



Cover Crop

Grasses, legumes, and forbs planted for seasonal vegetative cover.

Lifespan of Practice: 1 year, minimum 90 days

Tennessee Implementation Requirements No. TN-IR-340



REQUIRED PRESCRIPTION (e.g. single species up to five (5) species)

Select species that are compatible with other components of the cropping system. Ensure herbicides used with crops are compatible with cover crop selections.

Do not use fire to remove cover crop residue.

Cover crops shall not be managed as a harvested crop.

Treat the seed with the appropriate inoculum at the time of planting.

All cover crops will be a minimum of 10" tall or have a biomass of 3,000 lb. (300 lb. /ac. In.) at termination.

Criteria to Maintain or Increase Soil Health and Organic Matter Content (must meet above plus this criteria):

A minimum of 5 species will be planted with a total seeding rate of 100% or higher of the full rate. The full seeding rate in the mix should include (1) 10% or more of small grains and legume species components; (2) 5 to 15% brassica or crucifers (for cotton, no brassicas other than optional radish); and, (3) no more than 1.5 lbs. of brassicas are recommended in any mix. If planting after October 1, do not plant radish in the mix. Radish is the only brassica recommended preceding cotton.

Cover crops and the following cash crop will be planted no-till. EXCEPTION: Cash crops that have not been traditionally planted no-till (ONLY tobacco, green beans and vegetable crops) may be strip tilled at planting when meeting a STIR value of ≤ 20 for each crop in the rotation. Terminating cover crops when legumes are in the mid-bloom stage will result in the greatest soil health benefits.

Target a C:N ratio prior to a high residue crop of 30:1 or less.

Target a C:N ratio prior to a low residue crop of 31:1 or higher.

Designed By: _____ **ESJAA Level:** _____ **Date:** _____

Grazing Cover Crops: The combined canopy and surface residue will be 90% or greater at all times. Allow the cover crop to reach bloom stage and a minimum height of 10” before grazing and graze no lower than 5 inches. Earlier grazing must be approved by the local District Conservationist. An area must be provided to remove livestock from the cover crop when the cover crop is vulnerable to overgrazing or excessive trampling.

OPERATION AND MAINTENANCE RESPONSIBILITIES

Evaluate the cover crop to determine if the cover crop is meeting the planned purpose(s). If the cover crop is not meeting the purpose(s), adjust the management, change the species of cover crop, or choose a different technology.

Goals and Objectives (e.g. control of palmer amaranth and improve soil health and nutrient cycling):

PURPOSE

This practice is applied to support general criteria and one or more of the following purposes:

- ☐ Reduce erosion from wind and water.
- ☐ Maintain or increase soil health and organic matter content.
- ☐ Reduce water quality degradation by utilizing excessive soil nutrients.
- ☐ Suppress excessive weed pressures and break pest cycles.
- ☐ Improve soil moisture use efficiency.
- ☐ Minimize soil compaction.

Planned Seeding and Termination:

Field No.	Acres	Crop which cover crop will be planted into	Species Mix (see list below, e.g. Mix 3)	Seeding Method (e.g. no-till drilled, aerial)	Date Seeded	Planned Termination Method (e.g. chemical, crimping, winter kill, etc.) and Date	Notes (e.g. palmer amaranth 30%)

Seeding Method: Cover crops must be no-till planted by either the drilling or aerial seeding (broadcast) method. Drilling is the preferred seeding method. The broadcast seeding method is best for moist soil when rainfall is predicted. If aerial seeding into a corn crop, best results are to time seeding when corn is dried up to the ears. For aerial seeding into a soybean crop, best results are to seed at first leaf drop.

Participant's Signature: _____ **Date:** _____

Practice Name, Code, and Unit(s)	Specific Conservation Planning and Design Documentation (Consider all that are applicable)	Specific Certification Documentation (All items in boxes below must be completed)
Cover Crop (340), ac.	<input type="checkbox"/> Planting rates, dates, and plant species to be established <input type="checkbox"/> Establishment procedure (site and seedbed preparation, planting method) <input type="checkbox"/> Species selection and seeding rates <input type="checkbox"/> Dates and method to terminate cover crop <input type="checkbox"/> Before and after soil loss calculations (RUSLE2)	<input type="checkbox"/> Description of the vegetation at the time of checkout (e.g. percentage of desirable species, height, and condition) <input type="checkbox"/> Photo (preferable before/after)

