Windbreak/Shelterbelt Renovation
(Ac.) 650

DEFINITION

Replacing, releasing and/or removing selected trees and shrubs or rows within an existing windbreak or shelterbelt, adding rows to the windbreak or shelterbelt or removing selected tree and shrub branches.

PURPOSES

Restoring or enhancing the original planned function of existing windbreaks or shelterbelts.

CONDITIONS WHERE PRACTICE APPLIES

In any windbreak or shelterbelt that is no longer functioning properly for the intended purpose.

Note: To extend the length of an existing windbreak, use the Michigan NRCS Windbreak/Shelterbelt Establishment (380) Conservation Practice Standard. For normal and periodic pruning, use the Michigan NRCS Tree/Shrub Pruning (660) Conservation Practice Standard.

CRITERIA

General Criteria Applicable to All Applications

Comply with applicable federal, state, and local laws and regulations during the installation, operation, and maintenance of this practice.

Apply all chemicals in accordance with label directions. Refer to Michigan NRCS Pest Management (595) Conservation Practice Standard for more information.

Choose the method or combination of methods (thinning, pruning, removal and replacement, and/or supplementation planting) that will best accomplish the intended purpose. Refer to the Windbreak Series Bulletins (USDA National Agroforestry Center) for design recommendations for specific purposes: http://www.unl.edu/nac/windbreaks.htm.

Protect residual plants during the renovation.

Use species that are adapted to the soils, climate, and purpose. Refer to the Conservation Tree/Shrub Suitability Guide (CTSG) in the Michigan NRCS Field Office Technical Guide, Section II, for a detailed listing of species suited to the soils at the site.

Use native species if possible. If native species are not adaptable or not proven effective for the planned use, then noninvasive, nonnative species may be used. Refer to the Invasive Plant Species List in the Michigan Field Office Technical Guide (FOTG), Section II, for prohibited plant species.

Additional Criteria Applicable to Thinning Applications

Thin trees or shrubs to reduce plant competition, alter the density of the planting, and/or maintain or improve the health of the residual plants.

Thin to favor those plants that have the most vigor, are most likely to respond to release, and will best perform the intended function.

Remove entire or partial rows of trees or shrubs to release adjacent rows.

Refer to the Michigan NRCS Windbreak/Shelterbelt Renovation (650) Conservation Design Sheet and Michigan NRCS Forest Stand Improvement (666) Conservation Practice Standard for more information.

Additional Criteria Applicable to Pruning Applications

Prune or shear the trees or shrubs to remove diseased branches or alter the density of the planting.

Prune in accordance with the Michigan NRCS Tree/Shrub Pruning (660) Conservation Practice Standard.

Additional Criteria Applicable to Removal and Replacement Applications

Remove rows of trees and/or shrubs that are dead, dying, or no longer accomplishing the intended purpose, if their function cannot be restored through other means, e.g., pruning.

Coppicing, the cutting of trees and shrubs at their base to encourage resprouting, can be used to restore some species. Refer to the Michigan NRCS Windbreak/Shelterbelt Renovation (650) Conservation Design Sheet for information on plants with good coppicing potential, and coppicing techniques.

Plant new rows as needed to restore the function of the windbreak in accordance with the Michigan NRCS Windbreak/Shelterbelt Establishment (380) Conservation Practice Standard. Refer also to the Michigan NRCS Tree/Shrub Establishment (612) Conservation Practice Standard for additional information on establishing new trees and shrubs.

Use additional conservation practices, e.g., Tree/Shrub Site Preparation (490), Herbaceous Weed Control (315), Cover Crop (340), as needed to ensure the best chance of tree/shrub establishment.

Additional Criteria Applicable to Supplemental Planting Applications

Evaluate existing growing space, shade level and root competition to determine acceptable levels to permit unimpeded growth to new plantings.

Add rows of trees or shrubs adjacent to or within an existing windbreak or add individual trees and shrubs as needed to improve windbreak or shelterbelt density.

Plant new rows as needed to restore the function of the windbreak in accordance with the Michigan NRCS Windbreak/Shelterbelt Establishment (380) Conservation Practice Standard. Refer also to the Michigan NRCS Tree/Shrub Establishment (612) Conservation Practice Standard for additional information on establishing new trees and shrubs.

Use additional conservation practices, e.g., Tree/Shrub Site Preparation (490), Herbaceous Weed Control (315), Cover Crop (340), as needed to ensure the best chance of tree/shrub establishment.

