

Legume and Cereal Rye Cover Crop Mixture with termination by Rolldown and /or herbicide.

Producer Name: _____
 Contract # _____
 Date: _____

INFORMATION ON THIS JOB SHEET IS CONSIDERED TO BE PART OF THE CONTRACT AND/OR CONSERVATION PLAN.

Purpose

This job sheet will be used to establish a legume and cereal rye cover crop mixture that fixes nitrogen naturally for the soil system and controls erosion. Depending on how long the cover is left on the field, soil quality benefits could also be enhanced.

Conditions Where Practice Applies

Practice applies on all lands where landowners wish to improve natural plant nutrient cycling, and to provide vegetative cover for natural resource protection.

Establishment Specifications

1. Plant species and seeding rates will be utilized according to **Table 1**. Legume cover crop mixtures should consist of cereal rye and at least one legume. Cereal rye is the small grain of choice due to its surface biomass, root production and ability to hold the soil. Eligible legume species are: austrian winter pea, crimson clover, hairy vetch, and red clover. See the “Establishing Vegetative Practices In Kentucky” document, located on eFOTG, section IV, Table 4, for recommended cover crop species mixtures and seeding dates for various locations throughout Kentucky. See **Table 2** for “Estimated

Nitrogen



(N) Credits for Cover Crop Mixtures Containing Legumes” to assist landowner in cover crop selection.

2. Seed will conform to minimum state standards for purity, germination and other features. Commercially marketed seed in Kentucky meets these requirements. **Organic producers should ensure the use of organic seed when available. Contact State Organic Certifier for more information.**
3. All areas should be fertilized and limed according to University of Kentucky soil test or equivalent. It is critical for the pH to be brought into the appropriate range for the type of plants being grown before large amounts of biomass are added to the soil surface. Large amounts of surface biomass buffers soil pH making it more difficult to adjust pH up or down.

Seeding and Seedbed Preparation

No-till establishment is the preferred method of seeding since soil disturbance is minimal, thus reducing weed competition and the risk of soil erosion.

Conventional seeding may be used to establish fields the risk of soil erosion is minimal.

Important: If soil is wet, avoid no-till planting or culti-packing planted seedbeds. This may result in placing the seed too deep in the ground, compacting the soil from wheel traffic, and causing sidewall compaction by the planter.

Seeding Dates

Cover crops must be sown no later than **September 30th West of Interstate 65**. Optimum dates for seeding this cover crop mixture West of Interstate 65 is **September 10th through 20th** (or earlier).

Cover crops must be sown no later than **September 15th East of Interstate 65**. Optimum dates for seeding this cover crop mixture East of Interstate 65 is **September 1st through 10th**.

No-Till Seeding

Care should be exercised to insure appropriate cover crop mixture seeding rates and seeding depths are obtained when using no-till drills or planters.

Conventional Seeding

The importance of a dry firm seedbed cannot be over emphasized to ensure proper planting depth.

Seedbeds may be prepared by disking.

Once seedbed is prepared, broadcast seed, culti-pack, harrow or roll the seeded area only once to ensure good seed to soil contact and the proper seeding depth.

Aerial Seeding

Seeding rates must be increased by at least 25% for all cover crop seed species to insure adequate cover crop stand. Optimum seeding dates for aerial seeding are from **September 1st through 10th** at all locations within Kentucky.

When possible, aerial seeding should be performed over top of an existing crop before leaves of the existing crop fall to the ground.

Operation and Maintenance

It is recommended that cover crop mixtures be terminated by roll down in conjunction with a chemical burn down with all plant residues left on soil surface. **Organic producers should ensure the use of organically approved chemicals. Contact State Organic Certifier for more information.**

Roll down can be accomplished using roller crimpers, stalk choppers or cultipackers. Roller crimpers and stalk choppers are the preferred roll down implements due to their crimping abilities, which cultipackers do not have.

Where cover crops are to be tilled into the soil surface it is recommended that a full mow down of cover crop be completed first and then cover crop mixture tilled into the soil surface with as little soil disturbance from tillage tools as possible.

For KY NRCS Program Purposes:

- **Winter legume based cover crops CANNOT be terminated before Cereal Rye in the mix reaches stage 10 of the attached Purdue University Extension Publication, “Small Grain Growth Stages”, Insert 1.**
- **Winter cover crops must be terminated before cereal rye is half headed out. This guidance is based on USDA’s Risk Management Agency to prevent crop insurance conflicts. The participant should contact their crop insurance company if they have crop insurance eligibility concerns.**
- **Cover crops CANNOT be harvested for grain, silage, or hay. All cover crop residue must be left in the field.**
- **Use practice Residue Management (344) to promote proper spring management.**

Insert 1: Purdue University Extension Service

Small Grains Growth Stages

Stage 1

3-Leaf Stage: The first two leaves are completely developed, and the middle, or third, leaf is partially developed.

Stage 2

The tillers (sometimes called side shoots) are beginning to form.

Stage 3

Tillers have formed and are in their primary growth stage.

Stage 4

Tillers have ended their growth and the leaf sheaths (the lower part of the leaf which surrounds the stem) begin to form.

Stage 5

Leaf sheaths are strongly erected and the stems formed start to grow in length.

Stage 6

One-Joint Stage: The first joint develops near the soil surface and can be felt inside the stem. The joints, or nodes, produce a swelled appearance in the lower portion of the stem.

Stage 7

Two-Joint Stage: The second joint has formed, marking the beginning of the reproductive phase.

