



CONSERVATION ENHANCEMENT ACTIVITY

E340D

CONSERVATION STEWARDSHIP PROGRAM

Intensive orchard/vineyard floor cover cropping to increase soil health

Conservation Practice 340: Cover Crop

APPLICABLE LAND USE: Crop (Perennial)

RESOURCE CONCERN: Soil

ENHANCEMENT LIFE SPAN: 1 Year

Enhancement Description

Implement orchard or vineyard floor cover crops. Cover crop shall not be harvested, grazed, or burned. Must achieve a soil conditioning index of zero or higher and produce a positive trend in the Organic Matter subfactor over the life of the rotation.

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 STATE SPECIFIC LISTS**).
- 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.
- 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

E340D - Intensive orchard/vineyard floor cover cropping to increase soil health	July 2019	Page 1
---	-----------	----------



CONSERVATION STEWARDSHIP PROGRAM

achieve the purpose of the cover crop without negatively impacting 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. **(STATES SHALL PREPARE GUIDANCE FOR THEIR LOCAL CLIMATES AND CROPPING SYSTEMS.)** *Minimum 2 species cover crop mix* will be selected based on producing higher volumes of organic material and root mass to maintain or increase soil organic matter.
- Planned crop rotation including cover crop biomass production and associated management activities must achieve a management soil conditioning index (SCI) of zero or higher and result in a positive trend in the Organic Matter (OM) sub factor value over the life of the rotation.
- Cover crops are replanted annually.
- Grow cover crops on a minimum of 60% of the field area year annually.



CONSERVATION STEWARDSHIP PROGRAM

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



CONSERVATION STEWARDSHIP PROGRAM

Cover Crop Mix and Seeding Rate – *minimum 2 species cover crop mix*

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	
Termination Date (window)	
Termination Method	

- Prior to implementation, read and follow current [NRCS Cover Crop Termination Guidelines](#).
- Prior to implementation, determine develop map showing the area(s) to be planted to cover crop. Cover crop must cover at least 60% of the field area each year.
- During implementation, cover crops must not be burned or harvested.
- 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.



CONSERVATION STEWARDSHIP PROGRAM

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) value and Organic Matter (OM) subfactor value over the life of the rotation. Cover crop must increase SCI and OM sub factor from the current/benchmark condition and SCI value must be zero or greater and have a positive trending OM subfactor over the life of the rotation.

Benchmark Management SCI = _____ Benchmark Management OM sub factor = _____

Planned Management SCI = _____ Planned Management OM sub factor = _____

- Prior to implementation, verify the cover crop mix includes at least 2 species of cover crop.
- Prior to implementation, verify the development of a map showing the area(s) to be planted to cover crop.
- Prior to implementation, verify cover crop will cover at least 60% of the field area each year.
- 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 = _____

E340D - Intensive orchard/vineyard floor cover cropping to increase soil health	July 2019	Page 5
---	-----------	----------



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.

**CONSERVATION
STEWARDSHIP
PROGRAM**

Participant Name _____ Contract Number _____

Total Amount Applied _____ Fiscal Year Completed _____

NRCS Technical Adequacy Signature Date



E340D - Intensive orchard/vineyard floor cover cropping to increase soil health	July 2019	Page 6
---	-----------	----------

ALABAMA – E340D Supplement- Intensive orchard/vineyard floor cover cropping to increase soil health

Requirements:

- Applicable where additional cover is needed and cover crops have not been planted in the past. Cover crops must not be harvested, burned, or grazed. Warm-season covers may be necessary following cool-season covers with legumes (which decompose rapidly).
- Calculate before and after soil loss for the field. There must be a reduction in soil loss and must not exceed the soil loss tolerance level (T). SCI must be zero or higher.
- increase seeding rates by 30% if aerially applied.
- Cover crops should be planted as early as possible and terminated as late as practical for maximum biomass production.
- Minimum requirement is a **two species mix** that includes a small grain, legume, or brassica. Radish provides excellent early fall growth if planted timely. Ryegrass may not be used. Austrian winter pea does not germinate well unless drilled. Cover crop should be at least 24 inches tall prior to termination.
- Insect and rodent pest management must be considered and contingency plans should be developed.
- Nutrient management should be evaluated. Additional nitrogen may be fixed or released depending on the C:N ratio of the selected cover mix.
- Termination of the cover crop may be problematic due to the height of the cover and proximity of the orchard crop. This enhancement should not be used unless proper equipment is available or the cover crop is allowed to mature and naturally senesce.
- Cover crops must be grown on at least 60% of the field area annually.
- Complete the tables on the national jobsheet for documentation. In addition, receipts, copy of seed tags, weight tickets, etc. are needed. Photographs should be taken immediately prior to termination.
- Follow planting guidelines according to NRCS Conservation Practice Standard 340-Cover Crop or plant according to the table below. Other mixes may be approved by the state agronomist.

(Increase rates by 30% if broadcast)	Minimum lbs./ac
Examples	
2 species-small grain, crimson clover	50 lbs. + 10 lbs.
2 species-small grain, crimson clover, (when greater legume ratio is desired)	25 lbs. + 15 lbs.
2 species- crimson clover, radish	17 lbs. + 4 lbs.
3 species-small grain, crimson clover, radish	40 lbs. + 10 lbs. + 3 lbs.