Certified By: _____ **ESJAA Level:** _____ **Date:** _____

COVER CROP EXAMPLE MIXES				
Multiple Species Cover Crop Mix (Cool Season planted prior to Soybeans)				
Crop Mixes	Seeding Rate Lb./Ac ¹		Seeding Date	C:N ratio in Late Vegetative State ⁵
	Drilled	Broadcast		
Mix 1				
Cereal Rye	20	26	August 15 to October 15	31
Oats ²	20	26		
Austrian Winter Peas	11	14		
Crimson Clover	4	5		
Radish	1	1		
Turnip	0.5	0.5		
OR				
Mix 2				
Cereal Rye	20	26	August 15 to October 15	32
Wheat	15	20		
Crimson Clover	4	5		
Radish	1.5	1.5		
Hairy Vetch	4	5		
OR				
Mix3				
Cereal Rye	28	36	August 15 to October 15	35
Wheat	28	36		
Crimson Clover	4	5		
Radish	1	1		
Turnip	0.5	0.5		
Multiple Species Cover Crop Mix (Cool Season drilled only after double crop soybeans or cotton and up to 20% of land in full season soybeans)				
Mix 4				
Cereal Rye	20	-	Drilled only up to November 1	33
Triticale	20	-		
Turnip	0.5	-		
Crimson Clover or Hairy Vetch	5	-		
Austrian Winter Peas ³	13	-		
OR				
Mix 5				
Black oats	20	-	Drilled only up to November 1	26
Barley	20	-		
Annual ryegrass ⁴	10	-		
Crimson Clover or Hairy Vetch	5	-		
Turnip	0.5	-		
Basic Cover Crop Mix (Cool Season prior to Corn or Soybeans)				
Mix 6				
Cereal Rye	20	26	August 15 to October 15	30
Wheat	20	26		
Crimson Clover	5	7		
Austrian Winter Peas	14	18		
Radish	1	1		

[illegible]

¹ If grazing is planned increase small grain seeding rate up to 100lb/ac.

² Black oats may be substituted for Winter Oats, although in the northern and high elevation areas black oats may freeze out in colder winters. Spring oats provide quick cover but may smother other species so rate should not be increased above 20 lb/ac.

³ Austrian Winter Peas can be an issue to plant cotton into.

⁴ Annual ryegrass, especially Italian ryegrass can be difficult to kill and if it goes to seed it could volunteer later. Best to use a variety with annual ryegrass to improve control of termination. Use a cold tolerant variety if planting late. Annual ryegrass is easier to control when it is terminated at 10". Only recommended for producers with experience controlling it. Not recommended if you plan to grow wheat in the future.

⁵ The Carbon: Nitrogen (C:N) ratio is recommended to be 30:1 or higher prior to low residue crops and below 30:1 prior to high residue crops.

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- All mixes are only examples of mixes that can be used. Other mixes can be approved for use.
- Buckwheat and sunflower at a 1 lb/ac rate can be added to any mix as long as it is 30 or more days until the date of the average killing frost. These would add to diversity but at this rate they would not count as one of the five species in a mix
- Seed needs to meet the state seed law. It can be variety not stated (VNS), a Variety, certified seed or seed harvested from the producer's farm. Ideal is to be a Variety due to uniformity. Branded seed can be VNS seed.
- Seeding rate can be increased on all species but be aware that early production species can shade and reduce the stand of slower growing species; e.g. radish and/or turnip could reduce the stand of other species.
- Some producers have reported a corn yield drag after cereal rye. If it is a concern, other small grains can be substituted. Most likely the issue is too much carbon in mixture causing a higher C:N ratio.
- Recommend not using brassicas preceding cotton and caution using Austrian winter peas prior to cotton.
- Brassicas are heavy feeders and caution needs to be taken when using them. Maintain good fertility for the following crop.
- Mixes can be developed using the "smart mix 5_20_17 KB slim version.xlsx" calculator. No more than 1.5 lb. of brassicas is typically recommended in a mixture. Turnip and more so rape (canola) can be difficult to kill.
- Cover crop species that have worked well in suppressing herbicide resistant weeds, such as palmer amaranth and horseweed (marestail), are cereal rye, annual ryegrass, rape, and black oats. Sorghums, warm season annuals are also reported to have some allelopathic nature.
- Legumes are typically coated and pre-inoculated. If not, order fresh inoculant and inoculate seed at seeding.

Certified Completed Seeding and Termination of Cover Crops:

Field No.	Acres	Crop which cover crop will be planted into	Species Mix (see list below, e.g. Mix 3)	Seeding Method (e.g. no-till drilled)	Date Seeded	Termination Method (e.g. chemical, crimping, winter kill, etc.) and Date	Notes (e.g. cover crop 30 inches tall at termination)

Additional Notes: