

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

**Scenario: #1 - Individual tree - hand plant w tubes**

**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. Seedlings are protected from wildlife browsing. Wildlife habitat is degraded by loss of forest conditions.

Associated Practices: Mulching (484), Tree & Shrub Site Preparation (490)

**Before Situation:**

The stocking level does not meet the minimum recommended number of trees per acre and does not meet the landowners objectives. To be a viable forest additional seedlings need planting. Wildlife habitat is rated poor. Wildlife are known to browse tree seedlings in the area causing great damage. The 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 10 acres at a rate of 300 trees per acre, and the objectives of the landowner are met. Seedlings are protected from wildlife browsing by installing some type of protection device. A forest will provide wildlife habitat, provide a long term ground and capture atmospheric carbon.

**Scenario Feature Measure:** Each Planted Seedling

**Scenario Unit:** Each

**Scenario Typical Size:** 3,000

**Scenario Cost:** \$25,302.96

**Scenario Cost/Unit:** \$8.43

**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	\$37.72	12	\$452.64
Trailer, enclosed, small	1503	Small enclosed trailer (typically less than 30' in length) pulled by a pickup to transport materials and equipment. Truck not included.	Hour	\$4.12	12	\$49.44
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	75	\$871.50
<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	\$22.22	75	\$1,666.50
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	\$42.74	12	\$512.88
<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	\$0.62	3000	\$1,860.00
Stakes, wood, 3/4" x 3/4" x 60"	1583	3/4" x 3/4" x 60" wood stakes to fasten items in place. Includes materials only.	Each	\$1.56	3000	\$4,680.00
Tree shelter, solid tube type, 4" x 60"	1567	4" x 60" tree tube for protection from animal damage. Materials only.	Each	\$5.07	3000	\$15,210.00

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

**Scenario: #2 - Individual tree - hand planting**

**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. Wildlife habitat is degraded by loss of forest conditions.

Associated Practices: Mulching (484), Tree & Shrub Site Preparation (490)

**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 rated poor. The resource concern is degraded plant condition: inadequate structure and composition, and inadequate wildlife & fish habitat.

**After Situation:**

The prescribed number of trees are hand planted on 10 acres at a rate of 600 trees per acre, and the objectives of the landowner are met. The forest will provide wildlife habitat, provide a long term ground cover, and capture atmospheric carbon.

**Scenario Feature Measure:** Each Planted Seedling

**Scenario Unit:** Each

**Scenario Typical Size:** 6,000

**Scenario Cost:** \$5,835.28

**Scenario Cost/Unit:** \$0.97

**Cost Details (by category):**

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<b>Equipment/Installation</b>						
Trailer, enclosed, small	1503	Small enclosed trailer (typically less than 30' in length) pulled by a pickup to transport materials and equipment. Truck not included.	Hour	\$4.12	16	\$65.92
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	\$37.72	16	\$603.52
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	50	\$581.00
<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	\$42.74	16	\$683.84
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	\$22.22	50	\$1,111.00
<b>Materials</b>						
Tree, conifer, seedling, bare root, 1-1	1513	Bare root conifer trees, 1-1 (2 years old). Includes materials and shipping only.	Each	\$0.42	6000	\$2,520.00
Wire flags	1586	Small vinyl flags attached to wire stakes, typically, 36" in length, for marking tree rows	Each	\$0.09	3000	\$270.00

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

**Scenario: #3 - Shrubs Planting**

**Scenario Description:**

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

Associated Practices: Mulching (484), Tree & Shrub Site Preparation (490)

**Before Situation:**

Little or no shrubby vegetation, is present under the forest overstory. Wildlife species that need shrub cover are not present. An adequate stand of overstory trees is present, but it is a single level, not multi-level. Resource concern is inadequate habitat for fish and wildlife - habitat fragmentation.

**After Situation:**

A 10 acre area is planted with shrubs. Shrubs are not planted over the entire 10 acres. They are planted in groups or motts. The motts, more or less circular in shape, are 50 feet in diameter, with 50 shrubs planted within each mott. 4 motts are planted per acre for a total of 200 shrubs per acre. Motts are randomly established to take advantage of site conditions and shrub species being planted.

