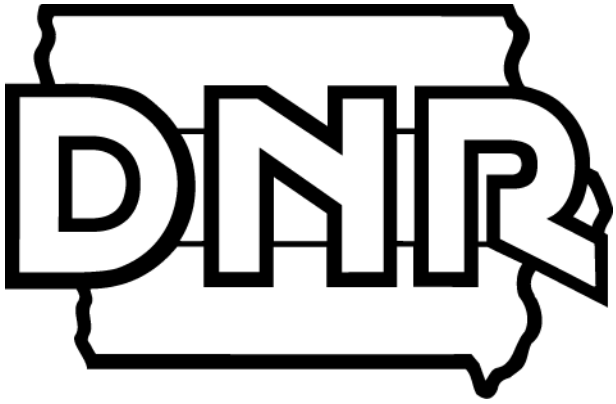
# FORESTRY PRACTICES MANUAL

## TECHNICAL GUIDE

IOWA DEPARTMENT OF NATURAL RESOURCES




Revised 11/15/2023

# FORESTRY PRACTICES MANUAL

TECHNICAL GUIDE

## PURPOSE:

The Forestry Practices Manual serves as a technical guide to forestry for Iowa's woodland owners, conservation planners, and foresters. This Technical Guide also defines the conservation practice standards for forestry practices included in the REAP Forestry/Native Grasses Fund cost-share program administered by Iowa Department of Agriculture and Land Stewardship and other programs.

A Forest Management Plan (or associated project plans) must be approved by an Iowa Department of Natural Resources (DNR) District Forester before any management activities are started. Once project work is complete, a passing inspection is required prior to project certification (and the reimbursement/payment of associated project funds). This applies to private lands forestry projects involving State and Federal financial assistance, and forestry contracting work on state owned lands (WMA's, State Parks, etc.).

## SECTIONS:

# 1. Forest Conservation Plans

## A. Forest Practice Plan/Forest Management Project Plan

**DEFINITION**
A concisely-written plan describing detailed silvicultural activities that are recommended to achieve specific forest management objectives for a particular stand.

**PURPOSE**
Forest Practice Plans are written to provide detailed, succinct stand prescriptions or cost-shared activity requirements for a particular project. These plans typically address a single stand or area of a forested tract, a particular management concern, or landowner area of interest. Practice plans usually address immediate, short-term landowner needs. These stand-scale plans can be a component of a larger scale Forest Stewardship Plan, or can lead to more comprehensive planning in the future.

Forest Practice Plans are often used to document existing conditions and make management recommendations as required by Federal or State financial assistance programs, such as NRCS or REAP cost share practices (see list below). However, Forest Practice Plans may also be used to address resource needs when financial assistance programs are not being used.

Some common activities for which Forest Practice Plans are typically written for include:

- Forest Stand Improvement (666)
- Tree & Shrub Planting, Direct Seeding, and Regeneration (612)
- Invasive species control or Brush Management (314)
- Site preparation for natural regeneration (490)
- Prescribed Burning or wildfire mitigation (338)
- Storm Recovery/Rehabilitation (e.g., Emergency Forest Restoration Program)
- Harvest & Regeneration
- NRCS Design and Implementation (DIA) 165 (Formerly part of CAP 106)

**SPECIFICATIONS**
Each Forest Practice Plan should be prepared by a professional forest resource manager and include the following:

- Landowner's and plan writer's contact information.
- Property identification and location information.
- Landowner's objectives.
- Description of existing site conditions.
- Listing of any recent management activities.
- Detailed management recommendations and timeline for activities.
- Detailed map of practice area depicting silvicultural activities footprint and calculated acres for each prescription.
- Forest stand improvement projects should be planned to accommodate: State and Federal provisions for Threatened and Endangered species, forest insect and disease issues, and other relevant damaging agents.
- Forest Practice Plans must be written or approved by a DNR District Forester for all projects of state and federal programs for which the DNR has technical responsibility. Compliance with this plan is required for project approval.

## B. Forest Stewardship Plan

**DEFINITION**
A comprehensive plan written for private, non-industrial forest landowners that identifies and describes voluntary actions they can take to achieve their individual ownership objectives while simultaneously protecting and/or enhancing forest resources that benefit society.

**PURPOSE**

Forest Stewardship Plans are a product of the national Forest Stewardship Program, which is a partnership between the federal US Forest Service (State, Private, and Tribal Forestry) and State forestry agencies. The purpose of the Forest Stewardship Program is to maintain and enhance the vital benefits private forestland provides to society by facilitating long-term stewardship of important private forest landscapes. These include fish and wildlife habitat, healthy soils, clean air, water quality, timber & other renewable wood products, outdoor recreation, threatened and endangered species, and more.

A Forest Stewardship Plan serves as the foundation for engaging forest landowners in a plan that addresses individual landowner objectives while adhering to national and state Forest Stewardship Plan guidelines.

An approved and active Forest Stewardship Plan is a requirement for landowners wishing to participate in many USDA Conservation Programs. The Farm Bill explicitly recognizes Forest Stewardship Plans and other forest management plans as eligible to meet program planning requirements for certain programs, where forest land is concerned. An active, written Forest Stewardship Plan is also a requirement for certification into the American Tree Farm System program.

All Forest Stewardship Plans must be written or approved by the DNR State Forester or a suitable representative.

**SPECIFICATIONS**

Forest Stewardship Plans may vary in layout and design but all plans must contain the following information and Resource Elements:

1. The landowner's and plan writer's contact information
2. The property identification and location information.
3. Clearly state landowner goals and objectives.
4. Current forest stand conditions which could include past management activities, current forest species composition of the overstory, understory, and forest floor, relevant stand stocking or quantitative data as needed and appropriate to the landowner goals, project objectives, and/or stand prescriptions (e.g., basal area, relative stocking percentage, trees per acre, volume per acre, crop trees per acre, tree diameters/size classes, growth rates, regeneration stocking, etc.). Such metrics may be required for Forest Stewardship Plan approval at the discretion of the IDNR Forester.
5. Describe desired forest stand conditions.
6. Include practices and activities aimed at reaching the desired forest condition or condition class for each stand.
7. Document a timeline for implementation of each practice and activity.
8. Describe any suggested monitoring activities to be done by the forester or landowner.
9. Be developed for a specified management period that adequately allows for progress with the landowner's long term stewardship objectives.
10. Be reviewed and renewed, revised, or rewritten at the end of the specified management period or sooner, as needed, to be considered current.
11. Landowners must be involved in plan development by setting clear objectives, timetables, and targets, and clearly understanding the plan's details and desired outcomes.
12. Resource Elements: The plan preparer will consider, describe, and evaluate resource elements present and their importance to the ownership. The extent to which a Forest Stewardship Plan addresses these elements will depend upon their prevalence on the property and their importance with respect to the landowner's primary objectives. The intent of this guidance is that all approved Forest Stewardship Plans be multi-resource in scope and adequately comprehensive with respect to forest ecosystem management.

    The plan preparer will consider, describe, and evaluate resource elements and their importance to the ownership when they are present. Management recommendations and alternative strategies, consistent with landowner objectives, will be provided to protect or enhance all resource elements present. Resource elements to be considered include:

    - Soil and water
    - Biological diversity
    - Range

- Agroforestry
- Aesthetic quality and desired Timber species
- Recreation
- Wood and fiber production
- Fish and wildlife
- Threatened and endangered species
- Forest health and invasive species
- Conservation-based estate planning / legacy planning information
- Archeological, cultural, and historic sites
- Wetlands
- Fire
- Carbon Sequestration & Climate Resilience
- Forests of Recognized Importance (FORI) - To be considered when aligning Forest Stewardship Plans with American Tree Farm System's Standards of Sustainability.

