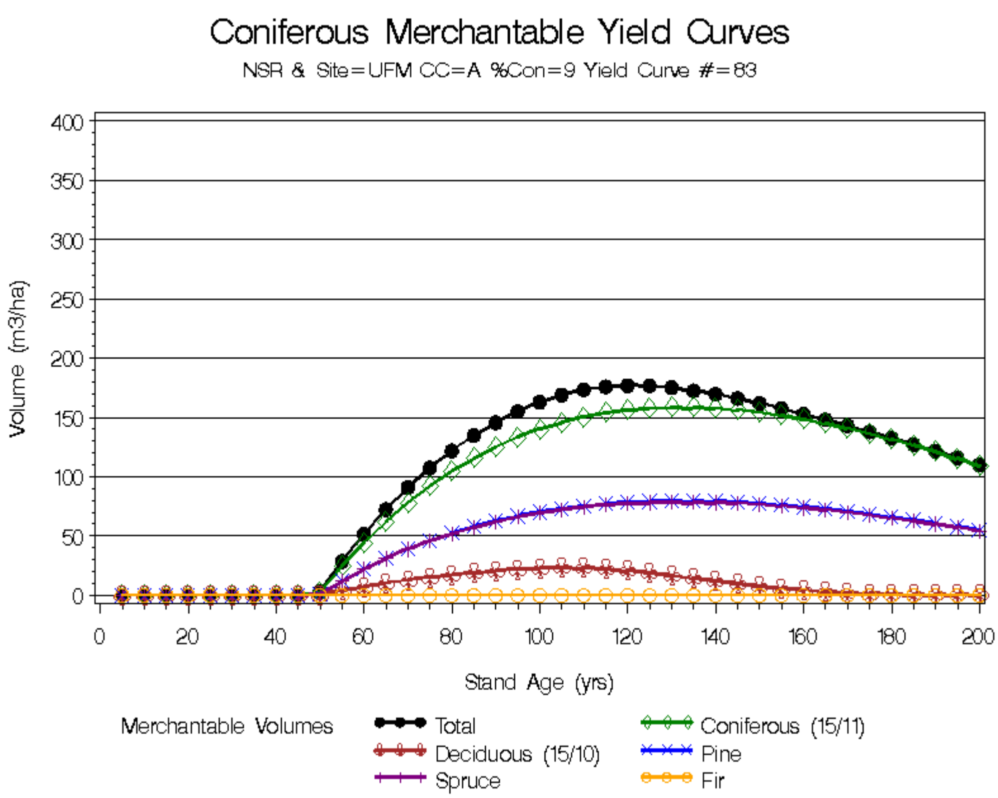
NSR & Site=UFM CC=A %Con=8 Yield Curve #=82

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	3	0.1	2	0.0	1	0.0
60	52	0.9	41	0.7	11	0.2
70	91	1.3	72	1.0	19	0.3
80	122	1.5	97	1.2	25	0.3
90	146	1.6	116	1.3	30	0.3
100	163	1.6	130	1.3	33	0.3
110	173	1.6	139	1.3	34	0.3
120	175	1.5	145	1.2	30	0.3
130	171	1.3	147	1.1	24	0.2
140	164	1.2	146	1.0	18	0.1
150	154	1.0	143	1.0	11	0.1
160	144	0.9	138	0.9	6	0.0
170	134	0.8	130	0.8	3	0.0
180	123	0.7	122	0.7	1	0.0
190	113	0.6	112	0.6	1	0.0
200	102	0.5	101	0.5	1	0.0



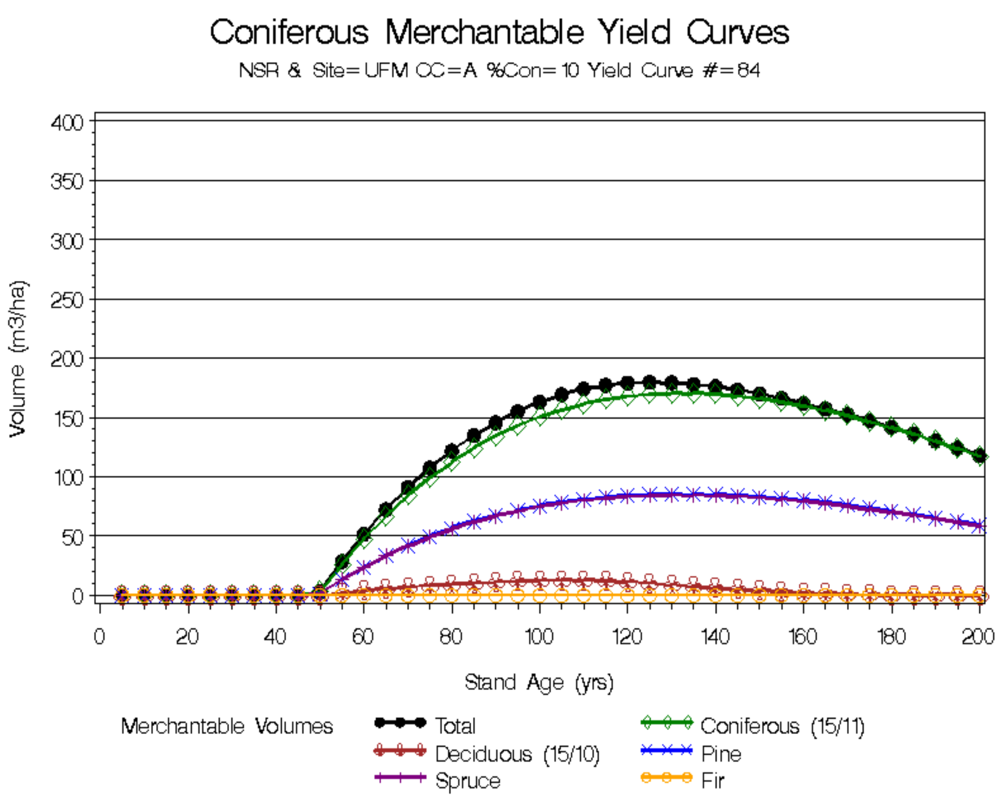
NSR & Site=UFM CC=A %Con=9 Yield Curve #=83

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	3	0.1	3	0.1	0	0.0
60	52	0.9	44	0.7	7	0.1
70	91	1.3	78	1.1	13	0.2
80	122	1.5	105	1.3	17	0.2
90	146	1.6	125	1.4	21	0.2
100	163	1.6	140	1.4	23	0.2
110	173	1.6	150	1.4	23	0.2
120	177	1.5	156	1.3	21	0.2
130	175	1.3	159	1.2	17	0.1
140	170	1.2	158	1.1	12	0.1
150	162	1.1	154	1.0	8	0.1
160	153	1.0	149	0.9	4	0.0
170	143	0.8	141	0.8	2	0.0
180	133	0.7	132	0.7	1	0.0
190	122	0.6	121	0.6	1	0.0
200	110	0.6	109	0.5	1	0.0



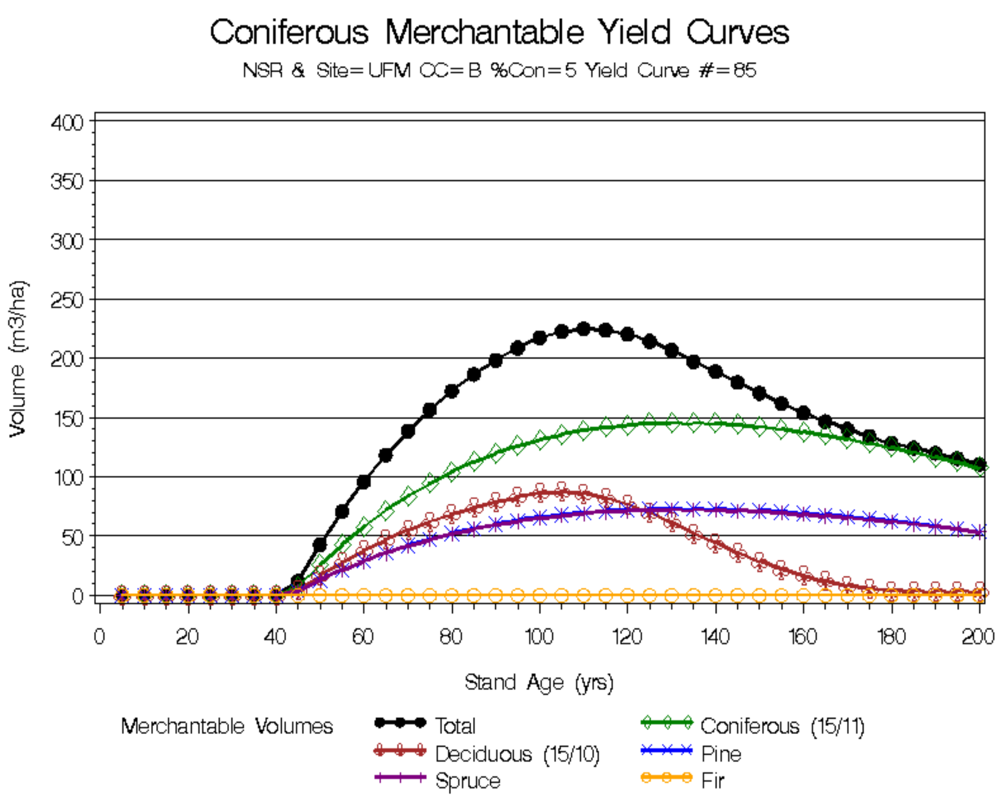
NSR & Site=UFM CC=A %Con=10 Yield Curve #=84

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	3	0.1	3	0.1	0	0.0
60	52	0.9	48	0.8	4	0.1
70	91	1.3	84	1.2	7	0.1
80	122	1.5	113	1.4	9	0.1
90	146	1.6	135	1.5	11	0.1
100	163	1.6	151	1.5	13	0.1
110	174	1.6	161	1.5	13	0.1
120	179	1.5	168	1.4	11	0.1
130	180	1.4	170	1.3	9	0.1
140	176	1.3	170	1.2	7	0.0
150	170	1.1	166	1.1	4	0.0
160	162	1.0	160	1.0	2	0.0
170	153	0.9	151	0.9	1	0.0
180	142	0.8	141	0.8	1	0.0
190	131	0.7	130	0.7	1	0.0
200	118	0.6	117	0.6	0	0.0



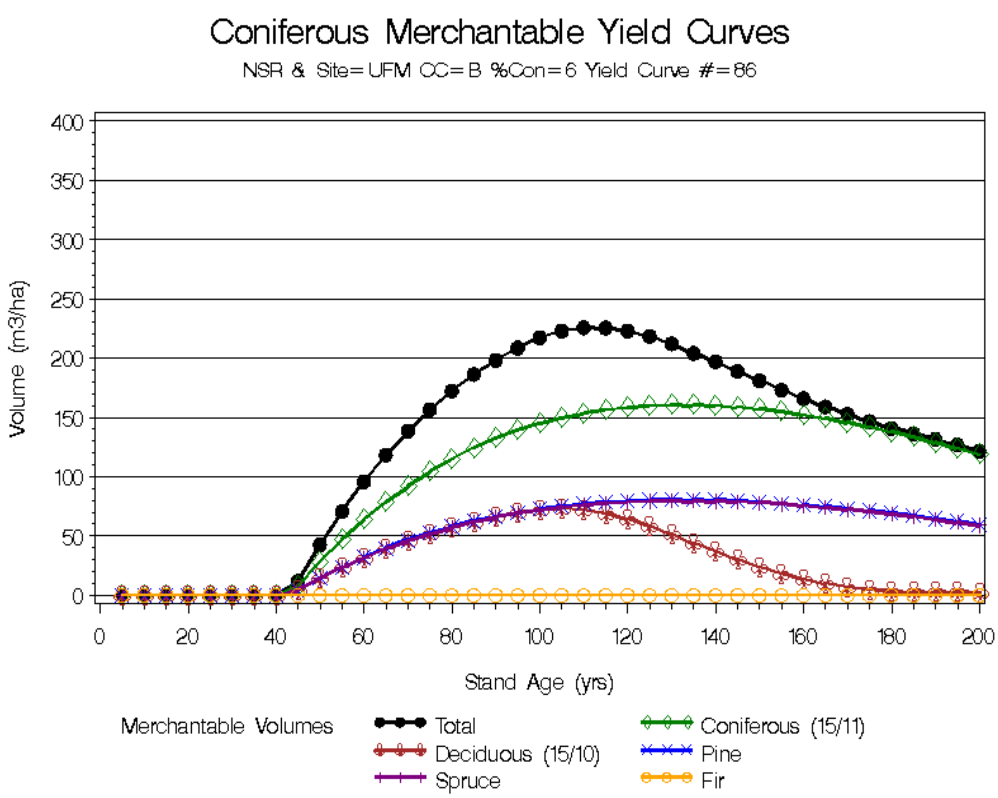
NSR & Site=UFM CC=B %Con=5 Yield Curve #=85

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	43	0.9	26	0.5	17	0.3
60	96	1.6	58	1.0	38	0.6
70	139	2.0	84	1.2	55	0.8
80	173	2.2	104	1.3	69	0.9
90	198	2.2	120	1.3	79	0.9
100	217	2.2	131	1.3	86	0.9
110	225	2.0	139	1.3	86	0.8
120	220	1.8	143	1.2	77	0.6
130	207	1.6	145	1.1	62	0.5
140	189	1.3	145	1.0	44	0.3
150	171	1.1	142	0.9	29	0.2
160	154	1.0	138	0.9	16	0.1
170	140	0.8	132	0.8	8	0.0
180	128	0.7	125	0.7	4	0.0
190	120	0.6	117	0.6	4	0.0
200	111	0.6	108	0.5	3	0.0



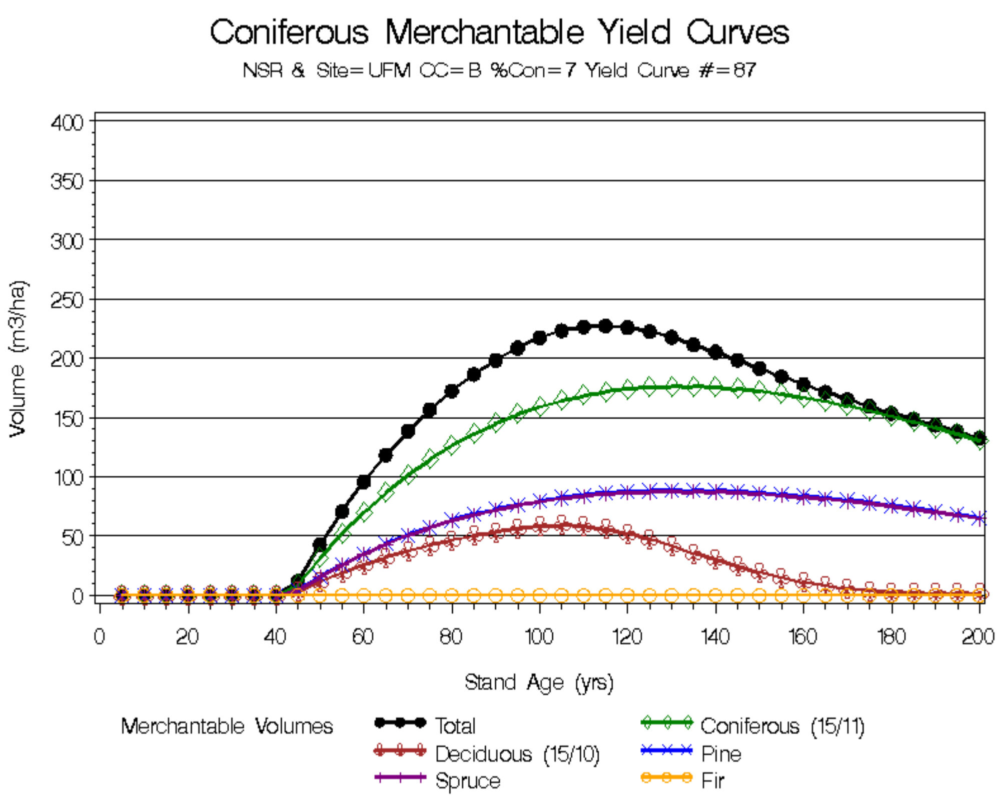
NSR & Site=UFM CC=B %Con=6 Yield Curve #=86

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	43	0.9	29	0.6	14	0.3
60	96	1.6	64	1.1	32	0.5
70	139	2.0	93	1.3	46	0.7
80	173	2.2	115	1.4	57	0.7
90	198	2.2	132	1.5	66	0.7
100	217	2.2	145	1.5	72	0.7
110	226	2.1	154	1.4	72	0.7
120	223	1.9	159	1.3	65	0.5
130	212	1.6	161	1.2	52	0.4
140	197	1.4	160	1.1	37	0.3
150	181	1.2	157	1.0	24	0.2
160	166	1.0	152	1.0	14	0.1
170	153	0.9	146	0.9	7	0.0
180	141	0.8	138	0.8	3	0.0
190	132	0.7	129	0.7	3	0.0
200	122	0.6	119	0.6	3	0.0



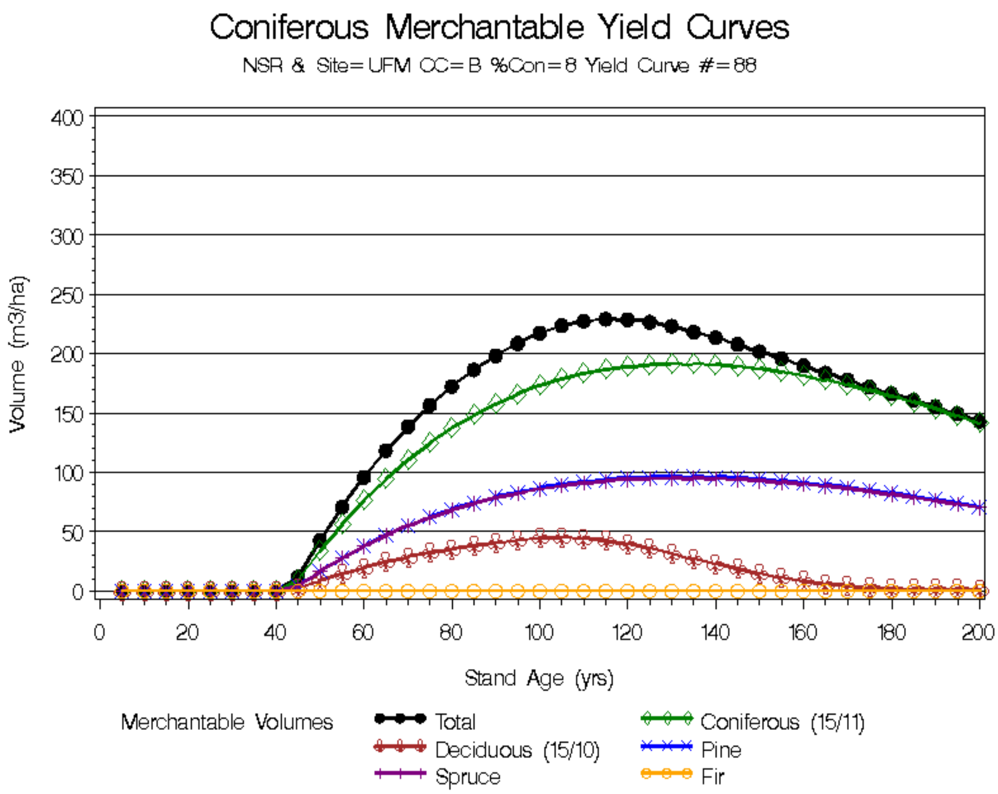
NSR & Site=UFM CC=B %Con=7 Yield Curve #=87

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	43	0.9	31	0.6	12	0.2
60	96	1.6	70	1.2	26	0.4
70	139	2.0	101	1.4	37	0.5
80	173	2.2	126	1.6	46	0.6
90	198	2.2	145	1.6	53	0.6
100	217	2.2	159	1.6	59	0.6
110	227	2.1	168	1.5	58	0.5
120	226	1.9	174	1.4	52	0.4
130	218	1.7	176	1.4	42	0.3
140	205	1.5	175	1.3	30	0.2
150	192	1.3	172	1.1	19	0.1
160	178	1.1	167	1.0	11	0.1
170	165	1.0	160	0.9	6	0.0
180	154	0.9	151	0.8	3	0.0
190	144	0.8	141	0.7	2	0.0
200	133	0.7	130	0.7	2	0.0



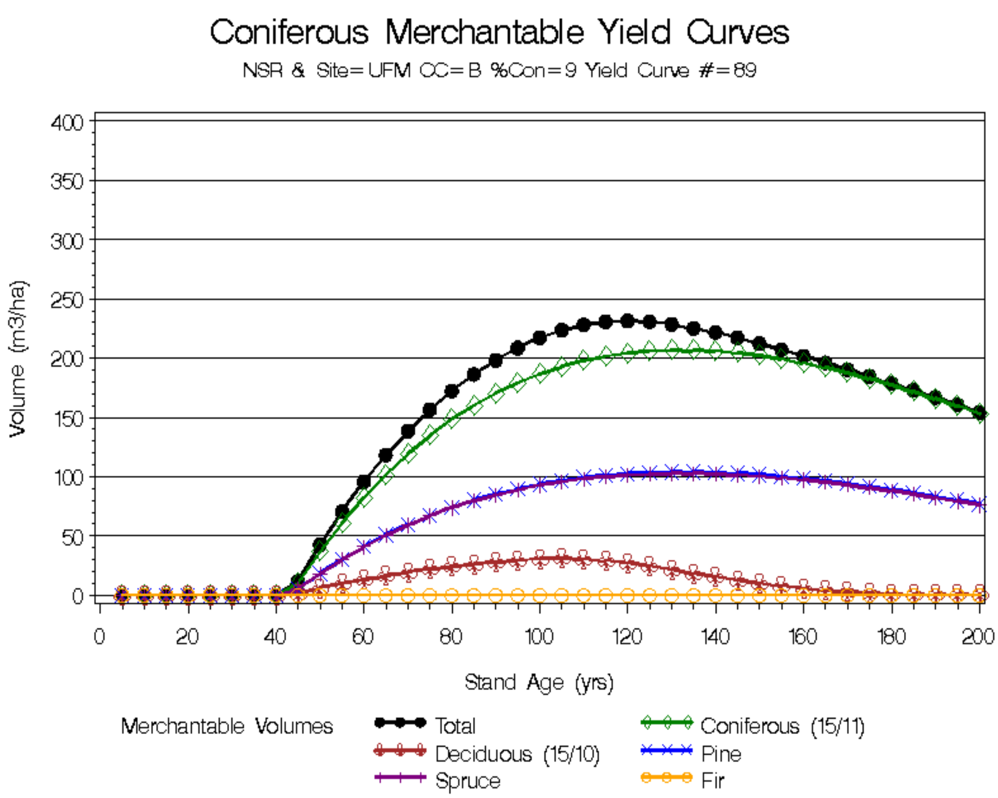
NSR & Site=UFM CC=B %Con=8 Yield Curve #=88

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	43	0.9	34	0.7	9	0.2
60	96	1.6	76	1.3	20	0.3
70	139	2.0	110	1.6	28	0.4
80	173	2.2	137	1.7	35	0.4
90	198	2.2	158	1.8	41	0.5
100	217	2.2	173	1.7	45	0.4
110	228	2.1	183	1.7	44	0.4
120	229	1.9	189	1.6	40	0.3
130	223	1.7	191	1.5	32	0.2
140	214	1.5	191	1.4	23	0.2
150	202	1.3	187	1.2	15	0.1
160	190	1.2	181	1.1	8	0.1
170	178	1.0	174	1.0	4	0.0
180	166	0.9	164	0.9	2	0.0
190	155	0.8	154	0.8	2	0.0
200	143	0.7	142	0.7	2	0.0



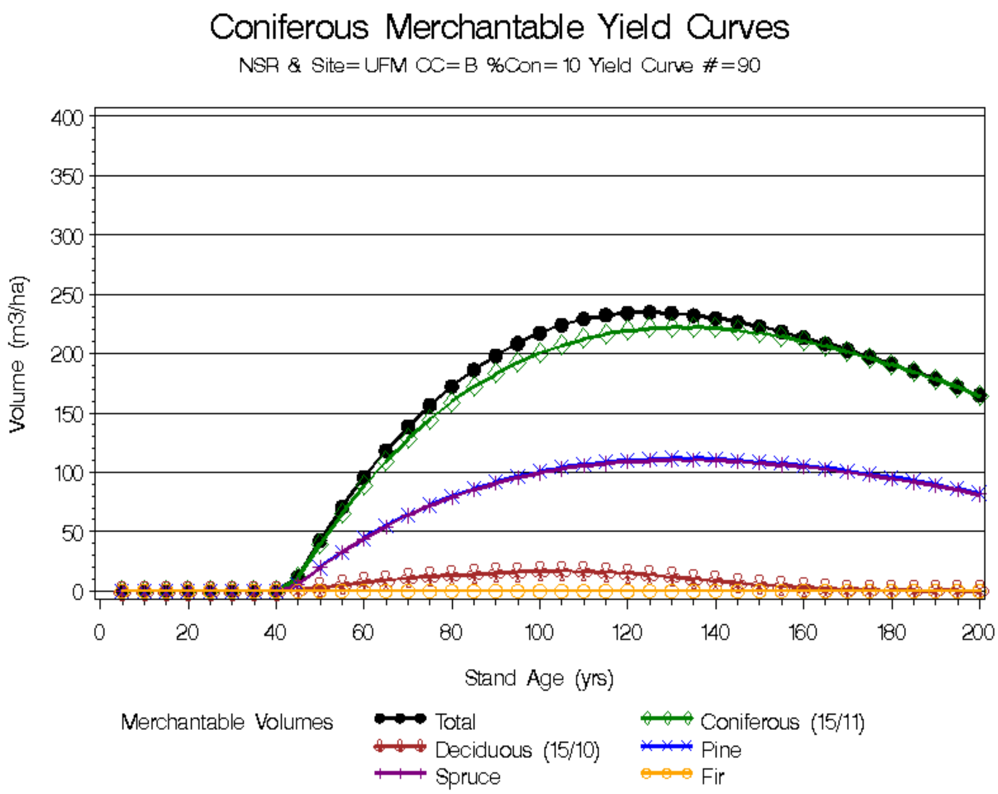
NSR & Site=UFM CC=B %Con=9 Yield Curve #=89

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	43	0.9	37	0.7	6	0.1
60	96	1.6	82	1.4	14	0.2
70	139	2.0	119	1.7	20	0.3
80	173	2.2	148	1.9	24	0.3
90	198	2.2	170	1.9	28	0.3
100	217	2.2	187	1.9	31	0.3
110	228	2.1	198	1.8	31	0.3
120	232	1.9	204	1.7	27	0.2
130	229	1.8	207	1.6	22	0.2
140	222	1.6	206	1.5	16	0.1
150	212	1.4	202	1.3	10	0.1
160	202	1.3	196	1.2	6	0.0
170	191	1.1	188	1.1	3	0.0
180	179	1.0	178	1.0	1	0.0
190	167	0.9	166	0.9	1	0.0
200	154	0.8	153	0.8	1	0.0



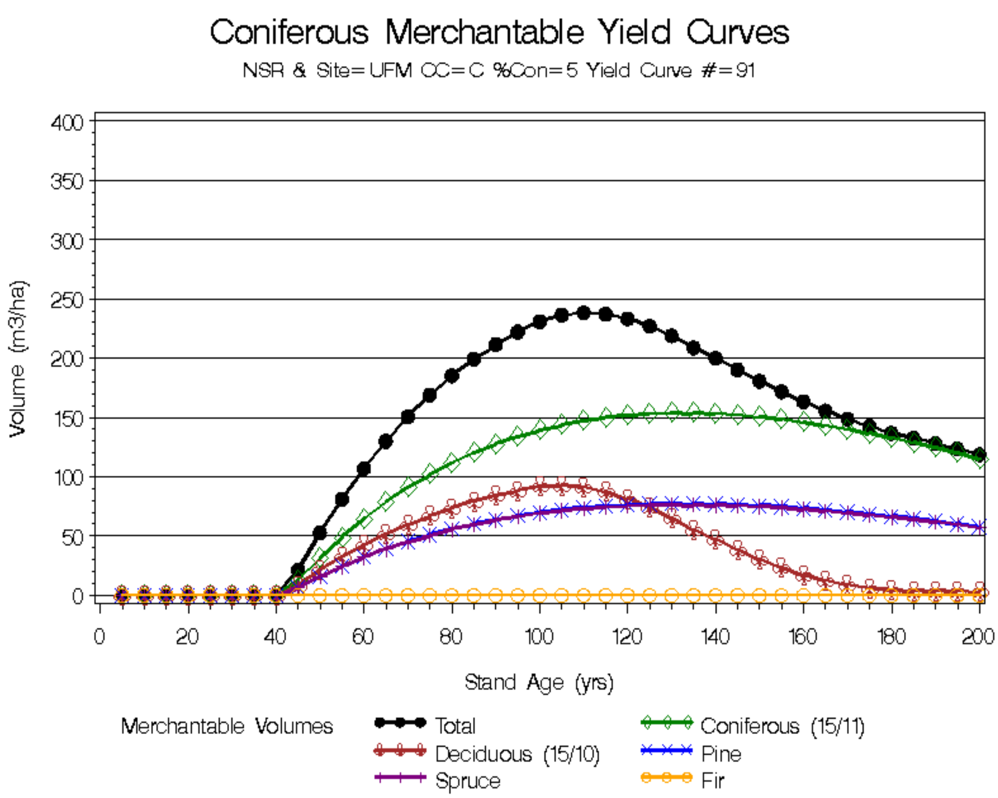
NSR & Site=UFM CC=B %Con=10 Yield Curve #=90

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	43	0.9	39	0.8	3	0.1
60	96	1.6	88	1.5	7	0.1
70	139	2.0	128	1.8	11	0.2
80	173	2.2	159	2.0	13	0.2
90	198	2.2	183	2.0	15	0.2
100	217	2.2	201	2.0	17	0.2
110	229	2.1	213	1.9	17	0.2
120	235	2.0	220	1.8	15	0.1
130	234	1.8	222	1.7	12	0.1
140	230	1.6	221	1.6	9	0.1
150	223	1.5	217	1.4	6	0.0
160	214	1.3	211	1.3	3	0.0
170	203	1.2	202	1.2	2	0.0
180	191	1.1	191	1.1	1	0.0
190	179	0.9	178	0.9	1	0.0
200	165	0.8	165	0.8	1	0.0



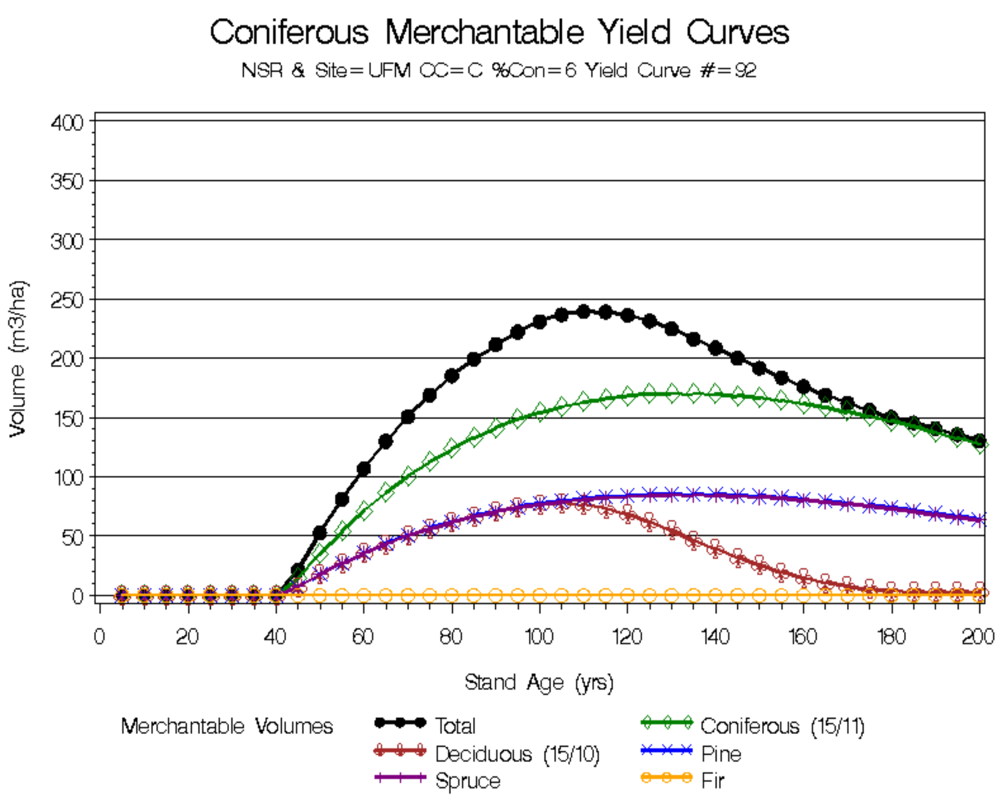
NSR & Site=UFM CC=C %Con=5 Yield Curve #=91

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	53	1.1	32	0.6	21	0.4
60	107	1.8	64	1.1	42	0.7
70	151	2.2	91	1.3	60	0.9
80	185	2.3	112	1.4	74	0.9
90	212	2.4	128	1.4	84	0.9
100	231	2.3	139	1.4	92	0.9
110	239	2.2	147	1.3	91	0.8
120	233	1.9	152	1.3	81	0.7
130	219	1.7	154	1.2	65	0.5
140	200	1.4	153	1.1	47	0.3
150	181	1.2	151	1.0	30	0.2
160	163	1.0	146	0.9	17	0.1
170	149	0.9	140	0.8	9	0.1
180	137	0.8	133	0.7	4	0.0
190	128	0.7	124	0.7	4	0.0
200	119	0.6	115	0.6	3	0.0



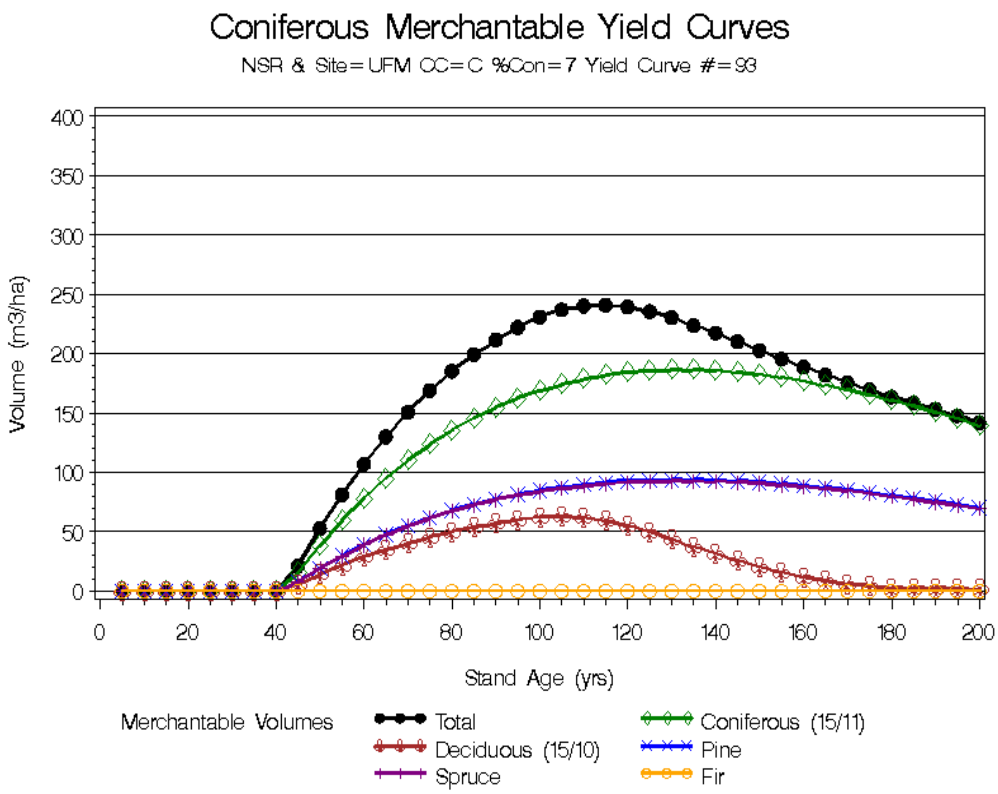
NSR & Site=UFM CC=C %Con=6 Yield Curve #=92

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	53	1.1	35	0.7	18	0.4
60	107	1.8	71	1.2	36	0.6
70	151	2.2	101	1.4	50	0.7
80	185	2.3	124	1.5	62	0.8
90	212	2.4	141	1.6	71	0.8
100	231	2.3	154	1.5	77	0.8
110	239	2.2	163	1.5	77	0.7
120	236	2.0	168	1.4	68	0.6
130	225	1.7	170	1.3	55	0.4
140	209	1.5	169	1.2	39	0.3
150	192	1.3	166	1.1	25	0.2
160	176	1.1	162	1.0	15	0.1
170	162	1.0	155	0.9	7	0.0
180	150	0.8	147	0.8	3	0.0
190	141	0.7	138	0.7	3	0.0
200	130	0.7	128	0.6	3	0.0



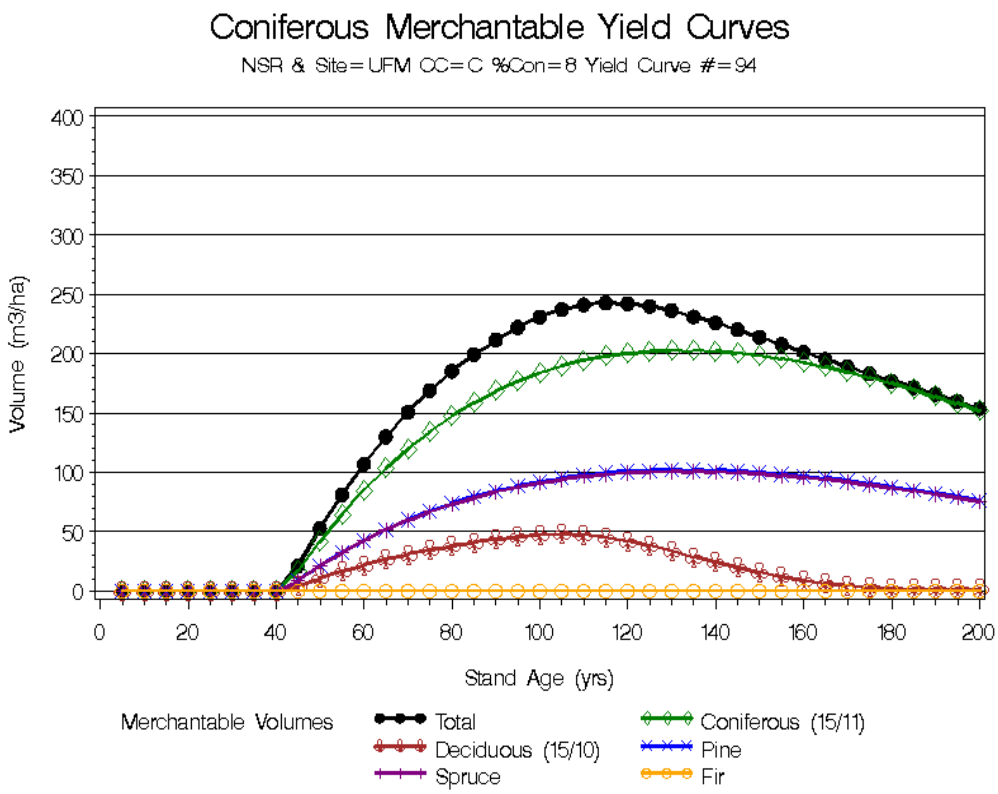
NSR & Site=UFM CC=C %Con=7 Yield Curve #=93

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	53	1.1	39	0.8	14	0.3
60	107	1.8	78	1.3	29	0.5
70	151	2.2	110	1.6	41	0.6
80	185	2.3	135	1.7	50	0.6
90	212	2.4	155	1.7	57	0.6
100	231	2.3	169	1.7	62	0.6
110	240	2.2	179	1.6	62	0.6
120	239	2.0	184	1.5	55	0.5
130	231	1.8	186	1.4	44	0.3
140	218	1.6	186	1.3	32	0.2
150	203	1.4	182	1.2	20	0.1
160	189	1.2	177	1.1	12	0.1
170	176	1.0	170	1.0	6	0.0
180	164	0.9	161	0.9	3	0.0
190	153	0.8	151	0.8	3	0.0
200	142	0.7	140	0.7	2	0.0



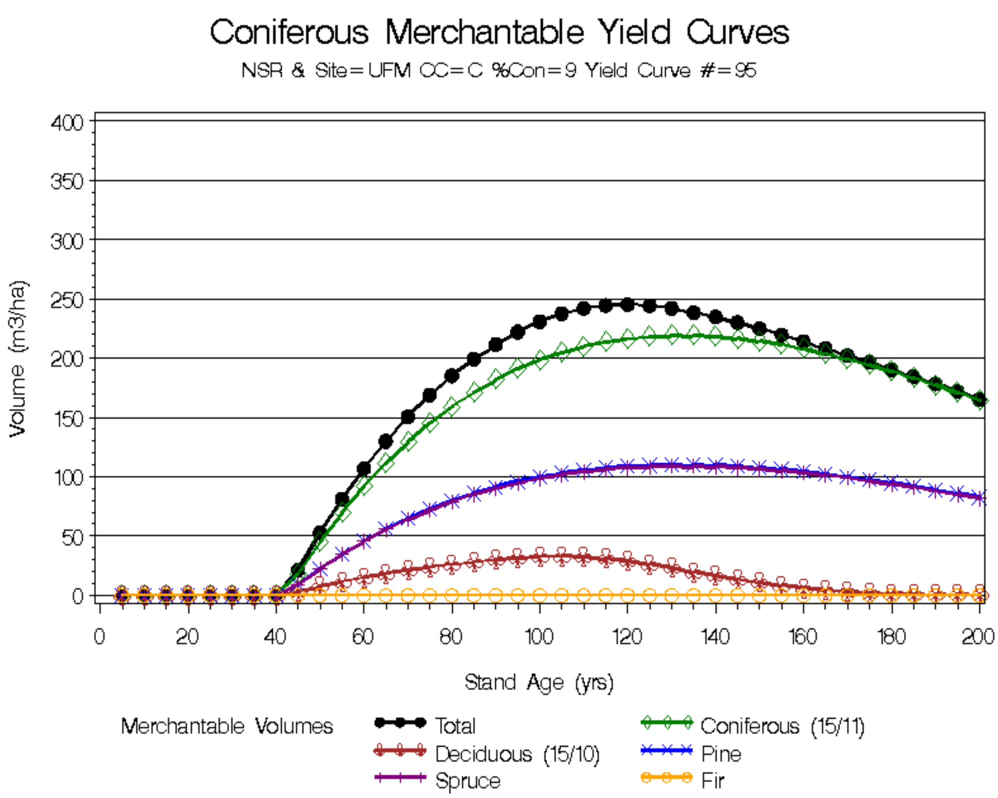
NSR & Site=UFM CC=C %Con=8 Yield Curve #=94

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	53	1.1	42	0.8	11	0.2
60	107	1.8	85	1.4	22	0.4
70	151	2.2	120	1.7	31	0.4
80	185	2.3	147	1.8	38	0.5
90	212	2.4	168	1.9	43	0.5
100	231	2.3	184	1.8	47	0.5
110	241	2.2	194	1.8	47	0.4
120	242	2.0	200	1.7	42	0.4
130	236	1.8	203	1.6	34	0.3
140	226	1.6	202	1.4	24	0.2
150	214	1.4	198	1.3	16	0.1
160	201	1.3	193	1.2	9	0.1
170	189	1.1	185	1.1	5	0.0
180	177	1.0	175	1.0	2	0.0
190	166	0.9	164	0.9	2	0.0
200	154	0.8	152	0.8	2	0.0



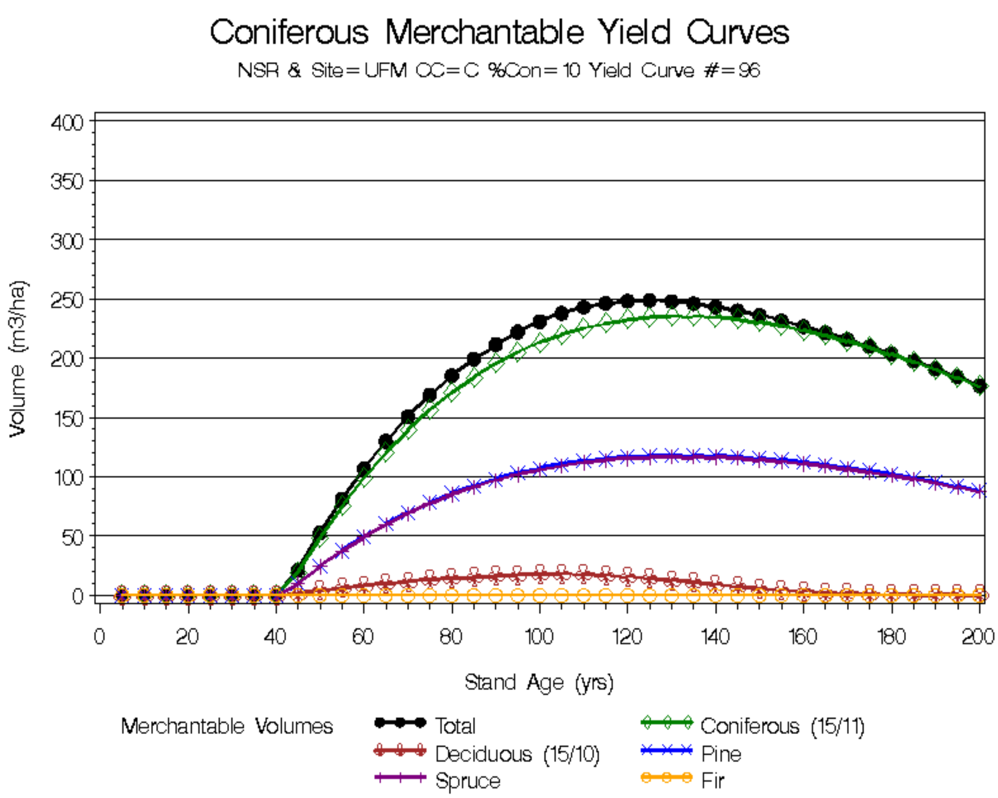
NSR & Site=UFM CC=C %Con=9 Yield Curve #=95

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	53	1.1	45	0.9	7	0.1
60	107	1.8	92	1.5	15	0.3
70	151	2.2	129	1.8	21	0.3
80	185	2.3	159	2.0	26	0.3
90	212	2.4	182	2.0	30	0.3
100	231	2.3	198	2.0	33	0.3
110	242	2.2	210	1.9	32	0.3
120	245	2.0	216	1.8	29	0.2
130	242	1.9	219	1.7	23	0.2
140	235	1.7	218	1.6	17	0.1
150	225	1.5	214	1.4	11	0.1
160	214	1.3	208	1.3	6	0.0
170	203	1.2	199	1.2	3	0.0
180	191	1.1	189	1.1	1	0.0
190	179	0.9	177	0.9	1	0.0
200	165	0.8	164	0.8	1	0.0



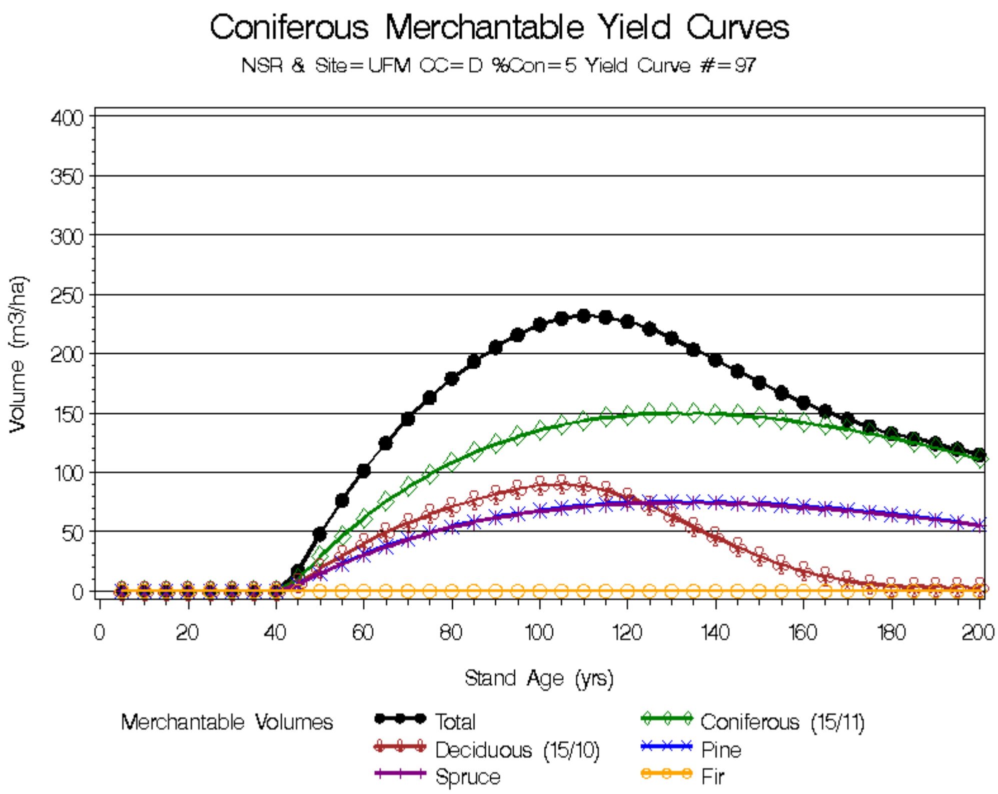
NSR & Site=UFM CC=C %Con=10 Yield Curve #=96

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	53	1.1	49	1.0	4	0.1
60	107	1.8	99	1.6	8	0.1
70	151	2.2	139	2.0	12	0.2
80	185	2.3	171	2.1	14	0.2
90	212	2.4	195	2.2	16	0.2
100	231	2.3	213	2.1	18	0.2
110	243	2.2	225	2.0	18	0.2
120	248	2.1	233	1.9	16	0.1
130	248	1.9	235	1.8	13	0.1
140	244	1.7	234	1.7	9	0.1
150	236	1.6	230	1.5	6	0.0
160	227	1.4	223	1.4	3	0.0
170	216	1.3	214	1.3	2	0.0
180	204	1.1	203	1.1	1	0.0
190	191	1.0	190	1.0	1	0.0
200	177	0.9	176	0.9	1	0.0



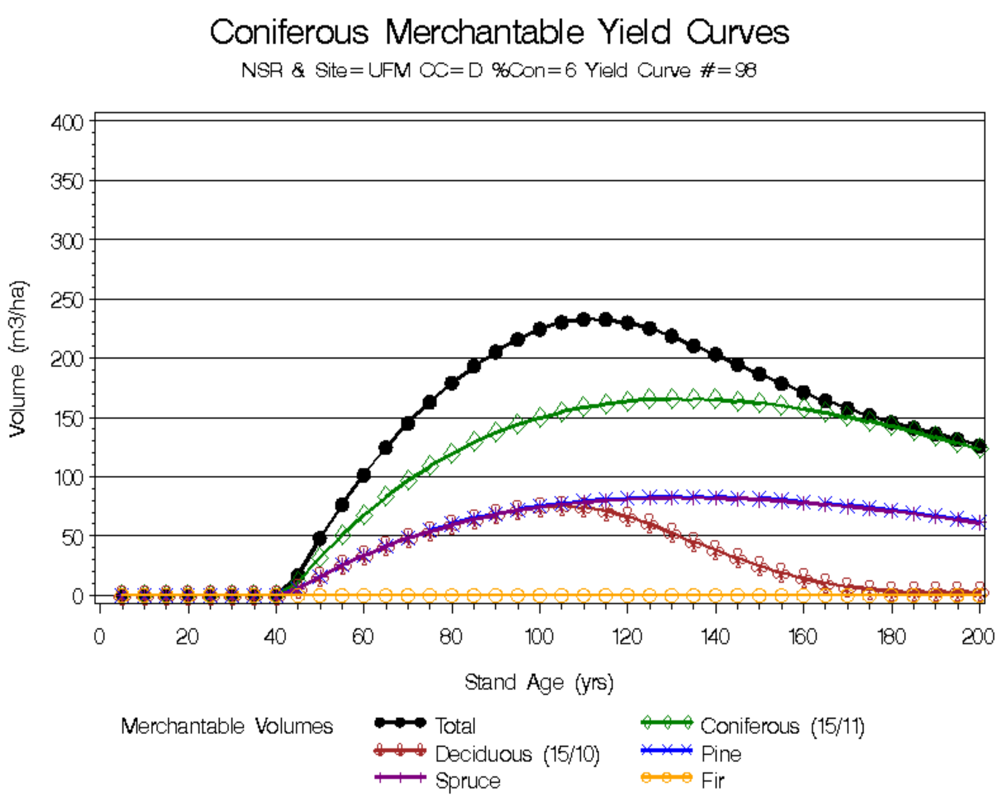
NSR & Site=UFM CC=D %Con=5 Yield Curve #=97

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	48	1.0	29	0.6	19	0.4
60	102	1.7	61	1.0	40	0.7
70	145	2.1	87	1.2	58	0.8
80	179	2.2	108	1.4	71	0.9
90	205	2.3	124	1.4	82	0.9
100	225	2.2	135	1.4	89	0.9
110	232	2.1	143	1.3	89	0.8
120	227	1.9	148	1.2	79	0.7
130	213	1.6	150	1.2	64	0.5
140	195	1.4	149	1.1	46	0.3
150	176	1.2	147	1.0	29	0.2
160	159	1.0	142	0.9	17	0.1
170	145	0.9	136	0.8	9	0.1
180	133	0.7	129	0.7	4	0.0
190	124	0.7	121	0.6	4	0.0
200	115	0.6	112	0.6	3	0.0



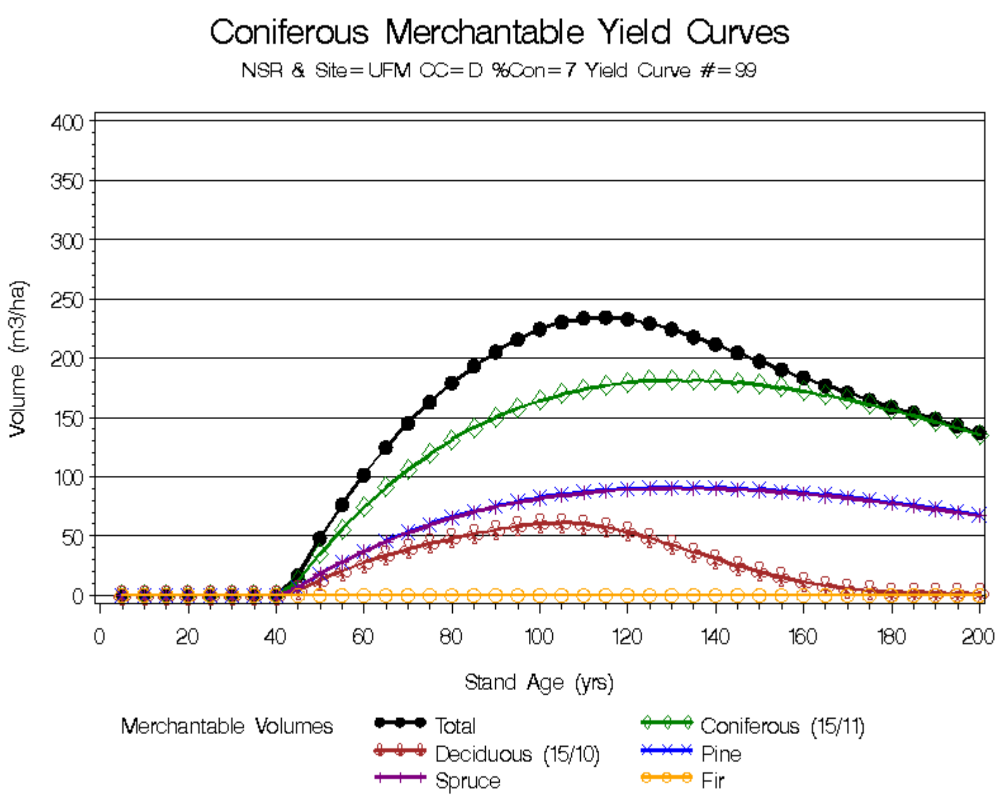
NSR & Site=UFM CC=D %Con=6 Yield Curve #=98

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	48	1.0	32	0.6	16	0.3
60	102	1.7	68	1.1	34	0.6
70	145	2.1	97	1.4	48	0.7
80	179	2.2	120	1.5	60	0.7
90	205	2.3	137	1.5	68	0.8
100	225	2.2	150	1.5	75	0.7
110	233	2.1	159	1.4	74	0.7
120	230	1.9	164	1.4	67	0.6
130	219	1.7	166	1.3	53	0.4
140	203	1.5	165	1.2	38	0.3
150	187	1.2	162	1.1	25	0.2
160	171	1.1	157	1.0	14	0.1
170	158	0.9	151	0.9	7	0.0
180	146	0.8	143	0.8	3	0.0
190	137	0.7	133	0.7	3	0.0
200	126	0.6	123	0.6	3	0.0



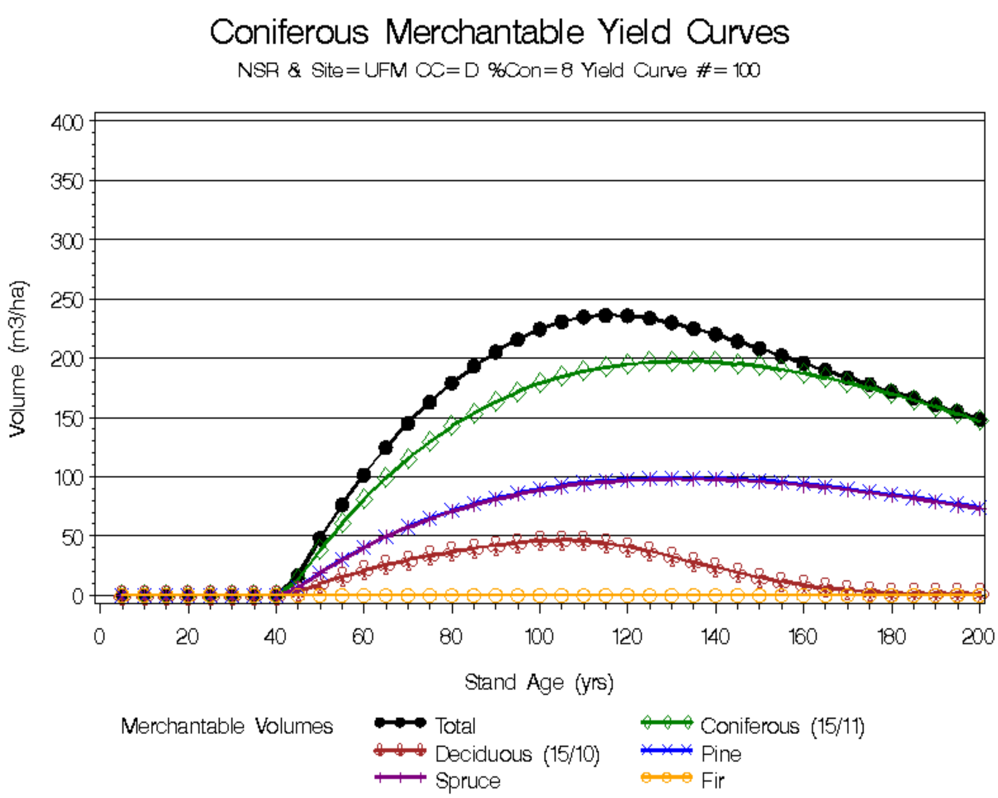
NSR & Site=UFM CC=D %Con=7 Yield Curve #=99

