

Practice: 340 - Cover Crop

Scenario: #1 - Cover Crop, single species

Scenario Description:

Typically a cool season small grain such as rye or wheat, or warm season annual grass (sorghum) will be planted as a cover crop following harvest of a row crop or small grain, and will be followed by a row crop or herbaceous cover that will utilize the residue as a mulch. This scenario assumes that seed will be planted with a no-till drill. The cover crop should be allowed to generate as much biomass as possible without delaying planting of the following crop. If the cover crop overwinters it will be terminated using an approved chemical or mechanical method following NRCS cover crop termination guidelines.

Before Situation:

Row crops such as corn and soybeans are harvested in mid-late fall. Fields that are disked immediately following harvest or those used to produce a low residue crop such as soybeans or silage may have less than 30% residue resulting in bare soil being exposed to intense rainfall during the fall, winter, and early spring. Over the winter residue degrades and sediment/nutrient runoff from fields increases. Sheet and rill erosion occurs with visible rills by spring. Runoff from the fields flows into streams, water courses or other water bodies causing degradation to the receiving waters. Soil health (soil organic matter) declines over time as a result of tillage practices and long periods of bare soil.

After Situation:

After harvest of row crop, fields are planted with a small grain cover crop such as rye or wheat. The average field size is 40 acres. The cover crop is seeded with a no-till drill. The cover crop provides soil cover by late fall, throughout the winter, and into the early spring. Runoff and erosion are reduced and no rills are visible on the soil surface in the spring. Wind erosion is reduced by standing residues. If the cover crop overwinters it is terminated using an approved chemical or mechanical method prior to spring planting as late as feasible to maximize plant biomass production. Over time, soil health is improved due to the additional biomass, ground cover, soil infiltration, and plant diversity introduced to the cropping system. Cover crop residues left on the surface may maximize weed control by increasing allelopathic and mulching effect.

Scenario Feature Measure: Area planted

Scenario Unit: Acre

Scenario Typical Size: 40

Scenario Cost: \$3,139.60

Scenario Cost/Unit: \$78.49

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation						
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acre	\$20.28	40	\$811.20
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	\$5.83	40	\$233.20
Materials						
One Species, Cool Season, Annual Grass or Legume	2311	Cool season annual grass or legume. Includes material and shipping only.	Acre	\$36.55	40	\$1,462.00
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	\$15.83	40	\$633.20

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Scenario: #2 - Cover Crop, multiple species

Scenario Description:

Typically a small grain or small grain-legume mix (may also use forage sorghum, radishes, turnips, buckwheat, etc) will be planted as a cover crop following harvest of a row crop or small grain and will be followed by a row crop or herbaceous cover that will utilize the residue as a mulch. This scenario assumes that seed will be planted with a no-till drill. The cover crop should be allowed to generate as much biomass as possible without delaying planting of the following crop. If the cover crop overwinters it will be terminated using an approved chemical or mechanical method following NRCS cover crop termination guidelines.

Before Situation:

Row crops such as corn and soybeans are harvested in mid-late fall. Fields that are disked immediately following harvest or those used to produce a low residue crop such as soybeans or silage may have less than 30% residue resulting in bare soil being exposed to intense rainfall during the fall, winter, and early spring. Over the winter residue degrades and sediment/nutrient runoff from fields increases. Sheet and rill erosion occurs with visible rills by spring. Runoff from the fields flows into streams, water courses or other water bodies causing degradation to the receiving waters. Soil health (soil organic matter) declines over time as a result of tillage practices and long periods of bare soil.

After Situation:

After harvest of row crop, fields are planted with a small grain-legume mix cover crop, typically rye and clover. The average field size is 40 acres. The cover crop is seeded with a no-till drill. The cover crop provides soil cover by late fall, throughout the winter, and into the early spring. Runoff and erosion are reduced and no rills are visible on the soil surface in the spring. Wind erosion is reduced by standing residues. If the cover crop overwinters it is terminated using an approved chemical or mechanical method prior to spring planting as late as feasible to maximize plant biomass production. Over time, soil health is improved due to the additional biomass, ground cover, soil infiltration, and plant diversity introduced to the cropping system. Cover crop residues left on the surface may maximize weed control by increasing allelopathic and mulching effect.

Scenario Feature Measure: Area planted

Scenario Unit: Acre

Scenario Typical Size: 40

Scenario Cost: \$3,913.20

Scenario Cost/Unit: \$97.83

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation						
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acre	\$20.28	40	\$811.20
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	\$5.83	40	\$233.20
Materials						
Five Species Mix, Cool Season, Annual Grasses and Legumes	2320	Cool season, introduced grass and legume mix. Includes material and shipping only.	Acre	\$55.89	40	\$2,235.60
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	\$15.83	40	\$633.20

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Scenario: #3 - Legume, N fixation

Scenario Description:

A legume will be planted as a cover crop following harvest of a row crop or small grain, and will be followed by a crop that will utilize the fixed nitrogen. This scenario assumes that seed will be planted with a no-till drill. Legume seeds must be inoculated with the proper inoculant prior to planting. The cover crop should be allowed to reach early to mid-bloom before it is terminated using an approved chemical or mechanical method in order to maximize nitrogen fixation. The legume will promote biological nitrogen fixation and reduce energy use by reducing the need for commercial nitrogen fertilizer in following crops.