**Scenario Feature Measure:** Each Planted shrub

**Scenario Unit:** Each

**Scenario Typical Size:** 2,000

**Scenario Cost:** \$2,371.92

**Scenario Cost/Unit:** \$1.19

**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	\$37.72	8	\$301.76
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	17	\$197.54
Trailer, enclosed, small	1503	Small enclosed trailer (typically less than 30' in length) pulled by a pickup to transport materials and equipment. Truck not included.	Hour	\$4.12	8	\$32.96
<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	\$42.74	8	\$341.92
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	\$22.22	17	\$377.74
<b>Materials</b>						
Wire flags	1586	Small vinyl flags attached to wire stakes, typically, 36" in length, for marking tree rows	Each	\$0.09	2000	\$180.00
Shrub, seedling or transplant, bare root, 6-18"	1506	Bare root hardwood trees 6-18" tall. Includes materials and shipping only.	Each	\$0.47	2000	\$940.00

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

**Scenario: #4 - Low Density Hand Plant w Tubes**

**Scenario Description:**

This practice involves planting of 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. Newly planted hardwood seedlings are protected from browsing by installing open tree tubes. Trees are planted at 15 foot spacing or greater. Terrain is moderately to steeply sloping, too steep to be planted with a mechanical tree planter so the area is hand planted.

Associated Practices: Mulching (484), Tree & Shrub Site Preparation (490)

**Before Situation:**

The land has a 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). The main resource concern is degraded plant condition and inadequate structure and composition

**After Situation:**

10 acres of land is established with 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. All planted trees have vexar tubes, or similar, installed to protect from animal damage. A maximum planting density of 200 trees per acre is required for the site.

**Scenario Feature Measure:** Area of Treatment

**Scenario Unit:** Acre

**Scenario Typical Size:** 10

**Scenario Cost:** \$17,587.12

**Scenario Cost/Unit:** \$1,758.71

**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	\$37.72	17	\$641.24
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	50	\$581.00
Trailer, enclosed, small	1503	Small enclosed trailer (typically less than 30' in length) pulled by a pickup to transport materials and equipment. Truck not included.	Hour	\$4.12	17	\$70.04
<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	\$42.74	16	\$683.84
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	\$22.22	50	\$1,111.00
<b>Materials</b>						
Stakes, wood, 3/4" x 3/4" x 60"	1583	3/4" x 3/4" x 60" wood stakes to fasten items in place. Includes materials only.	Each	\$1.56	2000	\$3,120.00
Tree shelter, solid tube type, 4" x 60"	1567	4" x 60" tree tube for protection from animal damage. Materials only.	Each	\$5.07	2000	\$10,140.00
Tree, hardwood, seedling or transplant, bare root, 16-36"	1510	Bare root hardwood trees 18-36" tall. Includes materials and shipping only.	Each	\$0.62	2000	\$1,240.00

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

**Scenario: #5 - Low Density Hand Plant with tubes**

**Scenario Description:**

This practice involves planting of tree and shrub seedlings after the site has been prepared for seedling growth and establishment. The productivity of the site is good and will handle a low density planting rate. Newly planted hardwood seedlings and shrub are protected from browsing by installing open tubes. Trees and shrubs are planted at 15 foot spacing or greater. Terrain is moderately to steeply sloping, too steep to be planted with a mechanical tree planter so the area is hand planted.

Associated Practices: Mulching (484), Tree & Shrub Site Preparation (490)

**Before Situation:**

The land has a little/no tree/shrub canopy or is stocked with the wrong 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). The main resource concern is degraded plant condition and inadequate structure and composition

**After Situation:**

10 acres of land is established with permanent tree and shrub 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. All plantings shall tubes, or similar, installed to protect from animal damage. A maximum planting density of 100 trees and 50 shrubs per acre is required for the site.

