



Forest Stand Improvement

Ash Stand Replacement -- Code 666

Conservation Practice Job Sheet

Ohio—Natural Resources Conservation Service **October 2010**

Landowner:	Farm No.:
Service Forestry Case Record No.:	Stand No.:
Setup By:	Approved By:
Date:	Date:

Definition

Ash stand replacement is a forest management practice designed to replace ash trees in a landowners woods that have been or will be affected by the emerald ash borer (EAB).

Purposes (Check all that apply)

Use Ash Stand Replacement to:

- Improve forest stand composition in woodlands with a high ash composition.
- Increase mast production for a variety of wildlife species
- Establish native hardwood trees where ash trees have been impacted by the emerald ash borer.
- Reduce non-native invasive plants



Specifications

This practice is for forested stands having greater than 50% ash canopy cover and are capable of growing other native hardwood species. Emerald ash borer (*Agilus planipennis*) is a non-native insect from China that is capable of infesting and killing all species of ash (*Fraxinus* spp.) in Ohio.

The replacement trees can either be 1 gallon or 3 gallon containerized stock planted at density of 100 trees/acre or bare root seedlings planted at a density of 200 seedlings/acre. Native hardwoods must be used as replacement trees for the ash, with a preference toward oak species. Conifer species may not be planted. Because this practice occurs in a forested habitat, it is expected that most replacement trees will be planted by hand (tree planting bar, shovel or auger) at irregular spacings. Replacement trees should be marked somehow (flags, ribbon, shelters, etc...) to identify them as being planted through this practice.

There may be a need for site preparation in some cases to remove competing vegetation. In cases where invasive species are present, it is important to control the invasive plants prior to planting the replacement trees.

Site Preparation

The following method of site preparation is planned:

- Mechanical means such as plowing, discing or rototilling
- Chemical control of vegetation
- Hand scalping the area where trees are to be planted
- Other: _____

Existing brush or trees may be maintained if the site is to be interplanted and the retained trees/shrubs will provide functions consistent with the planned use. For wildlife purposes, consider retaining some trees that will provide den sites or mast production while the new planting is becoming established. Undesirable trees that will hamper planting or provide excessive shade should be removed or killed.

Planting Dates

Balled and burlapped or container-grown plants may be planted any time that soil conditions are suitable as long as proper watering procedures are followed.

Bare-rooted stock shall be planted in late winter or spring as soon as the ground thaws until April 30.

Location and Layout (See Map)

Forest Stand #	Acres to be Planted	Comments

Species and Plant Spacing

Forest Stand #	Species	Type of Stock*	Planting Dates	Number of trees/acre

* Bareroot, Container

Storage and Preparation of Seedlings

Replacement stock should be stored in cool but not freezing conditions (35° to 50° air temperatures). Roots should be kept moist, but not wet. Avoid damage to roots during storage.

If bare root seedlings need to be stored for over one week and cold storage is not available, the seedlings should be heeled in. This is done by digging a slightly sloping trench, placing the seedlings in the trench and covering the roots with moist soil. Do not allow the roots to dry out.

Top-prune, as needed, to provide adequate top-to-root ratio. The preferred ratio is 1:1 to 2:1.

If needed, root-prune seedlings that have excessively long main roots (roots longer than the effective depth capacity of planting tools or machines). Usually this is about 8 inches. No more than one-quarter of the root system should be removed.

Planting Methods

Bare-rooted trees or shrubs may be planted with a mattock, dibble or planting bar or mechanical tree planter. Container and balled-and-burlapped plants are typically planted by digging a hole big enough for the plant's roots. With all methods, the following measures are to be followed:

1. Plant the tree at the same depth it was growing in the nursery. The seedling root collar should line up with the soil surface.
2. Plant the tree upright. Make sure the roots are hanging downward in a natural position and not doubled or sharply bent.
3. Press the soil so that it is firmly packed around the roots so that the tree is held in place and there is good soil-root contact.
4. Plant only one tree per spot.
5. Do not allow plant roots to dry out while planting.

Care after Planting

Watering Typically, large plantings are not watered. However, specialized or smaller plantings such as windbreaks may be watered to increase survival and growth. If trees are watered, the water should be applied gradually through sprinklers, soaker hoses, drip buckets or other means. If water is to be applied in large amounts or dumped on the plants, this should be done in two passes to increase irrigation effectiveness. Watering should be discontinued after July to allow trees to properly harden off in the fall.

Weed Control Elimination of competing vegetation is normally carried out for one to five years after planting. Weed control may be the most important factor in tree and shrub seedling survival, especially for hardwood species. Weed control may be accomplished through mulching, cultivation, mowing or herbicide usage. In all cases, the vegetation should be controlled in a band 12 to 18 inches along each side of the tree row or in a 2 to 3 foot diameter circle around each tree.

Mechanical or hand cultivation should be kept at least 6 inches from the seedling and no deeper than 3 inches to avoid damage to the seedling. Additional methods may be needed to control weeds closer to the seedling. Mowing generally does not provide as good of control since the weeds are still competing for nutrients and water; also potential damage to seedlings is high. Mulching provides good control but may be impractical on large plantings. The proper use of herbicides generally provides good weed control.

Pest Management Plant injury or death should be controlled through preventative measures. Domestic animals that might graze on seedlings should be excluded. Control of weeds (which may hide rodents or rabbits), repellants or poisons, hunting and the use of tree shelters should be considered to reduce damage from wild animals. New plantings should be monitored for potential insect and disease problems and appropriate control measures taken if significant problems are found.

Replanting Some plants will be lost over time to a variety of causes. The decision to re-plant for some or all of the losses will be based on whether or not the remaining trees and shrubs will likely provide the desired functions.

Operation and Maintenance

1. If needed, competing vegetation will be controlled until the woody plants are established. Noxious weeds will be controlled.
2. Replanting will be required when survival is inadequate.
3. Supplemental water will be provided as needed.
4. The replacement trees will be inspected periodically and protected from adverse impacts including insects, diseases or competing vegetation, fire and damage from livestock or wildlife.

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5. Periodic applications of nutrients may be needed to maintain plant vigor.

Questions regarding the planting or maintenance of the tree planting should be directed to (phone) _____.

See the attached map of your property for the location of the required practice.

Site Specific Comments and Recommendations