Before Situation:

Crops such as corn, wheat and grain sorghum are included in a rotation where commercial fertilizer is the primary source of nitrogen. The lack of crop diversity has contributed to a decline in soil health requiring increasing inputs to sustain yields.

After Situation:

Legume cover crops, typically a clover or vetch species, are added to the crop rotation to fix nitrogen and improve crop diversity. The average field size is 40 acres. The cover crop is seeded with a no-till drill. No fertilizer is applied with the cover crop. The cover crop is terminated using an approved chemical or mechanical method prior to planting the subsequent crop but as late as feasible to maximize plant biomass production and nitrogen fixation. Over time, soil health is improved due to the additional biomass, ground cover, and plant diversity introduced into the cropping system. By utilizing the nitrogen that is fixed by the legume cover crop, the amount of energy used is reduced by reducing the amount of commercial fertilizer that will be needed for the following crop.

Scenario Feature Measure: Area planted

Scenario Unit: Acre

Scenario Typical Size: 40

Scenario Cost: \$3,139.60

Scenario Cost/Unit: \$78.49

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation						
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acre	\$20.28	40	\$811.20
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	\$5.83	40	\$233.20
Materials						
One Species, Cool Season, Annual Grass or Legume	2311	Cool season annual grass or legume. Includes material and shipping only.	Acre	\$36.55	40	\$1,462.00
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	\$15.83	40	\$633.20

Practice: 340 - Cover Crop

Scenario: #4 - Organic Cover Crop

Scenario Description:

Typically a small grain or small grain-legume mix (may also use forage sorghum, radishes, turnips, buckwheat, etc) will be planted as a cover crop following harvest of an organically grown crop, and will be followed by an organically grown crop that will utilize the residue as a mulch. This scenario assumes that seed will be planted with a no-till drill. The cover crop should be allowed to generate as much biomass as possible without delaying planting of the following crop. If the cover crop overwinters it will be terminated using a mechanical kill method (mowing, rolling, undercutting, etc.) prior to planting the subsequent crop. This scenario **REQUIRES** use of Certified Organic Seed. Nonorganically produced, untreated seeds may be used when an equivalent organically produced variety is not available.

Before Situation:

Organically grown crops such as various vegetable and fruit crops (along with organically produced row crops) are grown and harvested in mid-late fall. Fields are disked immediately following harvest. Residue amounts after harvest average 30% or less, resulting in bare soil being exposed to wind erosion and/or intense rainfall during the fall, winter, and early spring. Over the winter residue degrades and sediment/nutrient runoff from fields increases. Sheet and rill erosion occurs with visible rills by spring. Runoff from the fields flows into streams, water courses or other water bodies causing degradation to the receiving waters. Soil health (soil organic matter) declines over time as a result of tillage practices, low residue crops, and long periods of bare soil.

After Situation:

After harvest of organic crop, fields are planted with a small grain-legume mix cover crop, typically rye and clover. The average field size is 40 acres. The cover crop is seeded with a no-till drill. No additional fertilizer is applied with the cover crop. The cover crop provides soil cover by late fall, throughout the winter, and into the early spring. Runoff and erosion are reduced and no rills are visible on the soil surface in the spring. If the cover crop overwinters it is terminated using a mechanical kill method (mowing, rolling, undercutting, etc.), prior to spring planting as late as feasible to maximize plant biomass production. Over time, soil health is improved due to the additional biomass, ground cover, and plant diversity introduced to the cropping system. Wind erosion is reduced by standing residues. Cover crop residues left on the surface may maximize weed control by increasing allelopathic and mulching effect.

Scenario Feature Measure: Area planted

Scenario Unit: Acre

Scenario Typical Size: 40

Scenario Cost: \$4,687.60

Scenario Cost/Unit: \$117.19

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation						
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acre	\$20.28	40	\$811.20
Mechanical weed control, Vegetation termination	957	Mechanical operations, Includes: Roller/crimper, mower, shredder, etc. Includes equipment, power unit and labor costs.	Acre	\$19.51	40	\$780.40
Materials						
Certified Organic, Three plus Species Mix, Cool Season, Annual Grasses and Legumes	2343	Certified organic cool season annual grass and legume mix. Includes material and shipping only.	Acre	\$77.40	40	\$3,096.00