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	48	1.0	35	0.7	13	0.3
60	102	1.7	74	1.2	27	0.5
70	145	2.1	106	1.5	39	0.6
80	179	2.2	131	1.6	48	0.6
90	205	2.3	150	1.7	55	0.6
100	225	2.2	164	1.6	60	0.6
110	234	2.1	174	1.6	60	0.5
120	233	1.9	179	1.5	54	0.4
130	225	1.7	182	1.4	43	0.3
140	212	1.5	181	1.3	31	0.2
150	198	1.3	178	1.2	20	0.1
160	184	1.1	172	1.1	11	0.1
170	171	1.0	165	1.0	6	0.0
180	159	0.9	156	0.9	3	0.0
190	149	0.8	146	0.8	2	0.0
200	138	0.7	135	0.7	2	0.0



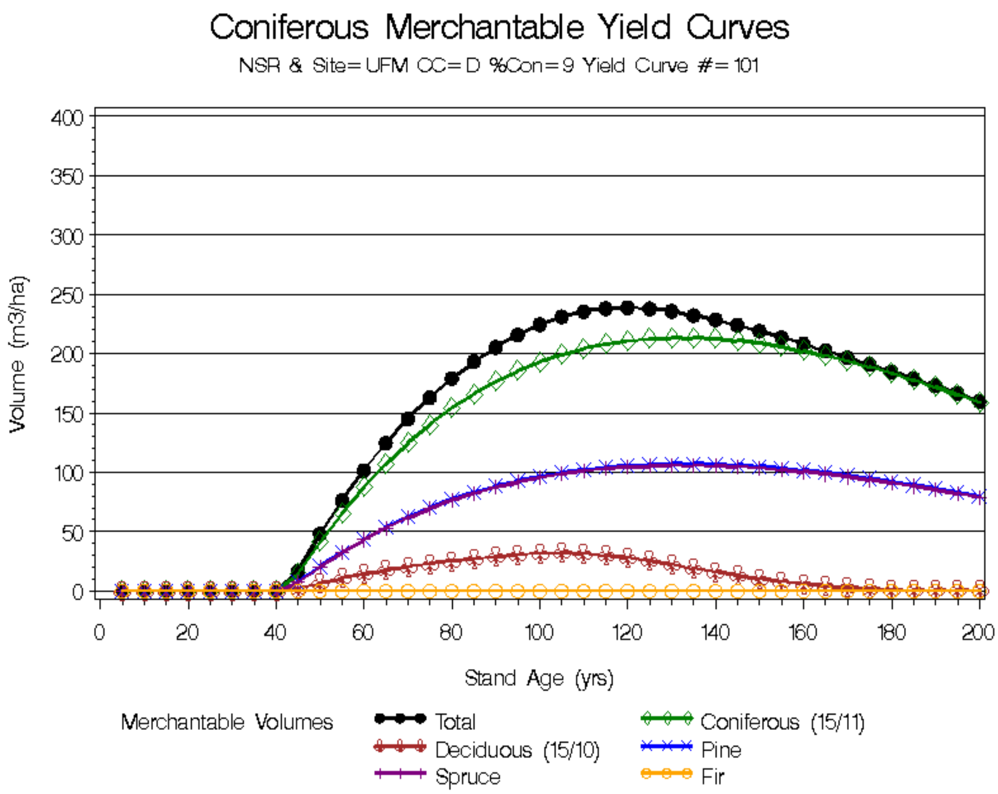
NSR & Site=UFM CC=D %Con=8 Yield Curve #=100

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	48	1.0	38	0.8	10	0.2
60	102	1.7	81	1.3	21	0.3
70	145	2.1	115	1.6	30	0.4
80	179	2.2	142	1.8	37	0.5
90	205	2.3	163	1.8	42	0.5
100	225	2.2	179	1.8	46	0.5
110	235	2.1	189	1.7	46	0.4
120	236	2.0	195	1.6	41	0.3
130	230	1.8	197	1.5	33	0.3
140	220	1.6	197	1.4	24	0.2
150	208	1.4	193	1.3	15	0.1
160	196	1.2	187	1.2	9	0.1
170	184	1.1	179	1.1	4	0.0
180	172	1.0	170	0.9	2	0.0
190	161	0.8	159	0.8	2	0.0
200	149	0.7	147	0.7	2	0.0



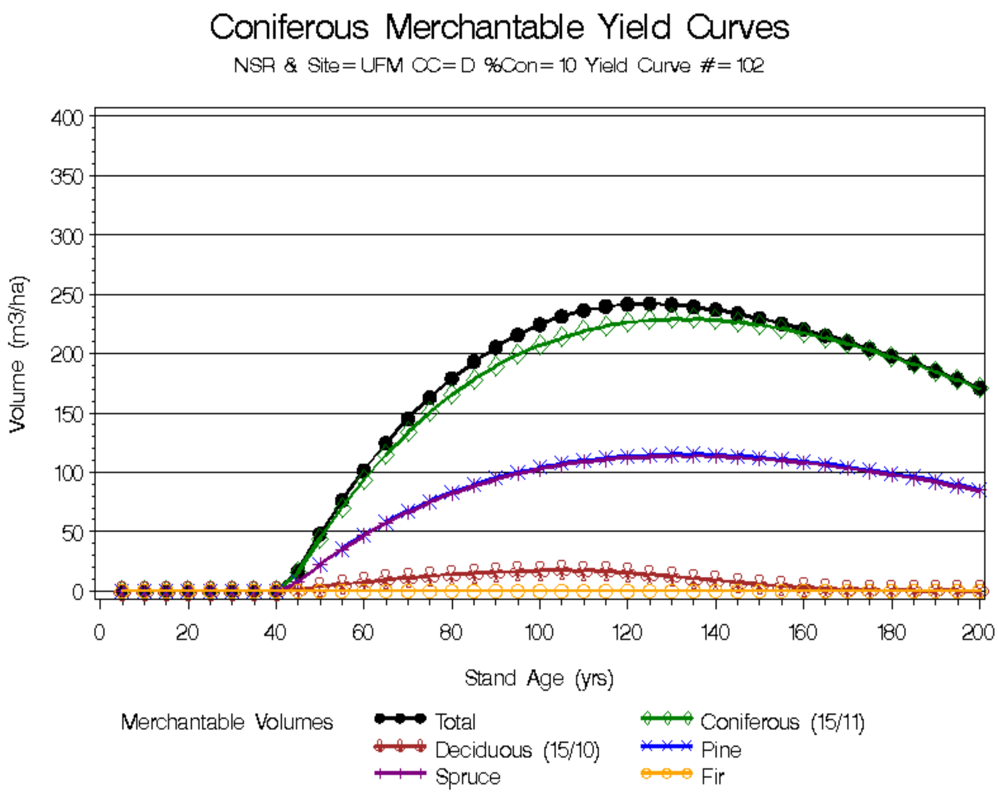
NSR & Site=UFM CC=D %Con=9 Yield Curve #=101

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	48	1.0	41	0.8	7	0.1
60	102	1.7	87	1.5	14	0.2
70	145	2.1	125	1.8	20	0.3
80	179	2.2	154	1.9	25	0.3
90	205	2.3	176	2.0	29	0.3
100	225	2.2	193	1.9	32	0.3
110	236	2.1	204	1.9	32	0.3
120	239	2.0	211	1.8	28	0.2
130	236	1.8	213	1.6	23	0.2
140	229	1.6	212	1.5	16	0.1
150	219	1.5	209	1.4	10	0.1
160	208	1.3	202	1.3	6	0.0
170	197	1.2	194	1.1	3	0.0
180	185	1.0	184	1.0	1	0.0
190	173	0.9	172	0.9	1	0.0
200	160	0.8	159	0.8	1	0.0



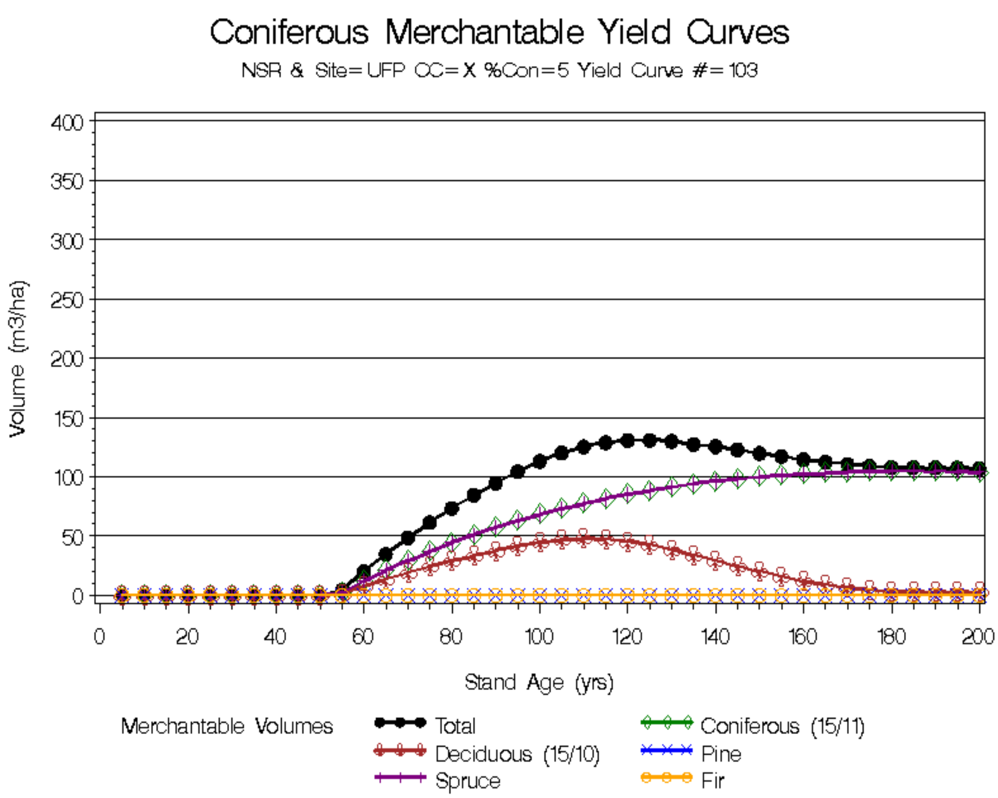
NSR & Site=UFM CC=D %Con=10 Yield Curve #=102

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	48	1.0	44	0.9	4	0.1
60	102	1.7	94	1.6	8	0.1
70	145	2.1	134	1.9	11	0.2
80	179	2.2	165	2.1	14	0.2
90	205	2.3	190	2.1	16	0.2
100	225	2.2	207	2.1	17	0.2
110	237	2.2	219	2.0	17	0.2
120	242	2.0	226	1.9	15	0.1
130	242	1.9	229	1.8	12	0.1
140	237	1.7	228	1.6	9	0.1
150	230	1.5	224	1.5	6	0.0
160	221	1.4	217	1.4	3	0.0
170	210	1.2	208	1.2	2	0.0
180	198	1.1	197	1.1	1	0.0
190	185	1.0	185	1.0	1	0.0
200	171	0.9	171	0.9	1	0.0



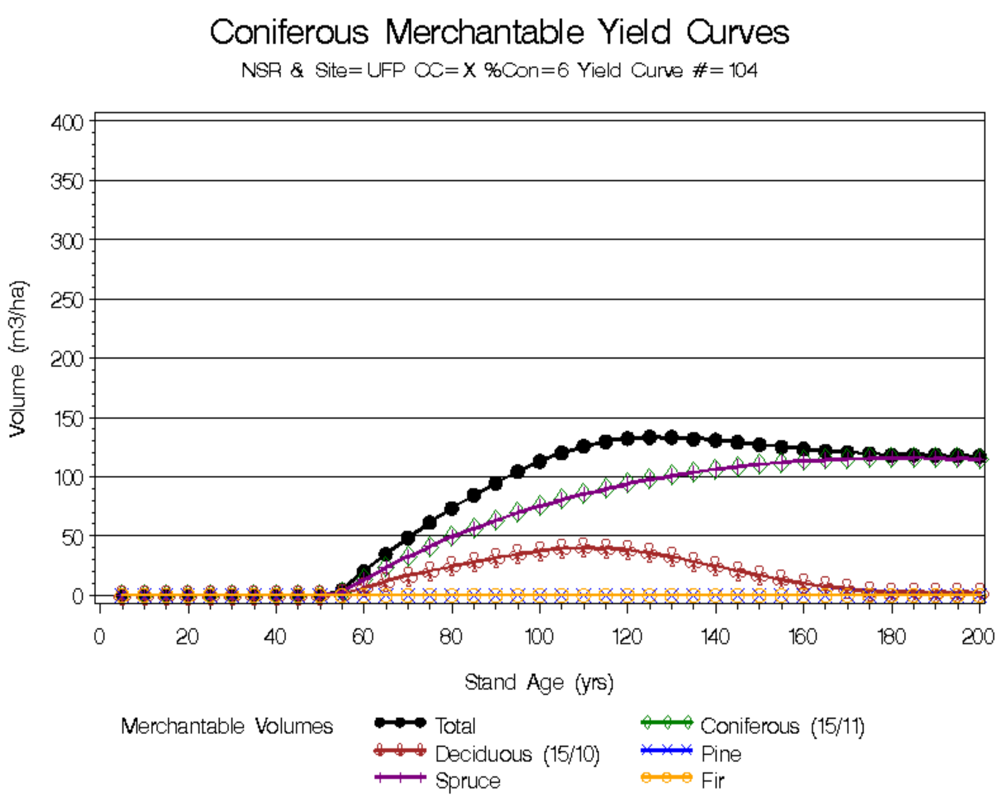
NSR & Site=UFP CC=X %Con=5 Yield Curve #=103

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	12	0.2	8	0.1
70	49	0.7	29	0.4	19	0.3
80	74	0.9	44	0.6	29	0.4
90	95	1.1	57	0.6	38	0.4
100	113	1.1	68	0.7	45	0.4
110	125	1.1	77	0.7	48	0.4
120	131	1.1	85	0.7	46	0.4
130	130	1.0	91	0.7	39	0.3
140	126	0.9	96	0.7	29	0.2
150	120	0.8	100	0.7	20	0.1
160	115	0.7	102	0.6	12	0.1
170	111	0.7	104	0.6	7	0.0
180	108	0.6	105	0.6	3	0.0
190	108	0.6	105	0.6	3	0.0
200	107	0.5	104	0.5	3	0.0



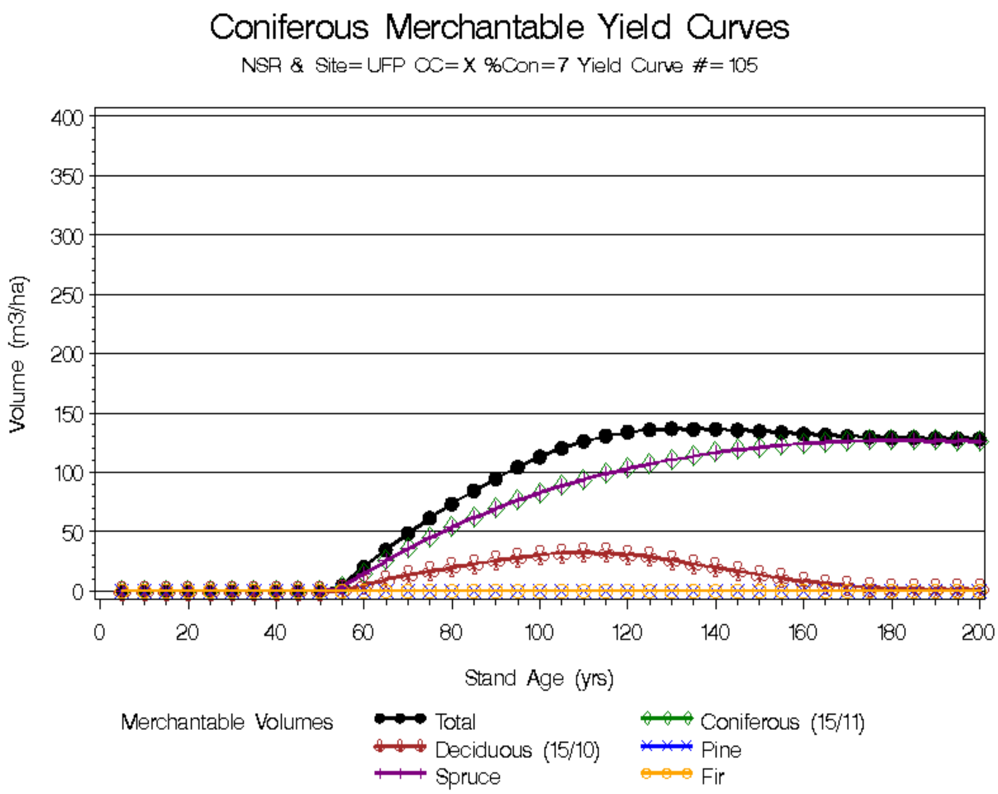
NSR & Site=UFP CC=X %Con=6 Yield Curve #=104

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	13	0.2	7	0.1
70	49	0.7	32	0.5	16	0.2
80	74	0.9	49	0.6	24	0.3
90	95	1.1	63	0.7	32	0.4
100	113	1.1	75	0.8	38	0.4
110	126	1.1	86	0.8	40	0.4
120	132	1.1	94	0.8	38	0.3
130	133	1.0	101	0.8	32	0.2
140	131	0.9	106	0.8	25	0.2
150	127	0.8	110	0.7	17	0.1
160	124	0.8	113	0.7	10	0.1
170	121	0.7	115	0.7	6	0.0
180	119	0.7	116	0.6	3	0.0
190	118	0.6	116	0.6	3	0.0
200	118	0.6	115	0.6	3	0.0



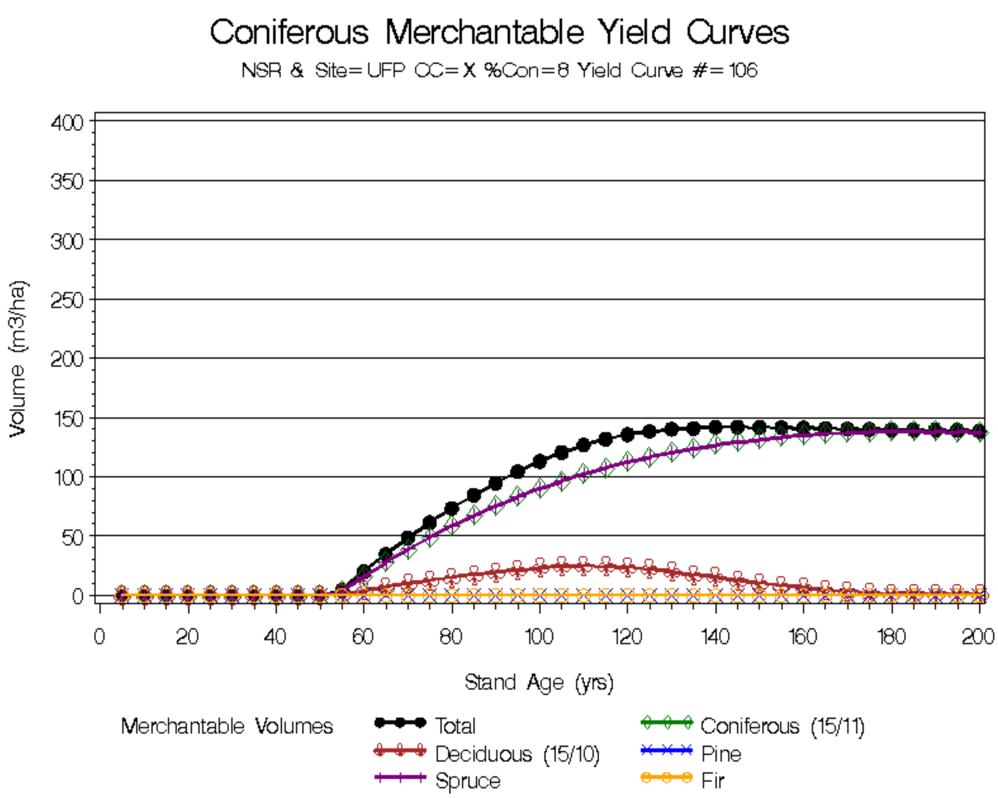
NSR & Site=UFP CC=X %Con=7 Yield Curve #=105

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	15	0.2	5	0.1
70	49	0.7	36	0.5	13	0.2
80	74	0.9	54	0.7	20	0.2
90	95	1.1	69	0.8	26	0.3
100	113	1.1	83	0.8	30	0.3
110	126	1.1	94	0.9	33	0.3
120	134	1.1	103	0.9	31	0.3
130	137	1.1	111	0.9	26	0.2
140	136	1.0	117	0.8	20	0.1
150	135	0.9	121	0.8	14	0.1
160	132	0.8	124	0.8	8	0.1
170	131	0.8	126	0.7	4	0.0
180	129	0.7	127	0.7	2	0.0
190	129	0.7	127	0.7	2	0.0
200	128	0.6	126	0.6	2	0.0



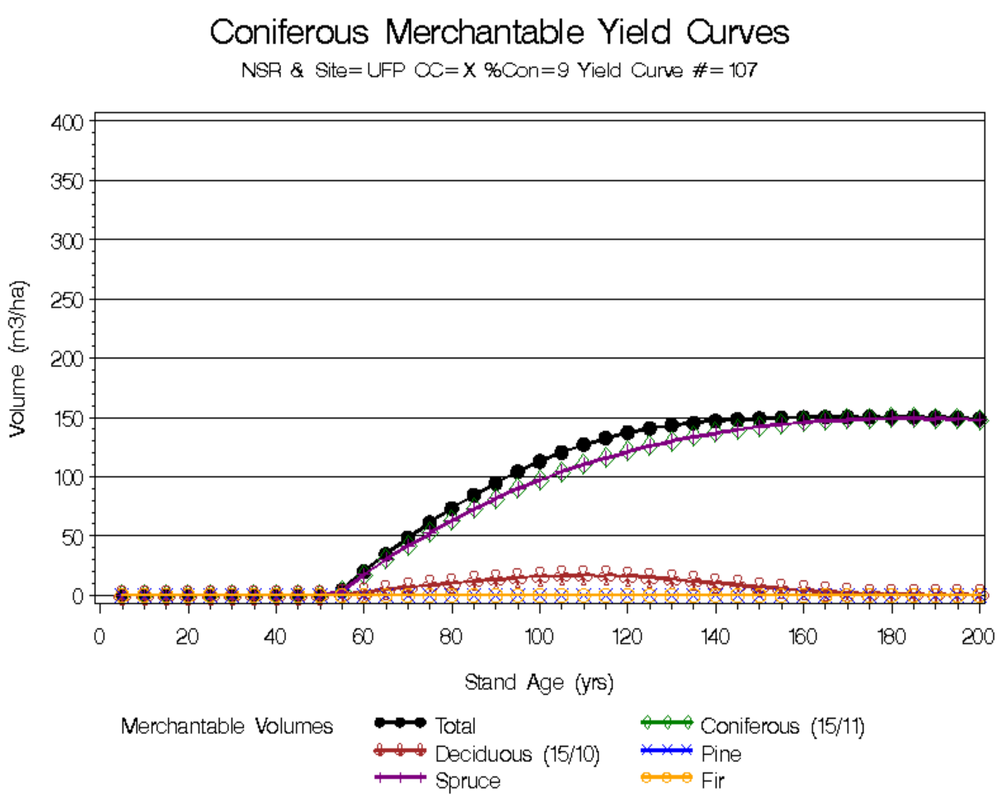
NSR & Site=UFP CC=X %Con=8 Yield Curve #=106

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	16	0.3	4	0.1
70	49	0.7	39	0.6	10	0.1
80	74	0.9	58	0.7	15	0.2
90	95	1.1	75	0.8	19	0.2
100	113	1.1	90	0.9	23	0.2
110	127	1.2	102	0.9	25	0.2
120	136	1.1	112	0.9	24	0.2
130	140	1.1	120	0.9	20	0.2
140	142	1.0	127	0.9	15	0.1
150	142	0.9	132	0.9	10	0.1
160	141	0.9	135	0.8	6	0.0
170	141	0.8	137	0.8	3	0.0
180	140	0.8	138	0.8	2	0.0
190	140	0.7	138	0.7	2	0.0
200	139	0.7	137	0.7	2	0.0



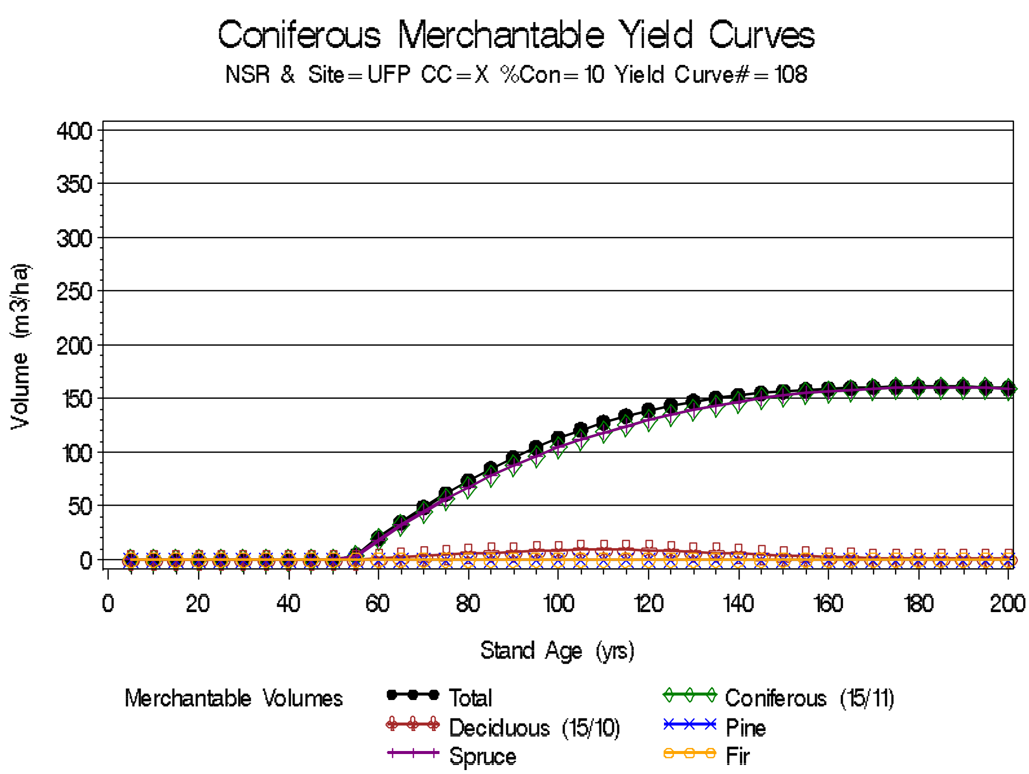
NSR & Site=UFP CC=X %Con=9 Yield Curve #=107

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	17	0.3	3	0.0
70	49	0.7	42	0.6	7	0.1
80	74	0.9	63	0.8	10	0.1
90	95	1.1	81	0.9	13	0.1
100	113	1.1	97	1.0	16	0.2
110	127	1.2	110	1.0	17	0.2
120	137	1.1	121	1.0	16	0.1
130	144	1.1	130	1.0	14	0.1
140	147	1.1	137	1.0	10	0.1
150	149	1.0	142	0.9	7	0.0
160	150	0.9	146	0.9	4	0.0
170	151	0.9	148	0.9	2	0.0
180	150	0.8	149	0.8	1	0.0
190	150	0.8	149	0.8	1	0.0
200	149	0.7	148	0.7	1	0.0



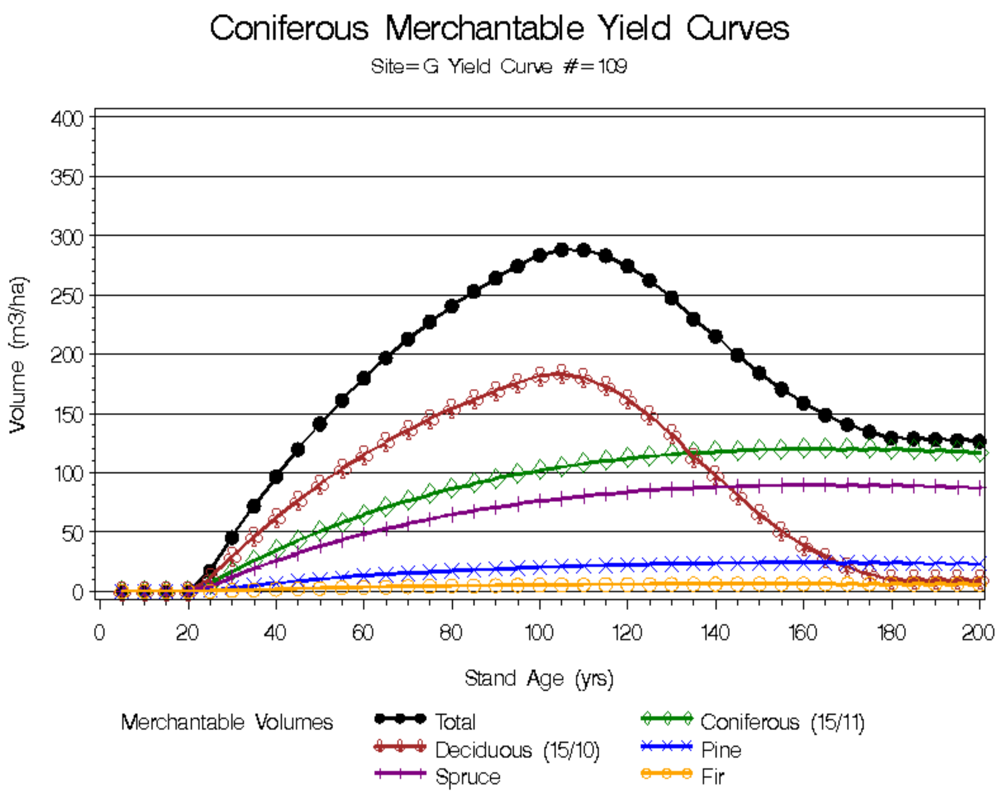
NSR & Site=UFP CC=X %Con=10 Yield Curve #=108

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	18	0.3	2	0.0
70	49	0.7	45	0.6	4	0.1
80	74	0.9	68	0.8	6	0.1
90	95	1.1	88	1.0	7	0.1
100	113	1.1	104	1.0	9	0.1
110	128	1.2	118	1.1	9	0.1
120	139	1.2	130	1.1	9	0.1
130	147	1.1	140	1.1	8	0.1
140	153	1.1	147	1.1	6	0.0
150	157	1.0	153	1.0	4	0.0
160	159	1.0	157	1.0	2	0.0
170	160	0.9	159	0.9	1	0.0
180	161	0.9	160	0.9	1	0.0
190	161	0.8	160	0.8	1	0.0
200	160	0.8	159	0.8	1	0.0



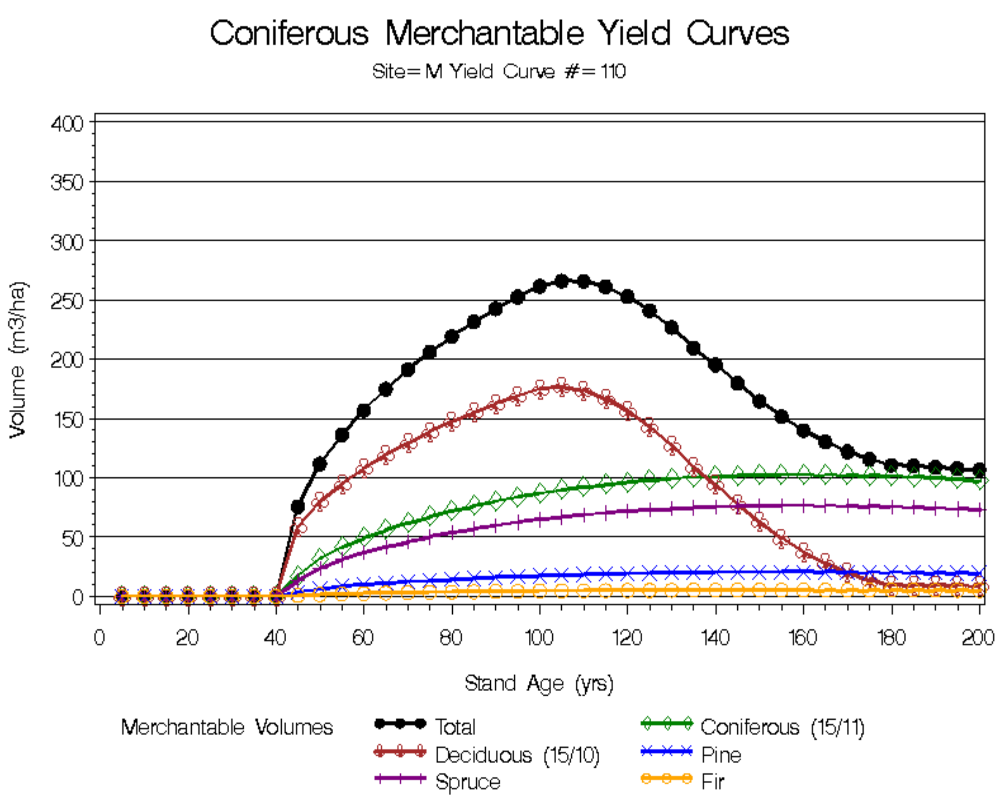
Coniferous Switch Stands Site=G Yield Curve #=109

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	45	1.5	16	0.5	29	1.0
40	97	2.4	35	0.9	62	1.5
50	141	2.8	51	1.0	91	1.8
60	180	3.0	65	1.1	115	1.9
70	213	3.0	77	1.1	136	1.9
80	241	3.0	87	1.1	154	1.9
90	264	2.9	95	1.1	169	1.9
100	284	2.8	102	1.0	182	1.8
110	288	2.6	108	1.0	180	1.6
120	275	2.3	112	0.9	163	1.4
130	248	1.9	115	0.9	132	1.0
140	215	1.5	118	0.8	98	0.7
150	184	1.2	119	0.8	65	0.4
160	159	1.0	120	0.8	39	0.2
170	141	0.8	120	0.7	21	0.1
180	129	0.7	120	0.7	10	0.1
190	128	0.7	119	0.6	10	0.1
200	127	0.6	117	0.6	10	0.0



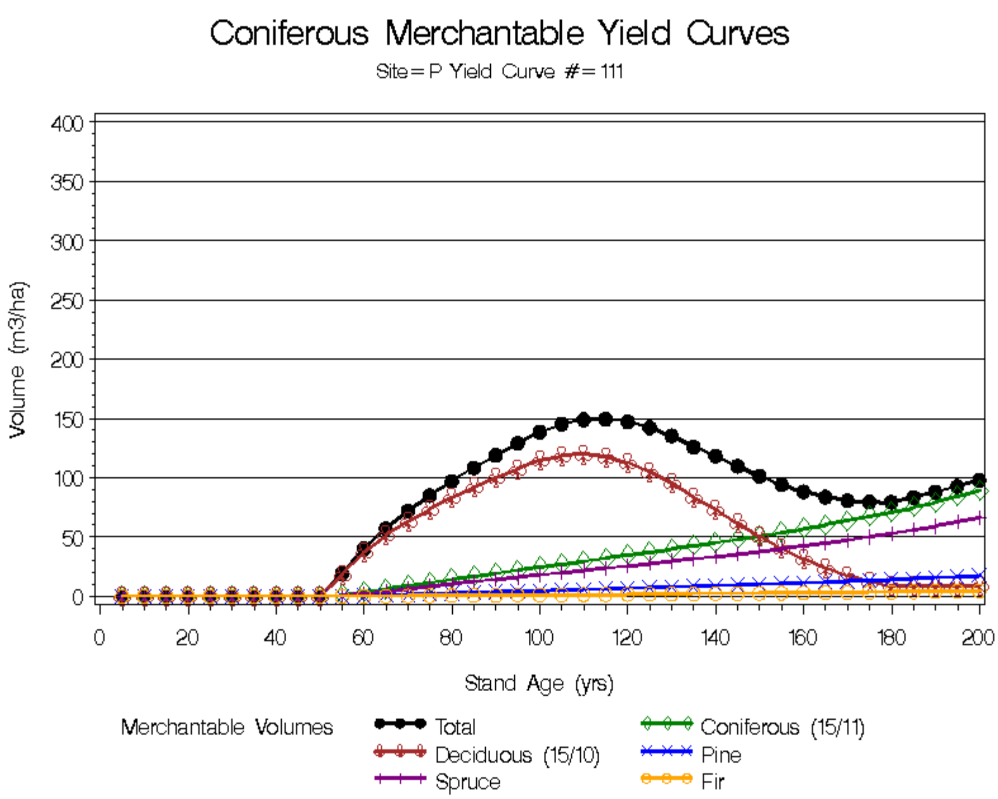
Coniferous Switch Stands Site=M Yield Curve #=110

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	112	2.2	32	0.6	80	1.6
60	157	2.6	49	0.8	108	1.8
70	191	2.7	62	0.9	129	1.8
80	219	2.7	72	0.9	148	1.8
90	243	2.7	80	0.9	163	1.8
100	262	2.6	87	0.9	175	1.7
110	266	2.4	92	0.8	174	1.6
120	253	2.1	96	0.8	157	1.3
130	227	1.7	99	0.8	128	1.0
140	195	1.4	101	0.7	94	0.7
150	165	1.1	102	0.7	63	0.4
160	140	0.9	103	0.6	37	0.2
170	122	0.7	102	0.6	20	0.1
180	111	0.6	101	0.6	9	0.1
190	109	0.6	100	0.5	9	0.0
200	107	0.5	98	0.5	9	0.0



Coniferous Switch Stands   Site=P Yield Curve #=111

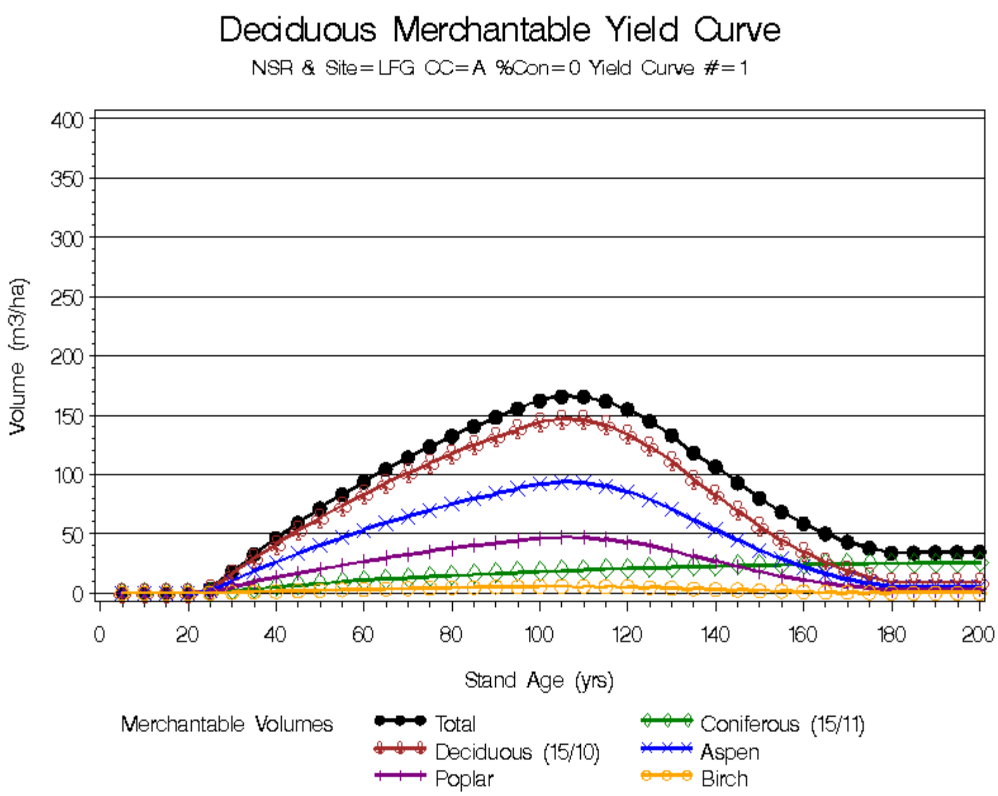
Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	0	0.0	0	0.0	0	0.0
40	0	0.0	0	0.0	0	0.0
50	0	0.0	0	0.0	0	0.0
60	40	0.7	3	0.1	37	0.6
70	72	1.0	9	0.1	63	0.9
80	97	1.2	14	0.2	83	1.0
90	119	1.3	19	0.2	100	1.1
100	139	1.4	24	0.2	114	1.1
110	149	1.4	29	0.3	120	1.1
120	147	1.2	35	0.3	113	0.9
130	136	1.0	40	0.3	96	0.7
140	119	0.8	45	0.3	73	0.5
150	101	0.7	51	0.3	51	0.3
160	88	0.6	57	0.4	31	0.2
170	81	0.5	64	0.4	17	0.1
180	79	0.4	71	0.4	9	0.0
190	88	0.5	79	0.4	9	0.0
200	98	0.5	89	0.4	9	0.0



3.2 Deciduous Yield Curves (15 / 10 Utilization and 15cm Stump Height)

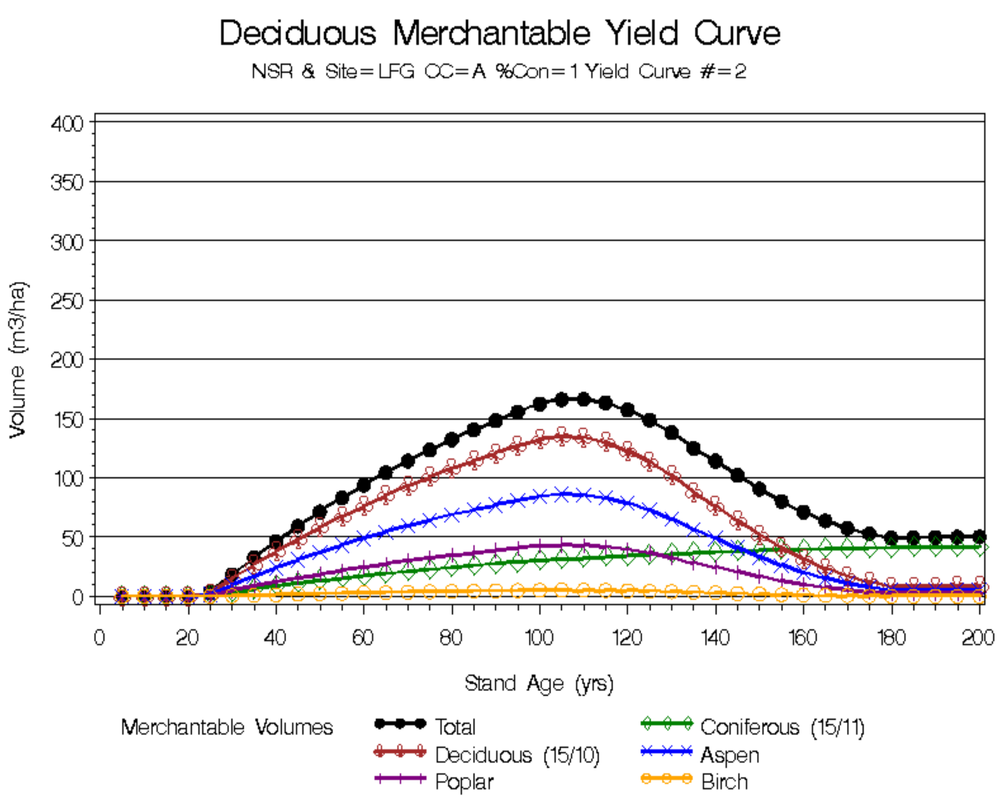
NSR & Site=LFG CC=A %Con=0 Yield Curve #=1

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	18	0.6	2	0.1	16	0.5
40	46	1.2	5	0.1	41	1.0
50	71	1.4	8	0.2	63	1.3
60	94	1.6	11	0.2	83	1.4
70	114	1.6	13	0.2	101	1.4
80	132	1.7	15	0.2	117	1.5
90	148	1.6	17	0.2	132	1.5
100	162	1.6	18	0.2	144	1.4
110	166	1.5	20	0.2	146	1.3
120	155	1.3	21	0.2	134	1.1
130	133	1.0	22	0.2	111	0.9
140	106	0.8	23	0.2	84	0.6
150	80	0.5	23	0.2	57	0.4
160	59	0.4	24	0.2	34	0.2
170	43	0.3	25	0.1	19	0.1
180	34	0.2	25	0.1	9	0.1
190	34	0.2	25	0.1	9	0.0
200	35	0.2	25	0.1	9	0.0



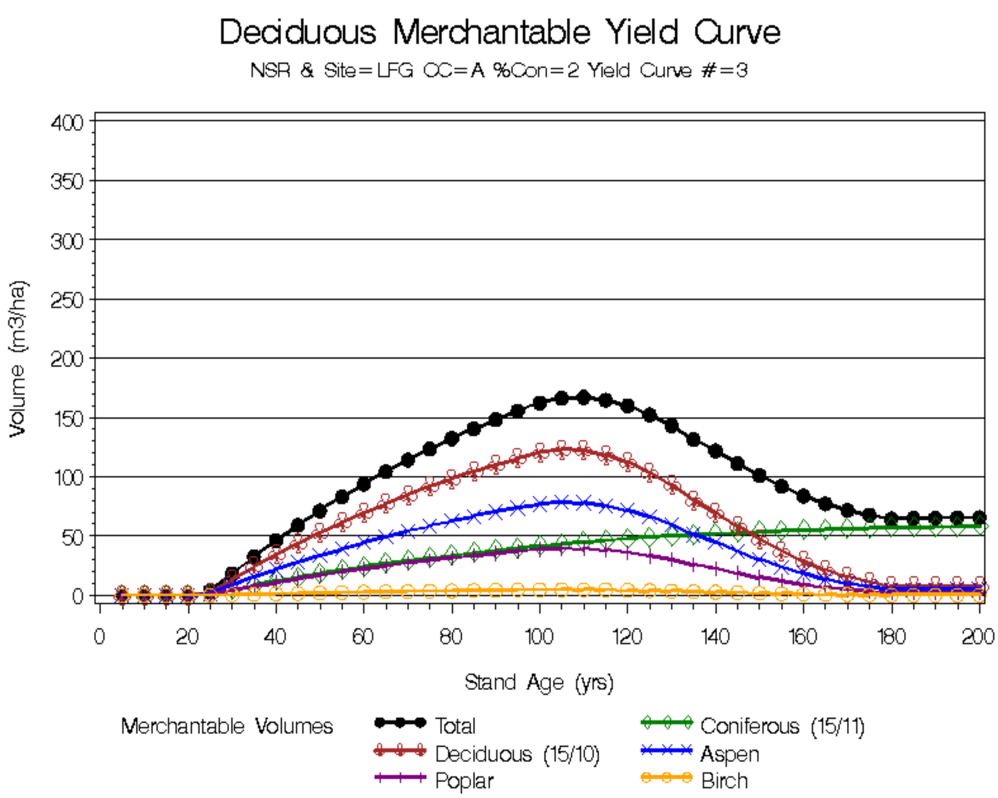
NSR & Site=LFG CC=A %Con=1 Yield Curve #=2

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	46	1.2	9	0.2	38	0.9
50	71	1.4	13	0.3	58	1.2
60	94	1.6	17	0.3	77	1.3
70	114	1.6	21	0.3	93	1.3
80	132	1.7	24	0.3	108	1.3
90	148	1.6	27	0.3	121	1.3
100	162	1.6	30	0.3	132	1.3
110	166	1.5	32	0.3	134	1.2
120	157	1.3	34	0.3	123	1.0
130	138	1.1	36	0.3	102	0.8
140	114	0.8	37	0.3	77	0.5
150	91	0.6	39	0.3	52	0.3
160	71	0.4	40	0.2	32	0.2
170	58	0.3	40	0.2	17	0.1
180	49	0.3	41	0.2	8	0.0
190	50	0.3	41	0.2	8	0.0
200	50	0.3	42	0.2	8	0.0



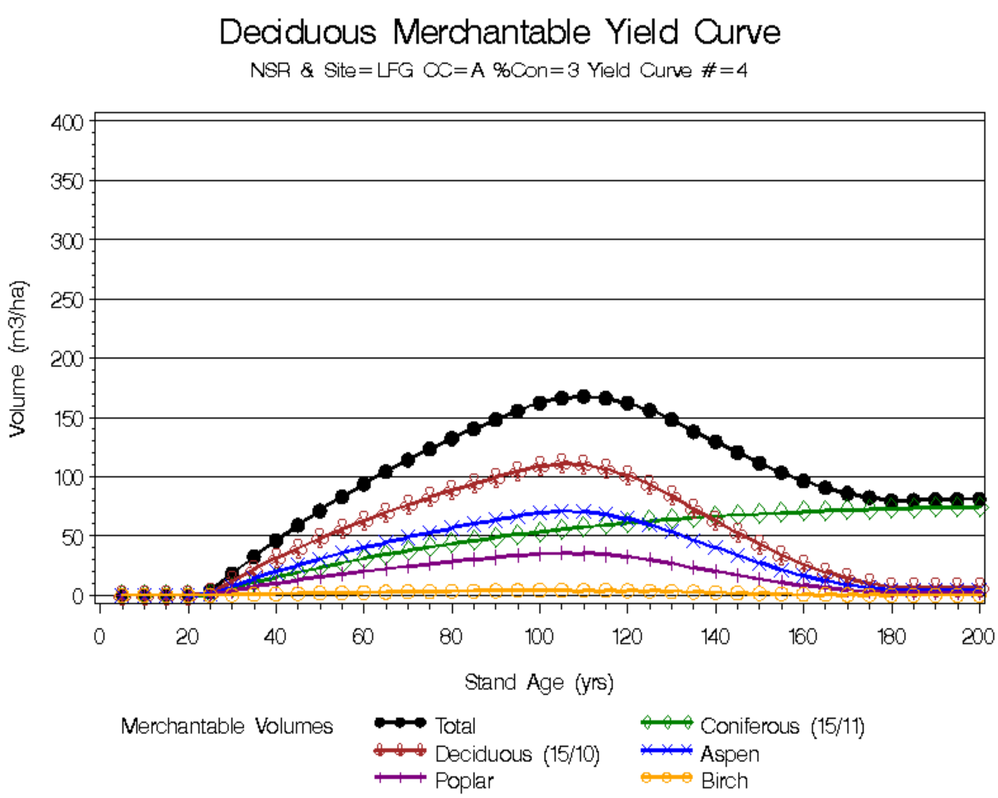
NSR & Site=LFG CC=A %Con=2 Yield Curve #=3

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	18	0.6	5	0.2	14	0.5
40	46	1.2	12	0.3	34	0.9
50	71	1.4	18	0.4	53	1.1
60	94	1.6	24	0.4	70	1.2
70	114	1.6	29	0.4	85	1.2
80	132	1.7	34	0.4	98	1.2
90	148	1.6	38	0.4	110	1.2
100	162	1.6	42	0.4	121	1.2
110	167	1.5	45	0.4	122	1.1
120	160	1.3	48	0.4	112	0.9
130	143	1.1	50	0.4	93	0.7
140	122	0.9	52	0.4	70	0.5
150	101	0.7	54	0.4	47	0.3
160	84	0.5	55	0.3	29	0.2
170	72	0.4	56	0.3	16	0.1
180	65	0.4	57	0.3	8	0.0
190	65	0.3	58	0.3	8	0.0
200	66	0.3	58	0.3	8	0.0



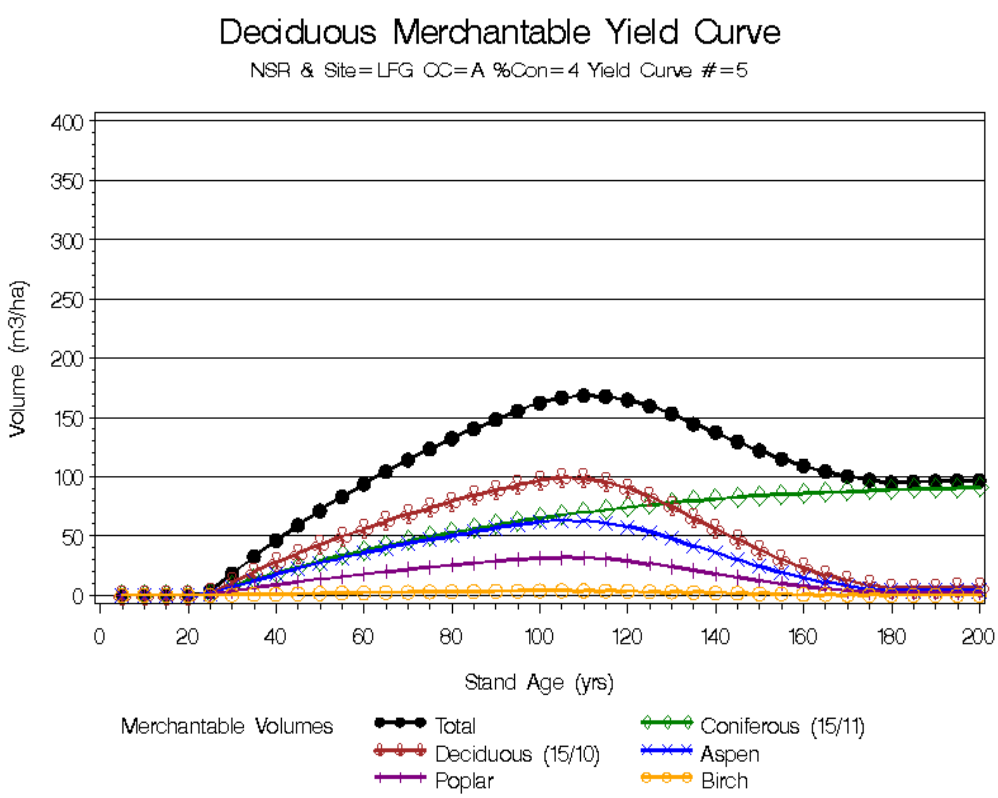
NSR & Site=LFG CC=A %Con=3 Yield Curve #=4

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	18	0.6	6	0.2	12	0.4
40	46	1.2	15	0.4	31	0.8
50	71	1.4	23	0.5	48	1.0
60	94	1.6	31	0.5	63	1.1
70	114	1.6	38	0.5	77	1.1
80	132	1.7	43	0.5	89	1.1
90	148	1.6	49	0.5	100	1.1
100	162	1.6	53	0.5	109	1.1
110	168	1.5	57	0.5	110	1.0
120	162	1.4	61	0.5	101	0.8
130	148	1.1	64	0.5	84	0.6
140	130	0.9	67	0.5	63	0.5
150	112	0.7	69	0.5	43	0.3
160	97	0.6	71	0.4	26	0.2
170	86	0.5	72	0.4	14	0.1
180	80	0.4	73	0.4	7	0.0
190	81	0.4	74	0.4	7	0.0
200	81	0.4	74	0.4	7	0.0



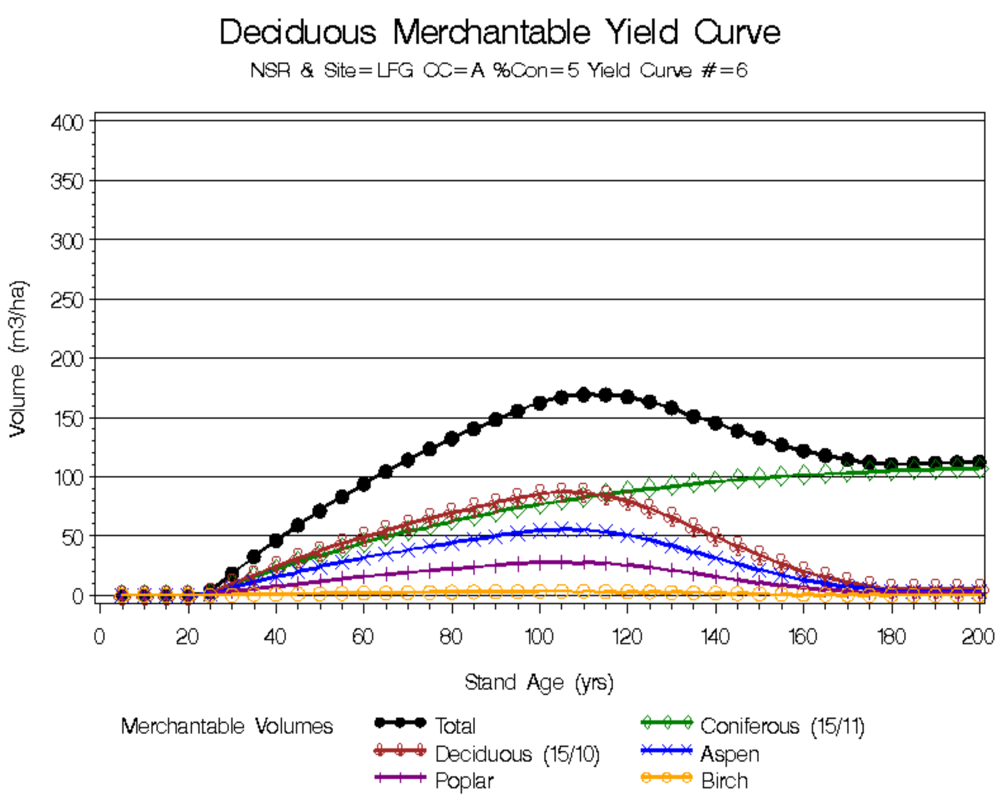
NSR & Site=LFG CC=A %Con=4 Yield Curve #=5

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	18	0.6	7	0.2	11	0.4
40	46	1.2	19	0.5	28	0.7
50	71	1.4	29	0.6	43	0.9
60	94	1.6	38	0.6	56	0.9
70	114	1.6	46	0.7	68	1.0
80	132	1.7	53	0.7	79	1.0
90	148	1.6	59	0.7	89	1.0
100	162	1.6	65	0.7	97	1.0
110	169	1.5	70	0.6	99	0.9
120	165	1.4	74	0.6	91	0.8
130	153	1.2	78	0.6	75	0.6
140	138	1.0	81	0.6	56	0.4
150	122	0.8	84	0.6	38	0.3
160	109	0.7	86	0.5	23	0.1
170	100	0.6	88	0.5	13	0.1
180	95	0.5	89	0.5	6	0.0
190	96	0.5	90	0.5	6	0.0
200	97	0.5	91	0.5	6	0.0



