

Reforestation

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FIGURE

Fig. REF-1: Planting Irregular or Offset Rows To Discourage
Visual Penetration...8

REMEMBER:

Guidelines help with *how* to manage,
not *whether* to manage.

These guidelines focus on *how* to protect the functions and values of forest resources during forest management activities. They do not provide advice on *whether* to manage or which management activities are needed.

Guidelines provide a *menu*, not a *mandate*.

Site-level resource management decisions are based on many different factors, including resource needs, landowner objectives, site capabilities, existing regulations, economics and the best information available at any given time. No one will apply all of the guidelines related to a particular activity. Instead, the landowner, resource manager or logger will consider many different factors in determining which combination of guidelines provides the best “fit” for a particular site at a particular time. The intent of having multiple guidelines is to provide decision-makers with as much flexibility—and as much choice—as possible in taking steps to effectively balance forest management needs and resource sustainability.

General guidelines and *activity-specific* guidelines
are closely related.

Frequent references from activity-specific guidelines back to the general guidelines will make it easy for landowners, resource managers, loggers and others to consider all of the related guidelines—both general and specific—that apply to a particular management activity.

Guidelines are supplemented from time to time
by “Additional Considerations.”

The guidelines are supplemented from time to time by “Additional Considerations,” which provide additional guidance to further promote sustainability of our forest resources.

INTRODUCTION

Reforestation includes the process of planting (or otherwise regenerating) and establishing a desired forest community on a given site. An important part of reforestation is the selection of an appropriate tree species or forest community to manage.

Common reforestation techniques include both natural and artificial methods:

- Natural regeneration methods include root suckering, stump sprouting or natural seeding.
- Artificial regeneration methods include aerial and ground seeding, machine planting and hand planting.

Artificial regeneration methods include aerial and ground seeding, machine planting and hand planting. *Photo courtesy of Minnesota DNR*



The Benefits of Guidelines

Benefits to cultural resources: Reforestation guidelines can minimize damage to cultural resources resulting from reforestation of cut-over sites. Guidelines can protect archaeological sites from erosion, compaction and rutting, which can destabilize historic buildings, structures and historic areas.

Benefits to forest soils: Reforestation guidelines can help minimize exposure of mineral soil, compaction or rutting of soil, removal of surface soil, increased erosion, or impacting the nutrient balance of the site.

Benefits to riparian areas: Reforestation guidelines can minimize alteration of vegetation within the riparian area. That vegetation is important for providing inputs of coarse woody debris and fine litter to water bodies; retaining nutrients, sediment and energy; bank and shoreline stabilization; maintenance of moderate water temperatures through shading; and wildlife habitat. Guidelines for retaining vegetation also have a positive impact on aesthetics, wood products and recreation. Reforestation guidelines provide flexibility to exceed mineral soil exposure recommendations within the filter strip guidelines, if needed, to successfully regenerate certain desired species.

Benefits to visual quality: Reforestation guidelines help address the potential negative visual impacts of artificial regeneration by promoting natural-appearing stands.

Benefits to water quality and wetlands: Reforestation guidelines provide opportunities to reduce the potential for increased erosion and subsequent sedimentation of water bodies and wetlands due to reforestation activities that protect mineral soil from exposure. Guidelines that address equipment operations and maintenance can help protect water quality and wetlands.

Benefits to wildlife habitat: Reforestation guidelines encourage approaches to regeneration of cut-over sites that result in tree species diversity, appropriate species selection for a particular site, and maintenance of habitat structure.

Considerations

- ❑ Increasing planting complexity may increase planting costs.
- ❑ Management methods associated with natural-appearing stands (such as mixed-species planting and randomized spacing) can have increased long-term costs.
- ❑ Leaving residual trees can require increased disease-control measures, especially when residuals and regeneration are the same species.



Have you identified
your goals and objectives?

See *Identifying Goals and Objectives*
in General Guidelines.

Have you conducted a site inventory?

See *Conducting a Site Inventory*
in General Guidelines.

PLANNING

IMPORTANT! Review General Guidelines:

- Incorporating Sustainability into Forest Management Plans
- Maintaining Filter Strips
- Managing Riparian Areas

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Other guidelines that apply: In addition to specific reforestation guidelines and related general guidelines provided below, refer to the following forest management activity sections for additional guidelines appropriate to reforestation activities.

