

**Practice: 612 - Tree/Shrub Establishment**

**Scenario: #1 - Conifer, Interplanting**

**Scenario Description:**

Tree seedlings will be hand planted in the forested area where few or no forest trees are growing, the existing stand of trees needs underplanting, or the previously planted seedling tree stocking level is below desirable conditions. Individual conifer seedlings may be planted as shade trees in a pasture, to supplement a riparian forest buffer or to stabilize a critical area.

**Before Situation:**

The stocking level of the forest does not meet the minimum recommended number of trees per acre. The existing condition of the forest stand does not meet the landowners objectives. To be a viable forest additional seedlings need planting. Wildlife habitat is degraded by loss of forest conditions. This resource concern addressed is degraded plant condition -- and inadequate structure and composition, and inadequate wildlife & fish habitat.

**After Situation:**

The prescribed number of trees are hand planted on 20 acres, and the objectives of the landowner are met. The forest will provide wildlife habitat, provide a long term ground cover, and capture atmospheric carbon. Larger and smaller acreages may be treated with this practice. The specific tree species and numbers per acre should be specified in the job sheet based on the local site conditions, markets and the landowner's goals.

**Scenario Feature Measure:** Area Planted

**Scenario Unit:** Each

**Scenario Typical Size:** 3,000

**Scenario Cost:** \$881.52

**Scenario Cost/Unit:** \$0.29

**Cost Details (by category):**

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<b>Equipment/Installation</b>						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	\$31.63	8	\$253.04
<b>Labor</b>						
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hour	\$37.95	8	\$303.60
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$18.11	8	\$144.88
<b>Materials</b>						
Tree, conifer, seedling, bare root, 1-0	1512	Bare root conifer trees, 1-0 (1 year old). Includes materials and shipping only.	Each	\$0.06	3000	\$180.00

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**Scenario: #2 - Plant Bareroot Conifer Seedlings**

**Scenario Description:**

This practice involves planting of pine tree seedlings after the site has been prepared for seedling growth and establishment. The productivity of the site is good and will handle a medium density planting rate of approximately 500 trees per acre (7' X 12' spacing). When the terrain is moderately to steeply sloping, hand planting is recommended. On gentle slopes or flat terrain, hand or machine planting can be used.

**Before Situation:**

The land has little/no tree cover, or is stocked with the wrong tree species. Competing vegetation is a before and after planting concern. Soil condition is degraded due to the loss of the native forest ecosystem (organic matter in top soil depleted). Resource concerns addressed are degraded plant condition -- undesirable plant productivity and health, and inadequate structure and composition and degraded wildlife habitat.

**After Situation:**

Approximately 500 pine trees/ac are planted on 40 acres of land to established permanent tree cover that will improve degraded plant condition, reduce soil erosion, establish wildlife habitat, sequester carbon and reduce invasive species presence. Establishing forest vegetation also creates corridors for wildlife movement. Larger or smaller acreages can be treated with this practice. The specific tree species and numbers per acre should be specified in the job sheet based on the local site conditions, markets and the landowner's goals.

**Scenario Feature Measure:** Area of Treatment

**Scenario Unit:** Each

**Scenario Typical Size:** 20,720

**Scenario Cost:** \$4,307.80

**Scenario Cost/Unit:** \$0.21

**Cost Details (by category):**

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<b>Equipment/Installation</b>						
Mechanical tree planter	1600	Mechanical tree planter. Requires a pulling unit of either tractor or small dozer depending upon site conditions. Does not include labor.	Hour	\$6.60	16	\$105.60
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	\$31.63	40	\$1,265.20
<b>Labor</b>						
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hour	\$37.95	16	\$607.20
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$18.11	60	\$1,086.60
<b>Materials</b>						
Tree, conifer, seedling, bare root, 1-0	1512	Bare root conifer trees, 1-0 (1 year old). Includes materials and shipping only.	Each	\$0.06	20720	\$1,243.20

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**Scenario: #4 - Planting Bareroot Hardwood Seedlings,**

**Scenario Description:**

Establish or improving a hardwood forest by hand planting hardwood seedlings at a density of 300 trees per acre (approximately a 12' X 12' spacing). The area is lacking desirable tree species and the area is suitable for growing hardwood trees. The resource setting is an area that historically was a hardwood forest either an upland or bottomland site.

**Before Situation:**

In an existing forest the present trees are poor quality, at low stocking levels, or are undesirable species or the area does not have any trees at all. Wildlife habitat is poor due to the above described conditions. Another condition where this scenario may be used is to reforest abandoned agriculture fields or pastures. Prior to planting any needed vegetation control should be conducted first. The existing conditions do not meet the landowner's objectives of growing hardwood trees to reforest and area and improve wildlife habitat. Resource concerns are degrade plant condition - undesirable productivity and health, inadequate structure and composition; inadequate habitat for fish and wildlife, and soil sheet and rill erosion.