13. Prescriptions or treatments must be stand or site specific. An ownership map drawn to scale, or photo, which accurately depicts vegetation cover types, hydrology, and other significant forest related resources with a legend, is required.
14. The professional resource manager will discuss the Forest Stewardship Plan with the landowner, following completion, and periodically, to assure understanding and encourage plan implementation.
15. Additional Information: The landowner's understanding may be improved by including additional information appendices. Appendices might include:
    - Descriptions of assistance available and financial incentive programs
    - Educational materials
    - A glossary of terms
    - An explanation of applicable Federal, State, and/or county regulatory programs, especially as they apply to:
        - Archeological, cultural, and historical sites
        - Wetlands
        - Threatened and Endangered Species

**PLAN DURATION**

All Forest Stewardship Plans are written to cover a time period of ten years unless otherwise stated in the plan.

**SPATIAL DATA REQUIREMENTS**

All Forest Stewardship Plans must have spatial data for the Plan boundary that is entered into the USFS SMART database. These spatial data allow plans to be located within or outside the state's designated federal investment area, and to be selected for monitoring for the purposes of calculating the federal accomplishment metrics and state funding allocation formula.

**PLAN IMPLEMENTATION MONITORING**

All active and approved Forest Stewardship Plans are subject to random sampling for monitoring purposes by the USFS. The intent of the Forest Stewardship Program's plan implementation monitoring effort is to reliably assess the extent to which current Forest Stewardship plans are being implemented and to demonstrate that landowners are managing their woods based on recommendations made in their Forest Stewardship plans. Forest Stewardship plan monitoring feeds into national accomplishment reporting and provides data for the following Fiscal Year's national allocation formula.

The Plan monitoring protocol collects meaningful, statistically reliable results. Forest Stewardship plan monitoring focuses on implemented on-the-ground activities that occur within Forest Stewardship federal investment areas.

# 2. Tree & Shrub Establishment

## A. Tree & Shrub Planting

**DEFINITION**

Tree & shrub planting practices integrate the actual planting or interplanting of tree seedlings, transplants, cuttings or seed and the necessary cultural activities to establish or enhance a stand of desirable forest trees for conservation purposes.

**PURPOSE**

Tree planting practices are designed to establish a stand of trees and/or native shrubs suitable for forest products, wildlife habitat, soil protection, and/or water quality enhancement.

**PLANTING PLAN**

A written tree planting plan, written or approved by a DNR District Forester is required for all projects of state or federal programs for which the DNR has technical responsibility. Compliance with this plan is required for project approval.

**SPECIFICATIONS:**

1. Species must be suited to soil and site conditions.
2. Promote the use of native species when feasible and appropriate.
3. Planting stock must be from regionally adapted seed sources as determined by the DNR District Forester. All projects will utilize bareroot seedling stock unless specified in plan.
4. Planting stock must have a proper balance of root to top.
5. Use of hardwood seed for stand establishment will be acceptable as determined by DNR District Forester and as outlined in the Direct Seeding section of this manual.
6. Non-forest site planting rates for conifers, hardwoods, and/or shrubs is 500 to 1,450 seedlings per acre. To promote diversity, no more than 25% of one species shall be planted on any acre or as determined in the plan. The DNR District Forester will determine proper interplanting rates of existing forest sites for each project, with a minimum 25 seedlings per acre or as determined in the plan. Natural regeneration may be used to supplement planted seedling density and diversity in existing forest sites.
7. If permitted by the specific cost-share program, a planting plan may incorporate the production of intermediate and/or non-traditional forest products (i.e. Christmas trees, firewood, nuts, native fruit, woody florals, etc.) along with the long term "PURPOSE" (see above paragraph) of planting. Trees (or resulting coppice stock) established for the long term "PURPOSE" must be maintained at an adequate stocking level in compliance with the planting plan and must be uniformly distributed throughout the planting.
8. Planting dates:
    a. Spring planting:
        i. From when the frost is out of the ground until May 31.
        ii. May be extended as determined by IA DNR/DF based on stock, weather, and/or soil conditions.
    b. Fall planting from October 15 until ground is frozen (deciduous species only).
9. Minimum standards for tree planting approval are 90% compliance with:
    a. Seedlings must be uniformly distributed across the project footprint to cover all acres, allowing limited exclusions for natural regeneration, seed tree reserves, cavity trees, slash, etc.
    b. Proper planting depth:
        i. Root collars and any lateral roots must not be visible after planting.
        ii. Hardwoods - root collar same depth to one inch deeper than grown in nursery bed.
        iii. Conifers - root collar same depth to 1/2 inch deeper than grown in nursery bed.
    c. Vertically planted such that the top does not lean from vertical by an angle more than 20 degrees.
    d. Tamp seedlings in thoroughly to eliminate air pockets around the roots. Seedlings with proper firmness will not pull out of the ground with a slight tug.
    e. Site preparation as specified in the plan.
10. Control of adversely competing vegetation, prior to and two years after planting, is essential and compliance with planting plan specifications is required for project approval. Methods of controls include mulch, herbicides, or mechanical practices. Minimum vegetation control must be 3-foot wide band centered over the tree row or

