

Growing and Managing Forage Cover Crops

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Tip 1: After wheat or corn silage, always plant a cover crop to maximize the capture of sunlight, recycle residual nutrients and water, and control weeds. Apply manure in the fall and spring (not on wet soil) to maximize forage quality and quantity and minimize nutrient loss. See Figure 1.

Tip 2: Planting/drilling a forage cover crop early usually will result in improved stands, fast growth and better establishment. For forage cover crops, increase the seeding rate to 2-3X higher than the normal seeding rates for cover crops.

Tip 3: Summer annual forage cover crop mixtures include legumes (cowpea, field or winter pea), grasses (sorghums, oats, pearl millet, Teff, etc.), and brassicas (radish, turnips). Radish die with the first frost. Winter annual forage mixtures include legumes (winter pea, crimson clover, red clover), grasses (cereal rye, annual ryegrass, wheat, triticale or oats), and brassicas (rape and kale).

Tip 4: Standard seeding rates for forage oats is 75 to 110#/A or 2-3 bushels. For cereal rye, 110 to 150#/A or 2 to 2.5 bushels. Triticale is 90 to 120#/A 1.5 to 2 bushels (Sulc, 2013).

Tip 5: Watch plant back restrictions when planting forage cover crops. Dry weather will slow down herbicide degradation. To be legal, the default time before planting another crop for most herbicides is 18 to 24 months if the specific date is not listed.

Tip 6: For early fall forage production after wheat (by August 1st), use oats, cereal rye, annual ryegrass, triticale, Pearl millet, and various sorghum grasses. Fall planted oats with 50# N may produce 1-2 tons of forage before Christmas. Cereal rye fertilized or manured with fall and spring N may supply 3-5 tons forage in the spring (early to mid-May). Pearl millet and sorghums die with the first frost, and oats will not survive the winter, so they need to be planted early to maximize forage production.

Tip 7: Sudan-Sorghum after wheat may produce 1-2 tons first cutting and 4-5 tons second cutting. When Sudan-Sorghum is about 4 ft tall, cut or harvest the biomass leaving 9-12 inches of stubble. The Sudan-Sorghum will produce 5-9x more roots, and stimulate tillering, that will increase forage quality and improve soil structure from soil organic matter (SOM) additions (Clark, 2007). Sudan-Sorghum may increase short-term SOM.



Figure 1: A mixture of grasses (oats, cereal rye) and cowpeas harvested as silage after wheat. Forage cover crop mixtures are often grazed, wet baled as haylage, or dry baled as hay for forage production yielding 1-3 tons of dry matter. Sheep, beef, and dairy cattle can utilize this economical resource. Photo taken by Rafiq Islam at Piketon, Ohio.

Tip 8: After wheat or triticale, drill Teff shallow ($1/8^{\text{th}}$ - $1/4^{\text{th}}$ inch) at 5-7#/A raw, 7-10#/A coated may produce 1-3 tons of hay until first frost. Teff has about 1.3 million seeds per pound and is very drought resistant. Manure application may double production.

Tip 9: Grass cover crops need a minimum of 50# nitrogen (N) in the fall and 75-100# N in the spring to maximize production. Either fertilizer, manure, or a legume cover crop mixture or combinations of all three can be utilized to supply the N. Remember to credit N not used by the previous crop.

Tip 10: Adding 8,000 gallon of dairy or swine manure in fall will promote forage production and maximize tillering. Apply manure in the fall and spring to maximize forage quality and quantity and minimize nutrient loss.

Tip 11: For dairy producers, adding winter (field) peas, soybeans, and/or cowpeas to a mixture will increase crude protein (CP) content by 3-4% or add \$40-\$50 per acre in market value.

Tip 12: In Ohio, from September to October 1st, drill or plant triticale, wheat, oats, or cereal rye as forages.

Tip 13: In Ohio with cereal (winter) rye, adding 8,000 gallons of dairy manure in the fall resulted in 4 tons of quality haylage with 12% CP contents. Adding another 8,000 gallons of dairy manure in the spring (late March) resulted in 5 tons of haylage and 19-21% CP content.



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Tip 14: Cool season forage quality is generally higher in grass forage cover crops due to fast fall growth and lower temperatures with CP 20-32%, neutral detergent fiber (NDF) 30-38% and NDF digestibility 75-80% (Sulc, 2013).

Tip 15: Triticale (a cross between wheat and rye) generally has higher forage quality but lower forage quantity than that of cereal rye. Triticale matures later than cereal rye, is shorter and produces less biomass while cereal rye may have twice the forage quantity. Increasing seeding rates generally increases triticale biomass yields and forage quality.

Tip 16: Triticale seed cost is more expensive but dairy producers may prefer the higher quality (1-2% higher CP). Relative feed value is 100+ for triticale and may be similar for cereal rye dependent on stage of harvest.

Tip 17: Cereal rye grows fast in the spring and matures quickly. Harvest at vegetative or boot stage before the crop fully heads out to maximize quality. If cereal rye gets too mature, sell rye straw for \$100+ per ton and expect 4-5 tons of rye straw and plant another forage or soybeans.

Tip 18: Dry baling forages in the fall is difficult due to short day length. In Ohio, annual ryegrass should never be dry baled because it tends to mold before it will dry due to a waxy leaf and high moisture content. Wet baling, silage, or green chopping are the preferred harvesting methods for forage cover crops or grazing.

Tip 19: Daikon radish and forage turnips may be used as forages, although they are mostly grazed. For best growth, drill daikon radish (5-7#/A) and turnips (1-3#/A); if broadcasting, add 10% more seed and add either manure or fertilizer (minimum 50#N/A). Both radishes and turnips work well in forage mixtures and a legume for N production that are grazed.

Tip 20: For later planting in October, rape and kale are suitable brassicas that can survive the winter. Rape (Dwarf Essex) drilled at 2-5#/A or 3-6#/A broadcast may provide 15-25% CP forage. Kale may be drilled (3-5#/A) or broadcast (4-6#/A) one week later and may grow 25 inches tall, is cold tolerant, and makes a good forage.. Both rape and kale are generally grazed rather than hayed. Both rape and kale enhance wildlife habitat and are often added to wildlife forage plots.

Tip 21: Red clover drilled (8-10#/A) or frost seeded (9-11#/A) into wheat in early spring may produce several tons of good quality forage per acre (high in CP) and add 75-100# N to next crop.

Tip 22: Harvest forage cover crops before the main crop at boot stage or before it blooms to increase CP content and improve digestibility.

Tip 23: After wheat, intercropped corn, Sudan-sorghum, sorghum, or Pearl millet with soybean or winter or cow pea for silage production. The intercropping increases dry-matter yield, CP, and nutrients and decreased NDF and ADF contents in silages (Yucel et al. 2014).

Summary: Diverse forage cover crops associated with grain crops create a resilient environment for all species (microbes, soil fauna, and plants) to grow and thrive. Using cover crops as forages protect the soil, increases nutrient recycling, and produces a feed source which improves profitability on livestock farms.

For more information, visit the Midwest Cover Crops Council (MCCC) website. Refer to the Cover Crop Selector Program at the MCCC website for more information on planting and managing cover crops.

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