



Background and Purpose

Forest Stand Improvement is the manipulation of species composition, stand structure, and stocking by cutting or killing selected trees and or understory vegetation. The purpose of this practice is to help meet landowner's objectives while improving forest products, forest health, wildlife habitat, and a variety of other resources. This job sheet will focus on **crop tree release** and **area-wide thinnings** in stands with a mean stand diameter (MSD) between 3"-9" that are growing on productive forest sites and are overstocked.

Criteria for Thinning Operations

This practice is generally non-commercial and should be kept as separate as possible from commercial harvests. In larger dbh (7-9"msd) stands, confirm with the landowner and or consulting forester that the proposed activity is not a commercial sawlog harvest. Firewood removal is allowed so long as wildlife habitat criteria (see below) are addressed. Where firewood is removed, be cautious and conservative in removal so future sawtimber is not damaged. Prescriptions in forest plans will be based upon USFS Silvicultural stocking guides or other guides approved by the county forester.

Site Quality – financial assistance will only be allowed where the potential productivity class of the stand or site is a high site III or better with a minimum site index as listed below. Use Web Soil Survey for Site Index as many of the published hard copy soil surveys are out of date.

<http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm>

- Forest Type Site Index
- Spruce-Fir 35
- White Pine 55
- Northern Hardwoods 50
- Oak Hardwoods 50

Minimum size area to be treated – three (3) acres

This job sheet was developed to implement NRCS funded pole size thinning approaches using the **area-wide** and **crop tree release** techniques. Both prescriptions usually call for a lowering of the basal area (measure of tree density in ft²) as the stands are overstocked and there is little to no available growing space. Area-wide thinnings usually focus on removing the poor growing stock and retaining the good trees while paying little attention to the crowns of individual trees. Crop tree management requires attention to be focused on individual trees with the greatest potential for future income, wildlife habitat, or other values. During crop tree release, some of the trees that may have been retained in an area-wide thinning will be removed to give growing space to the crop tree. Where species diversity and quality differences between trees in a stand are low (e.g. red pine plantation), area wide thinnings are often prescribed. Where species

diversity and potential for quality trees is high (e.g. northern hardwoods), crop tree release is often prescribed.

The trees selected for removal shall be deadened by felling or limited double girdling. Time and funds should not be wasted on felling or girdling understory or overtopped trees that are not seriously competing with canopy forming trees.

Area-Wide Thinnings

Species: any commercial species.

Size: Mean stand diameter (MSD) 3” to 9” DBH. Individual trees may be larger than 9”

Crown Position: Dominant/Codominant.

Crown Size and Condition: reasonably healthy crown which appears capable of responding to release from competitors.

Form: reasonably straight – avoid trees with low forks, or severe sweep and crook.

Vigor: vigorous with no sign of serious dieback, insect or disease problems.

For area-wide thinnings, be sure to specify how the current stands basal area will be lowered to the target basal area such as through spacing of individual stems, variable removal of individual trees or groups, or number of rows to be removed in a plantation. Trees to be cut will be marked (flagged or painted). Rows to be removed may be minimally marked. **Pretreatment stand stocking should be more than halfway between the A line and B line on the approved stocking guide. Minimum level of acceptable growing stock (AGS) must be equal to the C line on the stocking guide. Post treatment stocking level shall be reduced to the B line on the stocking guide in the approved silvicultural guide for the species involved unless alternative minimum stocking has received prior approval by the county forester. When thinning hardwoods in the lower diameter classes (3-5”) be conservative on thinning to avoid snow and ice damage. In these lower diameter classes limit the degree of release to 2-3 sides at most.** Basal area will be measured after treatment by NRCS.

Crop Tree Release – Timber oriented

Species: any commercial species.

Size: Mean stand diameter (MSD) 3” to 9” DBH. Individual crop trees maybe larger than 9”

Crown Position: Dominant/Codominant.

Crown Size and Condition: large, healthy crown relative to DBH.

Form: reasonably straight – avoid trees with low forks, or severe sweep and crook.

Vigor: vigorous with no signs of serious dieback insect or disease damages.

