

# **New Brunswick Private Woodlot Silviculture Program**

**2020-2021**

## Table of Contents

Private Woodlot Silviculture Program .....	3
Eligibility and Conformance Requirements .....	3
Farmland Identification Program.....	5
Pre-Treatment Assessment Procedures for Marketing Boards.....	8
Work Certification and Payment Procedures for Marketing Boards .....	9
Post-Treatment Performance Monitoring by DNRED .....	9
Annual Financial Reporting by Marketing Boards .....	11
Rules and Regulations Governing Activities on Private Woodlots .....	11
Appendices.....	13
Appendix 1: Pre-Commercial Thinning .....	14
Appendix 2: Plantation Cleaning.....	16
Appendix 3: Site Preparation .....	18
Appendix 4: Fill Planting .....	19
Appendix 5: Full Planting .....	20
Appendix 6: Herbicide for Site Preparation and Plantation Release .....	22
Appendix 7: Herbicide for Natural Regeneration Release .....	24
Appendix 8: Woodlot Management Recommendations .....	25
Appendix 9: Commercial Thinning .....	27
Appendix 10: Hardwood Stand Improvement .....	29
Appendix 11: Alternative Harvest Operating Plan.....	31
Appendix 12: Plantation Performance Monitoring - Year 3 & Year 8 or 9 .....	33
Appendix 13: Required Plot Sizes for Pre-Treatment Assessment & Post-Treatment Inspections .....	34
Appendix 14: Landowner Agreement.....	35

## **Private Woodlot Silviculture Program**

Objective: Private woodlots account for 30% of New Brunswick's forests or 1.9 million hectares and are an integral component of the provincial wood supply and rural economy. To grow a sustainable supply of quality forest products which will be used in processing facilities, the provincial government partners with private woodlot owners and Forest Product Marketing Boards to fund certain silviculture treatments. These investments are expected to result in more valuable wood products available for harvest earlier than without such treatment. For more information on the value of the forest industry to New Brunswick, visit [www.nbforestry.com](http://www.nbforestry.com).

Administration: The Private Woodlot Silviculture Program is administered by the Forest Operations and Development (FOD) branch of the Department of Natural Resources and Energy Development (DNRED). Participation by woodlot owners is voluntary and the program is available to woodlot owners through one of the seven Forest Products Marketing Boards. Coordination is performed by the New Brunswick Federation of Woodlot Owners (NBFWO). Performance monitoring is done by DNRED FOD branch and Regional staff. Financial oversight is performed by the New Brunswick Forest Products Commission.

Funding: Program funding is determined annually based on a cost-sharing arrangement whereby government contributes a percentage of the total estimated treatment cost. The woodlot owner is expected to contribute the remainder of the total treatment cost. The cost-sharing percentage contributed by government and the resulting rates (\$/hectare) paid by DNRED for eligible treatments may be adjusted as required.

The total estimated cost (\$/hectare) for an eligible silviculture treatment includes the estimated costs to perform the work as well as estimated costs for Marketing Board administration. These administrative costs may include costs for pre-assessments of potential lands, post-treatment measurements, payment processing and on-going evaluation of treated sites. The maximum allowable Marketing Board administration deduction is 20% of the annual DNRED program funding for each Board.

Table 1 lists the current cost-sharing percentage contributed by government, the treatment activities currently available under the program, and the rates paid for each treatment type (including the Marketing Board administration cost).

### **Eligibility and Conformance Requirements**

Private Woodlot: As defined in the *Forest Products Act* and not be held by a Crown Timber Licensee, Sub-Licensee or Crown Corporation.

Property Size: Privately owned property, as identified by the PID number, is to be 5 hectares (ha) or larger.

A property of less than 5 ha may be eligible if it is adjacent to other property owned by the same landowner and is separated from that other property by a trail, road, railroad, utility corridor or highway, and, in conjunction with the other property, is  $\geq 5$  ha.

Investment Timeframe: There should be reasonable expectation that Woodlot Management Recommendations and treatments carried out under this program will enhance the volume and/or quality of forest products over at least a 10-year timeframe. Where site or stand conditions, incidence of disease or insect damage or landowner objectives suggest this expectation will not be met, such properties are not eligible for treatments under this program.

Sustainable Forestry: Any property which has received treatments under this program and then has been harvested without consideration for capturing the optimal value of forest products, minimizing waste and avoiding damage to other forest resources is not eligible for subsequent treatments under this program. For example; complete harvesting of a healthy 30-year old plantation cannot be followed by a planting treatment under this program.

Climate Change Adaptation: Treatment prescriptions and approvals shall be made with consideration to climate change adaptation. Refer to NBFWO project: *Building Capacity of New Brunswick Woodlot Owners to Adapt to Climate Change*. At this time, evidence shows that balsam fir is a high-risk species (will not adapt well to anticipated climate change). Red Maple and Red Oak have been identified as a species that will be highly adaptable. Some standards in this manual have been modified with consideration to this evidence.

Professional Certification: Any treatment prescriptions or Woodlot Management Plans developed under the Private Woodlot Silviculture Program must be signed by a Registered Professional Forester or Certified Forest Technician.

Work Area Size: For all silviculture treatment activities funded under this program, the minimum size work area is 0.2 ha. Funding claims for total work area less than 0.2 ha will not be accepted. Work blocks of less than 0.2 ha included as part of a larger claim will not be accepted.

Woodlot Management Recommendations are considered a treatment category and are available for eligible properties 5 ha or larger only. To be eligible for funding an entire PID numbered property area must be included in the management plan (see Appendix 8). Any exception to this requirement must be approved by DNRED.

Limits for Annual Funding: Marketing Boards are responsible for ensuring woodlot owners have fair access to the program and to this end, a Marketing Board may establish limits for annual cost sharing funding to individual woodlot owners.

Publishing of Treatment Locations: Any property which has received treatments under this program may have its location published for the purposes of operating the program.

By participating in the program, landowners authorize and consent to the disclosure and use of the treatment location information for forest inventory, public education or other purposes related to the program.

Personal and financial information collected are subject to the *Right to Information and Protection of Privacy Act*.

DNRED Access to Private Woodlots: Any property that has received treatments under this program may be inspected by DNRED staff members for compliance with criteria, rules and regulations outlined in this manual. For these purposes, DNRED staff members may enter upon and pass through these private properties without being liable for trespass at any time during or after treatment.

### **Farmland Identification Program**

Participation in the Private Woodlot Silviculture Program with land registered in the Provincial Farm Land Identification Program (FLIP) may affect continued eligibility for property tax deferrals.

Prior to participating in the Private Woodlot Silviculture Program, landowners of FLIP registered property are advised to discuss the implications with their Marketing Board representative, or with the FLIP Registrar at **(506) 453-2252**.

More information on the FLIP program is available at:

[http://www2.gnb.ca/content/gnb/en/services/services\\_renderer.14296.Farm\\_Land\\_Identification\\_Program\\_.html](http://www2.gnb.ca/content/gnb/en/services/services_renderer.14296.Farm_Land_Identification_Program_.html).

