

PRE-GERMINATED DIVOT MIX for REPAIRING ATHLETIC FIELDS

<http://turfgrass.hort.iastate.edu/extension/preseed.pdf>

Mike Andresen, CSFM and Dave Minner, Extension Turfgrass Specialist
Iowa State University

Most cool-season grasses can be pre-germinated to speed establishment and recovery on athletic fields. Perennial ryegrass, Kentucky bluegrass, and tall fescue have been pregerminated and used in a divot mix to hasten seedling establishment. The following program is used by the Iowa State University turf management team to manage the sand-based fields at Jack Trice Stadium and Johnny Majors practice facility.

Begin the pregermination process 4 or 5 days before the time you will actually apply seed to the field.

Submerge seed for 12 hours. Put a 50 lb bag of seed into a large water tight container. We keep four 50 gallon plastic trash cans on hand and mark them “for pregermination only”. Woven plastic seed bags that seed typically comes in are perfect for pregermination – the water soaks through the bag and the seed remains contained during the draining cycle. Fill the container with water so that the seed is completely immersed. Add 4 oz. Pana-Sea to each container with the seed and water. A heated shop is preferred so that everything equilibrates to about room temperature or 70°F. Do not use chilled water or freezing conditions. Include a fungicide such as Subdue to the soaking mixture during the early football season if seedling damping off by *Pythium* is anticipated.

Drain seed for 12 hours. It is recommended to have a 12 hour soak cycle followed by a 12 hour drain cycle, followed by another 12 hour soak cycle. For convenience we remove the bags each morning and allow them to drain during the 8 hour work day. Before the end of the work day we set up another soak cycle for the night. Even when we have forgotten about the bags and allowed them to soak for 2 or 3 days there has still been good germination.

Pregerminated seed is alive. Even though you may not see root tips the seeds have begun to respire and are alive... there is no turning back now. If the pregerminated seed dries in storage or in the field after planting it will die. You can refrigerate, not freeze, the living seed for about a week to slow down the growth if you want to plant it later.

Make divot mix by combining pregerminated seed, sand, turface, and green dye. Remove the seed bag from the pregermination container and allow a few minutes for drainage. A concrete or smooth blacktop surface works fine for mixing. Dump a 5-gallon bucket of sand on the surface and add some seed, turface, and dye over the pile. Use plastic to avoid staining of the hard surface if desired. Continue adding sand, seed, Turface, and dye until you have a layered pile. Shovel the pile to one side and then back again to mix. The recipe is 15 lbs of perennial rye or 10 lbs of Kentucky bluegrass seed, 40 gallons sand, 50 lbs Turface, and 32 oz Green Lawngr dye.

Remove divot debris before seeding. Load a 5-gallon bucket half full of divot mix and work the field from sideline to sideline five yards at a time. After mechanically sweeping the field there may still be debris in the divot that can be swept out by hand to insure good placement and establishment of the divot mix. Simply work a handful of mix into the divot then firm and level with your foot. Turf that is pushed-up or bubbled is worked back in place and flattened by foot. Divots that are completely dislodged seldom root sufficiently so they are removed and replaced by a 4 or 6-inch plug taken from a nursery or surrounding area of the field. Any remaining divot mix is spread in worn areas of the field.

Not all the seed survives but those that do represent mature plants for next years field. Seeds that are visible after placing the divot mix will seldom establish, but those just below the surface will develop if watered. The seeding rates seem very high compared to the normal broadcast seeding rates for grass establishment on bare ground. With divot mix it is important to remember that seed is mixed throughout a volume of sand and then the mixture is placed at various depths into divots. Seed visible on the surface dries out and seldom establishes while seed below a certain depth (1/4-inch for perennial rye and tall fescue, and 1/8-inch for Kentucky bluegrass) is shaded and does not continue to develop. For each home game we mix about eight 5-gallon buckets of sand with 15 pounds of perennial ryegrass or 10 lbs of Kentucky bluegrass seed. After filling divots we feel that we are getting about 100 seedlings/square inch. At this rate the divots fill quickly without a negative effect from seedling over crowding. Some seedlings get trampled and die but those that survive create biomass and a mature turf for the beginning of next year as opposed to bare spots with exposed and compacted soil.

We start the season in September using Kentucky bluegrass since it establishes well during September but may not fill divots when seeded in October. After the beginning of October we switch to perennial ryegrass because it establishes until the end of October and even into early November. Pregerminated Kentucky bluegrass divot mix seeded in early September will have nearly 90% of the divot covered with “green fuzz” in 7 days. Perennial ryegrass fills the divots about twice as fast as the Kentucky bluegrass. Pregermination fills the divots twice as fast as seeding without pregermination. One advantage of the pregerminated divot mix over non-germinated seed is that the pregerminated seed does not require excessive water to get the seeds started. They are already growing and it only takes a little more frequent watering to make the seedlings develop.

Seed count per square inch and seed weight per 1000 square feet for various divot mix depths

Given: Perennial ryegrass has 225,000 seeds/lb and divot mix uses 15 lbs seed/40 gallons sand
 Kentucky bluegrass has 1,500,000 seeds/lb and divot mix uses 10 lbs seed/40 gallons sand

Divot mix depth (inches)	Perennial Ryegrass		Kentucky bluegrass	
	Lbs seed/1000sqft	Seeds/sq.in.	Lbs seed/1000sqft	Seeds/sq.in.
1/16	15	23	10	104
1/8	30	46	20	208
1/4	60	92	40	416
1/2	120	184	80	832
1	240	368	160	1664

■ Indicates amount of seed that forms a seedling for each species.