

**NATURAL RESOURCES CONSERVATION SERVICE  
CONSERVATION PRACTICE STANDARD  
FOREST STAND IMPROVEMENT**

(Ac.)

**CODE 666**

**DEFINITION**

The manipulation of species composition, stand structure and stocking by cutting or killing selected trees and understory vegetation.

**PURPOSE**

- Increase the quantity and quality of forest products by manipulating stand density and structure.
- Harvest forest products.
- Initiate forest stand regeneration.
- Reduce wildfire hazard.
- Improve forest health reducing the potential of damage from pests and moisture stress.
- Restore natural plant communities.
- Achieve or maintain a desired native understory plant community for special forest products, grazing, and browsing.
- Improve aesthetic and recreation, values.
- Improve wildlife habitat.
- Alter water yield.
- Increase carbon storage in selected trees.

**CONDITIONS WHERE PRACTICE APPLIES**

All forest land.

This standard is not applicable for Alley Cropping, 311; Multi-story Cropping, 379, Windbreak/Shelterbelt Establishment (operation and maintenance), 380, and Windbreak/Shelterbelt Renovation, 650.

**CRITERIA**

**General Criteria Applicable to All Purposes**

Additional requirements are found in the jobsheets and or practice specification sheets. Specifications and site design for this practice shall be transmitted to clients using approved Vermont NRCS 666 job sheets.

An existing forest management plan, that identifies the need and specifications for this practice, is a requirement for forest stand improvement where pre-commercial thinning and/or crop tree release (for timber) is being performed. For mast tree release a forest management plan is not required but encouraged. The forest management plan will meet the minimum requirements of the Vermont Department of Forest, Parks and Recreation Use Value Appraisal program.

The harvest-regeneration strategy will be identified for all planned forest improvement harvesting:

- Uneven-aged management systems (e.g., single-tree selection, group selection, coppice selection)
- Even-aged management (e.g., clear-cut, seed-tree, shelterwood, coppice)

The extent or size and orientation of treatment area(s) shall be identified as part of practice design.

A forester or other trained individual will mark the trees to be removed when thinning is being prescribed. When crop tree (timber) or mast tree release is being prescribed, a forester or other trained individual will at least mark/flag the crop trees that are being released. It is recommended that they also mark the trees to be cut as well.

Conservation practice standards are reviewed periodically, and updated if needed. To obtain the current version of this standard, contact the Natural Resources Conservation Service [State Office](#) or visit the [electronic Field Office Technical Guide](#).

Preferred tree and understory species are identified and retained to achieve all planned purposes.

Spacing, density, size class, number and amounts of trees and understory species to be retained will follow established guidelines for the intended purposes.

Stocking guidelines shall contain stocking in terms of basal area, spacing or trees per acre by species and size class distribution.

The method, felling direction and timing of tree cutting for harvesting shall protect site resources, e.g., residual trees, wetlands, cultural resources, improvements and utilities. Time tree cutting to avoid buildup of insect or disease populations. Felling direction must be compatible with trail layout as specified by Forest Trails and Landings, 655. Forest stand improvement activities shall be performed to minimize soil erosion, compaction, rutting, and damage to remaining vegetation and maintain hydrologic conditions.

Refer to the Access Road, 560, standard for roads associated with forest stand improvement activities.

Slash and debris will be treated such that they do not present an unacceptable fire, safety, environmental, or pest hazard. Such remaining material will not interfere with the intended purpose or other management activities. Refer to Slash Treatment, 384. Burning of slash and other debris on-site shall follow the standard Prescribed Burning, 338.

[Comply with applicable federal, state and local laws and regulations during the installation, operation and maintenance of this practice including the "Acceptable Management Practices for Maintaining Water Quality on Logging Jobs in Vermont".](#)

#### **Additional Criteria to Reduce Wildfire Hazard**

Reduce stocking rates of trees to minimize crown-to-crown spread of fire.

Remove "ladder" fuels to minimize the occurrence of crown fires.

Further treat or eliminate slash accumulations next to roads and trails.

Reduce or eliminate species with high volatility but not to a level that would compromise other intended purposes.

For additional wildfire risk and damage reduction, refer to the standards Fuel Break, 383, and Firebreak, 394.

#### **Additional Criteria to Improve Wildlife Habitat**

Manage for a variety of native tree species and stocking rates that meet desired wildlife and pollinator species food and cover requirements.

Create, recruit and maintain sufficient snags and down woody material to meet requirements of desired species in balance with conditions needed to achieve other intended purposes.

Minimize improvement actions that disturb seasonal wildlife activities.

Refer to Early Successional Habitat Development/Management, 647, Rare and Declining Habitats, 643, Upland Wildlife Habitat Management, 645, and Wetland Wildlife Habitat Management, 644 to further develop and manage wildlife-related activities.

#### **Additional Criteria to Increase Carbon Storage in Selected Trees**

Manage for tree species and stocking rates that have higher rates of growth and potential for carbon sequestration.

### **CONSIDERATIONS**

Silvicultural objectives and harvest-regeneration strategies may change over time and may be limited by prior management.

Successful regeneration of desirable species is usually dependent upon timely application of forest stand improvement and other practices, e.g., prescribed burning, site preparation, tree and shrub establishment, prescribed grazing and access control.

The extent, timing, size of treatment area, or the intensity of the practice should be adjusted to minimize cumulative effects (onsite and offsite), e.g., hydrologic and stream alteration, habitat fragmentation, nutrient cycling, biodiversity and visual resources.

For purposes other than improving wildlife habitat, the practice should be timed to

minimize disturbance of seasonal pollinator and wildlife activities.

Landowners should secure a written contract with any service provider that specifically describes the extent of activity, duration of activity, liability and responsibilities of each party and amount and timing of payments for services provided

Slash, debris and other vegetation (biomass) removed during stand improvement may be used to produce energy. Management alternatives should consider the amount of energy required to produce and convert the biomass into energy with the amount produced by the biomass. Wildlife and sustainability requirements should also be considered.

Invasive or noxious woody vegetation should be controlled,

Clients should be advised of responsibilities of wildfire control and consider the development of a wildfire control plan including “defensible”

space, access routes, fire-season water source, and location of wildfire control facilities.

### **PLANS AND SPECIFICATIONS**

Specifications for applying this practice shall be prepared for each site and recorded using approved specification sheets, job sheets, technical notes and narrative statements in the conservation plan, or other acceptable documentation. [The Forest Stand Improvement - Vermont Conservation Practice Job Sheets 666](#) shall be used to describe the specifications for applying this practice.

### **OPERATION AND MAINTENANCE**

Periodic inspections during and after treatment activities are necessary to ensure that purposes are achieved and resource damage is minimized, e.g., assessment of insects, disease and other pests, storm damage, and damage by trespass. The results of inspections shall determine the need for additional treatment under this practice.