**Table 1. Private woodlot silviculture program treatment cost-sharing for 2020-21.**

2020-21				
Treatment Type Code	Site	Description	Rate Code	Rate/ha (DNRED contribution)
<b>Plantation Establishment</b>			<b>90:10 Cost-Sharing</b>	
FP	farmland	full planting	335	\$751
FP	farmland	full planting with site preparation - herbicide aerial	356	\$973
FP	farmland	full planting with site preparation - herbicide ground	355	\$1,169
FP	farmland	full planting with site preparation - C&H plow	347	\$1,205
FP	farmland	full planting with site preparation - disc trencher	345	\$1,099
FP	farmland	full planting with site preparation - drags	346	\$1,113
BP	forest	full planting (no site preparation) <i>TRIAL</i>	50	\$879
BP	forest	full planting (previous site preparation)	194	\$751
BP	forest	full planting with site preparation - herbicide ground	353	\$1,169
BP	forest	full planting with site preparation - herbicide aerial	354	\$973
BP	forest	full planting with site preparation - C&H plow	311	\$1,205
BP	forest	full planting with site preparation - disc trencher	309	\$1,099
BP	forest	full planting with site preparation - drags	310	\$1,113
FP	farmland	full planting (DNRED seedlings)	362	\$441
FP	farmland	full planting (DNRED seedlings) with site preparation - herbicide aerial	363	\$663
FP	farmland	full planting (DNRED seedlings) with site preparation - herbicide ground	364	\$859
FP	farmland	full planting (DNRED seedlings) with site preparation - C&H plow	365	\$895
FP	farmland	full planting (DNRED seedlings) with site preparation - disc trencher	366	\$789
FP	farmland	full planting (DNRED seedlings) with site preparation - drags	367	\$803
FP	farmland	full planting (DNRED seedlings) (previous site preparation)	377	\$457
BP	forest	full planting (DNRED seedlings) (no site preparation) <i>TRIAL</i>	368	\$569
BP	forest	full planting (DNRED seedlings) (previous site preparation)	369	\$441
BP	forest	full planting (DNRED seedlings) with site preparation - herbicide ground	370	\$859
BP	forest	full planting (DNRED seedlings) with site preparation - herbicide aerial	371	\$663
BP	forest	full planting (DNRED seedlings) with site preparation - C&H plow	372	\$895
BP	forest	full planting (DNRED seedlings) with site preparation - disc trencher	373	\$789
BP	forest	full planting (DNRED seedlings) with site preparation - drags	374	\$803
<b>Site Preparation</b>			<b>90:10 Cost-Sharing</b>	
FS	farmland	site preparation - herbicide aerial	352	\$249
FS	farmland	site preparation - herbicide ground	351	\$418
FS	farmland	site preparation - C&H plow	342	\$454
FS	farmland	site preparation - disc trencher	340	\$348
FS	farmland	site preparation - drags	341	\$362
BS	forest	site preparation - herbicide aerial	350	\$249
BS	forest	site preparation - herbicide ground	349	\$418
BS	forest	site preparation - C&H Plow	308	\$454



BS	forest	site preparation - disc trencher	306	\$348
BS	forest	site preparation - drags	307	\$362
<b>Fill Planting</b>			<b>90:10 Cost-Sharing</b>	
FF	farmland	fill planting	336	\$612
BF	forest	fill planting	46	\$612
FF	farmland	fill planting (DNRED seedlings)	375	\$302
BF	forest	fill planting (DNRED seedlings)	376	\$302
<b>Herbicide Release</b>			<b>90:10 Cost -Sharing</b>	
FH	farmland	herbicide release aerial	338	\$249
FH	farmland	herbicide release ground	337	\$418
BH	forest	herbicide release aerial	334	\$249
BH	forest	herbicide release ground	333	\$418
<b>Thinning</b>			<b>90:10 Cost-Sharing</b>	
BC	forest	full plantation cleaning	339	\$701
BC	forest	full plantation cleaning (high density)	357	\$981
BT	forest	pre-commercial thinning	331	\$981

Treatment Type Code	Site	Description	Rate Code	Rate/ha (DNRED contribution)
<b>Management Planning / Harvest-based</b>				
PM	forest	woodlot management recommendations (per document + \$5/ha if > 40 ha to maximum \$800)	600	\$500
PM	forest	woodlot management recommendation for a 5-10 ha property	605	\$200
CT	forest	commercial thinning	700	\$700
TH	forest	hardwood stand improvement <sup>2</sup>	701	\$700
OP	forest	operating plan <sup>2</sup>	702	\$400
<b>Forest Measurements</b>				
FM	forest	permanent sampling plot (PSP) re-measurement	601	\$1400
FM	forest	PSP establishment (commercial thinning)	602	\$2650
FM	forest	PSP establishment (hardwood stand improvement)	603	\$2250
FM	forest	PSP establishment (operating plan)	604	\$2250

<sup>2</sup>maximum \$140/ha for Board Administration

## **Pre-Treatment Assessment Procedures for Marketing Boards**

Criteria: Criteria developed for each silviculture treatment type are summarized in Appendices 1-11.

Note: *Pre-treatment approval must be obtained from DNRED for treatment of any sites which do not meet all required criteria.*

Multiple Treatments: Other than herbicide plantation release on forest sites (see Appendix 6), no work area will be funded through this program more than once for any given treatment type.

Signed Landowner Agreement: In order for any work under this program on a private woodlot to qualify for funding, the *Landowner Agreement* (see Appendix 14) must be signed. A signed Landowner Agreement is needed for each treatment on a private woodlot (identified by the PID number). If the private woodlot changes hands and the new owner(s) want to participate in the program, then a new landowner agreement must be signed. A Marketing Board may also have an existing version of a landowner agreement. In that case, the Marketing Board's own landowner agreement will be valid and attached to the signed DNRED Landowner Agreement.

Perimeter Marking: To facilitate post-treatment inspection, all treatment area perimeters must be marked by Marketing Board staff (or contractors), by tying distinctive colored flagging tape at each corner and  $\leq 25$  m intervals along boundaries of the entire perimeter of the work area represented on the post-treatment shapefile. All mapped voids should have perimeters marked with a different color ribbon than treatment sidelines. When more than one parcel (PID) is included in a work area, property lines should be clearly marked, and, the number of hectares treated on each PID clearly noted on the certification submission.

Sampling Procedures: Plot size requirements for pre-treatment assessment and post-treatment inspections are summarized in Appendix 13: Required Plot Sizes for Pre-Treatment Assessment & Post-Treatment Inspections.



## Work Certification and Payment Procedures for Marketing Boards

Submission Procedures: Work certification data for all completed program treatments will be submitted digitally by the Marketing Board using the Electronic Silviculture System (E-Silv) Transfer File Structure. By submitting this data, the Marketing Board certifies that the treatment has met the requirements and criteria listed in this manual and any additional site specific DNRED requirements.

Submission Timing: Marketing Boards must submit completed treatment data on a regular basis (i.e. within 30 days of treatment completion). The following deadlines for post-treatment certification submission will be applied:

Treatment Type	Deadline for all submissions
Herbicide	1 October
Site Preparation	1 December
Planting	1 October
Pre-commercial Thinning, Plantation Cleaning	1 January
Commercial Thinning, Hardwood Stand Improvement, Alternative Harvest Operating Plan	31 March
Plantation Performance Reports	1 May

**Note:** Failure to submit post-treatment certification records to E-Silv within required timelines may result in payment delay.

