

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

**Scenario:** #1 - Hardwood Hand Planting-bare root-protected

**Scenario Description:** Improving the hardwood forest setting by hand planting hardwood tree seedlings. Seedlings are protected from deer browsing. The number of trees to plant is lower than establishing a new forest. Resource concerns are degraded plant condition - undesirable productivity and health, and Inadequate structure and composition; inadequate habitat for fish and wildlife - habitat degradation.

**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 degraded plant condition - undesirable productivity and health, and Inadequate structure and composition; inadequate habitat for fish and wildlife - habitat degradation. Prior to planting any needed vegetation control will be conducted first.

**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.

**Scenario Feature Measure:** Area of Treatment

**Scenario Unit:** Acre

**Scenario Typical Size:** 10

**Total Scenario Cost:** \$6,057.87

**Scenario Cost/Unit:** \$605.79

**Cost Details**

Component Name	Id	Description	Unit	Cost	Qty	Total
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**Labor**

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	\$26.15	50	\$1,307.60
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	\$43.61	4	\$174.45

**Equipment Installation**

All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hour	\$32.61	25	\$815.23
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	\$12.04	50	\$602.15
Trailer, flatbed, small	1505	Small flatbed trailer (typically less than 30' in length) pulled by a pickup to transport materials and equipment. Truck not included.	Hour	\$15.87	25	\$396.68
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	\$21.74	25	\$543.47
Water tank, portable	1602	Portable water tank transported in a pick up truck. Typically with 200 gallon capacity includes tank with pump, hose and sprayer. Does not include the pickup truck. Equipment only.	Hour	\$2.42	25	\$60.44

**Mobilization**

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	\$171.69	1	\$171.69
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**Materials**

Planting gel, polymer	1576	Polymer planting gel that retains water around seedling roots. Materials only.	Pound	\$9.37	1	\$9.37
Shrub, seedling or transplant, bare root, 36-60"	1508	Bare root shrubs 3 to 5 foot tall. Includes materials and shipping only.	Each	\$1.73	300	\$518.78
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	\$0.72	300	\$216.00
Tree shelter, solid tube type,	1566	4" x 48" tree tube for protection from animal damage. Materials	Each	\$4.14	300	\$1,242.00

4" x 48"		only.				
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**Practice:** 612 - Tree/Shrub Establishment

**Scenario:** #2 - Hardwood Planting 1 gal pots

**Scenario Description:** Hardwood seedlings (potted) to be planted to reestablish an upland hardwood forest. Planting will be by hand. The resource setting is an area that historically was an upland hardwood forest. Resource concerns are degrade plant condition - undesirable productivity and health, and Inadequate structure and composition; inadequate habitat for fish and wildlife.

**Before Situation:** The native forest that has been removed and the land is either row cropped, grazed or hayed or brushy forest. If any upland trees exist they are poor quality tree or undesirable species. Terrain is gently to moderately sloping with soil erosion-sheet and rill occurring.

**After Situation:** The area of treatment is 2 acres. Potted/containerized hardwood seedlings are planted by hand. Post vegetation control should be evaluated and conducted it necessary.

**Scenario Feature Measure:** Area of Treatment

**Scenario Unit:** Acre

**Scenario Typical Size:** 2

**Total Scenario Cost:** \$10,877.26

**Scenario Cost/Unit:** \$5,438.63

**Cost Details**

Component Name	Id	Description	Unit	Cost	Qty	Total
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**Labor**

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	\$26.15	100	\$2,615.20
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	\$43.61	6	\$261.67

**Equipment Installation**

All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hour	\$32.61	50	\$1,630.47
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	\$12.04	100	\$1,204.31
Trailer, flatbed, small	1505	Small flatbed trailer (typically less than 30' in length) pulled by a pickup to transport materials and equipment. Truck not included.	Hour	\$15.87	50	\$793.37
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	\$21.74	50	\$1,086.94

**Mobilization**

Mobilization, Material, distance > 50 miles	1043	Mobilization cost of materials for special cases where the distance from the supplier delivery point to the job site exceeds 50 miles. The costs for shipping by UPS or bulk freight shipping to a location within 50 miles of the job site have already been included in the component price.	Dollar	\$1.00	100	\$100.00
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	\$171.69	1	\$171.69

**Materials**

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	\$5.02	600	\$3,013.62
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**Practice:** 612 - Tree/Shrub Establishment

**Scenario:** #3 - Hardwood Est.-Direct Seeding

**Scenario Description:** Native seed (acorns, nuts, etc) from native tree species are directly planted in the soil. Site preparation is completed (discing to eliminate competing vegetation). The native seed are collected/purchased locally so as to get trees known to be adapted to local conditions. Resource concerns are degraded plant condition, inadequate habitat for fish and wildlife.

