



Regeneration Lag Assessment

Approved: February 14th, 2005 – Grant Klappstein, SRD

Definition

Regeneration lag is the time (number of growing seasons, expressed in years) following harvest required for a new stand of trees to initiate growth. The regeneration lag is equivalent to the time a harvested area remains fallow without regenerating trees. Incorporated in the regeneration lag is the assumption that the new growth is that which will be acceptable for management.

Assessment Methodology

The regeneration lag assessment used the timing of historical reforestation activities and the regeneration survey status as the basis for establishing the regeneration lag assumed in the timber supply analysis (TSA).

A regeneration lag for each timber supply analysis stratum was calculated using the following methodology.

- Individual harvest areas within a stratum were assigned a regeneration lag according to the Rules for Regeneration Lag Assignment to Harvest Areas
- The individual harvest area regeneration lag values were averaged using area weighting.
- The regeneration lag for the stratum is the area-weighted average value. Depending on the means of input to the TSA this may have to be rounded, if this is the case then round up to the nearest whole number of years, i.e. a calculated value of 3.22 for a given strata would be input into the timber supply model as 4.
- The calculated raw (non-rounded) value (including decimal places) is presented in the analysis report.

Eligible Harvest Areas

- a) Definitions for post-harvest broad cover groups described in the TSA were used to group harvest areas by broad cover group (BCG) strata (C, CD, DC, D).



- b) Alberta Regeneration Standard strata were assumed to align with equivalent post-harvest broad cover groups used in the TSA.
- c) Only areas harvested on or after March 1, 1991 were used in the regeneration lag assessment.
- d) All harvest areas for any given harvest year were used with the exception of areas where significant and demonstrated change in practice are expected or no surveys were conducted within the assessment period. (For Drayton Valley and Edson all reforestation responsibility codes A2, AN, and AA were removed).
- e) A regeneration lag was calculated for each broad cover group used in the TSA.
- f) The eligible harvest area grouping rules in Table 1 were adhered to.

Table 1: Eligible Harvest Area Grouping Rules based on Skid Clearance Dates

Broad Cover Group Strata	Harvest Areas Used in Regeneration Lag Assessment (Skid Clearance Dates)
C, CD, DC	March 1, 1991 to April 30, 1996
D	March 1, 1991 to April 30, 1999

- a) All regeneration lag assessment periods begin on March 1, 1991.
- b) The regeneration lag assessment periods end on the second date in each matrix cell. This is the date that corresponds to the regeneration survey window per the Timber Management Regulation.

Rules for Regeneration Lag Assignment to Harvest Areas

1. The harvest area management strategy categories and status were assigned on the basis of reforestation treatment documents and regeneration status in the silviculture records
2. Harvest areas that were surveyed and remain Not-Satisfactorily Regenerated (NSR) were assigned a regeneration lag value based on assumptions of the proportion of NSR blocks that are under height and just require time to grow and the proportion of the harvest area that needs to be re-established with trees.



- a. Initial assumptions on regeneration lag for harvested areas are:
 - Ten (10) year regeneration lag value for NSR C, CD, and DC strata
 - Seven (7) year regeneration lag value for NSR D stratum
- b. Assessment of Weyerhaeuser surveys shows that 14% of NSR C, CD, and DC harvest areas were not satisfactory due to height. These under height areas were assumed to have a two (2) year regeneration lag. Therefore the C, CD, and DC regeneration lag values were adjusted to $(.14 * 2) + (.86 * 10) = 8.8$ or nine (9) years.
- c. Rarely are NSR blocks complete failures. Most often existing regeneration is retained in re-treatment activities. In recognition of this the regeneration lag value for NSR harvest areas were calculated by a weighted sum of the regeneration lags for NSR and SR proportions of the block. For example, a block was planted 2 years (according to table 3) after harvest to pure conifer. The establishment survey found the block to be 70% SR. Therefore, the regeneration lag is $(9*(1- 0.7)) + (2*0.7) = 4.1$ years.
 - The exception for this is NSR blocks with below 50% stocking will be assumed to be entirely re-established and will be assigned a regeneration lag values of nine and seven for the coniferous and deciduous standards respectively.
3. Harvest areas that are overdue for a survey will be excluded from the regeneration lag assessment.
4. The management strategies for harvest areas are defined as the treatments that were applied to 60 percent or more of the harvest area. Eligible treatments are planting, seeding, site preparation or leave for natural. Planted or seeded categorization takes precedence over site preparation. Site preparation takes precedence over leave for natural.
5. The last treatment date was determined by using the most recent silvicultural treatments (planting, seeding or site preparation) applied to 20 percent or more of the harvest area.
6. Table 2 was used to determine a Regeneration Lag Value for satisfactorily regenerated and conditionally regenerated harvest areas with management strategies of planting, seeding or site preparation.



Table 2. Rules for Regeneration Lag Assignment of Planting, Seeding, and Site Preparation Management Strategies

Timeline	Regeneration Lag Values for Satisfactorily Regenerated (SR) and Conditional (CSR) Harvest Areas (for planting, seeding, and site preparation ¹ management strategies)					
	May to August			September to April		
Skid Clearance Date						
Last Treatment Date	September to June following	July to June of following year	July or later in subsequent years	September to June following	July to June of following year	July or later in subsequent years
Regeneration Lag Value	0	1	+1 for each year	0	1	+1 for each year

¹For site preparation management strategies add two (2) years to the regeneration lag value

7. Table 3 was used to determine a Regeneration Lag Value for satisfactorily regenerated and conditionally regenerated harvest areas with a leave for natural management strategy

Table 3. Rules for Regeneration Lag Assignment of Leave for Natural Management Strategies

Timeline and Regeneration Strata	Regeneration Lag Values for Satisfactorily Regenerated (SR) and Conditional (CSR) Harvest Areas (for leave for natural management strategy)							
	May to August				September to April			
Skid Clearance Date								
Regeneration Strata	D	DC	CD	C	D	DC	CD	C
Regeneration Lag Value	1	2	3	4	0	1	2	3