Program Payment Coordination: The NBFWO will coordinate the following on behalf of the Marketing Boards:

- allocation of program funding among Marketing Boards;
- payment invoicing to DNRED;
- ensuring reporting timelines are met by Marketing Boards

## Post-Treatment Performance Monitoring by DNRED

Random Auditing: DNRED staff will conduct random inspections, by area (ha), across each treatment type to verify compliance with both treatment criteria and site area (ha) treated, as follows:

Treatment Type	Auditing intensity
Planting/ Site Preparation	≥ 20 %
Herbicide	≥ 20 %
Pre-commercial Thinning, Plantation Cleaning	≥ 10 %
Commercial Thinning, Hardwood Stand Improvement, Alternative Harvest Operating Plan	≥ 10 %
Plantation Performance Reports	≥ 5 %
Woodlot Management Recommendations	≥ 10 %

Post-Treatment Assessment: Once a treatment site is selected for auditing, it will be sampled as outlined for each treatment in the Appendices. DNRED staff reserve the right to take high resolution ortho-imagery of the treatment site using UAV systems, if so required for auditing purposes.

Post-Treatment Joint Evaluation: If a DNRED inspection finds that a treatment site does not meet criteria, the Marketing Board will have the option of requesting a joint evaluation. Results of joint evaluation will be final. Treatment sites deemed not meeting program criteria will have the total site area rejected and applied to a year-end area reconciliation calculation.

Site Area Difference: If during inspection a difference of more than 5% in a submitted individual site area is found, the Marketing Board will be notified. Marketing Boards will have the option of accepting the DNRED area measure, or calling for a joint evaluation, the results of which will be considered accurate. If work area boundaries are not evident, the Board will be contacted to identify the boundary.

Year End Area Reconciliation: A year-end financial adjustment will be made if an overall area difference of greater than 3% by treatment type is assessed for an individual Marketing Board. This area difference may include discrepancies in measured area and/or treatment area meeting standard. The % difference will be applied to the total area submitted for this treatment type and financial reimbursement to DNRED will be required equaling the product of this area difference times the treatment rate paid by DNRED.

Plantation Performance Reports & Woodlot Management Recommendations: DNRED inspections of these reports will involve an office review of submitted records and may include a field review of selected treatment sites. DNRED will consult with a Marketing Board where it is deemed that reports, recommendations or supporting field work does

not meet standard, in which case a compliance plan will be developed by DNRED for corrective action.

### **Annual Financial Reporting by Marketing Boards**

By June 30<sup>th</sup> of each year, a financial report (Schedule A) shall be submitted by the Forest Products Marketing Boards to the New Brunswick Forest Products Commission. This report must demonstrate the cost-sharing contributions (monetary and in-kind) to the program by woodlot owners and/or Marketing Boards on behalf of woodlot owners for the previous fiscal year. The Schedule A report will also summarize the program funds allocated towards direct treatment costs and administration costs. Where possible, the figures in this report will be based on each Board's audited financial statements. The New Brunswick Forest Products Commission reviews the information submitted by the boards for compliance with program requirements and reports the results to DNRED. DNRED may request the revenue portion of the report to be submitted on or before January 31<sup>st</sup> of each year.

**Note:** Failure to submit the Schedule A report in a timely manner may result in reduced program funding.

### **Rules and Regulations Governing Activities on Private Woodlots**

All forest management activities on private woodlots including any treatments carried out under the N.B. Private Woodlot Silviculture Program must comply with all applicable laws including the following:

- The *Clean Water Act*. The Watercourse and Wetland Alteration Regulation (90-80) protects provincial streams, rivers, wetlands, and lakes from work or ground disturbance in their vicinity. This includes (but is not limited to) all treatments funded under the Private Woodlot Silviculture Program. Any person intending to do work within 30 metres of a watercourse must apply for a permit (WAWA Permit) from the Department of Environment and Local Government (ELG).
- The *Forest Products Act* establishes the Forest Products Commission and governs the powers, duties and activities of the Commission including the oversight and general supervision of the Marketing Boards. The underlying objective of both the *Forest Products Act* and the *Natural Products Act* (with respect to farm products of the forest) is the control and regulation of primary forest products coming from private woodlots in New Brunswick.
- The *Forest Fires Act* requires that any work on forest land in which two or more persons are engaged have the required firefighting equipment on site to combat a forest fire. These persons must also establish a prearranged plan of action to deal with any outbreak of fire; and assure that each employee designated in the plan of action is made fully aware of his or her responsibilities in case of fire. A work permit may be required as well depending on the type of forest operation.

- The *Transportation of Primary Forest Products Act* requires that all wood products transported in New Brunswick (including private land) have a Transportation Certificate indicating source, date and time loaded, product, species, destination, licence plate number, name and signature of vehicle operator, offload date and receiver signature (Section 3 of Regulation 2002-37). Marketing Boards administer the Transportation Certificate system for private woodlots.
- The *Pesticides Control Act*. All pesticides used in New Brunswick are registered by the federal government, and only these pesticides may be used in the province. Pesticide use is further controlled (regulated) under the authority of the provincial *Pesticides Control Act* and Regulations, which is administered by ELG. The aim of the provincial legislation is to ensure that pesticides are used, stored and disposed of so that there is minimum impact on non-target species, human health or the environment.

**Any DNRED staff member who discovers a violation of one or more of these Acts within, and/or associated to a treatment submitted under the N.B. Private Woodlot Silviculture Program, will report the violation to the appropriate authorities.**

# Appendices

## Appendix 1: Pre-Commercial Thinning

**Objective:** To reduce the number of trees on a site using a thinning saw, allowing the remaining crop trees to maximize their growth.

### Pre-Treatment Assessment

- Density: > 5000 stems/ha (> 1 m in height) with crop trees not in a “free to grow” condition (using 1.46 m radius (6.7 m<sup>2</sup>) plots where 1 “in” tree represents 1,500 trees/ha).
- Stocking: > 60% acceptable crop tree species (using 1.26 m radius (5 m<sup>2</sup>) plots where one “in” tree represents stocked). Record the best potential crop tree by species.
- Remnant overstory: < 25% crown closure (8 m<sup>2</sup> residual basal area)
  - Large mature white pine or clumps of remnant overstory should be considered voids
- Average crop tree height: 2.0 - 7.0 m softwood  
5.0 - 9.0 m hardwood
- Locations with average crop tree height 1 meter greater than the maximum may be considered if the following criteria are met:
  - No removal of commercial products
  - Productive sites with low risk of insect, disease and/or weather damage
  - Live crown ratio adequate for growth response
- Acceptable crop tree species (i.e. > 60% stocking requirement): spruce, white pine, jack pine, fir, cedar, hemlock, sugar maple, red maple, yellow birch, white birch, oak, other commercial hardwood, aspen\*, potentially disease resistant beech\*\*, any combination of above. (Layered spruce and advanced stunted fir are not acceptable.)
- Each Marketing Board shall maintain a board level pre-commercial thinning species pecking order. This shall be provided to DNRED. Normally spruce, white pine, cedar and tolerant hardwoods shall be top tier in the crop tree pecking order. This pecking order will apply on all respective board treatments unless otherwise stated on an individual treatment (ex. adjusted to meet specific landowner objectives).
- \* See post-treatment inspection statement on aspen stocking.
- \*\* Potentially disease resistant Beech will be an acceptable crop tree when assessed as > 5 cm dbh while showing nil or low scale and smooth bark.

