Cover Crops Quick Facts

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Cover crops have been promoted recently as an important tool for soil health improvement. In reality, cover crops have been utilized for many years to reduce soil and nutrient loss, suppress weeds, increase water infiltration and soil water holding capacity, and increase soil organic matter. Potential negatives of dense covers include difficulty in establishing a summer crop; cooler and wetter soils in the spring, which may increase soilborne and seedling diseases; a "green bridge," which may increase insect pest issues in young crops; and nitrogen tie up in decomposing residue.

Select Cover for Intended Cash Crop

Selection of cover species may depend on the desired benefit. University of Tennessee research has shown that wheat, cereal rye, or two way mixtures of wheat or cereal rye plus hairy vetch or crimson clover are economical and effective ground covers for weed suppression. Typically, winter annual weeds like horseweed are not an issue where cover crops have been properly established. Palmer amaranth can be suppressed so that fewer pigweeds emerge, and the Palmer amaranth that do emerge are typically delayed as much as 30 days.

Growers participating in cost share programs requiring multi-species mixtures should follow their approved plan to be in compliance. More details on specific cover species may be found at tiny.utk.edu/TNequip. If weed suppression is the primary goal, minimize percentages of species such as Brassicas (radish, turnip), spring oats and Austrian winter pea, which are more likely to winterkill in Tennessee leaving "holes" in the cover stand. Plant Austrian winter pea by mid-October for the most consistent establishment.

- **Cover Crops for Corn or Cotton**: Brassicas are not recommended in front of cotton. Legumes provide nitrogen (N) and usually increase biomass of grass covers in mixtures. A majority legume cover may be a good choice if residual N is desired. Single species crimson clover or vetch allowed to continue to early bloom can provide 60 to 80 pounds of N to the cash crop. If a legume is planted with wheat or cereal rye to improve weed suppression, the amount of N provided to the crop will be less. Some N tie-up is expected following termination of grasses in the spring. Heavy stands of decomposing grass can affect corn or cotton growth early in the season. Tie-up of N can be minimized with early termination and at-planting nitrogen fertilizer. A legume mixture with a grass is believed to help offset N tie-up to the cash crop.
- **Cover Crops for Soybean**: Nitrogen from legumes is not needed by soybean, however, legumes provide N and therefore increase biomass of grass covers in mixtures. Wheat or cereal rye sown with either vetch or crimson clover terminated closer to soybean planting will provide excellent weed control. Grass cover crops are important non-hosts for nematodes, while hairy vetch and crimson clover may host root knot nematode. Clover species are a poor host for soybean cyst nematode (SCN), while hairy vetch appears to be a good SCN host.

Cover Crop Establishment

Cover crops should be drill seeded at an appropriate rate to ensure adequate establishment. Follow NRCS seeding guidelines for multi-species mixtures used in EQUIP.

Cover Crop	Drilled seeding Rate for single or two species mixtures (Per Acre)	Seeding Dates	Seed Depth	Comments
Cereal Rye	1-2 bu	Sept-early Nov	1-2"	Nutrient scavenger; see comments below on termination; biomass vigor is greater with good quality seed planted early.
Wheat	1-2 bu	Oct-early Nov	1-2"	Nutrient scavenger; plant early for cover crop; less expensive option; less total biomass compared to rye and less likely to tie up N in spring.
Hairy vetch	15 lb	Aug-Sept	½"- 1 ½"	Inoculate seed if no history of vetch in field; drill seed for maximum emergence and terminate before seed set to reduce emergence in later crops; 50% stand with wheat or rye may provide less than 30 lb N to cash crop.
Crimson Clover	15-20 lb	Aug-Sept	¼" - ½"	Inoculate seed if no history of clover in field; select early blooming variety to get spring crop in more timely; 50% stand with wheat or rye may provide less than 30 lb N to cash crop.

Cover Crop Termination and Planting Cash Crops

UT termination data suggests a two-pass herbicide program of glyphosate and dicamba* applied before planting the intended cash crop, followed by paraquat at planting, provides the most consistent control of cover crops including cereal rye and wheat.

- Terminate cover crops at least 14 to 21 days prior to planting corn or cotton and 10** to 14 days prior to planting soybeans.
- Cover termination at soybean planting** can increase weed suppression but is not recommended in a dry spring and field must be scouted for insects.
- Apply burndown herbicides before operating a roller or roller/crimper in field.
- In most winters, tillage radish winter-kills; however, there are no effective herbicides for control if it does not.
- In some blends, canola or rapeseed has been both Roundup Ready and Liberty Link, so early termination (before bolting) of this cover is prudent with a sequential application of dicamba or 2,4-D.

No-till equipment is commonly used to plant into cover residues. A land roller or roller/crimper operated prior to planting will flatten excessively tall, dense covers and can improve crop germination and early seedling growth. Always plant in the direction of the roller and apply burndown herbicides prior to rolling a field.

- Plant corn at least 2 inches deep and soybean at 1 inch to 1 ½ inches for good seed to soil contact.
- Row cleaners may reduce hairpinning in no-vetch covers, but experiment to determine how aggressive to set row cleaners.
- Ripple coulters may be effective in front of cotton.
- Cast iron closing wheels may work best in dry soils or with vetch mixtures.
- Residue is easier to cut through after dew has dried and soil is firm.

Insect and Disease Management

Cover crops can be hosts for both beneficial and pathogenic organisms. Grass following grass or legume after legume increases the buildup of disease inoculum. Cooler soil temperatures and increased moisture levels beneath residue may increase likelihood of seedling disease in a wet spring. Scout the cash crop at emergence and during early season for evidence of three cornered alfalfa hopper or other insect pests that may require additional treatment.

- Plant crop seed treated with fungicide and insecticide.
- If burndown is within 10 days of planting, consider adding an insecticide.
- Consider higher rates of insecticide seed treatments or supplemental insecticide applications in corn.
- Be mindful that clover, vetch and Austrian winter pea are attractive to pollinators. Avoid applying bee harmful insecticides to blooming cover crops if pollinators are present.

**Recommendation made assuming that dicamba is being applied at 0.25 lb ai/A. Label requires 14 d + 1 inch of rainfall prior to planting non-Xtend soybean, or 15 d + 1 inch of rainfall prior to planting non-Xtend cotton. There are no restrictions on planting interval to corn with this rate of dicamba.*

***Xtend varieties should be planted if dicamba is applied within 10 days of planting.*

References

Gill, H.K. and R. McSorley. Cover Crops for Managing Root Knot Nematodes. University of Florida. (http://edis.ifas.ufl.edu/in892)

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