1.5-foot radius around each seedling for a minimum two years. Alternative ground covers may be used in lieu of or to complement traditional control methods as determined in the plan.

11. When root pruning is needed for proper installation, minimum tap root length is 10 inches below the root collar. Lateral roots should be appressed to the tap root and pruned at that length. If tap root is pruned, tops must be pruned or clipped to 8" above the root collar to achieve proper balance.
12. Chemicals used in performing this practice must be applied according to authorized use, label directions, and other federal and state policies and requirements.
13. Planting survival standards - initial five-year establishment period:
    a. Adequate: Non-forest site minimum stocking of 300 trees per acre or forest sites of 75% survival. Not eligible for replanting cost-share assistance.
    b. Inadequate: Non-forest site less than 300 trees per acre or less than 75% survival. May be eligible (if available) for replanting cost-share assistance if not due to negligence.
14. Planting survival standards - post five-year establishment period. Adequacy is determined by a DNR District Forester on an individual planting basis.
15. The treated area must be protected from domestic livestock, grazing, and wildfire for the length of the cost-share program maintenance agreement and is encouraged long-term. Monitor project tree health on a regular basis.

## B. Direct Seeding

**DEFINITION**

Direct seeding establishes a forest through the use of seed rather than seedlings.

**PURPOSE**

Direct seeding practices are designed to establish a stand of trees suitable for forest products, wildlife habitat, soil protection, and/or water quality enhancement.

**PLANTING PLAN**

A written tree planting plan approved by a DNR District Forester is required for all projects of state or federal programs for which the DNR has technical responsibility. Compliance with this plan is required for project approval.

**SPECIFICATIONS**

1. Species must be suited to soil and site conditions.
2. Seed must be from regionally adapted seed sources as determined by the DNR District Forester.
3. Seed can be broadcast, drilled, or row planted. Methodology may be modified with approval of the DNR District Forester.
4. Seeding rates for non-forest sites will be determined by DNR District Forester to adequately reforest according to survival standards.
5. If permitted by the specific cost-share program, a planting plan may incorporate the production of intermediate products (i.e. firewood) along with the long term "PURPOSE" (see above paragraph) of planting. Trees must be maintained at a stocking level in compliance with the planting plan.
6. Seeding dates will be established in the plan as determined by the DNR District Forester.
7. Control of adversely competing vegetation, prior to and two years after planting, is essential and compliance with planting plan specifications is required for project approval. Methods of control must be suitable to seeding methodology and may include mulch, herbicides, or mechanical practices. Minimum vegetation control must be 3 feet wide band centered over the tree row or across the entire site for broadcast seedings for minimum two years. Chemicals used in performing this practice must be applied according to authorized use, label directions, and other federal and state policies and requirements.
8. Planting survival standards for direct seeding - initial five-year establishment period:
    a. Adequate. Minimum stocking of 300 desirable tree seedlings per acre or as specified in the plan. Not eligible for replanting cost-share assistance.
    b. Inadequate. Stocking level less than 300 desirable trees per acre or as specified in the plan. May be eligible (if available) for replanting cost-share assistance if not due to negligence.