### Post-Treatment Inspection

- Stocking: Record the best quality crop tree by species. Stocking must be > 60% acceptable crop tree species (using 1.26 m radius (5 m<sup>2</sup>) plots where one “in” tree represents stocked). Aspen (poplar) must be <50% of overall crop tree stocking.
- Average crop tree height: within pre-treatment assessment ranges for released crop trees in density plots; no crop trees < 1.0 m.

- Quality: > 85% overall quality compliance using quality deductions as follows:
  - Crop tree selection\* = 5% per tree
  - Excessive cutting of potential crop trees\*\* = 5% per tree
  - Crop tree damage = 3% per tree
  - Crop tree spacing\*\* = 3% per tree
  - Uncut competition\*\*\* = 3% per tree
  - Live branches on cut stumps = 3% per plot
  - Incomplete cuts = 1% per plot
- Density\*\*\*\* (using 3.57 m radius (40 m<sup>2</sup>) plots where 1 “in” tree represents 250 trees/ha):
  - 2,000 - 3,500 crop trees/ha (softwood, hardwood)
  - 3,000 - 4,000 crop trees/ha (white pine)
- Voids: All untreated areas larger than 0.04 ha are considered voids and will be deducted to calculate net treated area. All voids 0.5 ha and larger are to be mapped. When measuring voids, a growing space of 1 m is allowed around crop trees.

\* Based on treatment plan species pecking order with consideration to overall stem quality (diameter, height, health and vigor).

\*\* A quality deduction will not be made if plot density is within the acceptable range and stems are reasonably distributed in plot. Crop trees should have ≥1 metre of cleared space on all sides.

\*\*\* Includes all competing non-commercial tree species such as but not limited to: pin cherry, alder. The only brush species considered as competition is beaked hazelnut. Uncut competition also includes commercial species under 1 m in height that will compete with crop trees.

\*\*\*\* Generally, the mid-range of stated densities should be aimed for as the ideal. The range is to allow some flexibility for individual situations.

Sampling Procedures: stocking and density plots must share the same plot centre. Plot intensity shall be greater of 1 plot per ha or 4 plots per work area.

Note: Cedar and Ash require special consideration and should be preserved where possible. These species will be considered “invisible” for sampling and thinners should avoid cutting during treatment, unless thinning a patch of either species.



## Appendix 2: Plantation Cleaning

**Objective:** To reduce undesirable natural regeneration on a site using a thinning saw, allowing the remaining planted crop trees to maximize their growth.

### Pre-Treatment Assessment

- Density: > 5000 stems/ha (>1 m in height) with softwood crop trees not in a “free to grow” condition (using 1.46 m radius (6.7 m<sup>2</sup>) plots where 1 “in” tree represents 1,500 trees/ha).
- Not in “free-to-grow” condition: ingrowth of competing commercial and non-commercial tree species is significant (more than 40% of softwood crop trees affected) and will continue.
- Stocking: > 60% acceptable softwood crop tree species (using 1.26 m radius (5 m<sup>2</sup>) plots where one “in” tree represents stocked)
- Average crop tree height: 2.0 - 6.0 m softwood  
4.0 - 9.0 m hardwood
- Acceptable crop tree species: spruce, white pine, jack pine, fir, cedar, hemlock, red pine, sugar maple, red maple, yellow birch, white birch, oak, other commercial hardwood, aspen, any combination of above (layered spruce and advanced stunted fir is not acceptable).
- A crop tree pecking order is required in treatment plan. Planted trees, natural spruce and white pine shall normally be top tier in crop tree pecking order.
- High-density plantation cleaning: > 20,000 stems/ha; site must be stratified to isolate higher density patches (> 20,000 stems/ha) instead of averaging higher density with lower density to result in a site average over 20,000 stems/ha.

### Post-Treatment Inspection

- Stocking: Record best quality crop tree species. Stocking must be > 60% acceptable softwood crop tree species (using 1.26 m radius (5 m<sup>2</sup>) plots where one “in” tree represents stocked); Trembling Aspen must be < 30% of overall post-treatment crop tree stocking.
- Average crop tree height: within pre-treatment assessment ranges for released crop trees in density plots; no crop trees < 2.0 m.
- Quality: > 85% overall quality compliance using quality deductions as follows:
  - Crop tree selection\* = 5% per tree
  - Excessive cutting of potential crop trees\*\* = 5% per tree
  - Crop tree damage = 3% per tree
  - Crop tree spacing\*\* = 3% per tree
  - Uncut competition\*\*\* = 3% per tree
  - Live branches on cut stumps = 3% per plot
  - Incomplete cuts = 1% per plot
- Density\*\*\*\* (using 3.57 m radius (40 m<sup>2</sup>) plots where 1 “in” tree represents 250 trees/ha): 1,500 - 3,000 crop trees/ha; Acceptable softwood crop trees must be ≥ 1500 stems/ha.
- Voids: All untreated areas larger than 0.04 ha are considered voids and will be deducted to calculate net treated area. All voids 0.5 ha and larger are to be mapped. When measuring voids, a growing space of 1 m is allowed around crop trees.

\* Based on treatment plan species pecking order with consideration to overall stem quality (diameter, height, health and vigor).

\*\* A quality deduction will not be made if plot density is within the acceptable range and stems are reasonably distributed in plot. Crop trees should have  $\geq 1$  metre of cleared space on all sides.

\*\*\* Includes all competing non-commercial tree species such as but not limited to: pin cherry, alder. The only brush species considered as competition is beaked hazelnut. Uncut competition also includes commercial species under 1 m in height that will compete with crop trees.

\*\*\*\* Generally, the mid-range of stated density should be aimed for as the ideal. The range is to allow some flexibility for individual situations.

Sampling Procedures: stocking and density plots must share the same plot centre. Plot intensity shall be greater of 1 plot per ha or 4 plots per work area.

Note: Failed plantations that are being considered for treatment will not be approved without DNRED consultation.

Note: Cedar and Ash require special consideration and should be preserved where possible. These species will be considered “invisible” for sampling and thinners should avoid cutting during treatment, unless thinning a patch of either species.

### Appendix 3: Site Preparation

**Objective:** To use trenching, dragging or plowing equipment to expose suitable mineral soil for planting seedlings and to reduce undesirable natural regeneration which will compete with the planted seedlings. This treatment may not be required on certain planting sites.

#### **Pre-treatment Assessment**

All Sites:

- Planting Opportunities: the number of favorable planting opportunities < 1500/ha and no cost-effective alternative is available to create sufficient planting opportunities.
- Refer to Table 1 for approved equipment codes / rates.

Forest sites - the following sites resulting from harvesting may be treated:

- Softwood, Softwood-Hardwood, Intolerant Hardwood and Intolerant Hardwood-Softwood sites (pre-harvest stand types) with < 40% softwood natural generation (see Appendix 5) crop tree stocking (using 1.26 m radius (5 m<sup>2</sup>) plots where one "in" tree represents stocked). Woody species competition must be < 2 m average height.
- Remnant overstory: less than 25% crown closure (8 m<sup>2</sup>/ha residual basal area).

**Note:** Harvested Tolerant Hardwood and Tolerant Hardwood-Softwood sites (pre-harvest stand types) will not be treated.