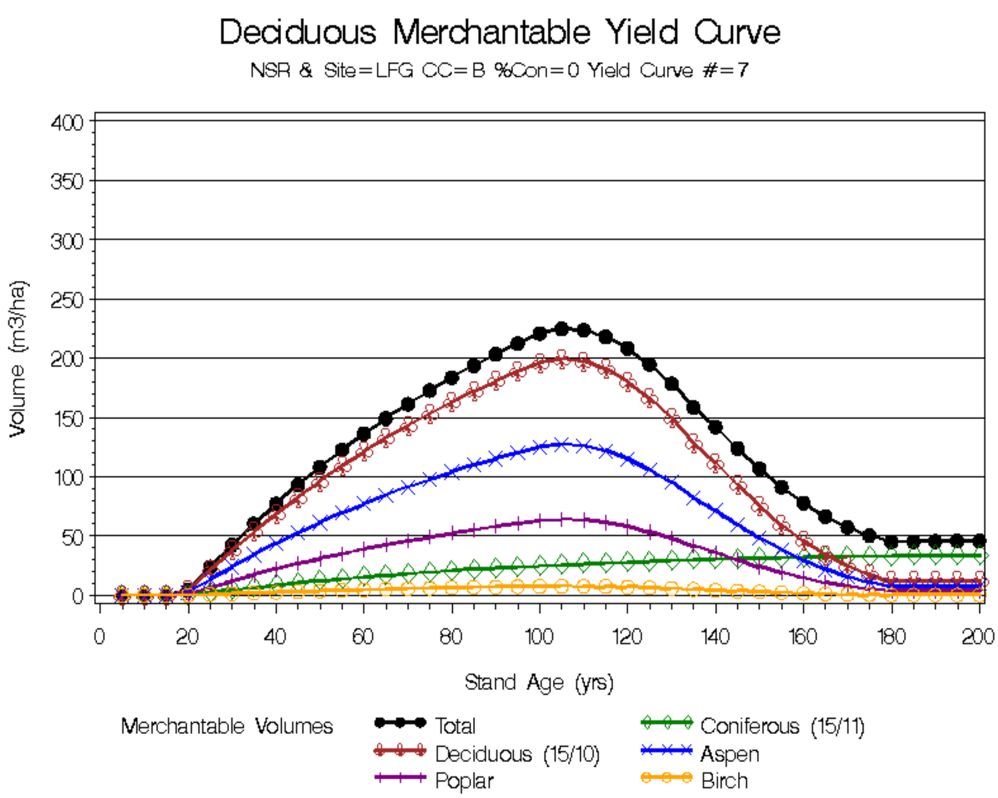
NSR & Site=LFG CC=A %Con=5 Yield Curve #=6

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	18	0.6	9	0.3	10	0.3
40	46	1.2	22	0.5	24	0.6
50	71	1.4	34	0.7	38	0.8
60	94	1.6	44	0.7	50	0.8
70	114	1.6	54	0.8	60	0.9
80	132	1.7	63	0.8	70	0.9
90	148	1.6	70	0.8	78	0.9
100	162	1.6	77	0.8	86	0.9
110	169	1.5	83	0.8	87	0.8
120	167	1.4	88	0.7	80	0.7
130	158	1.2	92	0.7	66	0.5
140	146	1.0	96	0.7	50	0.4
150	133	0.9	99	0.7	34	0.2
160	122	0.8	102	0.6	20	0.1
170	115	0.7	104	0.6	11	0.1
180	110	0.6	105	0.6	5	0.0
190	112	0.6	106	0.6	5	0.0
200	112	0.6	107	0.5	5	0.0



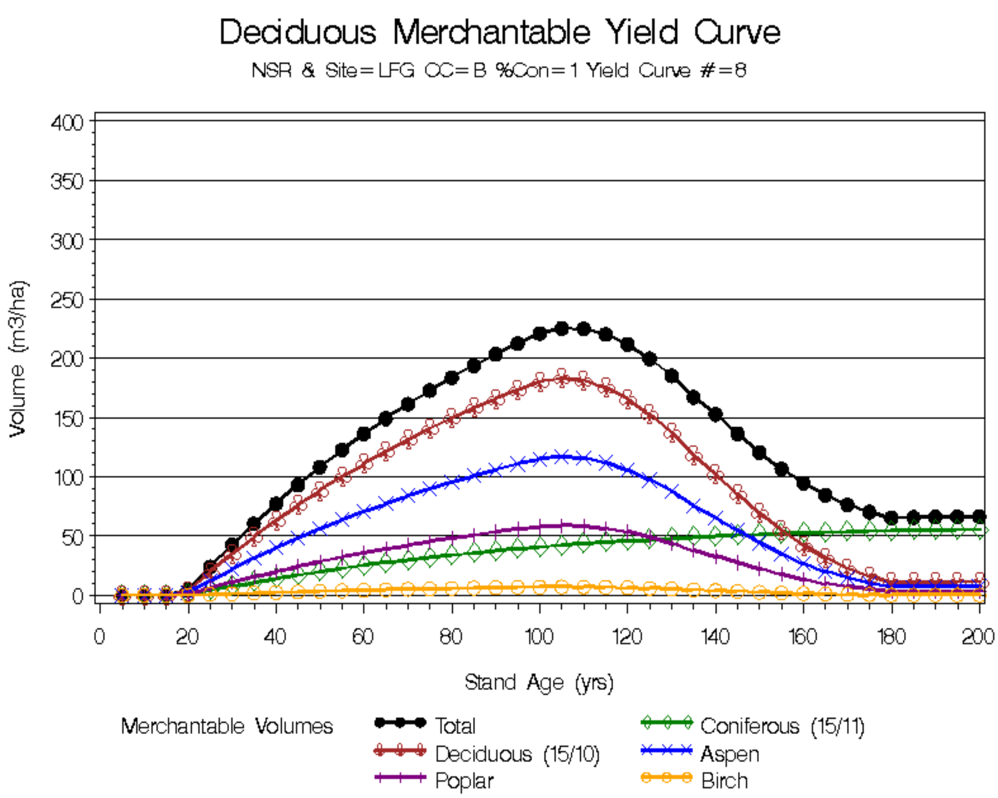
NSR & Site=LFG CC=B %Con=0 Yield Curve #=7

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
10	0	0.0	0	0.0	0	0.0
20	5	0.2	1	0.0	4	0.2
30	43	1.4	5	0.2	38	1.3
40	77	1.9	9	0.2	69	1.7
50	108	2.2	12	0.2	96	1.9
60	136	2.3	15	0.3	121	2.0
70	161	2.3	18	0.3	143	2.0
80	184	2.3	21	0.3	163	2.0
90	204	2.3	23	0.3	181	2.0
100	221	2.2	25	0.2	196	2.0
110	224	2.0	27	0.2	197	1.8
120	208	1.7	28	0.2	180	1.5
130	179	1.4	29	0.2	149	1.1
140	142	1.0	30	0.2	112	0.8
150	107	0.7	31	0.2	76	0.5
160	78	0.5	32	0.2	46	0.3
170	57	0.3	33	0.2	25	0.1
180	45	0.3	33	0.2	12	0.1
190	46	0.2	33	0.2	12	0.1
200	46	0.2	34	0.2	12	0.1



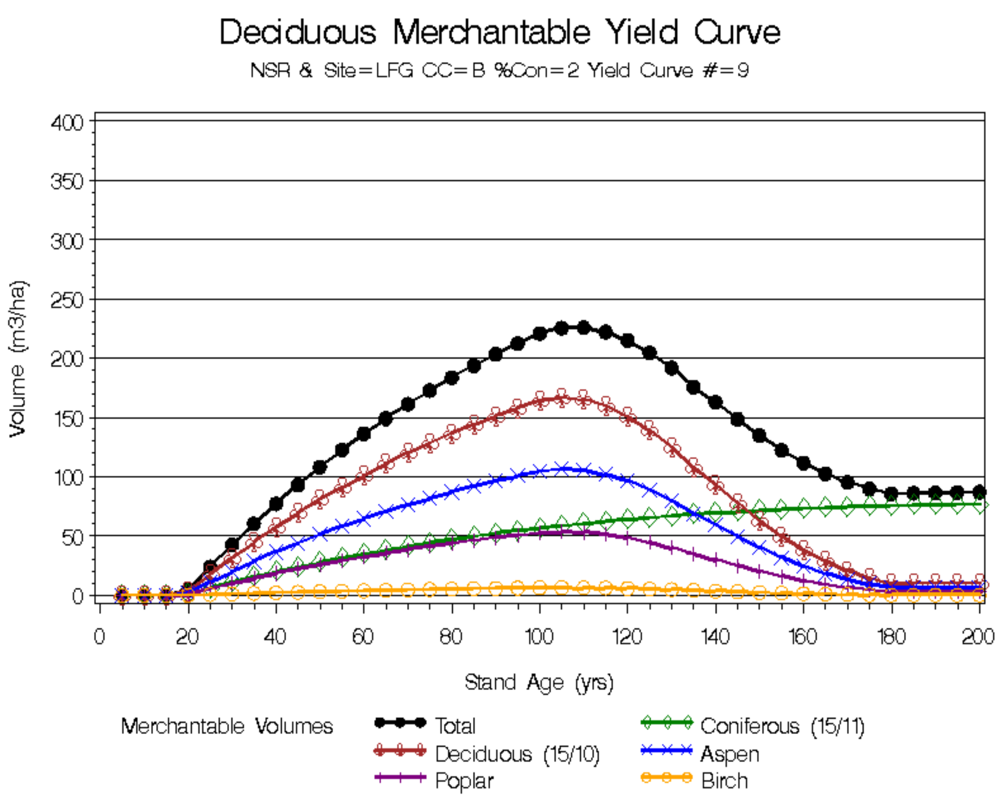
NSR & Site=LFG CC=B %Con=1 Yield Curve #=8

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
10	0	0.0	0	0.0	0	0.0
20	5	0.2	1	0.0	4	0.2
30	43	1.4	8	0.3	35	1.2
40	77	1.9	14	0.4	63	1.6
50	108	2.2	20	0.4	88	1.8
60	136	2.3	25	0.4	111	1.9
70	161	2.3	30	0.4	132	1.9
80	184	2.3	34	0.4	150	1.9
90	204	2.3	38	0.4	166	1.8
100	221	2.2	41	0.4	180	1.8
110	225	2.0	44	0.4	181	1.6
120	212	1.8	46	0.4	166	1.4
130	185	1.4	48	0.4	137	1.1
140	153	1.1	50	0.4	103	0.7
150	121	0.8	51	0.3	69	0.5
160	95	0.6	53	0.3	42	0.3
170	76	0.4	54	0.3	23	0.1
180	65	0.4	54	0.3	11	0.1
190	66	0.3	55	0.3	11	0.1
200	67	0.3	55	0.3	11	0.1



NSR & Site=LFG CC=B %Con=2 Yield Curve #=9

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
10	0	0.0	0	0.0	0	0.0
20	5	0.2	1	0.1	3	0.2
30	43	1.4	11	0.4	32	1.1
40	77	1.9	20	0.5	57	1.4
50	108	2.2	28	0.6	81	1.6
60	136	2.3	35	0.6	101	1.7
70	161	2.3	41	0.6	120	1.7
80	184	2.3	47	0.6	137	1.7
90	204	2.3	52	0.6	151	1.7
100	221	2.2	57	0.6	164	1.6
110	226	2.1	61	0.6	165	1.5
120	215	1.8	64	0.5	151	1.3
130	192	1.5	67	0.5	125	1.0
140	163	1.2	69	0.5	94	0.7
150	135	0.9	72	0.5	63	0.4
160	112	0.7	73	0.5	38	0.2
170	95	0.6	75	0.4	21	0.1
180	86	0.5	76	0.4	10	0.1
190	87	0.5	76	0.4	10	0.1
200	87	0.4	77	0.4	10	0.1

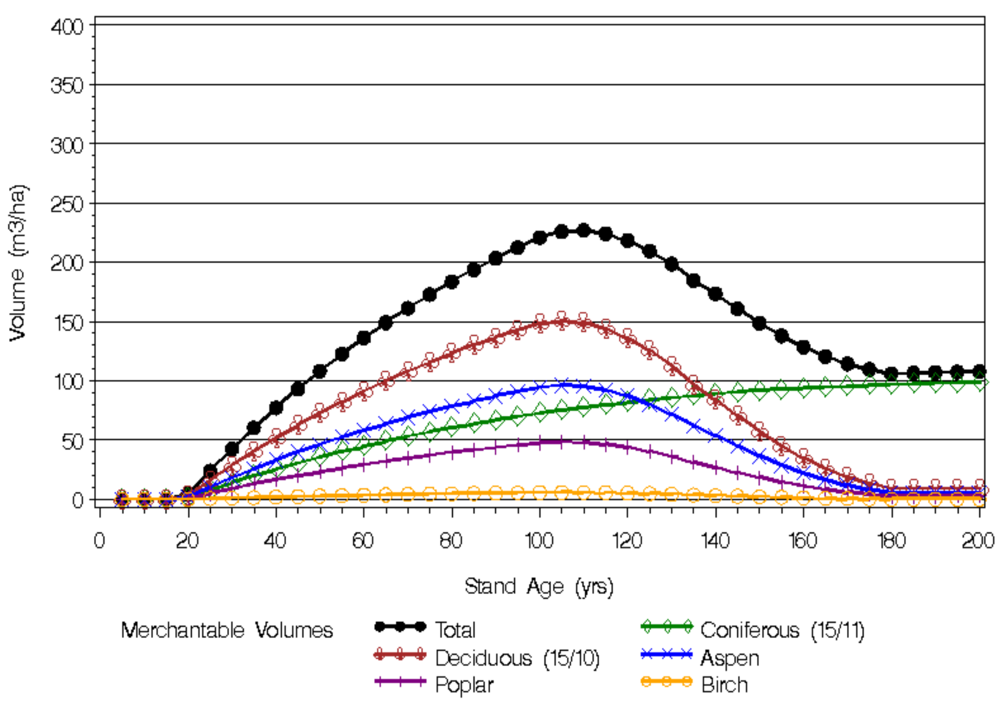


NSR & Site=LFG CC=B %Con=3 Yield Curve #=10

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
10	0	0.0	0	0.0	0	0.0
20	5	0.2	2	0.1	3	0.2
30	43	1.4	14	0.5	29	1.0
40	77	1.9	25	0.6	52	1.3
50	108	2.2	36	0.7	73	1.5
60	136	2.3	45	0.7	92	1.5
70	161	2.3	53	0.8	108	1.5
80	184	2.3	60	0.8	123	1.5
90	204	2.3	67	0.7	137	1.5
100	221	2.2	73	0.7	148	1.5
110	227	2.1	78	0.7	149	1.4
120	219	1.8	82	0.7	136	1.1
130	199	1.5	86	0.7	113	0.9
140	174	1.2	89	0.6	85	0.6
150	149	1.0	92	0.6	57	0.4
160	129	0.8	94	0.6	35	0.2
170	114	0.7	96	0.6	19	0.1
180	106	0.6	97	0.5	9	0.1
190	107	0.6	98	0.5	9	0.0
200	108	0.5	99	0.5	9	0.0

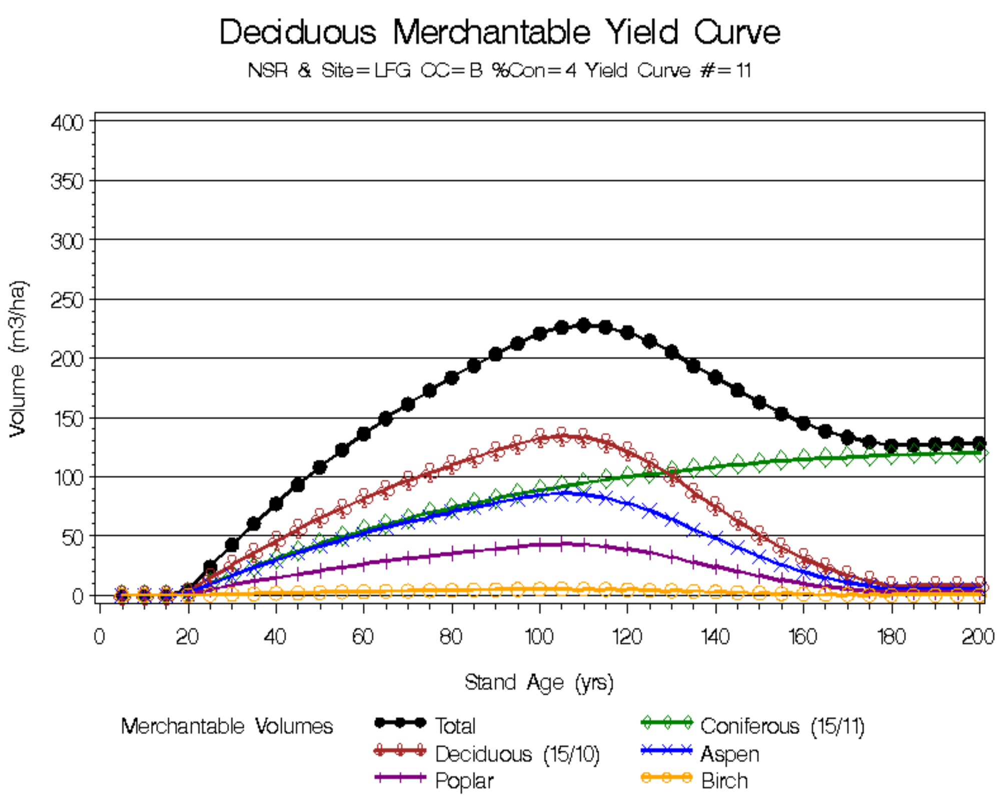
Deciduous Merchantable Yield Curve

NSR & Site=LFG CC=B %Con=3 Yield Curve #=10



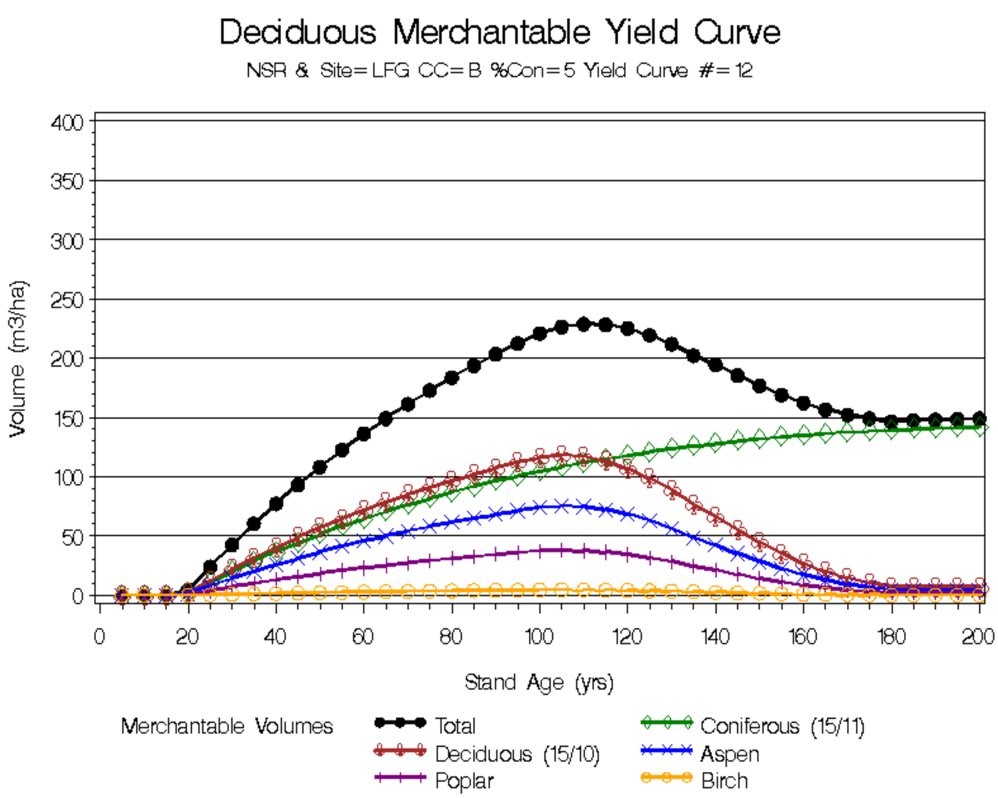
NSR & Site=LFG CC=B %Con=4 Yield Curve #=11

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
10	0	0.0	0	0.0	0	0.0
20	5	0.2	2	0.1	3	0.1
30	43	1.4	17	0.6	26	0.9
40	77	1.9	31	0.8	46	1.2
50	108	2.2	43	0.9	65	1.3
60	136	2.3	55	0.9	82	1.4
70	161	2.3	65	0.9	97	1.4
80	184	2.3	74	0.9	110	1.4
90	204	2.3	82	0.9	122	1.4
100	221	2.2	89	0.9	132	1.3
110	228	2.1	95	0.9	133	1.2
120	222	1.8	100	0.8	122	1.0
130	205	1.6	105	0.8	101	0.8
140	184	1.3	109	0.8	75	0.5
150	163	1.1	112	0.7	51	0.3
160	145	0.9	114	0.7	31	0.2
170	133	0.8	117	0.7	17	0.1
180	126	0.7	118	0.7	8	0.0
190	128	0.7	119	0.6	8	0.0
200	128	0.6	120	0.6	8	0.0



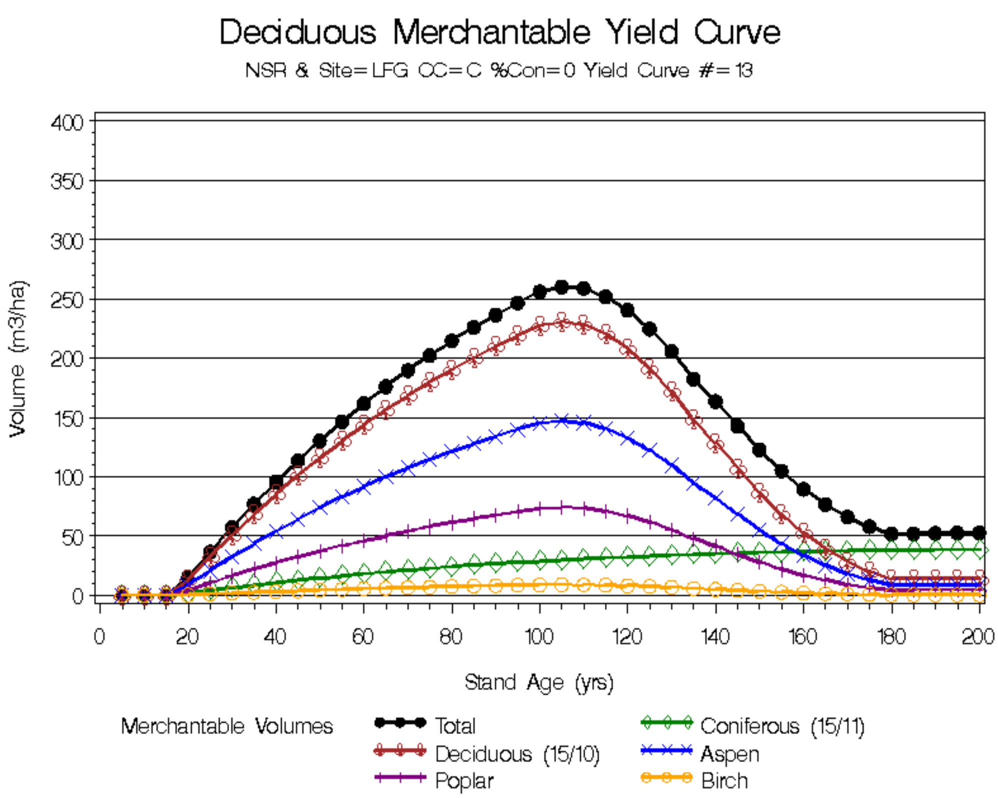
NSR & Site=LFG CC=B %Con=5 Yield Curve #=12

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
10	0	0.0	0	0.0	0	0.0
20	5	0.2	2	0.1	2	0.1
30	43	1.4	20	0.7	23	0.8
40	77	1.9	37	0.9	41	1.0
50	108	2.2	51	1.0	57	1.1
60	136	2.3	64	1.1	72	1.2
70	161	2.3	76	1.1	85	1.2
80	184	2.3	87	1.1	97	1.2
90	204	2.3	96	1.1	107	1.2
100	221	2.2	105	1.0	117	1.2
110	229	2.1	112	1.0	117	1.1
120	225	1.9	118	1.0	107	0.9
130	212	1.6	123	0.9	89	0.7
140	194	1.4	128	0.9	66	0.5
150	177	1.2	132	0.9	45	0.3
160	162	1.0	135	0.8	27	0.2
170	152	0.9	138	0.8	15	0.1
180	147	0.8	140	0.8	7	0.0
190	148	0.8	141	0.7	7	0.0
200	149	0.7	142	0.7	7	0.0



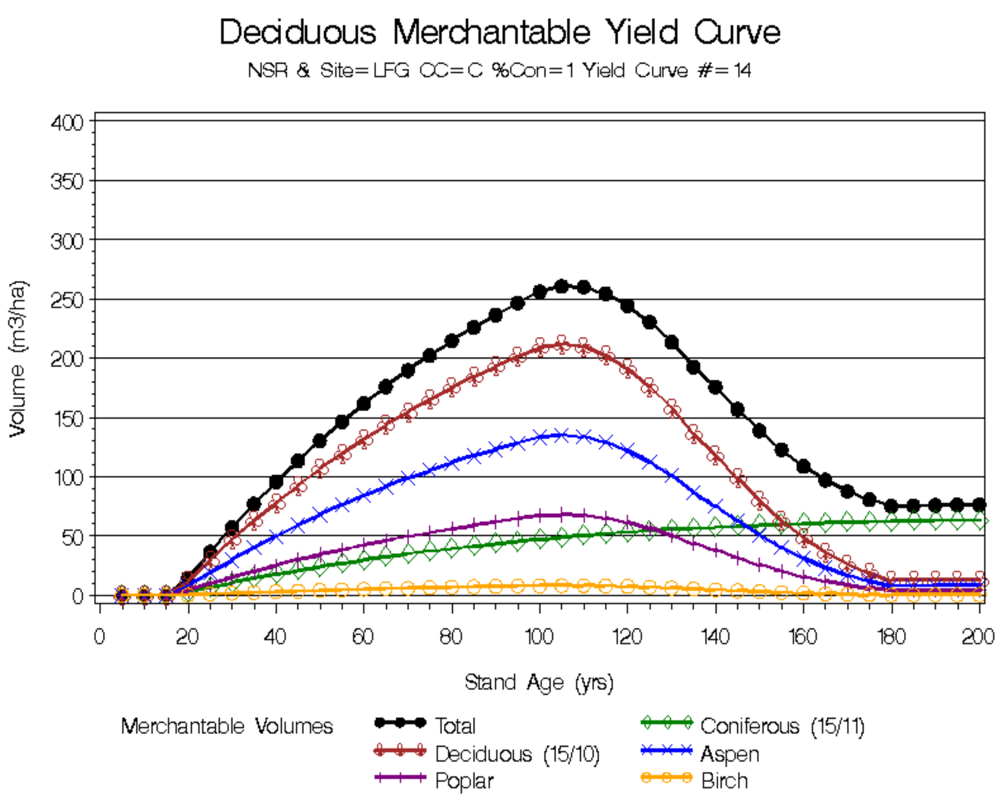
NSR & Site=LFG CC=C %Con=0 Yield Curve #=13

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
10	0	0.0	0	0.0	0	0.0
20	15	0.7	2	0.1	13	0.7
30	57	1.9	6	0.2	51	1.7
40	96	2.4	11	0.3	85	2.1
50	131	2.6	15	0.3	116	2.3
60	162	2.7	18	0.3	144	2.4
70	190	2.7	21	0.3	168	2.4
80	215	2.7	24	0.3	191	2.4
90	237	2.6	27	0.3	210	2.3
100	256	2.6	29	0.3	228	2.3
110	259	2.4	31	0.3	228	2.1
120	241	2.0	32	0.3	208	1.7
130	206	1.6	34	0.3	172	1.3
140	164	1.2	35	0.3	129	0.9
150	123	0.8	36	0.2	87	0.6
160	90	0.6	37	0.2	53	0.3
170	66	0.4	38	0.2	28	0.2
180	52	0.3	38	0.2	14	0.1
190	52	0.3	38	0.2	14	0.1
200	53	0.3	39	0.2	14	0.1



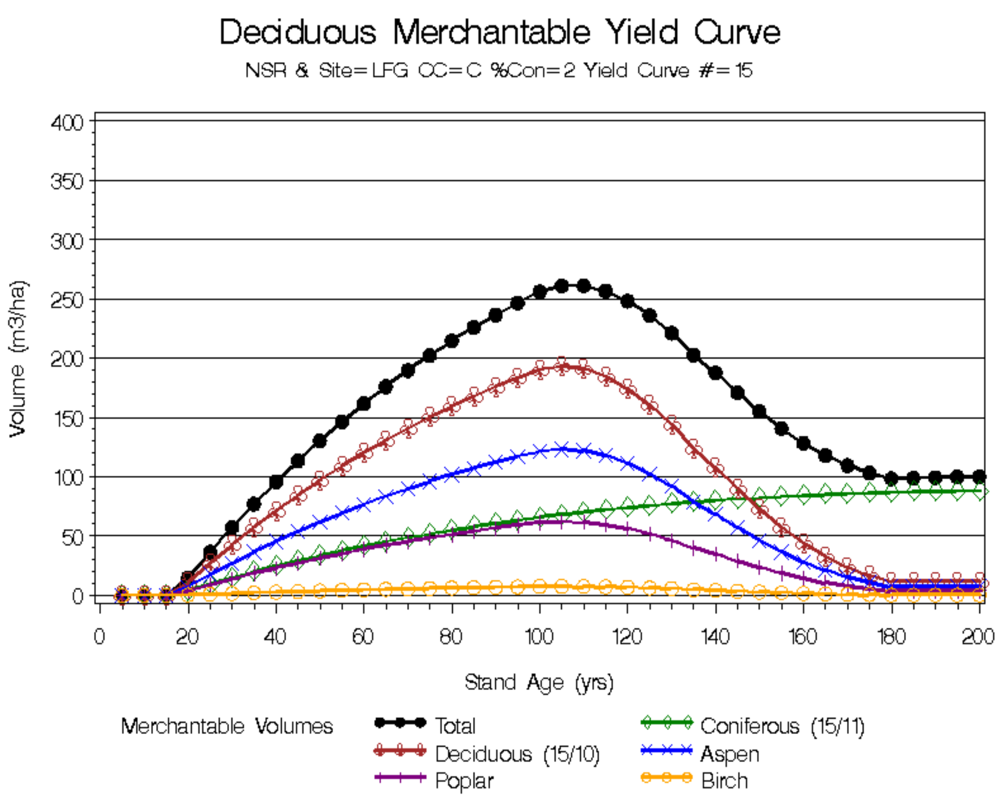
NSR & Site=LFG CC=C %Con=1 Yield Curve #=14

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
10	0	0.0	0	0.0	0	0.0
20	15	0.7	3	0.1	12	0.6
30	57	1.9	11	0.4	47	1.6
40	96	2.4	18	0.4	78	2.0
50	131	2.6	24	0.5	106	2.1
60	162	2.7	30	0.5	132	2.2
70	190	2.7	35	0.5	155	2.2
80	215	2.7	40	0.5	175	2.2
90	237	2.6	44	0.5	193	2.1
100	256	2.6	47	0.5	209	2.1
110	260	2.4	50	0.5	210	1.9
120	244	2.0	53	0.4	191	1.6
130	214	1.6	55	0.4	158	1.2
140	176	1.3	57	0.4	118	0.8
150	139	0.9	59	0.4	80	0.5
160	109	0.7	61	0.4	48	0.3
170	88	0.5	62	0.4	26	0.2
180	75	0.4	62	0.3	13	0.1
190	76	0.4	63	0.3	13	0.1
200	76	0.4	63	0.3	13	0.1



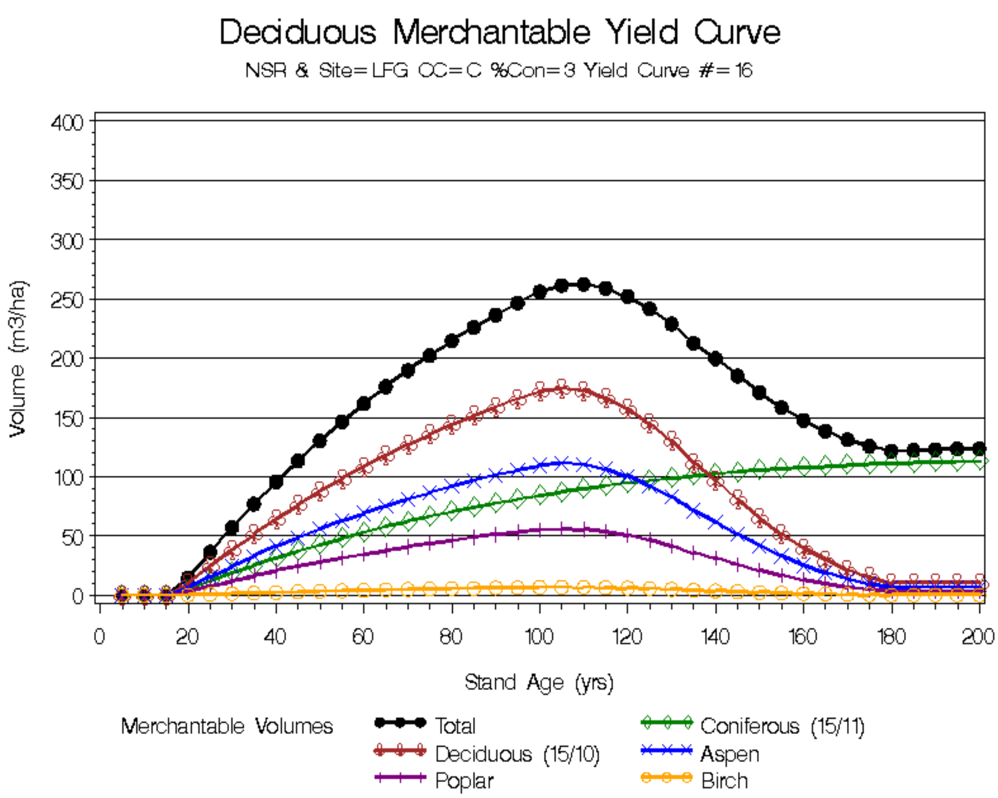
NSR & Site=LFG CC=C %Con=2 Yield Curve #=15

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
10	0	0.0	0	0.0	0	0.0
20	15	0.7	4	0.2	11	0.5
30	57	1.9	15	0.5	43	1.4
40	96	2.4	25	0.6	71	1.8
50	131	2.6	33	0.7	97	1.9
60	162	2.7	42	0.7	120	2.0
70	190	2.7	49	0.7	141	2.0
80	215	2.7	55	0.7	160	2.0
90	237	2.6	61	0.7	176	2.0
100	256	2.6	66	0.7	191	1.9
110	261	2.4	70	0.6	191	1.7
120	248	2.1	74	0.6	174	1.5
130	221	1.7	77	0.6	144	1.1
140	188	1.3	80	0.6	108	0.8
150	155	1.0	82	0.5	73	0.5
160	128	0.8	84	0.5	44	0.3
170	110	0.6	86	0.5	24	0.1
180	99	0.5	87	0.5	12	0.1
190	99	0.5	88	0.5	12	0.1
200	100	0.5	88	0.4	12	0.1



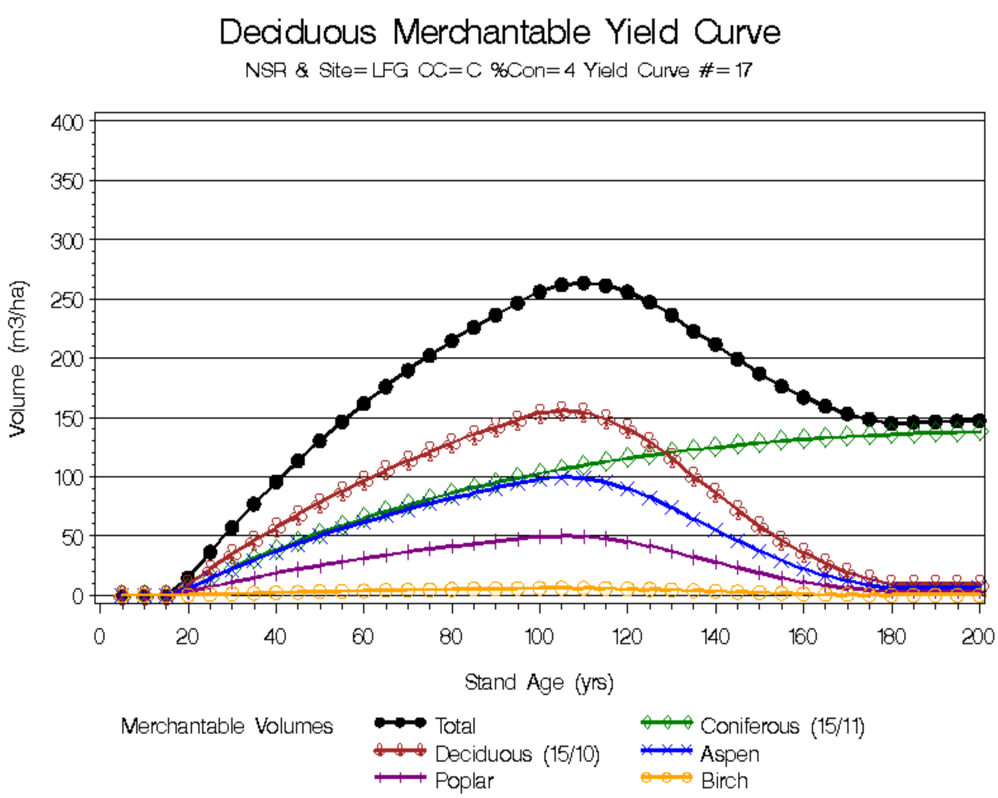
NSR & Site=LFG CC=C %Con=3 Yield Curve #=16

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
10	0	0.0	0	0.0	0	0.0
20	15	0.7	5	0.2	10	0.5
30	57	1.9	19	0.6	38	1.3
40	96	2.4	31	0.8	64	1.6
50	131	2.6	43	0.9	88	1.8
60	162	2.7	53	0.9	109	1.8
70	190	2.7	62	0.9	127	1.8
80	215	2.7	71	0.9	144	1.8
90	237	2.6	78	0.9	159	1.8
100	256	2.6	84	0.8	172	1.7
110	263	2.4	90	0.8	173	1.6
120	252	2.1	95	0.8	158	1.3
130	229	1.8	99	0.8	130	1.0
140	200	1.4	102	0.7	97	0.7
150	171	1.1	105	0.7	66	0.4
160	148	0.9	108	0.7	40	0.2
170	131	0.8	110	0.6	22	0.1
180	122	0.7	111	0.6	10	0.1
190	123	0.6	112	0.6	11	0.1
200	124	0.6	113	0.6	11	0.1



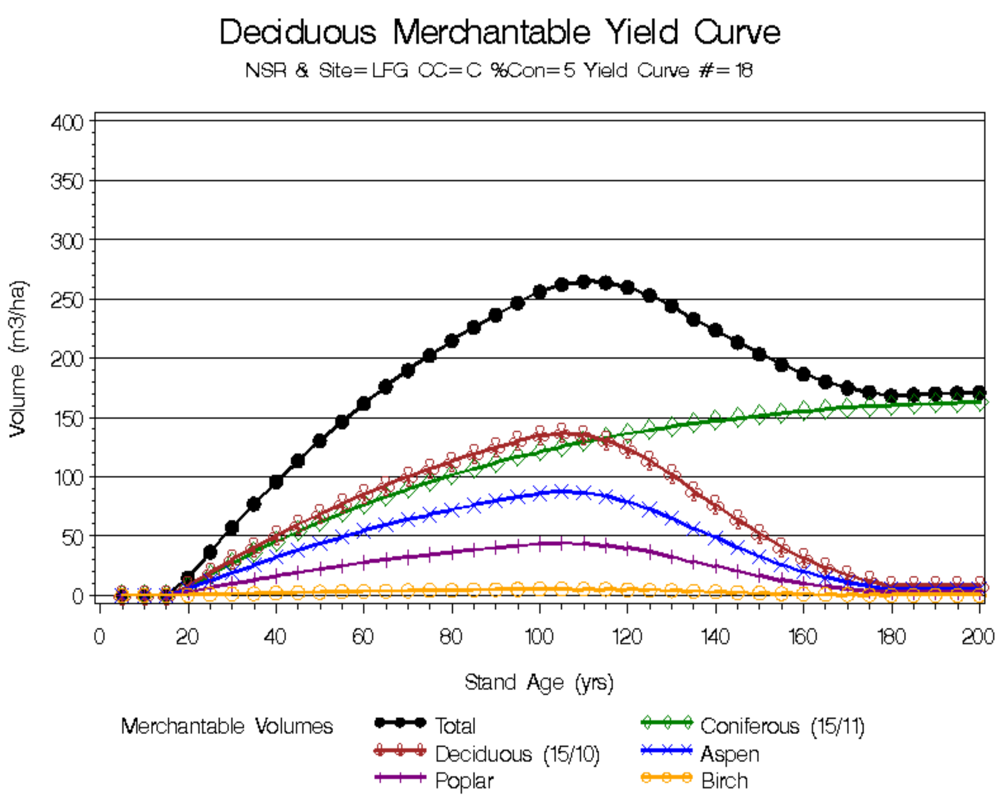
NSR & Site=LFG CC=C %Con=4 Yield Curve #=17

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
10	0	0.0	0	0.0	0	0.0
20	15	0.7	6	0.3	9	0.4
30	57	1.9	23	0.8	34	1.1
40	96	2.4	38	1.0	57	1.4
50	131	2.6	52	1.0	78	1.6
60	162	2.7	65	1.1	97	1.6
70	190	2.7	76	1.1	114	1.6
80	215	2.7	86	1.1	129	1.6
90	237	2.6	95	1.1	142	1.6
100	256	2.6	103	1.0	154	1.5
110	264	2.4	110	1.0	154	1.4
120	256	2.1	116	1.0	141	1.2
130	237	1.8	121	0.9	116	0.9
140	212	1.5	125	0.9	87	0.6
150	187	1.2	129	0.9	59	0.4
160	167	1.0	132	0.8	36	0.2
170	153	0.9	134	0.8	19	0.1
180	145	0.8	136	0.8	9	0.1
190	147	0.8	137	0.7	9	0.0
200	147	0.7	138	0.7	9	0.0



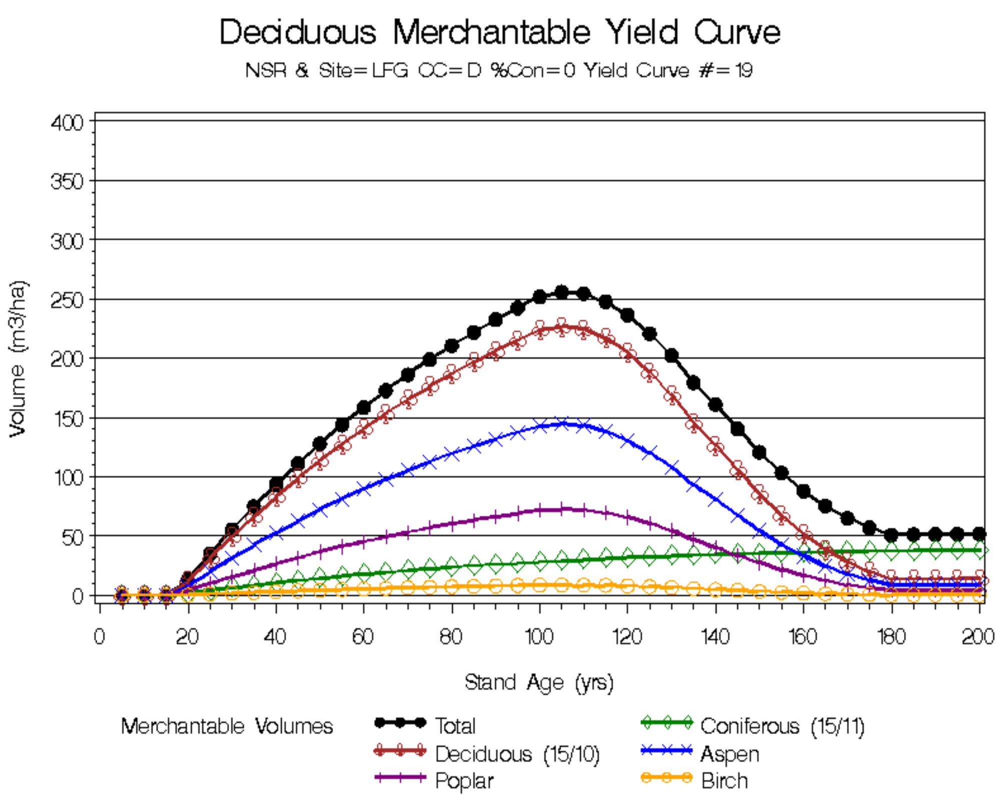
NSR & Site=LFG CC=C %Con=5 Yield Curve #=18

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
10	0	0.0	0	0.0	0	0.0
20	15	0.7	7	0.3	8	0.4
30	57	1.9	27	0.9	30	1.0
40	96	2.4	45	1.1	51	1.3
50	131	2.6	62	1.2	69	1.4
60	162	2.7	77	1.3	85	1.4
70	190	2.7	90	1.3	100	1.4
80	215	2.7	102	1.3	113	1.4
90	237	2.6	112	1.2	125	1.4
100	256	2.6	121	1.2	135	1.4
110	265	2.4	129	1.2	136	1.2
120	260	2.2	136	1.1	124	1.0
130	245	1.9	142	1.1	102	0.8
140	224	1.6	147	1.1	76	0.5
150	203	1.4	152	1.0	52	0.3
160	187	1.2	155	1.0	31	0.2
170	175	1.0	158	0.9	17	0.1
180	168	0.9	160	0.9	8	0.0
190	170	0.9	162	0.9	8	0.0
200	171	0.9	163	0.8	8	0.0



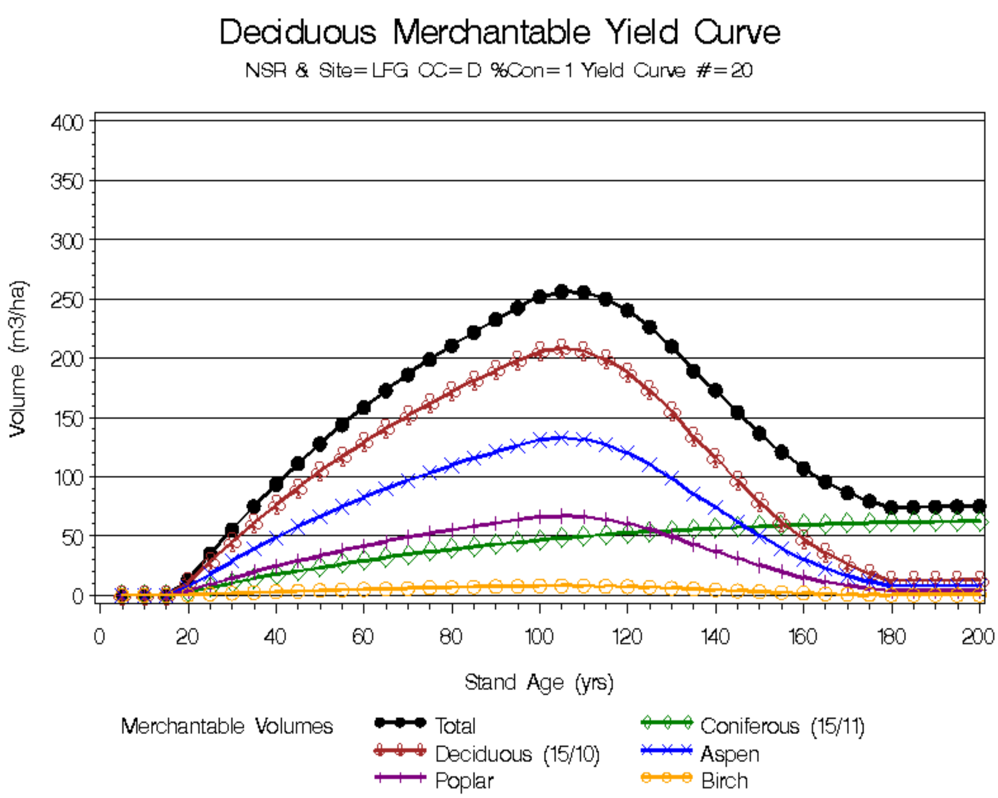
NSR & Site=LFG CC=D %Con=0 Yield Curve #=19

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
10	0	0.0	0	0.0	0	0.0
20	14	0.7	2	0.1	12	0.6
30	56	1.9	6	0.2	49	1.6
40	94	2.3	10	0.3	83	2.1
50	128	2.6	14	0.3	113	2.3
60	159	2.6	18	0.3	141	2.3
70	186	2.7	21	0.3	165	2.4
80	211	2.6	24	0.3	187	2.3
90	233	2.6	26	0.3	207	2.3
100	252	2.5	28	0.3	224	2.2
110	255	2.3	30	0.3	225	2.0
120	237	2.0	32	0.3	205	1.7
130	202	1.6	33	0.3	169	1.3
140	161	1.2	34	0.2	127	0.9
150	121	0.8	35	0.2	85	0.6
160	88	0.6	36	0.2	52	0.3
170	65	0.4	37	0.2	28	0.2
180	51	0.3	37	0.2	14	0.1
190	52	0.3	38	0.2	14	0.1
200	52	0.3	38	0.2	14	0.1



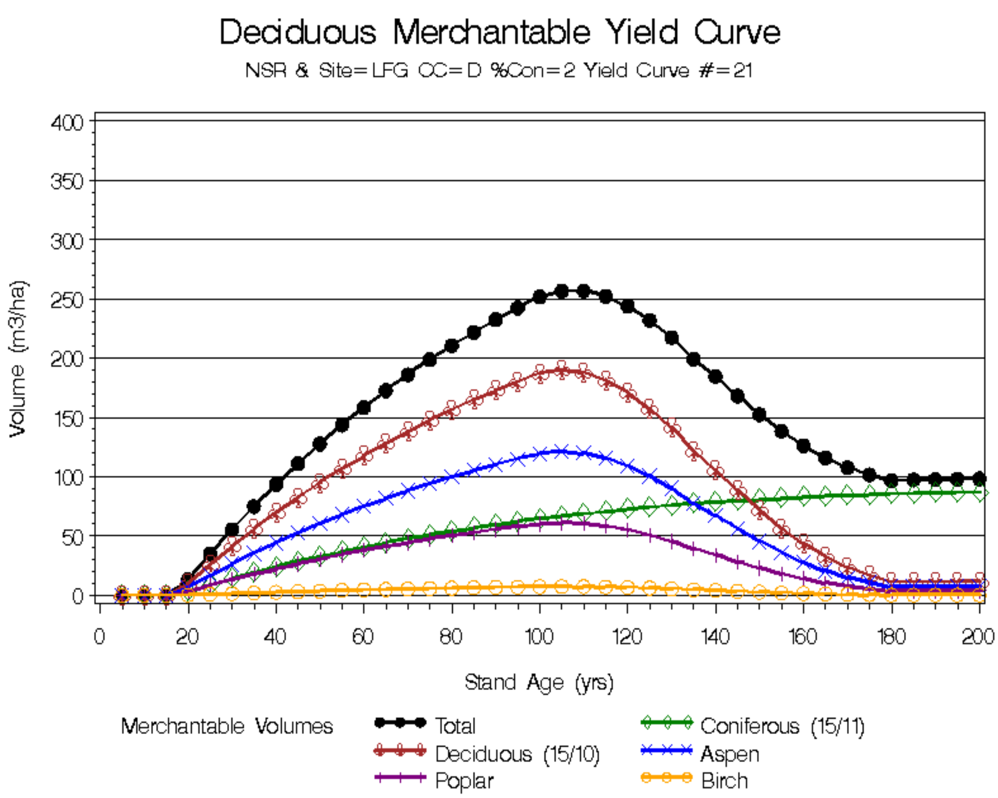
NSR & Site=LFG CC=D %Con=1 Yield Curve #=20

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
10	0	0.0	0	0.0	0	0.0
20	14	0.7	2	0.1	11	0.6
30	56	1.9	10	0.3	45	1.5
40	94	2.3	17	0.4	76	1.9
50	128	2.6	24	0.5	104	2.1
60	159	2.6	29	0.5	129	2.2
70	186	2.7	34	0.5	152	2.2
80	211	2.6	39	0.5	172	2.1
90	233	2.6	43	0.5	190	2.1
100	252	2.5	46	0.5	205	2.1
110	256	2.3	50	0.5	206	1.9
120	240	2.0	52	0.4	188	1.6
130	210	1.6	55	0.4	155	1.2
140	173	1.2	57	0.4	116	0.8
150	137	0.9	58	0.4	79	0.5
160	107	0.7	60	0.4	48	0.3
170	86	0.5	61	0.4	26	0.2
180	74	0.4	61	0.3	13	0.1
190	75	0.4	62	0.3	13	0.1
200	75	0.4	62	0.3	13	0.1



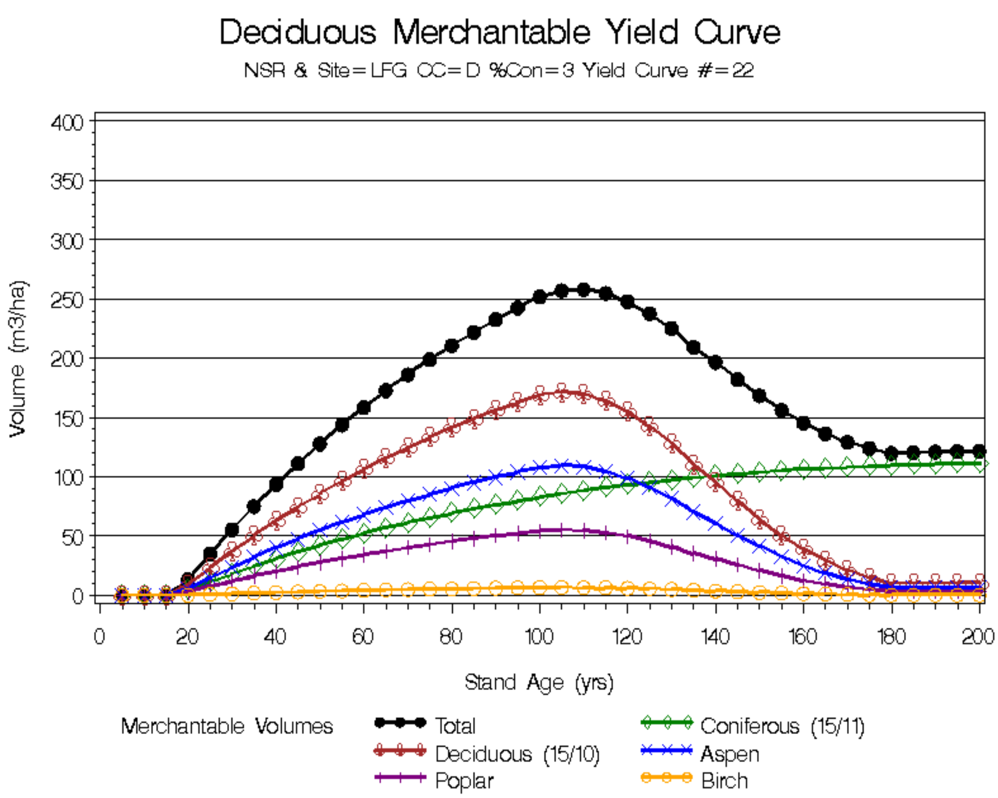
NSR & Site=LFG CC=D %Con=2 Yield Curve #=21

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
10	0	0.0	0	0.0	0	0.0
20	14	0.7	3	0.2	10	0.5
30	56	1.9	14	0.5	41	1.4
40	94	2.3	24	0.6	70	1.7
50	128	2.6	33	0.7	95	1.9
60	159	2.6	41	0.7	118	2.0
70	186	2.7	48	0.7	138	2.0
80	211	2.6	54	0.7	157	2.0
90	233	2.6	60	0.7	173	1.9
100	252	2.5	65	0.6	187	1.9
110	257	2.3	69	0.6	188	1.7
120	244	2.0	73	0.6	172	1.4
130	218	1.7	76	0.6	142	1.1
140	185	1.3	79	0.6	106	0.8
150	153	1.0	81	0.5	72	0.5
160	126	0.8	83	0.5	43	0.3
170	108	0.6	84	0.5	23	0.1
180	97	0.5	86	0.5	11	0.1
190	98	0.5	86	0.5	12	0.1
200	99	0.5	87	0.4	12	0.1



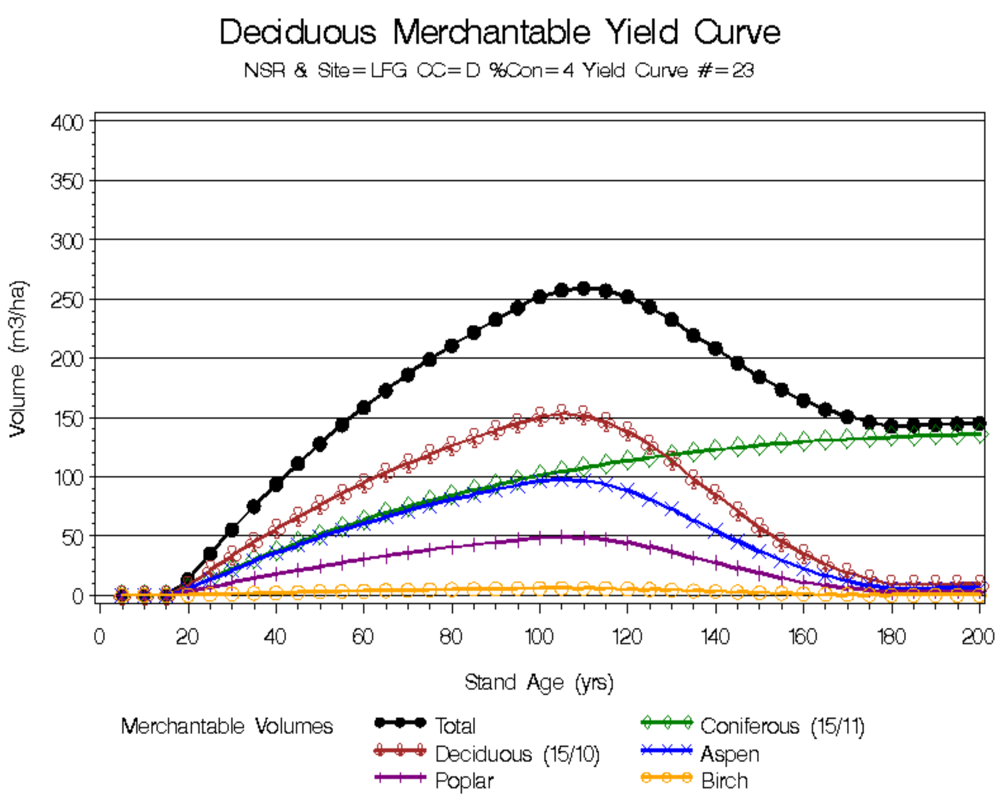
NSR & Site=LFG CC=D %Con=3 Yield Curve #=22

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
10	0	0.0	0	0.0	0	0.0
20	14	0.7	4	0.2	9	0.5
30	56	1.9	18	0.6	37	1.2
40	94	2.3	31	0.8	63	1.6
50	128	2.6	42	0.8	86	1.7
60	159	2.6	52	0.9	106	1.8
70	186	2.7	61	0.9	125	1.8
80	211	2.6	69	0.9	142	1.8
90	233	2.6	76	0.8	156	1.7
100	252	2.5	83	0.8	169	1.7
110	258	2.3	88	0.8	170	1.5
120	248	2.1	93	0.8	155	1.3
130	225	1.7	97	0.7	128	1.0
140	197	1.4	101	0.7	96	0.7
150	168	1.1	104	0.7	65	0.4
160	145	0.9	106	0.7	39	0.2
170	129	0.8	108	0.6	21	0.1
180	120	0.7	110	0.6	10	0.1
190	121	0.6	111	0.6	10	0.1
200	122	0.6	111	0.6	10	0.1



