A grass drill is the best way to plant seed into existing sod or firmly packed bare dirt. Grass drills with no-till attachments can plant seed into grass sod without any pre-tillage. Reduced soil erosion and fewer weeds are advantages of no-till drilling into sod. Grass drills work best if the soil and the vegetation are dry most of the thatch and standing dead material is removed by burning or haying. When operating properly, a no-till drill moves the thatch with trash plows, cuts a shallow furrow, meters the seed at the selected rate, plants the seed 1/2 inch – ½ inch deep, and presses the seed into the soil. In some areas, grass drills can be rented from governmental agencies. Check with your local Natural Resources Conservation Service for information on renting a grass drill. Note – A grass drill is a very specialized piece of equipment and should be operated by a person experienced in their operation.

To achieve the best performance and outcome with a grass drill, the seed must be properly mixed and calibrated and the drill must be operated correctly. The following are some best practices to optimize the use of a grass drill in planting prairie seed.

- Assign each species to the appropriate box based upon seed size and the extent to which the seed has been cleaned (Figure 1, Table 1). Note: Must species can be mixed together if seed is deseeded/deglassed and dehumidified and can be seeded through the rear cool-season/grain box.

- Consider broadcasting seeding (by hand or seeder) the very small seed. Some practitioners will hand broadcast very small seed (100,000 seeds or more per ounce) instead of using the grass drill. It is thought that a grass drill plants very small seed too deep. This may work well for smaller sites. However, hand seeding and getting an even coverage of seed in a large planting may not be possible or practical. In this case we recommend mixing all the very small seeded species (Table 2) together and mix in an equal amount of scoopable cat litter. Remove one or two discharge tubes from the front small seed box on the grass drill and add the very small seed mix in the well(s) where the tubes were removed. Seed will randomly fall to the soil surface and will likely get pressed into the soil by the drill and tractor tires as the units pass over.

- Add inert material to the seed to increase the volume. Filler should be similar in size to the seed in the mixture. Add scoopable cat litter to the seed that is to go in the front small seed box. For seed in the fluffy seed box, add an equal part of vermiculite. For seed in the cool season’s grain box add an equal part of cracked corn.

- Calibrate each box separately

- Always operate a grass drill at the recommended ground speed. Excessive ground speed will cause the drill to improperly plant the seed.

- Adjust the drill when operating. Look for seed not planted in the rows and adjust the drill accordingly.

- Inspect the drill while operating. Avoid drilling in wet conditions. Mud buildup on the drill can cause the blades to change the seed depth. A stiff putty knife works well to remove mud on the depth bands.

- Periodically squeeze and shake the feeder tubes connected to the fluffy and cool-season boxes. Individual compartments within the small seed box should have similar quantities of seed remaining while drilling. A compartment with more seed than the other compartments may indicate a plugged feeder tube.

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Dormant Seeding

A dormant seeding is defined as planting seed during a time when there is the least chance of germination and seed will lie dormant for several months. For most of the tallgrass prairie region dormant seeding can begin in early November. Early onset of very cold weather in the fall, or cold weather into late winter can extend the calendar times for dormant seeding. The benefits of dorm ant seeding are twofold. First, seeding when soil temperatures are below 39°F (4°C) ensures that there is no germination of the natives until the following spring when environmental conditions are suitable for germination and growth. Second, dormant seeding benefits forbs by permitting stratification which improves germination. We recommend that dormant seeding be done only if the seed can be planted into the soil (½ to 1 inch deep) and packed. Seed broadcasted onto ice or frozen ground is not recommended as it will expose the seed to wind erosion and predation. Dormant planting mimics the natural process of seed ripening and autumn/winter dispersal of many prairie species. However, dormant seeding of most native grasses, except switchgrass (Panicum virgatum) and Canada wild rye (Elymus canadensis) increases seed mortality (Meyer and Gaynor 2002). If the seed mix contains 50% to 70% forbs to grass seed or greater, dormant seeding should be considered. Grass seed should be increased by 25 percent if dormant seeded to compensate for seed loss (Henderson and Kern 1999).