Stage 8

Appearance of the last leaf.

Stage 9

Ligule Stage: The ligule (a membrane at the junction of the leaf sheath and leaf base) of the last leaf is fully developed, and the leaf sheath is swollen at the level of the capsuled head of grain.

Stage 10

"Boot" Stage: At this stage, the immature head of grain presses the rolled leaf sheath apart and becomes visible.

Stage 10.1

Head Emergence Stage

Stage 10.5

Flowering Stage

Stage 11

Ripening State (includes "dough" stage)

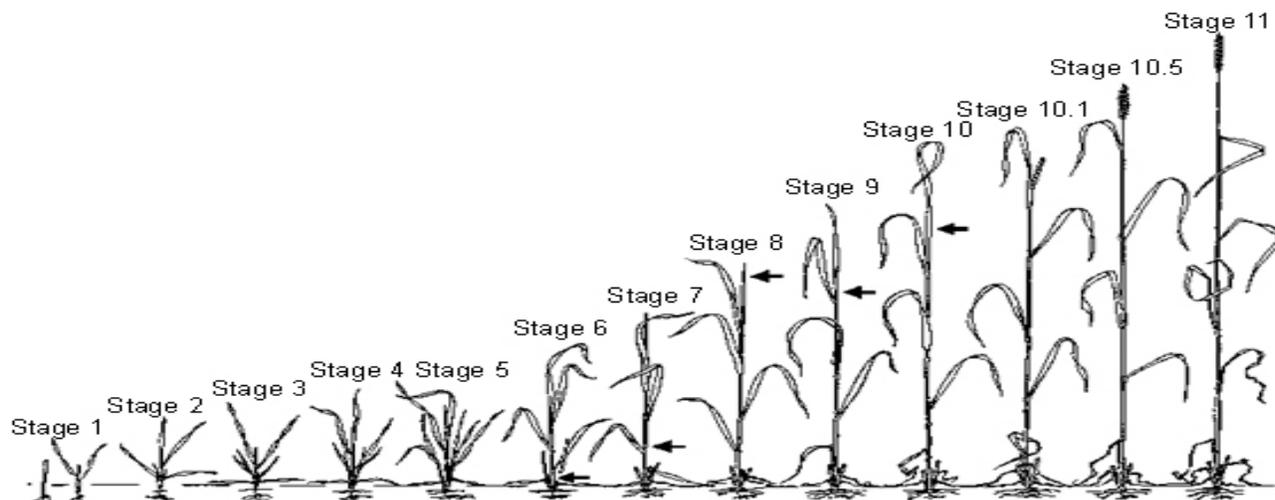


Table 2: Estimated Nitrogen (N) Credits for Cover Crop Mixtures Containing Legumes

| Eligible Cover Crop Mixture Species | *Est. N Credits | *Est. N Credits |
|--|--|--|
| | No-tilled | Tilled |
| Winter Legume (legumes and cereal rye mixtures): Hairy Vetch (20 lbs/ac) and Cereal Rye (35 lbs/ac) - or Crimson Clover (20 lbs/ac) and Cereal Rye (35 lbs/ac) or Austrian Winter Pea (40 lbs/ac) and Cereal Rye (35 lbs/ac) or Red Clover (10 lbs/ac) and Cereal Rye (35 lbs/ac) | 35 lbs/ac 30 lbs/ac 35 lbs/ac 30 lbs/ac | 18 lbs/ac 15 lbs/ac 18 lbs/ac 15 lbs/ac |
| Summer Legumes (single species): Cowpeas (90 lbs/ac) Soybeans (75 lbs/ac) Red Clover (10 lbs/ac) | 80 lbs/ac N 35 lbs/ac N 56 lbs/ac N | 40 lbs/ac 18 lbs/ac 28 lbs/ac |
| Mixture of the following 4 species: Cereal Rye (35 lbs/ac) **Crimson Clover (10 lbs/ac) **Austrian Winter Pea (29 lbs/ac) Diakon Radish (1.5 lbs/ac) | 74 lbs/ac N | 37 lbs/ac |

*It should be noted there are several variables that cannot be accurately estimated that have a significant impact on a cover crop’s ability to “fix” and/or “sequester” nitrogen in a soil system. Due to these factors, we have used conservative estimates in the above table for “Estimated Nitrogen Credits” for each individual species or mixture listed. To obtain more accurate estimated nitrogen credits on individual fields landowners should have a potentially mineralizable nitrogen test or a soil microbial food web analysis completed on individual field samples. Another alternative is to send individual field soil samples to, Dr. Rick Haney, ARS Soil Scientist, 808 East Blackland Road, Temple Texas 76502. Dr. Haney’s lab more accurately estimates the amount of nitrogen released by the soil microbial food web to crop plants throughout the growing season. At this time there is no charge for Dr. Haney’s services. Please call 254-770-6503 for more details.

KY Legume Cover Crop Seeding Mixture Options and Dates:

For counties west of I-65: Seeding dates: 9/10 through 9/30 (earlier is better)
For counties east of I-65: Seeding dates: 9/1 through 9/15 (earlier is better)

All legume cover crop seed mixtures must contain: Cereal Rye – 35 lbs/ac

and one or more of the following legumes:

- Austrian Winter Pea – 40 lbs/ac*
- Crimson Clover – 20 lbs/ac*
- Hairy Vetch- 20 lbs/ac*
- Red Clover- 10 lbs/ac*