

Switchgrass Seeding Recommendations for the Production of Biomass Fuel in Southern Iowa

The following provides information about the seed selection, storage, and planting methods used to establish switchgrass in southern Iowa.

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Conduct a soil test prior to seeding. Apply recommended rates of P, K, and lime before planting.

Seed selection options

Newly harvested switchgrass seed can have a high percentage of dormancy. Acceptable germination levels often are achieved after one year of storage. For newly harvested seed, a dormancy rating of 10 percent or less is excellent. Seed exposed to cold, moist conditions in the soil also loses its dormancy conditions through a process called stratification. Thus, planting high dormancy switchgrass seed during the winter and early spring months can help break seed dormancy and improve stand establishment.

Seed that is less than one-year-old and has not been stratified:

When drilling, plant between mid-November and April 15 to allow some stratification to occur. Regardless of the seed's age, broadcast in late January or February. For best results from frost seeding, a minimum of 30 percent of the soil should be exposed.

Seed that has been stored for one year or has been stratified:

Plant seed that has been stored for one year when soil temperature approaches 60°F.

- To decrease the number of dormant seeds, frost seed in late January or February. For best results, a minimum of 30 percent of the soil should be exposed.
- Stratified seed may be in short supply.
- Seed that is more than one year old may gradually lose viability.

Recommended variety:

At the present time, Cave-In-Rock is the recommended variety for biomass planting in Iowa. It has, however, been shown to be susceptible to a fungal, smut disease that can reduce plant vigor and yield. Recent trials in Iowa show that while the southern-origin, lowland varieties Alamo and Kanlow may be higher yielding, they present a higher risk of winterkill and winter injury than do locally adapted varieties. Other varieties are being evaluated.



Recommended seeding rate:

Five to 6 pounds of pure live seed (PLS) per acre.

Drills are recommended for planting switchgrass:

Conventional drills or no-till drills should have:

- Small seed boxes suitable for accurately metering switchgrass;
- Seed placement depth adjusted to plant seed no deeper than 1/4 inch to 1/2 inch; and
- An effective press wheel. If no press wheel is used, follow the drill with a suitable soil-firming device such as a cultipacker or roller.

Tilled seedbed:

- Tillage can be used to control weeds before seeding.
- A packing device should be used until the soil is firm enough that walking on the soil does not produce a footprint.
- One or two passes of the packing device after seeding will help to ensure good seed-to-soil contact.

- Use of a labeled pre- and/or post-emergence herbicide may be helpful in controlling weeds. Contact your local agricultural chemical dealer for specific product recommendations.
- Weed control also may be achieved by clipping one to three times during the first growing season. Clip to a stubble height of 4 inches to 5 inches whenever weeds reach 6 inches to 10 inches tall.

Seeding methods

Three major requirements are common to all seeding methods:

- A firm seed bed. Using a packing device is highly recommended. In tilled soil a footprint should not be visible when you walk on the soil.
- Seed depth should be 1/4 inch to 1/2 inch.
- Weed control during the first eight weeks is essential.

No-till establishment:

Into previous crop residue

- Control existing vegetation with glyphosate (Round-up).
- Use 1 to 1 1/2 quarts/acre in a 2 percent ammonium sulfate solution and a surfactant. Apply this mixture prior to or just after seeding and before the switchgrass seed germinates. Control weeds with a labeled pre- or post-emergence herbicide or by clipping.

Into an existing pasture, hay meadow, or CRP sod

- Prepare the land in the fall and seed in the spring.
- Mow the vegetation to a height of 2 inches to 4 inches in mid-August of the year before seeding.
- When autumn regrowth has reached a height of 4 inches to 6 inches, apply glyphosate (Round-up,) in the same manner as for previous crop residue.
- The following spring, evaluate for vegetative control skips and repeat the glyphosate treatment if necessary.
- Control weeds with a labeled pre- and/or

post-emergence herbicide or by clipping.

An alternative to applying glyphosate in late summer is:

- To burn the area in April after the cool season species have started to grow. This will set the cool season species back, reduce the thatch layer, and allow the soil to warm more quickly.
- Glyphosate then should be applied to the green vegetation prior to seeding. Spring applications of herbicides may not be as effective as late summer applications.
- Control weeds with a labeled herbicide or by clipping.

Establishing with a corn crop

- Seedbed preparation should be whatever is to be used for the corn crop (tilled, reduced-till or no-till). Satisfactory switchgrass stand densities have been achieved using various combinations of row spacing, corn plant populations, and harvest management.
- Plant the corn first and apply preemergence herbicide that is compatible with and labeled for corn and switchgrass.
- If possible, seed the switchgrass prior to corn emergence. However, if switchgrass planting must be delayed, switchgrass can be planted with minimal damage to emerged corn as long as the growing point of the corn plant is not exposed (above the soil surface). Using a packing device will help to ensure good seed-to-soil contact. Two passes may be necessary.

Frost seeding

- Must occur during freezing and thawing activity.
- Seed must be able to make contact with the soil. Generally, at least 30 percent of the soil should be exposed. This may require mowing or other preparation during the fall before frost seeding.
- Weed control is critical during the first growing season and may be accomplished either mechanically or with labeled herbicides.
- Frost seeding will stratify seed that is less than one year old, reducing the amount of dormant seed.

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