9. Planting survival standards - post five-year establishment period. Adequacy is determined by DNR District Forester on an individual site basis.
10. The treated area must be protected from domestic livestock, grazing, and wildfire for the length of the cost-share program maintenance agreement and is encouraged long-term. Monitor project tree health on a regular basis.

### C. Tree Protection

**DEFINITION**

Protection of desirable seedlings and saplings.

**PURPOSE**

To protect desirable seedlings from animal damage that is altering form, and impeding growth and/or vigor.

**MANAGEMENT PLAN**

A management plan written or approved by the DNR District Forester is required for all projects of state and federal programs for which the DNR has technical responsibility. Compliance with this plan is required for project approval.

**SPECIFICATIONS:**

1. Tree grow tubes must be a minimum of five-feet tall and ventilated. Tree grow tubes are only for hardwood trees and shrubs.
2. Tree grow tube stakes must be 12" longer than the tube they are installed on, and driven 12" into the ground to ensure the stake runs the entire height of the tube.
3. Metal wire cage height and diameter must correlate to wire gauge and mesh opening size based on forester discretion. Wire cages can be used for conifers, hardwoods, and shrubs.
4. Stakes for cages or tubes must be made of PVC, fiberglass, treated wood, or steel. Untreated wood, bamboo and other materials are not allowed.
5. The treated area must be protected from domestic livestock, grazing, and destructive fire for the length of the cost-share program maintenance agreement and is encouraged long-term.

## 3. Site Preparation for Regeneration

**DEFINITION**

Site preparation is the mechanical and/or chemical work required to create conditions favorable for the natural regeneration of desirable tree species within or adjacent to forested sites.

**PURPOSE**

Site preparation practices are designed to establish a stand of trees for timber production and/or wildlife habitat enhancement.

**MANAGEMENT PLAN**

A management plan written or approved by the DNR District Forester is required for all projects of state and federal programs for which the DNR has technical responsibility. Compliance with this plan is required for project approval.

**SPECIFICATIONS**

1. Mechanical and/or chemical treatments will create site conditions favorable for the regeneration of desirable species through planting, seeding, sprouting or a combination thereof. Treatments can include vegetation control and/or forest floor scarification.
2. The minimum stocking of desirable species during the five year establishment period is 300 seedlings and/or sprouts per acre.
3. Adequacy of stocking after the five year establishment period is determined by the DNR District Forester on an individual stand basis.
4. Chemicals used in performing this practice must be applied according to authorized use, label directions, and other federal or state policies and requirements.

5. The treated area must be protected from domestic livestock, grazing, and wildfire for the length of the cost-share program maintenance agreement and is encouraged long-term. Monitor project tree health on a regular basis.

## 4. Forest Stand Improvement

**DEFINITION**

Forest Stand Improvement (FSI) is any silvicultural action (forest management) that improves the growing conditions and overall plant health in a stand of trees (forest).

**PURPOSE**

FSI practices are designed to improve: species composition, quality, survival, growth rates, forest health, and wildlife habitat (for multiple species). FSI practices include: thinning (weeding, understory/midstory removal, basal area thinning, crop tree release, coppicing), control of vine competition, pruning, forest prescribed fire, forest invasive plant control, and management to protect against or rehabilitate the stand following damaging agents (logging damage, wildlife damage, domestic livestock, weather, natural disasters, insects, disease, wildfire).

**MANAGEMENT PLAN**

A management plan written or approved by the DNR District Forester is required for all projects of state and federal programs for which the DNR has technical responsibility. Compliance with this plan is required for project approval.

**SPECIFICATIONS**

1. If FSI is used for intermediate treatments, the appropriate stocking guide (from the following list) must be used in order to maintain stocking levels appropriate to the site and plan objectives. Woodland/Savanna management has differing stocking charts (see below), and a woodland/savanna management plan is required by the DNR District Forester for use with FSI financial assistance. The following stocking charts/guides should be referenced for Iowa's many forest conditions:
   - Forester's Handbook (with stocking charts): https://www.iowadnr.gov/portals/idnr/uploads/forestry/forester_handbook.pdf
   - Technical Guide to Crop Tree Release in Hardwood Forests: https://www.fs.usda.gov/research/treesearch/14228
   - Crop Tree Management in Eastern Hardwoods: https://cpb-us-w2.wpmucdn.com/u.osu.edu/dist/a/836/files/2016/02/CropTreeMgmt-1h35gph.pdf
   - Manager's Handbook for Oaks in the North Central States: https://www.fs.usda.gov/research/treesearch/10102
   - Manager's Handbook for Elm-Ash-Cottonwood in the North Central States: https://www.fs.usda.gov/research/treesearch/10162
   - Manager's Handbook for Northern Hardwoods in the North Central States: https://www.fs.usda.gov/research/treesearch/10104
   - Oak Woodland/Savanna Silviculture: https://www.fs.usda.gov/research/treesearch/54181
   - Coppice Management of Iowa Hardwoods: http://publications.iowa.gov/3415/1/F-327.pdf
2. Practices may be accomplished by chemical and/or mechanical methods.
3. Chemicals used in performing this practice must be applied according to authorized use, label directions, and other federal or state policies and requirements.
4. Forest stand improvement projects should be planned to accommodate: state and federal provisions for threatened and endangered species, forest insect and disease issues, and other relevant damaging agents.
5. The treated area must be protected from domestic livestock, grazing, and wildfire for the length of the cost-share program maintenance agreement and is encouraged long-term. Monitor project tree health on a regular basis.
6. Any forest stand improvement projects that include girdling, pruning, and potential wounding of oak species must only be completed between November 1 and March 14th unless otherwise specified in the project plan. These dates come from our state DNR Forest Health Site at https://www.iowadnr.gov/Conservation/Forestry/Forest-Health/Oak-Wilt.

7. Any desired changes to the Forest Management Plan (or associated project plans) must be approved by the DNR District Forester before any management activities are started.

# 5. Rescue Treatments

## A. Alternative Cover for Competition Control in Plantations

**DEFINITION**
Alteration of existing ground cover to vegetation that is less competitive with trees within a plantation.

**PURPOSE**
To improve the survival and growth rate of a plantation that is being severely affected by competition with existing ground cover.

**MANAGEMENT PLAN**
A management plan written or approved by the DNR District Forester is required for all projects of state and federal programs for which the DNR has technical responsibility. Compliance with this plan is required for project approval.

**SPECIFICATIONS**
1. Mechanical and/or chemical treatments may be used to create a seedbed.
2. Chemicals used in performing this practice must be applied according to authorized use, label directions and other federal or state policies and requirements.
3. Where seeding, use non-competitive grasses and/or forbs.
4. The treated area must be protected from domestic livestock, grazing, and wildfire for the length of the cost-share program maintenance agreement and is encouraged long-term. Monitor project tree health on a regular basis.

## B. Plantation Replanting

**DEFINITION**
The plantation replanting practice integrates the actual planting or interplanting of tree seedling, transplants, cuttings or seed and the necessary cultural activities to establish a plantation.

**PURPOSE**
To establish a tree planting that had “inadequate” survival Forestry Technical Guide - Tree & Shrub Planting, Item 13) due to conditions beyond control of the landowner.

**PLANTING PLAN**
A written tree planting plan approved by a DNR District Forester is required for all projects of state or federal programs for which the DNR has technical responsibility. Compliance with this plan is required for project approval.

**SPECIFICATIONS**
1. A replanting project is eligible for cost share only if the landowner has been in compliance with the original project’s planting plan and applicable maintenance agreements.
2. The replanting will be designed to bring the stocking to an adequate level as determined by the DNR District Forester
3. “Forestry Technical Guide - Tree & Shrub Establishment “specifications apply to this plantation replanting practice.
4. The treated area must be protected from domestic livestock, grazing, and wildfire for the length of the cost-share program maintenance agreement and is encouraged long-term. Monitor project tree health on a regular basis.

## C. Seedling/Sapling Rescue

**DEFINITION**

An action taken implementing treatments to control plant competition that is impeding growth and vigor where intervention is necessary to prevent or mitigate significant mortality or decline in quality of desirable tree and shrub species whether artificially planted or naturally regenerated.