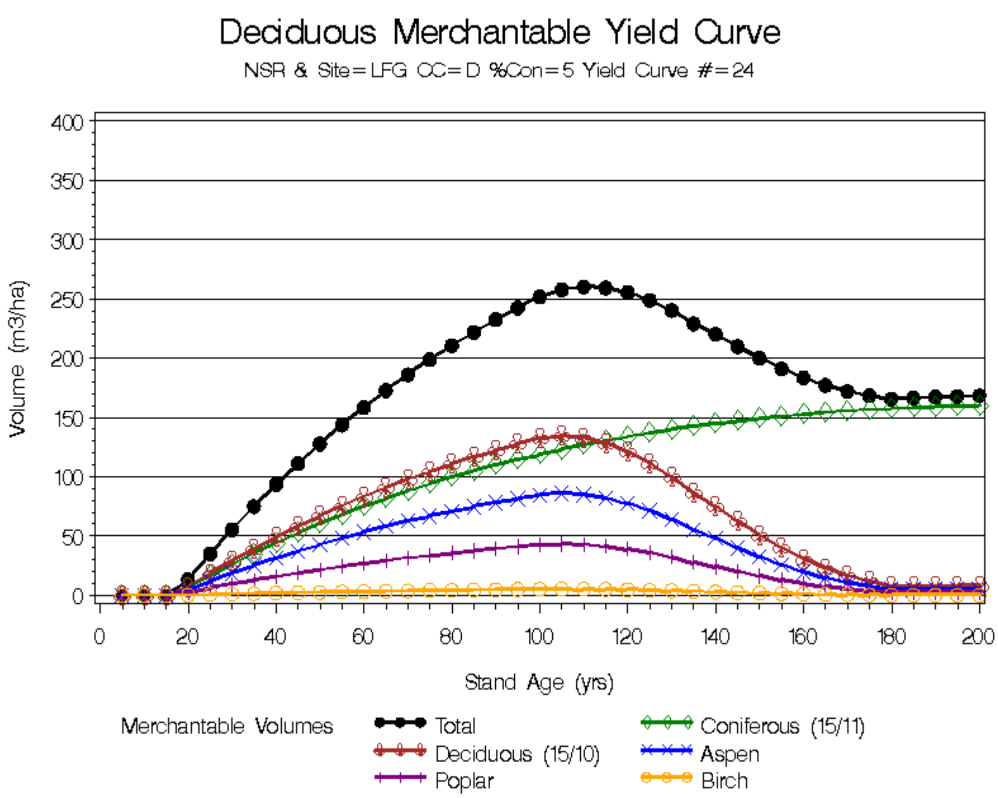
NSR & Site=LFG CC=D %Con=4 Yield Curve #=23

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
10	0	0.0	0	0.0	0	0.0
20	14	0.7	5	0.3	8	0.4
30	56	1.9	22	0.7	33	1.1
40	94	2.3	37	0.9	56	1.4
50	128	2.6	51	1.0	77	1.5
60	159	2.6	64	1.1	95	1.6
70	186	2.7	75	1.1	112	1.6
80	211	2.6	85	1.1	126	1.6
90	233	2.6	93	1.0	139	1.5
100	252	2.5	101	1.0	151	1.5
110	259	2.4	108	1.0	152	1.4
120	252	2.1	114	0.9	138	1.2
130	233	1.8	119	0.9	114	0.9
140	208	1.5	123	0.9	85	0.6
150	184	1.2	127	0.8	58	0.4
160	165	1.0	129	0.8	35	0.2
170	151	0.9	132	0.8	19	0.1
180	143	0.8	134	0.7	9	0.1
190	144	0.8	135	0.7	9	0.0
200	145	0.7	136	0.7	9	0.0



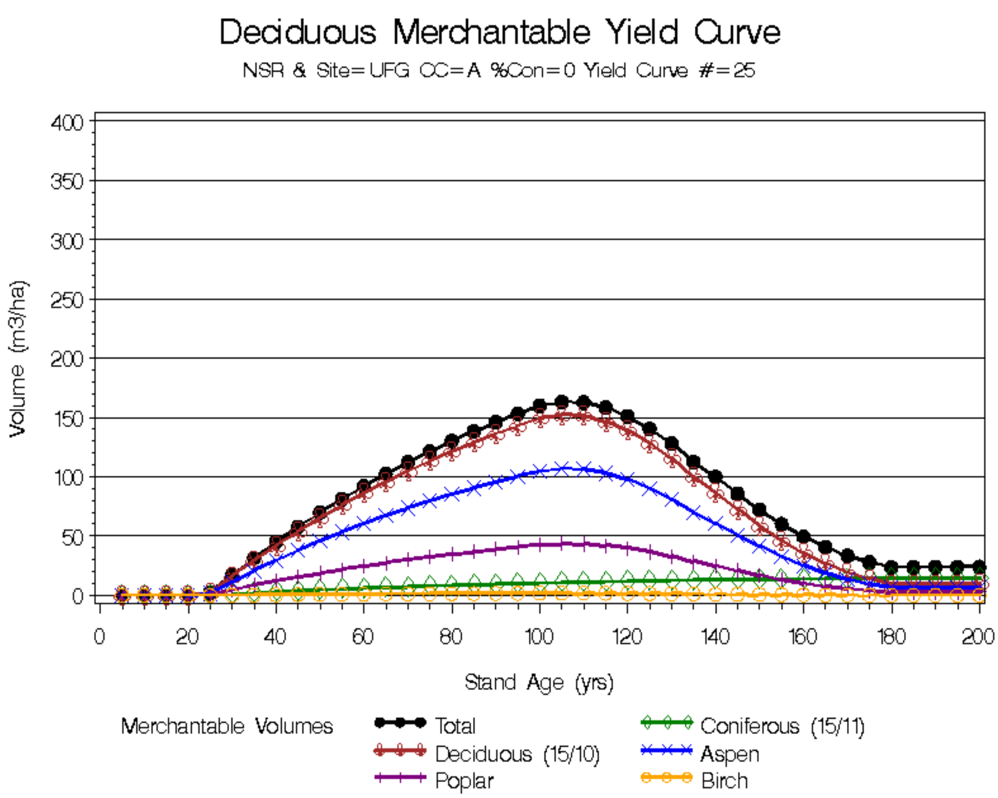
NSR & Site=LFG CC=D %Con=5 Yield Curve #=24

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
10	0	0.0	0	0.0	0	0.0
20	14	0.7	6	0.3	7	0.4
30	56	1.9	26	0.9	29	1.0
40	94	2.3	44	1.1	49	1.2
50	128	2.6	60	1.2	67	1.3
60	159	2.6	75	1.3	84	1.4
70	186	2.7	88	1.3	98	1.4
80	211	2.6	100	1.2	111	1.4
90	233	2.6	110	1.2	123	1.4
100	252	2.5	119	1.2	133	1.3
110	260	2.4	127	1.2	133	1.2
120	256	2.1	134	1.1	122	1.0
130	240	1.8	140	1.1	100	0.8
140	220	1.6	145	1.0	75	0.5
150	200	1.3	149	1.0	51	0.3
160	184	1.1	153	1.0	31	0.2
170	172	1.0	156	0.9	17	0.1
180	166	0.9	158	0.9	8	0.0
190	167	0.9	159	0.8	8	0.0
200	168	0.8	160	0.8	8	0.0



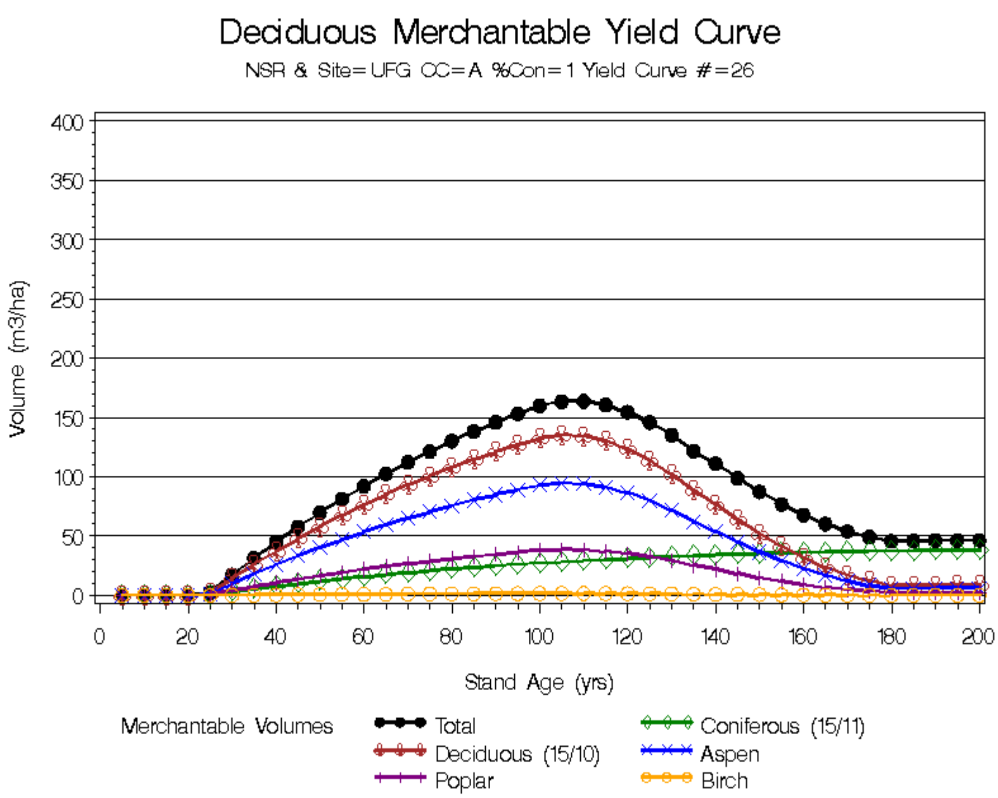
NSR & Site=UFG CC=A %Con=0 Yield Curve #=25

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	17	0.6	1	0.0	16	0.5
40	45	1.1	3	0.1	42	1.1
50	70	1.4	5	0.1	65	1.3
60	92	1.5	6	0.1	86	1.4
70	112	1.6	7	0.1	105	1.5
80	130	1.6	8	0.1	122	1.5
90	146	1.6	9	0.1	137	1.5
100	160	1.6	10	0.1	150	1.5
110	163	1.5	11	0.1	152	1.4
120	151	1.3	12	0.1	139	1.2
130	128	1.0	12	0.1	116	0.9
140	100	0.7	13	0.1	87	0.6
150	72	0.5	13	0.1	59	0.4
160	50	0.3	14	0.1	36	0.2
170	33	0.2	14	0.1	19	0.1
180	24	0.1	14	0.1	9	0.1
190	24	0.1	14	0.1	10	0.1
200	24	0.1	14	0.1	10	0.0



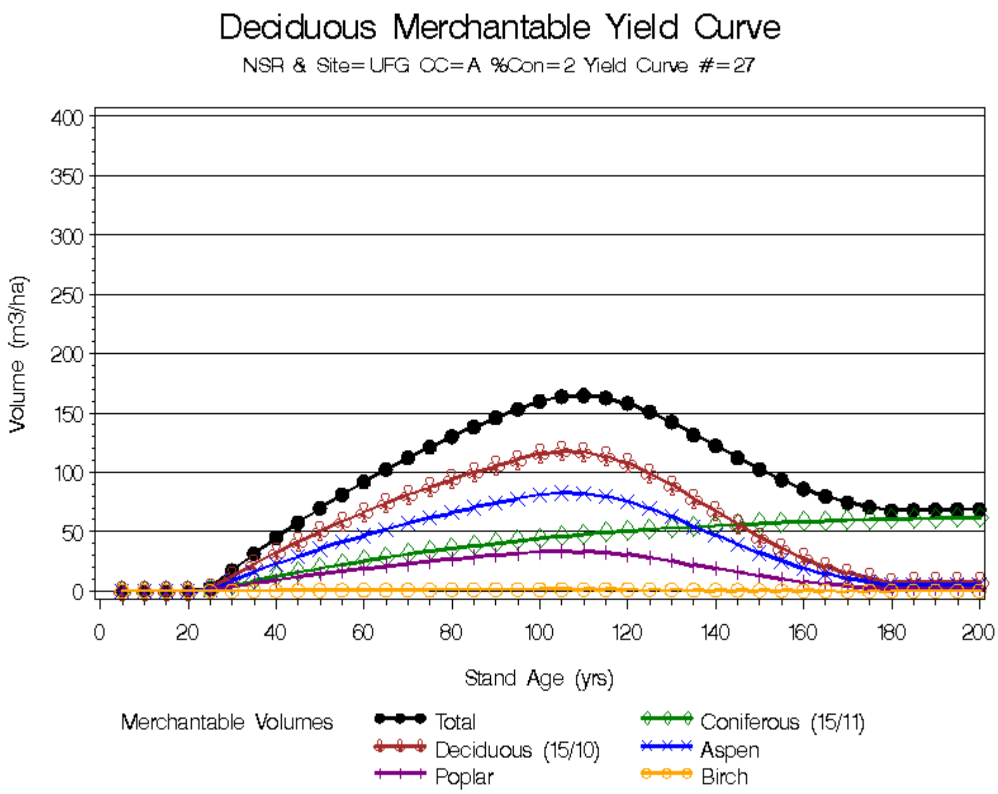
NSR & Site=UFG CC=A %Con=1 Yield Curve #=26

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	17	0.6	3	0.1	14	0.5
40	45	1.1	8	0.2	37	0.9
50	70	1.4	12	0.2	58	1.2
60	92	1.5	16	0.3	77	1.3
70	112	1.6	19	0.3	93	1.3
80	130	1.6	22	0.3	108	1.3
90	146	1.6	25	0.3	121	1.3
100	160	1.6	27	0.3	133	1.3
110	164	1.5	29	0.3	134	1.2
120	155	1.3	31	0.3	123	1.0
130	135	1.0	33	0.3	103	0.8
140	111	0.8	34	0.2	77	0.6
150	87	0.6	35	0.2	52	0.3
160	68	0.4	36	0.2	32	0.2
170	54	0.3	37	0.2	17	0.1
180	46	0.3	37	0.2	8	0.0
190	46	0.2	38	0.2	8	0.0
200	47	0.2	38	0.2	9	0.0



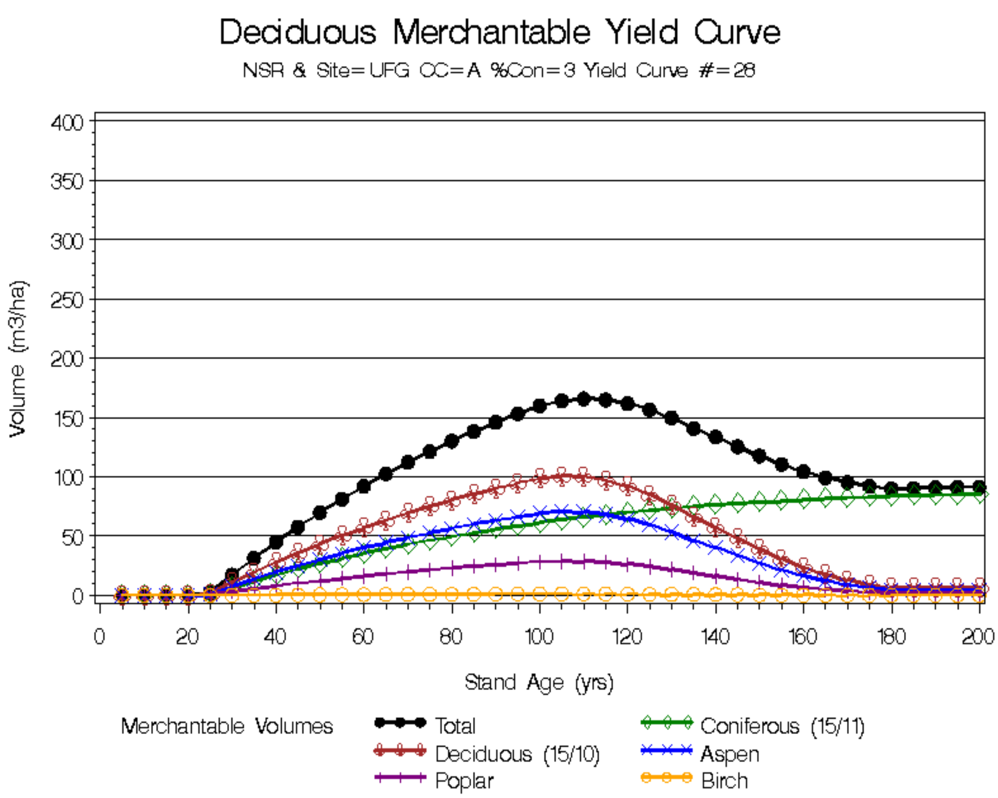
NSR & Site=UFG CC=A %Con=2 Yield Curve #=27

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	17	0.6	5	0.2	13	0.4
40	45	1.1	12	0.3	33	0.8
50	70	1.4	19	0.4	51	1.0
60	92	1.5	25	0.4	67	1.1
70	112	1.6	31	0.4	81	1.2
80	130	1.6	36	0.4	94	1.2
90	146	1.6	40	0.4	106	1.2
100	160	1.6	44	0.4	116	1.2
110	165	1.5	48	0.4	117	1.1
120	158	1.3	51	0.4	108	0.9
130	143	1.1	53	0.4	89	0.7
140	122	0.9	55	0.4	67	0.5
150	103	0.7	57	0.4	46	0.3
160	86	0.5	58	0.4	28	0.2
170	75	0.4	60	0.4	15	0.1
180	68	0.4	61	0.3	7	0.0
190	69	0.4	61	0.3	7	0.0
200	69	0.3	62	0.3	7	0.0



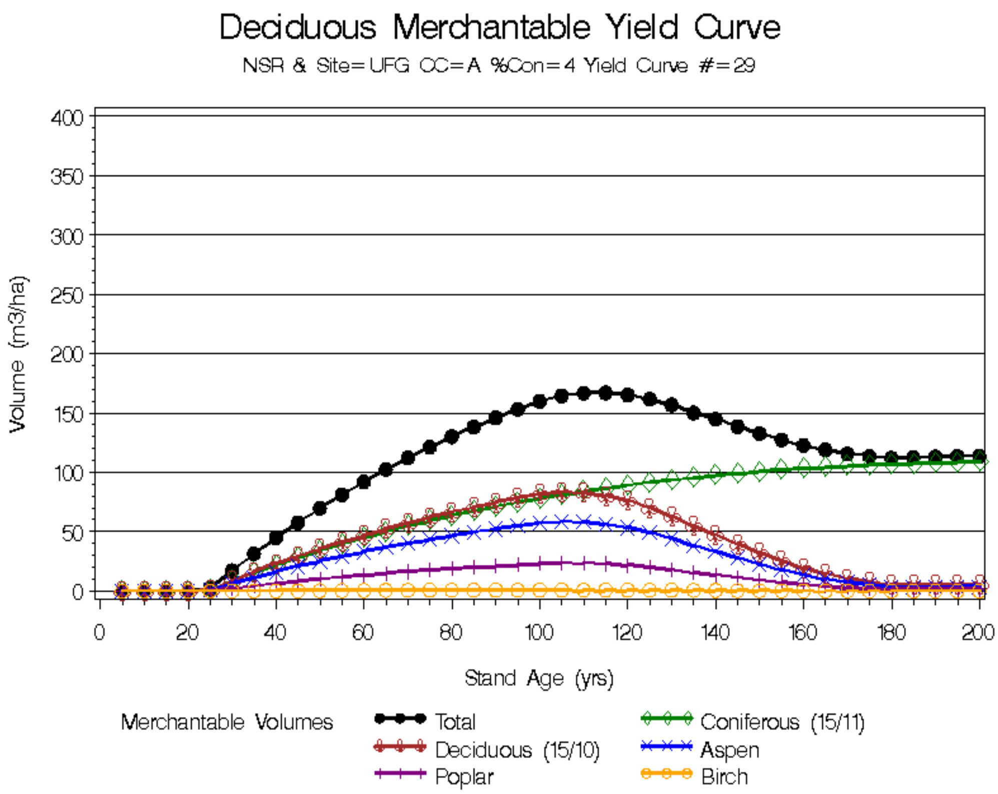
NSR & Site=UFG CC=A %Con=3 Yield Curve #=28

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	17	0.6	7	0.2	11	0.4
40	45	1.1	17	0.4	28	0.7
50	70	1.4	27	0.5	43	0.9
60	92	1.5	35	0.6	57	1.0
70	112	1.6	43	0.6	69	1.0
80	130	1.6	50	0.6	80	1.0
90	146	1.6	56	0.6	90	1.0
100	160	1.6	61	0.6	99	1.0
110	166	1.5	66	0.6	100	0.9
120	162	1.3	70	0.6	92	0.8
130	150	1.2	73	0.6	76	0.6
140	134	1.0	76	0.5	57	0.4
150	118	0.8	79	0.5	39	0.3
160	105	0.7	81	0.5	24	0.1
170	95	0.6	82	0.5	13	0.1
180	90	0.5	84	0.5	6	0.0
190	91	0.5	85	0.4	6	0.0
200	92	0.5	85	0.4	6	0.0



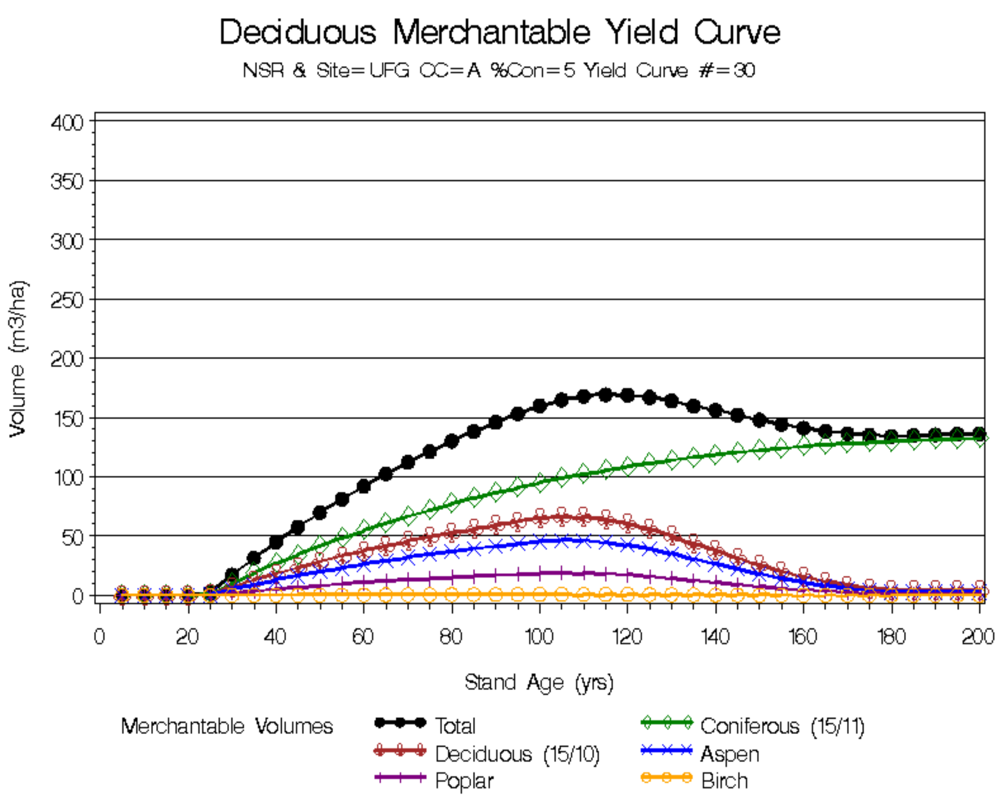
NSR & Site=UFG CC=A %Con=4 Yield Curve #=29

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	17	0.6	8	0.3	9	0.3
40	45	1.1	22	0.5	23	0.6
50	70	1.4	34	0.7	36	0.7
60	92	1.5	45	0.7	47	0.8
70	112	1.6	55	0.8	58	0.8
80	130	1.6	63	0.8	67	0.8
90	146	1.6	71	0.8	75	0.8
100	160	1.6	78	0.8	82	0.8
110	167	1.5	84	0.8	83	0.8
120	165	1.4	89	0.7	76	0.6
130	157	1.2	94	0.7	63	0.5
140	145	1.0	97	0.7	48	0.3
150	133	0.9	101	0.7	32	0.2
160	123	0.8	103	0.6	20	0.1
170	116	0.7	105	0.6	11	0.1
180	112	0.6	107	0.6	5	0.0
190	113	0.6	108	0.6	5	0.0
200	114	0.6	109	0.5	5	0.0



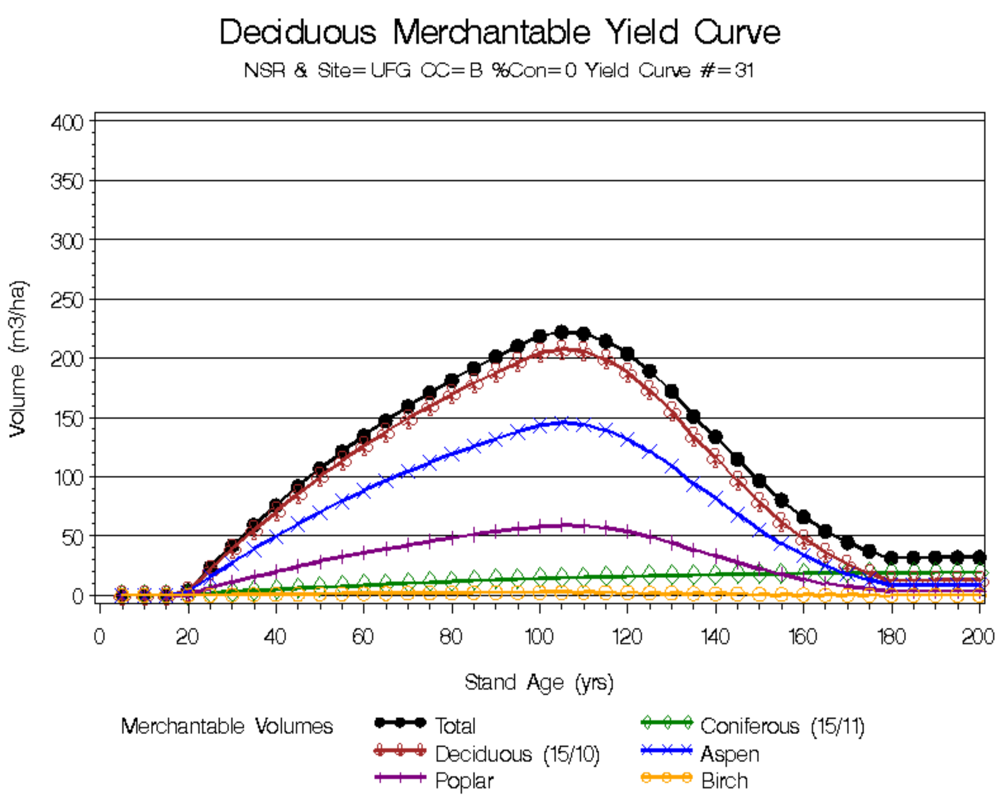
NSR & Site=UFG CC=A %Con=5 Yield Curve #=30

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
10	0	0.0	0	0.0	0	0.0
20	0	0.0	0	0.0	0	0.0
30	17	0.6	10	0.3	7	0.2
40	45	1.1	27	0.7	18	0.5
50	70	1.4	41	0.8	28	0.6
60	92	1.5	55	0.9	38	0.6
70	112	1.6	67	1.0	46	0.7
80	130	1.6	77	1.0	53	0.7
90	146	1.6	87	1.0	59	0.7
100	160	1.6	95	0.9	65	0.7
110	168	1.5	102	0.9	66	0.6
120	169	1.4	108	0.9	61	0.5
130	164	1.3	114	0.9	50	0.4
140	156	1.1	119	0.8	38	0.3
150	148	1.0	122	0.8	26	0.2
160	141	0.9	126	0.8	16	0.1
170	137	0.8	128	0.8	8	0.0
180	134	0.7	130	0.7	4	0.0
190	136	0.7	131	0.7	4	0.0
200	137	0.7	132	0.7	4	0.0



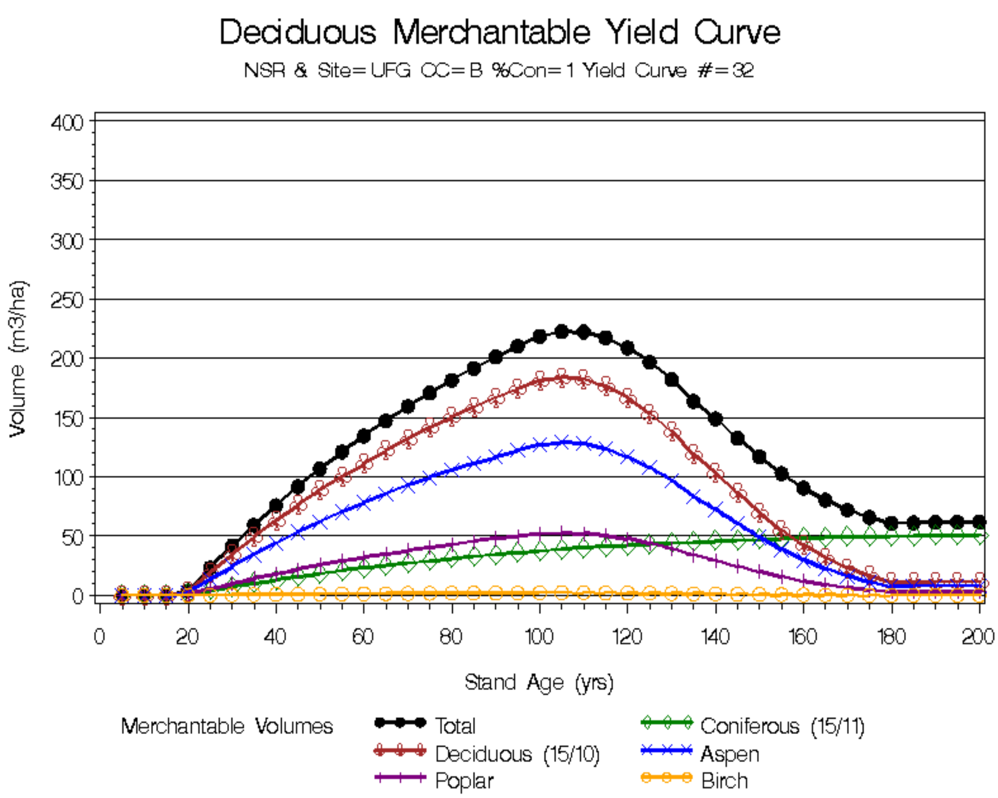
NSR & Site=UFG CC=B %Con=0 Yield Curve #=31

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
10	0	0.0	0	0.0	0	0.0
20	4	0.2	0	0.0	4	0.2
30	42	1.4	3	0.1	39	1.3
40	76	1.9	5	0.1	71	1.8
50	107	2.1	7	0.1	100	2.0
60	135	2.2	9	0.1	126	2.1
70	159	2.3	10	0.1	149	2.1
80	182	2.3	12	0.1	170	2.1
90	201	2.2	13	0.1	188	2.1
100	219	2.2	14	0.1	204	2.0
110	221	2.0	15	0.1	206	1.9
120	204	1.7	16	0.1	188	1.6
130	172	1.3	17	0.1	156	1.2
140	134	1.0	17	0.1	117	0.8
150	97	0.6	18	0.1	79	0.5
160	66	0.4	18	0.1	48	0.3
170	45	0.3	19	0.1	26	0.2
180	32	0.2	19	0.1	13	0.1
190	32	0.2	19	0.1	13	0.1
200	32	0.2	19	0.1	13	0.1



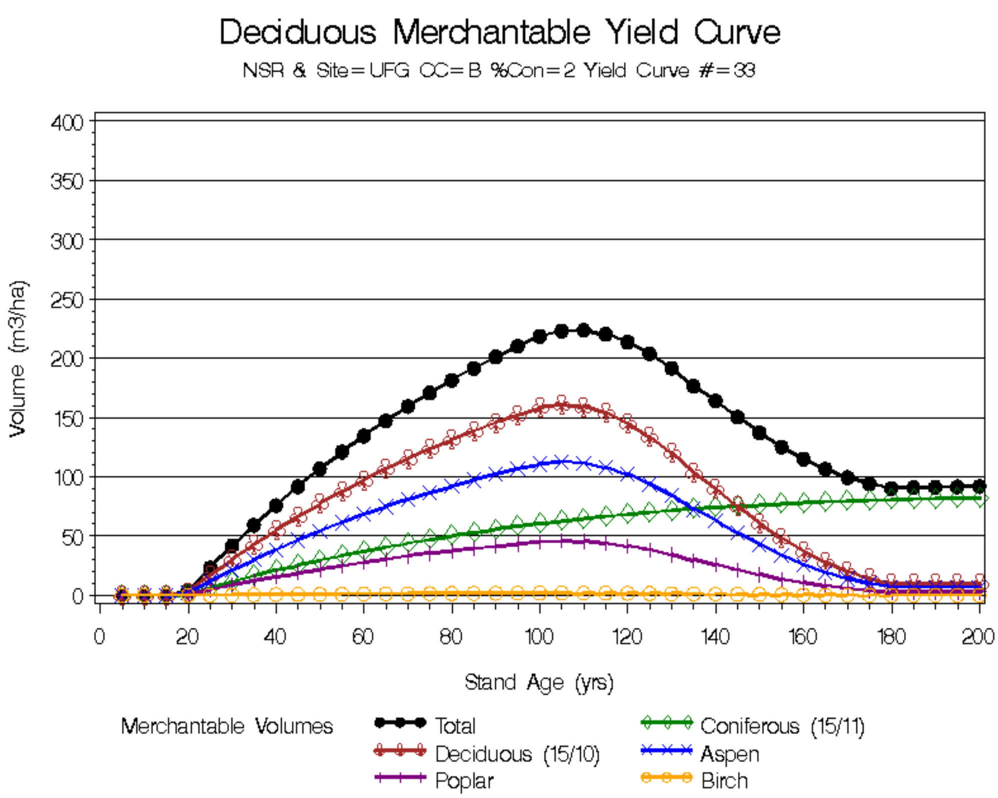
NSR & Site=UFG CC=B %Con=1 Yield Curve #=32

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
10	0	0.0	0	0.0	0	0.0
20	4	0.2	1	0.0	3	0.2
30	42	1.4	7	0.2	35	1.2
40	76	1.9	13	0.3	63	1.6
50	107	2.1	18	0.4	89	1.8
60	135	2.2	23	0.4	112	1.9
70	159	2.3	27	0.4	132	1.9
80	182	2.3	31	0.4	151	1.9
90	201	2.2	34	0.4	167	1.9
100	219	2.2	37	0.4	181	1.8
110	222	2.0	40	0.4	182	1.7
120	209	1.7	42	0.4	167	1.4
130	182	1.4	44	0.3	138	1.1
140	149	1.1	46	0.3	103	0.7
150	117	0.8	47	0.3	70	0.5
160	91	0.6	48	0.3	42	0.3
170	72	0.4	49	0.3	23	0.1
180	61	0.3	50	0.3	11	0.1
190	62	0.3	50	0.3	11	0.1
200	62	0.3	51	0.3	11	0.1



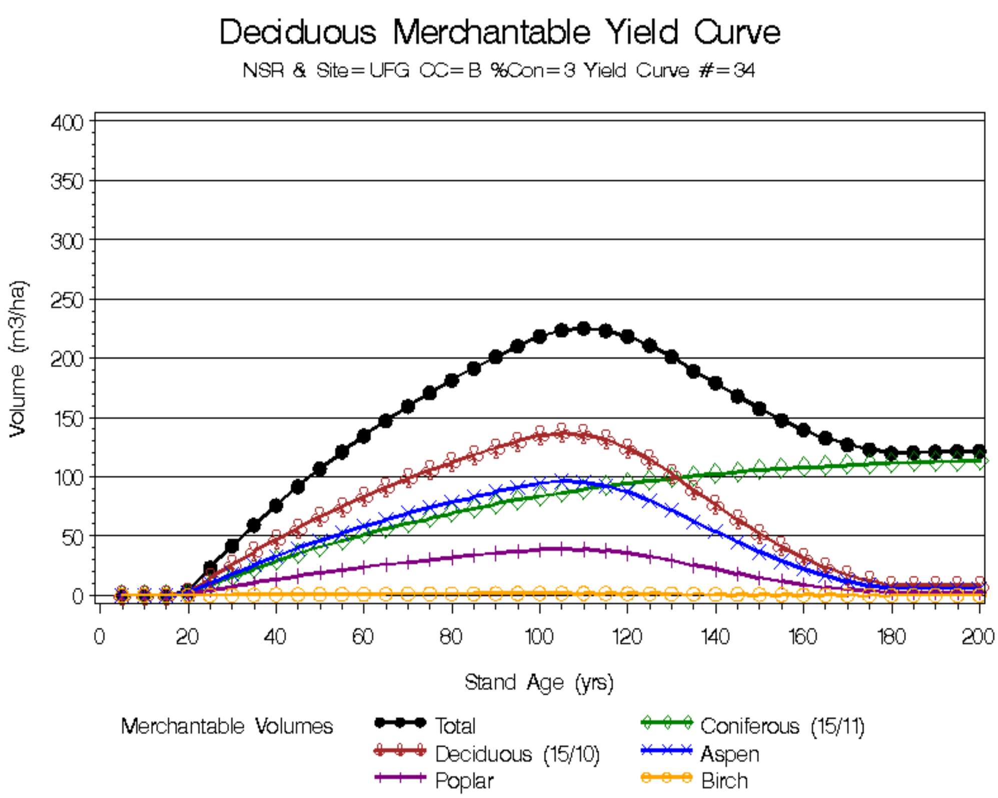
NSR & Site=UFG CC=B %Con=2 Yield Curve #=33

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
10	0	0.0	0	0.0	0	0.0
20	4	0.2	1	0.1	3	0.1
30	42	1.4	12	0.4	30	1.0
40	76	1.9	21	0.5	55	1.4
50	107	2.1	30	0.6	77	1.5
60	135	2.2	37	0.6	97	1.6
70	159	2.3	44	0.6	115	1.6
80	182	2.3	50	0.6	131	1.6
90	201	2.2	56	0.6	146	1.6
100	219	2.2	60	0.6	158	1.6
110	224	2.0	65	0.6	159	1.4
120	214	1.8	68	0.6	146	1.2
130	192	1.5	71	0.5	120	0.9
140	164	1.2	74	0.5	90	0.6
150	137	0.9	76	0.5	61	0.4
160	115	0.7	78	0.5	37	0.2
170	100	0.6	80	0.5	20	0.1
180	90	0.5	81	0.4	10	0.1
190	91	0.5	81	0.4	10	0.1
200	92	0.5	82	0.4	10	0.0



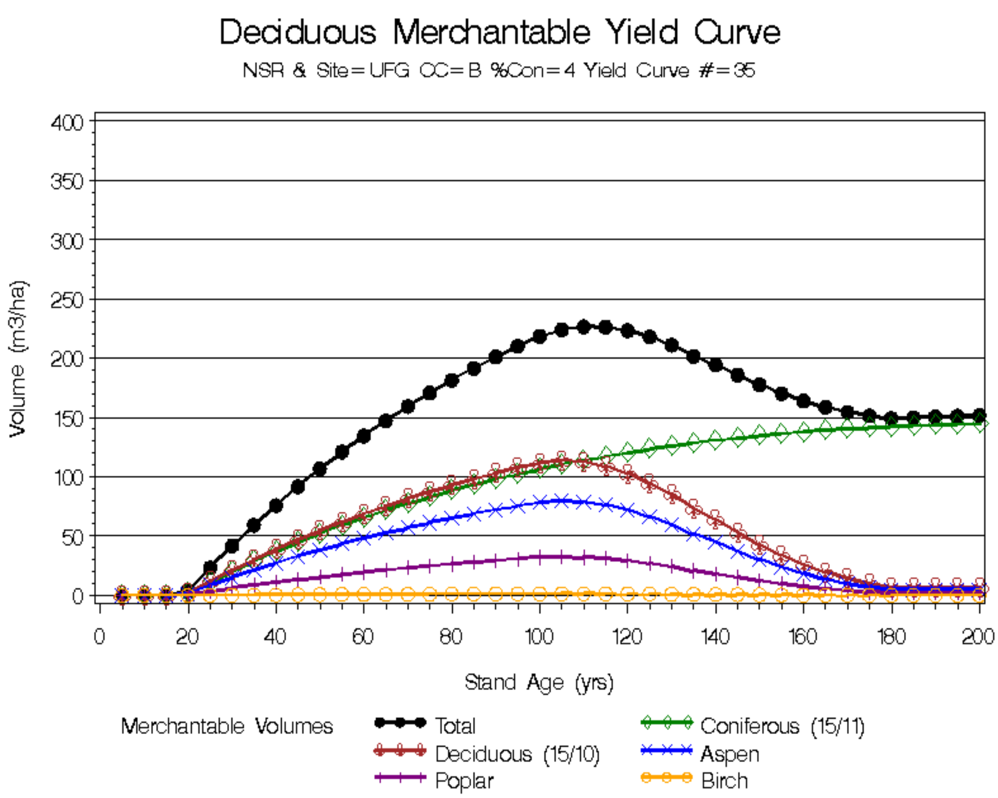
NSR & Site=UFG CC=B %Con=3 Yield Curve #=34

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
10	0	0.0	0	0.0	0	0.0
20	4	0.2	1	0.1	2	0.1
30	42	1.4	16	0.5	26	0.9
40	76	1.9	29	0.7	47	1.2
50	107	2.1	41	0.8	66	1.3
60	135	2.2	51	0.9	83	1.4
70	159	2.3	61	0.9	99	1.4
80	182	2.3	69	0.9	112	1.4
90	201	2.2	77	0.9	124	1.4
100	219	2.2	83	0.8	135	1.4
110	225	2.0	89	0.8	136	1.2
120	219	1.8	94	0.8	124	1.0
130	201	1.5	99	0.8	103	0.8
140	179	1.3	102	0.7	77	0.6
150	157	1.0	105	0.7	52	0.3
160	140	0.9	108	0.7	32	0.2
170	127	0.7	110	0.6	17	0.1
180	120	0.7	112	0.6	8	0.0
190	121	0.6	113	0.6	8	0.0
200	122	0.6	113	0.6	8	0.0



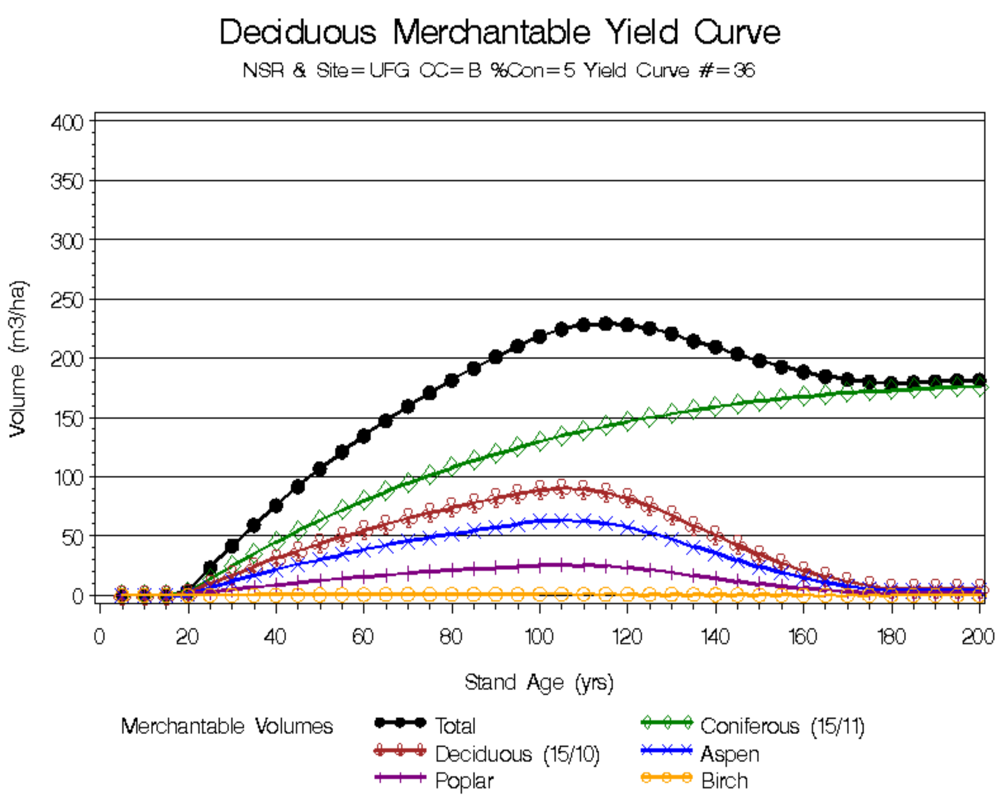
NSR & Site=UFG CC=B %Con=4 Yield Curve #=35

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
10	0	0.0	0	0.0	0	0.0
20	4	0.2	2	0.1	2	0.1
30	42	1.4	20	0.7	21	0.7
40	76	1.9	37	0.9	39	1.0
50	107	2.1	52	1.0	55	1.1
60	135	2.2	66	1.1	69	1.1
70	159	2.3	78	1.1	82	1.2
80	182	2.3	89	1.1	93	1.2
90	201	2.2	98	1.1	103	1.1
100	219	2.2	107	1.1	112	1.1
110	227	2.1	114	1.0	113	1.0
120	223	1.9	120	1.0	103	0.9
130	211	1.6	126	1.0	85	0.7
140	195	1.4	131	0.9	64	0.5
150	178	1.2	135	0.9	43	0.3
160	164	1.0	138	0.9	26	0.2
170	155	0.9	140	0.8	14	0.1
180	149	0.8	142	0.8	7	0.0
190	151	0.8	144	0.8	7	0.0
200	152	0.8	145	0.7	7	0.0



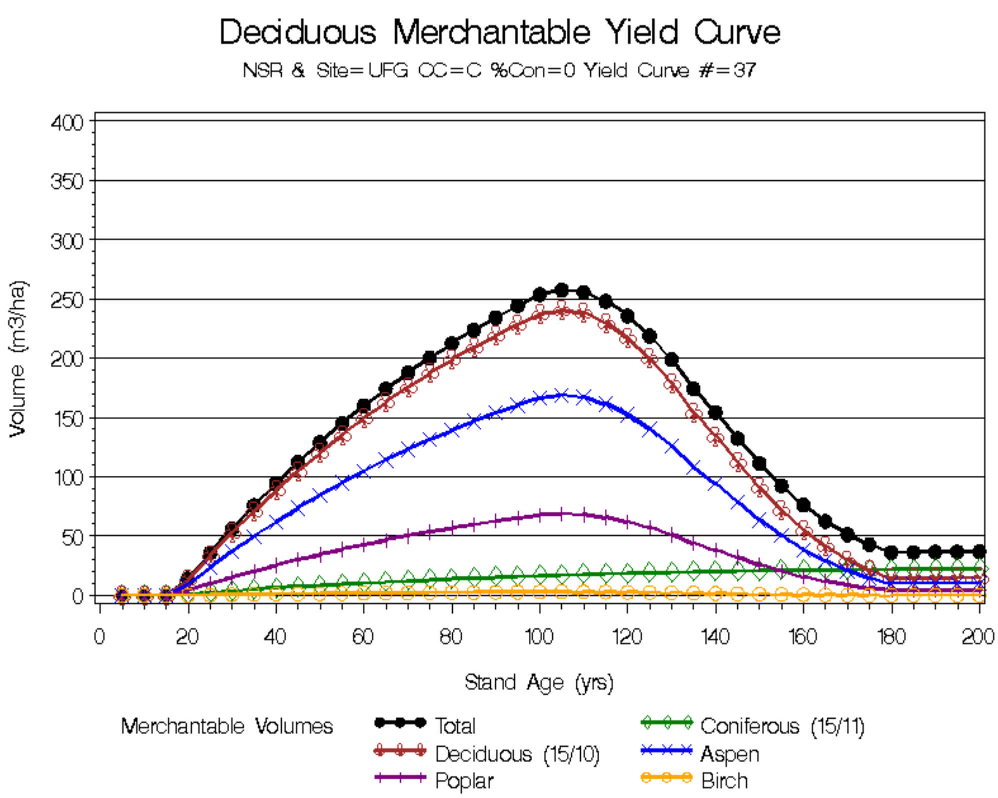
NSR & Site=UFG CC=B %Con=5 Yield Curve #=36

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
10	0	0.0	0	0.0	0	0.0
20	4	0.2	2	0.1	2	0.1
30	42	1.4	25	0.8	17	0.6
40	76	1.9	45	1.1	31	0.8
50	107	2.1	63	1.3	43	0.9
60	135	2.2	80	1.3	55	0.9
70	159	2.3	95	1.4	65	0.9
80	182	2.3	108	1.3	74	0.9
90	201	2.2	119	1.3	82	0.9
100	219	2.2	130	1.3	89	0.9
110	228	2.1	139	1.3	89	0.8
120	228	1.9	147	1.2	82	0.7
130	221	1.7	153	1.2	68	0.5
140	210	1.5	159	1.1	51	0.4
150	198	1.3	164	1.1	34	0.2
160	189	1.2	168	1.0	21	0.1
170	182	1.1	171	1.0	11	0.1
180	179	1.0	173	1.0	5	0.0
190	181	1.0	175	0.9	6	0.0
200	182	0.9	176	0.9	6	0.0



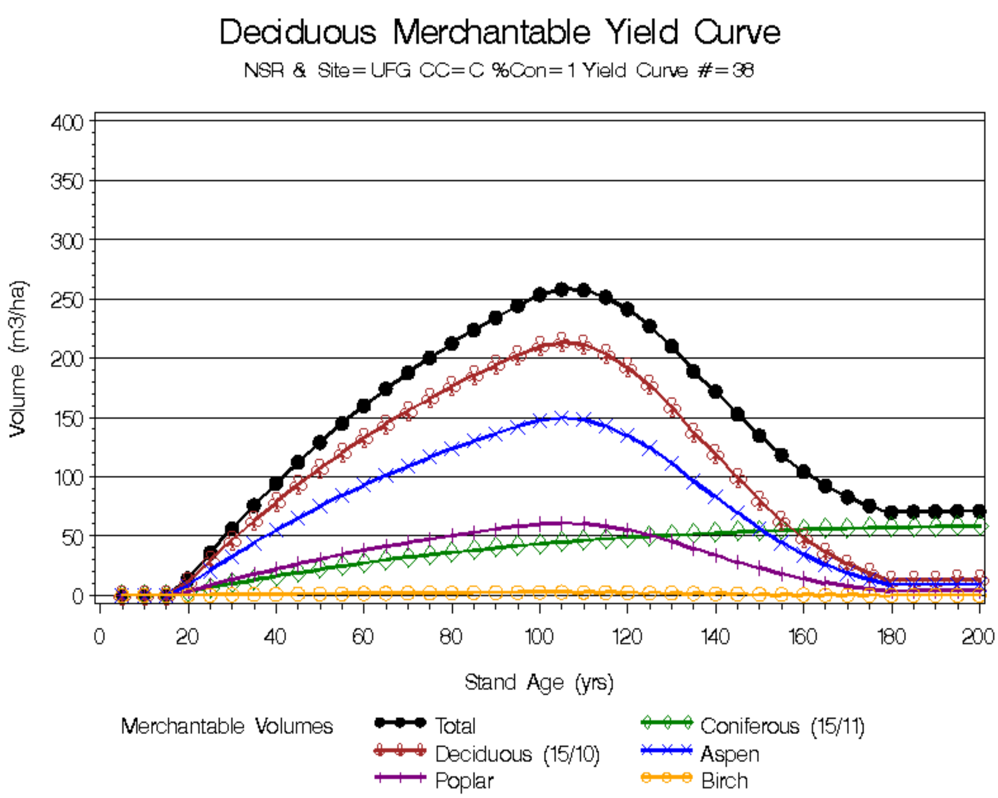
NSR & Site=UFG CC=C %Con=0 Yield Curve #=37

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
10	0	0.0	0	0.0	0	0.0
20	14	0.7	1	0.0	13	0.7
30	56	1.9	4	0.1	53	1.8
40	95	2.4	6	0.2	88	2.2
50	129	2.6	8	0.2	121	2.4
60	160	2.7	10	0.2	150	2.5
70	188	2.7	12	0.2	176	2.5
80	213	2.7	14	0.2	199	2.5
90	234	2.6	15	0.2	219	2.4
100	254	2.5	16	0.2	237	2.4
110	256	2.3	18	0.2	238	2.2
120	236	2.0	19	0.2	217	1.8
130	199	1.5	19	0.1	180	1.4
140	154	1.1	20	0.1	134	1.0
150	111	0.7	21	0.1	91	0.6
160	76	0.5	21	0.1	55	0.3
170	51	0.3	22	0.1	30	0.2
180	36	0.2	22	0.1	14	0.1
190	37	0.2	22	0.1	15	0.1
200	37	0.2	22	0.1	15	0.1



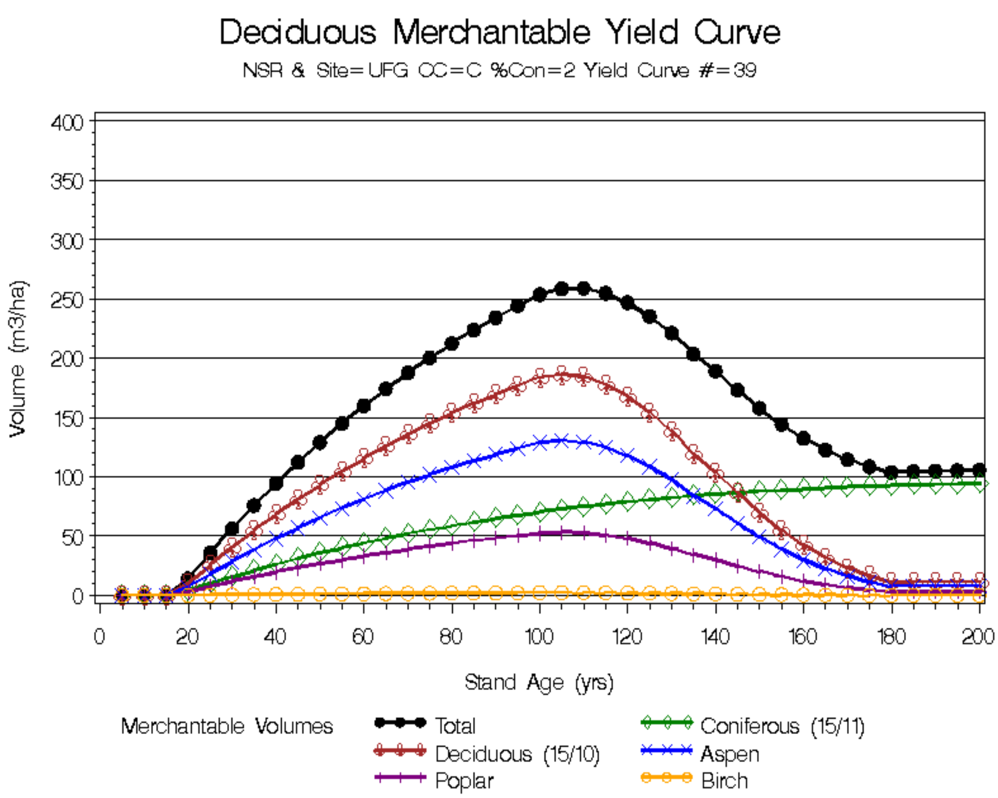
NSR & Site=UFG CC=C %Con=1 Yield Curve #=38

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
10	0	0.0	0	0.0	0	0.0
20	14	0.7	2	0.1	12	0.6
30	56	1.9	10	0.3	47	1.6
40	95	2.4	16	0.4	78	2.0
50	129	2.6	22	0.4	107	2.1
60	160	2.7	27	0.5	133	2.2
70	188	2.7	32	0.5	156	2.2
80	213	2.7	36	0.5	176	2.2
90	234	2.6	40	0.4	194	2.2
100	254	2.5	43	0.4	211	2.1
110	258	2.3	46	0.4	211	1.9
120	241	2.0	49	0.4	193	1.6
130	210	1.6	51	0.4	159	1.2
140	172	1.2	53	0.4	119	0.9
150	135	0.9	54	0.4	80	0.5
160	104	0.7	56	0.3	49	0.3
170	83	0.5	57	0.3	26	0.2
180	70	0.4	57	0.3	13	0.1
190	71	0.4	58	0.3	13	0.1
200	71	0.4	58	0.3	13	0.1



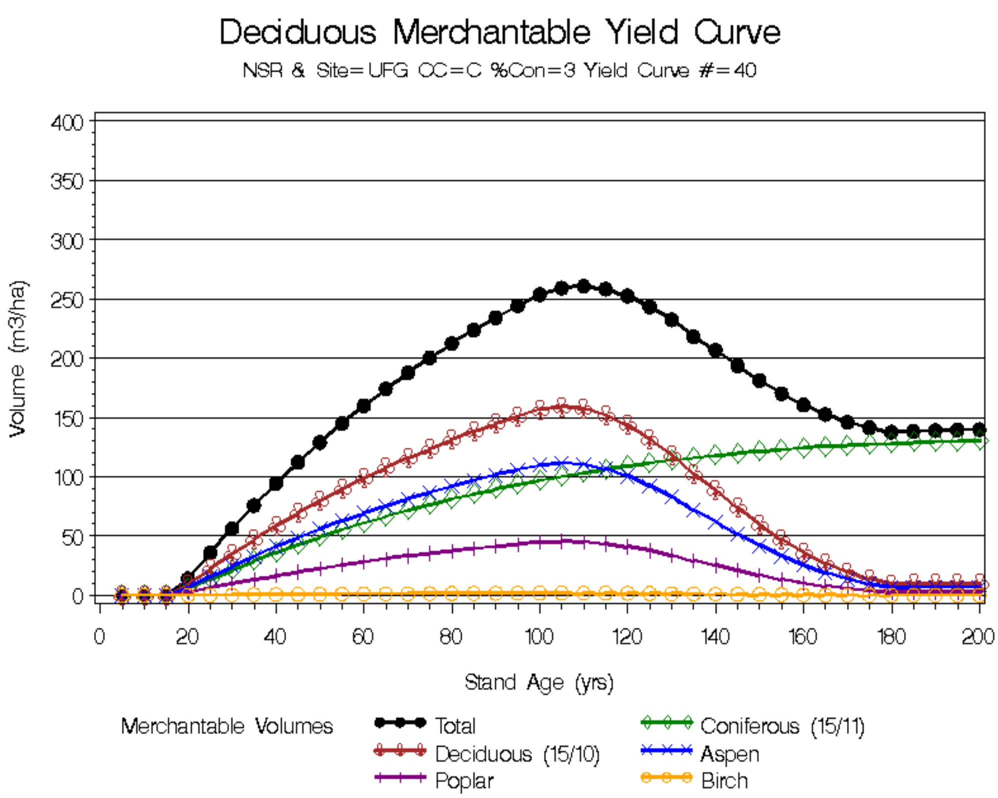
NSR & Site=UFG CC=C %Con=2 Yield Curve #=39

