

Native Herbaceous Seeding

Deciding when to plant a native herbaceous stand is a challenge. Some species establish better when spring planted, other species establish better when fall planted, and some species are hard to establish whenever they are planted. Seeding rates of some species may need to be increased depending on when and how they are planted.

Native seed can be planted by broadcast seeding, hydroseeding and drill seeding. Regardless of the seeding method used, it is essential that seed be planted at the proper depth and with good seed-to-soil contact.

Note: The purpose of this technical note is to provide general information on seeding a native herbaceous stand. If planning a seeding enrolled in a particular program (EQIP, WRE, CRP, etc.), always refer to the applicable program guidance to ensure all planned practices adhere to program requirements.

Seeding Time

Native plants exhibit a wide range of growth characteristics. With adequate soil moisture, cool-season grasses and many forbs germinate in early spring when minimum soil temperatures are between 39° to 45° F (3° to 7° C), while warm-season grasses germinate in late spring when soil temperatures reach 50° to 56° F (10° to 13° C) (Smith et al. 1998). Native seed mixes often contain both cool and warm-season species, and there is no single best time to plant. However, choosing a planting time to maximize germination and establishment depends upon the species selected and their contribution to the seed mix. A seed mix with a strong forb component (50 percent or greater forb seed) should be dormant seeded. By contrast, a seed mix of mostly warm-season grasses (70 percent or greater grass seed) should be spring seeded.

Dormant Seeding (After December 15th when soil temperatures are below 55° F)

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 Georgia, dormant seeding can begin in mid-December. 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 dormant seeding are twofold. First, seeding when soil temperatures are below 52° F 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 (1/8 to 1/4 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 herbaceous species. However, dormant seeding of most native grasses, except switchgrass (*Panicum virgatum*), increases seed mortality (Meyer and Gaynor 2002). If the seed mix contains 50:50 forb seed 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 (March to Mid-May)

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

USDA is an equal opportunity provider, employer and lender.

adequate stratification for some forbs to break dormancy. Non-germinated seed will remain in the soil until conditions are appropriate for germination.

Spring Planting Dates:

- Mountains: March 1-May 15
- Piedmont: Feb 15- May 15
- Coastal Plain: Feb 15- April 30

Summer Seeding (late May to mid-December)

Planting after mid-May is risky business. New germinates exposed to excessive heat and drought will perish. In addition, many herbaceous 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 the winter. Seeding natives during this time is not recommended.

If the site is prone to erosion, sow oats (up to 1 bushel per acre) with the herbaceous seed and/ or a mulch should be applied and crimped into the soil to keep the seed in place.

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 native stand. 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. Because of improvements in seed cleaning, the volume of native seed needed to plant a smaller site (1 acre or less) may not fill a 5-gallon bucket. The seed should be mixed in equal parts with inert material termed “carrier”, such as vermiculite, cracked corn or kitty litter. This will increase the volume of the seed, Mixing any of these carriers with the native 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 ensure even seed dispersal and distribution over the site. After seeding, seed should be incorporated into the soil to improve seed-to-soil contact. Incorporating seed into the soil can be done by dragging a piece of heavy chain, or a piece of chain link fencing, or using a drag harrow, or raking seed in with a garden rake. Drag, harrow, or rake until the seed disappears. Finally, pack the soil with a cultipacker or lawn roller.

Hydroseeding

Hydroseeding is a unique seeding method where seed is mixed with water, mulch and tackifier to form a slurry that is sprayed directly on the ground. Many county road departments and some landscaping companies use hydroseeding to seed native herbaceous stands. While this method of USDA is an equal opportunity provider, employer and lender.

seeding is restricted to professionals, you may decide to hire a local company to hydroseed your native stand. We recommend that your seeding contractor hydroseed with a two-step process. The first step is to broadcast the seed (see the Broadcast Seeding subsection). The second step is to spray the hydromulch slurry (without seed) over the seeded area. This two-step process will help insure that the seed is not suspended in the mulch where it can desiccate. Additives can be included in the slurry to reduce soil erosion (Meyermann 2008).

Grass Drills

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 and 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 1/8 inch – 1/4 inch deep, and presses the seed into the soil. In deep sands, seed may need to be planted 1/2 to 1 inch in depth to ensure seed is planted in a suitable environment for germination. 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 herbaceous 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: Most species can be mixed together if seed is debarbed/deawned and dehulled and can be seeded through the rear cool-season/grain box.
- Consider broadcast 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 kitty 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.

Tips on No-Till Seeding — Drill Seeding

- 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/ 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 depth bands can change the seeding 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.

 Natural Resources Conservation Service Georgia	327 CONSERVATION COVER		
	Conservation Practice Specifications/Native Herbaceous Seeding Job Sheet		
OCTOBER 2016			

Client/Operating Unit:		Tract:		Farm No.:	
Farm/Ranch Location:		Field No.:		Program:	
Specifications Date:			Planned Installation Date:		
Proposed Treatment Acres:					

Installation shall be in accordance with the specifications, drawings, and other requirements as identified in this Job Sheet. NO CHANGES ARE TO BE MADE IN THE SPECIFICATIONS WITHOUT PRIOR APPROVAL BY AN AGENCY REPRESENTATIVE.

DESIGN AND INSTALLATION/LAYOUT APPROVAL:

I have job approval authority and certify this practice has been designed with specifications to meet the conservation practice standard and that the client has been advised of installation and layout elements:

NRCS Representative name and title (type or print):		
NRCS Representative Signature:		Date:

LANDOWNER/OPERATOR ACKNOWLEDGES:

- They have received a copy of the specifications and understand the contents including the scope and location of the practice.
- They have obtained all necessary permits and/or rights in advance of practice application, and will comply with all ordinances and laws pertaining to the application of this practice.
- No changes will be made in the installation of the job without prior concurrence of the NRCS.
- Maintenance of the installed work is necessary for proper performance during the life of the practice. The practice life is _____.

I have reviewed all specifications and agree to install as specified:

Landowner/operator name and title (type or print):		
Landowner/operator Signature:		Date:

RECORD OF COMPLETION AND CHECK OUT CERTIFICATION:

Treated Acres:	Date Completed by Client:	Date Certified:	Approver's Initials:

I have job approval authority and certify this practice has been applied and meets design specifications:

NRCS Representative name and title (type or print):		
NRCS Representative Signature:		Date:
Notes:		