**PURPOSE**

Rescue treatments are designed to improve canopy position of targeted desirable trees and shrubs where they are being suppressed by less desirable plants. If needed actions are not taken, seedlings will be suppressed and eventually die.

**MANAGEMENT PLAN**

A management plan written or approved by the DNR District Forester is required for all projects of state and federal programs for which the DNR has technical responsibility. Compliance with this plan is required for project approval.

**SPECIFICATIONS**

1. Treatments include: Herbicide application, cutting (including felling or girdling) of competing woody plants, and/or coppicing of desirable species.
2. Rescue from woody competition will vary widely by site, stand condition, and optimum growing conditions of species needing rescue. Rescue treatment will be at forester discretion.
3. Practices may be accomplished by chemical and/or mechanical methods
4. Chemicals used in performing this practice must be applied according to authorized use, label directions, and other federal or state policies and requirements.
5. Projects should be planned to accommodate: state and federal provisions for threatened and endangered species, forest insect and disease issues, and other relevant damaging agents.
6. The treated area must be protected from domestic livestock, grazing, and wildfire for the length of the cost-share program maintenance agreement and is encouraged long-term. Monitor project tree health on a regular basis.
7. Any projects that include girdling, pruning, and potential wounding of oak species should only be completed between November 1 and March 14th unless otherwise specified in the project plan. These dates come from our state DNR Forest Health Site at https://www.iowadnr.gov/Conservation/Forestry/Forest-Health/Oak-Wilt.

## D. Rodent Control

**DEFINITION**

Control of a rodent population whose damage is threatening the survival of a tree plantation.

**PURPOSE**

To improve the survival of a plantation that is being severely affected by rodent damage. The control is designed to enable the trees to grow beyond the size susceptible to rodent damage.

**MANAGEMENT PLAN**

A management plan written or approved by the DNR District Forester is required for all projects of state and federal programs for which the DNR has technical responsibility. Compliance with this plan is required for project approval.

**SPECIFICATIONS**

1. Mechanical and/or chemical treatment may be used to control rodent population.
2. Chemicals used in performing this practice must be applied according to authorized use, label directions and other federal or state policies and requirements.
3. The treated area must be protected from domestic livestock, grazing, and wildfire for the length of the cost-share program maintenance agreement and is encouraged long-term. Monitor project tree health on a regular basis.

# 6. Exclusion Fencing

**DEFINITION**

Installing permanent or temporary fencing to exclude domestic livestock, wildlife, or humans from existing forest, forest regeneration, or tree plantings.

**PURPOSE**

To protect an existing forest, forest regeneration, or tree plantation from damage caused by domestic livestock, wildlife, or humans.

**MANAGEMENT PLAN**

A management plan written or approved by the DNR District Forester is required for all projects of state and federal programs for which the DNR has technical responsibility. Compliance with this plan is required for project approval.

**SPECIFICATIONS**

1. Minimum fencing standards:
    a. All barbed and woven wire fencing projects must follow the minimum standards as described in the Iowa NRCS Job Sheet found here: Iowa | Field Office Technical Guide | NRCS - USDA
    b. All electric fencing projects must follow the minimum standards as described in the Iowa NRCS Job Sheet found here: Iowa | Field Office Technical Guide | NRCS - USDA
    c. Corner and brace post standards shall be followed as diagramed here: Iowa | Field Office Technical Guide | NRCS - USDA
    d. Wire shall not be attached to trees.
    e. Wire gates shall be of materials of the same kind, grade and size specified for the field fence. Commercial panel gates are acceptable
    f. Used materials may be acceptable if adequate condition to exclude livestock for a minimum of 20 years. The DNR determines acceptability of used materials.
2. The landowner is responsible for fence maintenance and protection of the area from domestic livestock for the duration of the practice.
3. Property line fencing may be required but will not be eligible for cost share assistance.
4. Special considerations should be made to the design when white-tailed deer exclusion is one of the primary purposes.