



## CONSERVATION ENHANCEMENT ACTIVITY

**E340106Z4- Colorado**

## CONSERVATION STEWARDSHIP PROGRAM

### Use of soil health assessment to assist with development of cover crop mix to improve soil health and increase soil organic matter

#### Conservation Practice 340: Cover Crop

**APPLICABLE LAND USE: Crop (Annual & Mixed)**

**RESOURCE CONCERN ADDRESSED: Soil Quality Degradation**

**ENHANCEMENT LIFE SPAN: 1 Year**

#### Enhancement Description

Use of a soil health assessment to evaluate impact of current conservation crop rotation in addressing soil organic matter depletion (primary assessment made in Year 1). Soil health assessment results and client's objectives will be utilized to determine a multi-species cover crop mix that will be added to the crop rotation. During Year 3 a follow up assessment will be completed to allow time for the addition of a cover crop to increase soil organic matter.

#### Criteria

- Plant species, seedbed preparation, seeding rates, seeding dates, seeding depths, fertility requirements, and planting methods will be consistent with applicable local criteria and soil/site conditions ([Refer to Plant Materials Technical Note 59](#)).
- Determine the method and timing of termination to meet the grower's objective and the current NRCS Cover Crop Termination Guidelines.
- Select species that are compatible with other components of the cropping system.



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- Ensure herbicides used with crops are compatible with cover crop selections.
- Cover crops may be established between successive production crops, or companion-planted or relay-planted into production crops. Select species and planting dates that will not compete with the production crop yield or harvest.
- Do not burn cover crop residue. Do not harvest the cover crop.
- If the specific rhizobium bacteria for the selected legume are not present in the soil, treat the seed with the appropriate inoculum at the time of planting.
- Cover crop must provide soil coverage during all non-crop production periods to the maximum extent possible considering the cropping system, climate, and soils in the annual crop rotation. (Refer to [Cover Crop \(340\) Implementation Requirements](#) for information on species, suggested seeding and freeze free periods.)
- Soil health assessment will be used to evaluate impact of current conservation crop rotation in addressing soil organic matter depletion, as well as additional soil health objectives of the individual grower (primary assessment made in Year 1). During Year 3, a follow up assessment will be completed to allow time for the addition of a cover crop and other management activities to have an impact on soil health. No specific soil health assessment type is required or recommended by NRCS, but at a minimum the assessment must account for soil organic matter. Refer to the [Colorado NRCS Soil Cropland Resource Concern Assessment v. 1.7](#) for an example of a soil health scorecard and for more information on Soil Health Management Systems on Cropland. The specific assessment selected should provide the grower information based on their soil health objectives.
- Minimum 4 species cover crop mix will be selected on the basis of producing higher volumes of organic material and root mass to maintain or increase soil organic matter. The cover crop mix must be compatible with the local soil, climate, and cropping systems.
- Planned crop rotation including cover crops, biomass produced, and associated management activities must achieve a management soil conditioning index (SCI) of zero or higher and results in a positive trend in the Organic Matter (OM) sub factor value over the life of the rotation.



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### **Additional criteria when livestock are included in the system:**

*Cover Crops may only be grazed in a manner that retains or enhances the purpose of increasing soil organic matter.*

- Grazing plan must be developed to document livestock management. Plan must include at a minimum a forage estimate and livestock inventory for all fields implementing this enhancement that will be grazed. For soil health benefits, utilization by livestock must be less than 50% of available cover crop forage.
- Before cover crops are grazed, they must have produced enough biomass to allow for grazing while maintaining soil health benefits. Cover crops planted in late fall will not typically be well enough established, however if stands are adequate cover crops may be grazed in the spring prior to termination.
- Different cover crop species have varying tolerances to grazing; this should be taken into consideration when developing cover crop seeding specifications.
- Grazing shall not occur during wet soil conditions.
- Some pesticides have restrictions on grazing following application (up to 18 months). Refer to pesticide labels.



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### Documentation and Implementation Requirements

Participant will:

- Prior to implementation, provide NRCS with the current and planned crop rotation and field operation(s) used for each crop.