**After Situation:**

Approximately 300 hardwood seedlings are planted on 20 acres, however, larger and smaller tracts of land can be planted with this practice. Bareroot hardwood seedlings are planted by hand. Post vegetation control should be evaluated and conducted it necessary. The specific tree species and numbers per acre should be specified in the job sheet based on the local site conditions, markets and the landowner's goals. Upon completion of this practice, a hardwood forest will be re-established.

**Scenario Feature Measure:** Area of Treatment

**Scenario Unit:** Each

**Scenario Typical Size:** 6,040

**Scenario Cost:** \$4,919.08

**Scenario Cost/Unit:** \$0.81

**Cost Details (by category):**

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<b>Equipment/Installation</b>						
Hand tools, tree planting	1590	Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included.	Hour	\$11.62	90	\$1,045.80
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	\$31.63	6	\$189.78
<b>Labor</b>						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$18.11	90	\$1,629.90
<b>Materials</b>						
Tree, hardwood, seedling or transplant, bare root, 16-36"	1510	Bare root hardwood trees 18-36" tall. Includes materials and shipping only.	Each	\$0.34	6040	\$2,053.60

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**Scenario: #5 - Direct Seeding for Hardwood Establishment**

**Scenario Description:**

Using a mechanical nut planter to direct seed native nuts (acorns) directly into the soil at a rate of 30 lbs./ac. Site preparation is completed (disking to eliminate competing vegetation). The native seed are collected/purchased locally so as to get trees known to be adapted to local conditions. The planting will equal approximately 3000 seed per acre.

**Before Situation:**

The hardwood forest is degrading. High value species, lumber and wildlife habitat, are not regenerating due to changes in the natural disturbance regime or past harvesting. Unwanted shade tolerant tree species have regenerated and are in the overstory competing with desirable species as well as in the mid and understory where they will eventually out-compete with desirable species. Additionally, old fields or areas cleared of trees can be revegetated using direct seeding methods. Resource concerns are degraded plant condition, inadequate habitat for fish and wildlife and possible soil sheet and rill erosion.

**After Situation:**

A 10 acre tract may be the typical area however, larger and smaller areas may be treated. Seed from native species are collected or purchased and planted at prescribed rates. Site preparation is done prior to direct seeding. The degraded plant condition due to poor species composition will improve and habitat for wildlife will be more diverse. The landowner's objectives will be met and the resource concerns addressed using this practice.

**Scenario Feature Measure:** Area of Treatment

**Scenario Unit:** Acre

**Scenario Typical Size:** 10

**Scenario Cost:** \$2,283.16

**Scenario Cost/Unit:** \$228.32

**Cost Details (by category):**

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<b>Equipment/Installation</b>						
Mechanical nut planter	1601	Mechanical nut planter for direct seeding of trees and shrubs. Requires a pulling unit of either tractor or small dozer depending upon site conditions. Does not include labor.	Hour	\$1.69	6	\$10.14
Tractor, agricultural, 60 HP	963	Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included.	Hour	\$19.95	10	\$199.50
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acre	\$8.97	4	\$35.88
<b>Labor</b>						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12", Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	\$20.15	10	\$201.50
<b>Materials</b>						
Trees and shrubs, seed	1871	Brush Chipper, 12" capacity, typically 35 HP. Includes chipper and power unit. Does not include labor.	Pound	\$4.67	300	\$1,401.00
<b>Mobilization</b>						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$217.57	2	\$435.14

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**Scenario: #6 - Shrub Planting, Per Plant**

**Scenario Description:**

Shrubs are planted to provide a more diverse habitat. Plantings are in either uplands or bottomlands; in existing forests or old fields. The site lacks ground level habitat structure and diversity for wildlife.

**Before Situation:**

Shrubbery vegetation is lacking under the forest overstory or in open fields. Wildlife species that need shrub cover are not present. The forest may have an adequate stand of overstory trees, but lacking in a diversity of shrubs and the open field does not have many trees or shrubs present. Resource concern is inadequate habitat for fish and wildlife - habitat fragmentation.

**After Situation:**

A 10 acre area is planted with shrubs. Larger and smaller acreages can be treated as well. Shrubs can be planted over the entire 10 acres or they can be planted in groups or mottes. The mottes are typically circular in shape containing 50 to 100 plants in a 50 ft. circle, and the groups can be spaced out across the entire acreage. The shrub planting meets the landowner's objectives and the resource concerns of improving wildlife habitat and plant species diversity.

**Scenario Feature Measure:** Area of Treatment

**Scenario Unit:** Each

**Scenario Typical Size:** 500

**Scenario Cost:** \$470.28

**Scenario Cost/Unit:** \$0.94

**Cost Details (by category):**

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<b>Equipment/Installation</b>						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	\$31.63	1	\$31.63
Hand tools, tree planting	1590	Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included.	Hour	\$11.62	5	\$58.10
<b>Labor</b>						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$18.11	5	\$90.55
<b>Materials</b>						
Shrub, seedling or transplant, bare root, 18"-36"	1507	Bare root hardwood trees 18-36" tall. Includes materials and shipping only.	Each	\$0.58	500	\$290.00