

**Scenario Worksheet**

**Practice and Scenario Description:**

<b>Information Type</b>	<b>Data</b>
Region	Appalachian
State	North Carolina
Discipline Group	Agronomy
Practice Code/Name	340 - Cover Crop
Scenario ID	2
Scenario Name	Small Grain-Brassica Cover Crop
Scenario Description	Typically a small grain or small grain-brassica mix (may also use forage sorghum, radishes, turnips, buckwheat, etc) will be planted as a cover crop immediately after harvest of a row crop, and will be followed by a row 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. The cover crop will be terminated before head emergence using an approved herbicide a minimum of 3 weeks prior to planting the subsequent crop. This scenario is needed for widespread adoption of cover crops in the Appalachian region, especially in EQIP-MRBI areas.
Before Practice Situation	Row crops such as corn, soybeans, or cotton are grown and harvested in mid-late fall. Fields are disked immediately following harvest, with rows in some fields being hipped for drainage. 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. Excess nutrients such as nitrogen are lost due to winter precipitation. Soil health (soil organic matter) declines over time as a result of tillage practices, low residue crops, and long periods of bare soil. Within 30 days after harvest of row crop, fields are planted with a small grain-brassica mix cover crop, typically rye and oilseed radish. 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. Wind erosion is reduced by standing residues. The cover crop is terminated with an approved herbicide prior to spring planting as late as feasible to maximize benefits. The cover crop will be terminated at or before boot stage to allow producer compliance with (crop insurance) RMA guidance. 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.
After Practice Situation	
Scenario Feature Measure	Area planted
Scenario Unit	Acre
Scenario Typical Size	40

**Cost Summary:**

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$1,375.20	\$34.38
Equipment/Installation	\$754.80	\$18.87
Labor	\$0.00	\$0.00
Mobilization	\$0.00	\$0.00
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$2,130.00	\$53.25

**Cost Details:**

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	334	Herbicide, Glyphosate	A broad-spectrum, non-selective systemic herbicide. Product is typically used in these practices 340, 645, 314, 666, and 512. Refer to WIN-PST for product names and active ingredients. Materials only.	Acre	\$11.04	40	\$441.60
Materials	168	Oilseed Radish (Raphanus sativus var. oleiformis)	Brassicas / Non-Legume Broadleaf, Cover Crops and shipping.	Pound	\$3.56	60	\$213.60
Materials	198	Rye, Cereal (Secale cereale L.)	Small Grains, Cover Crops. Shipping not included.	Pound	\$0.30	2400	\$720.00
Equipment/Installation	948	Chemical, ground application	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	\$4.41	40	\$176.40
Equipment/Installation	960	Seeding Operation, No Till/Grass Drill	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acre	\$14.46	40	\$578.40

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**Practice and Scenario Description:**

<b>Information Type</b>	<b>Data</b>
Region	Appalachian
State	North Carolina
Discipline Group	Agronomy
Practice Code/Name	340 - Cover Crop
Scenario ID	3
Scenario Name	Legume Nitrogen fixation cover crop
<b>Scenario Description</b>	Typically a legume cover crop will be planted as a cover crop immediately after harvest of a row crop, and will be followed by a row 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. The cover crop will be terminated using an approved herbicide a minimum of 3 weeks prior to planting the subsequent crop.
<b>Before Practice Situation</b>	Row crops such as corn, soybeans, or cotton are grown and harvested in mid-late fall. Fields are disked immediately following harvest, with rows in some fields being hipped for drainage. 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.
<b>After Practice Situation</b>	Within 30 days after harvest of row crop, fields are planted with a legume cover crop, typically crimson clover or vetch. 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. Nitrogen building benefits require later termination to allow nitrogen fixation to occur, but the cover crop will be terminated at or before boot stage to allow producer compliance with (crop insurance) RMA guidance and at least 3 weeks prior to planting. The cover crop will be terminated using an approved herbicide a minimum of 3 weeks prior to planting the subsequent crop. 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 will improve weed control.
Scenario Feature Measure	Area planted
Scenario Unit	Acre
Scenario Typical Size	40

