

Practice: 381 - Silvopasture Establishment

Scenario #1 - Non-Commercial Thinning and Establish Native Grass

**Scenario Description:**

Non-commercial thinning of an existing stand of trees followed by establishment of native grasses. Planned removal of a portion of the trees will be conducted to allow more light to reach the forest floor. The removed trees cannot be sold for profit.

**Before Situation:**

A 10 acre pine plantation that is overstocked, with a basal area of 100 sq. ft. per acre or more. The forest stand is of low health and productivity with a high wildfire hazard and there is very little available forage for livestock, due to the dense shade of the tree canopy. Resource Concerns include Degraded Plant Condition - Undesirable Plant Productivity and Health, Inadequate Structure and Composition, Wildfire Hazard, Excessive Biomass Accumulation and Livestock Production Limitation - Inadequate Feed and Forage.

**After Situation:**

The pine stand is thinned, non-commercially, to a basal area of 50 sq. ft. per acre, which will allow adequate sunlight to the forest floor for grass production, yet still provide shade and some protection from the elements for livestock and wildlife. Debris is removed, all tree cutting will leave the shortest possible stump height. The soil is prepared for planting using chemical and mechanical means, then a mix of native warm-season grasses will be established, providing forage to livestock and wildlife. All Resource Concerns listed above are addressed.

**Feature Measure:** Acres of silvopasture established

**Scenario Unit::** Acre

**Scenario Typical Size:** 10

**Total Scenario Cost:** \$4,017.10

**Scenario Cost/Unit:** \$401.71

**Cost Details:**

Component Name	ID	Description	Unit	Cost	QTY	Total
<b>Equipment Installation</b>						
Mechanical cutter, chopper	943	Forestry mulcher, flail shredder, hydro axe, brush cutter, etc. Equipment and power unit costs. Labor not included.	Hour	\$84.38	10	\$843.80
Tillage, Primary	946	Includes heavy disking (offset) or chisel plow. Includes equipment, power unit and labor costs.	Acre	\$13.72	10	\$137.20
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	\$5.07	10	\$50.70
Fertilizer, ground application, dry bulk	950	Dry bulk fertilizer application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	\$5.68	10	\$56.80
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acre	\$17.65	2	\$35.30
Cultipacking	1100	Includes equipment, power unit and labor costs.	Acre	\$6.94	10	\$69.40
<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	\$19.35	8	\$154.80
<b>Materials</b>						
Phosphorus, P2O5	73	Price per pound of P2O5 supplied by Superphosphate. Price is not per pound of total product applied, no conversion is needed.	Pound	\$0.54	300	\$162.00
Potassium, K2O	74	K2O supplied by Muriate Of Potash. Price is not per pound of total product applied, no conversion is needed.	Pound	\$0.46	300	\$138.00
Herbicide, Glyphosate	334	A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acre	\$15.93	10	\$159.30
Three plus Species Mix, Warm Season, Native Perennial	2327	Native, warm season perennial grass. Includes material and shipping only.	Acre	\$220.98	10	\$2,209.80

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Scenario #2 - Non-Commercial Thinning and Establish Introduced Grass

**Scenario Description:**

Non-commercial thinning of an existing stand of trees followed by establishment of introduced grasses. Planned removal of a portion of the trees will be conducted to allow more light to reach the forest floor. The removed trees cannot be sold for profit.

**Before Situation:**

A 10 acre pine plantation that is overstocked, with a basal area of 100 sq. ft. per acre or more. The forest stand is of low health and productivity with a high wildfire hazard and there is very little available forage for livestock, due to the dense shade of the tree canopy. Resource Concerns include Degraded Plant Condition - Undesirable Plant Productivity and Health, Inadequate Structure and Composition, Wildfire Hazard, Excessive Biomass Accumulation and Livestock Production Limitation - Inadequate Feed and Forage.

**After Situation:**

The stand is thinned, non-commercially, to a basal area of 50 sq. ft. per acre, which will allow adequate sunlight to the forest floor for grass production, yet still provide shade and some protection from the elements for livestock and wildlife. Debris is removed, all tree cutting will leave the shortest possible stump height. The soil is prepared for planting using chemical and mechanical means, then a mix of cool-season introduced grasses and legumes will be established, providing forage to livestock and wildlife. All Resource Concerns listed above are addressed.

**Feature Measure:** Acres of silvopasture established

**Scenario Unit::** Acre

**Scenario Typical Size:** 10

**Total Scenario Cost:** \$2,616.30

**Scenario Cost/Unit:** \$261.63

**Cost Details:**

Component Name	ID	Description	Unit	Cost	QTY	Total
<b>Equipment Installation</b>						
Mechanical cutter, chopper	943	Forestry mulcher, flail shredder, hydro axe, brush cutter, etc. Equipment and power unit costs. Labor not included.	Hour	\$84.38	10	\$843.80
Tillage, Primary	946	Includes heavy disking (offset) or chisel plow. Includes equipment, power unit and labor costs.	Acre	\$13.72	10	\$137.20
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	\$5.07	10	\$50.70
Fertilizer, ground application, dry bulk	950	Dry bulk fertilizer application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	\$5.68	10	\$56.80
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acre	\$17.65	2	\$35.30
Cultipacking	1100	Includes equipment, power unit and labor costs.	Acre	\$6.94	10	\$69.40
<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	\$19.35	8	\$154.80
<b>Materials</b>						
Nitrogen (N), Ammonium Nitrate	69	Price per pound of N supplied by Ammonium Nitrate. Price is not per pound of total product applied, no conversion is needed.	Pound	\$0.75	350	\$262.50
Phosphorus, P2O5	73	Price per pound of P2O5 supplied by Superphosphate. Price is not per pound of total product applied, no conversion is needed.	Pound	\$0.54	350	\$189.00
Potassium, K2O	74	K2O supplied by Muriate Of Potash. Price is not per pound of total product applied, no conversion is needed.	Pound	\$0.46	350	\$161.00
Herbicide, Glyphosate	334	A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acre	\$15.93	10	\$159.30
Four Species Mix, Cool Season, Introduced Perennial (2 grasses, 2 legumes)	2317	Cool season grass and legume mix. Includes material and shipping only.	Acre	\$49.65	10	\$496.50

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Scenario #3 - Establish Native Grass

**Scenario Description:**

Establishment of native grasses into an existing stand of trees that is already stocked at an adequate density.

**Before Situation:**

A 10 acre pine plantation woodlot that has a basal area of 50 sq. ft. per acre. The plant productivity and health is low and there is very little available forage for livestock, due to undesirable species in the understory. Resource Concerns include Degraded Plant Condition - Undesirable Plant Productivity and Health, Inadequate Structure and Composition; Livestock Production Limitation - Inadequate Feed and Forage.

**After Situation:**

The soil is prepared for planting using chemical and mechanical means, then a mix of native warm-season grasses will be established, providing forage to livestock and wildlife. All Resource Concerns listed above are addressed.

**Feature Measure:** Acres of silvopasture established

**Scenario Unit::** Acre

**Scenario Typical Size:** 10

**Total Scenario Cost:** \$3,090.30

**Scenario Cost/Unit:** \$309.03

**Cost Details:**

Component Name	ID	Description	Unit	Cost	QTY	Total
<b>Equipment Installation</b>						
Tillage, Primary	946	Includes heavy disking (offset) or chisel plow. Includes equipment, power unit and labor costs.	Acre	\$13.72	10	\$137.20
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	\$5.07	10	\$50.70
Fertilizer, ground application, dry bulk	950	Dry bulk fertilizer application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	\$5.68	10	\$56.80
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acre	\$17.65	10	\$176.50
<b>Materials</b>						
Phosphorus, P2O5	73	Price per pound of P2O5 supplied by Superphosphate. Price is not per pound of total product applied, no conversion is needed.	Pound	\$0.54	300	\$162.00
Potassium, K2O	74	K2O supplied by Muriate Of Potash. Price is not per pound of total product applied, no conversion is needed.	Pound	\$0.46	300	\$138.00
Herbicide, Glyphosate	334	A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acre	\$15.93	10	\$159.30
Three plus Species Mix, Warm Season, Native Perennial	2327	Native, warm season perennial grass. Includes material and shipping only.	Acre	\$220.98	10	\$2,209.80

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Scenario #4 - Establish Introduced Grass

**Scenario Description:**

Establishment of introduced grasses into an existing stand of trees that is already at an adequate density.

**Before Situation:**

A 10 acre pine plantation woodlot that has a basal area of 50 sq. ft. per acre. The plant productivity and health is low and there is very little available forage for livestock, due to undesirable species in the understory. Resource Concerns include Degraded Plant Condition - Undesirable Plant Productivity and Health, Inadequate Structure and Composition; Livestock Production Limitation - Inadequate Feed and Forage.

**After Situation:**

The soil is prepared for planting using chemical and mechanical means, then a mix of cool-season introduced species of grasses and legumes will be established, providing forage to livestock. All Resource Concerns listed above are addressed.

**Feature Measure:** Acres of silvopasture established

**Scenario Unit::** Acre

**Scenario Typical Size:** 10

**Total Scenario Cost:** \$1,727.00

**Scenario Cost/Unit:** \$172.70

**Cost Details:**

Component Name	ID	Description	Unit	Cost	QTY	Total
<b>Equipment Installation</b>						
Tillage, Primary	946	Includes heavy disking (offset) or chisel plow. Includes equipment, power unit and labor costs.	Acre	\$13.72	10	\$137.20
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	\$5.07	10	\$50.70
Fertilizer, ground application, dry bulk	950	Dry bulk fertilizer application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	\$5.68	10	\$56.80
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acre	\$17.65	10	\$176.50
<b>Materials</b>						
Nitrogen (N), Ammonium Nitrate	69	Price per pound of N supplied by Ammonium Nitrate. Price is not per pound of total product applied, no conversion is needed.	Pound	\$0.75	400	\$300.00
Phosphorus, P2O5	73	Price per pound of P2O5 supplied by Superphosphate. Price is not per pound of total product applied, no conversion is needed.	Pound	\$0.54	350	\$189.00
Potassium, K2O	74	K2O supplied by Muriate Of Potash. Price is not per pound of total product applied, no conversion is needed.	Pound	\$0.46	350	\$161.00
Herbicide, Glyphosate	334	A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acre	\$15.93	10	\$159.30
Four Species Mix, Cool Season, Introduced Perennial (2 grasses, 2 legumes)	2317	Cool season grass and legume mix. Includes material and shipping only.	Acre	\$49.65	10	\$496.50

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Scenario #5 - Establish Trees and Native Grass

**Scenario Description:**

Establishment of trees and native grasses into a field that contains neither suitable forage nor suitable tree cover for a silvopasture system.

**Before Situation:**

A 10 acre old field without suitable forage for livestock nor tree cover. There is very little available forage for livestock, due to undesirable species in the understory. Resource Concerns include Degraded Plant Condition - Undesirable Plant Productivity and Health, Inadequate Structure and Composition; Livestock Production Limitation - Inadequate Feed and Forage, and Inadequate Livestock Shelter.

**After Situation:**

The site will be prepared using chemical and mechanical means, a mix of native warm-season grasses will be established, and then 200 pine trees per acre will be planted, providing forage to livestock and wildlife, and, in time, producing a viable wood products crop. Per the conservation practice standard, livestock grazing will be deferred until the trees reach adequate height to resist damage, or use exclusion measures are established. All Resource Concerns listed above are addressed.

**Feature Measure:** Acres of silvopasture established

**Scenario Unit::** Acre

**Scenario Typical Size:** 10

**Total Scenario Cost:** \$3,381.34

**Scenario Cost/Unit:** \$338.13

**Cost Details:**

Component Name	ID	Description	Unit	Cost	QTY	Total
<b>Equipment Installation</b>						
Tillage, Primary	946	Includes heavy disking (offset) or chisel plow. Includes equipment, power unit and labor costs.	Acre	\$13.72	10	\$137.20
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	\$5.07	10	\$50.70
Fertilizer, ground application, dry bulk	950	Dry bulk fertilizer application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	\$5.68	10	\$56.80
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acre	\$17.65	2	\$35.30
Tractor, agricultural, 60 HP	963	Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included.	Hour	\$20.48	4	\$81.92
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	\$12.04	4	\$48.16
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	\$6.84	4	\$27.36
<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	\$19.35	8	\$154.80
<b>Materials</b>						
Phosphorus, P2O5	73	Price per pound of P2O5 supplied by Superphosphate. Price is not per pound of total product applied, no conversion is needed.	Pound	\$0.54	300	\$162.00
Potassium, K2O	74	K2O supplied by Muriate Of Potash. Price is not per pound of total product applied, no conversion is needed.	Pound	\$0.46	300	\$138.00
Herbicide, Glyphosate	334	A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acre	\$15.93	10	\$159.30
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	2000	\$120.00
Three plus Species Mix, Warm Season, Native Perennial	2327	Native, warm season perennial grass. Includes material and shipping only.	Acre	\$220.98	10	\$2,209.80

Practice: 381 - Silvopasture Establishment

Scenario #6 - Establish Trees and Introduced Grass

**Scenario Description:**

Establishment of trees and introduced grasses and legumes into a field that contains neither suitable forage nor suitable tree cover for a silvopasture system.

**Before Situation:**

A 10 acre old field without suitable forage for livestock nor tree cover. There is very little available forage for livestock, due to undesirable species in the understory. Resource Concerns include Degraded Plant Condition - Undesirable Plant Productivity and Health, Inadequate Structure and Composition; Livestock Production Limitation - Inadequate Feed and Forage, and Inadequate Livestock Shelter.

**After Situation:**

The site will be prepared using chemical and mechanical means, a mix of cool-season grasses and legumes will be established, and then 200 pine trees per acre will be planted, providing forage to livestock and wildlife, and, in time, producing a viable wood products crop. Per the conservation practice standard, livestock grazing will be deferred until the trees reach adequate height to resist damage, or use exclusion measures are established. All Resource Concerns listed above are addressed.