### **Current Management Rotation**

Field	Planned Crops/Cover Crop (in sequence)	Planting Date	Harvest/Termination Date

### **Current Field Operations for each crop**

Field	Crop	Field Operation	Timing of Field Operation (month/year)

### **Planned Management Rotation Including Cover Crop**

Field	Planned Crops/Cover Crop (in sequence)	Planting Date	Harvest/Termination Date



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## Cover Crop Mix (*minimum of 4 species*) and Seeding Rate

Species	Variety	Seed Size	Typical Seeding Depth	Seeding Rate (PLS lbs/acre)	Percent of Mix (%)

### Establishment and Management Considerations:

Task	Provide information and details
Seedbed Preparation	
Seeding Date	
Seeding Depth	
Seeding Method	
Fertilizer, as needed	
Weed Management, as needed	
Grazing Management, as needed	
Termination Date (window)	
Termination Method	

### Soil Health Assessment:

Producer Objective	Year 1 Assessment Value	Year 3 Assessment Value
Soil Organic Matter (required)		

- Prior to implementation, read and follow current [NRCS Cover Crop Termination Guidelines](#).
- Prior to implementation, if livestock are included in the system consider cover crop species tolerant to grazing.



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- Prior to implementation, if livestock are included in the system develop a grazing plan which must document livestock management. Plan must include at a minimum a forage estimate and livestock inventory for all fields implementing this enhancement that will be grazed. For soil health benefits, utilization by livestock must be less than 50% of available cover crop forage.
- During implementation, cover crops must not be burned or harvested.
- During implementation, if livestock are included in the system maintain records of forage utilization.
- During implementation, notify NRCS of any planned changes in crops, crop rotation, or unharvested areas to verify the planned system meets the enhancement criteria.
- After implementation, if changes to the cover crop and crop rotation were made, complete the tables above to document the applied Cover Crop for the contract period and provide to NRCS.
- After implementation, if livestock are included in the system provide grazing plan and forage utilization records to NRCS for review to verify additional criteria of the enhancement were met.
- After implementation, provide soil health assessment results and any documentation of changes made to NRCS for review to verify implementation of the enhancement.

**NRCS will:**

- As needed, provide technical assistance in selecting cover crop mixes for the crop rotations or substitute species that would meet the criteria of the enhancement.
- As needed, provide additional assistance to the participant as requested.
- Prior to implementation, provide and explain the current [NRCS Cover Crop Termination Guidelines](#).
- Prior to implementation, use information provided from the participant to calculate the management Soil Conditioning Index (SCI) and Organic Matter (OM) sub factor value over the life of the rotation using current NRCS Soil Conditioning Index (SCI) procedure. Cover crop must increase SCI and OM sub factor from the current/benchmark condition and SCI value must be 0 or greater and have a positive trend in OM sub factor over the life of the rotation.

**Benchmark Management SCI = \_\_\_\_\_, Benchmark Management OM sub factor = \_\_\_\_\_**



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Planned Management SCI = \_\_\_\_\_,

Planned Management OM sub factor = \_\_\_\_\_

- Prior to implementation, if livestock are included in the system verify a grazing plan has been developed.
- During implementation, evaluate planned adjustments in cover crop selected, timing in crop rotation, management, or field operations to verify the new system meets the enhancement criteria.
- After implementation, evaluate the applied crop rotation or management using information provided from the participant, if any variation to planned evaluation, then calculate SCI values to document that the applied rotation met the enhancement criteria.

Applied Management SCI = \_\_\_\_\_, Applied Management OM sub factor = \_\_\_\_\_

- After implementation, if livestock are included in the system review grazing plan and forage utilization records to verify additional criteria of the enhancement were met.
- After implementation, review soil health assessment results and any documentation of changes made to verify implementation of the enhancement.

### Colorado Documentation Requirements

- Cover Crop, 340, Implementation Requirements document must be completed per the Plans and Specifications for the planned purpose.
- The current NRCS wind and water erosion prediction technologies must be used to document SCI calculations.
- Soil health assessment results for Year 1 and Year 3 must be provided as documentation.

### NRCS Documentation Review:

I have reviewed all required participant documentation and have determined the participant has implemented the enhancement and met all criteria and requirements.

Participant Name \_\_\_\_\_ Contract Number \_\_\_\_\_

Total Amount Applied \_\_\_\_\_ Fiscal Year Completed \_\_\_\_\_

\_\_\_\_\_  
NRCS Technical Adequacy Signature                      Date

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