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Cover Crop: Who What Where and Rye

Of the dozens of cover crop species, rye is king. It grows fast in the spring, can be planted late in the fall, and suppresses weeds like no other. There is a reason most cover crop mixes have rye as the background. It is highly effective in post corn and going into long season soybeans. Its ideal termination time frame lines up well when soil temperatures are high enough for soybean planting. It can be a difficult cover crop to manage before corn but has been proven effective with proper timing.

The biggest advantage of rye in comparison to other cover crops is its ability to suppress weeds. First, rye is allelopathic, which means it creates root biochemicals that block weeds from germinating. No worries about the soybean germination, as the biochemicals won't affect seeds of that size. Farmers and researchers have reduced herbicide applications, often to just one application with generic herbicides, and achieved similar weed control to multiple pre and post herbicide applications with a more expensive herbicide package. Jeff Murphy, farmer in Crawford County, says that he only sprayed his rye cover crop field once shortly after soybean emergence, vs. a pre and one to two post applications in his conventional tillage fields. Murphy says, "The rye cover crop has improved soil aggregation, helped retain moisture and cool the soil during the dry periods, and had great winter growth and survivability."

Planting Rye

First off, this is cereal rye we are talking about. It's not perineal rye, or ryegrass, or Italian rye. If allowed to go to seed, cereal rye can be a competitor in wheat fields, but often much less than many other types of winter grasses. It should also not be ALS-resistant, the most common herbicide group for post control of weeds in wheat in spring. Named variety rye seed is more expensive but has been shown to be more predictable with more growth than variety not stated seed.

Rye is a smaller seed than wheat but can still be planted using a drill. Drilling rates are around 55 to 60 lbs. per acre and at a 0.75 to 1.5 seeding depth. Many farmers have had success with rye by broadcasting, mixed with fertilizer, and then going over the field with a cutlipacker or something to lightly improve seed soil contact. Aerial seeding into a drying corn or soybean crop has also been tried with success that largely depends on the weather. Dale Coomes, also a

farmer in Crawford County, has experience with aerial seeding and says, “I’ve learned that aerial seeding success largely depends on the weather and the timing. The trick in soybeans is to seed right before leaf drop, so the leaves act as the moisture barrier to get the seeds germinated.”

Rye will need at least some amount of nitrogen to get started but overall fertility depends on cover crop goals. Since the best use of rye is no-till planting soybeans; lime, phosphorus, and potassium for the proceeding soybean crop needs to be applied before planting. Poultry litter, while common for corn, is given a useful opportunity in a cover crop before soybeans.

Rye Termination

According to the Midwest Cover Crop Council, cereal rye can be terminated with a full rate of glyphosate (1 lb. acid equivalent per acre). During a wet spring it is ideal to drill soybeans into green standing rye. This means spraying the rye shortly before planting, or right after planting and before crop emergence. Always check the furrow closer is covering the seed. The thick thatch and roots of the rye can make it difficult for the closing wheel and often modifications are required. Down pressure on the drill becomes an important factor.

Rye can also be terminated with rolling, using specialized equipment that resembles a large drum with crushing ridges. The goal is to not cut the rye off at the surface, which would cause it to come back from the crown, but crush the stem in multiple places. The rye then tries to repair itself and dies in the process. Rolling during soft dough stage gives the best chance of complete termination.

JJ Bebb of Corner Post Crop Insurance confirms that, “Due to the 2018 Farm Bill, cover crop rules for the proceeding crop change before the 2020 growing season. Crop insurance attaches on the insured crop at the time of planting, following Good Farming Practices determined by RMA rules.” Some of those guidelines state that cover crops need to be terminated before crop emergence in Zone 4, which covers most of eastern Kansas and all of Missouri. Also that cover crops can be grazed or baled, or seeded by intercropping or over-seeding.

Getting Started

Success with cover crops, like all of farming, depends on experience, and often a little luck with the weather. Both Murphy and Coomes are impressed with rye’s ability to generate biomass and ease of establishment. In Coomes’s long term cover cropped and no-till fields, he has noted that while it has taken a number of years, there has been a marked and certain improvement of soil organic matter and aggregation. On August 12th, Murphy, Coomes, and a couple other farmers are going to have tours of their fields in Missouri and Crawford County. This will be a great opportunity to learn from real experience, which is often more valuable than research and publications. Contact me at any K-State Research and Extension Wildcat District office for more information on cover crops or if you are interested in joining the cover crop and no-till field tour.

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