**Scenario Feature Measure:** Acres of area planted

**Scenario Unit:** Acre

**Scenario Typical Size:** 10

**Scenario Cost:** \$12,923.74

**Scenario Cost/Unit:** \$1,292.37

**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	80	\$929.60
Trailer, enclosed, small	1503	Small enclosed trailer (typically less than 30' in length) pulled by a pickup to transport materials and equipment. Truck not included.	Hour	\$4.12	88	\$362.56
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	\$37.72	24	\$905.28
<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	\$42.74	5	\$213.70
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	\$22.22	80	\$1,777.60
<b>Materials</b>						
Tree shelter, solid tube type, 4" x 24"	1563	4" x 24" tree tube for protection from animal damage. Materials only.	Each	\$2.17	500	\$1,085.00
Tree, hardwood, seedling or transplant, bare root, 16-36"	1510	Bare root hardwood trees 18-36" tall. Includes materials and shipping only.	Each	\$0.62	1000	\$620.00
Shrub, seedling or transplant, bare root, 6-18"	1506	Bare root hardwood trees 6-18" tall. Includes materials and shipping only.	Each	\$0.47	500	\$235.00
Stakes, wood, 3/4" x 3/4" x 24"	1580	3/4" x 3/4" x 24" wood stakes to fasten items in place. Includes materials only.	Each	\$0.33	500	\$165.00
Stakes, wood, 3/4" x 3/4" x 60"	1583	3/4" x 3/4" x 60" wood stakes to fasten items in place. Includes materials only.	Each	\$1.56	1000	\$1,560.00
Tree shelter, solid tube type, 4" x 60"	1567	4" x 60" tree tube for protection from animal damage. Materials only.	Each	\$5.07	1000	\$5,070.00

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

**Scenario: #6 - High Density, Mechanical Plant**

**Scenario Description:**

This practice applies to forestlands that are being actively managed. Seedlings selected are appropriate for the site and site conditions. Tree seedlings are planted after the site has been prepared for seedling establishment and growth. Forest site productivity is high or very high and dense planting is planned. Larger containerized seedlings are planted. Trees are planted at 10 foot spacing or less. Terrain conditions allow for mechanical tree planting.

Associated Practices: Mulching (484), Tree & Shrub Site Preparation (490)

**Before Situation:**

The land lacks forest 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 organic matter in top soil. Resource concerns are degraded plant condition (including undesirable plant productivity and health, and inadequate structure) and composition and degraded wildlife habitat.

**After Situation:**

10 acres of land is established with permanent tree cover that will improve degraded plant condition, establish wildlife habitat, sequester atmospheric carbon. Establishing forest vegetation also creates corridors for wildlife movement. Actions should be planned with competing vegetation concerns. A density of 436 trees per acre or greater is required for the site.

**Scenario Feature Measure:** area of treatment

**Scenario Unit:** Acre

**Scenario Typical Size:** 10

**Scenario Cost:** \$4,165.72

**Scenario Cost/Unit:** \$416.57

**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	\$37.72	9	\$339.48
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	9	\$59.40
Tractor, agricultural, 60 HP	963	Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included.	Hour	\$23.79	9	\$214.11
Trailer, enclosed, small	1503	Small enclosed trailer (typically less than 30' in length) pulled by a pickup to transport materials and equipment. Truck not included.	Hour	\$4.12	9	\$37.08
<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	\$22.22	18	\$399.96
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12", Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	\$22.43	9	\$201.87
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	\$42.74	9	\$384.66
<b>Materials</b>						
Tree, conifer, seedling, bare root, 1-1	1513	Bare root conifer trees, 1-1 (2 years old). Includes materials and shipping only.	Each	\$0.42	4360	\$1,831.20
<b>Mobilization</b>						
Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	\$174.49	4	\$697.96

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

**Scenario: #7 - High Density, Mechanical plant with tubes**

**Scenario Description:**

Improving the hardwood forest setting by hand planting hardwood tree seedlings. Prior to planting any needed vegetation control will be conducted first. Seedlings are protected from deer browsing. Trees are planted at 10 foot spacing or less.

Associated Practices: Mulching (484), Tree & Shrub Site Preparation (490)

**Before Situation:**

In an existing upland forest the present trees are poor quality, at low stocking levels, or are undesirable species. Existing conditions do not meet landowner objectives of growing high quality trees. Wildlife habitat is poor due to the above described conditions. Resource concerns are degrade plant condition - undesirable productivity and health, and Inadequate structure and composition; inadequate habitat for fish and wildlife - habitat degradation.

**After Situation:**

The area of treatment is 10 acres. Bare root hardwood seedlings are planted by hand in the best locations for seedling survival. Solid tree tubes are installed to protect seedlings from animal browsing damage. Post planting vegetation control is planned to ensure seedling survival. A density of 436 trees per acre or greater is required for the site.