CONSIDERATIONS

Renovation may be accomplished in multiple phases to minimize the time of reduced functionality.

Erosion control may be needed during the renovation process.

Wildlife and pollinator needs should be considered when selecting tree or shrub species to add or remove. Species diversity should be considered.

Debris should be removed from the site and disposed of properly if the debris is likely to cause insect, disease, fire or operability problems.

Vegetation removed during renovation can be burned in accordance with the Michigan NRCS Prescribed Burning (338) Conservation Practice Standard.

Spacing of rows within a windbreak may be adjusted, to accommodate mechanical equipment.

Pruning Considerations

Pruning of certain deciduous tree species may result in epicormic branching (the new lateral branch growth from dormant buds beneath the bark). Epicormic branching will increase the density of the barrier but can lower the quality of future wood products.

Where prevention of wind erosion is a desired function of the barrier, do not prune above a height of 4.5 feet from the ground.

Thinning Considerations

Thinning of some plants (mainly shrubs and deciduous trees) may result in stump sprouting. Where sprouting is not desired, an appropriate herbicide may be applied to the stump to kill the plant.

Release of natural reproduction can be done in rows to conform to a windbreak design or be managed similar to a natural forest using forest stand improvement techniques. Refer to the Michigan NRCS Standard Forest Stand Improvement (666) Conservation Practice Standard.

Consider thinning a shrub row if it is located upwind of newly planted conifers and can cause damaging snowdrifts on the young trees.

Planting Considerations

Supplemental watering of newly planted trees/shrubs may be required.

Consider shade tolerance when selecting species to plant. Refer to the CTSG tool in the FOTG, Section II for information on shade tolerance.

If more than 50% of the understory vegetation consists of perennial grasses and broadleaved weeds, consider releasing the trees, with chemical or mechanical means. If tillage is used, do not till deeper than 3 inches to prevent damage to tree roots and use extreme care not to damage tree boles.

Consider planting balled and burlapped, container-grown or 2-1 size transplants when reinforcing existing single-row windbreaks. Loss is more critical in these designs so larger planting stock may increase survival and growth rates.

PLANS AND SPECIFICATIONS

Use Michigan NRCS Windbreak/Shelterbelt Renovation (650) Conservation Design Sheet, or other approved specification sheets, job sheets, and narrative statements in the conservation plan or other acceptable documentation to prepare specifications.

Specifications will include, but are not limited to, the following:

- Map showing location of windbreak to be renovated
- Species to be treated, planted or regenerated
- Number of trees and/or shrubs to be treated
- Treatment method(s)
- Timing of treatment
- Type of equipment to be used
- Site preparation needed
- Mitigation measures (e.g., slash and debris disposal) to minimize wildfire or pest hazards.

OPERATION AND MAINTENANCE

The following practices shall be carried out to ensure that this practice functions as intended throughout its expected life. These actions include normal repetitive activities in the application and use of the practice (operation) and repair and upkeep of the practice (maintenance):

- Perform inspections semi-annually and following severe storms to ensure that the windbreak is functioning properly and to identify any problems from excessive traffic, pests, weeds, pesticide use, livestock, fire, etc. Take prompt corrective actions as needed.
- Replace dead planted trees and shrubs to retain at least 90% survival with no two adjacent plants missing within a row, and to maintain the function of the practice.
- Thin and prune the windbreak as needed to maintain its function.
- Livestock shall be excluded from the windbreak as necessary to maintain its function.
- Maintain central stems on trees by pruning to eliminate forks and multiple leaders. Refer to the Michigan NRCS Tree/Shrub Pruning (660) Conservation Practice Standard.

REFERENCES

Stange, Craig, J. Wilson, J. Brandle, and M. Kuhns. 1998. Windbreak Renovation, University of Nebraska Cooperative Extension Bulletin EC-98-1777-X. http://www.unl.edu/nac/morepublications/ec1777.pdf

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USDA NRCS. 1997. Windbreak Technology. NEDC Training Course Handbook. Ft. Worth, TX.

Wight, Bruce and Gary Kuhn. 1989. Windbreak Renovation – Getting Started; Basic Principles of Renovation. p. 5 – 11. *In* Proc. Windbreak Renovation Workshop (The Forestry Committee, Great Plains Agricultural Committee and The Windbreak Technology Working Group, SAF). Winner, SD.10-12 October 1989. Great Plains Agriculture Council Pub. No.128.

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