

Association for Sustainable Forestry

Category 7 Quality Improvement Silviculture Program

Procedures Manual



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Acknowledgements:

Information contained in this manual has been taken from DNR's Monitoring Procedures, Bowater's Procedure Manual, and Stora's Procedures for JMP. I would like to thank each party for sharing their information.

1. INTRODUCTION

The procedures found in this manual have been developed with the objective of providing a system for determining whether silviculture sites will meet or have met ASF Silviculture Criteria. Assessments for areas proposed for funding or funded through the ASF should be conducted in accordance with the procedures outlined in this document.

The ASF maintains a "rate payment system" where the funding level for a particular treatment depends on the specific duties to be completed by the individual contractor or woodland owner. The following explains the elements that are required to meet *Level 1* and *Level 2* funding rates.

Level 1

Contractors or woodland owners must ensure activities are completed on proper sites (with proper prescriptions) and that work is appropriately supervised and carried out in a safe, efficient, and effective manner by a skilled workforce to the treatment standards (ASF Silviculture Criteria). Contractors or woodland owners should employ the skills of a forester or forest technician, hold public liability and property insurance and Worker's Compensation Insurance or a private insurance policy where required, and comply with all Federal and Provincial Acts and Regulations. Contractors or woodland owners must consistently provide accurate and reasonable treatment prescriptions, work measurements and map preparation, and properly complete application and claiming procedures and documentation. Specific duties include (all must be met):

- Locate potential treatment areas
- Seek landowner agreements
- Prepare applications (must include pre-assessment sheets)
- Treatment layout
- Complete work in accordance to ASF Silviculture Criteria
- Complete claims (must include post-assessment sheets)
- Submit mapping data in accordance to Appendix C of the ASF's Procedures Manual

Level 2

Contractors or woodland owners must ensure that work is carried out in a safe, efficient, and effective manner to the treatment standards (ASF Silviculture Criteria). Contractors or woodland owners must hold public liability and property insurance and Worker's Compensation Insurance or a private insurance policy where required and comply with all Federal and Provincial Acts and Regulations. Some or all of the specific duties of the *Level 1* rate cannot be met.

Those looking to obtain *Level 1* funding rates are strongly encouraged to use this manual.

2. PRE-ASSESSMENTS

i Plot Size:

To pre-assess crop tree release a 5.0 m radius plot and a prism plot will be used. The fixed area (5.0 m radius) circular plot provides an assessment area of 1/125th ha and will be used to determine the density of crop trees. A prism with a BAF (basal area factor) of 2 should be used for the prism plot, which represents 2m²/ha BA (basal area) for each tree tallied.

To pre-assess crop tree pruning a plot with a radius of 5.0 m will be used. This fixed area circular plot provides an assessment area of 1/125th ha and will be used to determine the density of crop trees.

To pre-assess selection management a prism plot will be used. A prism with a BAF (basal area factor) of 2 should be used, which represents 2m²/ha BA (basal area) for each tree tallied.

ii Stocking Plot Size:

A stocking plot of 1.36 m will be used to determine site stocking. This fixed area circular plot provides an assessment area of 1/1736th ha which is equivalent to the area available to one tree at 2.4m spacing (one tree would constitute full stocking). This plot is NOT required for crop tree release or crop tree pruning.

iii Sampling Intensity:

Pre-assessments will be conducted at the following intensities:

Treatment area (ha)	Number of plots
19.1 +	1/ha
9.1-19.0	20
4.1-9.0	15
0.1-4.0	10

iv Methodology:

Plot locations will be evenly distributed throughout the total area of the silviculture site.

- The first sample plot should be located at least 30m from the edge of the site. No plot should be located closer than 30m to the edge or to another plot.
- Lines should be run with a compass and the distance paced or stringed between plots. Sample plots are required to be GPS δ at the time of the assessment. Please note: Stocking plots are to be conducted at sample plots.
- If the silviculture contractor is ArcView capable, there is an extension that allows the contractor to draw a grid (at any size) over a polygon and the sample plots can easily be placed by using a graphics tool. The graphics can then be converted to shapefiles and loaded onto a GPS system through

DNR Garmin. In the field, the contractor can then navigate to the sample plots. Please contact the ASF Coordinator for any assistance with this method.

- d Pre-assessment tally sheets for each treatment are provided in Appendix A. Formulae for calculation of treatment criteria are provided on the tally sheets. Reference ASF Silviculture Criteria to determine if the site meets the requirements.

v Specific Pre-assessment Criteria by Treatment:

Untreated areas left to satisfy the Wildlife Habitat and Watercourses Protection Regulations are not to be sampled in pre-assessments. This area may entail up to 5% of the treated block area (for blocks greater than 3 ha). Areas over 5% will have to be excluded from the treatment area.