For crop tree release, specify approximate number of trees expected to be released per acre, target species, and other species to retain. Crop trees will be release on 3-4 sides. At a minimum, crop trees will be marked (flagged or painted) in a manner so that they are easily identifiable. It is recommended that trees to be cut are marked with a different color flagging or paint. It is very important for good communication between landowner, forester and contractor on the crop tree

approach so crop trees are retained and not accidentally cut. Tally sheets are also recommended but not required. A tally sheet is available for landowners that are interested in a greater level of detail and record keeping. The sheet can be used to inventory or analyze potential crop trees or can also be used to record the number of trees to cut. **Pretreatment stand stocking should be more than halfway between the A line and B line on the approved stocking guide. Minimum level of acceptable growing stock (AGS) must be equal to the C line on the stocking guide. Minimum number of timber crop trees to be released in stands with a MSD between 3"-5.9' is 40 per acres (maximum 60 per acre). In stands with an MSD between 6.0"- 9" the minimum is 30 per acre (maximum 50 per acre) When thinning hardwoods in the lower diameter classes (3-5") be conservative on thinning and release on only 2-3 sides at most to avoid snow and ice damage.** The number, acreage, species and degree of release of crop trees will be evaluated after treatment by NRCS.

Wildlife Habitat Criteria

Do not discriminate (cull trees) entirely on species basis. When possible favor uncommon and valuable wildlife tree species over common species. Favor mast producing species such as oak, black cherry, ash, maple, yellow birch and white pine during thinning operations. Species of low commercial value but high value to wildlife should also be encouraged. Beech, hickory and aspen are valuable species for mast production, denning, nesting and roosting. Retain den and nest trees during thinning operations. **Four stems to the acre will be left on the forest floor and these will be from the large diameter poles culled on site. If the stand has pole diameters of 6 inches or greater, 4 snags/acre will be created through girdling. Treatment areas within Indiana bat range (consult with NRCS) will need review and potentially limitations on timing of the practice or design. Within the Indiana bat range, review by NRCS and potentially the USFWS will be required before practice layout and implementation. There may be some requirements that need to be followed to eliminate negative impacts to bats.**

Considerations

Time the practice so it minimally affects seasonal wildlife activities (e.g. breeding birds, seasonal food sources for bear, etc.). When in softwood stands, consider the potential impact to deer wintering areas in the upper pole size diameters and snowshoe hare at the lower size diameters in spruce-fir.

Please Note: A current Forest Management Plan that identifies the need and specifications for this practice is a requirement. The FMP will meet the minimum requirements of the Vermont Department of Forest and Parks Use Value Appraisal (UVA) program.

Operation and maintenance

Periodic inspections during treatment activities are necessary to ensure that objectives are achieved and resource damage is minimized. Follow-up and ongoing management activities will be needed to obtain desired results.

Forest Stand Improvement – Job Sheet – Specifications Sheet

<i>For:</i>	<i>Tract #:</i> <i>Land Unit(s):</i>
<i>Stand Numbers:</i>	<i>Forest Management Plan Date:</i>
<i>Designed By:</i>	<i>Consulting Forester:</i>
<i>Signature:</i>	<i>Company:</i>
<i>Date:</i>	<i>UVA Plan?*</i>

* Be sure landowner has contacted the county forester to receive concurrence.

Purpose (check all that apply)	
To increase the quantity and quality of forest products	Achieve a desired level of crop tree stocking and density
Improve wildlife habitat	Increase carbon storage in selected crop trees
Reduce the potential of damage from wildfire, pests, and moisture stress.	Other:

EXISTING STAND CONDITIONS

NOTE: It is expected that a good description of existing stand conditions (Site Class/Site Index, Mean Stand Diameter, stems/acre, etc.) and management prescriptions are found within the landowner’s forest management plan. Please be sure that a copy is included in the case file so that it can be referred to later. It is the basis for implementation of this practice and activity.

Management Description – Under site specifications be sure to describe applicable items. **For crop tree release** describe approximate number of crop trees/acre, target crop trees, unusual or important species to retain, target BA, how trees will be identified, etc. **For area-wide thinning** describe target species to retain, spacing or other proposed thinning specs., target BA, unusual or important species to maintain, how cull trees will be marked, etc. For either describe how the practice will be completed such as by hand (chainsaw), chemical, mechanical (e.g. harvester).

Stand Number:	Type of Forest Stand Improvement (check one)	Date to be completed:
	Crop Tree Release	Area-Wide Thinning (basal area reduction)
	Site Specifications:	
Acres to Treat:		
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Installation shall be in accordance with the aforementioned criteria and specifications. Information concerning proper procedures and techniques for crop tree release are available through NRCS and the reference guide 'Crop Tree Management in Eastern Hardwoods – Forest Resources Management - USFS NA-TP-19-93' (see references above). For full information on the practice and specification go the NRCS website for practice standards: http://www.vt.nrcs.usda.gov/technical/Conservation_Practices/Index.html.

Additional Specifications and Notes:

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