**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.

**After Situation:** Seed from native species are collected or purchased and planted at prescribed rates. Site preparation is done prior to direct seeding. Degraded plant condition is on an upward trend and habitat for wildlife will improve.

**Scenario Feature Measure:** Area of Treatment

**Scenario Unit:** Acre

**Scenario Typical Size:** 2

**Total Scenario Cost:** \$1,715.61

**Scenario Cost/Unit:** \$857.80

**Cost Details**

Component Name	Id	Description	Unit	Cost	Qty	Total
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**Labor**

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	\$26.15	12	\$313.82
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	\$43.61	3	\$130.84

**Equipment Installation**

All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hour	\$32.61	12	\$391.31
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	\$12.04	12	\$144.52
Trailer, flatbed, small	1505	Small flatbed trailer (typically less than 30' in length) pulled by a pickup to transport materials and equipment. Truck not included.	Hour	\$15.87	12	\$190.41
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	\$21.74	12	\$260.87

**Mobilization**

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	\$171.69	1	\$171.69
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**Materials**

Trees and shrubs, seed	1871	Tree or shrub seed, e.g., acorns, to establish trees. Includes materials and shipping only.	Pound	\$4.67	24	\$112.15
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**Practice:** 612 - Tree/Shrub Establishment

**Scenario:** #4 - Plant Small Areas/Quantities

**Scenario Description:** Trees and shrubs are planted to improve habitat and the successional process. Trees and shrubs are planted in an upland or wetland setting. The resource concerns are insufficient cover/shelter and insufficient food for wildlife. Small quantities of trees and shrubs are needed to plant portions of fields to meet habitat and food needs.

**Before Situation:** Old fields or other open areas lack sufficient cover/shelter and food for species of concern. There is a lack of native woody cover and the open areas are dominated by forbs and grass.

**After Situation:** A 5 acre field will have portions planted to trees and shrubs in a scattered pattern equalling about an acre of planting. Small quantities of trees and shrubs, 200 stems, will need to be ordered. Larger trees and shrubs will be planted to compete better with idle area forbs and tall grasses.

**Scenario Feature Measure:** Area of Treatment

**Scenario Unit:** Acre

**Scenario Typical Size:** 1

**Total Scenario Cost:** \$2,443.26

**Scenario Cost/Unit:** \$2,443.26

**Cost Details**

Component Name	Id	Description	Unit	Cost	Qty	Total
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**Labor**

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	\$26.15	12	\$313.82
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	\$43.61	4	\$174.45

**Equipment Installation**

All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hour	\$32.61	12	\$391.31
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	\$12.04	12	\$144.52
Trailer, flatbed, small	1505	Small flatbed trailer (typically less than 30' in length) pulled by a pickup to transport materials and equipment. Truck not included.	Hour	\$15.87	12	\$190.41
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	\$21.74	12	\$260.87

**Mobilization**

Mobilization, Material, distance > 50 miles	1043	Mobilization cost of materials for special cases where the distance from the supplier delivery point to the job site exceeds 50 miles. The costs for shipping by UPS or bulk freight shipping to a location within 50 miles of the job site have already been included in the component price.	Dollar	\$1.00	100	\$100.00
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	\$171.69	1	\$171.69

**Materials**

Planting gel, polymer	1576	Polymer planting gel that retains water around seedling roots. Materials only.	Pound	\$9.37	1	\$9.37
Shrub, seedling or transplant, bare root, 36-60"	1508	Bare root shrubs 3 to 5 foot tall. Includes materials and shipping only.	Each	\$1.73	200	\$345.85
Tree, hardwood, seedling or transplant, bare root, 36-60"	1511	Bare root hardwood trees 3 to 5 foot tall. Includes materials and shipping only.	Each	\$1.70	200	\$340.97