a Crop Tree Release

Crop Trees ó tally number of crop trees present in plot by species
Ave. Crop Tree DBH ó tally the diameter, at breast height, of the average crop tree present in plot (note: even though the average is tallied, all crop trees must have a diameter >10 cm)
Total Crop Trees - number of crop trees tallied in plot
BA tally - tally number of trees present in prism plot

b Crop Tree Pruning

Crop Trees ó tally number of crop trees present in plot by species
Ave. Crop Tree Height ó tally the height of the average crop tree present in plot (note: even though the average is tallied, all crop trees must have a height > 8 m)
Total Crop Trees - number of crop trees tallied in plot

c Selection Management

Stocked ó yes or no whether crop tree is present in stocking plot
NS (Non-Stockable) ó tally if entire plot falls on a location that would not support tree growth (such as exposed bedrock or a wet area)
Tolerant Crop Trees (BA tally) ó tally number of tolerant crop trees present in prism plot by species
Other Crop Trees (BA tally) ó tally number of other crop trees present in prism plot by species
Number Height Classes ó tally number of height classes present in prism plot (must be minimum 3 m difference in height to constitute separate height class)
Total Tolerant Crop Trees - number of tolerant crop trees tallied in prism plot
Total Other Crop Trees - number of other crop trees tallied in prism plot

3. POST-ASSESSMENTS

i Plot Size:

To post-assess crop tree release a 5.0 m radius plot and a prism plot will be used. The fixed area (5.0 m radius) circular plot provides an assessment area of 1/125th ha and will be used to determine the density of crop trees. A prism with a BAF (basal area factor) of 2 should be used for the prism plot, which represents 2m²/ha BA (basal area) for each tree tallied.

To post-assess crop tree pruning a plot with a radius of 5.0 m will be used. This fixed area circular plot provides an assessment area of 1/125th ha and will be used to determine the density of crop trees.

To post-assess selection management a prism plot will be used. A prism with a BAF (basal area factor) of 2 should be used, which represents 2m²/ha BA (basal area) for each tree tallied.

ii Stocking Plot Size:

A stocking plot of 1.36 m will be used to determine site stocking. This fixed area circular plot provides an assessment area of 1/1736th ha which is equivalent to the area available to one tree at 2.4m spacing (one tree would constitute full stocking). This plot is NOT required for commercial thinning, crop tree release, or crop tree pruning.

iii Sampling Intensity:

Post-assessments will be conducted at the following intensities:

Treatment area (ha)	Number of plots
19.1 +	1/ha
9.1-19.0	20
4.1-9.0	15
0.1-4.0	10

iv Methodology:

Plot locations will be evenly distributed throughout the total area of the silviculture site.

- e The first sample plot should be located at least 30m from the edge of the site. No plot should be located closer than 30m to the edge or to another plot.
- f Lines should be run with a compass and the distance paced or stringed between plots. Sample plots are required to be GPSed at the time of the assessment. Please note: Stocking plots are to be conducted at sample plots.
- g If the silviculture contractor is ArcView capable, there is an extension that allows the contractor to draw a grid (at any size) over a polygon and the sample plots can easily be placed by using a graphics tool. The graphics can then be converted to shapefiles and loaded onto a GPS system through

DNR Garmin. In the field, the contractor can then navigate to the sample plots. Please contact the ASF Coordinator for any assistance with this method.

- h Post-assessment tally sheets for each treatment are provided in Appendix B. Formulae for calculation of treatment criteria are provided on the tally sheets. Reference ASF Silviculture Criteria to determine if the site meets the requirements.

v Specific Post-assessment Criteria by Treatment:

Untreated areas left to satisfy the Wildlife Habitat and Watercourses Protection Regulations are not to be sampled in post-assessments. This area may entail up to 5% of the treated block area (for blocks greater than 3 ha). Areas over 5% will have to be excluded from the treatment area.

a Crop Tree Release

- Crop Trees ó tally number of *marked* and *released* crop trees present in plot by species (*the crowns of crop trees must be released on at least 3 sides*)
- Ave. Crop Tree DBH ó tally the diameter, at breast height, of the average crop tree present in plot (note: even though the average is tallied, all crop trees must have a diameter >10 cm)
- Total Crop Trees - number of crop trees tallied in plot
- BA tally - tally number of trees present in prism plot

b Crop Tree Pruning

- Crop Trees ó tally number of *pruned* crop trees present in plot by species (*crop trees must be pruned to a height of 5 m*)
- Ave. Crop Tree Height ó tally the height of the average crop tree present in plot (note: even though the average is tallied, all crop trees must have a height > 8 m)
- Total Pruned Crop Trees ó total number of pruned crop trees present in plot

c Selection Management

- Stocked ó yes or no whether crop tree is present in stocking plot
- NS (Non-Stockable) ó tally if entire plot falls on a location that would not support tree growth (such as exposed bedrock or a wet area)
- Tolerant Crop Trees (BA tally) ó tally number of tolerant crop trees present in prism plot by species
- Other Crop Trees (BA tally) ó tally number of other crop trees present in prism plot by species
- Number Height Classes ó tally number of height classes present in prism plot (must be minimum 3 m difference in height)
- Total Tolerant Crop Trees - number of tolerant crop trees tallied in prism plot
- Total Other Crop Trees - number of other crop trees tallied in prism plot

4. DEFINITIONS

- Stocking: An expression of the percentage of a site occupied by trees (at 8 ft spacing).
- Density: The number of trees per unit area (usually per hectare).
- Height: A measurement of the distance from the bottom to the top of an object.
- Crop Trees: Trees of good quality and form which are free of damage (e.g. insect, fungi).
- Diameter: The diameter (length of a line segment that passes through the centre of a circle from end to end) of a tree at breast height (1.3m from the ground).
- Age: The age of a tree at breast height (1.3m from the ground).
- Basal Area: A measure of the cross-sectional area (m^2/ha) taken up by trees at breast height (1.3m from the ground).