Practices for Reliably Establishing Warm-Season Grasses

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Native warm-season grasses like big bluestem, indiangrass, and switchgrass have a reputation for being difficult to establish and taking 3 years to get a usable stand. This may have been the norm 25 years ago, but it is not true today. New herbicides and cultivars have made it possible to seed native warm-season grasses in the spring, harvest for hay after a killing frost, and begin grazing at 75-100% of full production the next spring. A few simple guidelines need to be followed.

Warm-season grasses are readily established when quality seed of adapted cultivars is used in conjunction with the proper planting date, seeding rate and method, and herbicides for weed control. In the central Great Plains and Midwest, warm-season grasses can be planted 2-3 weeks before or after the recommended planting dates for corn, typically from late-April to early-June. Warm-season grasses should be seeded with at least 30 pure live seeds (PLS)/ft^2 based on the quality of the seedlot. Number of seeds per pound varies with species and seed lot, so calibrate drills based on known seeds per pound.


Photo 1.


Photo 2.


Photo 3.

Excellent results are obtained by planting no-till into soybean stubble (Photo 1) or a similar seed bed with a properly-calibrated no-till grassland drill with depth bands that plant seeds 0.25”-0.5” deep followed by press wheels in 7.5-10” rows. During the seeding year, all harvests must occur after a killing frost to avoid damaging stands. Good weed management and rainfall in seeding year will provide approximately half of the fully-established yield potential of the site and cultivar. Indiangrass seed (Photo 2) and big bluestem are fluffy and require a seperate seed box equipped with an active flow mechanism to prevent seed bridging. If warm-season grasses are planted after crops that leave heavy residue such as corn or sorghum, it may be necessary to graze, shred or bale the stalks, or use tillage to reduce the residue. If tillage is required, the seedbed needs to be packed to firm the soil. The packed soil needs to be firm enough so that walking across the field leaves only a faint footprint (Photo 3).

The cultural practices are similar for all native warm-season grass species. However, the native warm-season grasses have different herbicide tolerances, so weed control needs to be specifically tailored to the species being planted. Weed competition is the major reason warm-season grasses are slow to establish. For big bluestem and indiangrass, applying 4 oz. of imazapic (Plateau®)/ac immediately after planting and prior to big bluestem seedling emergence provides good grass and broadleaf weed control. For switchgrass, applying 8 oz. of quinclorac (Paramount®) plus 1 qt. of atrazine/ac immediately after planting provides similar weed control. Indiangrass seedlings do not tolerate atrazine, and switchgrass seedlings do not tolerate imazapic, so seeding mixtures containing both indiangrass and switchgrass will limit herbicide options. During the establishment year, escape broadleaf weeds can be treated with 2,4-D at 1 qt./ac after grass seedlings have 5 leaves. Weed control will account for only 5-10% of establishment costs. After a successful establishment year, warm-season grass will need limited additional herbicide applications with good management. Always read and follow label directions; contact the local extension agent for specific issues.

Keys to reliably establishing warm-season grasses:

1) plant high quality certified seed of adapted cultivars - cheap seed is not a bargain
2) develop a firm seedbed
3) use a well-calibrated grassland drill
4) seed 2-3 weeks before or after the recommended corn planting date
5) control weeds early with herbicides
6) monitor weather conditions and try to plant before a predicted rainy period.

Researchers use a frequency grid to monitor grass and weed seedlings during the seeding year. A frequency grid can be made out of a piece of concrete re-mesh with 6” x 6” squares. Cut the re-mesh into a 5 x 5 grid with 25 squares. When grass seedlings are easy to see and have 3-4 leaves, select at least 10 different locations in the field. At each location, place the frequency gridon the ground and count the number of the 25 squares that have a grass seedling, and record that number. Flip the frequency grid and repeat 3 more times for a total of 100 squares. Add the number of squares that contained at least 1 seedling - this is the percent frequency of grass seedlings for that location. Repeat the process at 9 other locations and calculate the average stand frequency percent for the 10 locations. A stand frequency of 50% or greater (>2 plants /ft^2) indicates a successful stand, 25-50% are marginal to adequate, and stands with <25% frequency may need to be over- or re-seeded.

Nitrogen (N) fertilizer is not recommended during the planting year since N will encourage weed growth, increase competition for establishing the seedlings, increase establishment cost, and increase economic risk associated

with establishment if stands should fail. Soil tests are recommended prior to planting. Since warm-season grasses are deep rooted, soil samples should be taken to a depth of 5'. Adequate levels of phosphorus (P) and potassium (K) likely will be in the soil profile. If warranted by soil tests (P < 10 ppm), fertilize with P_2O_5 at 20-40 lbs/ac before planting to encourage root growth and promote rapid establishment.

Researchers have grazed indiangrass and switchgrass pastures 12-months after seeding by following these basic guidelines.