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

**Scenario:** #5 - Shrub Planting

**Scenario Description:** Shrubs are planted to provide a more diverse habitat and to enhance cover, food (fruit, nectar, pollen, nesting sites) for specific wildlife needs on small and urban farms for shrub dependent wildlife. Shrub planting density is variable depending on the objective (e.g., protective cover, food (e.g., fruit, nectar, pollen). Resource concerns are Inadequate structure and composition; inadequate habitat for fish and wildlife - habitat degradation, inadequate habitat for fish and wildlife - cover, inadequate habitat for fish and wildlife - food.

**Before Situation:** In existing small or urban farm, there is insufficient food, cover and nesting opportunity for species that use shrublands for all or a significant portion of their life cycle. Existing conditions do not meet landowner objectives of creating cover, food, or nesting sites for desired shrubland wildlife. Resource concerns are Inadequate structure and composition; inadequate habitat for fish and wildlife - habitat degradation, inadequate habitat for fish and wildlife - cover, inadequate habitat for fish and wildlife - food

**After Situation:** In existing small or urban farm, there is now sufficient food, cover and nesting opportunity for species that use shrubs for all or a significant portion of their life cycle. Existing conditions now meet the landowner's objectives of creating cover, food, or nesting sites for desired shrubland wildlife. Resource concerns are now addressed for Inadequate structure and composition; inadequate habitat for fish and wildlife - habitat degradation, inadequate habitat for fish and wildlife - cover, inadequate habitat for fish and wildlife - food

**Scenario Feature Measure:** Area of Treatment

**Scenario Unit:** Each

**Scenario Typical Size:** 200

**Total Scenario Cost:** \$3,936.47

**Scenario Cost/Unit:** \$19.68

**Cost Details**

Component Name	Id	Description	Unit	Cost	Qty	Total
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**Labor**

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	\$26.15	34	\$889.17
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	\$43.61	4	\$174.45

**Equipment Installation**

All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hour	\$32.61	17	\$554.36
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	\$12.04	34	\$409.46
Trailer, flatbed, small	1505	Small flatbed trailer (typically less than 30' in length) pulled by a pickup to transport materials and equipment. Truck not included.	Hour	\$15.87	17	\$269.74
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	\$21.74	17	\$369.56

**Mobilization**

Mobilization, Material, distance > 50 miles	1043	Mobilization cost of materials for special cases where the distance from the supplier delivery point to the job site exceeds 50 miles. The costs for shipping by UPS or bulk freight shipping to a location within 50 miles of the job site have already been included in the component price.	Dollar	\$1.00	100	\$100.00
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	\$171.69	1	\$171.69

**Materials**

Shrub, seedling or transplant, potted, 1/2 to 1 gal.	1526	Potted shrub, 1/2 to 1 gal. Includes materials and shipping only.	Each	\$4.99	200	\$998.03
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**Practice:** 612 - Tree/Shrub Establishment

**Scenario:** #6 - Shrub Bare Root Hand Planting In Sod Grasses

**Scenario Description:** This scenario is to enhance cover, food (fruit, nectar, pollen, nesting sites) for specific wildlife needs on land converted to agriculture and currently in grass sod for shrub dependent wildlife. Shrub planting density is variable depending on the objective (e.g., protective cover, food (e.g., fruit, nectar, pollen). Resource concerns are Inadequate structure and composition; inadequate habitat for fish and wildlife - habitat degradation, inadequate habitat for fish and wildlife - cover, inadequate habitat for fish and wildlife - food. This scenario is only to be used for hand planting in sod where sod will choke out bare root seedlings; this scenario is not to be used for dibble- or mechanical-planting of shrubs in grassland, or woodland or existing cropland where grass groundcover is not a problem.

**Before Situation:** In existing open grassland, there is insufficient food, cover and nesting opportunity for species that use shrublands for all or a significant portion of their life cycle. Existing conditions do not meet landowner objectives of creating cover, food, or nesting sites for desired shrubland wildlife. Resource concerns are Inadequate structure and composition; inadequate habitat for fish and wildlife - habitat degradation, inadequate habitat for fish and wildlife - cover, inadequate habitat for fish and wildlife - food.