**Feature Measure:** Acres of silvopasture established

**Scenario Unit::** Acre

**Scenario Typical Size:** 10

**Total Scenario Cost:** \$2,109.24

**Scenario Cost/Unit:** \$210.92

**Cost Details:**

Component Name	ID	Description	Unit	Cost	QTY	Total
<b>Equipment Installation</b>						
Tillage, Primary	946	Includes heavy disking (offset) or chisel plow. Includes equipment, power unit and labor costs.	Acre	\$13.72	10	\$137.20
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	\$5.07	10	\$50.70
Fertilizer, ground application, dry bulk	950	Dry bulk fertilizer application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	\$5.68	10	\$56.80
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acre	\$17.65	10	\$176.50
Tractor, agricultural, 60 HP	963	Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included.	Hour	\$20.48	4	\$81.92
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	\$12.04	4	\$48.16
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	\$6.84	4	\$27.36
<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	\$19.35	8	\$154.80
<b>Materials</b>						
Nitrogen (N), Ammonium Nitrate	69	Price per pound of N supplied by Ammonium Nitrate. Price is not per pound of total product applied, no conversion is needed.	Pound	\$0.75	400	\$300.00
Phosphorus, P2O5	73	Price per pound of P2O5 supplied by Superphosphate. Price is not per pound of total product applied, no conversion is needed.	Pound	\$0.54	300	\$162.00
Potassium, K2O	74	K2O supplied by Muriate Of Potash. Price is not per pound of total product applied, no conversion is needed.	Pound	\$0.46	300	\$138.00
Herbicide, Glyphosate	334	A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acre	\$15.93	10	\$159.30
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	2000	\$120.00
Four Species Mix, Cool Season, Introduced Perennial (2 grasses, 2 legumes)	2317	Cool season grass and legume mix. Includes material and shipping only.	Acre	\$49.65	10	\$496.50

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Scenario #7 - Establish Pine Trees

**Scenario Description:**

Establishment of pine trees into an existing pasture that contains adequate native or introduced forage.

**Before Situation:**

10 acre pasture with suitable forage for livestock. There is very little protection from the elements (sun, wind, etc.) available to the livestock. Additionally, there are no long-term wood products being produced. Resource Concerns include Degraded Plant Condition - Undesirable Plant Productivity and Health, Inadequate Structure and Composition, Livestock Production Limitation - Inadequate Livestock Shelter.

**After Situation:**

The site will be prepared using Tree/Shrub Site Preparation (490), if needed, and then 200 pine trees per acre will be planted, providing shade and wind protection to livestock and wildlife, and, in time, producing a viable wood products crop. Per the conservation practice standard, livestock grazing will be deferred until the trees reach adequate height to resist damage, or use exclusion measures are established. All Resource Concerns listed above are addressed.

**Feature Measure:** Per pine tree planted

**Scenario Unit::** Each

**Scenario Typical Size:** 2000

**Total Scenario Cost:** \$946.64

**Scenario Cost/Unit:** \$0.47

**Cost Details:**

Component Name	ID	Description	Unit	Cost	QTY	Total
<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	\$12.04	16	\$192.64
<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	\$19.35	16	\$309.60
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	\$40.55	8	\$324.40
<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	2000	\$120.00

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Scenario #8 - Establish Hardwood trees

**Scenario Description:**

Establishment of hardwood trees into an existing pasture that contains adequate native or introduced forage.

**Before Situation:**

10 acre pasture with suitable forage for livestock. The current situation is no tree cover as the pastures do not have a significant tree component. There is very little protection from the elements (sun, wind, etc.) available to the livestock. Additionally, there are no long-term wood products being produced. Resource concerns include Degraded Plant Condition - Undesirable Plant Productivity and Health, Inadequate Structure and Composition, Livestock Production Limitation - Inadequate Livestock Shelter.

**After Situation:**

The site will be prepared using tree/shrub site preparation (490), if needed. Once completed, the pasture will have 200 hardwood trees per acre established. The shade provided by the trees helps conserve water, improve forages, reduces soil erosion and provides shade and wind protection to livestock and wildlife, and, in time, produce a viable wood products crop. Per the conservation practice standard, livestock grazing will be deferred until the trees reach adequate height to resist damage, or use exclusion measures are established.

**Feature Measure:** Per hardwood tree planted

**Scenario Unit::** Each

**Scenario Typical Size:** 1

**Total Scenario Cost:** \$1.24

**Scenario Cost/Unit:** \$1.24

**Cost Details:**

Component Name	ID	Description	Unit	Cost	QTY	Total
<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	\$12.04	0.03	\$0.36
<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	\$19.35	0.03	\$0.58
<b>Materials</b>						
Tree, hardwood, seedling or transplant, bare root, 6-18"	1509	Bare root hardwood trees 6-18" tall. Includes materials and shipping only.	Each	\$0.30	1	\$0.30