For activities involving:	Refer to these guidelines:
Building, maintaining, relocating or closing roads	Forest Road Construction and Maintenance
Use of heavy equipment	Mechanical Site Preparation
Pesticide use	Pesticide Use

Species Selection

U Select suitable tree species to regenerate. Consider such factors as:

- Site capabilities
- Existing natural regeneration
- Historical vegetation
- Variation in growth rates and seed production
- Mixing of deciduous and coniferous species
- Sunlight requirements

U Choose seed or seedlings from a locally adapted source.

U Use pre- and post-harvest techniques that will increase success of oak regeneration where appropriate, including burning, stump sprout thinning or scarification.

Reducing Visual Impacts Due to Species Selection During Reforestation

*In areas classified as most sensitive: **

- U** Promote a mixture of species, both naturally occurring and planted.
- U** Encourage and maintain diversity within the stand.
- U** Favor long-lived species where appropriate to minimize frequency of management activities.

*In areas classified as moderately sensitive: **

- U** Use species appropriate for site.
- U** Promote a mixture of species, both naturally occurring and planted.

*In areas classified as less sensitive: **

- U** Choose species consistent with integrated resource management principles.

*See *Part 2, Visual Quality: Visual Sensitivity Classifications* for information related to how classifications are determined and which Minnesota counties have developed visual sensitivity classification maps.

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Promoting a mixture of species encourages and maintains diversity, which also provides wildlife habitat diversity and the positive visual impact of a natural-appearing landscape. *Photo courtesy of Superior National Forest*



Promote natural-appearing stands by avoiding planting rows perpendicular to travel routes, which can result in a negative visual impact. *Photo courtesy of Minnesota DNR*

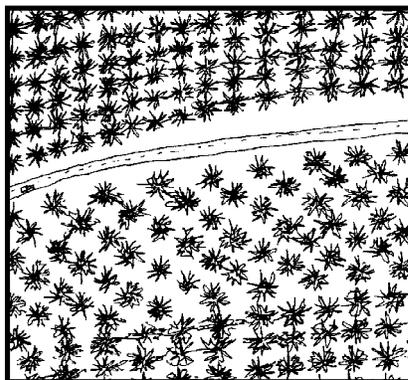


Figure REF-1: To avoid the perception of unnatural straight rows (as shown above the travel route), plant irregular or offset rows for the first few rows along a travel route (as shown below the travel route) to discourage visual penetration and increase the perception of a natural stand.

Reducing Visual Impacts Due to Planting Layout and Design

*In areas classified as most sensitive: **

- U** Do not plant rows perpendicular to travel routes or recreation areas.
- U** Plant irregular or offset rows to encourage natural-appearing stands. See Figure REF-1.
- U** Use wider initial spacing to minimize number of re-entries to the site and to encourage establishment of other species.

*In areas classified as moderately sensitive: **

- U** Avoid rows perpendicular to travel routes or recreation areas.
- U** Use wider spacing along sensitive boundaries.

*In areas classified as less sensitive: **

- U** Choose species and plantation design consistent with integrated resource management principles.

*See Part 2, *Visual Quality: Visual Sensitivity Classifications* for information related to how classifications are determined and which Minnesota counties have developed visual sensitivity classification maps.

OPERATIONAL ACTIVITIES

IMPORTANT! Review General Guidelines:

- Protecting Cultural Resources
- Managing Equipment, Fuel and Lubricants
- Protecting the Normal Flow of Streams and Wetlands
- Protecting Wetland Inclusions and Seasonal Ponds
- Retaining Leave Trees
- Providing Coarse Woody Debris

U Conduct on-site meetings with the contractor, landowner and resource manager prior to moving equipment onto a site. Such meetings can help assure common understanding of landowner objectives, contract specifications and site conditions.

Additional Considerations

- K** Consider reintroducing yellow birch, white pine, red oak, black walnut, and/or white cedar to mesic hardwood sites where they once existed.
- K** Consider scarifying the soil in the vicinity of conifer seed trees to enhance regeneration of these species.