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
10	0	0.0	0	0.0	0	0.0
20	14	0.7	4	0.2	10	0.5
30	56	1.9	16	0.5	41	1.4
40	95	2.4	26	0.7	68	1.7
50	129	2.6	36	0.7	93	1.9
60	160	2.7	44	0.7	116	1.9
70	188	2.7	52	0.7	136	1.9
80	213	2.7	59	0.7	154	1.9
90	234	2.6	65	0.7	170	1.9
100	254	2.5	70	0.7	184	1.8
110	259	2.4	75	0.7	184	1.7
120	247	2.1	79	0.7	168	1.4
130	221	1.7	82	0.6	139	1.1
140	189	1.4	85	0.6	104	0.7
150	158	1.1	88	0.6	70	0.5
160	133	0.8	90	0.6	43	0.3
170	115	0.7	92	0.5	23	0.1
180	104	0.6	93	0.5	11	0.1
190	105	0.6	94	0.5	11	0.1
200	106	0.5	94	0.5	11	0.1



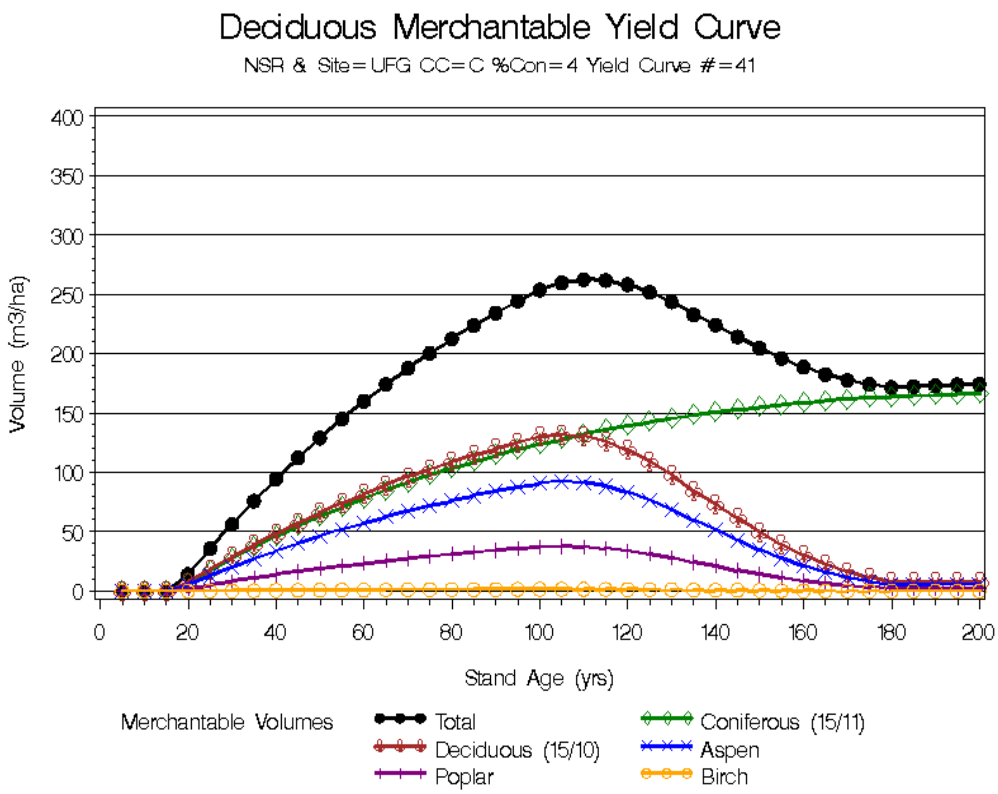
NSR & Site=UFG CC=C %Con=3 Yield Curve #=40

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
10	0	0.0	0	0.0	0	0.0
20	14	0.7	5	0.3	9	0.4
30	56	1.9	22	0.7	35	1.2
40	95	2.4	36	0.9	58	1.5
50	129	2.6	49	1.0	80	1.6
60	160	2.7	61	1.0	99	1.6
70	188	2.7	72	1.0	116	1.7
80	213	2.7	81	1.0	131	1.6
90	234	2.6	90	1.0	145	1.6
100	254	2.5	97	1.0	157	1.6
110	261	2.4	103	0.9	157	1.4
120	253	2.1	109	0.9	144	1.2
130	233	1.8	114	0.9	119	0.9
140	207	1.5	118	0.8	89	0.6
150	181	1.2	121	0.8	60	0.4
160	161	1.0	124	0.8	36	0.2
170	146	0.9	127	0.7	20	0.1
180	138	0.8	128	0.7	10	0.1
190	139	0.7	130	0.7	10	0.1
200	140	0.7	130	0.7	10	0.0



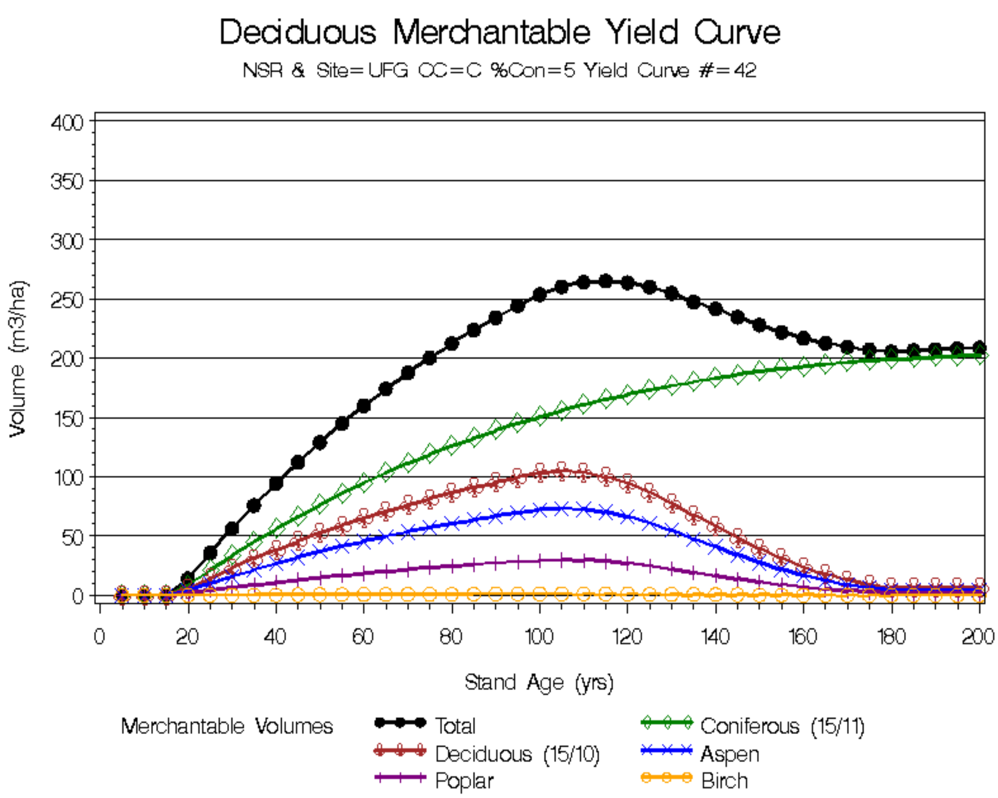
NSR & Site=UFG CC=C %Con=4 Yield Curve #=41

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
10	0	0.0	0	0.0	0	0.0
20	14	0.7	7	0.3	7	0.4
30	56	1.9	27	0.9	29	1.0
40	95	2.4	46	1.2	48	1.2
50	129	2.6	63	1.3	66	1.3
60	160	2.7	78	1.3	82	1.4
70	188	2.7	92	1.3	96	1.4
80	213	2.7	104	1.3	109	1.4
90	234	2.6	114	1.3	120	1.3
100	254	2.5	124	1.2	130	1.3
110	263	2.4	132	1.2	131	1.2
120	258	2.2	139	1.2	119	1.0
130	244	1.9	145	1.1	98	0.8
140	224	1.6	151	1.1	74	0.5
150	205	1.4	155	1.0	50	0.3
160	189	1.2	159	1.0	30	0.2
170	178	1.0	162	1.0	16	0.1
180	172	1.0	164	0.9	8	0.0
190	173	0.9	165	0.9	8	0.0
200	174	0.9	166	0.8	8	0.0



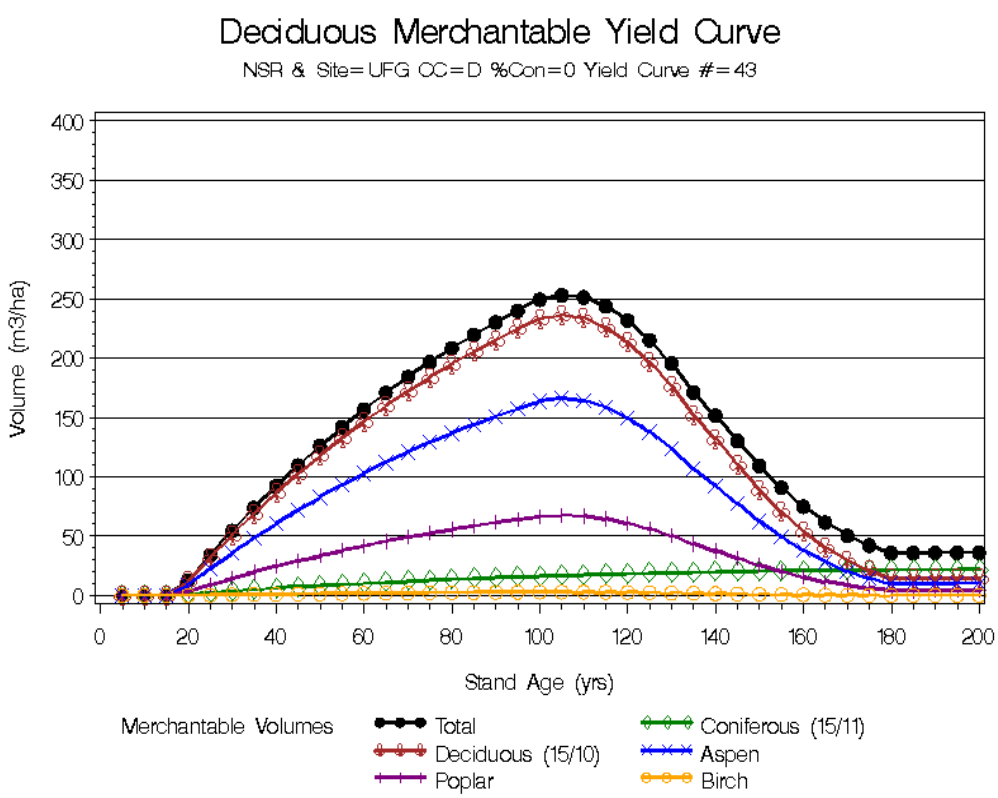
NSR & Site=UFG CC=C %Con=5 Yield Curve #=42

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
10	0	0.0	0	0.0	0	0.0
20	14	0.7	8	0.4	6	0.3
30	56	1.9	33	1.1	23	0.8
40	95	2.4	56	1.4	38	1.0
50	129	2.6	77	1.5	52	1.0
60	160	2.7	95	1.6	65	1.1
70	188	2.7	111	1.6	76	1.1
80	213	2.7	126	1.6	86	1.1
90	234	2.6	139	1.5	95	1.1
100	254	2.5	151	1.5	103	1.0
110	264	2.4	161	1.5	104	0.9
120	264	2.2	169	1.4	95	0.8
130	255	2.0	177	1.4	78	0.6
140	242	1.7	183	1.3	58	0.4
150	228	1.5	189	1.3	39	0.3
160	217	1.4	193	1.2	24	0.1
170	209	1.2	197	1.2	13	0.1
180	206	1.1	199	1.1	6	0.0
190	208	1.1	201	1.1	6	0.0
200	209	1.0	202	1.0	6	0.0



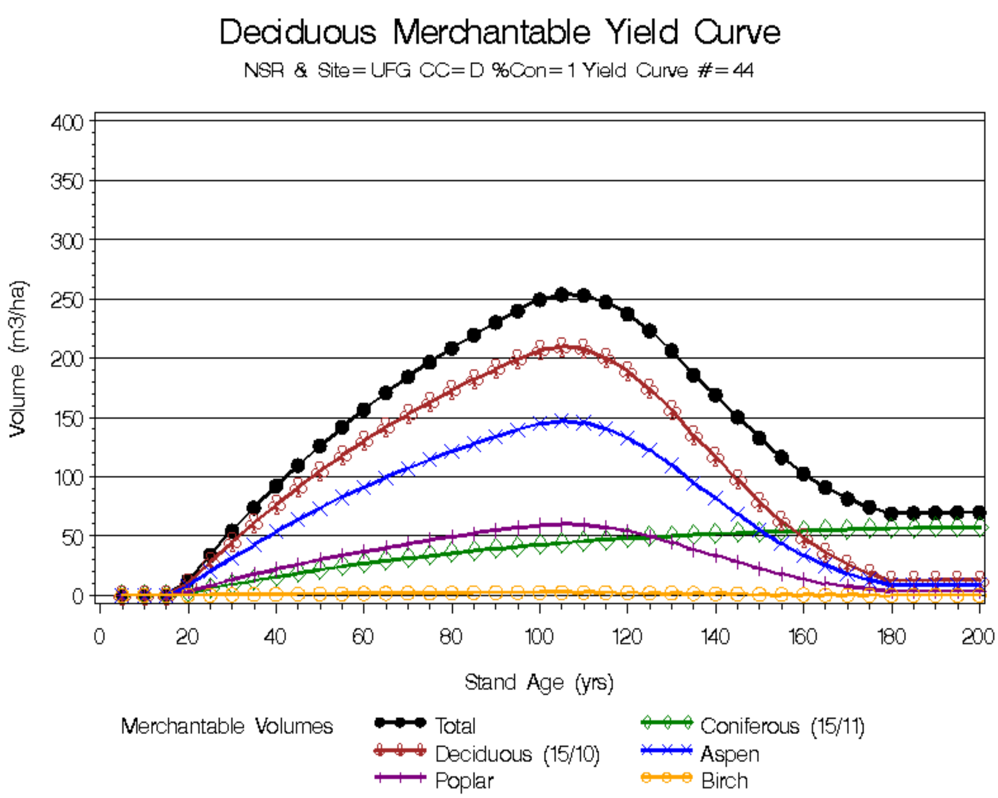
NSR & Site=UFG CC=D %Con=0 Yield Curve #=43

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
10	0	0.0	0	0.0	0	0.0
20	13	0.6	1	0.0	12	0.6
30	54	1.8	4	0.1	51	1.7
40	92	2.3	6	0.1	86	2.2
50	126	2.5	8	0.2	118	2.4
60	157	2.6	10	0.2	147	2.4
70	184	2.6	12	0.2	172	2.5
80	209	2.6	14	0.2	195	2.4
90	230	2.6	15	0.2	215	2.4
100	249	2.5	16	0.2	233	2.3
110	252	2.3	17	0.2	234	2.1
120	232	1.9	18	0.2	214	1.8
130	196	1.5	19	0.1	177	1.4
140	152	1.1	20	0.1	132	0.9
150	110	0.7	20	0.1	89	0.6
160	75	0.5	21	0.1	54	0.3
170	50	0.3	21	0.1	29	0.2
180	36	0.2	21	0.1	14	0.1
190	36	0.2	22	0.1	14	0.1
200	36	0.2	22	0.1	14	0.1



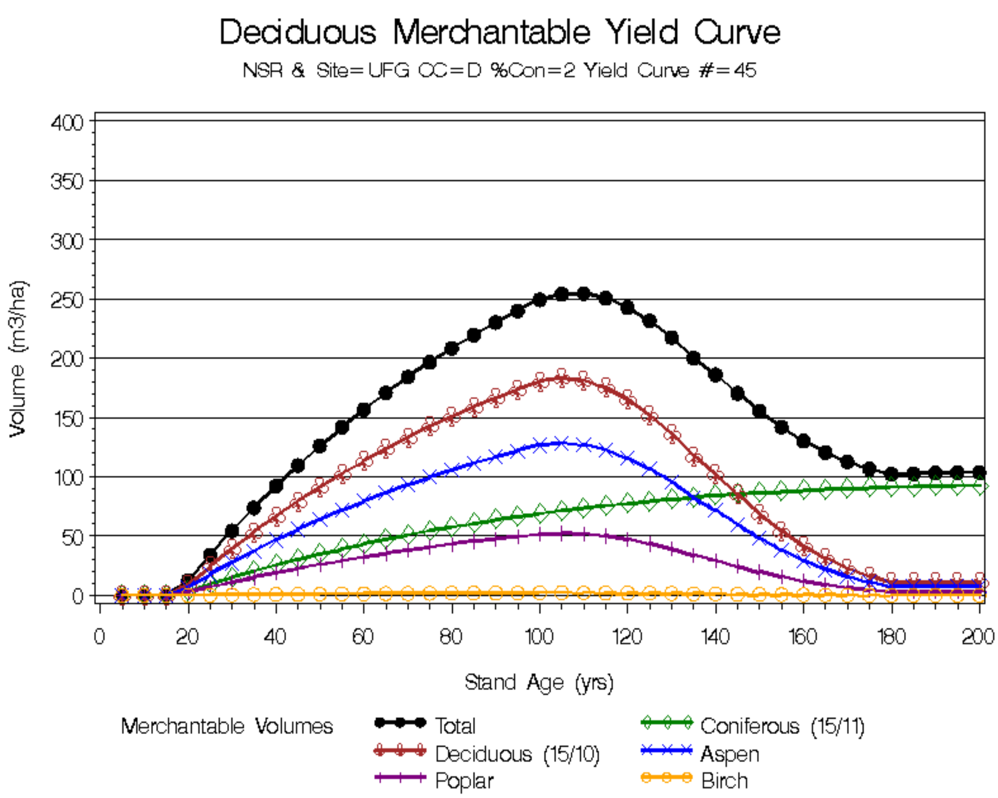
NSR & Site=UFG CC=D %Con=1 Yield Curve #=44

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
10	0	0.0	0	0.0	0	0.0
20	13	0.6	2	0.1	11	0.5
30	54	1.8	9	0.3	45	1.5
40	92	2.3	16	0.4	76	1.9
50	126	2.5	22	0.4	105	2.1
60	157	2.6	27	0.4	130	2.2
70	184	2.6	31	0.4	153	2.2
80	209	2.6	36	0.4	173	2.2
90	230	2.6	39	0.4	191	2.1
100	249	2.5	43	0.4	207	2.1
110	253	2.3	45	0.4	208	1.9
120	237	2.0	48	0.4	190	1.6
130	207	1.6	50	0.4	157	1.2
140	169	1.2	52	0.4	117	0.8
150	132	0.9	53	0.4	79	0.5
160	103	0.6	55	0.3	48	0.3
170	82	0.5	56	0.3	26	0.2
180	69	0.4	56	0.3	13	0.1
190	70	0.4	57	0.3	13	0.1
200	70	0.4	57	0.3	13	0.1



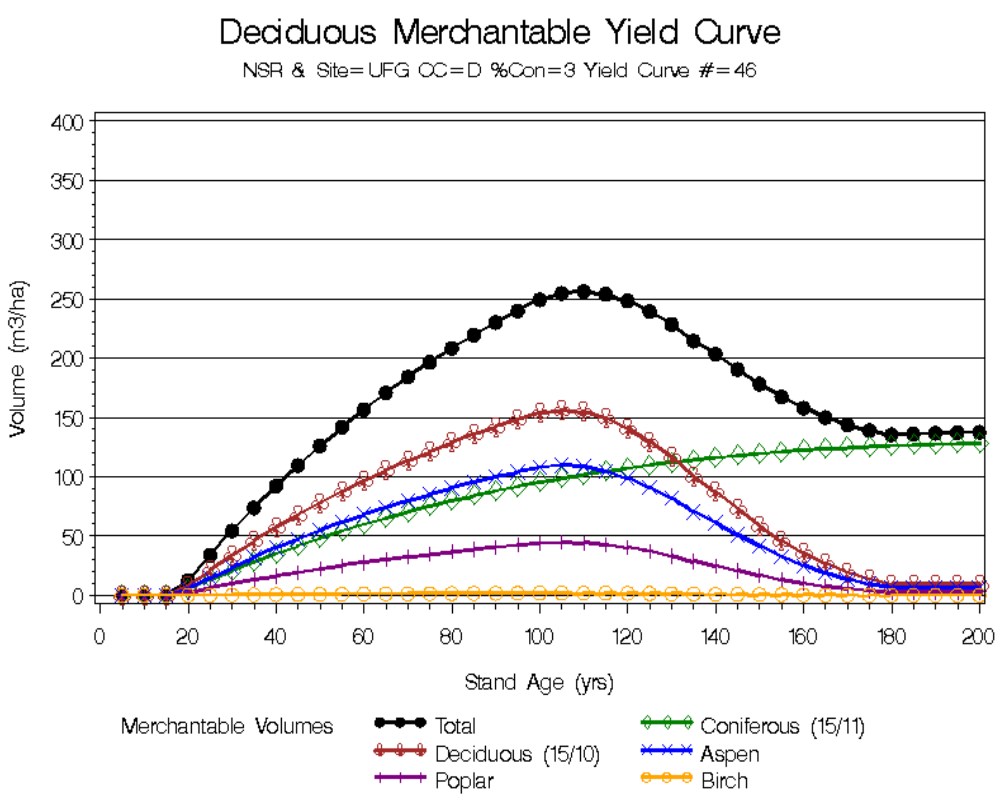
NSR & Site=UFG CC=D %Con=2 Yield Curve #=45

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
10	0	0.0	0	0.0	0	0.0
20	13	0.6	4	0.2	9	0.5
30	54	1.8	15	0.5	39	1.3
40	92	2.3	25	0.6	67	1.7
50	126	2.5	35	0.7	91	1.8
60	157	2.6	43	0.7	114	1.9
70	184	2.6	51	0.7	133	1.9
80	209	2.6	58	0.7	151	1.9
90	230	2.6	64	0.7	167	1.9
100	249	2.5	69	0.7	181	1.8
110	255	2.3	74	0.7	181	1.6
120	243	2.0	78	0.6	165	1.4
130	218	1.7	81	0.6	137	1.1
140	186	1.3	84	0.6	102	0.7
150	155	1.0	86	0.6	69	0.5
160	130	0.8	88	0.6	42	0.3
170	113	0.7	90	0.5	23	0.1
180	102	0.6	91	0.5	11	0.1
190	103	0.5	92	0.5	11	0.1
200	104	0.5	93	0.5	11	0.1



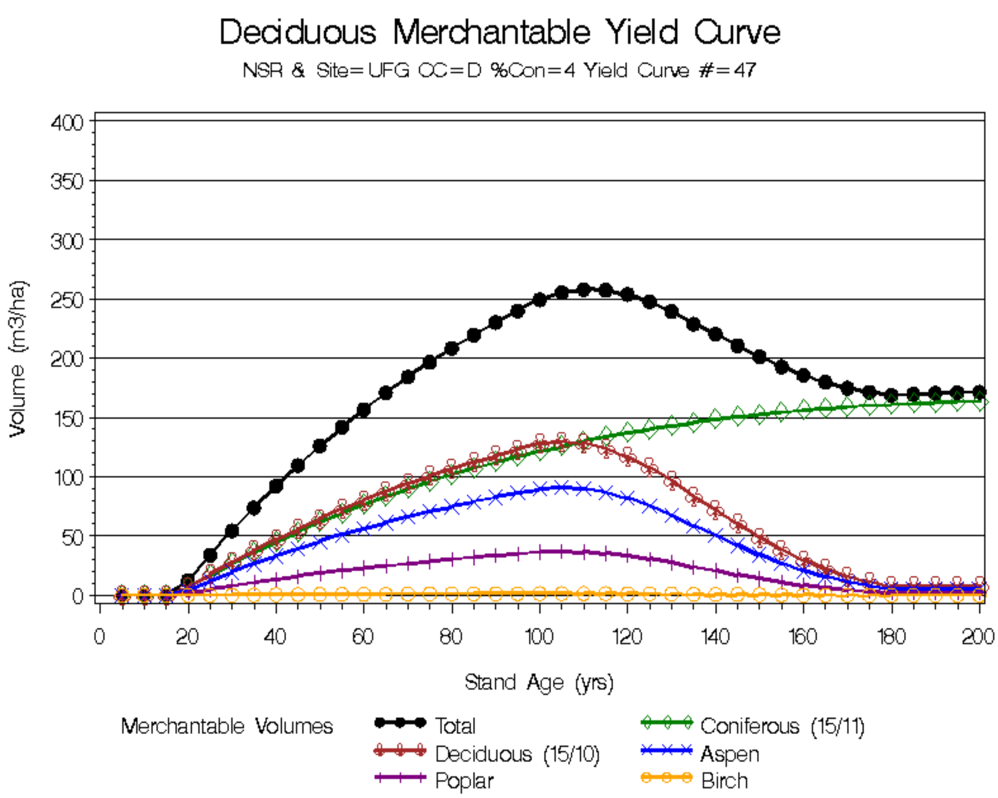
NSR & Site=UFG CC=D %Con=3 Yield Curve #=46

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
10	0	0.0	0	0.0	0	0.0
20	13	0.6	5	0.2	8	0.4
30	54	1.8	21	0.7	34	1.1
40	92	2.3	35	0.9	57	1.4
50	126	2.5	48	1.0	78	1.6
60	157	2.6	60	1.0	97	1.6
70	184	2.6	70	1.0	114	1.6
80	209	2.6	80	1.0	129	1.6
90	230	2.6	88	1.0	142	1.6
100	249	2.5	95	1.0	154	1.5
110	256	2.3	102	0.9	155	1.4
120	248	2.1	107	0.9	141	1.2
130	229	1.8	112	0.9	117	0.9
140	203	1.5	116	0.8	87	0.6
150	178	1.2	119	0.8	59	0.4
160	158	1.0	122	0.8	36	0.2
170	144	0.8	124	0.7	19	0.1
180	136	0.8	126	0.7	9	0.1
190	137	0.7	127	0.7	9	0.0
200	138	0.7	128	0.6	10	0.0



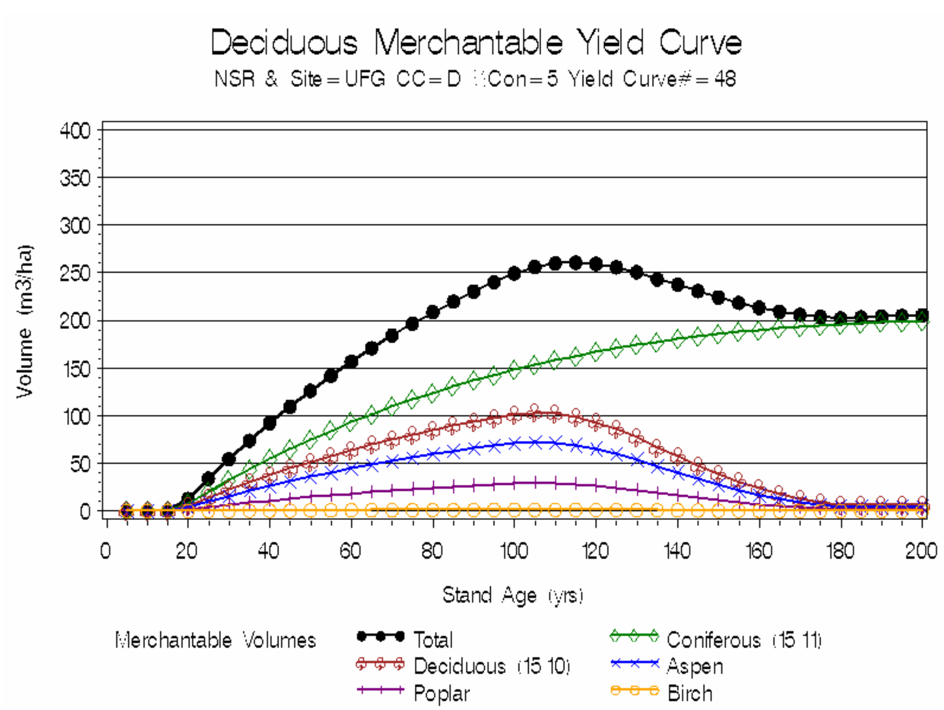
NSR & Site=UFG CC=D %Con=4 Yield Curve #=47

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
10	0	0.0	0	0.0	0	0.0
20	13	0.6	6	0.3	7	0.3
30	54	1.8	27	0.9	28	0.9
40	92	2.3	45	1.1	47	1.2
50	126	2.5	62	1.2	65	1.3
60	157	2.6	76	1.3	80	1.3
70	184	2.6	90	1.3	94	1.3
80	209	2.6	102	1.3	107	1.3
90	230	2.6	112	1.2	118	1.3
100	249	2.5	122	1.2	128	1.3
110	258	2.3	130	1.2	128	1.2
120	254	2.1	137	1.1	117	1.0
130	240	1.8	143	1.1	97	0.7
140	221	1.6	148	1.1	72	0.5
150	201	1.3	153	1.0	49	0.3
160	186	1.2	156	1.0	30	0.2
170	175	1.0	159	0.9	16	0.1
180	169	0.9	161	0.9	8	0.0
190	171	0.9	163	0.9	8	0.0
200	172	0.9	164	0.8	8	0.0



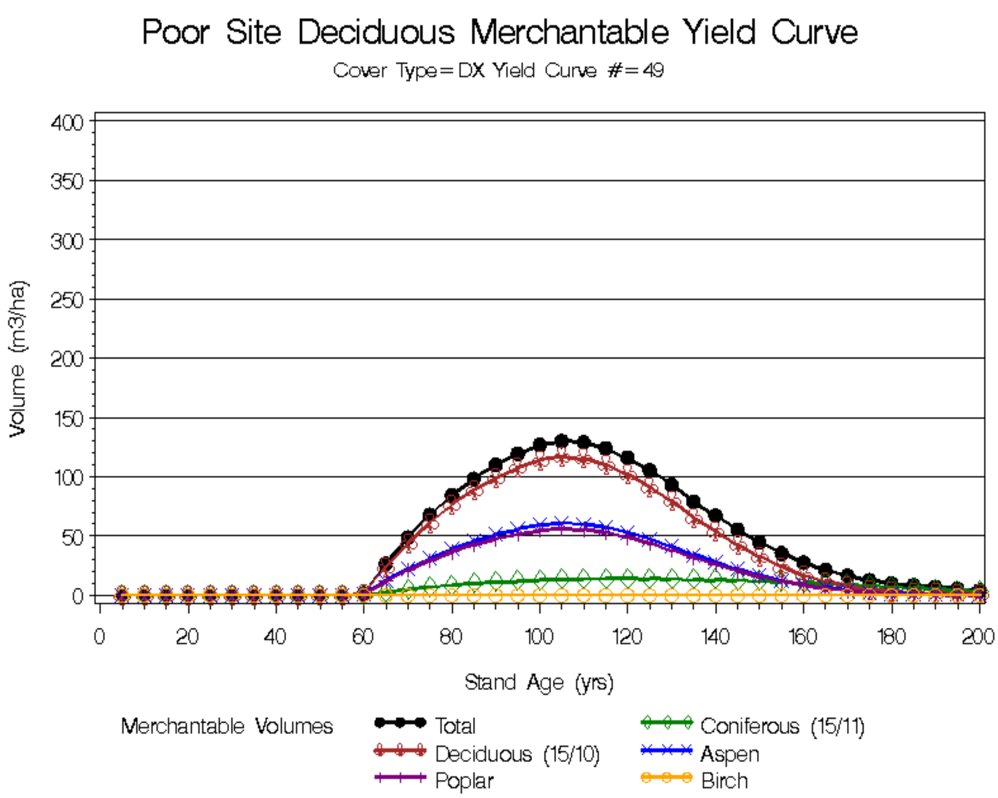
NSR & Site=UFG CC=D %Con=5 Yield Curve #=48

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
10	0	0.0	0	0.0	0	0.0
20	13	0.6	8	0.4	5	0.3
30	54	1.8	32	1.1	22	0.7
40	92	2.3	55	1.4	38	0.9
50	126	2.5	75	1.5	51	1.0
60	157	2.6	93	1.6	64	1.1
70	184	2.6	109	1.6	75	1.1
80	209	2.6	124	1.5	85	1.1
90	230	2.6	137	1.5	94	1.0
100	249	2.5	148	1.5	101	1.0
110	260	2.4	158	1.4	102	0.9
120	259	2.2	167	1.4	93	0.8
130	251	1.9	174	1.3	77	0.6
140	238	1.7	180	1.3	57	0.4
150	224	1.5	186	1.2	39	0.3
160	213	1.3	190	1.2	24	0.1
170	206	1.2	193	1.1	13	0.1
180	202	1.1	196	1.1	6	0.0
190	204	1.1	198	1.0	6	0.0
200	205	1.0	199	1.0	6	0.0



Site=Poor Cover Type=DX Yield Curve #=49

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	2	0.0	0	0.0	1	0.0
70	49	0.7	5	0.1	44	0.6
80	84	1.1	8	0.1	76	1.0
90	110	1.2	11	0.1	99	1.1
100	127	1.3	13	0.1	114	1.1
110	129	1.2	14	0.1	116	1.1
120	116	1.0	14	0.1	102	0.9
130	93	0.7	14	0.1	79	0.6
140	67	0.5	13	0.1	54	0.4
150	45	0.3	12	0.1	33	0.2
160	28	0.2	11	0.1	17	0.1
170	17	0.1	9	0.1	8	0.0
180	10	0.1	7	0.0	3	0.0
190	7	0.0	5	0.0	2	0.0
200	4	0.0	3	0.0	1	0.0

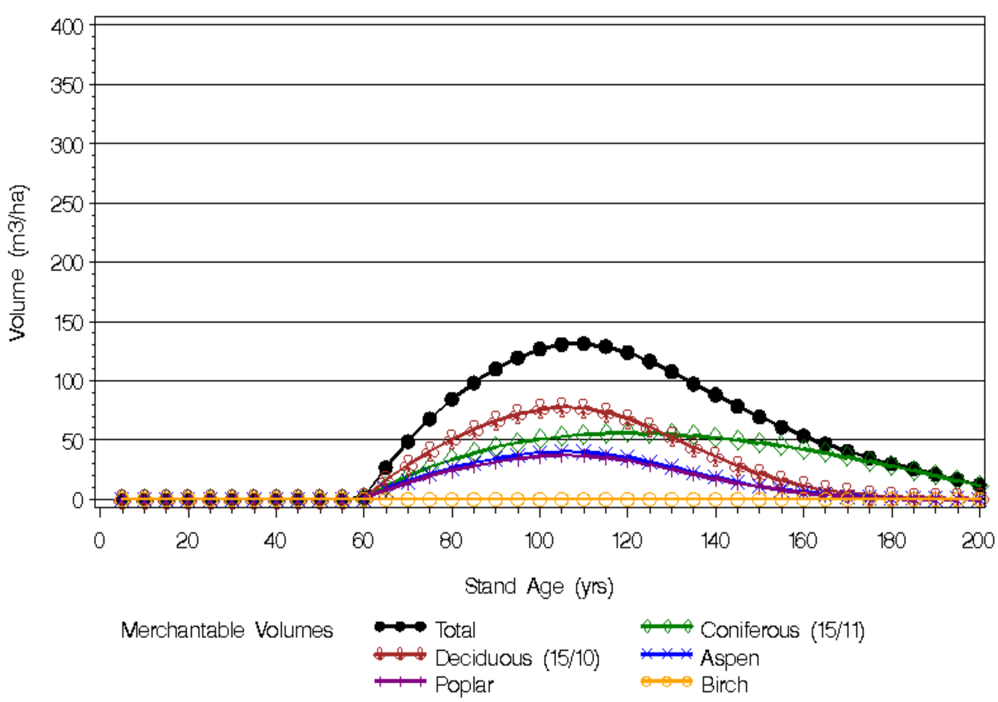


Site=Poor Cover Type=DC Yield Curve #=50

Stand Age (years)	Total Volume (m3/ha)	Total MAI (m3/ha/yr)	Coniferous Volume (15/11) (m3/ha)	Coniferous MAI (m3/ha/yr)	Deciduous Volume(15/10) (m3/ha)	Deciduous MAI (m3/ha/yr)
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	2	0.0	1	0.0	1	0.0
70	49	0.7	20	0.3	29	0.4
80	84	1.1	34	0.4	51	0.6
90	110	1.2	44	0.5	66	0.7
100	127	1.3	51	0.5	76	0.8
110	132	1.2	55	0.5	77	0.7
120	124	1.0	56	0.5	68	0.6
130	108	0.8	55	0.4	53	0.4
140	88	0.6	52	0.4	36	0.3
150	70	0.5	48	0.3	22	0.1
160	54	0.3	42	0.3	11	0.1
170	41	0.2	36	0.2	5	0.0
180	30	0.2	28	0.2	2	0.0
190	21	0.1	20	0.1	1	0.0
200	12	0.1	11	0.1	1	0.0

Poor Site Deciduous Merchantable Yield Curve

Cover Type=DC Yield Curve #=50



4 Suggestions for future TSP programs

Site index is being increasingly used to estimate growth and yield projections. A clear and consistent sampling protocol must be implemented for selecting SI trees to ensure that some estimate of SI is obtained for each plot. In addition if no valid SI tree is available within a plot a procedure must be developed to allow for an SI tree to be sampled outside the plot but within the same stand.

5 References

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6 Appendix

6.1 Data Library

Field Name	Data Type	Description and Possible Values
_AVI		All fields with the extension "_AVI" designate a standard AVI field. AVI stand calls. See AVI manual for description. Some AVI fields without a "_AVI" extension include: moisture, structure, horper, tpr, nonfortype, nonforcl, natnonveg, anthveg, anthnonveg, interpret, refsource, refyear, u_moisture, u_horper, u_tpr, u_nonforty, u_nonforcl, u_natnonveg, u_anthveg, u_anthnonv, u_interpre
a1, a2, b1, b2, b3, b4, b5	Numeric	Taper Coefficients Numeric
Actconvol	Numeric	Plot Observed Mean Coniferous Volume
Actconvol	Numeric	Plot Observed Mean coniferous volume
Actdecvol	Numeric	Plot Observed Mean Deciduous Volume
Actdecvol	Numeric	Plot Observed Mean deciduous volume
Actvol	Numeric	Plot Observed Mean total volume
Age_lcl	Numeric	Plot Observed Lower 95% confidence interval for stand age
Age_ucl	Numeric	Plot Observed Upper 95% confidence interval for stand age
Age_x	Numeric	Plot Observed Mean stand age
agecof1, agecof2, agecof3	Numeric	Provincial breast height age to stump height age coefficients Numeric
allcon_si	Numeric	Stand Site Index – based on all coniferous species (excludes LT) SI at 50 years
allcon_totage	Numeric	Stand age – based on all coniferous species (excludes LT) site trees Total age (years)
ANTHNONVEG	Character	Anthropogenic Non-Vegetated Land Identified as Follows: AIE – Peat extractions; AIF – Farm; AIG – Gravel or borrow pit; AIH – Permanent right-of-way; AII – Industrial sites; AIW – Water reservoir; ASC – City, town, village; ASR – Ribbon development.
ANTHVEG	Character	Anthropogenic Vegetated Land Identified as Follows: CA – Annual crops; CIP – Pipeline; CIW – Geophysical activity (wellsite); CP – Cropland (perennial); CPR – Perennial crops (with SO or SC N.F.TYPE).
AREA	Numeric	Area in Square Metres
Area_ha	Numeric	AVI Stand Area Area in ha
aspenha	Numeric	Plot measured aspen volume per hectare (15/10 utilization) m^3 / ha
aw_si	Numeric	Stand Site Index – based on AW and PB SI at 50 years
aw_totage	Numeric	Stand Total Age – based on AW and PB site trees Total age (years)
awvol15	Numeric	Projected aspen volume per hectare (15/10 utilization) m^3 / ha
B0, B1, B2, B3,	Numeric	Provincial coefficients for estimating site index

Field Name	Data Type	Description and Possible Values
B4, B5		Numeric
bark_a, bark_b	Numeric	DIB to DOB bark coefficients Numeric
Bhage	Numeric	Individual Tree Breast Height Age Age in years
birchha	Numeric	Plot measured birch volume per hectare (15/10 utilization) m^3 / ha
bwvol15	Numeric	Projected birch volume per hectare (15/10 utilization) m^3 / ha
c_vol15ha	Numeric	Plot measured coniferous volume per ha (15 / 11 utilization standard) m^3 / ha
C0, C1	Numeric	Parameters for coniferous volume function Numeric
CC	Character	Crown class of individual sampled trees C – Co-dominant D – Dominant I – Intermediate N – Unknown O – Open Grown S – Suppressed U – Understory V – Veteran X – Dead
CC_AVI	Character	Crown Closure Identified as Follows: A – 6 – 30% Crown Closure; B – 31 – 50% Crown Closure; C – 51 – 70% Crown Closure; D – 71 – 100% Crown Closure.
cc_AVI	Character	Crown closure as defined by AVI A – 6% to 30% B – 31% to 50% C – 51% to 70% D – 71% to 100% X – for poor sites only all crown closure classes are grouped into the “X” category.
cc_ord	Numeric	Crown closure ordinal variable (based on CC_AVI) 0 – CC_AVI=”X” 1 – CC_AVI=”A” 2 – CC_AVI=”B” 3 – CC_AVI=”C” 4 – CC_AVI=”D”
Con_site	Character	Coniferous site quality based on sitelogix call G- Good M- Medium P- Poor
Cond1, Cond2, and Cond3	Character	Condition Code - Description of individual tree characteristics 01 – Conks 02 – Open Scars 12 – Burls and Galls 13 – Forks 14 – Pronounced Crook 19 – Broken Top 22 – Limby 23 – Leaning 24 – Broken Stem

Field Name	Data Type	Description and Possible Values
		25 – Standing Dead 26 – Missing 27 – Dead and Down 28 – Same Stump 29 – Cut Down 30 – Stem Insects 31 – Stem Disease 32 – Foliar Insects 33 – Foliar Disease 34 – Stem Form Defects 35 – Dead Top/Dieback 36 – Closed Scars 37 – Unknown 43 & 46 – Non-valid entry (assumed to be a non-entry) 91 – 96 Dwarf Mistletoe
conmai	Numeric	Coniferous mean annual increment m^3 / ha / year
convol15ha	Numeric	Projected coniferous volume per ha (15 / 11 utilization standard) m^3 / ha
Counter	Numeric	Counts the order of trees in a stand by DBH Numeric
Cullsup	Character	Cull suspect class – Description of individual tree characteristics C – conks and punk knots O - old broken tops S - scars and other wounds N - non-suspect F - frost cracks I – unknown (suspect an “intermediate” cc call that ended up in wrong column)
Cvol_lcl	Numeric	Plot Observed Lower 95% confidence interval for Coniferous Volume
Cvol_ucl	Numeric	Plot Observed Upper 95% confidence interval for Coniferous Volume
Cvol_x	Numeric	Plot Observed Mean Coniferous Volume
d_vol15ha	Numeric	Plot measured deciduous volume per ha (15 / 10 utilization standard) m^3 / ha
DBH	Numeric	Tree -Diameter Breast Height Diameter in cm
Dead	Character	Identifies Dead Trees Y – Tree dead N – Tree alive (dead tree is defined as a condition code equal to either 25, 26, or a species call of either ‘DC’, or ‘DD’)
Dec_mort	Numeric	Percentage deciduous volume retention after mortality Numeric proportion
Dec_site	Character	Deciduous site quality based on sitelogix call G- Good M- Medium P- Poor
decmai	Numeric	Deciduous mean annual increment m^3 / ha / year
decvol15ha	Numeric	Projected deciduous volume per ha (15 / 10 utilization standard) m^3 / ha
Dvol_lcl	Numeric	Plot Observed Lower 95% confidence interval for Deciduous Volume
Dvol_ucl	Numeric	Plot Observed Upper 95% confidence interval for Deciduous Volume
Dvol_x	Numeric	Plot Observed Mean Deciduous Volume
Ecof_Site	Character	Stand site quality classification (based on field calls only)

Field Name	Data Type	Description and Possible Values
		LFG – Lower Foothills Good LFM – Lower Foothills Medium LFP – Lower Foothills Poor UFG – Upper Foothills Good UFM – Upper Foothills Medium UFP – Upper Foothills Poor
Ecofield	Character	Plot ecosites phase – assigned by field sample crew See *Field guide to ecosites of west-central Alberta – (Beckingham, Corns, and Archibald, 1996)*
Ecolet_f	Character	Plot ecosite as defined by field data collection See *Field guide to ecosites of west-central Alberta – (Beckingham, Corns, and Archibald, 1996)* Additional codes: W- Water Y – Linear disturbance (man caused) Z – Other disturbance (man caused)
Ecolet_x/ ecoletter	Character	Plot ecosite as defined by SiteLogix See *Field guide to ecosites of west-central Alberta – (Beckingham, Corns, and Archibald, 1996)*
Ecophs1	Character	Primary Sitelogix ecosite phase assignment Recorded as: Natural Subregion – Ecosite.Phase
Ecophs2	Character	Secondary Sitelogix ecosite ecophase assignment Recorded as: Natural Subregion – Ecosite.Phase
Ecosit1	Character	Primary Sitelogix ecosite assignment Recorded as: Natural Subregion - Ecosite
Ecosit2	Character	Secondary Sitelogix ecosite assignment Recorded as: Natural Subregion – Ecosite
Ecosite	Character	Plot Ecosite Equal to ecolet_f field when a field call is available, otherwise equal to ecolet_x W – Water Y – Road and well sites
Ecounit	Character	Full Sitelogix ecosite call Primary and Secondary (Ecosit1 and Ecosit2) are shown in combination
Ecox_Site	Character	Stand site quality classification (based on SiteLogix calls only) LFG – Lower Foothills Good LFM – Lower Foothills Medium LFP – Lower Foothills Poor UFG – Upper Foothills Good UFM – Upper Foothills Medium UFP – Upper Foothills Poor
EXT1	Numeric	Extent of Modification 1
EXT2	Numeric	Extent of Modification 2
fbvol15ha	Numeric	Projected fir volume per ha (15 / 11 utilization standard) m^3 / ha
firha	Numeric	Plot measured fir volume per hectare (15/11 utilization) m^3 / ha
FORSTKEY	Character	AVI Polygon ID Composed of PID, MER, TWP, RGE
HGT_AVI	Numeric	Height (m)
HORPER	Numeric	Stand Structure Value

Field Name	Data Type	Description and Possible Values
Ht	Numeric	Total tree height of individual sampled trees Height in m
ht_a, ht_b, ht_c	Numeric	Height diameter coefficient Numeric
Htcrwn	Numeric	Height to live crown of individual sampled trees Height in m
Indexm	Numeric	Proportion of volume present on Medium site switch stands compared to good site
indexp	Numeric	Proportion of volume present on Poor site switch stands compared to good site
INTERPRETE	Character	Interpreter's Initials
larchha	Numeric	Plot larch volume per hectare (15/11 utilization) m^3 / ha
linkvar	Numeric	Link variable Amalgamates township, range, meridian, and stand into a single variable
Lower	Character	Volume Record Indicator Y – Record volume is a lower 95% confidence interval
M_NSR	Character	Natural subregion as defined by Sitelogix LF – Lower Foothills UF – Upper Foothills
M_SI	Numeric	Mean site index by site quality Numeric
Meanx	Character	Volume Record Indicator Y – Record volume is a mean
Mer	Numeric	Meridian Numeric
MER_AVI	Numeric	Meridian:
merlast	Numeric	Meridan of previous record Numeric
MOD1_AVI	Character	Stand Modifier 1 Identified as Follows: AK – Animal kill; BU – Burn; CC – Clearcut; CL – Clearing; CW – Abandoned wellsite; DT – Discolored / dead tops; FL – Flooded; FT – Fire tower; IK – Insect kill; MT – Microwave tower; PI – Pipeline; RW – Railway; SC – Scarified; SN – Snags; ST – Scattered timber; TH – Thinned; TL – Transmission line; WF – Windfall.
MOD2_AVI	Character	Stand Modifier 2 Identified as Follows: BU – Burn; CC – Clearcut; CL – Clearing; GR – Grazing; IK – Insect kill;

Field Name	Data Type	Description and Possible Values
		PI – Pipeline; PL – Planted; SC – Scarified; SN – Snags; ST – Scattered timber; TH – Thinned; TL – Transmission line; WF – Windfall.
MOISTURE	Character	Moisture Regime Identified as Follows: A – Aquatic; D – Dry; M – Mesic; W – Wet.
NATNONVEG	Character	Naturally Non-Vegetated Land Identified as Follows: NMB – Recent burn; NMC – Cutbank; NMS – Sand; NWF – Flooded; NWL – Lake or pond; NWR – River.
newcc	Character	Updated crown class calls for records with missing observations Numeric
NONFORCL	Numeric	Non-Forested Natural Vegetated Land Shrub Closure
NONFORTYPE	Character	Naturally Non-Forested Vegetated Land Identified as Follows: BR – Bryophytes / mosses; HF – Herbaceous forbs; HG – Herbaceous grassland; SC – Closed shrubs; SO – Open shrubs.
NR_field	Character	Natural subregion assigned by field crew LF – Lower Foothills UF – Upper Foothills
Nregion	Numeric	Standard provincial natural subregion numeric code 10 – Upper Foothills 11 – Lower Foothills
NSR	Character	Natural subregion (Provincial natural subregion is the standard) LF – Lower Foothills UF – Upper Foothills
NSR_Prov	Character	Natural subregion as defined from Alberta provincial data LF – Lower Foothills UF – Upper Foothills
O_LAND	Character	Overstory Landbase CON - Coniferous DEC - Deciduous
ORIGIN_AVI	Numeric	Origin
OS_AGE	Numeric	Overstory AVI Age =1998 – origin (in years)
OS_CC	Character	Stand overstory crown closure A – Low Density (indicates A or B – AVI crown closure) C – Low Density (indicates C or D – AVI crown closure)
OS_Cov	Character	Overstory Cover Group CX – Pure Coniferous Stand CD – Coniferous Dominated Mixedwood DC - Deciduous Dominated Mixedwood

Field Name	Data Type	Description and Possible Values
		DX – Pure Deciduous Stand
Pbvol15ha	Numeric	Projected poplar volume per ha (15 / 10 utilization standard) m^3 / ha
Per_AW	Numeric	Percentage of total deciduous volume made up by Aspen numeric value
Per_BW	Numeric	Percentage of total deciduous volume made up by Birch numeric value
Per_Con	Numeric	Stand percentage coniferous composition (excludes larch) 1 to 10 – denotes composition in 10% categories
Per_Conlt	Numeric	Stand percentage coniferous composition (includes larch) 1 to 10 – denotes composition in 10% categories
Per_Dec	Numeric	Stand percentage deciduous composition 1 to 10 - denotes composition in 10% categories
Per_FB	Numeric	Percentage of total coniferous volume (excluding LT) made up by Fir numeric value
Per_Larch	Numeric	Stand percentage larch composition 1 to 10 – denotes composition in 10% categories
Per_LT	Numeric	Percentage of total coniferous volume (including LT) made up by Larch numeric value
Per_PB	Numeric	Percentage of total deciduous volume made up by Poplar numeric value
Per_PL	Numeric	Percentage of total coniferous volume (excluding LT) made up by Pine numeric value
Per_Sb	Numeric	Stand percentage SB composition 1 to 10 - denotes composition in 10% categories
Per_SW	Numeric	Percentage of total coniferous volume (excluding LT) made up by spruce species numeric value
Phsunit	Character	Full Sitelogix ecosites phase call Primary and Secondary (Ecophs1 and Ecophs2) are shown in combination
PID	Numeric	AVI Polygon ID
pineha	Numeric	Plot measured pine volume per hectare (15/11 utilization) m^3 / ha
pl_si	Numeric	Stand Site Index – based on PL and PJ SI at 50 years
pl_totage	Numeric	Stand Age – based on PL and PJ site trees Total age (years)
plot_age	Numeric	Plot Age in years = 1998 – origin
plot_num	Numeric	Number of plots in stand Numeric
Plot_si	Numeric	Plot SI
plot_site	Character	Plot Site Quality LFG – Lower Foothills Good LFM – Lower Foothills Medium LFP – Lower Foothills Poor UFG – Upper Foothills Good UFM – Upper Foothills Medium UFP – Upper Foothills Poor XXG – Lower and Upper Foothills Good XXM – Lower and Upper Foothills Medium XXP – Lower and Upper Foothills Poor
plotarea	Numeric	Total plot area in a stand

Field Name	Data Type	Description and Possible Values
		Plot_num * 160m^2
Plotid	Character	Plot Identifier Unique plot identifier
Plotlet	Character	Plot Letter During some TSP years a alpha character was used to differentiate between multiple plots in a stand. Valid assignments are: A, B, C,…Z.
Plotno	Character	Plot Number Alpha-numeric value assigned by field crews during sampling
PlotSize	Numeric	TSP Plot Size All plots were 160m^2
plvol15ha	Numeric	Projected Pine volume per hectare (15/11 utilization) in m^3
poplarha	Numeric	Plot measured poplar volume per hectare (15/10 utilization) m^3 / ha
prov_a, prov_b, prov_c	Numeric	Provincial coefficients for Height/DBH regression relationship Numeric
REFSOURCE	Character	Reference Source Identified as Follows: A – Air call; F – Field plot; I – Interpreted TPR; P – PSP; S – Supplementary photography; V – Volume plot.
REFYEAR	Numeric	Reference Year
Rge	Numeric	Range Numeric
RGE_AVI	Numeric	Range:
rgelast	Numeric	Range of previous record Numeric
Rsq	Numeric	Estimate of R^2 from non-linear regression Numeric
Sev	Character	Identifies trees as severely damaged enough to be excluded from SI calculations Y – Severe Damage N – No severe damage (severe damage is defined as a condition code equal to either 13, 19, 24, 28, 34, 35, or cull suspect class equal to either 'O' or 'F')
Si_obs	Numeric	Number of Site Index Trees in Stand Numeric
Site	Character	Site quality based on the species present (see sptype field) and sitelogix ecosites call G – Good M – Medium P – Poor
Site_t_req	Numeric	Maximum number of site trees required Numeric
Sitequal	Character	Stand Quality GM – Good or medium site PX – Poor site
Source	Character	TSP program code name rawtree – 1996 edvsamp – 1997 d0001 – 1998 v0006 – 1999

Field Name	Data Type	Description and Possible Values
Sp	Character	Tree species DC – Dead coniferous DD – Dead deciduous NO – No species (used to indicate null plots) All other codes - Standard Alberta species codes used
SP1_AVI	Character	Species 1 Identified as Follows: A – Unspecified Deciduous; AW – Trembling Aspen; BW – White Birch; FB – Balsam Fir; LT – Larch; P – Pine; PB – Balsam Poplar; PJ – Jack Pine; PL – Lodgepole Pine; SB – Black Spruce; SW – White Spruce.
SP1P_AVI	Numeric	Species 1 Percent
SP2_AVI	Character	Species 2 Identified as Follows: A – Unspecified Deciduous; AW – Trembling Aspen; BW – White Birch; FB – Balsam Fir; LT – Larch; P – Pine; PB – Balsam Poplar; PJ – Jack Pine; PL – Lodgepole Pine; SB – Black Spruce; SW – White Spruce.
SP2P_AVI	Numeric	Species 2 Percent
SP3_AVI	Character	Species 3 Identified as Follows: A – Unspecified Deciduous; AW – Trembling Aspen; BW – White Birch; FB – Balsam Fir; LT – Larch; P – Pine; PB – Balsam Poplar; PJ – Jack Pine; PL – Lodgepole Pine; SB – Black Spruce; SW – White Spruce.
SP3P_AVI	Numeric	Species 3 Percent
SP4_AVI	Character	Species 4 Identified as Follows: AW – Trembling Aspen; BW – White Birch; FB – Balsam Fir; LT – Larch; P – Pine; PB – Balsam Poplar; PL – Lodgepole Pine; SB – Black Spruce; SW – White Spruce.