Former Agricultural Fields:

- Sites must be of above average site quality and must not show signs of impeded drainage (sites with soil gleying must be avoided).
- May be treated where existing vegetation significantly impedes planting or is present to the extent that it would retard the establishment of planted seedlings.
- Use of a brush hog is acceptable where > 60% of planting opportunities are overtopped by woody species. Herbicide site preparation may also be required.
- Mowing of predominately non-woody vegetation is not eligible.
- Use of a mulching head, hydro Axe, Marden Rollers, or other heavy equipment is acceptable with prior DNRED approval and where the site is at least 95% occupied by non-commercial woody species > 3m in height.
- 100% of the work area must be treated (no spot or band treatment).

#### **Post-treatment Inspection**

- Potential for stocking: Sufficient favorable planting opportunities to accommodate a minimum of 80% crop tree stocking (using 1.26 m radius (5 m<sup>2</sup>) plots where one "in" tree represents stocked).
- Planting opportunity: a location with access to mineral soil and where competing vegetation will not significantly impede the development of the seedling for at least 12 months from the scheduled time of planting.
- Untreated areas: inoperable areas that are too wet and/or rock outcrops, larger than 0.04 ha are considered voids and will be deducted to calculate net treated area. All voids 0.5 ha and larger are to be mapped and must be excluded from the final submitted shapefile.

## Appendix 4: Fill Planting

**Objective:** To speed up stand regeneration and improve stand quality using improved planting stock where natural regeneration is not adequately occupying the site. This treatment normally requires herbicide treatment soon after planting to control competing hardwood and herbaceous vegetation.

### Pre-Treatment Assessment

- Stocking: must be 40-60% of acceptable softwood natural regeneration (using 1.26 m radius (5 m<sup>2</sup>) plots where one "in" tree represents stocked).
- Site preparation is not done in advance of fill planting. Natural softwood regeneration is protected, as it comprises a significant component of the density and stocking.
- Planting Opportunities: Must have sufficient natural regeneration plus planting opportunities to accommodate 90% softwood stocking. Sites must be stratified to identify fill-planting areas.
- Planting must not occur within ELG regulated set-backs/buffers where herbicide release treatment is not permitted.
- Initial planting failure: sites with poor planted tree survival due to site quality constraints (excessively wet or dry) or insect, animal or disease damage which are likely to persist are not eligible. DNRED must review and approve any fill-planting proposal on a failed plantation site.
- Remnant overstory: less than 25% crown closure (8 m<sup>2</sup> residual basal area)
- Harvested Tolerant Hardwood and Tolerant Hardwood-Softwood sites (pre-harvest stand types) will not be treated.

### Post-Treatment Inspection

- Species: Planted seedlings must be native commercial softwood species and/or Norway spruce. Wild seedling transplants are not acceptable.
- Stocking: must be ≥ 80% acceptable planted and natural softwood trees. Stocking of planted trees must be 20 - 60%. Record a planted tree if stocked to both planted and natural.
- Density: 1,800 - 2,500 planted plus natural softwood seedlings/ha for forest sites, and 1,800 - 3,000 for farm land sites (using 3.57 m radius (40 m<sup>2</sup>) plots where 1 "in" tree represents 250 trees/ha)
- See Appendix 5 for the following requirements:
  - Quality
  - Sampling
  - Voids
  - Natural Regeneration
  - Moisture Conditions
  - Seedling Care

## Appendix 5: Full Planting

**Objective:** To speed up stand regeneration and improve stand quality using improved planting stock. This treatment requires site preparation prior to planting (exception: see Trial Project below). In most cases, a herbicide treatment is required soon after planting to control competing hardwood and herbaceous vegetation. This treatment is only recommended where desirable natural regeneration does not quickly establish itself after harvesting.

### **Pre-Treatment Assessment:**

- Harvesting method and layout: Since harvesting creates the forest planting site, harvests should be designed with cost-effective site preparation, planting and herbicide release in mind. Harvesting and site preparation should avoid seasonally wet, dry or otherwise low productivity areas. Use smooth boundaries and avoid excessive slash.
- Planting must not occur within ELG regulated set-backs/buffers where herbicide release treatment is not permitted.
- Stocking: must be  $\leq 40\%$  of all acceptable softwood natural regeneration (using 1.26 m radius (5 m<sup>2</sup>) plots where one "in" tree represents stocked).
- Planting opportunities: Must have sufficient planting opportunities to accommodate  $\geq 90\%$  stocking.
- Remnant overstory: less than 25% crown closure (8 m<sup>2</sup> residual basal area)
- Harvested Tolerant Hardwood and Tolerant Hardwood-Softwood sites (pre-harvest stand types) will not be treated.
- *Trial Project* – Full Planting without Site Preparation: This trial treatment is suited for sites that have been harvested full tree to roadside (ex. full tree chipping), leaving a minimal amount of slash on site. A different rate will apply (see Table 1). The following conditions apply:
  - The duff layer shall be disturbed leaving adequate planting opportunities which will allow planters to get seedling roots into mineral soil with ease.
  - Site must be planted as soon as feasible after harvesting to avoid seedling competition with weed and shrub species that establish within the first growing season.

### **Post-Treatment Inspection:**

- Site: the site must not be excessively wet.
- Species: Planted seedlings must be native commercial softwood species and/or Norway spruce. Multiple species are acceptable. Seedling species must be appropriate for the site to optimize growth. Wild seedling transplants are not acceptable.
- Stocking: must be  $\geq 80\%$  stocking of planted trees.

- Density: 1,800 - 2,500 planted seedlings/ha for forest sites, and 1,800 - 3,000 for farm land sites (using 3.57 m radius (40 m<sup>2</sup>) plots where 1 “in” tree represents 250 trees/ha)
- Quality: A planted seedling is considered meeting requirements if all the following criteria are satisfied (using 3.57 m radius (40 m<sup>2</sup>) plots):
  - Alive or estimated to have been alive when planted.
  - Firmly imbedded to the root collar.
  - Roots/planting plug must have mineral soil contact; No exposed roots; Not “J” rooted.
  - Not broken below the top whorl.
  - Multiple stems are counted as one.
  - located on an acceptable planting opportunity.
- Sampling: stocking and density plots must share the same plot centre. Plot intensity shall be greater of 1 plot per ha or 4 plots per work area.
- Voids: All untreated areas larger than 0.04 ha are considered voids and will be deducted to calculate net treated area. All voids 0.5 ha and larger are to be mapped. When measuring voids, a growing space of 1 m is allowed around crop trees.
- Natural Regeneration: will not include the following:
  - Layering,
  - Seedlings with over 25% of circumference of stem girdled,
  - Seedlings with a live crown ratio of less than 20%,
  - Advanced stunted fir regeneration; this is advanced regeneration present following harvest. Generally, this refers to trees over one metre in height with short “umbrella” shaped crowns exhibiting very poor annual growth.
- Moisture Conditions: Boards are encouraged to monitor planting site moisture conditions daily, and to consider cessation of planting activity when sites become sufficiently dry to jeopardize seedling survival.

Boards are encouraged to view two key components of the Fire Weather Index: The Drought Code (DC) and the Buildup Index (BUI) at: <http://intranet/0078/Content/ForestFireMgmt-e.asp> (see Classification of Day and region). **DC > 300**, and **BUI > 55** have been identified as critical levels above which higher than normal seedling mortality rates may be expected.