Spring Seeding (Late March to Mid-June)

There is a wide range of soil temperatures in spring. Spring soil temperatures (1 inch deep) in Iowa range from 35°F (2°C) in late March to over 70°F (21°C) in mid-June (Riley 1931). The specific time of year the site is seeded will determine which species are favored in the seed mix. Early spring seeding favors cool-season grasses, sedges and some forbs. The window for germination of cool-season plants diminishes as soil temperatures increase throughout spring. A late spring seeding favors warm-season grasses and some forbs. Spring seeding may not permit adequate stratification for some forbs to germinate. Non-germinated seed will remain in the soil until conditions are appropriate for germination.

Summer Seeding (July to September)

Planting mid and late-summer is risky business. New germinates exposed to excessive heat and drought will perish. In addition, many prairie species require 2–6 weeks to germinate. By the end of the growing season, it is likely that seedlings may be too small to survive. Seeding native prairie species during this time is not recommended.

Seeding Methods

Planting seed at the proper depth with good seed-to-soil contact is essential. Seed planted too deep will not emerge resulting in poor stand establishment. Likewise, seed not covered by soil can germinate, desiccate and die. It’s the responsibility of the person(s) actually doing the seeding to ensure that seed is planted correctly. This requires periodic checking of the planted seed and the equipment during seeding.

Broadcast Seeding

Broadcast seeders range from tractor and ATV mounted implements to hand-held seeders or simple hand broadcast seeding. This method can be a low cost way to seed your prairie. An inexpensive hand held fertilizer spreader, available at your local hardware store can be used for seeding.

To assure that the seed is evenly distributed and dispersed over the planting site the seed must be properly mixed and the seeding rate carefully calculated. The seed should be mixed in equal parts with inert material such as vermiculite, cracked corn or kitty litter. This will increase the volume of the seed because of improvements in seed cleaning, the volume of prairie seed needed to plant a smaller site (1 acre or less) may not fill a 5-gallon bucket. Mixing any of these materials with the prairie seed will improve the seed flow through the seeder, and will make calculating the seeding rate much easier. Seed can be mixed in a plastic tub by hand or on a concrete slab using a flat shovel. If you use a mechanical seeder, calibrate the equipment before sowing seed and follow the calibration procedure as listed in the owner’s manual. If seed is hand broadcasted, divide seed by half and sow each half over the entire site so the site is seeded twice. This will increase even seed dispersal and contribute to the establishment. Likewise, seed not covered by soil too deep will not emerge resulting in poor stand establishment. Likewise, seed not covered by soil can germinate, desiccate and die. It’s the responsibility of the person(s) actually doing the seeding to ensure that seed is planted correctly. This requires periodic checking of the planted seed and the equipment during seeding.

Spring Seeding (February to March)

Seeds on cracked soil Prairie seeds can become incorporated into the soil by the cracks that are created by freeze-thaw cycles in late winter.

Frost seeding is a special form of dormant seeding done at the tail end of winter when temperatures are below freezing at night and above freezing during the daytime. If the soil surface is free of snow or ice, seed can either be drilled or broadcasted. The freeze-thaw action creates small cracks in the soil and allows seeds to settle into the soil. The effect on germination of prairie grass and forb seed by a frost seeding as compared to other seeding times is unknown. However, research on non-native legumes has shown that frost seeding can improve seed germination, but an unusually dry and warm spring can result in poor establishment (Barnhart 2002). In addition, the effect on germination of non-native cool-season grasses that are frost sensitive can vary and is not recommended for some species (West et al. 1997). The benefit of frost seeding prairie seed may be related to the length of time the seed remains in the soil before germination. As compared to a dormant seeding in November, frost seeding reduces the time seed remains in the soil before germination and may reduce seed mortality from pathogens and birds (Henderson and Kern 1999). We believe that frost seeding can be a good time to seed for most native seed mixes. We recommend seeding with a no-till grass drill to maximize seed-to-soil contact. If broadcast seeding is used, the seeding rate should be increased by 25% to compensate for seed loss due to wind erosion and predation (Henderson and Kern 1999). Frost seeding is not recommended on eroded sites with rills and gullies. If the site is prone to erosion, sow oats (up to 1 lb) to ½ inch deep to improve the prairie seed and a mulch should be applied and crimped into the soil to keep the seed in place.

Frost seeding with a bacon fork

During this time is not recommended.

Broadcast seeding with a Bacon fork

Description

Seeding with a bacon fork: Seed is dropped into two slots while the tractor is moving. One fork is dropped at a time. The seed is then dropped into the soil by the bacon fork. This method is used during this time is not recommended.