*small grains- rye, wheat, oats, barley, and triticale
 Legumes-crimson clover, vetch, Austrian winter pea
 Brassicas-daikon radish, turnip, rape

TABLE 1. PLANTS COMMONLY USED FOR COVER CROPS IN ALABAMA

Forage Crop	Seeding Rate (lb/A)	Seeding Depth (in.)	Planting Date			Remarks
			North	Central	South	
<u>Warm Season Annual Grasses</u>						
Millet, Browntop, Proso, & Foxtail	Drill 20 B-Cast 30	½ - ¾	May 1–Aug 1	Apr 1-Aug 15	Apr 1-Aug 15	Well drained, productive soils.
Millet, Pearl	Drill 15 B-Cast 30	½ - 1½	Apr 20-Jul 1	Apr 15-Jul 1	Apr 1-Jul 15	Adapted to clay and loam soils with good summer moisture. Avoid calcareous Black Belt soils.
Sorghum-Sudan Hybrids	Drill 25 B-Cast 35	½ - 1	May 1–Aug 1	Apr 15-Aug 1	Apr 1–Aug 15	Well drained, productive soils.
Sorghum, Forage	Rows 5 B-Cast 20	1	Apr 20-May 15	Apr 20-May 15	Apr 20-Jul 1	Well drained, productive soils.
Sudangrass	Drill 25 B-Cast 35	½ - 1	May 1-Aug 1	May 1-Aug 1	May 1-Aug 1	Light sandy to heavy clay soils.
<u>Cool Season Annual Grasses</u>						
Small Grains (Oats, Rye, Wheat, Barley, Triticale)	90-120	1 – 2	Sep 1–Nov 1	Sep 15–Nov 1	Sep 15-Nov 15	Rye is better adapted to well drained, sandy to loam soil and is more tolerant of soil acidity than wheat or oats; Oats are cold sensitive & subject of winter kill, especially in the northern half of Alabama; Wheat more tolerant of heavy wet soils.

Table 1. (cont.) Plants Commonly Used for Cover Crops in Alabama

Forage Crop	Seeding Rate (lb/A)	Seeding Depth (in.)	Planting Date			Remarks
			North	Central	South	
<u>Warm Season Annual Legumes</u>						
Lespedeza, Annual	30	¼ - ½	Feb 15-Apr 1	Feb 15-Apr 1	-	Needs good drainage; tolerant of drought; low fertility and soil acidity. Avoid lime soils of Black Belt.
<u>Cool Season Annual Legumes</u>						
Austrian Winter Peas	40	1-2	Sept 1-Oct 15	Sept 1-Oct	Sept 1-Oct 15	Best on well drained soils.
Caley Peas	50	½ - 1	Sep 1-Oct 15	Sep 1-Oct 15	Sep 1-Oct 15	Adapted to alkaline and moderately acid Black Belt soil. Seeds are toxic.
Clover, Arrowleaf <i>(see note "F" if seed is coated)</i>	6	0 - ½	Aug 25-Oct 1	Sep 1-Oct 15	Sep 15-Nov 1	Overseed 5 weeks later. Best on well drained soils. Avoid Black Belt soils.
Clover, Ball <i>(see note "F" if seed is coated)</i>	4	0 - ¼	Sep 1-Oct 31	Sep 1-Oct 31	Sep 1-Oct 31	Adapted to most soils. Reseeds well and tolerates wet soils and flooding.
Clover, Crimson <i>(see note "F" if seed is coated)</i>	25	0 - ½	Aug 25-Oct 1	Sep 1-Oct 15	Sep 15-Nov 1	Avoid high pH soils. Best on well drained soils. Overseed 5 weeks later.
Clover, Red <i>(see note "F" if seed is coated)</i>	Drill 8 B-Cast 15	¼ - ½	Sep 15-Nov 15 Or Feb 1-Apr 1	Sep 15-Nov 15 Or Feb 1-Apr 1	Sep 15-Nov 15 -	Fertile, well drained soils.

Table 1. (cont.) Plants Commonly Used for Cover Crops in Alabama

Forage Crop	Seeding Rate (lb/A)	Seeding Depth (in.)	Planting Date			Remarks
			North	Central	South	
Clover, Subterranean <i>(see note "F" if seed is coated)</i>	10	¼ - ½	Aug 25-Oct 1	Sep1-Oct 31	Sep1-Oct 31	Best on well drained, productive soils.
Vetch, Common <i>(see note "F" if seed is coated)</i>	35	1-2	--	Sep 1-Oct 15	Sep 15-Nov 1	Best on well drained soils. Certain varieties can freeze if planted late, especially in north Alabama. Nova II is the least cold tolerant.
Vetch, Hairy <i>(see note "F" if seed is coated)</i>	25	1-2	Sep 1 –Oct 15	Sep 1-Oct 15	Sep 15-Nov 1	Best on well drained soils.
Brassicas Daikon radish (Tillage radish)	5	0.25 – 0.5	Aug 30	Sept 15	Sept 20	Adapted to most soils.
Rape/Canola	5	0.25 – 0.75	Aug 15	Aug 30	Sept 15	Adapted to most soils.
Turnip/Purple top	5	0.25 – 0.75	Aug 20	Aug 30	Sept 15	Adapted to most soils.

NOTES:

- A. Drill = Drilled and B-Cast = Broadcast.
- B. Where legumes are seeded with grasses, use the seeding dates for the grasses.
- C. Where two or more grasses are used in a mixture, reduce the seeding rate of each by about one-third. Reduce the

seeding rates of legumes by about 50% when used in the mixtures of three.

- D. Seeding rates should be increased at least 30% when aerially seeded.
- E. Seeding rates for a cost-share program shall be the rate specified by the program.
- F. Consider the weight of the coated seed in your seeding recommendation to adjust for the proper PLS rate.

GEOGRAPHICAL AREAS FOR SPECIES ADAPTATION AND SEEDING DATES