**Cost Summary:**

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$2,511.60	\$62.79
Equipment/Installation	\$754.80	\$18.87
Labor	\$0.00	\$0.00
Mobilization	\$0.00	\$0.00
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
<b>Total</b>	<b>\$3,266.40</b>	<b>\$81.66</b>

**Cost Details:**

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	185	Crimson Clover (Trifolium incarnatum)	Legumes, Cover Crops and shipping.	Pound	\$2.25	600	\$1,350.00
Materials	198	Rye, Cereal (Secale cereale L.)	Small Grains, Cover Crops. Shipping not included.	Pound	\$0.30	2400	\$720.00
Materials	334	Herbicide, Glyphosate	A broad-spectrum, non-selective systemic herbicide. Product is typically used in these practices 340, 645, 314, 666, and 512. Refer to WIN-PST for product names and active ingredients. Materials only.	Acre	\$11.04	40	\$441.60
Equipment/Installation	948	Chemical, ground application	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	\$4.41	40	\$176.40
Equipment/Installation	960	Seeding Operation, No Till/Grass Drill	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acre	\$14.46	40	\$578.40

**Scenario Worksheet**

**Practice and Scenario Description:**

Information Type	Data
Region	Appalachian
State	North Carolina
Discipline Group	Agronomy
Practice Code/Name	340 - Cover Crop
Scenario ID	4
Scenario Name	Soil health building cover crop
Scenario Description	A mixture of small grain, legumes, and brassicas will be planted as a cover crop immediately after harvest of a row crop, and will be followed by a row crop that will utilize fixed nitrogen and cover crop biomass as a mulch. 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 herbicide, 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 Practice Situation	Row crops such as corn, soybeans, or cotton are grown and harvested in mid-late fall. Fields are disked immediately following harvest, with some fields being hipped for drainage. Residue amounts after harvest average 30% or less, 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. Only commercial nitrogen fertilizer is used for following crops.
After Practice Situation	Within 30 days after harvest fields are planted with a legume cover crop, typically a clover or vetch species. 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 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. The cover crop is terminated with an approved herbicide prior to spring planting as late as feasible to maximize plant biomass production. Terminate at or before small grain boot stage if crop insurance is a concern. Over time, soil health is improved due to the additional biomass, ground cover, 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. By utilizing the nitrogen that is fixed by the legume cover crop, the amount of energy 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

**Cost Summary:**

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$2,805.20	\$70.13
Equipment/Installation	\$754.80	\$18.87
Labor	\$0.00	\$0.00
Mobilization	\$0.00	\$0.00
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$3,560.00	\$89.00

**Cost Details:**

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	183	Austrian Winter Pea, Caley Pea (Lathyrus hirsutus)	Legumes, Cover Crops. Shipping not included.	Pound	\$1.01	1000	\$1,010.00
Materials	185	Crimson Clover (Trifolium incarnatum)	Legumes, Cover Crops and shipping.	Pound	\$2.25	320	\$720.00
Materials	334	Herbicide, Glyphosate	A broad-spectrum, non-selective systemic herbicide. Product is typically used in these practices 340, 645, 314, 666, and 512. Refer to WIN-PST for product names and active ingredients. Materials only.	Acre	\$11.04	40	\$441.60
Materials	168	Oilseed Radish (Raphanus sativus var. oleiformis)	Brassicas / Non-Legume Broadleaf, Cover Crops and shipping.	Pound	\$3.56	60	\$213.60
Materials	198	Rye, Cereal (Secale cereale L.)	Small Grains, Cover Crops. Shipping not included.	Pound	\$0.30	1400	\$420.00
Equipment/Installation	948	Chemical, ground application	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	\$4.41	40	\$176.40
Equipment/Installation	960	Seeding Operation, No Till/Grass Drill	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acre	\$14.46	40	\$578.40

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## Practice and Scenario Description:

<b>Information Type</b>	<b>Data</b>
Region	Appalachian
State	North Carolina
Discipline Group	Agronomy
Practice Code/Name	340 - Cover Crop
Scenario ID	5
Scenario Name	Organic weed suppression cover crop
Scenario Description	Typically a small grain, brassica mix (may also use forage sorghum, radishes, turnips, buckwheat, etc) will be planted as a cover crop immediately after 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 conventionally. The cover crop should be allowed to generate as much biomass as possible, without delaying planting of the following crop. The cover crop will be terminated using a mechanical kill method (mowing, rolling, undercutting, etc.), a minimum of 3 weeks prior to planting the subsequent crop. This scenario REQUIRES use of Certified Organic Seed.
Before Practice 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. Runoff and erosion are reduced and no rills are visible on the soil surface in the spring. The cover crop is terminated with 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 maximize weed control by increasing allelopathic and mulching effect.
After Practice Situation	Within 30 days after harvest of organic crop, fields are planted with a small grain-brassica mix cover crop, typically rye and clover. The average field size is 10 acres. The cover crop is seeded conventionally with minimum soil disturbance. 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. The cover crop is terminated with 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 maximize weed control by increasing allelopathic and mulching effect.
Scenario Feature Measure	Area planted
Scenario Unit	Acre
Scenario Typical Size	10

## Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$1,096.45	\$109.65
Equipment/Installation	\$503.40	\$50.34
Labor	\$0.00	\$0.00
Mobilization	\$0.00	\$0.00
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$1,599.85	\$159.99

## Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	192	Certified Organic, Crimson Clover (Trifolium incarnatum)	Legumes, Cover Crops and shipping.	Pound	\$5.35	130	\$695.50
Materials	175	Certified Organic, Radish, Forage (Raphanus sativus var. niger)	Brassicas / Non-Legume Broadleaf, Cover Crops and shipping.	Pound	\$3.53	15	\$52.95
Materials	203	Certified Organic, Rye, Cereal (Secale cereale L.)	Small Grains, Cover Crops. Shipping not included.	Pound	\$0.58	600	\$348.00
Equipment/Installation	957	Mechanical weed control, Vegetation termination	Mechanical operations, Includes: Roller/crimper, mower, shredder, etc. Includes equipment, power unit and labor costs.	Acre	\$20.05	10	\$200.50
Equipment/Installation	959	Seeding Operation, Broadcast, Ground	Broadcast seed via ground operation. May require post tillage operation to incorporate seed. Includes equipment, power unit and labor costs.	Acre	\$20.36	10	\$203.60
Equipment/Installation	945	Tillage, Light	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acre	\$9.93	10	\$99.30

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**Practice and Scenario Description:**

Information Type	Data
Region	Appalachian
State	North Carolina
Discipline Group	Agronomy
Practice Code/Name	340 - Cover Crop
Scenario ID	7
Scenario Name	Orchard/Vineyard Annual Cover Crop
Scenario Description	Orchard or Vineyard annual cover crop is planted which is destroyed by field operations occurring spring through fall. Cover crops are used to reduce erosion from wind and water, increase soil organic matter content, capture and recycle or redistribute nutrients in the soil profile, promote biological nitrogen fixation and reduce energy use, increase biodiversity, suppress weeds, manage soil moisture, and minimize and reduce soil compaction. Planted annually in orchards and vineyards. 60% cover crop per acre.
Before Practice Situation	Orchards or vineyards with bare soil between vine/tree rows. Bare soil is exposed to wind erosion and/or intense rainfall during the fall, winter, and early spring. Over the winter sediment/nutrient runoff from orchards/vineyards 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 long periods of bare soil.
After Practice Situation	Orchard or Vineyard areas between vine/tree rows are planted with an annual cover crop mix in the early fall. The cover crops are killed by typical farming operations before the next fall. Cover crop residues are left on the surface. Root systems are left intact in non-tilled systems. Soil quality benefits are accrued by reducing soil erosion, re-establishing soil porosity, and adding organic matter to the soil.
Scenario Feature Measure	
Scenario Unit	Acre
Scenario Typical Size	10

**Cost Summary:**

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$582.00	\$58.20
Equipment/Installation	\$144.60	\$14.46
Labor	\$0.00	\$0.00
Mobilization	\$0.00	\$0.00
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$726.60	\$72.66

**Cost Details:**

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	197	Oats (Avena sativa)	Small Grains, Cover Crops. Shipping not included.	Pound	\$0.46	700	\$322.00
Materials	112	Red Clover (Trifolium pratense)	Introduced Legumes and shipping.	Pound	\$2.60	100	\$260.00
Equipment/Installation	960	Seeding Operation, No Till/Grass Drill	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acre	\$14.46	10	\$144.60