In addition, daily precipitation should be monitored since acceptable Drought Codes can result from high humidity while soil moisture remains insufficient for seedling survival. To view daily precipitation, visit: <http://www1.gnb.ca/0079/FireWeather/FireWeatherHourly-e.asp?Stn=all>

- Seedling Care: Boards are responsible to ensure staff/contractors/owners are aware of and follow DNRED best management practices for seedling care.

## **Appendix 6: Herbicide for Site Preparation and Plantation Release**

**Objective:** To control regeneration forecasted to compete with planted seedlings by applying an herbicide product registered for forestry applications, using aerial or ground based treatment methods.

### **Pre-Treatment Assessment**

- Initial Release Timing: Release treatments should normally take place the first or second growing season after planting. (see Appendix 7 for natural regeneration release criteria)
- Site Preparation prior to planting: site preparation treatment must occur after competing vegetation has achieved near full foliage (July) and planting may occur within the same growing season and must occur before the end of the next growing season.
- Stocking: > 75% softwood (planted and natural) stocking (using 1.26 m radius (5 m<sup>2</sup>) plots where one "in" tree represents stocked).
- Competition: Hardwood, woody brush and/or herbaceous weeds occupy ≥ 80% of site; ≥ 40% of the planted crop trees are overtopped, show growth interference or are expected to become overtopped.
- Remnant Overstory: must be < 4 m<sup>2</sup>/ha BA for aerial treatment.
- Crop tree protection: Initial release treatment cannot be within the year of planting, unless approved by DNRED.
- Second Release Timing: Any second release treatment must occur within 4 growing seasons following planting and be recommended by Year 3 Plantation Performance Monitoring (see Appendix 11), unless otherwise approved by DNRED.
- Regulations: A Pesticide Use Permit must be obtained from the NB Department of Environment and Local Government, authorizing the application of any herbicide treatment, either by ground or by air, before any operations commence (exception: certified applicators performing ground application on their own land).

### **Post-Treatment Inspection**

- Competition Control: < 25 % of the area stocked to softwood is showing growth interference with hardwood, woody brush and/or herbaceous weeds that is overtopping or expected to overtop the crop species
- Untreated areas: inoperable areas larger than 0.04 ha are considered voids and will be deducted to calculate net treated area. All voids 0.5 ha and larger are to be mapped and must be excluded from the final submitted shapefile. The Marketing Board should download the GPS navigational data from the herbicide application vehicle to determine the area treated.
- Performance Reporting: Each treatment site must be inspected by the Marketing Board during the spring growing season immediately following treatment to determine compliance with the above "Competition Control" criteria. Each Marketing Board will



submit, not later than August 1<sup>st</sup> of the year following treatment, a list of any sites where the treatment was unsuccessful.

- Sampling: Plot intensity greater of one plot per ha or 4 plots per work area.

## **Appendix 7: Herbicide for Natural Regeneration Release**

**Objective:** To control regeneration forecasted to compete with desirable natural regeneration by applying a herbicide product registered for forestry applications, using aerial or ground based treatment methods.

### **Pre-Treatment Assessment**

- Stocking: > 75% softwood stocking (using 1.26 m radius (5 m<sup>2</sup>) plots where one "in" tree represents stocked).
- Competition: Hardwood, woody brush and/or herbaceous weeds occupy ≥ 80% of site; ≥ 40% of the natural regeneration are overtopped, show growth interference or are expected to become overtopped.
- Remnant Overstory: must be < 4 m<sup>2</sup>/ha basal area for aerial treatment.
- Tolerant Hardwood: < 40% of crop tree competition is tolerant hardwood
- Regulations: A Pesticide Use Permit must be obtained from the NB Department of Environment and Local Government, authorizing the application of any herbicide treatment, either by ground or by air, before any operations commence (exception: certified applicators performing ground application on their own land).

### **Post-Treatment Inspection**

- Competition Control: < 25 % of the area stocked to softwood is showing growth interference with hardwood, woody brush and/or herbaceous weeds that is overtopping or expected to overtop the crop species
- Untreated areas: inoperable areas larger than 0.04 ha are considered voids and will be deducted to calculate net treated area. All voids 0.5 ha and larger are to be mapped and must be excluded from the final submitted shapefile. The Marketing Board should download the GPS navigational data from the herbicide application vehicle to determine the area treated.
- Reporting: Each treatment site must be inspected by the Marketing Board during the spring growing season immediately following treatment to determine compliance with the above "Competition Control" criteria. Each Marketing Board will submit, not later than August 1<sup>st</sup> of the year following treatment, a list of any sites where the treatment was unsuccessful.
- Sampling: Plot intensity greater of one plot per ha or 4 plots per work area.

## Appendix 8: Woodlot Management Recommendations

**Objective:** To develop written woodlot management recommendations for individual forest properties. These recommendations may relate to timber, ecological values or personal enjoyment and may be part of an overall forest management plan.

### Property Size and Rate Paid

- Minimum Size: must include at least one PID  $\geq$  5 ha:
  - 5-10 hectare property\*: \$200,
  - 10 - 40 hectare property: \$500,
  - $\geq$  40 hectare property: an additional \$5/ha for each ha above 40 ha to a maximum of \$800.
- Multiple PID's: should be incorporated into a single document, so long as all PID's are adjacent to each other, or are separated from each other by a trail, road, railroad, utility corridor or highway. All PID's described in a document must be identified on the certification form.
- Assessment: The entire property (as designated in the Woodlot Management Recommendations document) must be assessed. Recommendations are not to address only a portion of a PID parcel or adjacent PID parcels.
- \* Less than 10 ha properties are not eligible if another program treatment is received in the same or previous year

### Components

- Format: flexible but must be a written document with the signature of a Certified Forest Technician or Registered Professional Forester.
- Map: Scale sketch or aerial photograph of property, including delineation of all stands, access roads and non-productive portions of the property.
- Stand Description: includes but is not limited to species composition by % basal area or volume, age, height, dbh, as well as overall site productivity.
- Treatments: recommendations for the next 10 year's activities may include treatments under the Private Woodlot Silviculture Program or other activities to achieve the owner's objectives.
- Long-term resource considerations: One or more of the following items should be noted as part of an overall property description:
  - Wetlands
  - Forest health
  - Adaptation to climate change
  - Historical, cultural & archaeological sites, other special sites
  - Protection from fire
  - Soil & water quality protection

- Biodiversity and wildlife habitat
- Carbon sequestration
- Recreation opportunities

Records: The owner/manager of the property must be provided with a signed copy of the woodlot management recommendations, and a copy retained in Marketing Board files, including a digital map of the management plan area (GPS boundary). Such treatment records must be made available to DNRED staff upon request.

Frequency: Only one woodlot management recommendations treatment per property every 5 years under this program.

## **Appendix 9: Commercial Thinning**

**Objective:** To improve the growth and quality of desired stems in plantations and pre-commercially thinned stands by removing stems with lower potential and releasing the remaining desired stems which increases growth rate and promotes higher valued products.

### **Pre-Treatment Assessment:**

- Plantation or pre-commercial thinning at least 25 years old (stand age) and not older than 40 years (stand age).
- Stands should be considered for treatment when crowns begin to compete.
- Less than 50 m<sup>2</sup>/ha BA.
- Stands with excessive risk of pest or disease damage are not eligible.
- Stands with excessive risk of wind damage (windthrow or breakage) should be avoided. High risk indicators are:
  - Root masses are predominately shallow
  - Poor drainage
  - Low live crown ratios
  - Height (m) to diameter (dbh cm) ratios on crop trees are > 0.8
  - Wind exposed slope, aspect or stand edge particularly at high elevations or along coastlines.
- Site moderately well to well drained. Site should be an ecosite 5 or 7 (DNR Ecosite Classification).
- Live Crown ratio > 35% (dominants & co-dominants).
- Woodlot owner signed agreement on plan objectives and timeline.

### **Post-Treatment Inspection:**

- Removed between 30% and 50% BA (including trails).
- Thinned from below using consistent pattern.
- On previously planted sites, the treated stand must have ≥80% of BA comprised of softwood crop trees (not including balsam fir, red pine, jack pine or tamarack). DNRED must be consulted and pre-approve any Red Pine or Jack Pine plantations proposed for treatment.
- On previously pre-commercially thinned sites, the treated stand must have ≥50% of BA comprised of spruce, white pine, hemlock, cedar, sugar maple, red maple and/or yellow birch.
- Extraction trails should be in straight lines in order to keep the leave strip a consistent width and prevent the trails from converging.

- Leave strip width between trails should average between 15 m and 18 m. In all cases, the entire leave strip must be treated.
- Removal (priority) pecking order: defective, damaged or likely not to survive; trees with non-vigorous crowns.
- Crop tree damage incidents must be < 10% of crop trees (in BA sweeps).
  - exposed sapwood greater than 200 cm<sup>2</sup>;
  - > 20% crown damaged;
  - > 20% root system damaged
- Crop trees should have at least 3 sides of the crown released. Adjust for site quality and consider risk of windthrow.
- Trails should be ≤ 5 m.
- Untreated areas > 1000 m<sup>2</sup> must be mapped out.
- A buffer (minimum 20 m) should be left on open stand edges to reduce risk of windthrow.
- Sampling: Plot intensity greater of one plot per ha or 4 plots per work area.

**Note:**

In 2020-21 DNRED is encouraging application of the Northern Hardwood Research Institute – Silviculture Prescription System (SPS). SPS may apply to stands that were previously pre-commercially thinned and which have a component of tolerant hardwood (including red maple).

Pre-treatment assessment criteria associated with risks (wind, pest, disease) and site still apply. A Woodlot Owner signed agreement is still required.

Otherwise, where it can be shown that SPS was appropriate for the stand (using SPS keys) and it was fully applied and documented, the following SPS treatment will be eligible for funding as Commercial Thinning:

- CT – Commercial Thinning

## Appendix 10: Hardwood Stand Improvement

**Objective:** To improve the growth and quality of desired trees in hardwood-dominated stands with abundant tolerant hardwood species by removing stems at risk of losing value and reducing competition among remaining crop trees which increases growth rate and promotes higher valued products.

### **Pre-Treatment Assessment:**

- Between 26 and 40 m<sup>2</sup>/ha BA (>10 cm dbh class).
- 60% of BA in acceptable hardwood species (sugar maple, red maple, yellow birch, ash, basswood, disease free beech, oak, butternut, ironwood).
- > 30% of total BA are quality hardwood potential\*.
- Moderately-well to well drained, without evidence of unacceptable risk of wind throw, pest or disease damage and within Ecosite 5 or 7 (DNR Ecosite Classification).
- 10 years since last harvest treatment.
- Stands treated under the *New Brunswick Sugar Bush Silviculture Program* are not eligible.
- Woodlot owner signed agreement on plan objectives and timeline.
- A written prescription including pre-treatment stand information and treatment plan/objectives must be prepared by an RPF or CFT and be made available to DNRED if the treatment is selected for audit.

### **Post-Treatment Inspection:**

- Removed between 20% and 40% BA (including trails).
- ≥ 80% of BA must be comprised of acceptable hardwood species (see pre-treatment assessment species); ≤ 20% may be quality red spruce, white pine, hemlock or cedar.
- > 50 % of total BA are quality hardwood potential\*.
- Thinned using consistent pattern.
- Crop tree spacing (> 80% of crop trees released on 3 sides).
- Should leave 5 large diameter trees/ha for course woody debris density, if possible.
- Trails < 5 m.
- Removal (priority) pecking order: defective and poor form trees, damaged or likely not to survive 10 years; intolerant hardwood, balsam fir



- Crop tree damage incidents must be < 10% of crop trees (in BA sweeps).
  - exposed sapwood greater than 200 cm<sup>2</sup>;
  - > 20% crown damaged;
  - > 20% root system damaged
- Minimal damage of desirable regeneration and saplings
- Areas > 1000 m<sup>2</sup> either untreated or residual BA < 15m<sup>2</sup>/ha must be mapped out

Sampling: Plot intensity greater of one plot per ha or 4 plots per work area.

\* quality hardwood tree potential (acceptable growing stock): contains or has potential to contain at least 1 pallet log > 2.6 m in length; > 10 cm dbh; no rot, dry or dead wood, straight, no spiral cracks; NHRI tree form and risk rating guide shall be used to assess quality tree potential.

**Note:**

In 2020-21 DNRED is encouraging application of the Northern Hardwood Research Institute – Silviculture Prescription System (SPS). Hardwood Stand Improvement is well suited for SPS.

Pre-treatment assessment criteria associated with risks (wind, pest, disease) and site still apply. Stands treated under the *NB Sugar Bush Silviculture Program* are not eligible. It must be 10 years since the last harvest. A Woodlot Owner signed agreement is still required.

Otherwise, where it can be shown that SPS was appropriate for the stand (using SPS keys) and it was fully applied and documented, the following SPS treatment will be eligible for funding as Hardwood Stand Improvement:

- SGS – Single with Group Selection

## Appendix 11: Alternative Harvest Operating Plan

**Objective:** To support the growth and quality of desired trees using alternative harvest systems which encourage regeneration, maintenance and growth of tolerant species and long-lived species. Harvest systems under this plan are intended to provide an alternative to even-aged harvest systems. Removal of stems which are at risk of losing value reduces competition among remaining crop trees. This increases growth rates and promotes higher valued products.

### **Pre-Treatment Assessment:**

- Must present a harvest alternative to clearcutting or other even-aged systems.
- Stands with excessive risk of pest or disease damage are not eligible.
- Stands with excessive risk of wind damage (windthrow or breakage) should be avoided. High risk indicators are:
  - Root masses are predominately shallow
  - Poor drainage
  - Low live crown ratios (<35%)
  - Height (m) to diameter (dbh cm) ratios on crop trees are > 0.8
  - Wind exposed slope, aspect or stand edge particularly at high elevations or along coastlines.
- Does not include pre-merchantable thinning or semi-commercial thinning.
- Must include an objective to encourage regeneration and/or maintenance and/or improvement of key tolerant tree species and long-lived species. This includes tolerant hardwoods, spruce, white pine, cedar and hemlock. Red maple may also be included as it has been identified as a climate change adaptive species.
- Woodlot owner must sign an agreement on plan objectives and timeline
- A written prescription including pre-treatment stand information (including photos) and treatment plan/objectives must be prepared by an RPF or CFT and be made available to DNRED if the treatment is selected for audit.

### **Post Treatment Inspection:**

- The treated stand must have ≥50% of BA comprised of sugar maple, red maple, yellow birch, spruce, white pine, cedar and/or hemlock.
- Treated using a consistent pattern
- Harvest treatment must meet the requirements set forth in the prescription.
- Crop tree damage incidents must be < 10% of crop trees (in BA sweeps).
  - exposed sapwood greater than 200 cm<sup>2</sup>;
  - > 20% crown damaged;

- > 20% root system damaged
- Minimal damage of desired regeneration and saplings.
- Areas > 1000 m<sup>2</sup> either untreated or residual BA < 15m<sup>2</sup>/ha must be mapped out
- Sampling: Plot intensity greater of one plot per ha or 4 plots per work area.

**Note:**

In 2020-21 DNRED is encouraging application of the Northern Hardwood Research Institute – Silviculture Prescription System (SPS). In the case of Alternative Harvest Operating Plan, SPS may have broad application.

Pre-treatment assessment criteria associated with risks (wind, pest, disease) still applies. A Woodlot Owner signed agreement is still required.

Otherwise, where it can be shown that SPS was appropriate for the stand (using SPS keys) and it was fully applied and documented, the following SPS treatment will be eligible for funding as an Alternative Harvest Operating Plan:

- CTA – Continuous Cover Two Aged / Extensive

## Appendix 12: Plantation Performance Monitoring - Year 3 & Year 8 or 9

**Objective:** To document plantation performance and to initiate release or cleaning treatment activities as warranted.

### **Reporting Requirements**

- For all plantations established under this or other provincially funded programs, reports are to be submitted indicating the growth status during their 3<sup>rd</sup> and 8<sup>th</sup> or 9<sup>th</sup> year of development. The administration funding provided by the program to Marketing Boards is intended to cover the cost of this performance monitoring activity.
- There is an expectation that plantations be treated, as needed, in advance of Year 3 monitoring to control competing hardwood and herbaceous vegetation. This is normally accomplished with a herbicide treatment in the first or second growing season (see Appendix 6).
- Year 3 reports based on walk-through estimates must include the following:
  - Plantation treatment number; area, crop tree stocking, total softwood stocking, percent stocked softwood overtopped, showing growth interference or expected to become overtopped.
  - Recommendation (follow-up herbicide release vs. no action required) and scheduled time of planned release. Sites recommended for herbicide release treatment must meet criteria described in Appendix 6.
- Year 8 or 9 reports based on a walk-through assessment must include the following:
  - Plantation treatment number;
  - Area;
  - Estimated planted crop tree stocking and total softwood stocking;
  - Estimated hardwood stocking;
  - Estimated percent softwood stocked plots experiencing competition;
  - Estimated density of all commercial species. Specify hardwood and softwood densities;
  - Recommendation (cleaning vs no action required) and scheduled time of required cleaning. Sites recommended for cleaning treatment must meet criteria described in Appendix 2.

### Appendix 13: Required Plot Sizes for Pre-Treatment Assessment & Post-Treatment Inspections

<b>Density/Quality</b>		
<b>Activity</b>	<b>Pre-Treatment</b>	<b>Post-Treatment</b>
Thinning & cleaning	6.7 m <sup>2</sup> , 1.46 m radius 1/1,500 ha	40 m <sup>2</sup> , 3.57 m radius 1/250 ha
Fill planting & full planting	N/A	40 m <sup>2</sup> , 3.57 m radius 1/250 ha
Herbicide site preparation or release	No requirement	No requirement

<b>Stocking</b>		
<b>Activity</b>	<b>Pre-Treatment</b>	<b>Post-Treatment</b>
Thinning & cleaning	5 m <sup>2</sup> , 1.26 m radius 1/2,000 ha	5 m <sup>2</sup> , 1.26 m radius 1/ 2,000 ha
Fill planting & full planting	5 m <sup>2</sup> , 1.26 m radius 1/ 2,000 ha	5 m <sup>2</sup> , 1.26 m radius 1/ 2,000 ha
Herbicide site preparation or release	5 m <sup>2</sup> , 1.26 m radius 1/ 2,000 ha	5 m <sup>2</sup> , 1.26 m radius 1/ 2,000 ha

<b>Planting Opportunities</b>		
<b>Activity</b>	<b>Pre-Treatment</b>	<b>Post-Treatment</b>
Site Preparation	5 m <sup>2</sup> , 1.26 m radius 1/ 2,000	See planting stocking

## Appendix 14: Landowner Agreement



### **Landowner Agreement for Participation in the Department of Natural Resources and Energy Development (DNRED) 2020-21 New Brunswick Private Woodlot Silviculture Program**

**Background:** The New Brunswick Private Woodlot Silviculture Program has provided financial incentive to landowners interested in conducting specific silvicultural treatments on private woodlots. The program targets stand establishment activities (site preparation and plantation establishment), early interventions (herbicide, plantation cleaning and pre-commercial thinning), and stand improvement harvests (commercial thinning, hardwood stand improvement and alternative harvest operating plans) all of which necessitate several decades for the benefits to mature.

Program assistance is available on properties providing the following conditions are met;

- all program requirements and treatment criteria listed in this manual are met;
- the registered landowner agrees in writing to manage the treatment area in a manner consistent with the time frame necessary to produce primary wood products;
- the registered landowner agrees to repay moneys received under this program should they fail to manage area that is treated under this program prior to the production of primary wood products, and;
- DNRED staff members may enter upon and pass through these private properties without being liable for trespass at any time during or after treatment to check compliance with criteria, rules and regulations outlined in this manual.

#### **LANDOWNER AGREEMENT:**

I \_\_\_\_\_ (print) am the registered landowner of the property identified by PID # \_\_\_\_\_. I have read and understand this document. I agree that in accepting financial assistance under this program, I am committing this treatment area to the production of primary forest products. I understand and acknowledge that production of primary forest products is a process that typically requires a time frame measured in decades. I agree to manage this treatment area in a manner consistent with the time frame necessary to produce primary wood products. I agree to allow DNRED staff members to enter upon and pass through my properties at any time during or after treatment to check compliance with criteria, rules and regulations outlined in this manual. I also agree to repay moneys received under this program should I fail to manage area treated in a manner that is consistent with the time frame necessary for production of primary wood products. I acknowledge that I have read the *2020-21 New Brunswick Private Woodlot Silviculture Manual* and understand the contents within. I understand

that DNRED has made subsidies available to the landowner for silviculture activities (Table 1) on private woodlots.

\_\_\_\_\_  
Signature of Registered Landowner

\_\_\_\_\_  
Date

*Marketing Board Section*

I \_\_\_\_\_ (print), of the \_\_\_\_\_ (Marketing Board) shall supervise all operations pertaining to the silviculture treatments undertaken within this agreement and will ensure that the quality of the work completed meets the criteria stipulated in the *2020-21 New Brunswick Private Woodlot Silviculture Manual*.

\_\_\_\_\_  
Signature of Marketing Board RPF or CFT

\_\_\_\_\_  
Date

**Example Rates**

<i>Treatment</i>	<i>Rate/ha (DNRED Contribution)</i>
Tree Planting	\$751
Site Prep-Disc Trencher	\$348
Aerial Herbicide	\$222
PCT	\$981
Alt. Harvest Operating Plan	\$400

\*See Table 1 for complete list of the treatment rates

(This document is needed for each PID and should be attached to the activity certification form and maintained within Marketing Board records. Prescription forms that are submitted to DNRED staff should have a copy of this agreement attached.)