**Scenario Feature Measure:** Area of Treatment

**Scenario Unit:** Acre

**Scenario Typical Size:** 10

**Scenario Cost:** \$36,007.70

**Scenario Cost/Unit:** \$3,600.77

**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	9	\$59.40
Trailer, enclosed, small	1503	Small enclosed trailer (typically less than 30' in length) pulled by a pickup to transport materials and equipment. Truck not included.	Hour	\$4.12	9	\$37.08
Tractor, agricultural, 60 HP	963	Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included.	Hour	\$23.79	9	\$214.11
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	\$37.72	9	\$339.48
<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	\$22.43	9	\$201.87
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	\$42.74	24	\$1,025.76
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	\$22.22	82	\$1,822.04
<b>Materials</b>						
Tree shelter, solid tube type, 4" x 60"	1567	4" x 60" tree tube for protection from animal damage. Materials only.	Each	\$5.07	4360	\$22,105.20
Stakes, wood, 3/4" x 3/4" x 60"	1583	3/4" x 3/4" x 60" wood stakes to fasten items in place. Includes materials only.	Each	\$1.56	4360	\$6,801.60
Tree, hardwood, seedling or transplant, bare root, 16-36"	1510	Bare root hardwood trees 18-36" tall. Includes materials and shipping only.	Each	\$0.62	4360	\$2,703.20
<b>Mobilization</b>						
Mobilization, small equipment	1138	Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds.	Each	\$174.49	4	\$697.96

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

**Scenario: #8 - High Density, Hand Plant**

**Scenario Description:**

This practice involves planting of tree seedlings after the site has been prepared for seedling growth and establishment. The productivity of the site is good and will handle a high density planting rate. Terrain is moderately to steeply sloping, too steep to be planted with a mechanical tree planter so the area is hand planted. Trees are planted at 10 foot spacing or less.

Associated Practices: Mulching (484), Tree & Shrub Site Preparation (490)

**Before Situation:**

The land has a little/no tree cover. 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). The main resource concerns are degraded plant condition and inadequate structure and composition

**After Situation:**

10 acres of land is established with permanent tree cover that will improve degraded plant condition, reduce soil erosion, establish wildlife habitat, sequester carbon and reduce invasive species presence. A density of 436 trees per acre or greater is required for the site. Establishing forest vegetation also creates corridors for wildlife movement.

**Scenario Feature Measure:** Area of Treatment

**Scenario Unit:** Acre

**Scenario Typical Size:** 10

**Scenario Cost:** \$3,981.72

**Scenario Cost/Unit:** \$398.17

**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	\$37.72	12	\$452.64
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	12	\$139.44
Trailer, enclosed, small	1503	Small enclosed trailer (typically less than 30' in length) pulled by a pickup to transport materials and equipment. Truck not included.	Hour	\$4.12	12	\$49.44
<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	\$22.22	36	\$799.92
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	\$42.74	12	\$512.88
<b>Materials</b>						
Tree, conifer, seedling, bare root, 1-1	1513	Bare root conifer trees, 1-1 (2 years old). Includes materials and shipping only.	Each	\$0.42	4360	\$1,831.20
Wire flags	1586	Small vinyl flags attached to wire stakes, typically, 36" in length, for marking tree rows	Each	\$0.09	2180	\$196.20

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

**Scenario: #9 - Planting, container**

**Scenario Description:**

Potted, hardwood seedlings are hand planted to re-establish an upland hardwood forest. Resource setting is an historic upland, hardwood forest. Rapid establishment is necessary to meet the resource concern, ensure survivability, and meet the desired canopy at maturity. Associated Practices: Mulching (484), Tree & Shrub Site Preparation (490)

**Before Situation:**

A cropped, grazed, hay, or bushy forest is re-established to native forest. Existing resource concerns require rapid establishment to ensure a successful stand at maturity. Terrain is gently to moderately sloping. Excessive soil erosion or water quality problems exist. Other concerns include degraded plant condition, undesirable productivity and health, inadequate structure and composition, and inadequate habitat for fish and wildlife. Area is subject to a high risk of survivability due deer pressure, browse and rub, competition, and other environmental factors influencing the survivability.

**After Situation:**

A five acre area is treated with potted, containerized hardwood seedlings. Trees are hand planted at a rate of 120 trees per acre. Trees and shrubs have a 75% survivability rate with an expected rate of 90 trees per acre at maturity. Typical healthy, hardwood forests in the region have around 100 trees at maturity. Post vegetation control is evaluated and conducted as necessary to ensure stand development. Due to the high risk of survivability, container plants are necessary to ensure adequate canopy at maturity.