**After Situation:** The area of treatment is 1 acre. Bare root hardwood shrub seedlings are planted by hand on a 6 x 6 spacing in a sod grass field by hand. Will require removal of sod in a 2-foot circle prior to planting bareroot seedlings to achieve adequate survival. Installation of post-planting practice mulching or other vegetation control is needed to enhance seedling survival.

**Scenario Feature Measure:** <Unknown>

**Scenario Unit:** Each

**Scenario Typical Size:** 1200

**Total Scenario Cost:** \$8,538.70

**Scenario Cost/Unit:** \$7.12

**Cost Details**

Component Name	Id	Description	Unit	Cost	Qty	Total
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**Labor**

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	\$26.15	120	\$3,138.24
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	\$43.61	8	\$348.89

**Equipment Installation**

All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hour	\$32.61	40	\$1,304.37
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	\$12.04	120	\$1,445.17
Trailer, flatbed, small	1505	Small flatbed trailer (typically less than 30' in length) pulled by a pickup to transport materials and equipment. Truck not included.	Hour	\$15.87	40	\$634.69
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	\$21.74	40	\$869.55

**Mobilization**

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	\$171.69	1	\$171.69
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**Materials**

Planting gel, polymer	1576	Polymer planting gel that retains water around seedling roots. Materials only.	Pound	\$9.37	6	\$56.23
Shrub, seedling or transplant, bare root, 6-18"	1506	Bare root hardwood trees 6-18" tall. Includes materials and shipping only.	Each	\$0.47	1200	\$569.85

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

**Scenario:** #8 - Mostly Hardwood Hand Planting-bare root-protected

**Scenario Description:** Improving a highly degraded site by hand planting tree seedlings, appropriate to the site. Seedlings are protected from deer browsing. The number of trees to plant is a minimum of 200 plants/ac. Resource concerns are degraded plant condition - undesirable productivity and health, and Inadequate structure and composition; inadequate habitat for fish and wildlife - habitat degradation.

**Before Situation:** In an existing upland forest the present overstory trees are poor quality, at low stocking levels, or are undesirable species. Dense invasive species in the understory have prevented natural regeneration of native tree and shrub species. Existing conditions do not meet landowner objectives of growing high quality trees for the future. 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. Prior to planting any needed vegetation control will be conducted first.

**After Situation:** The area of treatment is 10 acres. First, the invasive species are adequately controlled under a different conservation practice. The existing overstory canopy is also treated per the forester's recommendation in order to create the optimal light conditions for the new tree seedlings. Bare root hardwood and/or softwood seedlings are planted by hand at a minimum of 200 plants/ac. The species and planting rate are recommended by a forester in the forest management plan. Solid tree tubes are installed to protect seedlings from animal browsing damage. Post planting vegetation control is planned to ensure seedling survival.

**Scenario Feature Measure:** Area of Treatment

**Scenario Unit:** Acre

**Scenario Typical Size:** 10

**Total Scenario Cost:** \$17,813.33

**Scenario Cost/Unit:** \$1,781.33

**Cost Details**

Component Name	Id	Description	Unit	Cost	Qty	Total
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**Labor**

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	\$26.15	80	\$2,092.16
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	\$43.61	10	\$436.12

**Equipment Installation**

All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hour	\$32.61	5	\$163.05
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	\$12.04	80	\$963.44
Trailer, flatbed, small	1505	Small flatbed trailer (typically less than 30' in length) pulled by a pickup to transport materials and equipment. Truck not included.	Hour	\$15.87	20	\$317.35
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	\$21.74	20	\$434.78

**Mobilization**

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	\$171.69	1	\$171.69
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**Materials**

Planting gel, polymer	1576	Polymer planting gel that retains water around seedling roots. Materials only.	Pound	\$9.37	6	\$56.23
Shrub, seedling or transplant, bare root, 36-60"	1508	Bare root shrubs 3 to 5 foot tall. Includes materials and shipping only.	Each	\$1.73	2000	\$3,458.51
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	\$0.72	2000	\$1,440.00
Tree shelter, solid tube type, 4" x 48"	1566	4" x 48" tree tube for protection from animal damage. Materials only.	Each	\$4.14	2000	\$8,280.00