

Immediate Release

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James J. Hoorman
Hoorman Soil Health Services
Website: HoormanSoilHealth.com
Email: HoormanSoilHealthServices@gmail.com
Cell: 419-421-7255

Cover crops after wheat

Wheat harvest may start in 3-4 weeks and it is time to order cover crop seed. A long growing season after wheat allows for many options. Warm season cover crops grow in the summer but die with the first frost while cool season species generally survive the winter. Major categories include brassicas, grasses, legumes, and other broadleaves with over 60 species. Cover crops offer many advantages including adding carbon and soil organic matter (SOM), improving water infiltration and soil structure, tie up soluble nutrients, weed fighters, and improve soil health.

Brassica cover crops are small seeded, fairly inexpensive, and include daikon radish, kale, rape seed, and turnips. Radish, kale and rape have deep roots which reduce soil compaction, help control weeds, and add soil microbial diversity. Radish should be planted in mixtures (2#/A or less) because when it dies (20⁰ F) it smells bad and may allow soluble nutrients to leach. Turnips are shallow rooted and planted for grazing. All brassicas are non-mycorrhizal meaning they are not a host for beneficial mycorrhizae soil fungus.

Kale and rape seed are planted (by themselves) at 3-5#/A, very small seed, large tap roots and are often planted in mixtures at low rates. Kale and rape are cool season, great pollinators, improve water infiltration, but may be difficult to terminate and should be planted only in mixtures before corn. Planted alone, they may cause 5-10 corn bushel yield loss, but are much less of a problem in mixtures.

Warm season grasses include sorghum, Sorghum Sudan, Sudan, millets (pearl, fox, German etc.) oats, and Teff (forage). Warm season grasses fix carbon, add SOM and have many fine roots to improve horizontal water infiltration. Cool season grasses include cereal rye, annual ryegrass, barley, and wheat. Grasses absorb soluble nutrients, improve soil structure, and can be harvested for hay or haylage.

Sudan or sorghum varieties break up soil compaction if mowed or harvested, allowing new roots to add SOM. Oat varieties include spring oats (most common), forage oats, and winter oats (survives tempos down to single digits) which are highly mycorrhizal, improving soil structure and soil health. Cereal rye is a common cool season grass planted late after corn and before

soybeans. Cereal rye scavenges soluble nutrients, its deep roots improve water infiltration and soil structure, can be used for grazing or forage, and is the best all round weed fighters; out competing marehail, waterhemp, pigweed and many other weeds. New no-tillers should be careful planting cereal rye in front of corn, due to its high lignin content and ability to tie up nitrogen.

Legumes and clovers are high nitrogen fixers before corn and are slightly more expensive. Warm season legumes include cowpeas, Austrian winter peas, and Sunn Hemp while cool season legumes include true winter peas and vetches (hairy, wooly, common, etc) which may add 50-150#N/A if allowed to bloom. Cowpeas require very little moisture while winter peas require more moisture to germinate and grow. Austrian winter peas generally are planted early and may produce up to 150#N/A but will die with the first frost. True winter peas are planted in September, will generally survive the winter, but must be allowed to grow in the spring to get 75-100#N/A. Hairy vetch or common vetch create a thick matt to reduce weeds, and can produce up to 150-200#N/A, but have hard seed.

Cool season clovers include red, sweet, crimson, and Balansa clover. Red clover produces 75-125# N/A, tolerates wet soils but can be hard to terminate and the nitrogen is available late in the growing season. Crimson and Balansa clover have deep fibrous roots and may produce 100-150#N in the spring. Balansa clover tolerates wet soil, is a great weed fighter, and survives cold Ohio winters better than Crimson. Other warm season broadleaf cover crops include buckwheat (shallow rooted) and sunflower (deep rooted) which are great pollinators.

Cover crops can be planted singularly or in mixtures. A simple formula for mixtures is to take the full seeding rate for each species divided by the number of species planted. A common three-way mixture of oats, radish and Balansa clover would be oats ($33\# \text{ per acre} / 3 = 11\# / \text{A}$) plus radish ($3\# / 3 = 1\# / \text{A}$) plus Balsana ($5\# / 3 = 1.5\text{-}2\# / \text{A}$) for a total of 15# / A for this three-way mix. For more information on cover crops, look up the Midwest Cover Crops Field Guide, 2nd ed (\$5), Appendix A:Cover Crops on the NRCS website, or visit HoormanSoilHealthServices.com.