**Scenario Feature Measure:** Area of Treatment

**Scenario Unit:** Acre

**Scenario Typical Size:** 5

**Scenario Cost:** \$8,740.48

**Scenario Cost/Unit:** \$1,748.10

**Cost Details (by category):**

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<b>Equipment/Installation</b>						
Trailer, enclosed, small	1503	Small enclosed trailer (typically less than 30' in length) pulled by a pickup to transport materials and equipment. Truck not included.	Hour	\$4.12	16	\$65.92
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	30	\$348.60
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	\$37.72	16	\$603.52
<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	\$22.22	30	\$666.60
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	\$42.74	16	\$683.84
<b>Materials</b>						
Stakes, wood, 3/4" x 3/4" x 36"	1581	3/4" x 3/4" x 36" wood stakes to fasten items in place. Includes materials only.	Each	\$0.71	600	\$426.00
Tree, hardwood, seedling or transplant, potted, 1/2 to 1 gal.	1531	Potted hardwood tree, 1/2 to 1 gal. Includes materials and shipping only.	Each	\$4.84	600	\$2,904.00
Tree shelter, solid tube type, 4" x 60"	1567	4" x 60" tree tube for protection from animal damage. Materials only.	Each	\$5.07	600	\$3,042.00

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

**Scenario: #10 - High Density, Hand Plant, Tubes**

**Scenario Description:**

This practice involves planting of tree seedlings after the site has been prepared for seedling growth and establishment. Tree tubes are employed to minimize deer browsing. The productivity of the site is good and will handle a high density planting rate. RTerrain is moderately to steeply sloping, too steep to be planted with a mechanical tree planter so the area is hand planted. Trees are planted at 10 foot spacing or less.

Associated Practices: Mulching (484), Tree & Shrub Site Preparation (490)

**Before Situation:**

The land has a little/no tree cover. 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 are degraded plant condition -- undesirable plant productivity and health, and inadequate structure and composition and degraded wildlife habitat.

**After Situation:**

10 acres of land is established with permanent tree cover that will improve degraded plant condition, reduce soil erosion, establish wildlife habitat, sequester carbon and reduce invasive species presence. A density of 436 trees per acre or greater is required for the site. Establishing forest vegetation also creates corridors for wildlife movement.

**Scenario Feature Measure:** Area of planting

**Scenario Unit:** Acre

**Scenario Typical Size:** 10

**Scenario Cost:** \$37,666.80

**Scenario Cost/Unit:** \$3,766.68

**Cost Details (by category):**

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<b>Equipment/Installation</b>						
Trailer, enclosed, small	1503	Small enclosed trailer (typically less than 30' in length) pulled by a pickup to transport materials and equipment. Truck not included.	Hour	\$4.12	28	\$115.36
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	\$37.72	28	\$1,056.16
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	109	\$1,266.58
<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	\$42.74	28	\$1,196.72
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	\$22.22	109	\$2,421.98
<b>Materials</b>						
Stakes, wood, 3/4" x 3/4" x 60"	1583	3/4" x 3/4" x 60" wood stakes to fasten items in place. Includes materials only.	Each	\$1.56	4360	\$6,801.60
Tree shelter, solid tube type, 4" x 60"	1567	4" x 60" tree tube for protection from animal damage. Materials only.	Each	\$5.07	4360	\$22,105.20
Tree, hardwood, seedling or transplant, bare root, 16-36"	1510	Bare root hardwood trees 18-36" tall. Includes materials and shipping only.	Each	\$0.62	4360	\$2,703.20

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

**Scenario: #11 - Hand Plant Conifers**

**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 or the previously planted seedling tree stocking level is below desirable conditions. Wildlife habitat is degraded by loss of forest conditions.

Associated Practices: Mulching (484), Tree & Shrub Site Preparation (490)

**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 rated poor. The resource concern is degraded plant condition: inadequate structure and composition, and inadequate wildlife & fish habitat.

**After Situation:**

The prescribed number of trees are hand planted on 10 acres at a rate of 605 trees per acre, and the objectives of the landowner are met. The forest will provide wildlife habitat, provide a long term ground cover, and capture atmospheric carbon.

**Scenario Feature Measure:** Number of trees planted

**Scenario Unit:** Each

**Scenario Typical Size:** 6,050

**Scenario Cost:** \$4,021.64

**Scenario Cost/Unit:** \$0.66

**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	8	\$92.96
Trailer, enclosed, small	1503	Small enclosed trailer (typically less than 30' in length) pulled by a pickup to transport materials and equipment. Truck not included.	Hour	\$4.12	8	\$32.96
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	\$37.72	8	\$301.76
<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	\$42.74	8	\$341.92
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	\$22.22	32	\$711.04
<b>Materials</b>						
Tree, conifer, seedling, bare root, 1-1	1513	Bare root conifer trees, 1-1 (2 years old). Includes materials and shipping only.	Each	\$0.42	6050	\$2,541.00