

# Cover Crop Basics

for Southeast Missouri



Cropping challenges caused by poor fertility, low organic matter, poor infiltration, soil erosion, weeds and compaction are actually indicators of poor soil health. Tillage is often used to treat these issues, but tillage is detrimental to soil health. On the other hand, cover crops scavenge nitrogen, increase organic matter, improve infiltration, reduce erosion and prevent weeds. Consider designating a 20-40-acre field, and following the steps below to experiment with cover crops and see how they can help your soil and you!

## Cover Crop Usage Tips

- Develop a three-year plan that identifies cash crops and cover crops.
- Plan early and locate cover crop seed in springtime for planting in the fall.
- Use shorter-season varieties of corn (110-112 days) or soybeans to maximize cover crop benefits.
- Leave crop residue on fields to preserve moisture.
- Select cover crop varieties that are well suited for your area; avoid “Variety Not Stated” (VNS) seed.
- Plant cover crop seed early and shallow (1/4 to 1/2 inch).
- Apply 20 pounds of nitrogen, per acre, at planting to boost cover crop establishment.
- When planting corn, apply starter nitrogen in row with planter.

## Cover Crop Termination Tips

- Be able to terminate cover crops in the spring, even if by ATV sprayer.
- For best results, spray herbicides on sunny days when temperatures are above 50 degrees.
  - If spraying when temperatures are in the 40s, spray in the early morning versus afternoon to allow for better herbicide translocation. If night temperatures fall below 38 degrees, wait three days before spraying glyphosate. Soil temperature should be above 45 degrees.
  - Fill sprayer tank with water, add Ammonium Sulfate (AMS) and surfactant, and agitate three-five minutes before adding the herbicide.
  - Consider using non-glyphosate herbicides to reduce the risk of plants developing herbicide resistance.
- When planning herbicide control for cover crop mixes, consider all species in the mixture.
  - Vegetative stage is easier to control.
  - Match herbicides to the cover crops.
  - Use a grass herbicide initially and leave the legumes to fix more nitrogen; terminate the legumes later.
- Residual herbicide from the previous grain crop can inhibit cover crop establishment. This is especially noticeable in overlap areas, during dry years, and during late-planting years.
- Terminate all cover crops before they make a seed head.

## Cover Crops Need to Complement the Cash Crop!

For a corn-soybean rotation, follow these steps to improve soil health:

1. No-till cereal rye into corn stalks. You can drill late (October into November) and still be successful with establishing the cereal rye.
2. No-till soybeans into the terminated cereal rye. Plant an earlier group soybean to harvest earlier.
3. No-till a low carbon/nitrogen cover crop mixture that winter kills, such as spring oats and oilseed radish.
4. No-till corn into the winter-killed oats and radish.

## Annual Ryegrass



*Preferred varieties:*  
King, Bounty, Jackson

**Drilled Rate:** 12 pounds per acre  
**Broadcast Rate:** 20 pounds per acre  
**Seed Cost:** \$9-\$16 per acre  
**Seeding Period:** March, August-September  
(up to October 10 works most years)

- Reasonable in cost
- Seed in September for best results
- Works well in front of corn or soybeans
- Establishes easily, even when broadcasted
- Provides weed control
- Has good root mass
- Adds organic matter and soil tilth
- Likes wet soils
- Collects nitrogen in the fall and winter
- Kill in April during its vegetative state
- Secondary buds allow regrowth
  - If not controlled in the spring it can become a problem
- Plan on two herbicide applications
- Can be a problem in wheat
- Decomposes easily
- Marshall, Bruiser are good forage varieties

## Cereal Rye



*Preferred varieties:*  
Aroostock, Rymin, Daold

**Drilled Rate:** 50 pounds per acre  
**Broadcast Rate:** 75 pounds per acre  
**Seed Cost:** \$12-\$20 per acre  
**Seeding Period:** March-May,  
August-mid November

- Easy to establish, can usually broadcast
- Good for breaking up surface compaction
- Provides good weed control
  - Winter annuals, smartweed, ragweed, horseweed
- Be careful if used before corn
  - Has the potential to stunt corn especially in cool, wet conditions
  - Broadcast 50 pounds of nitrogen per acre at planting, come back and side-dress to alleviate the issue
- Easy to plant into
- Captures nitrogen
- Kill at end of March to release nitrogen
- Easy to control in the spring
- Grows fast in April
  - Can severely dry out soil if not controlled early enough
- Can be grazed/harvested for hay

## Crimson Clover



*Preferred varieties:*  
Dixie, AU Robbins, AU Sunrise

**Drilled Rate:** 12 pounds per acre  
**Broadcast Rate:** 18 pounds per acre  
**Seed Cost:** \$14-\$21 per acre  
**Seeding Period:** July-September 20  
(up to October 1 works most years)

- Inoculate seed prior to planting
- Not the same as Red Clover
- Doesn't like wet field conditions
- Winter annual – excellent growth
- Good nitrogen provider
  - Provides up to 100 pounds per acre usable nitrogen
- Kill Crimson Clover in mid April
  - In late April/early May Crimson Clover will bloom and die

## Hairy Vetch



*Preferred varieties:*  
Groff, Madison, Winter, Pennington, Kaup

**Drilled Rate:** 15 pounds per acre  
**Broadcast Rate:** 20 pounds per acre  
**Seed Cost:** \$27-\$36 per acre  
**Seeding Period:** August-September

- Inoculate seed prior to planting
- Blue, Purple and Common Vetch are not winter hardy.
- Not the same as Crown Vetch
- Good option before corn
- Provides 100+ pounds of nitrogen for following corn crop
- Increases corn yields
- Easy to control in the spring with 2,4-D
- Vetch can be driven over and planted into.
  - Plant corn 1.5-2 inches deep and make sure to plant into soil and not the cover crop residue.
- Decomposes in less than 30 days

## Oats



*Preferred varieties:*  
Bates, Webster

**Drilled Rate:** 35 pounds per acre  
**Broadcast Rate:** 50 pounds per acre  
**Seed Cost:** \$12-\$17 per acre  
**Seeding Period:** March-April,  
August-September

- Cheap to plant
- Establishes fast
- Provides good erosion control
- Scavenges nitrogen
- Reduces winter annuals
- Winter kills
- Can be grazed
- Easy to plant into in spring

## Oilseed Radish



*Preferred varieties:*  
Adios, Arena, Tillage, Daikon

**Drilled Rate:** 5 pounds per acre  
**Broadcast Rate:** 8 pounds per acre  
**Seed Cost:** \$13-\$20 per acre  
**Seeding Period:** March-May,  
August-September 15 (October 1 at the latest)

- A fall seeding rate will produce carrot size root
- Best results when planted early
  - Earlier planting date provides larger root
- Easy to establish
- Works best in rows
- Doesn't like acidic soil
- Increases soil tilth and organic matter
- Works well mixed with oats or cereal rye
- Dies after several days at 25 degrees
- Decomposes quickly, no root left in spring

## What Not to Use as Winter Cover Crops

- Winter peas and lentils are not winter hardy
- Turnips are better for grazing than as a cover crop
  - You will see more advantages in row crops with Oilseed radish
- Canola is difficult to grow and requires a September 12-20 seeding date to survive winter
- Buckwheat is a summer annual that captures phosphorus and provides summer weed control
  - Buckwheat must be killed in 45 days or it sets seed and becomes a weed itself.

## Try These Cover Crop Mixes

- Oats at 16 pounds per acre with Crimson Clover at 7 pounds per acre (\$14/acre)
- Oats at 14 pounds per acre with Oilseed Radish at 3 pounds per acre (\$13/acre)
- Oats at 18 pounds per acre with Hairy Vetch at 8 pounds per acre (\$20/acre)
- Cereal Rye at 20 pounds per acre with Oilseed Radish at 3 pounds per acre (\$13/acre)
- Annual Ryegrass at 8 pounds per acre with Crimson Clover at 5 pounds per acre (\$12/acre)
- Cereal Rye at 20 pounds per acre with Crimson Clover at 7 pounds per acre (\$13/acre)

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