Field Name	Data Type	Description and Possible Values
SP4P_AVI	Numeric	Species 4 Percent
SP5_AVI	Character	Species 5 Identified as Follows: AW – Trembling Aspen; BW – White Birch; FB – Balsam Fir; LT – Larch; P – Pine; PB – Balsam Poplar; SB – Black Spruce; SW – White Spruce.
SP5P_AVI	Numeric	Species 5 Percent
spruceha	Numeric	Plot measured spruce species volume per hectare (15/11 utilization) m^3 / ha
Sptype	Character	Identifies trees as either: deciduous, pine, other coniferous species decid – Deciduous pine – Pine conif – Coniferous (Excludes pine and larch)
ST_Site	Character	Stand site quality classification LFG – Lower Foothills Good LFM – Lower Foothills Medium LFP – Lower Foothills Poor UFG – Upper Foothills Good UFM – Upper Foothills Medium UFP – Upper Foothills Poor
Stand*	Numeric	Stand Number Numeric
STAND_AVI	Numeric	AVI Stand ID
Standlast	Numeric	Stand number of previous record Numeric
Std_age	Numeric	Stand age (based on SoPM)
Std_cc	Character	Stand crown closure (based on SoPM) A – 6% to 30% B – 31% to 50% C – 51% to 70% D – 71% to 100% X – for poor sites only all crown closure classes are grouped into the “X” category.
Std_larch	Numeric	Stand percentage larch composition (based on SoPM) 1 to 10 – denotes composition in 10% categories
Std_sb	Numeric	Stand percentage black spruce composition (based on SoPM) 1 to 10 – denotes composition in 10% categories
Std_sp1	Character	First species (based on SoPM) AW – Trembling Aspen; BW – White Birch; FB – Balsam Fir; LT – Larch; P – Pine; PB – Balsam Poplar; PL – Lodgepole Pine; SB – Black Spruce; SW – White Spruce.
Std_sp1per	Numeric	Stand percentage first species composition (based on SoPM) 1 to 10 – denotes composition in 10% categories
Std_sp2	Character	Second species (based on SoPM) AW – Trembling Aspen;

Field Name	Data Type	Description and Possible Values
		BW – White Birch; FB – Balsam Fir; LT – Larch; P – Pine; PB – Balsam Poplar; PL – Lodgepole Pine; SB – Black Spruce; SW – White Spruce.
STD_TYPE	Character	Stand Type CON – Coniferous Dominated Stand DEC – Deciduous Dominated Stand
Stdper_con	Numeric	Stand percentage coniferous composition (based on SoPM) 1 to 10 – denotes composition in 10% categories
Stdper_dec	Numeric	Stand percentage deciduous composition (based on SoPM) 1 to 10 – denotes composition in 10% categories
Story	Character	Designates the SoPM O – Overstory A – Understory – Landbase assigned by overstory U – Understory – Landbase assigned by understory C – ARIS cut records
stpdbh_a, stpdbh_b, stpdbh_c	Numeric	DBH / Stump Height Diameter coefficients Numeric
STRUCTURE	Character	Stand Structure Identified as Follows: C – Complex; H – Horizontal; M – Multi-storey.
stumpage	Numeric	Stump age (30cm) Numeric (years)
sw_si	Numeric	Stand site index – based on SW, SB, FB and FA SI at 50 years breast height age
sw_totage	Numeric	Stand age – based on SW, SB, FB and FA site trees Total age (years)
Swt_only	Numeric	Switch Stand Indicator 0 – Not a switch stand 1 – Switch stand
swvol15ha	Numeric	Projected spruce species volume per hectare (15/11 utilization) in m^3
t_vol15ha	Numeric	Plot measured total volume per ha (15/11 Coniferous, 15/10 Deciduous) m^3 / ha
t0, t1, t2, t3, t4, t5, t6	Numeric	Parameters for total volume function Numeric
totage	Numeric	Total Age of Stand Total age (years)
totmai	Numeric	Total mean annual increment m^3 / ha / year
tottemp15ha	Numeric	Projected total volume per ha (15/11 Coniferous + 15/10 Deciduous) prior to deciduous mortality retention has been applied m^3 / ha
totvol15ha	Numeric	Projected total volume per ha (15/11 Coniferous + 15/10 Deciduous) after deciduous mortality retention has been applied m^3 / ha
TPR	Character	Timber Productivity Rating Identified as Follows: G – Good;

Field Name	Data Type	Description and Possible Values
		M – Medium; F – Fair; U – Unproductive.
Tree	Numeric	Plot sampled tree number Sequential number
Tvol_lcl	Numeric	Plot Observed Lower 95% confidence interval for total volume
Tvol_ucl	Numeric	Plot Observed Upper 95% confidence interval for total volume
Tvol_x	Numeric	Plot Observed Mean total volume
Twp	Numeric	Township Numeric
TWP_AVI	Numeric	Township:
twplast	Numeric	Township of previous record Numeric
U_ANTHNONV	Character	Anthropogenic Non-Vegetated Land Identified as Follows: AIF – Farm; AIG – Gravel or borrow pit; AIH – Permanent right-of-way; AII – Industrial sites; AIW – Water reservoir; ASR – Ribbon development.
U_ANTHVEG	Character	Anthropogenic Vegetated Land Identified as Follows: CA – Annual crops; CIP – Pipeline; CIW – Geophysical activity (wellsite); CP – Cropland (perennial); CPR – Perennial crops (with SO or SC N.F.TYPE).
U_CC_AVI	Character	Crown Closure Identified as Follows: A – 6 – 30% Crown Closure; B – 31 – 50% Crown Closure; C – 51 – 70% Crown Closure; D – 71 – 100% Crown Closure.
U_EXT1_AVI	Numeric	Extent of Modification 1
U_EXT2_AVI	Numeric	Extent of Modification 2
U_HGT_AVI	Numeric	Height (m)
U_HORPER	Numeric	Stand Structure Value
U_INTERPRE	Character	Interpreter’s Initials
U_LAND	Character	Understory Landbase CON - Coniferous DEC - Deciduous
U_MOD1_AVI	Character	Stand Modifier 1 Identified as Follows: AK – Animal kill; BU – Burn; CC – Clearcut; CL – Clearing; CW – Abandoned wellsite; DT – Discolored / dead tops; FL – Flooded; MT – Microwave tower; RW – Railway; SC – Scarified; SN – Snags; ST – Scattered timber; TH – Thinned; TL – Transmission line;

Field Name	Data Type	Description and Possible Values
		WF – Windfall.
U_MOD2_AVI	Character	Stand Modifier 2 Identified as Follows: BU – Burn; CC – Clearcut; CL – Clearing; GR – Grazing; PL – Planted; SC – Scarified; SN – Snags; TH – Thinned.
U_MOISTURE	Character	Moisture Regime Identified as Follows: A – Aquatic; D – Dry; M – Mesic; W – Wet.
U_NATNONVE	Character	Naturally Non-Vegetated Land Identified as Follows: NMC – Cutbank; NMS – Sand; NWF – Flooded; NWL – Lake or pond; NWR – River.
U_NONFORCL	Numeric	Non-Forested Natural Vegetated Land Shrub Closure
U_NONFORTY	Character	Non-Forested Natural Vegetated Land Type Identified as Follows: BR – Bryophytes / mosses; HF – Herbaceous forbs; HG – Herbaceous grass; SC – Closed shrubs; SO – Open shrubs.
U_ORIGIN	Numeric	Origin
U_REFSOURC	Character	Reference Source Identified as Follows: A – Air call; F – Field plot; I – Interpreted TPR.
U_REFYEAR	Numeric	Reference Year
U_SP1_AVI	Character	Species 1 Identified as Follows: AW – Trembling Aspen; BW – White Birch; FB – Balsam Fir; LT – Larch; P – Pine; PB – Balsam Poplar; PJ – Jack Pine; PL – Lodgepole Pine; SB – Black Spruce; SW – White Spruce.
U_SP1P_AVI	Numeric	Species 1 Percent
U_SP2_AVI	Character	Species 2 Identified as Follows: A – Unspecified Deciduous; AW – Trembling Aspen; BW – White Birch; FB – Balsam Fir; LT – Larch; P – Pine; PB – Balsam Poplar;

Field Name	Data Type	Description and Possible Values
		PJ – Jack Pine; PL – Lodgepole Pine; SB – Black Spruce; SW – White Spruce.
U_SP2P_AVI	Numeric	Species 2 Percent
U_SP3_AVI	Character	Species 3 Identified as Follows: A – Unspecified Deciduous; AW – Trembling Aspen; BW – White Birch; FB – Balsam Fir; LT – Larch; P – Pine; PB – Balsam Poplar; PJ – Jack Pine; PL – Lodgepole Pine; SB – Black Spruce; SW – White Spruce.
U_SP3P_AVI	Numeric	Species 3 Percent
U_SP4_AVI	Character	Species 4 Identified as Follows: AW – Trembling Aspen; BW – White Birch; FB – Balsam Fir; LT – Larch; P – Pine; PB – Balsam Poplar; PL – Lodgepole Pine; SB – Black Spruce; SW – White Spruce.
U_SP4P_AVI	Numeric	Species 4 Percent
U_SP5_AVI	Character	Species 5 Identified as Follows: AW – Trembling Aspen; BW – White Birch; FB – Balsam Fir; LT – Larch; P – Pine; PB – Balsam Poplar; PL – Lodgepole Pine; SB – Black Spruce; SW – White Spruce.
U_SP5P_AVI	Numeric	Species 5 Percent
U_STRUCTUR	Character	Stand Structure Identified as Follows: H – Horizontal; M – Multi-storey.
U_TPR	Character	Timber Productivity Rating Identified as Follows: G – Good; M – Medium; F – Fair; U – Unproductive.
U_YEAR1_AVI	Numeric	Year of Modification 1
U_YEAR2_AVI	Numeric	Year of Modification 2
UPer_Larch	Numeric	Understory percentage larch composition 1 to 10 – denotes composition in 10% categories
UPer_Sb	Numeric	Understory percentage SB composition 1 to 10 - denotes composition in 10% categories

Field Name	Data Type	Description and Possible Values
Upper	Character	Volume Record Indicator Y – Record volume is an upper 95% confidence interval
US_AGE	Numeric	Understory AVI Age =1998 – origin (in years)
US_CC	Character	Stand understory crown closure A – Low Density (indicates A or B – AVI crown closure) C – Low Density (indicates C or D – AVI crown closure)
US_Cov	Character	Understory Cover Group CX – Pure Coniferous Stand CD – Coniferous Dominated Mixedwood DC - Deciduous Dominated Mixedwood DX – Pure Deciduous Stand
Year	Numeric	Year TSP sampled 1996 to 1999
Year_sam	Numeric	Year TSP sampled 1996 to 1999
YEAR1_AVI	Numeric	Year of Modification 1
YEAR2_AVI	Numeric	Year of Modification 2
Yieldmodel	Character	Plot in yield model identifier YES – Plot has SI and is included in model NO – Plot does not have SI and is not included in model
Yieldnum	Numeric	Yield Curve Number Numeric

* - It is possible for *stand* and *stand_avi* to be different. *Stand* is based on field crew's intention of the stand they would sample. Whereas, *stand_avi* is the AVI stand number that each plot was located in based on the spatial location coverage. This is also true for *twp,* and *rge* however this should be rare. Stand numbering had changed between the 1995 sample year and the production of the spatial coverage.

6.2 Validation of yield models

An analysis was completed to validate the final yield projections by comparing projected volume yields to field observed means (Figure 6-1 to Figure 6-26).

When comparing field observed means to projected yields the following must be understood:

1. The strength of a field measured mean is dependant upon the number of plots used to estimate a mean. To demonstrate, Figure 6-3 illustrates "C" crown closure stands on good sites; here the field measures for stand age 100, 110, and 120 are of most concern to us because they comprise the majority of the plots sampled and is within the likely harvest age range.
2. Due to the upper foothill being a relatively small area in the Edson FMA there was not as complete a sampling across the strata type as there was in the lower foothills. Therefore, for predicted yields total yields upper foothills and lower foothills data were combined, allowing for the lower foothills estimates to buttress the upper foothills data. The differences in predicted total volume between natural sub-regions were driven by the differences in SI. The field observed averages do not combine the plots from both natural sub-regions.

6.2.1 Verifying total yield projections from coniferous dominated stands

When compared to TSP field-measured mean volumes, the total yield projections for the coniferous total yield strata are shown to be reasonable estimates (Figure 6-1 to Figure 6-18). Focusing first on lower foothills good and medium sites, the yield projections for "C" crown closure stands (yield stratum #3, and #7) have a strong relationship with the estimated means (Figure 6-3 and Figure 6-7). The majority of plots that were sampled (in yield stratum #3 and #7) were between 100 and 120 years old and here the yield projections and field means are compatible.

The yield projections for upper foothills good site "C" crown closure stands aligned realistically with the field calculated means (Figure 6-12). Due to the upper foothills being a relatively small area in the Edson FMA crown closures "A", "B", and "D" were not sampled enough to have confidence in the field measured means. However, the alignment with the "C" crown closure stands along with the results from the lower foothills suggests the estimates are within reason. For both lower and upper foothills poor site stands, the yield projections and the field measured means align as expected (Figure 6-9 and Figure 6-18). Overall total volume projections for coniferous dominated stands match well with the field observed measurements.

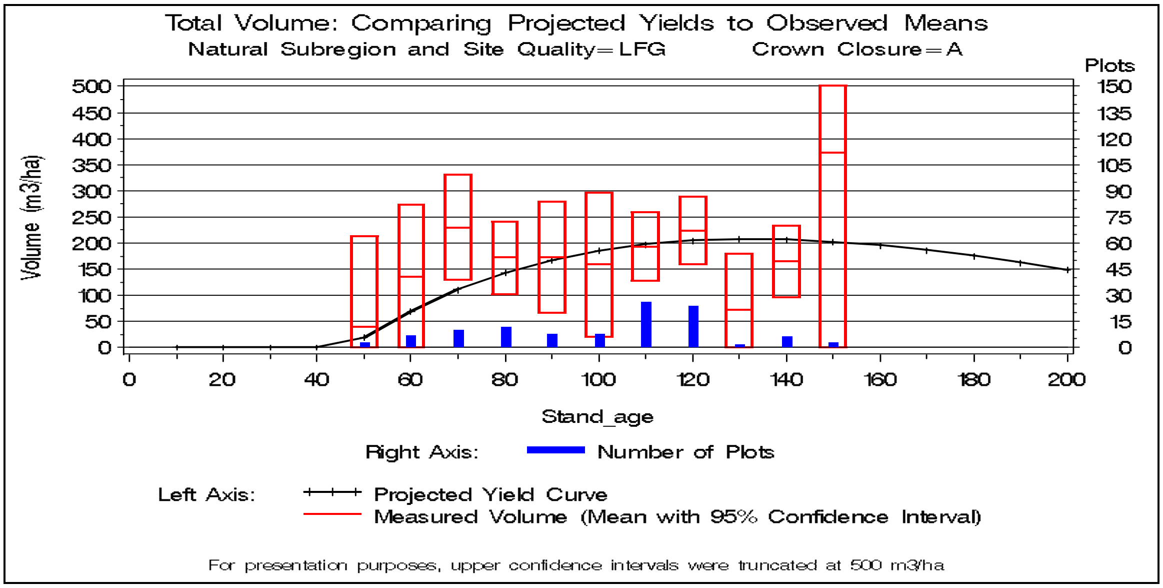


Figure 6-1. Yield stratum #1 - Projected total volume (NSR= LF, Site=G, and CC=A) from coniferous dominated stands compared to observed field measured means.

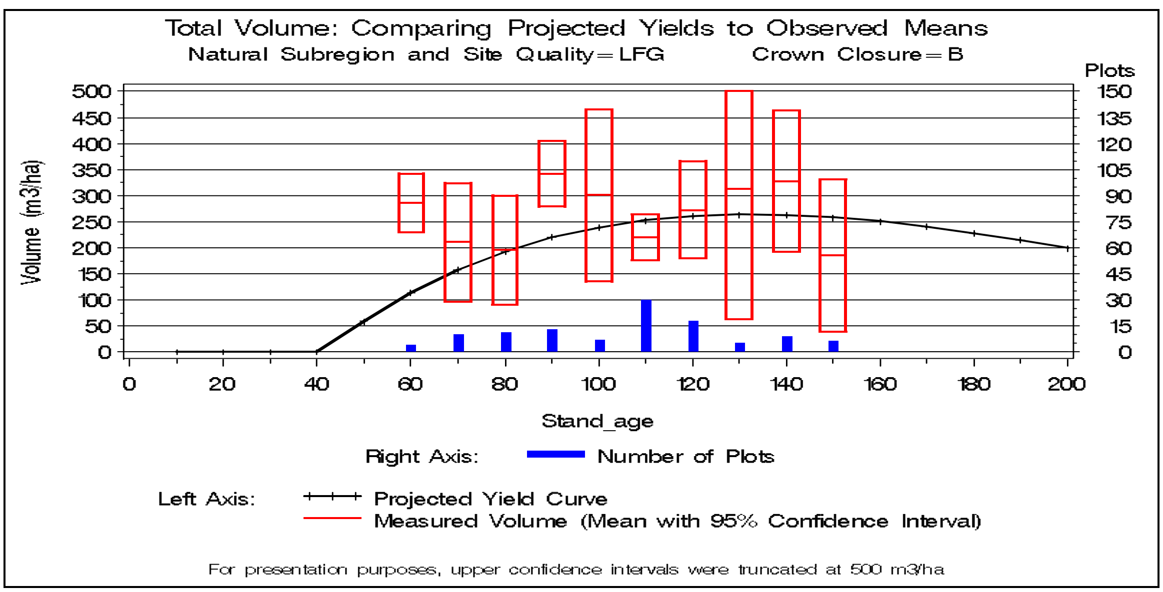


Figure 6-2. Yield stratum #2 - Projected total volume (NSR= LF, Site=G, and CC=B) from coniferous dominated stands compared to observed field measured means.

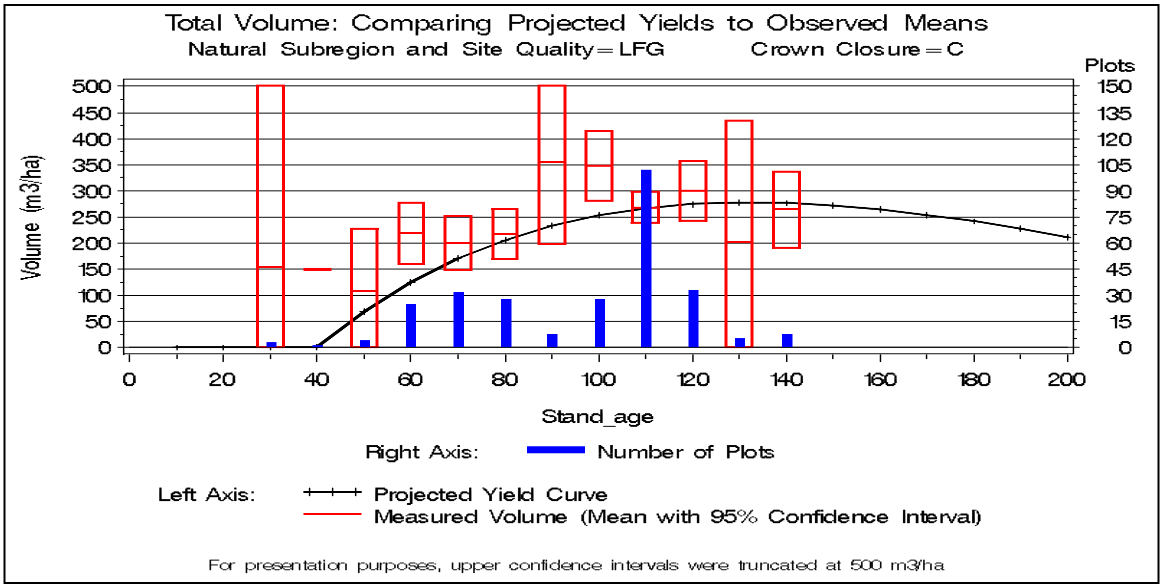


Figure 6-3. Yield stratum #3 - Projected total volume (NSR= LF, Site=G, and CC=C) from coniferous dominated stands compared to observed field measured means.

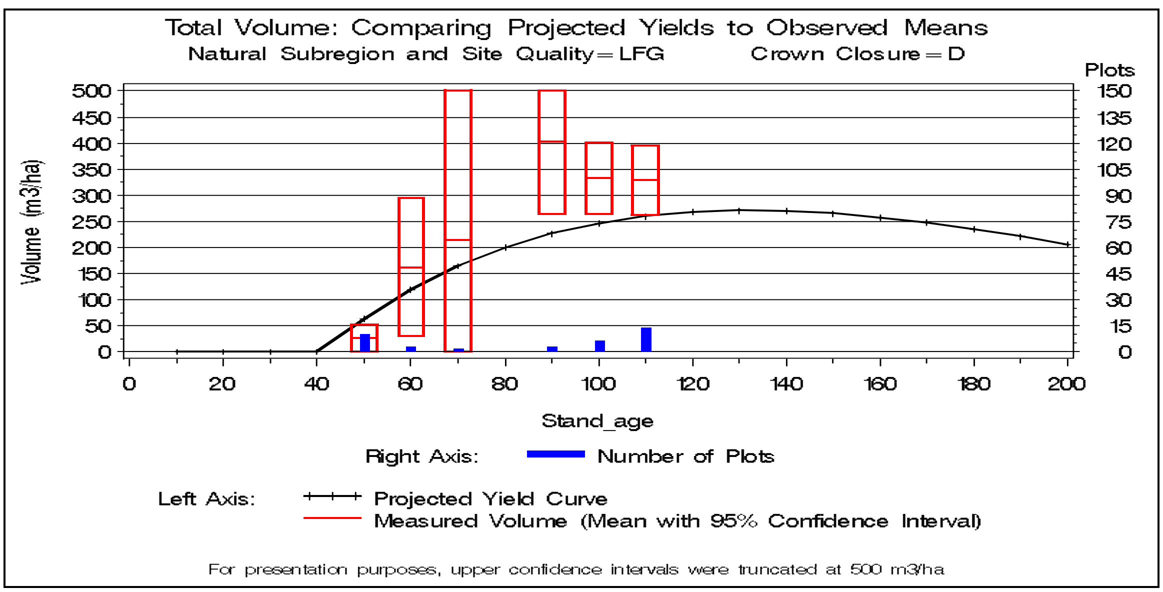


Figure 6-4. Yield stratum #4 - Projected total volume (NSR= LF, Site=G, and CC=D) from coniferous dominated stands compared to observed field measured means.

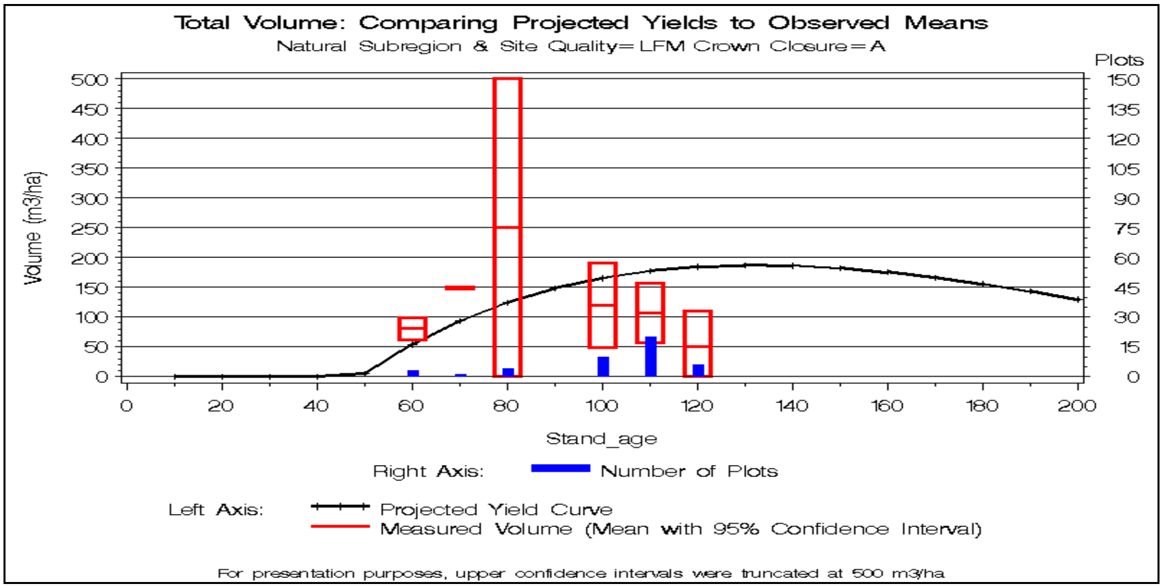


Figure 6-5. Yield stratum #5 - Projected total volume (NSR= LF, Site=M, and CC=A) from coniferous dominated stands compared to observed field measured means.

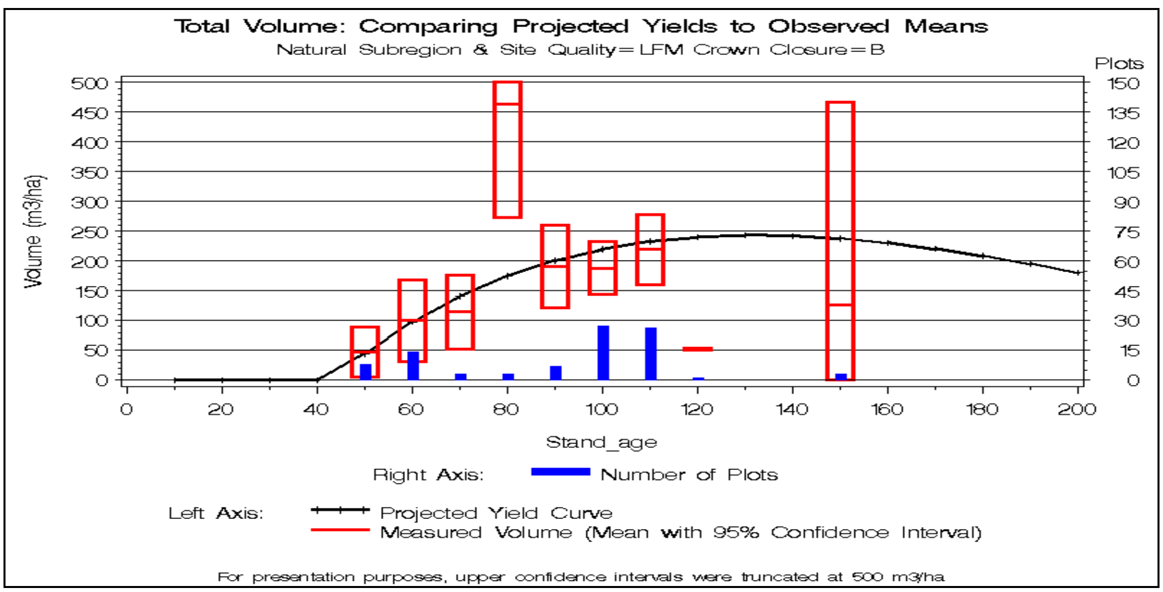


Figure 6-6. Yield stratum #6 - Projected total volume (NSR= LF, Site=M, and CC=B) from coniferous dominated stands compared to observed field measured means.

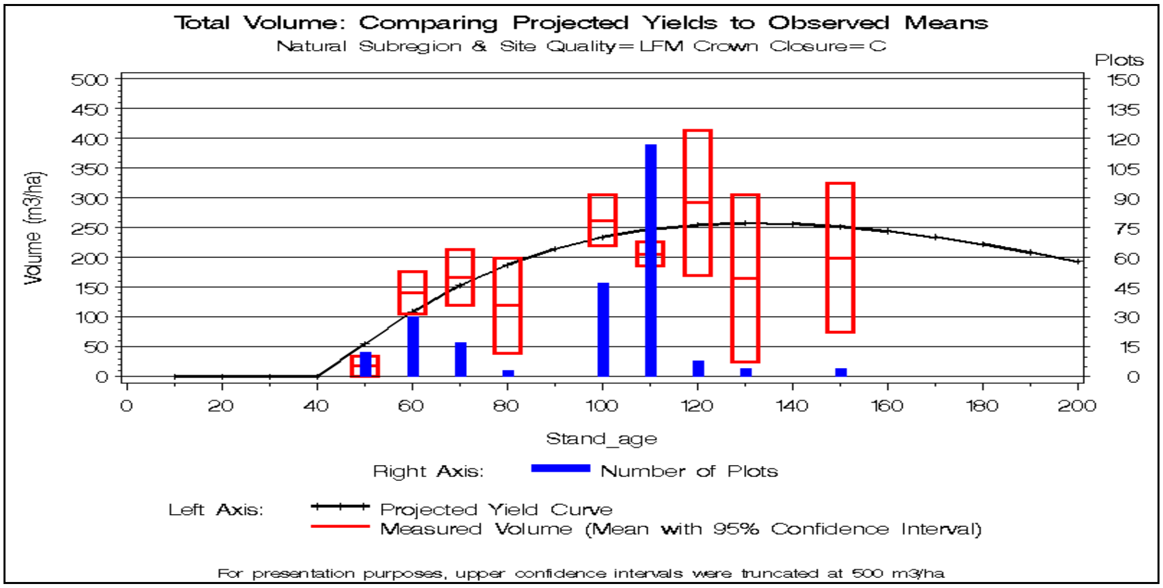


Figure 6-7. Yield stratum #7 - Projected total volume (NSR= LF, Site=M, and CC=C) from coniferous dominated stands compared to observed field measured means.

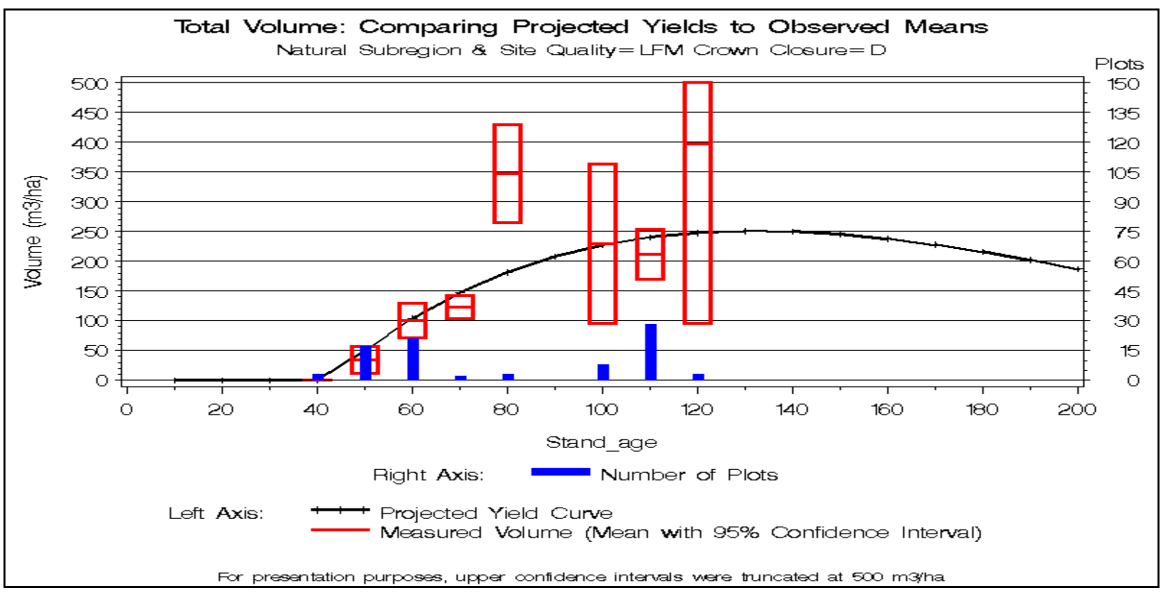


Figure 6-8. Yield stratum #8 - Projected total volume (NSR= LF, Site=M, and CC=D) from coniferous dominated stands compared to observed field measured means.

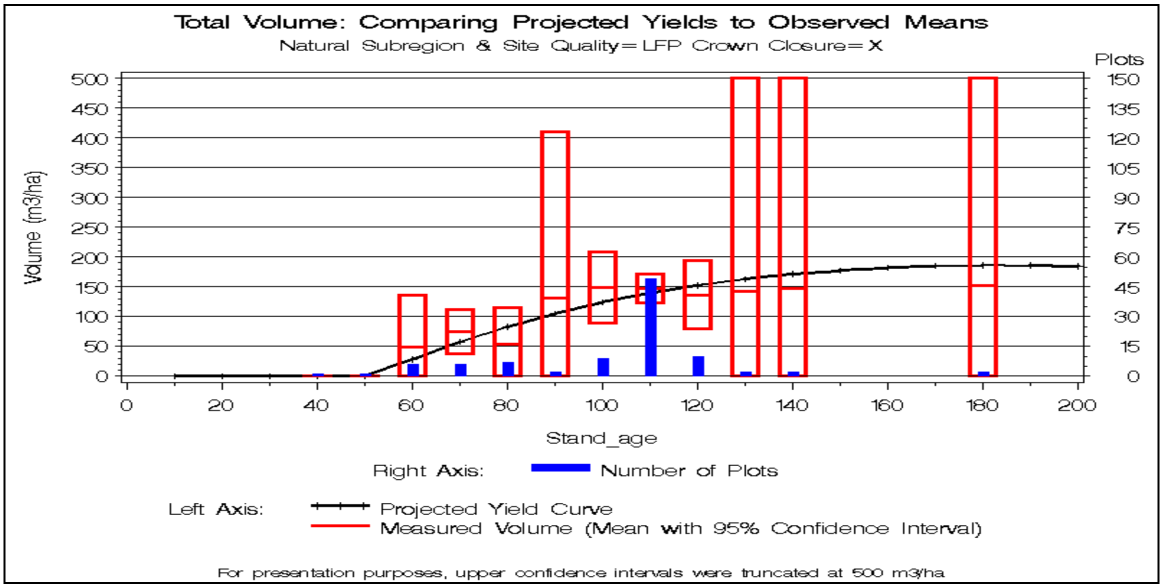


Figure 6-9. Yield stratum #9 - Projected total volume (NSR= LF, Site=P, and CC=A to D) from coniferous dominated stands compared to observed field measured means.

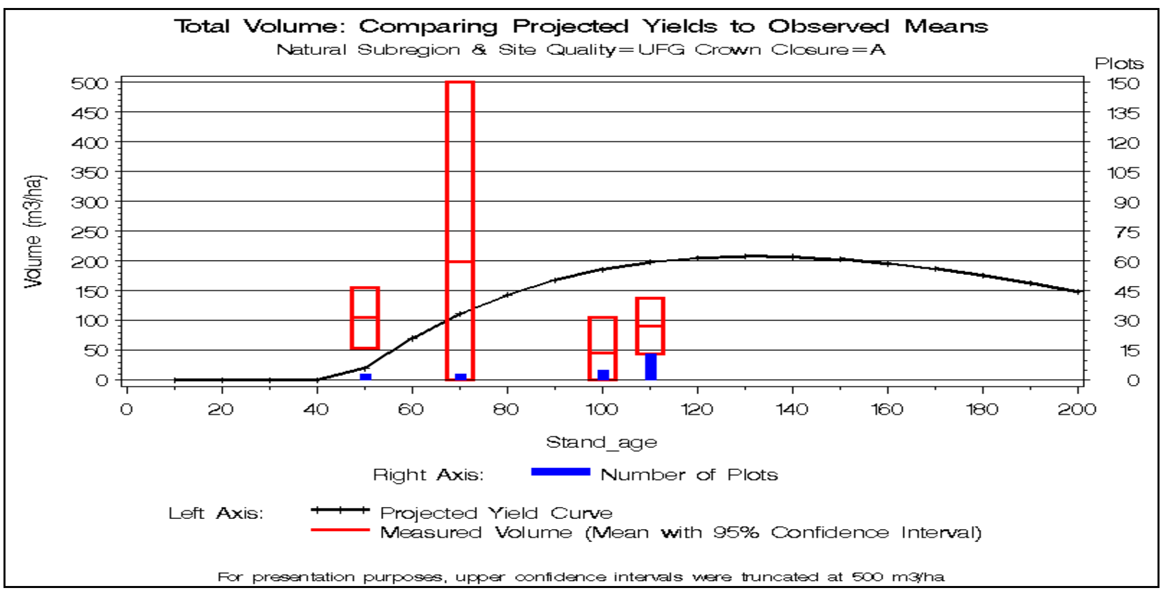


Figure 6-10. Yield stratum #10 - Projected total volume (NSR= UF, Site=G, and CC=A) from coniferous dominated stands compared to observed field measured means.

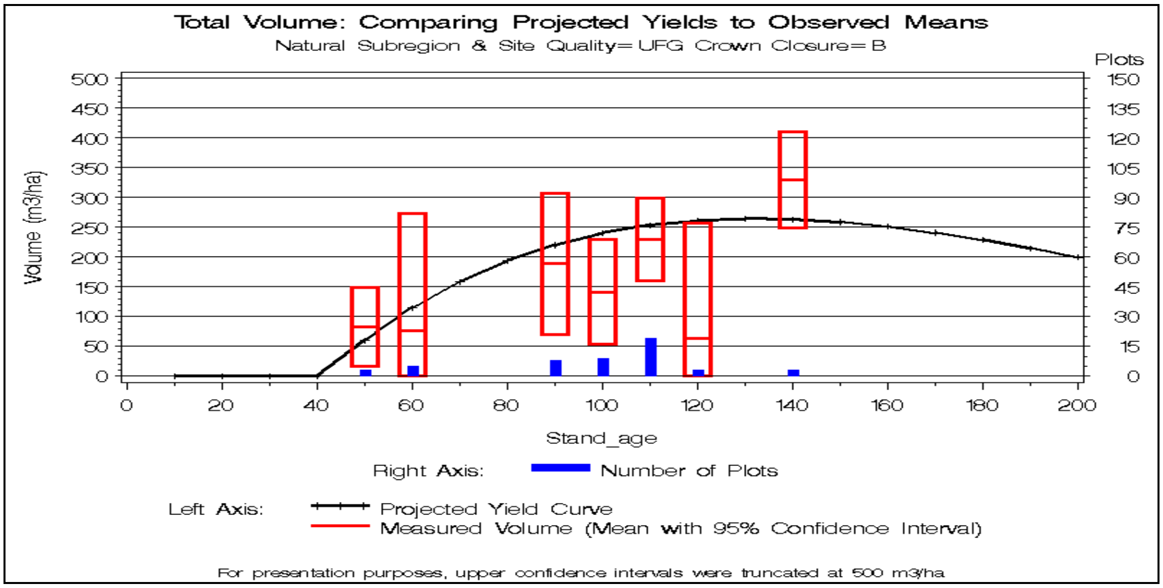


Figure 6-11. Yield stratum #11 - Projected total volume (NSR= UF, Site=G, and CC=B) from coniferous dominated stands compared to observed field measured means.

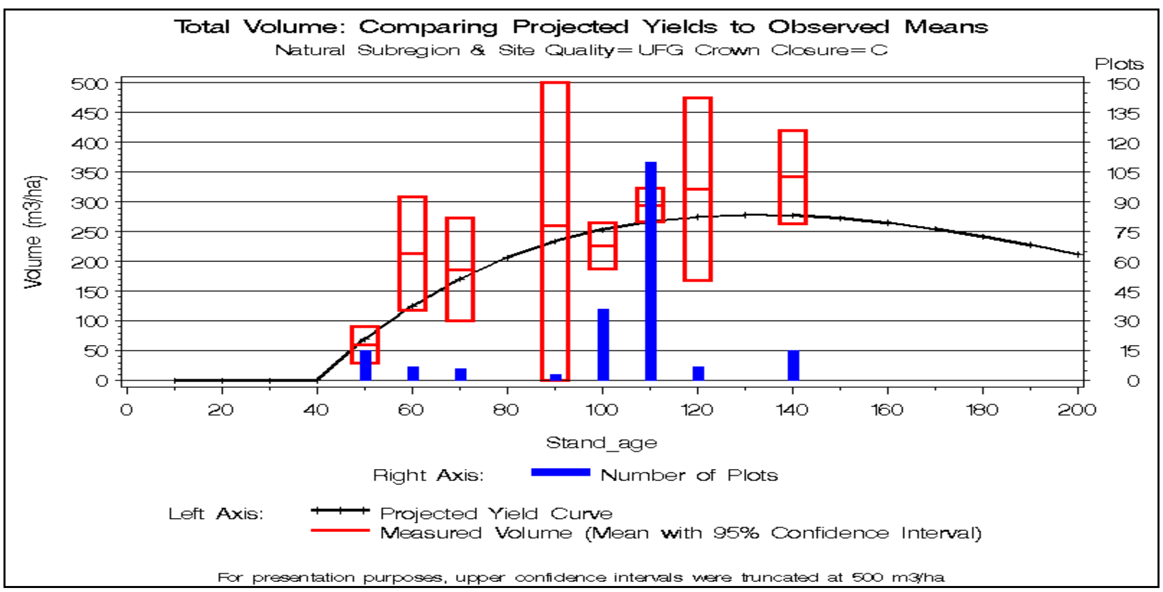


Figure 6-12. Yield stratum #12 - Projected total volume (NSR= UF, Site=G, and CC=C) from coniferous dominated stands compared to observed field measured means.

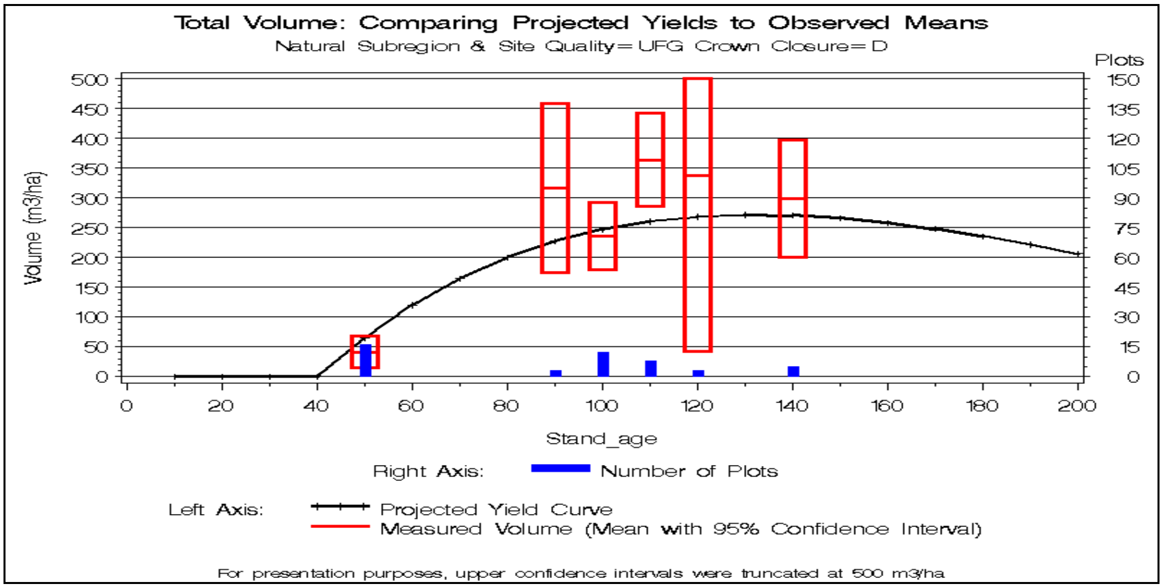


Figure 6-13. Yield stratum #13 - Projected total volume (NSR= UF, Site=G, and CC=D) from coniferous dominated stands compared to observed field measured means.

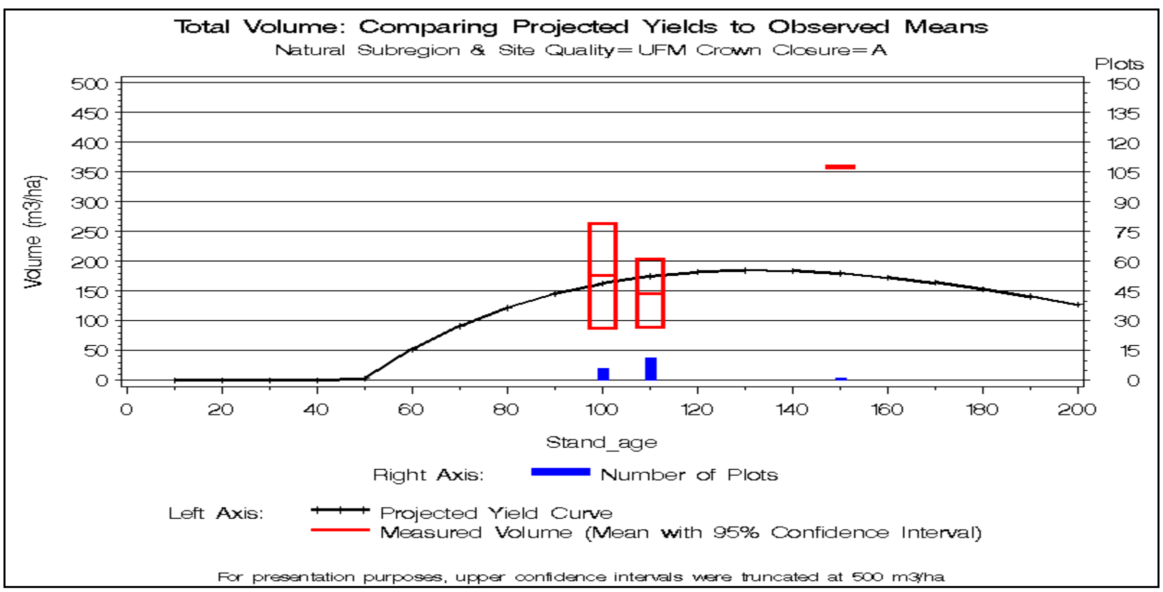


Figure 6-14. Yield stratum #14 - Projected total volume (NSR= UF, Site=M, and CC=A) from coniferous dominated stands compared to observed field measured means.

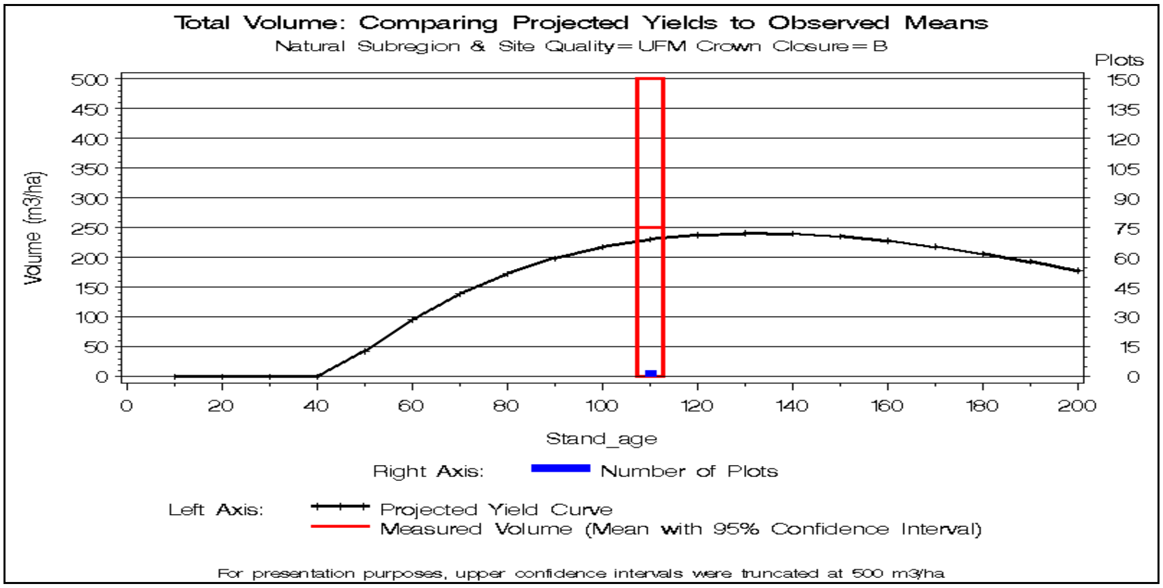


Figure 6-15. Yield stratum #15 - Projected total volume (NSR= UF, Site=M, and CC=B) from coniferous dominated stands compared to observed field measured means.

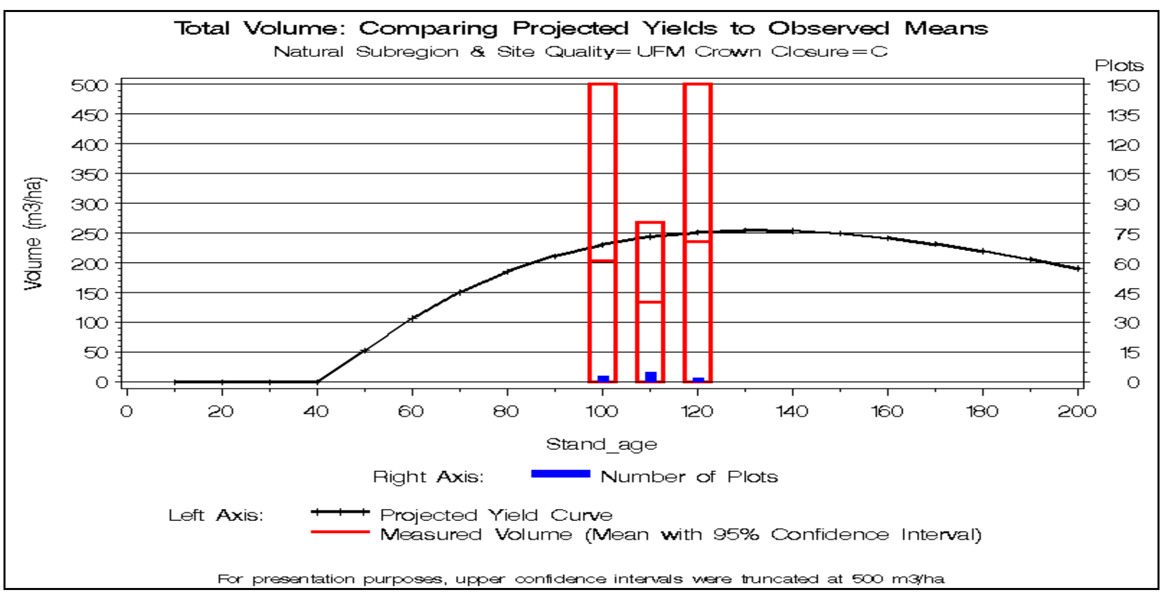


Figure 6-16. Yield stratum #16 - Projected total volume (NSR= LF, Site=M, and CC=C) from coniferous dominated stands compared to observed field measured means.

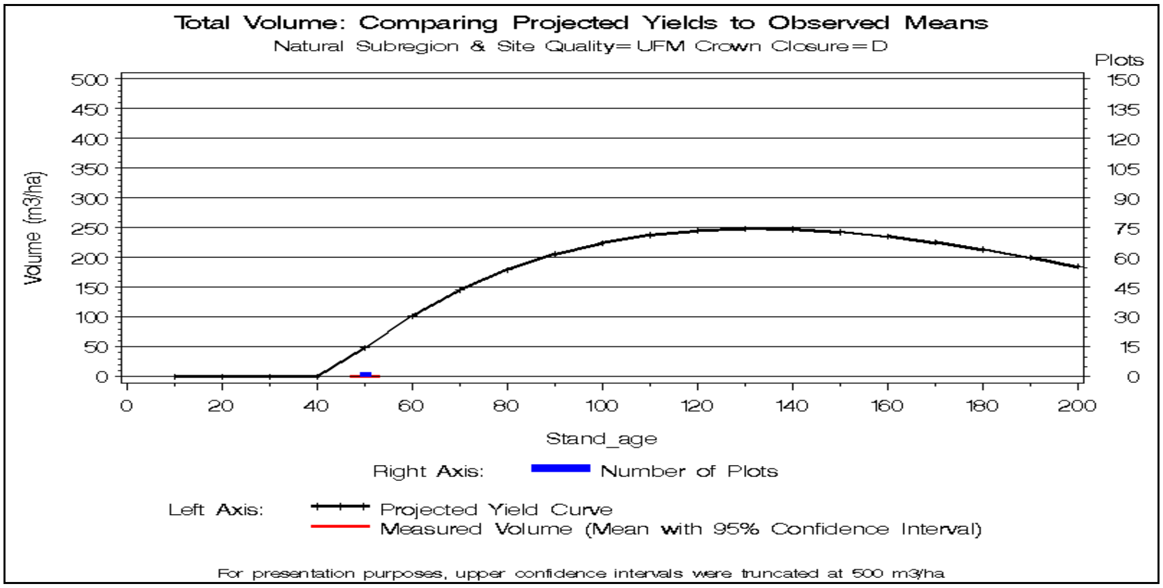


Figure 6-17. Yield stratum #17 - Projected total volume (NSR= UF, Site=M, and CC=D) from coniferous dominated stands compared to observed field measured means.

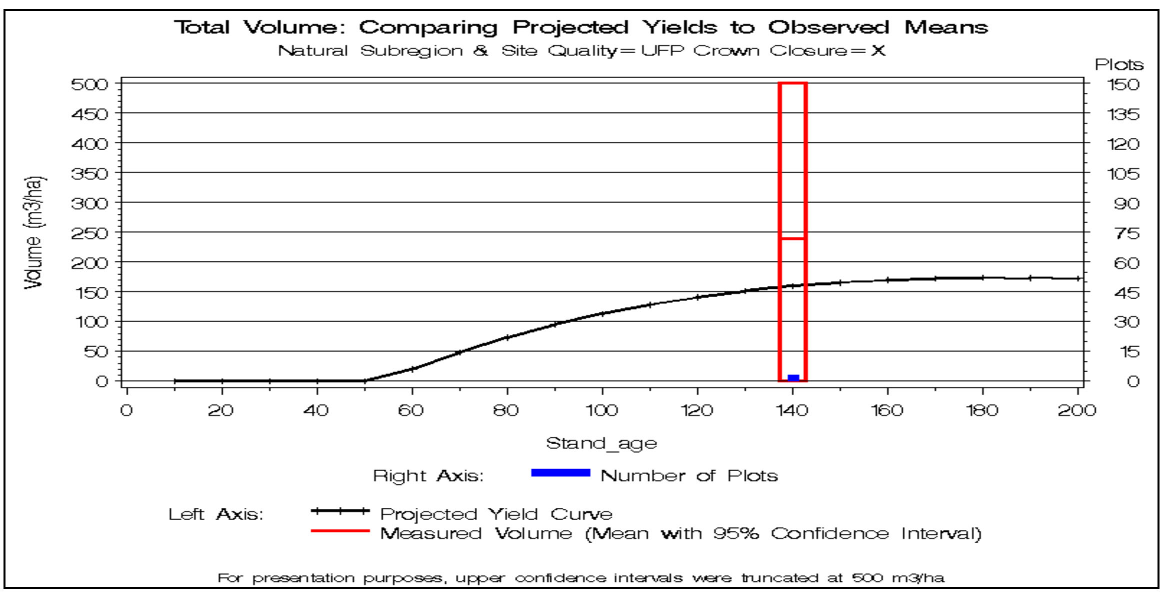


Figure 6-18. Yield stratum #18 - Projected total volume (NSR= UF, Site=P, and CC=A to D) from coniferous dominated stands compared to observed field measured means.

6.2.2 Verifying total yield projections from deciduous dominated stands

When compared to TSP field measured-mean volumes the total yield projections for the 8 major deciduous strata (due to a lack of plots the poor site yield strata was not included) are shown to be reasonable (Figure

6-19 to Figure 6-26). For the most part, all yield projections in the lower foothills are comparable to the estimates provided by the TSP means. For upper foothills "C" crown closure stands were sampled with enough frequency to confirm that the yield projections emulate the observed field means.

When making these comparisons it must also be remembered that proposed yield curves have an additional deciduous mortality constant (section 2.6.6) applied (which is not included in the projections here to avoid confounding the comparison). Overall total volume projections for deciduous dominated stands match well with the field observed measurements.

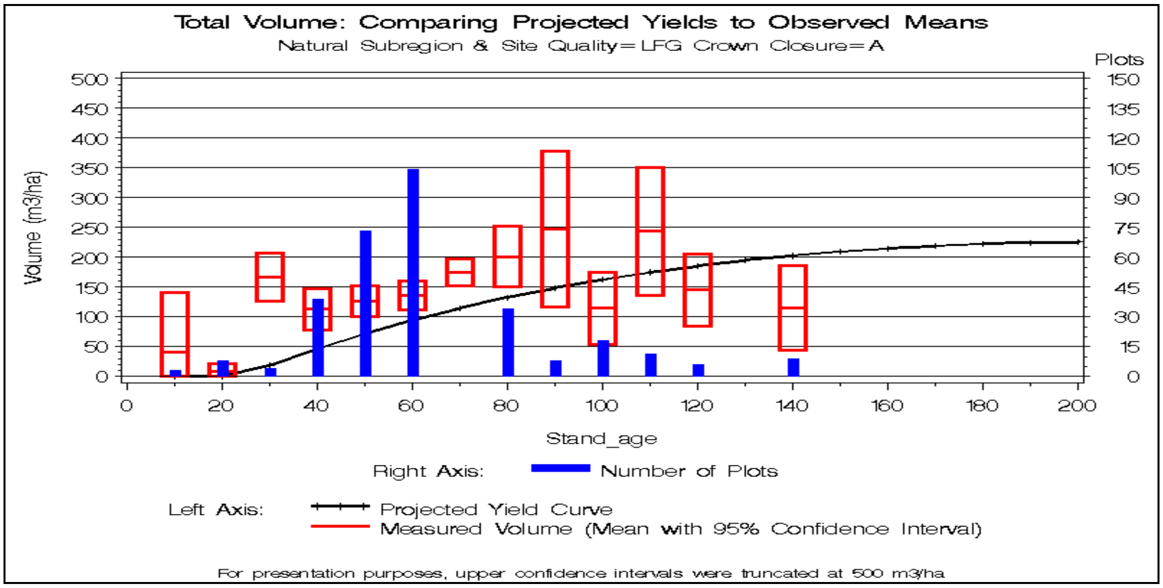


Figure 6-19. Yield stratum #19 - Projected total volume (NSR= LF, Site=G, and CC=A) from deciduous dominated stands compared to observed field measured means.

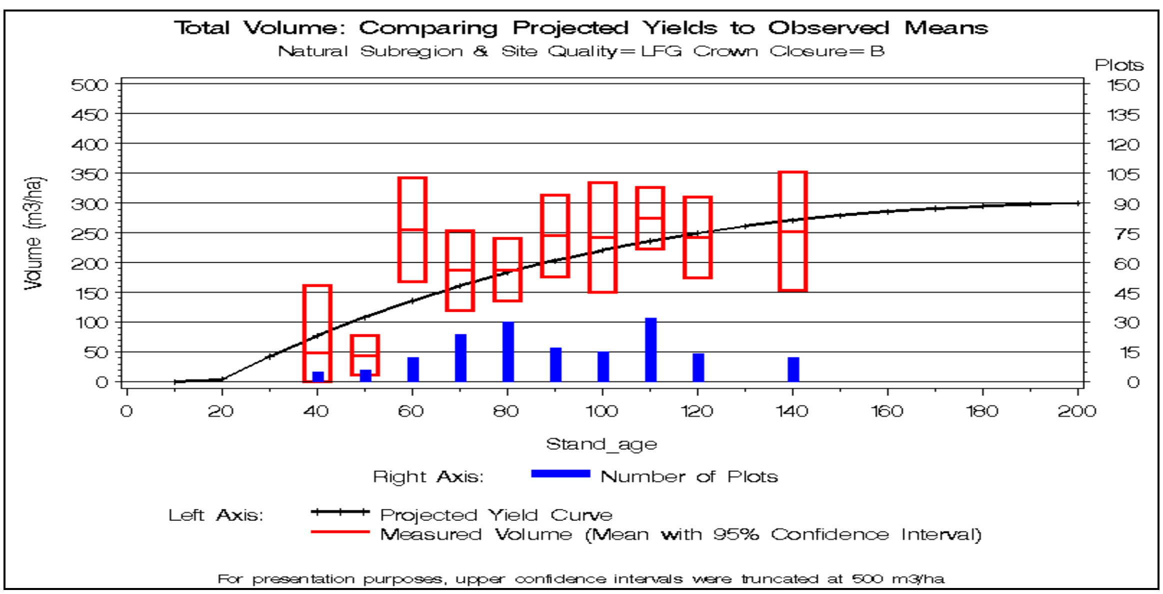


Figure 6-20. Yield stratum #20 - Projected total volume (NSR= LF, Site=G, and CC=B) from deciduous dominated stands compared to observed field measured means.

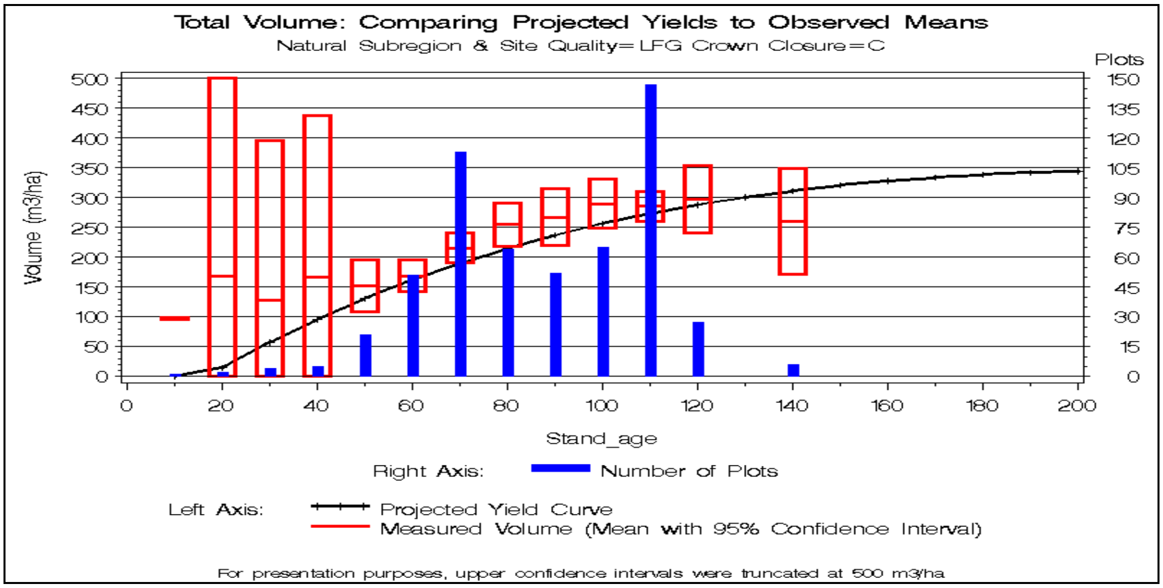


Figure 6-21. Yield stratum #21 - Projected total volume (NSR= LF, Site=G, and CC=C) from deciduous dominated stands compared to observed field measured means.

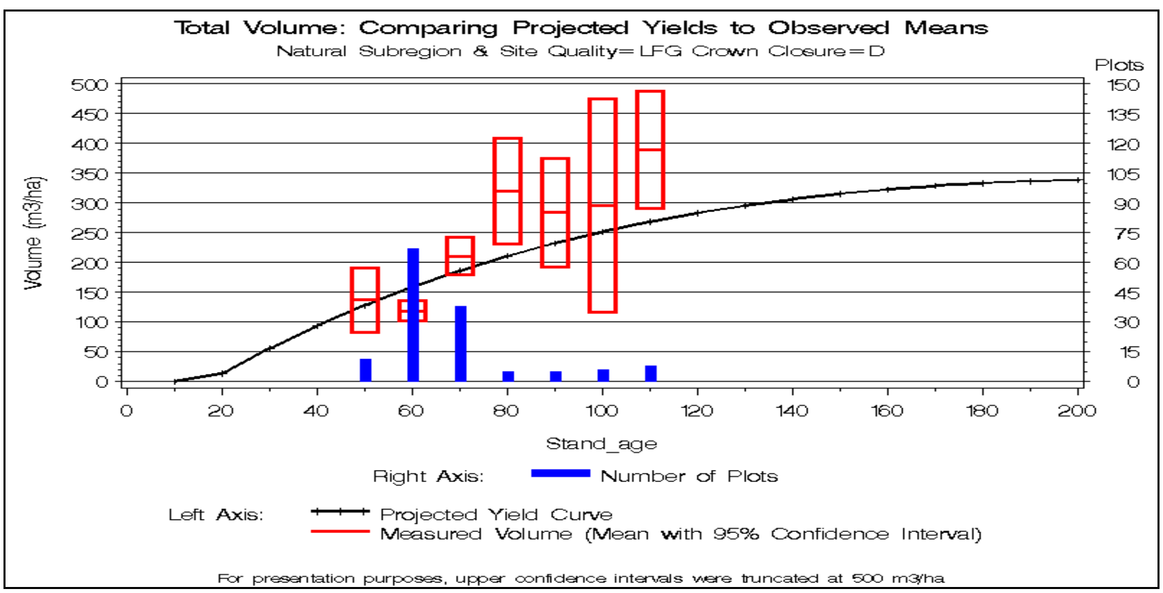


Figure 6-22. Yield stratum #22 - Projected total volume (NSR= LF, Site=G, and CC=D) from deciduous dominated stands compared to observed field measured means.

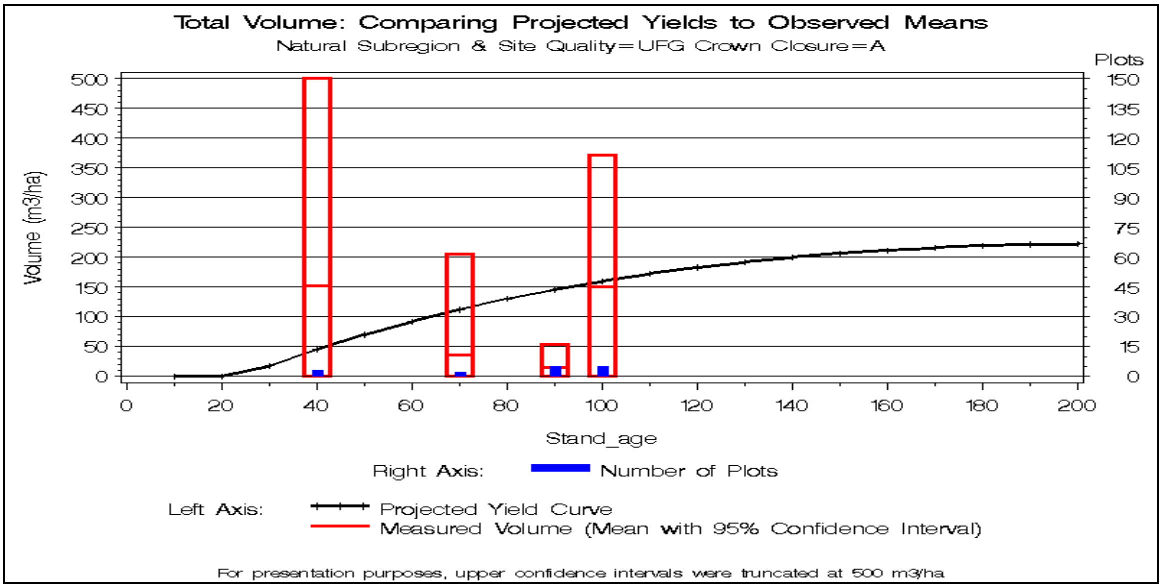


Figure 6-23. Yield stratum #23 - Projected total volume (NSR= UF, Site=G, and CC=A) from deciduous dominated stands compared to observed field measured means.

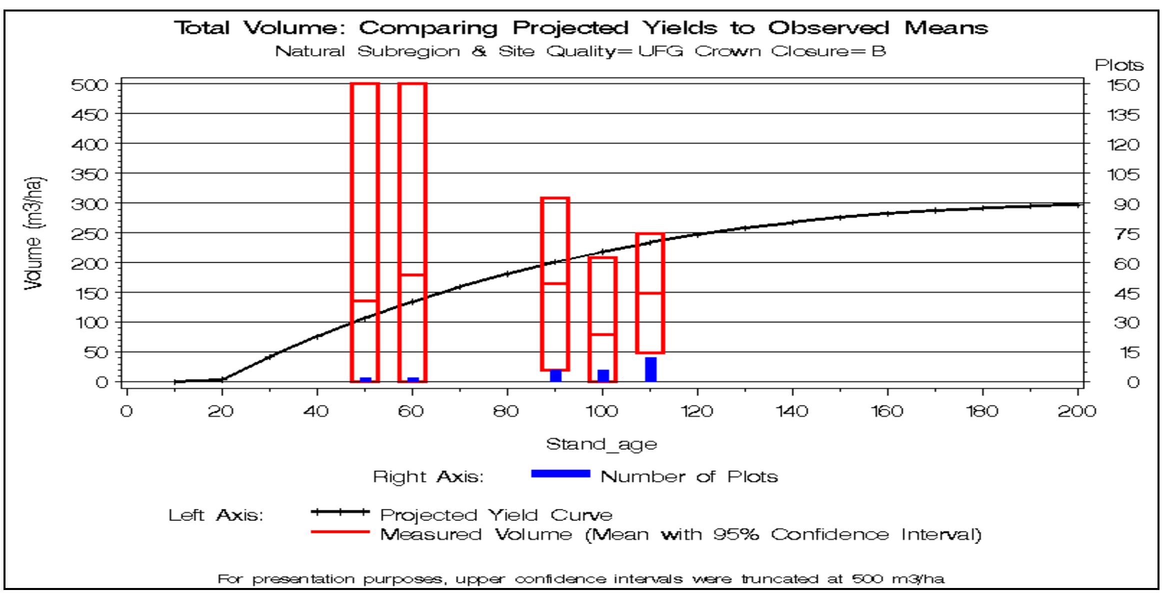


Figure 6-24. Yield stratum #24 - Projected total volume (NSR= UF, Site=G, and CC=B) from deciduous dominated stands compared to observed field measured means.

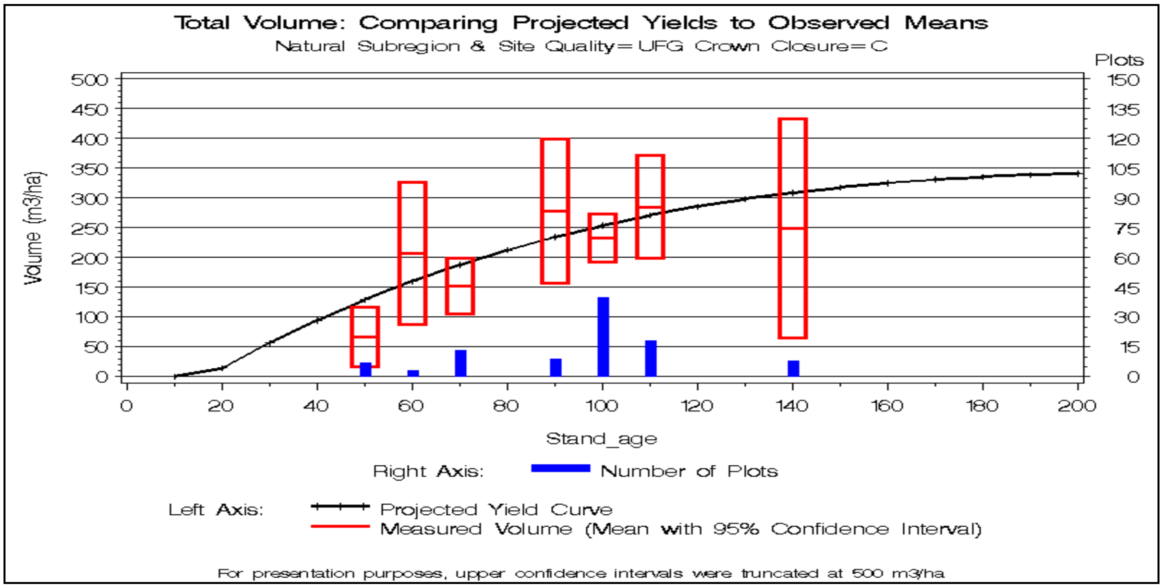


Figure 6-25. Yield stratum #25 - Projected total volume (NSR= UF, Site=G, and CC=C) from deciduous dominated stands compared to observed field measured means.

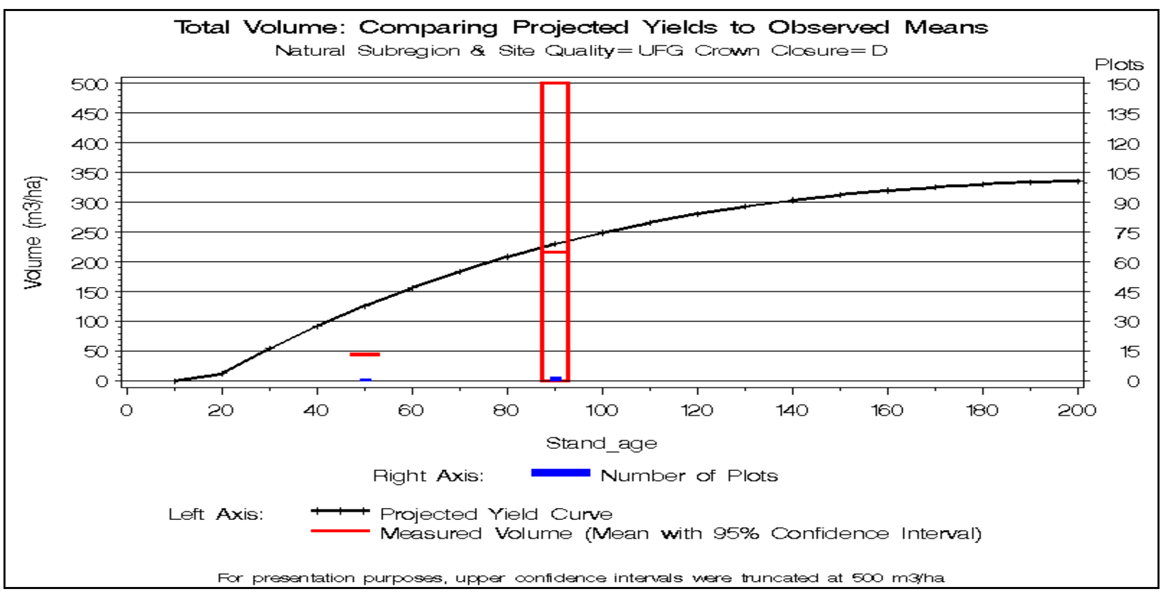


Figure 6-26. Yield stratum #26 - Projected total volume (NSR= UF, Site=G, and CC=D) from deciduous dominated stands compared to observed field measured means.

6.2.3 Verifying major species volume projections

Major species volumes were estimated by Equation 9, which in effect represents major species volume as a proportion of total volume. Therefore to check for errors an analysis was done that compared the proportional contribution of major species volume to total volume from field observations (coniferous volume/total volume – for coniferous dominated stands) to the results from Equation 9 with the total volume parameter remove:

$$\text{Proportion of total volume contributed by major species} = (c0 + c1 \bullet PC)$$

Equation 13

Coniferous Volumes

The results show that Equation 9 predicts coniferous volumes in accord with the field observations. The results are also consistent with statistical and biological expectations. For coniferous dominated stands (both in lower and upper foothills) the proportion of coniferous species volume increases consistently with increasing AVI coniferous composition (Figure 6-27). Therefore Equation 9 can be used with confidence for predicting the major species volume for coniferous dominated stands.

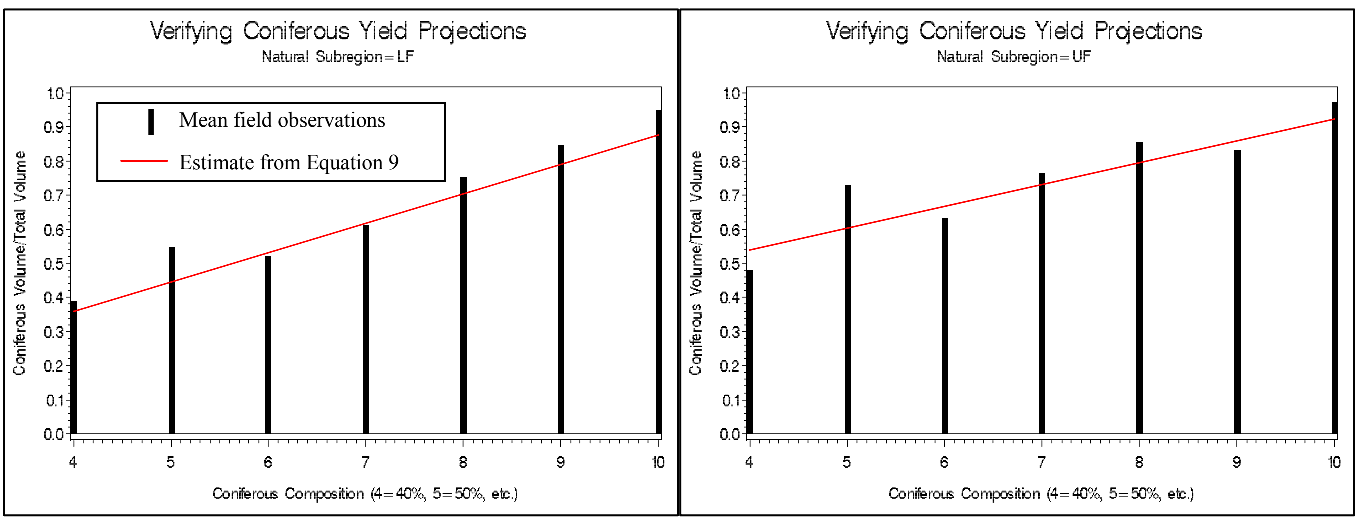
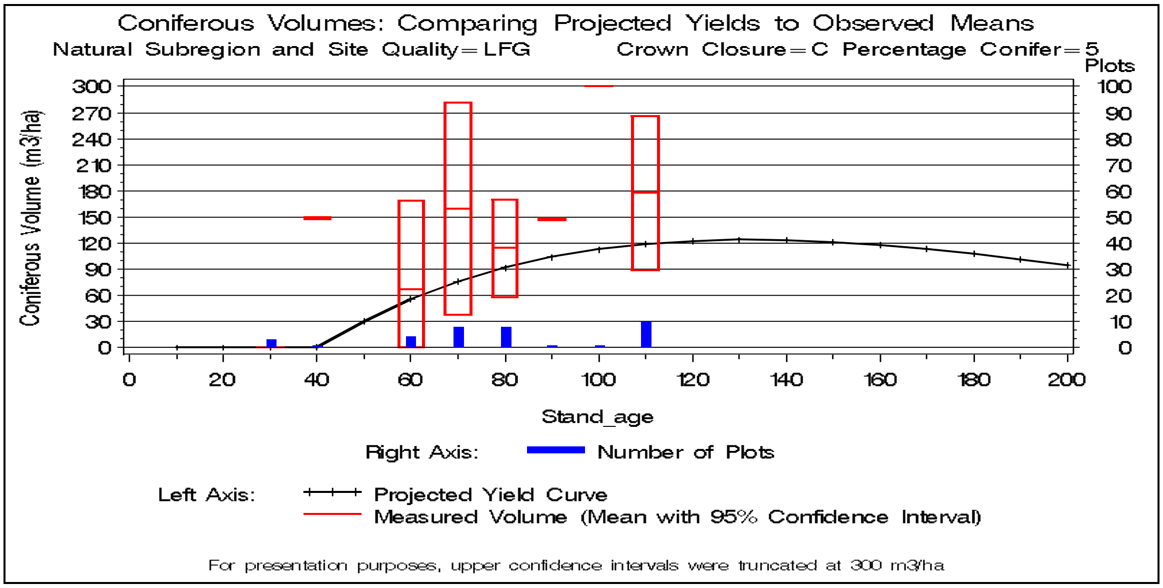
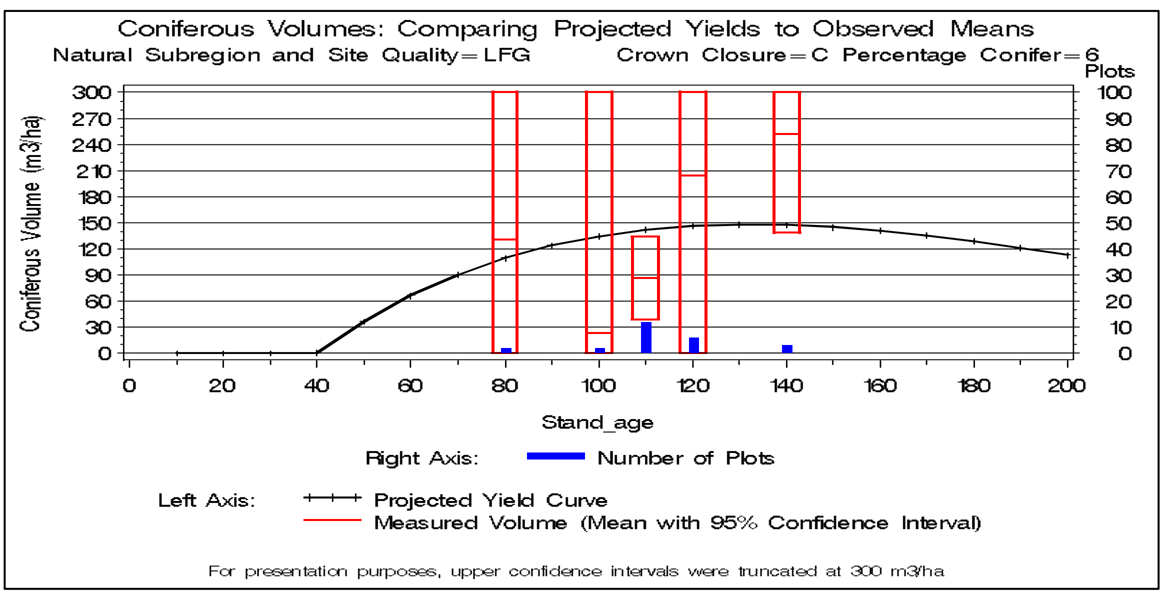
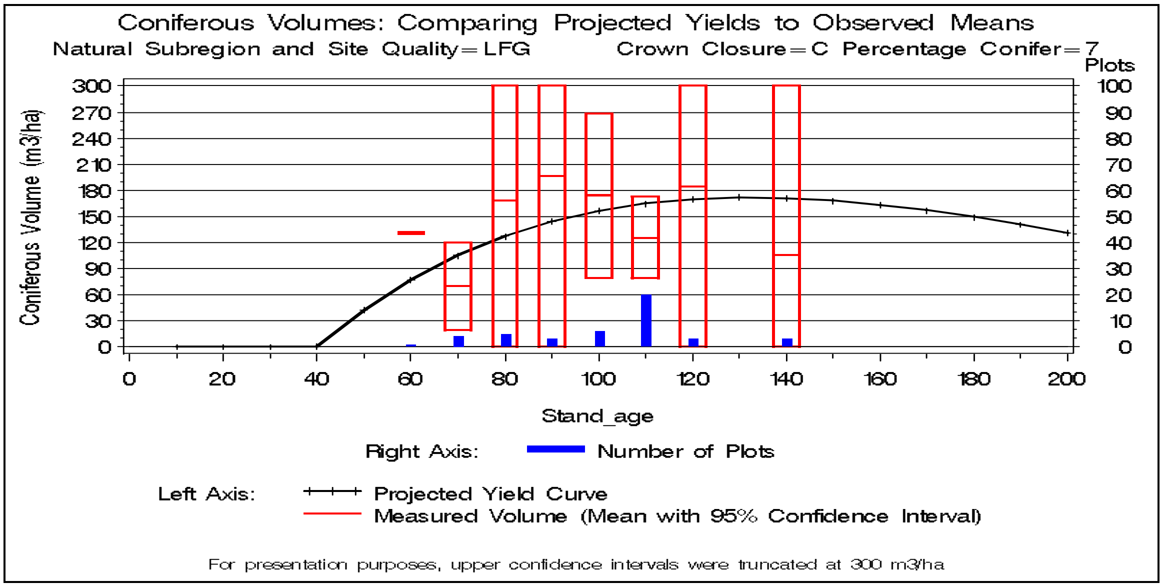


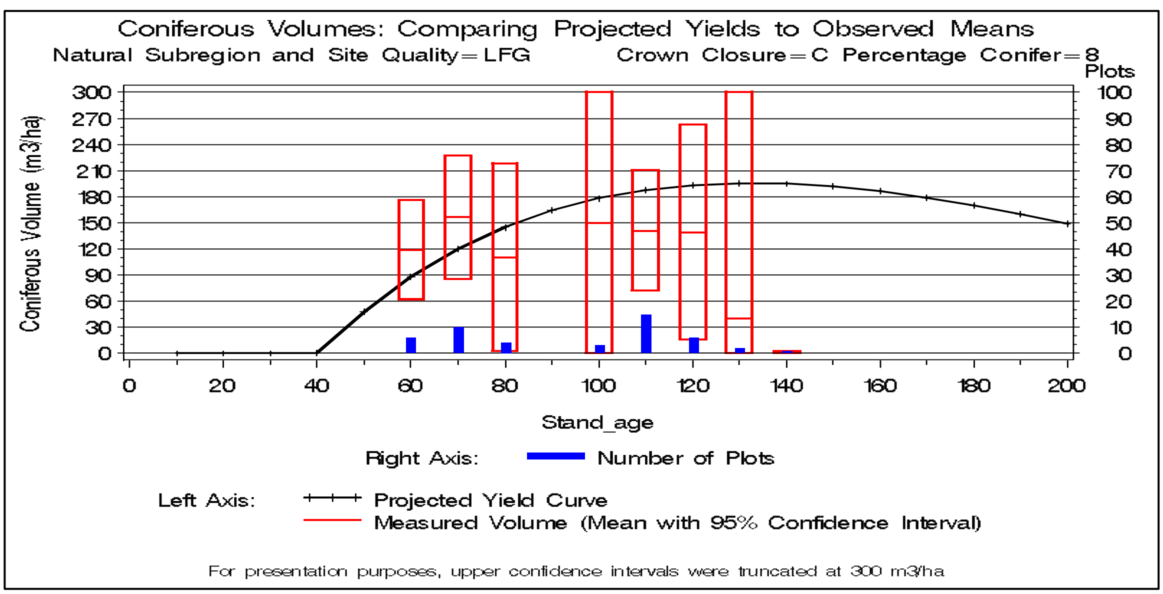
Figure 6-27. Verifying proportion of volume obtained from coniferous species based on different AVI coniferous composition on coniferous dominated stands (Yield projection versus field measured data).

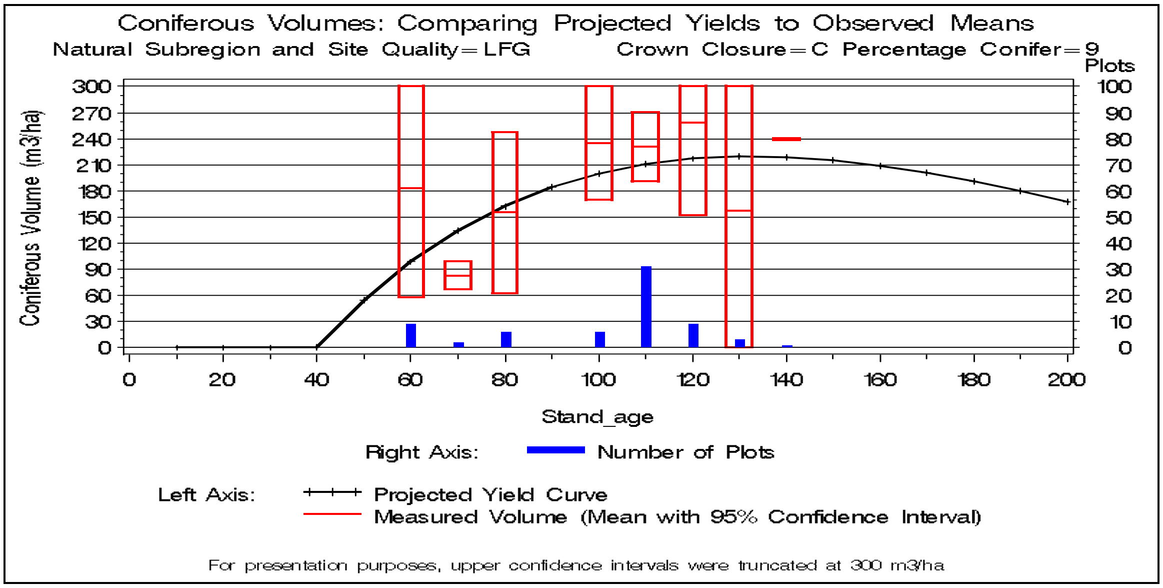
Six examples of how coniferous volume predictions directly compare to field measured volumes



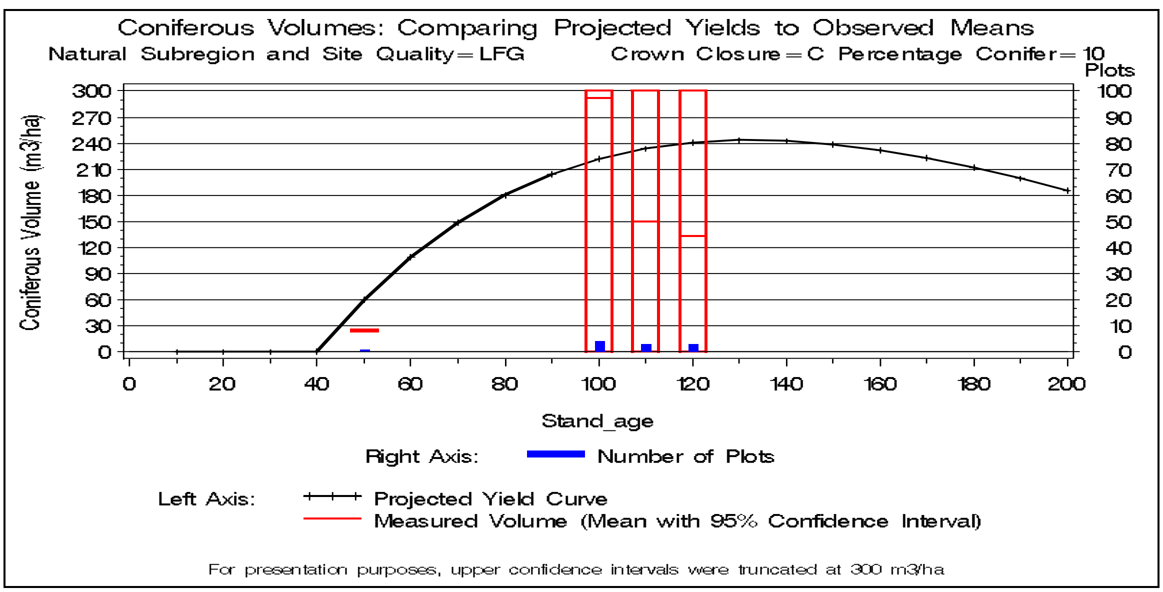



Coniferous Volumes: Comparing Projected Yields to Observed Means
Natural Subregion and Site Quality=LFG
Crown Closure=C Percentage Conifer=7
Plots
Coniferous Volume (m3/ha)
300
270
240
210
180
150
120
90
60
30
0
100
90
80
70
60
50
40
30
20
10
0
0
20
40
60
80
100
120
140
160
180
200
Stand_age
Right Axis:
Number of Plots
Left Axis:
Projected Yield Curve
Measured Volume (Mean with 95% Confidence Interval)
For presentation purposes, upper confidence intervals were truncated at 300 m3/ha


Coniferous Volumes: Comparing Projected Yields to Observed Means
Natural Subregion and Site Quality=LFG
Crown Closure=C Percentage Conifer=8
Plots
Coniferous Volume (m3/ha)
300
270
240
210
180
150
120
90
60
30
0
100
90
80
70
60
50
40
30
20
10
0
0
20
40
60
80
100
120
140
160
180
200
Stand_age
Right Axis:
Number of Plots
Left Axis:
Projected Yield Curve
Measured Volume (Mean with 95% Confidence Interval)
For presentation purposes, upper confidence intervals were truncated at 300 m3/ha



Coniferous Volumes: Comparing Projected Yields to Observed Means
Natural Subregion and Site Quality=LFG
Crown Closure=C Percentage Conifer=9
Plots
Coniferous Volume (m3/ha)
Stand_age
Right Axis: Number of Plots
Left Axis: Projected Yield Curve
Measured Volume (Mean with 95% Confidence Interval)
For presentation purposes, upper confidence intervals were truncated at 300 m3/ha



Coniferous Volumes: Comparing Projected Yields to Observed Means
Natural Subregion and Site Quality=LFG
Crown Closure=C Percentage Conifer=10
Plots
Coniferous Volume (m3/ha)
Stand_age
Right Axis: Number of Plots
Left Axis: Projected Yield Curve
Measured Volume (Mean with 95% Confidence Interval)
For presentation purposes, upper confidence intervals were truncated at 300 m3/ha

Deciduous Volumes

The results show that Equation 9 predicts deciduous volumes in accord with the field observations. The results are also consistent with statistical and biological expectations. For deciduous dominated stands (both in lower and upper foothills) the proportion of deciduous species volume increases consistently with increasing AVI deciduous composition (Figure 6-27). Therefore Equation 9 can be used with confidence for predicting the major species volume for deciduous dominated stands.

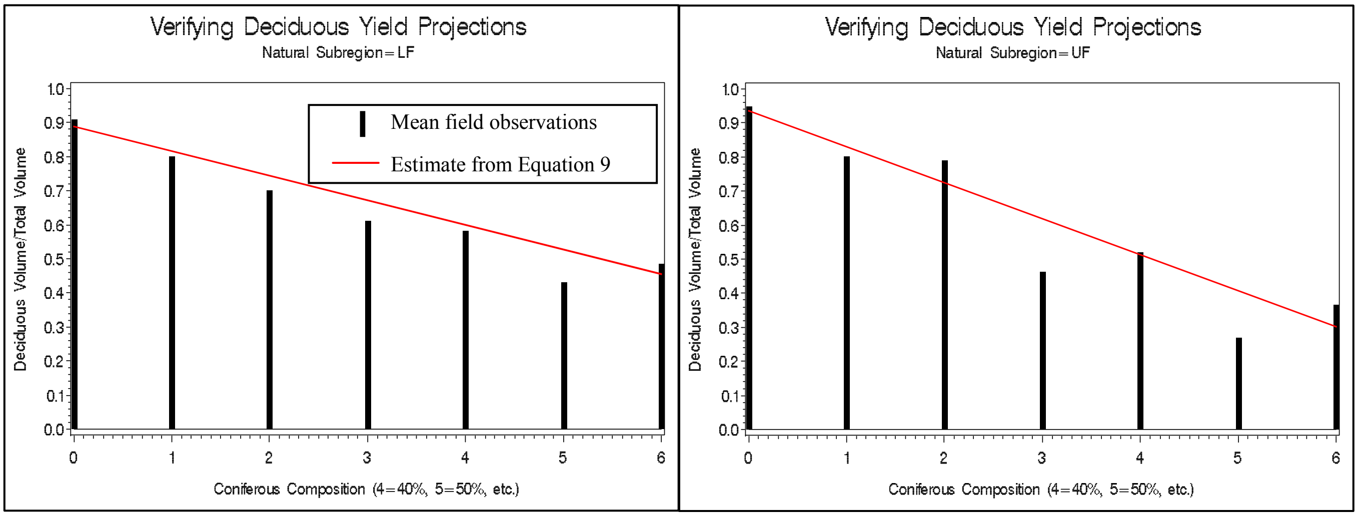
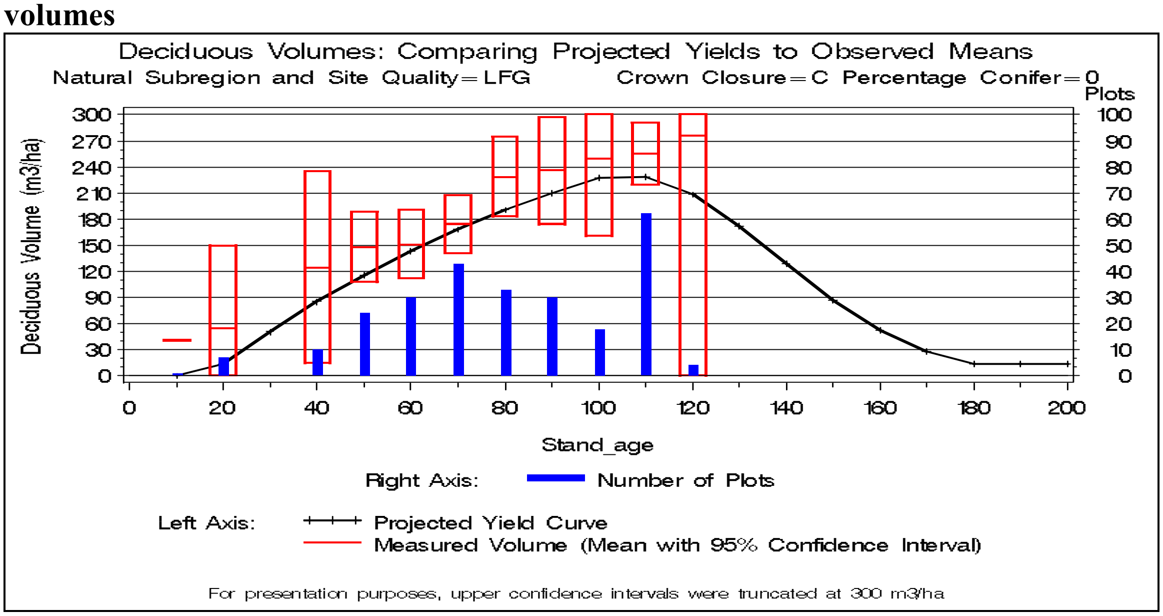
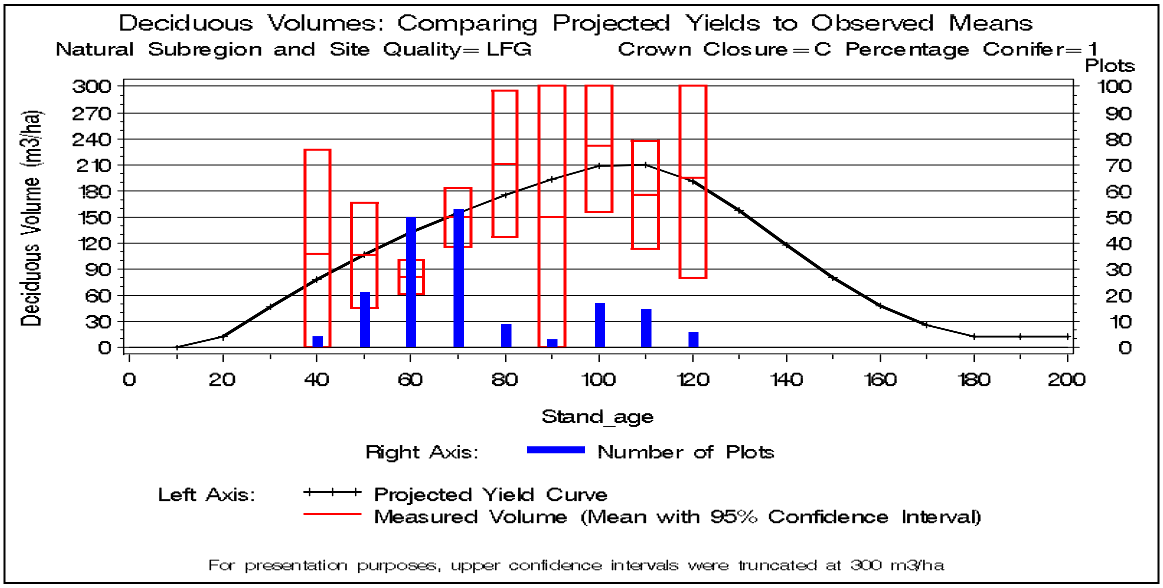
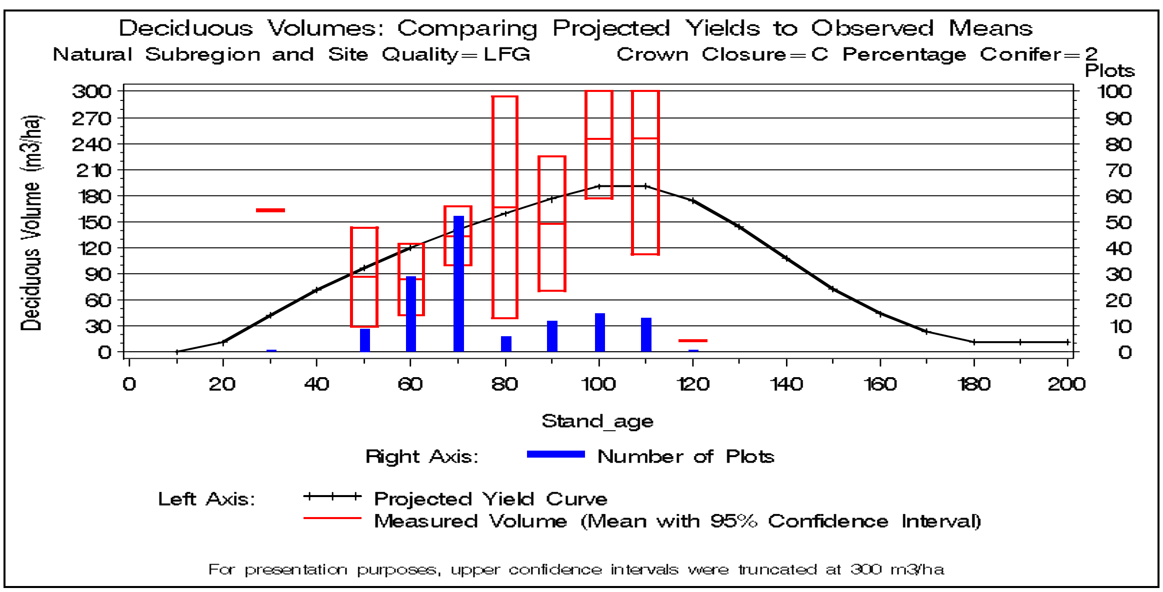


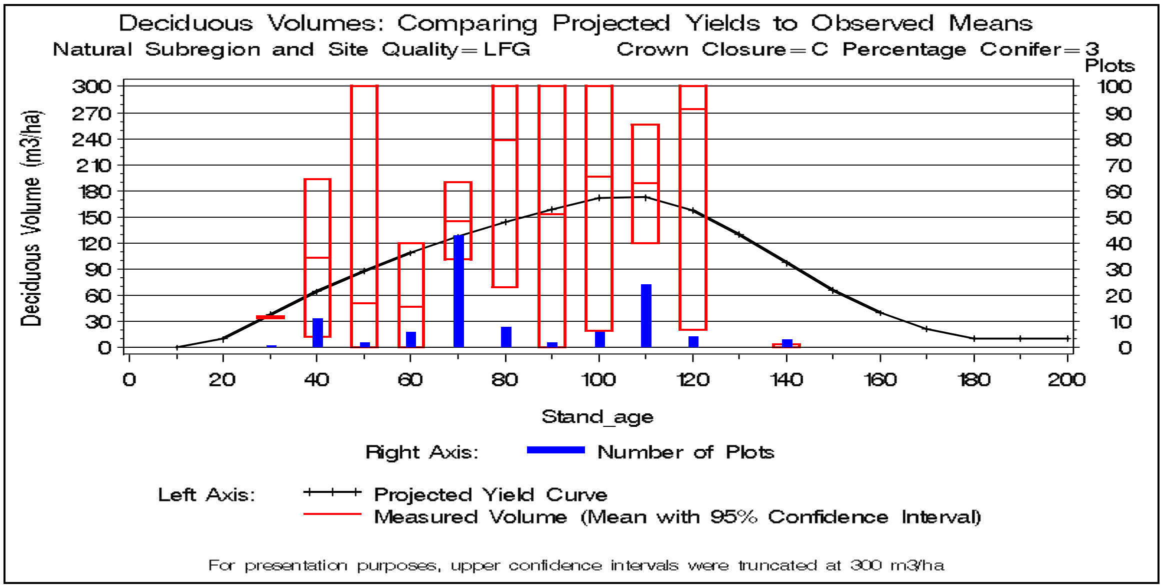
Figure 6-28. Verifying proportion of volume obtained from deciduous species based on different AVI coniferous composition on deciduous dominated stands (Yield projection versus field measured data).

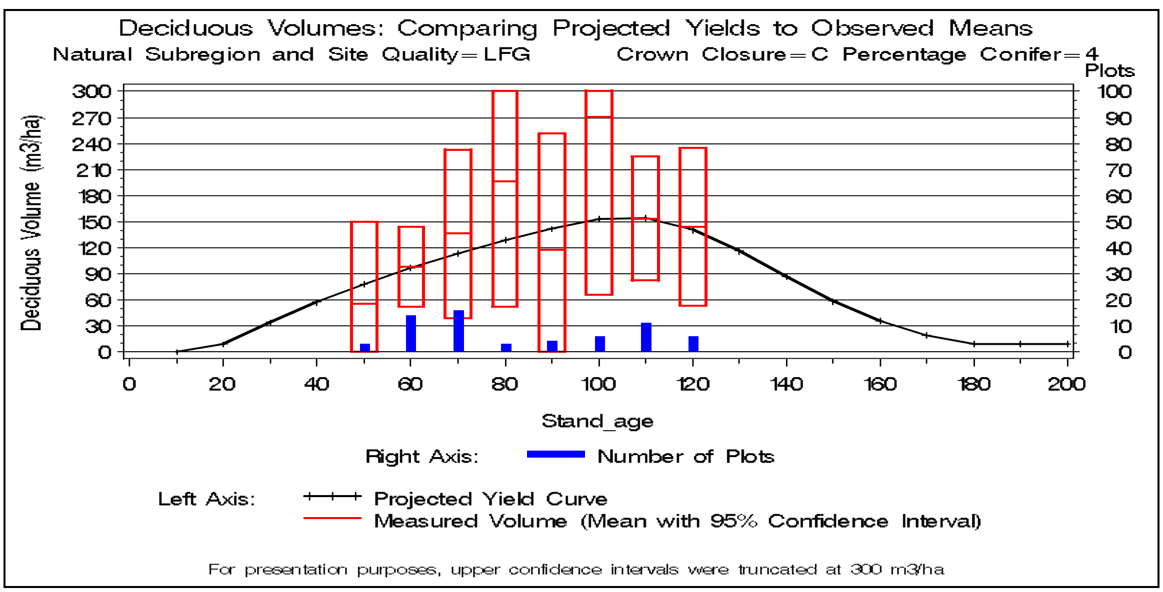
Six examples of how deciduous volume predictions directly compare to field measured volumes

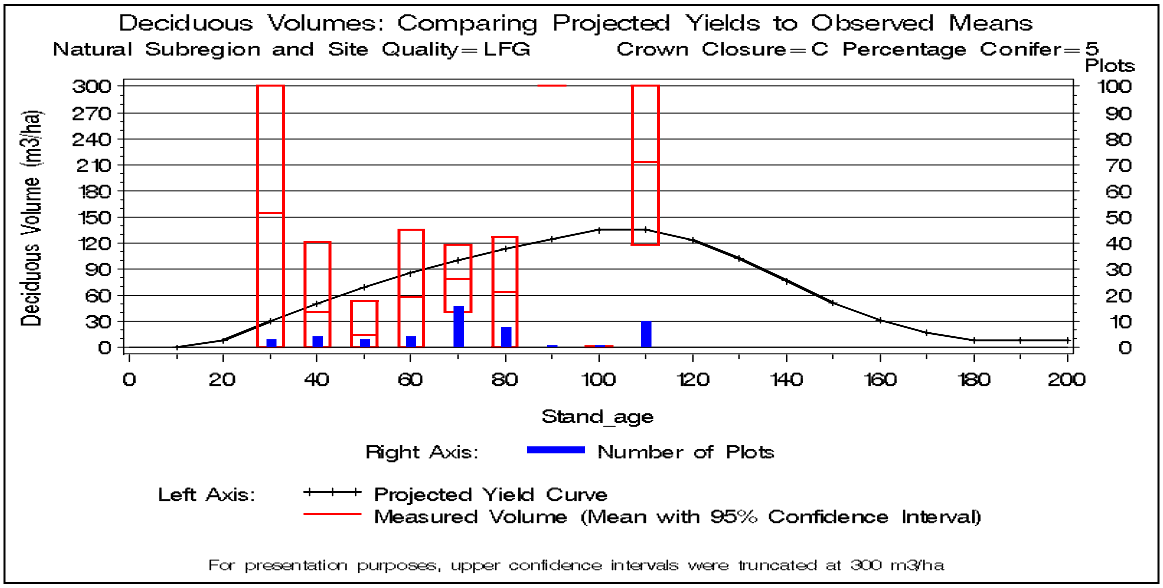



Deciduous Volumes: Comparing Projected Yields to Observed Means
Natural Subregion and Site Quality= LFG
Crown Closure=C Percentage Conifer=1
Plots
Deciduous Volume (m3/ha)
300
270
240
210
180
150
120
90
60
30
0
100
90
80
70
60
50
40
30
20
10
0
0
20
40
60
80
100
120
140
160
180
200
Stand_age
Right Axis: Number of Plots
Left Axis: Projected Yield Curve
Measured Volume (Mean with 95% Confidence Interval)
For presentation purposes, upper confidence intervals were truncated at 300 m3/ha


Deciduous Volumes: Comparing Projected Yields to Observed Means
Natural Subregion and Site Quality= LFG
Crown Closure=C Percentage Conifer=2
Plots
Deciduous Volume (m3/ha)
300
270
240
210
180
150
120
90
60
30
0
100
90
80
70
60
50
40
30
20
10
0
0
20
40
60
80
100
120
140
160
180
200
Stand_age
Right Axis: Number of Plots
Left Axis: Projected Yield Curve
Measured Volume (Mean with 95% Confidence Interval)
For presentation purposes, upper confidence intervals were truncated at 300 m3/ha


Deciduous Volumes: Comparing Projected Yields to Observed Means
Natural Subregion and Site Quality=LFG
Crown Closure=C Percentage Conifer=3
Plots
Deciduous Volume (m3/ha)
300
270
240
210
180
150
120
90
60
30
0
100
90
80
70
60
50
40
30
20
10
0
0
20
40
60
80
100
120
140
160
180
200
Stand_age
Right Axis:
Number of Plots
Left Axis:
Projected Yield Curve
Measured Volume (Mean with 95% Confidence Interval)
For presentation purposes, upper confidence intervals were truncated at 300 m3/ha


Deciduous Volumes: Comparing Projected Yields to Observed Means
Natural Subregion and Site Quality=LFG
Crown Closure=C Percentage Conifer=4
Plots
Deciduous Volume (m3/ha)
300
270
240
210
180
150
120
90
60
30
0
100
90
80
70
60
50
40
30
20
10
0
0
20
40
60
80
100
120
140
160
180
200
Stand_age
Right Axis:
Number of Plots
Left Axis:
Projected Yield Curve
Measured Volume (Mean with 95% Confidence Interval)
For presentation purposes, upper confidence intervals were truncated at 300 m3/ha



6.2.4 Analyzing plots in and out of the net landbase for bias

Of the 2885 plots that were evaluated for use in the total volume function 139 were in netted out areas (an area removed from the harvestable landbase). As discussed above subjective deletion stands were already removed from the analysis. Both the coniferous and deciduous plots below suggest that including these 139 plots do not bias the proposed yield curves.

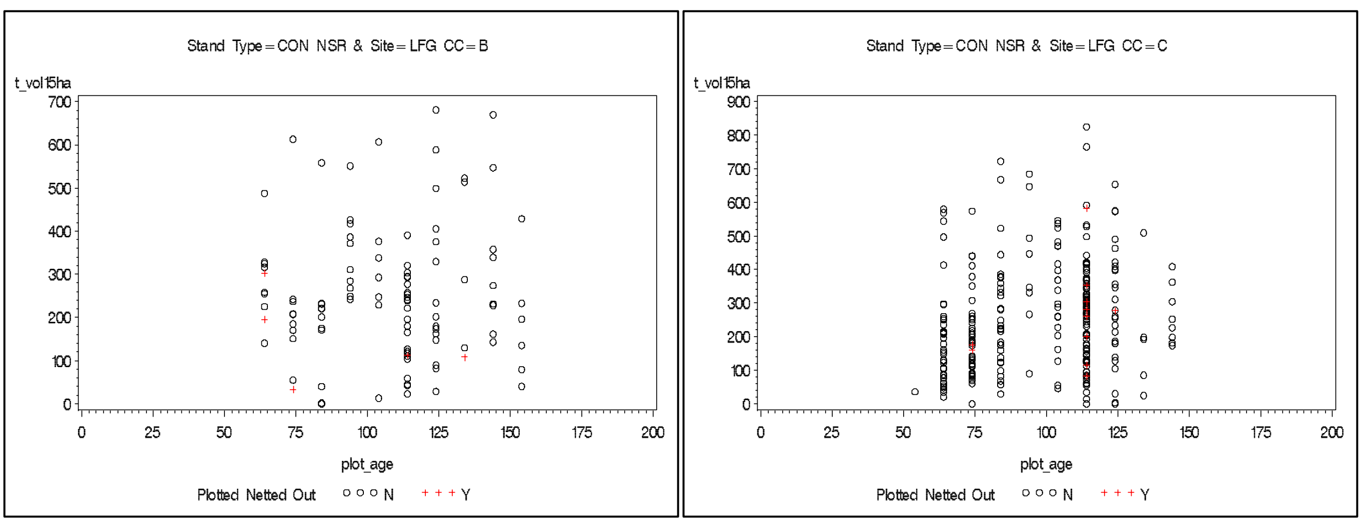


Figure 6-29 Comparison of plot volumes of plots located in netted-out areas (not removed due to subjective deletions) versus plots located in the net harvestable coniferous landbase.

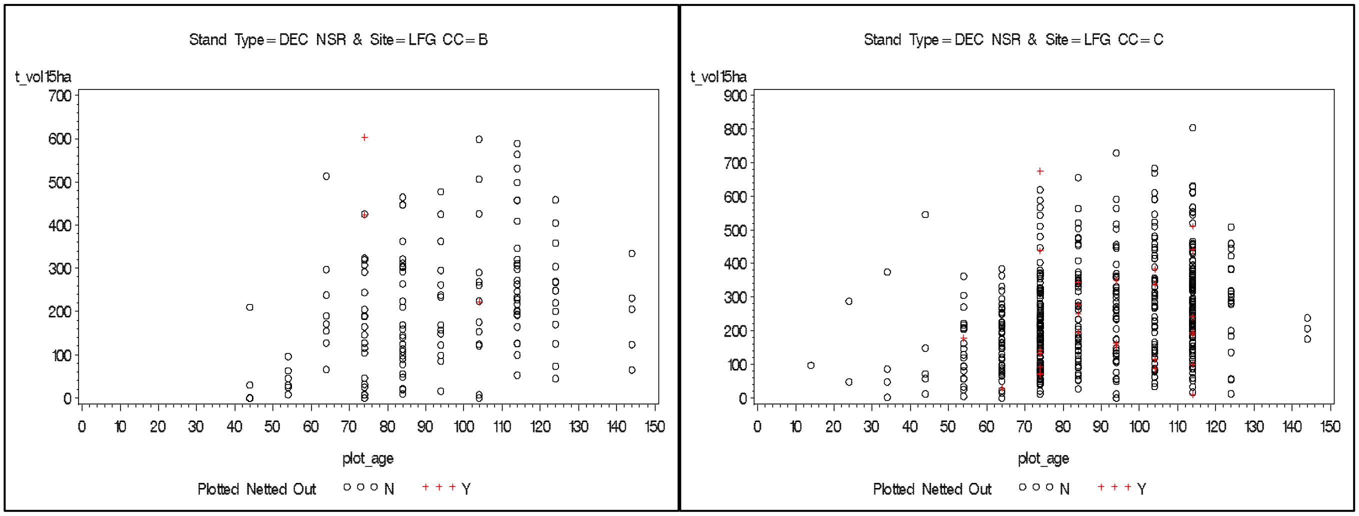


Figure 6-30 Comparison of plot volumes of plots located in netted-out areas (not removed due to subjective deletions) versus plots located in the net harvestable deciduous landbase.

6.3 Grouping ecosites into site quality groupings

Program: *ecogroups.prg*

Site productivity categories were identified on the basis of ecosite. SiteLogix was used to assign each plot to an ecosite based on the ecological classification system defined in *Field Guide to Ecosites of West-central Alberta*. Due to some ecosites being under represented in the Edson sampling program Drayton Valley FMA data were used to buttress the ecosites groupings (Please note: the compiled Drayton Valley data only is included in this submission – the raw plot data for the Drayton Valley data is available upon request or can be viewed during the Drayton Valley yield curve submission). This is a reasonable approach because the two FMAs are within the same natural subregions (Lower and Upper Foothills) and have similar forest vegetation. In addition, Weyerhaeuser Company's plans are to fully integrate sampling programs between the FMAs.

The following process was used to group site productivity classes:

1. Both Edson and Drayton Valley FMA TSP protocol included plot productivity information acquired by measuring the age and height of dominant and co-dominant trees.
2. The age and height of site trees (see section 2.3.1) were used to derive a site index value for deciduous and coniferous species groups at each plot.
3. Site index values for coniferous and deciduous species groups for each plot were stratified by ecosite classes based on the SiteLogix prediction for ecosites.
4. Box plots were used to analyze the distribution of site index values for SiteLogix ecosite calls.
5. Ecosite classes were grouped into productivity classes based on:
    a. Median and mean productivity values,
    b. Range of productivity variation,
    c. Number of observations per class, and
    d. Ecological relationship between classes.
    e. Knowledge of harvesting history in the area

Table 6-1. Site quality groupings for coniferous and deciduous stands by Site Logix ecosite call

Species Type	NSR	Site Quality	Ecosite Categories
Coniferous	LF	Good	E, F
		Medium	C, D, I
		Poor	A, B, G, H, J, K, L, M, N
	UF	Good	D, E, F
		Medium	C, H, J
		Poor	A, B, G, I, K, L, M, N
Deciduous[1]	LF	Good	E, F, I
		Medium	-
		Poor	A, B, C, D, G, H, J, K, L, M, N
	UF	Good	E, F
		Medium	-
		Poor	A, B, C, D, G, H, I, J, K, L, M, N

[1] Only two productivity classes were used to represent deciduous because of the narrow range of site utilization or low numbers of observations.

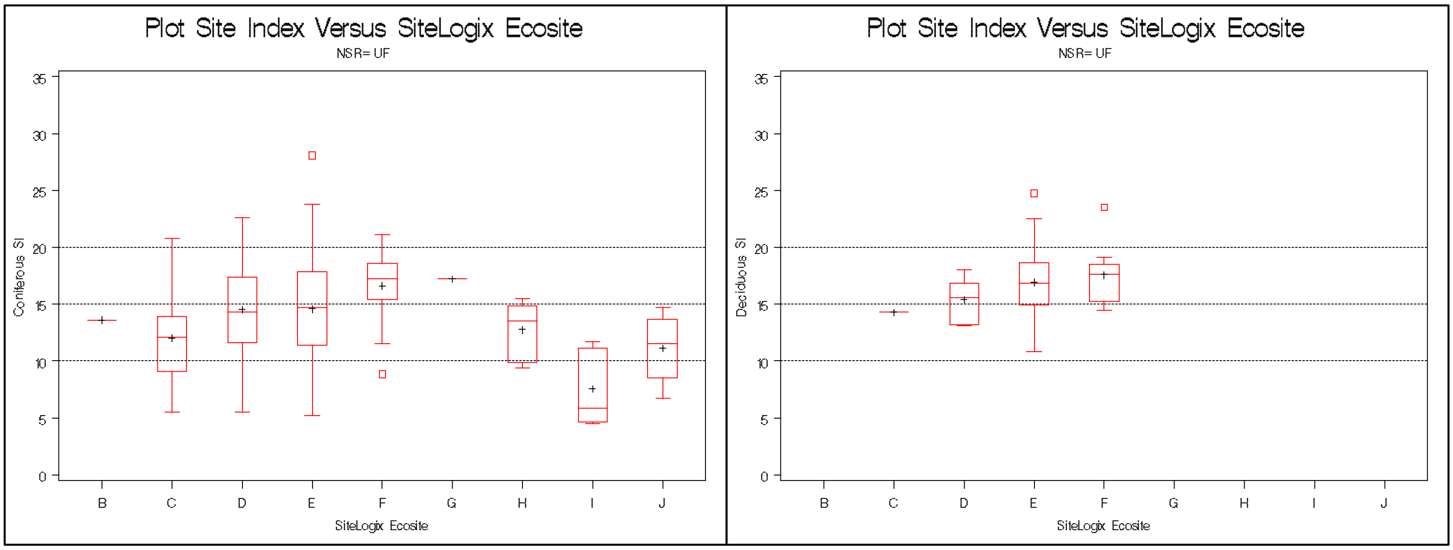


Figure 6-31. Distribution of site index values in the Upper Foothills by SiteLogix ecosite class (includes Edson and Drayton Valley data)

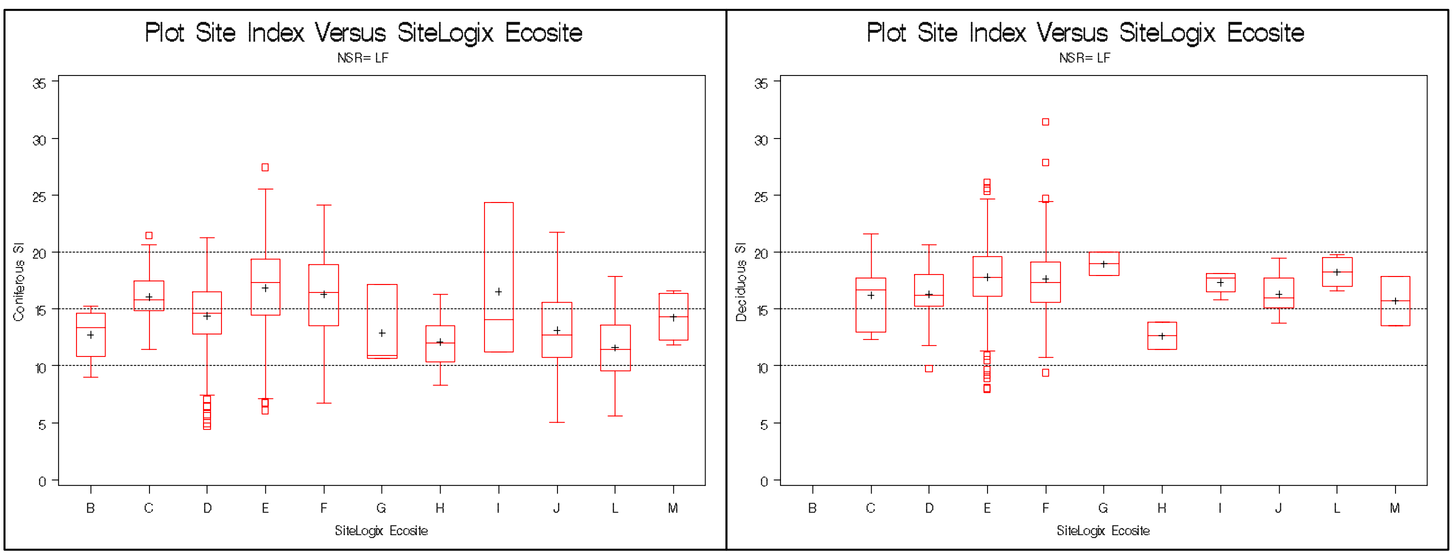


Figure 6-32. Distribution of site index values in the Lower Foothills by SiteLogix ecosite class (includes Edson and Drayton Valley data)

6.3.1 TPR Versus Site Logix

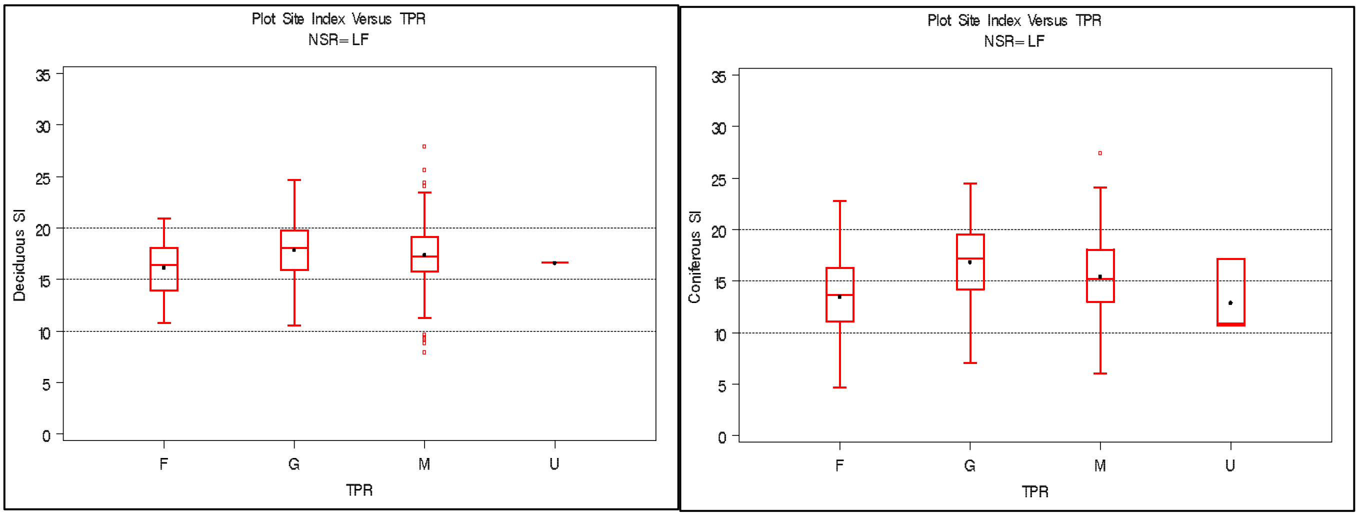


Figure 6-33. TPR versus plot SI

6.4 Area Weight Yield Curves

Program: Area_weighted_curves_appendix

Introduction

A timber supply analysis completed using numerous yield curves (such as the 161 within this report) will likely result in a more reasonable harvest sequence. When the data are stratified correctly the yield curves will represent a narrower range of volume plots rather than a coarse estimate of mean volume across a broad range of strata types. However, using several yield curves makes it difficult to understand what the average yield is across the net landbase (area that is considered available for industrial forest operations over the planning horizon) of the Edson FMA.

To provide an estimate of FMA level yields, the 161 yield curves were combined into four area weighted yield curves stratified by broad cover group.

Methods

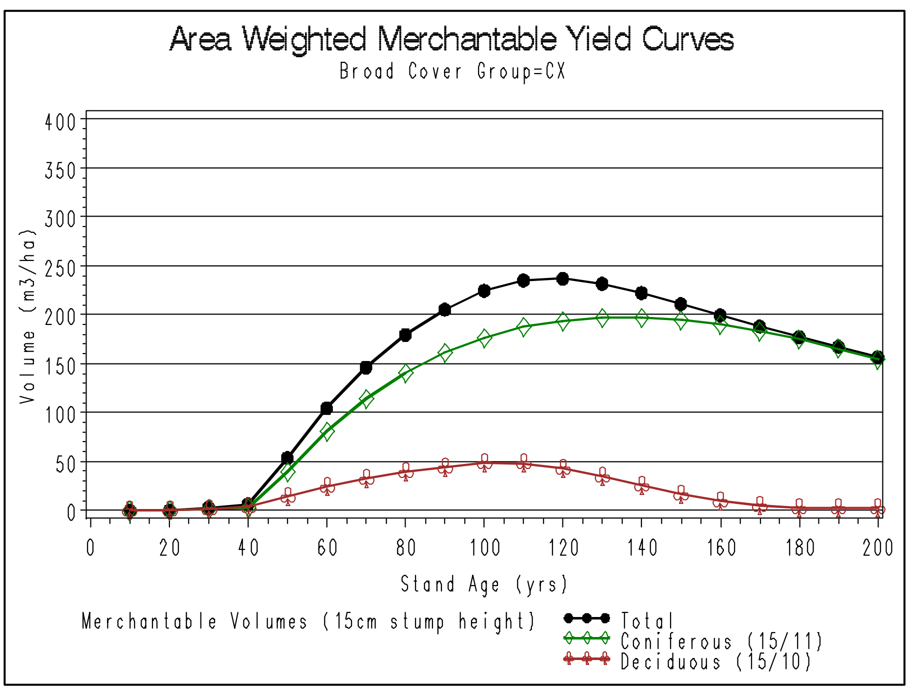
The area weighted yield curves were produced by the following steps:

1. Obtain the area and broad cover group assigned to each yield curve for each polygon within the net landbase across the FMA.
2. The total net area of each broad cover group is then divided into the area from each contributing yield curve to calculate the area proportion.
3. The coniferous and deciduous volume per hectare from each yield curve was then adjusted by the area proportion.
4. The adjusted volumes were then summed and rolled-up into a single estimate of volume for each broad cover group (CX, CD, DC, and DX).

Results

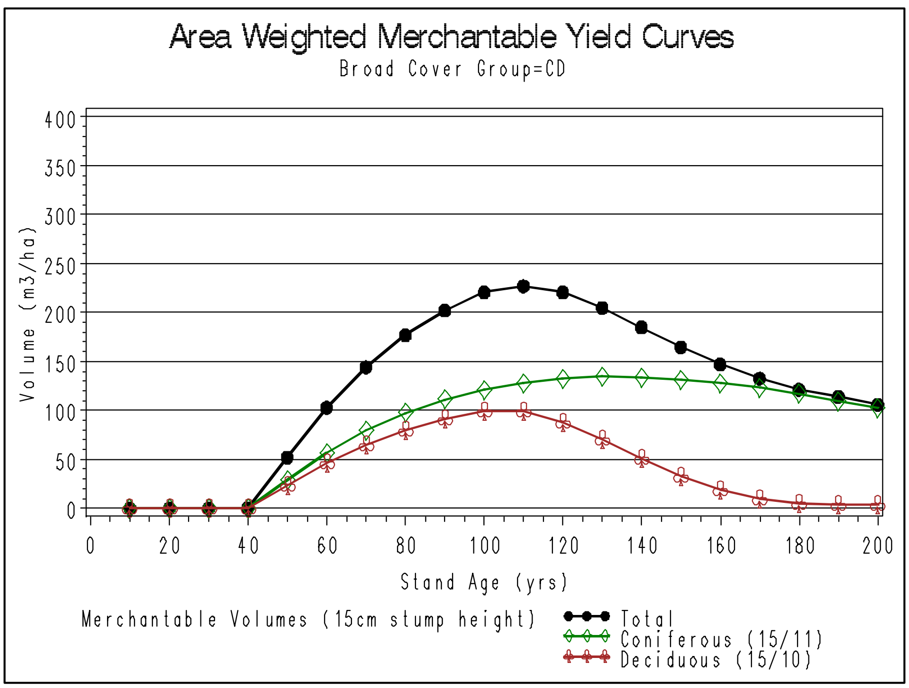
Broad Cover Group=CX

AGE	Total Volume	Coniferous Volume(15/11)	Deciduous Volume(15/10)
10	0	0	0
20	0	0	0
30	3	1	2
40	6	2	4
50	54	40	14
60	104	81	24
70	146	114	32
80	180	141	39
90	205	161	44
100	225	177	48
110	235	187	48
120	237	194	43
130	232	197	35
140	222	197	25
150	211	195	16
160	199	190	10
170	188	183	5
180	177	175	2
190	167	165	2
200	157	155	2



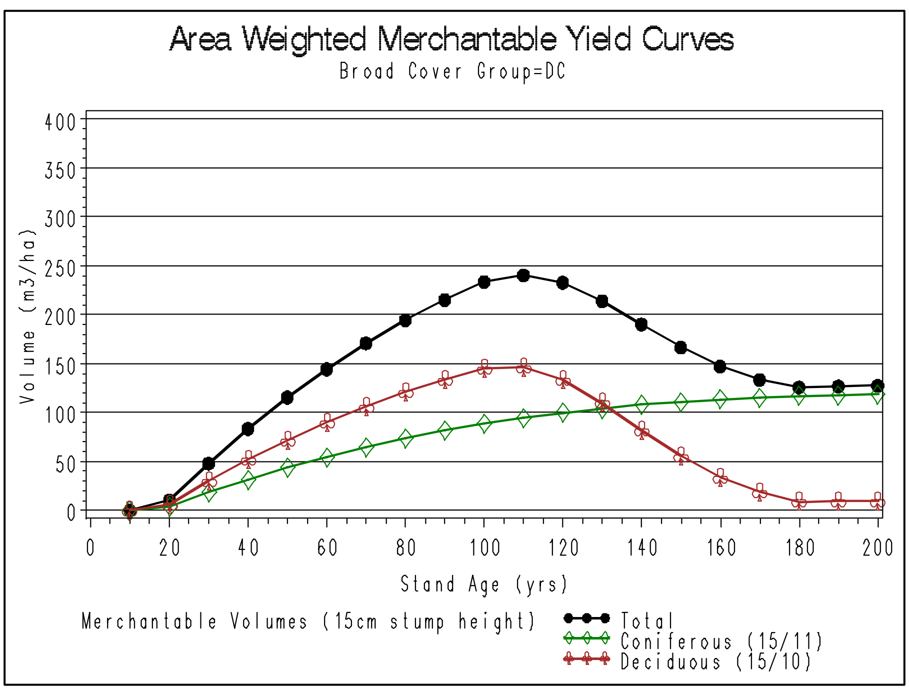
Broad Cover Group=CD

AGE	Total Volume	Coniferous Volume(15/11)	Deciduous Volume(15/10)
10	0	0	0
20	0	0	0
30	0	0	0
40	0	0	0
50	52	29	23
60	103	57	46
70	144	79	65
80	177	97	80
90	202	111	91
100	221	121	99
110	227	128	99
120	221	133	88
130	205	134	71
140	185	134	51
150	165	132	33
160	147	128	19
170	133	123	10
180	121	117	4
190	114	110	4
200	106	102	4



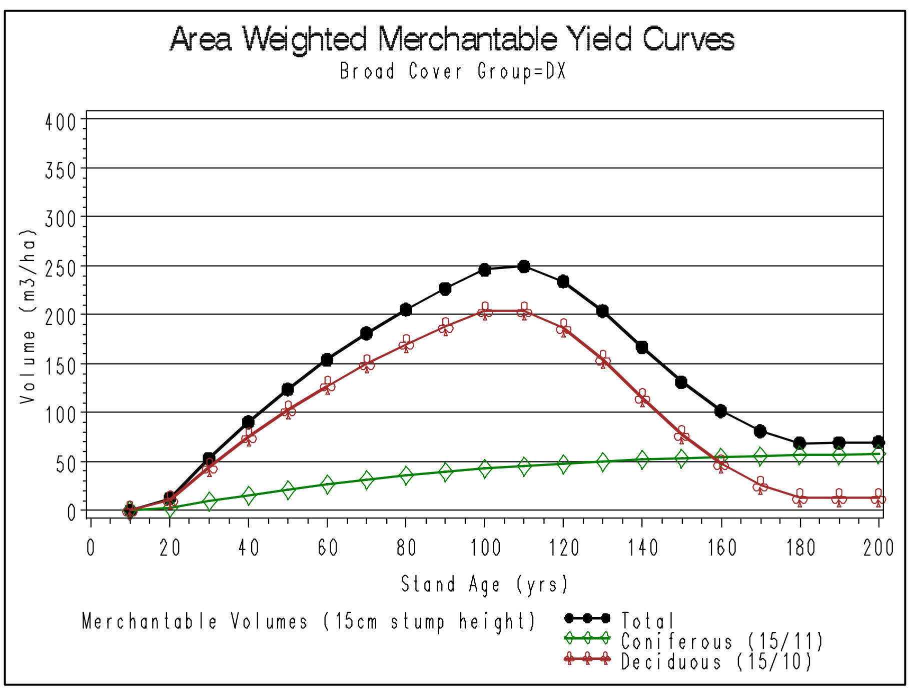
Broad Cover Group=DC

AGE	Total Volume	Coniferous Volume(15/11)	Deciduous Volume(15/10)
10	0	0	0
20	10	4	6
30	48	18	30
40	83	32	52
50	116	44	72
60	144	55	90
70	171	65	106
80	195	74	121
90	215	82	134
100	234	88	145
110	240	95	146
120	233	100	133
130	214	104	110
140	190	108	82
150	167	111	56
160	147	114	34
170	134	116	18
180	126	117	9
190	127	118	9
200	128	119	9



Broad Cover Group=DX

AGE	Total Volume	Coniferous Volume(15/11)	Deciduous Volume(15/10)
10	0	0	0
20	12	2	10
30	53	9	44
40	90	16	75
50	124	21	102
60	154	27	127
70	181	31	150
80	205	36	170
90	227	39	188
100	246	43	203
110	250	45	204
120	234	48	186
130	204	50	154
140	167	52	115
150	131	53	78
160	102	55	47
170	81	56	25
180	69	56	12
190	69	57	12
200	70	57	13



6.5 Estimating change in piece size versus age

Recent planning standards require an estimate of piece size to be included in yield table development (Section 5.5.8 in Draft Albert Forest Management Planning Manual). While this requirement has theoretical validity, it is difficult to obtain reliable results from temporary sample plot (TSP) data because the model will need to be based on multiple trees on multiple sites rather than the change in piece of individual trees through time. Additionally, it is widely acknowledged that individual tree volume is impacted by stand competition (Husch et al 2003) and that stand density is weakly related to stand age. Therefore, even in the best case, the relationship between piece size and age will be weakly related.

Caveats

This statistic is to be used as a reporting tool only; therefore the frailty of this relationship will not impact the final timber supply analysis results. If it is desired in the future to use piece size as a model constraint, a more rigorous estimate process (likely with PSP data) will need to be developed.

The piece size versus age model presented below was built from TSPs located in natural stands only. No data were available for regenerating stands; therefore as managed stands tend to regenerate from lower densities (compared to natural), the estimates provided from this model should be considered applicable to natural stands only.

Background

Two potential piece size models were compared during preliminary testing (J.S Thrower and Associates. 2004. Modeling piece size. Memo to Weyerhaeuser, September 30, 2004. Presented to ASRD October 26, 2004).

- Option 1: Piece size (trees/m^3) modeled as a function of AVI stand age
- Option 2: Piece size modeled though a surrogate variable quadratic mean diameter (DBHq) as it is closely correlated to piece size

We observed that the piece size estimate using DBHq (Option 2) was stronger than the piece size estimate using trees/m^3 for all of the major strata. Therefore, we decided to model piece size through the surrogate variable DBHq.

Program: *PieceSize_appendix.sas*

Description of Process

The SAS program performs the following steps:

- Calculate DBHq for each TSP plot
- Assign each plot to a major strata
- Model DBHq as a function of AVI stand age

Each of the steps is described in the following section.

Calculate Quadratic Mean Diameter (DBHq)

DBHq for coniferous and deciduous trees were calculated separately for each sampled stand. All merchantable stands with a valid measure of both DBHq and AVI stand age were used as an observation in the modeling process. Four strata were used to project piece size across the Edson FMA.

1. Coniferous dominated stands (C, or CD) – Good/Medium Sites – Lower/Upper Foothills – All crown closures (Understory managed stands not included)
2. Deciduous dominated stands (D, or DC) – Good Sites – Lower/Upper Foothills – All crown closures (Understory managed stands not included)
3. Poor Site (Both coniferous and deciduous dominated stands) – Lower/Upper Foothills – All crown closures (Understory managed stands not included)
4. Understory managed stands (Switch stands) only – All Sites – Lower/Upper Foothills – All crown closures

The prediction model used was:

$$QUAD\_DBH = q0 \bullet PLOT\_AGE \bullet \exp(q1 \bullet PLOT\_AGE)$$

Equation 14

where:
QUAD_DBH – Quadratic Mean Diameter
PLOT_AGE – AVI stand age
q0, q1 – coefficients to be estimated

Site quality was assigned based on Sitelogix (Table 2-5). Due to greater similarity, coniferous good and medium sites were modeled together, while poor sites were kept separate.

Table 6-2. Coefficients for piece size models

PStrata	Site	Stand Type	Tree Species Class	Q0	Q1
1	Good/ Medium	Coniferous	Coniferous	0.4300	-0.00637
			Deciduous	0.5031	-0.00650
2	Good	Deciduous	Coniferous	0.6342	-0.00923
			Deciduous	0.5993	-0.00760
3	Poor	Coniferous / Deciduous	Coniferous	0.4636	-0.00858
			Deciduous	0.5175	-0.00848
4	All	Understory Managed	Coniferous	0.8203	-0.01210
			Deciduous	1.0599	-0.01500

Red Text indicates not significant at 95% confidence.

Results

The results for all strata are similar with stand quadratic mean diameter increasing for both coniferous and deciduous trees as stands age (when immature to mature). However mature and over mature stands show the start of a slight decrease in stand quadratic mean. Perhaps this can be explained by large dominant trees dying and being replace intermediate trees.

Table 6-3. Strata 1 - Projected stand quadratic mean diameter for coniferous dominated stands on good and medium sites

Stand Age	Quadratic Mean Diameter	
	Coniferous	Deciduous
10	4.0	4.7
20	7.6	8.8
30	10.7	12.4
40	13.3	15.5
50	15.6	18.2
60	17.6	20.4
70	19.3	22.3
80	20.7	23.9
90	21.8	25.2
100	22.7	26.3
110	23.5	27.1
120	24.0	27.7
130	24.4	28.1
140	24.7	28.4
150	24.8	28.5
160	24.8	28.5
170	24.8	28.3
180	24.6	28.1
190	24.4	27.8
200	24.1	27.4

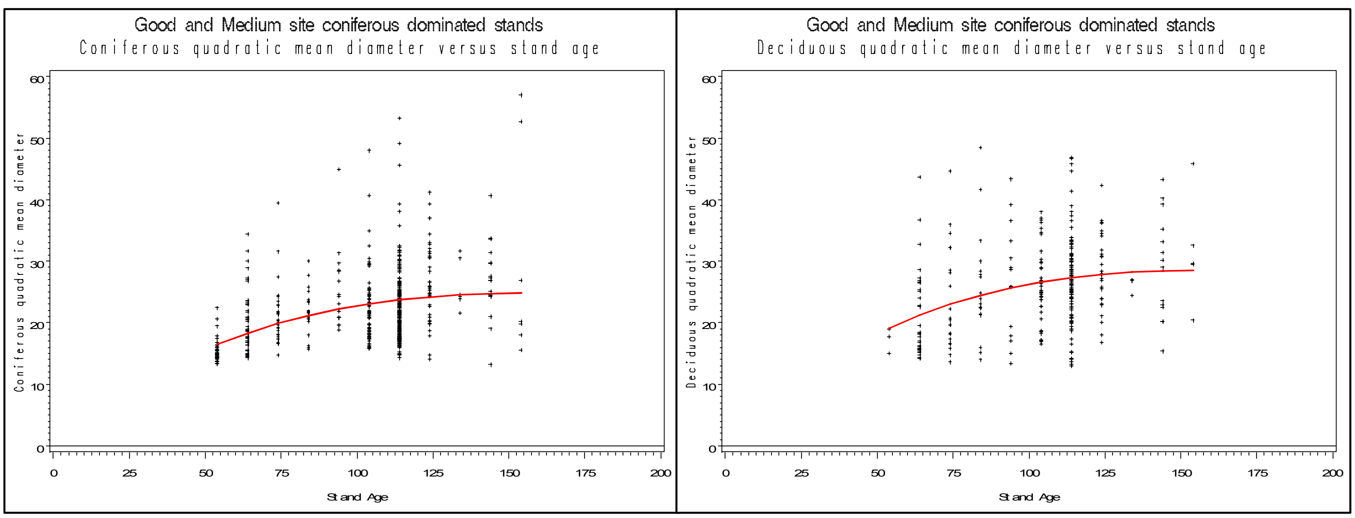


Figure 6-34. Strata 1 - Projected stand quadratic mean diameter of merchantable coniferous and deciduous trees located within good and medium site coniferous dominated stands (C or CD).

Table 6-4. Strata 2 - Projected stand quadratic mean diameter for deciduous dominated stands on good sites

	Quadratic Mean Diameter	
Stand Age	Coniferous	Deciduous
10	5.8	5.6
20	10.5	10.3
30	14.4	14.3
40	17.5	17.7
50	20.0	20.5
60	21.9	22.8
70	23.3	24.6
80	24.2	26.1
90	24.9	27.2
100	25.2	28.0
110	25.3	28.6
120	25.1	28.9
130	24.8	29.0
140	24.4	29.0
150	23.8	28.8
160	23.2	28.4
170	22.5	28.0
180	21.7	27.5
190	20.9	26.9
200	20.0	26.2

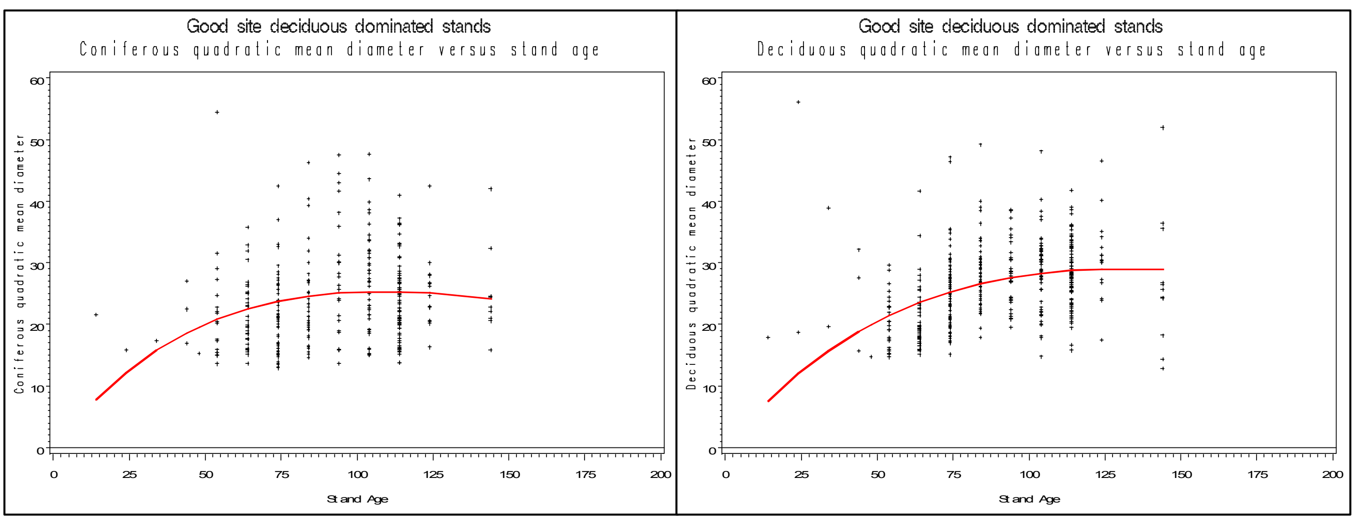


Figure 6-35. Strata 2 - Projected stand quadratic mean diameter of merchantable coniferous and deciduous trees located within good site deciduous dominated stands (D or DC).

Table 6-5. Strata 3 - Projected stand quadratic mean diameter for stands on poor sites

Stand Age	Quadratic Mean Diameter Coniferous	Quadratic Mean Diameter Deciduous
10	4.3	4.8
20	7.8	8.7
30	10.8	12.0
40	13.2	14.7
50	15.1	16.9
60	16.6	18.7
70	17.8	20.0
80	18.7	21.0
90	19.3	21.7
100	19.7	22.2
110	19.8	22.4
120	19.9	22.4
130	19.8	22.3
140	19.5	22.1
150	19.2	21.8
160	18.8	21.3
170	18.3	20.8
180	17.8	20.2
190	17.3	19.6
200	16.7	19.0

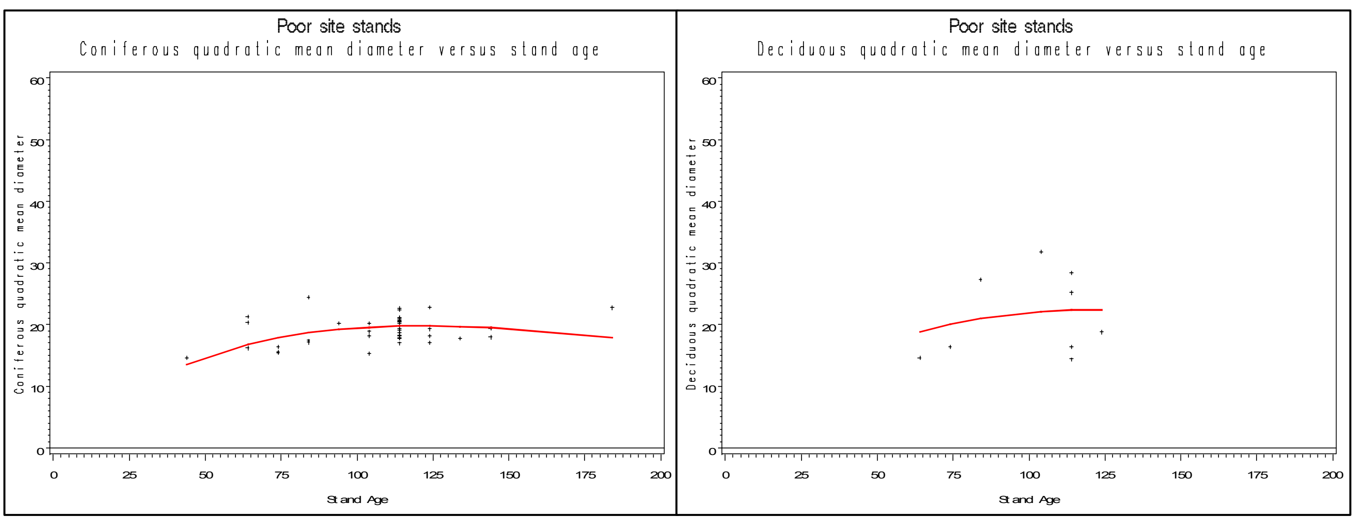


Figure 6-36. Strata 3 - Projected stand quadratic mean diameter of merchantable coniferous and deciduous trees located within poor site stands (C, CD, DC, or D).

Table 6-6. Strata 4 - Projected stand quadratic mean diameter for understory managed stands

	Quadratic Mean Diameter	
Stand Age	Coniferous	Deciduous
10	7.3	9.1
20	12.9	15.7
30	17.1	20.3
40	20.2	23.3
50	22.4	25.0
60	23.8	25.9
70	24.6	26.0
80	24.9	25.5
90	24.8	24.7
100	24.5	23.6
110	23.8	22.4
120	23.0	21.0
130	22.1	19.6
140	21.1	18.2
150	20.0	16.8
160	18.9	15.4
170	17.8	14.1
180	16.7	12.8
190	15.6	11.6
200	14.6	10.6

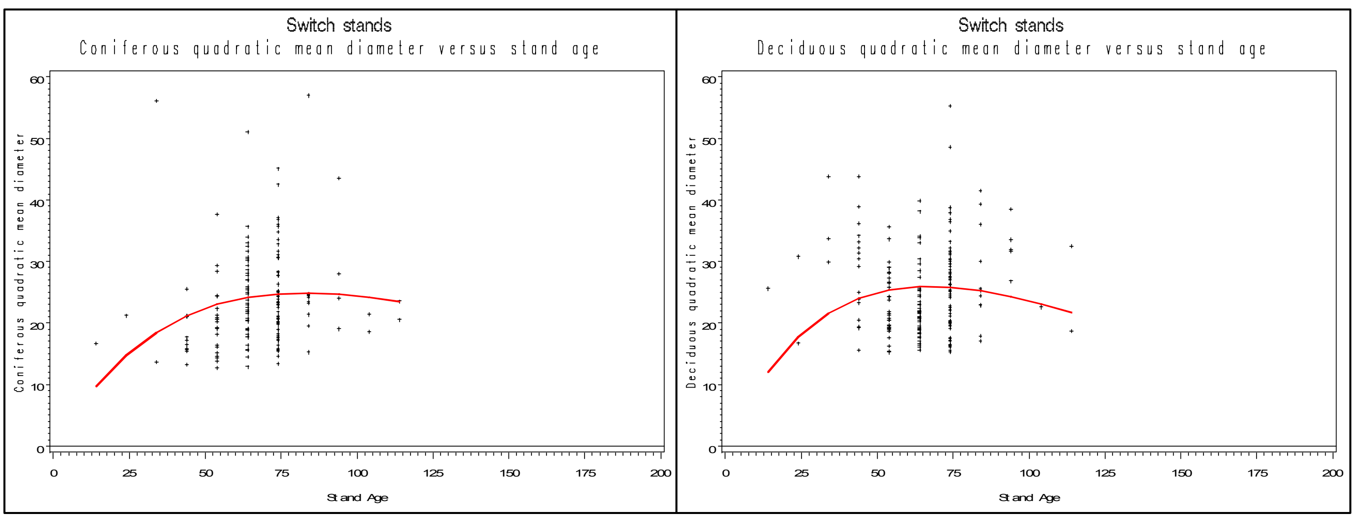


Figure 6-37. Strata 4 - Projected stand quadratic mean diameter of merchantable coniferous and deciduous trees located within understory managed stands.

6.6 Comparing volumes from different utilization standards

The coniferous volume projections used for this project were based on 15/11 utilization and a 15cm stump height, which are the current standards used in the Edson FMA. To understand how utilization and stump height impact the results, the volumes obtained from two other standards were compared to the proposed standard. The alternate methods are a "traditional" standard which uses a 15/11 utilization with a 30cm stump height and an "opportunity" standard which is a 13/7 utilization with a 15cm stump height.

The results for yield curve #18 (NSR= LF, Site=Good, and CC=C) is the only comparison presented, however the results are representative of all FMA yield curves. The curve form is similar regardless of the standard used (based on Equation 7 and Equation 9); as would be expected the "traditional" standard projects slightly less volume and the "opportunity" standard provides somewhat more volume. For a TSA, changes in volume projection to harvest ages are of the most consequence. Compared to the "proposed" standard, at a stand age of 100 years the traditional method shows a ≈ 4 % decrease in volume, while the "opportunity" method indicates a ≈ %9 increase in volume utilized (Table 6-7).

Table 6-7. Comparison of projected coniferous yields (Yield Curve#18) with different utilization standards and stump heights

	Projected Coniferous Volume		
Stand age	Proposed Standard (Utilization: 15/11 Stump height: 15cm)	Traditional Standard (Utilization: 15/11 Stump height: 30cm)	Opportunity Standard (Utilization: 13/7 Stump height: 15cm)
10	0	0	0
20	0	0	0
30	0	0	0
40	1	0	11
50	60	57	78
60	109	104	131
70	149	142	174
80	180	173	207
90	204	196	232
100	222	214	249
110	234	225	260
120	241	233	266
130	244	236	266
140	243	235	263
150	239	232	256
160	232	226	246
170	223	218	234
180	212	208	220
190	199	196	204
200	186	183	187

6.7 Data to be output to Woodstock Model

Program: *10_Woodstock*

A program was used to combine yield curves and piece size data into a single file which will form the basis of the yield section in the Woodstock TSA model.

6.8 Estimating AAC potential from marginal stands

Introduction

Weyerhaeuser has submitted a DFMP that proposes an annual allowable cut level for the Edson FMA. Complicating this process, the Edson FMA has a number of timber operators with diverse standards. These operators have agreement upon the definition of what constitutes a truly merchantable stand (see the landbase allocation report). However, there is a relatively small range of forest types (hereafter called *marginal*) where some disparities between operators arose as to if marginal stands are viable for operations.

Weyerhaeuser proposes to address this problem through the approach discussed below. This method is based on previous discussions with officials from Alberta Sustainable Resource Development.

Methods

A summary of the steps are as follows:

1. **Identify net landbase (first ignore marginal stands)** - During the landbase allocation portion of the DFMP process Weyerhaeuser in discussion with other Edson FMA timber harvesters developed a set of agreed upon "rules" to identify the merchantable landbase. These rules were used in the submitted November 24, 2004 Landbase Allocation document. Alberta SRD gave an agreement-in-principle to this document in February of 2005. Therefore, the Edson FMA AACs will be based upon this "approved" netdown procedure along with the "approved" submitted February 4, 2005 yield curves. At this initial stage marginal stands were not addressed.
2. **Identify marginal stands** - In the November 24, 2004 Landbase Allocation document subjective deletion rules were to identify stands located on undesirable (often too wet) harvest sites. Two subjective deletion rules were used: 1) Stands with 10% or more Larch composition or; 2) Stands with 80% or more Black spruce composition. All stands that met either of the above criteria were removed from the net landbase.

   Some Edson FMA timber harvesters expressed a concern that the above subjective deletion rules were too coarse and removed some merchantable stands. During meetings with Edson FMA timber harvesters the following rules were agreed upon to indicate potential marginal stands (all the following must be true to qualify).
   a. Stand must have been identified as a subjective deletion in the November 24, 2004 Landbase Allocation document and have no more than 20% larch composition
   b. Stand must be greater than and equal to 14m tall
   c. Stand must have greater than an "A" crown closure

The above rules were applied to stands that had a single removal of being subjectively deleted only. For example, if a stand was both a subjective deletion and was within a water buffer it could not be considered as a "marginal" stand.

3. **Estimate volume from marginal stands** – In the February 4, 2005 yield curve submission, plots located within marginal areas were removed and did not contribute to the final yield curve projections. Therefore, plot volumes sampled on marginal area needed to be compiled. The compilation process was the same as that used in the February 4, 2005 yield curve submission. Five SAS programs were used:
    a. 01mergetsp_marginal
    b. 02si_marginal
    c. 03htdbh_marginal
    d. 04volume_marginal
    e. 05marginal_standvol

    A conservative rotation age of 140 years was assumed for marginal stands. Thus, only compiled volumes for plots within marginal stands 120 to 160 years old were used to calculate a mean volume m^3/ha. Mean annual increment (MAI) was then calculated by dividing by 140 years.
4. **Estimate marginal stand AAC** - The maximum possible AAC from marginal stands was calculated by multiplying MAI by marginal stand area for each FMU.
5. **Locate marginal stands on Stanley sequence map** - After the proposed Stanley harvest sequences have been derived (marginal stands not included) the marginal stands will be identified on a map to provide visual representation of where the opportunities exist for harvesting marginal stand in association with sequenced stands.
6. **Allocation** – Operators will likely not sequence marginal stands in isolation but rather in association with stands within the net landbase already sequenced. Operator allocation of marginal stands will be in proportional to the conifer allocation as described within this dfmp. As an example, a quota holder having 10% of the conifer AAC in a FMU would be able to access up to 10% of the volumes indicated in Table 1 below in any quadrant.

Analysis and Results

Estimating Marginal Stand Yields

The numbers below were obtained from the program *05_marginalvol.sas.*

Number of plots located in subjective deletion stands (February 4, 2005 yield curve report) = **332 plots**

Number of plots located in subjective deletion stands + no more than 20% larch composition or 80% or greater black spruce composition = **287 plots**

Number of plots located in subjective deletion stands + no more than 20% larch composition or 80% or greater black spruce composition + stand height >= 14m + crown closure >= "B" density = **100 plots**

Number of plots located in subjective deletion stands + no more than 20% larch composition or 80% or greater black spruce composition + stand height >= 14m + crown closure >= "B" density + stand age between 120 and 160 years old = **46 plots**

Mean volumes for 46 plots on marginal stands 140 to 160 years old

Total Volume = 125 m^3/ha
Coniferous Volume = 123 m^3/ha
Deciduous Volume = 2 m^3/ha

Coniferous MAI = 123 m^3/ha / 140 yrs = 0.88 m^3/ha/yr
Deciduous MAI = 2 m^3/ha / 140 yrs = 0.01 m^3/ha/yr

Table 29. Estimated annual gross* marginal stand volumes for FMUs E1F, E2F, W5F, and W6F in FMA#970035.

FMU	Marginal Stand Area† (ha)	Coniferous MAI	Coniferous Volume (m^3/yr)	Deciduous MAI	Deciduous Volume (m^3/yr)
E1F	2,795	0.88	2,460	0.01	28
E2F	2,875	0.88	2,530	0.01	29
W5F	754	0.88	664	0.01	8
W6F	3,358	0.88	2,955	0.01	34
FMA	9,782		8,608		98

*does not take into account cull, retention, or spatial reduction percentage

† - marginal stand areas were obtained from the netdown document.

6.9 Converting to coniferous 15/10 utilization volume from 15/11 coniferous utilization volume

Report Provided by: ***J.S. Thrower & Associates Ltd.***

Yield tables were developed for Weyerhaeuser's Edson FMA and submitted to ASRD February 2005. These yield tables were developed based on the coniferous utilization standard of 15 cm minimum stump height and 11 cm minimum top diameter (15/11 utilization). Weyerhaeuser requires a simple conversion factor for operators who want to use a 10 cm minimum top diameter (15/10 utilization). This memo describes the procedures used to determine the factor for converting conifer 15/11 yield tables to 15/10 yield tables.

The basic steps to calculate the conversion factor were:

1. Recompile the tree- and plot-level data with a conifer 15/10 utilization standard.
   We used the same compilation routine as used in the 15/11 analysis and simply changed the conifer minimum top diameter to 10 cm in the tree-level volume calculation. The compilation routine then compiles the plot-level volumes using the alternate utilization standard.

2. Refit the volume-age yield tables using the 15/10 utilization volume compilation.

We used the same yield table modeling routine as used in the 15/11 analysis (no changes necessary). The volume age curves were fit to the higher 15/10 utilization plot-level volumes (Figure 41).

3. Compare the resulting 15/10 yield tables to the original 15/11 tables curves.
   We did a logical comparison of the 15/10 utilization yield tables to 15/11 utilization yield tables

   (i.e. the 15/10 yield tables do not cross below the 15/11 yield tables) (Figure 41).

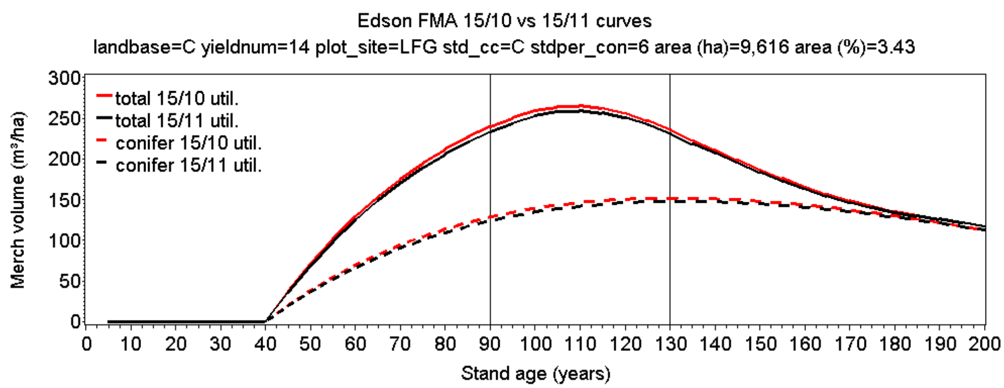


Figure 41. Alternate utilizations for yield table number 14.

4. Compute the average percent difference between 15/10 and 15/11 utilization at timber harvest ages for each yield table.
   Weyerhaeuser determined that the average timber harvesting age over the next 20 years for coniferous stands is approximately 110 years age. We calculated the percent difference between 15/10 and 15/11 utilization yield tables for each base yield table (161 in total) between the ages of 90 to 130 years (Figure 42).

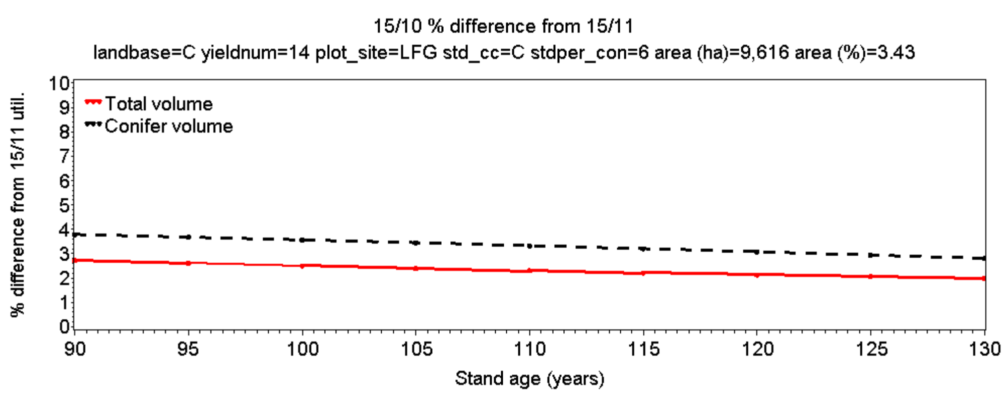


Figure 42. 15/10 percent difference from 15/11 volume.

5. Compute the area-weighted average percent difference between 15/10 and 15/11 yield tables.

We attached the net landbase area to each analysis unit and calculated the area-weighted average of the volume ratio between the 15/10 and 15/11. The 15/10 conifer yield tables were, on average, 2.99% higher than the 15/11 conifer yield tables (Table 30, Table 31).

Table 30. Yield table 15/11 to 15/10 conversion factors.

landbase	area (ha)	area (%)	total volume		conifer volume	
			15/10 % diff. from 15/11	conversion factor	15/10 % diff. from 15/11	conversion factor
C	157,875	56.4	2.68	1.0268	3.52	1.0352
D	122,232	43.6	0.60	1.0060	2.32	1.0232
All	*280,107*	*100.0*	*1.77*	*1.0177*	*2.99*	*1.0299*

Table 31. Conversion factors for largest analysis units in the landbase (up to 80% of area of landbase).

landbase	yield number	area (ha)	area (%)	total volume: 15/10 % diff. from 15/11	total volume: conversion factor	conifer volume: 15/10 % diff. from 15/11	conifer volume: conversion factor
D	13	21,316	7.6%	0.56	1.0056	2.78	1.0278
D	14	19,835	7.1%	0.57	1.0057	2.27	1.0227
C	42	16,938	6.0%	2.78	1.0278	3.46	1.0346
D	15	16,522	5.9%	0.58	1.0058	2.04	1.0204
C	41	9,984	3.6%	2.77	1.0277	3.51	1.0351
C	14	9,616	3.4%	2.33	1.0233	3.32	1.0332
C	109	9,607	3.4%	1.75	1.0175	3.53	1.0353
D	16	9,053	3.2%	0.58	1.0058	1.92	1.0192
C	17	8,786	3.1%	2.34	1.0234	3.07	1.0307
D	19	7,095	2.5%	0.49	1.0049	2.71	1.0271
D	17	6,513	2.3%	0.59	1.0059	1.84	1.0184
C	13	6,497	2.3%	2.33	1.0233	3.47	1.0347
C	54	6,250	2.2%	5.13	1.0513	5.84	1.0584
D	7	6,233	2.2%	0.58	1.0058	2.80	1.0280
C	48	6,121	2.2%	4.33	1.0433	5.03	1.0503
C	15	5,676	2.0%	2.33	1.0233	3.21	1.0321
C	16	5,141	1.8%	2.33	1.0233	3.13	1.0313
D	8	4,709	1.7%	0.59	1.0059	2.29	1.0229
D	20	4,362	1.6%	0.50	1.0050	2.20	1.0220
C	36	4,338	1.5%	2.23	1.0223	2.92	1.0292
C	2	3,793	1.4%	1.78	1.0178	2.76	1.0276
C	6	3,321	1.2%	1.78	1.0178	2.47	1.0247
C	53	3,301	1.2%	5.13	1.0513	5.89	1.0589
C	71	3,156	1.1%	2.30	1.0230	2.74	1.0274
C	72	3,153	1.1%	2.29	1.0229	2.64	1.0264
D	10	2,903	1.0%	0.60	1.0060	1.94	1.0194
D	9	2,696	1.0%	0.60	1.0060	2.06	1.0206
C	23	2,462	0.9%	3.76	1.0376	4.50	1.0450
C	5	2,422	0.9%	1.78	1.0178	2.52	1.0252
C	35	2,323	0.8%	2.23	1.0223	2.97	1.0297
C	11	2,244	0.8%	1.81	1.0181	2.54	1.0254
C	47	2,181	0.8%	4.33	1.0433	5.08	1.0508
C	40	2,164	0.8%	2.77	1.0277	3.58	1.0358
C	30	2,162	0.8%	2.34	1.0234	3.02	1.0302
D	4	2,150	0.8%	0.53	1.0053	1.86	1.0186

6.10 Summary of volume sampling procedures

This section outlines the sampling procedures used in the Weyerhaeuser TSP programs. The Weyerhaeuser TSP program has changed slightly over the years with technological advances and changes in objectives. Within each year the program remained constant, therefore the volume sampling procedures will be explained for each year with similar years grouped.

Sample design

The same sample design was applied in 1996, 1997 and 1999. Stands were stratified on the basis of broad cover group, dominant species, density and height class of the overstory cover type. Four broad cover groups were considered: C, CD, DC and D. In the C, and CD covertypes the dominant species was defined as the leading conifer species. In the D, and DC covertypes the dominant species was the leading deciduous species. Stands with trembling aspen and balsam poplar as the dominant species were combined. Four 5-metre height classes were defined (5 to 9m, 10 to 14m, 15 to 19m and 20 metres or more). In general, plots were distributed throughout these strata proportional to area.

The objective of the sampling program, conducted in 1996, 1997 and 1999 was to sample stands that were likely to be harvested. Based on the program objectives the following stands were for the most part excluded from sampling; stands with an 'Unproductive' timber productivity rating (TPR), stands with a 30% and greater larch component and stands with a 50% or more black spruce component with an 'A' crown closure.

The sample design differed in 1998 because the TSP program had a different objective. The purpose of the TSP program in 1998 was to determine the merchantability of 'A' crown closure deciduous stands. For this reason only stands that met this criteria were included in the sampling population.

In 1996 and 1997, stands were selected by choosing a central sampling location from a list of township quarter section centres within the Weyerhaeuser FMA area. For each randomly selected quarter section centre, three stands within 1.5 km that met the stratification criteria were chosen. Plots were clustered three per stand. The first plot was randomly located within the stand and the second and third plots were placed 100 metres apart on an azimuth of either East, North, South or West depending on the location of the first plot within the stand. All plots were located prior to fieldwork.

In 1998 and 1999 a slightly different stand and plot selection method was applied. A seamless forest cover was created removing administrative boundaries caused by townships. Transect lines were systematically placed every 300 metres, from an arbitrarily chosen starting point at the bottom right boundary corner of the Edson library index coverage. Transects were split at the polygon edges and either one, two or three plots were placed at least 20 metres apart along transects, at distances determined by a random number generator.

The intent of the program is to sample stands that may be included in the productive land base for timber management purposes. The volume sampling program is primarily intended for yield curve development for forecasting timber supplies in both the deciduous and coniferous land bases.

STAND AND PLOT SELECTION:

A central sampling location will be randomly selected from a list of all township quarter section centres. For each randomly selected quarter section, three stands within 1.5 km. of the quarter section centre will be selected. Plots will be randomly selected within each selected stand. Stand selection will be without replacement.. Where access is extremely poor, plots may be replaced with alternates.

PLOT CONFIGURATION:

The plots will be fixed area plots of 160 m2 (a circular plot with a radius of 7.14M).

Field procedures

Field procedures remained reasonably consistent over the four years of the program. Tie points were established for each plot cluster using mapped features such as roads and seismic lines. Plots were circular in shape with a 7.14-meter radius (160 m^2). Plots were not to be moved in the event of natural features such as small openings or creeks. Plots were moved if they were located on seismic lines or newly constructed features not typed out on the map. These plots were moved a distance of 20 metres past the disturbance. All trees with a diameter at breast height (DBH) greater than 7.0 centimeters had the species, DBH, condition code and crown class recorded. Additional information, age at breast height and total height was collected from sample trees at each plot. A minimum of three conifer sample trees were selected in pure conifer stands. Similarly, three deciduous sample trees were necessary in pure deciduous stands. In mixedwood stands, three conifer and three deciduous sample trees were selected. In plots with less than the required number of sample trees, trees were chosen from outside of the plot, but within the same stand. Species, height and DBH were measured on all sample trees taken from outside of the plot. The trees selected from outside the plot were the trees closest to plot center. All cores were taken to an office environment for counting.

MEASUREMENTS:

Plot establishment: All plots are to be marked with an aluminum stake to facilitate check cruising. GPS will be used to record the location of plot centre. Plots are not to be moved for natural features such as openings in stands and creeks. If the plot falls on a seismic line, then the plot should be moved 20 metres perpendicular to the direction of the seismic line. If the plot lands on a newly constructed feature that would be typed out in AVI, such as a well site or road, proceed forward or backwards on the same line of travel to a distance of 20 meters past the edge of the new disturbance.

Tree Measurements: All trees of 7.0 cm. dbh or greater are to be tallied. Height is to be measured on every fifth tree tallied on a plot (in pure stands, a maximum of 5 trees measured for height is satisfactory). The following measurements are to be recorded on all trees - species, dbh, condition code, and crown class

Every fifth tree will have the following additional measurements recorded: total height, height to live crown, and age.

Ages are to be recorded on every plot (from dominant and codominant trees which also have a height taken). A minimum of 3 trees of coniferous species are to be aged in pure conifer stands. Similarly, 3 age trees are necessary in pure deciduous stands. In mixedwood stands, aging will be done on 3 conifer and 3 deciduous trees. In plots with less than the required number of trees, age trees are to be taken from trees outside of the plot (but within the same stand. Species, height and dbh are to be measured on age trees outside of the plot. The trees selected from outside the plot will be the trees closest to plot centre.) All cores are to be taken to an office environment for counting, and will be maintained by the contractor for checking by Weyerhaeuser, if required.

Plot Description:

- AVI field type (overstory and understory)

- overstory condition : decadent, overmature, mature, immature
- evidense of previous harvesting
- ecosite and community classification based on the Field Guide to Ecosites of West Central Alberta (Beckingham and Archibald).

Coniferous Understory:

Coniferous understory will be surveyed with sub-plots of 100m2 (centred at the plot centre of the tree plot). A dot tally of the coniferous stems greater than 0.3 m in height and less than 7.0 cm dbh will be conducted. Coniferous understory stems are to be counted by species and height class (0.3m-2m, 2.1 m -4 m, 4.1m-6m, 6.1 m+).

6.11 TSP Quality Control Checklist

Measurement	***Allowable Error***
PLOT INFORMATION	
Direction from Tie-point	- directions from the tie-point to the witness tree must be complete enough to facilitate plot relocation (specific allowance has not been defined because of variability in distances, etc.
Plot Centre Location	- bearing and horizontal distance to the plot centre must be within 2 degrees of the bearing and within + or - 2 % of the distance
TREE INFORMATION	
Ages	- ages must be within + or - 4 years for conifers and + or - 10 years for deciduous trees
No. of Trees	- no error allowed; all stems7.1 cm or greater with the plot boundary must be numbered
No. of Understory Stems	- total number of stems by species must be within 10% of check cruise
Tree\Sapling Species	- no error allowed, all species must be identified correctly
Tree DBH	- must be within + or - 0.5 cm
Height	- must be within + or - 5%
ECOSITE INFORMATION	
Humus Form	- must be correctly identified

Drainage	- with + or - one drainage class
Depth to mottles, water, gleying, drainage	- within + or - 10% of the actual depth
Texture	- within + or - one texture class
Ecosite Phase	- correct to the ecosite phase level
Aspect	- within + or - 15 degrees
Slope Position	- within + or - one topographic position
Slope	- within + or - 5%
Vegetation	- must be within one cover class

TREE MEASUREMENTS	
Tree DBH	- if more than 5% of the total numbered trees are incorrect (not within 0.5 cm.), all plots established by the crew in the entire day will have to be remeasured
Height	- if more than 20% of the heights checked are incorrect (not within 5%) the heights in all plots established by the crew in the entire day will have to be remeasured
No. of Trees	- if any trees (of 7.1 cm or greater) are incorrectly tallied as being in or out of the plot, then all plots established by the crew in the entire day will have to be remeasured
Species	- if any trees are tallied with incorrect species, then all plots within that stand will require revisitation to confirm species identification

ECOSITE CLASSIFICATION: Rating System

Humus form	1
Drainage	1
Depth to mottles, water, gleying, drainage	.5

Texture	1
Ecosite Phase	1
Aspect	.5
Slope position	.5
Slope	.5
Vegetation	.25 each
If weighted errors in the above ecosite rating system are greater than 2, all other plots surveyed that day will have to be rechecked.	

Completeness of Tally Sheets	- all appropriate fields on the tally sheets should be filled in. Field crews with missing entries will be required to revisit plots to fill in missing entries. Correct codes are to be used.

6.12 March 31, 2005 Approval Letter

Alberta
SUSTAINABLE RESOURCE DEVELOPMENT

Government of Alberta 2001 & 2002 IPAC Gold Award for Innovative Management

Public Lands and Forests Division
Forest Management Branch

8th Floor 9920 - 108 Street
Edmonton, Alberta
Canada T5K 2M4

Telephone (780) 427-8474
Fax (780) 427-0084

Ref: 06328 – F02 – 04
06328 – 10

March 31, 2005

Mr. Paul Scott
Planning Forester
Weyerhaeuser Company Ltd.
2509 Aspen Drive
Edson, Alberta
T7E 1S8

Dear Mr. Scott:

REF: APPROVAL – WEYERHAEUSER EDSON YIELD CURVES

The Forest Management Branch has completed its review of the report *"Edson DFMP Yield Curve Development (February 4, 2005)"*. The Resource Analysis Section agrees-in-principle with the methodology, can replicate the generated yield estimates, and the calculations appear reasonable.

Weyerhaeuser Edson's Yield Curves are acceptable for use in the Detailed Forest Management Plan (DFMP) on the condition that the following items are corrected and a complete and revised document is included in the DFMP.

1. **Required Action:** Piece size was calculated as quadratic mean diameter (DBHq). There are a couple problems with this analysis which require action prior to final submission:

    a. Piece size is modeled within a different set of strata then the yield strata. Therefore, a piece size strata field should be created to ensure a clean link to the net landbase.
    b. This analysis should only include stems that contribute merchantable volume, as this is intended to evaluate piece size of merchantable stems. It appears that all stems were included in the submitted analysis. The company must recompile the DBHq to include only merchantable stems and refit the piece size models.

.../2

c. Model DBHq with stand age defined by the story of primary management not simply the overstory, as the story of primary management will be the one utilized when the model is applied to the net landbase. The company must refit the piece size models based on the stand ages from story of primary management.
d. The yield curve development report needs to include resulting model coefficients and tables of piece size values for each piece size stratum.

2. **Editorial:** Table 2-9 on page 18 of the document appears to have the coefficients mixed up. For example, in the second row 'LFG' 'Bw' should be 'LFG' 'Aw'. It appears that this is only an issue in the documentation and not in the SAS code. Check to make sure that the correct coefficients were used for the compilation and make appropriate corrections in the final submission.

3. **Editorial:** It appears that the wrong graph was inserted on page 197. Check to be sure all graphics and tables represent the final yield predictions and make appropriate corrections in the final submission.

4. **Editorial:** The comment in the results and discussion regarding a decline observed in the conifer dominated stands is odd as relatively little decline is observed. An assumption stated in the document regarding a truncated yield function at 160 years and a constant yield following 160 years has not been applied nor is it appropriate for these yield functions. Remove this comment from the discussion, to reduce any potential confusion regarding whether or not such an adjustment was applied to the curves.

5. **Editorial:** Include a description of how the area weighted yield functions were generated. This can be relatively brief, as long as it is clearly described.

6. **Outstanding Check:** We were unable to verify if the yield strata are being assigned the same to the net landbase as they are assigned for use in model development and that the same net landbase areas are being reported. This check will need to be conducted upon submission of a final net landbase. Please contact this office to discuss.

7. **Caution:** The methodology used to calculate site index (SI) makes it incompatible with any application to specific stands and/or strata where SI is derived independently of the original source data. This makes this model incompatible with future use for regenerating yields based on a measured SI seed. This is the conclusion based on the following characteristics:

   a. using conifer and deciduous site index instead of species-specific site index;
   b. using stand-level pooled-plot site index calculation instead of calculating site index for each plot and finding the mean of those plot observations for the stand-level SI;

.../3

c. using an individual tree SI model with top height inputs; and
d. using one mean SI within a stratum which does not appear to have a stable SI across all age classes, according to the TSP data.

8. **Caution:** Leading species was not used to help define the yield strata. Weyerhaeuser showed that the proportion of spruce leading to pine leading conifer types on the landbase proportionally reflected the plots used to develop the yield model for the conifer strata. In order for these yields to maintain their validity in the regenerated landbase, the company will have to ensure that a similar leading species split is maintained.

9. **Caution:** Due to the methodology utilized we observed some overestimates and some underestimates of yield among strata / yield curves. At the strategic level these outages appear to balance out. They may, however, prove to be challenging to apply to harvest scheduling and operational planning.

10. **Post Harvest Transitions:** The transition assumptions to be used in the timber supply analysis were not outlined in detail in the yield curve documentation. Detailed post-harvest transitions will be evaluated during the review of the timber supply analysis.

11. **Death Age:** The death ages to be used in the timber supply analysis were not outlined in the yield curve documentation. An appropriate death age for the model will be evaluated during the review of the timber supply analysis.

12. **Growth and Yield Monitoring:** A robust growth and yield-monitoring program is required to evaluate assumptions made within this yield curve development exercise.

Thank you for completing this component of the Detailed Forest Management Plan. Should you have any questions please contact Darren Aitkin directly at (780) 644-5581.

Yours truly,

Robert W. Stokes, RPF
Senior Manager
Forest Planning Section

cc: Daryl Price, Senior Manager, Resource Analysis Section
Darren Aitkin, Growth and Yield Forester, Resource Analysis Section
Bert Ciesielski, Area Forester, Drayton Valley