



## MAKING PRE-GERMINATED DIVOT MIX FOR FIELD REPAIR

By Mike Andresen, CSFM, and Dr. Dave Minner

**M**ost cool-season grasses can be pre-germinated to speed establishment and recovery on athletic fields. Perennial ryegrass, Kentucky bluegrass, and tall fescue have been pre-germinated 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. The process is also followed for in-season maintenance on soil-based practice and game fields.

**Begin the pre-germination process 4 or 5 days** before the time you will actually apply seed to the field.

Put a 50-pound bag of seed into a large water tight container and fill the container with tap water. We keep four 50-gallon plastic trash cans on hand and mark them “for pre-germination 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 ounces of Pana-Sea (or other quality biostimulant or diluted fertilizer solution) to each container with the seed and water.

A heated shop is preferred so that everything equilibrates to about room temperature or 70 degrees 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, or you can use Apron-treated seed.

**Let the seed solution soak in water for 12 hours, then 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. There have been times when we simply changed the water (drain the barrel and immediately refill

with soaking solution) daily and seedling success remained high.

We've further experimented by daily aerating the solution with the nozzle of a backpack blower rather than change the solution. Though we don't recommend this practice, we have not seen significant loss of seed establishment. Success is

er 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, calcined clay, and dye over the pile. Mix on a sheet of plastic or a tarp to avoid staining of the hard surface if desired. Continue adding sand, seed, calcined clay, and dye

10 pounds of Kentucky bluegrass seed, 40 gallons sand, 50 pounds calcined clay, and 32 ounces of a quality turf colorant dye.

### **Remove divot debris before seeding.**

Load a 5-gallon bucket half full of divot mix and work the field from sideline to sideline 5 yards at a time. A bucket more than half full is difficult to handle comfortably. After mechanically sweeping the field there may still be debris in the divot that can be swept out by hand to ensure 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 where you can expect players will "cleat it in."

### **Not all the seed survives but those that do represent mature plants for next year's field.**

Seeds that are visible after placing the divot mix and seeds that are placed too deep will seldom establish, however 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



Divot dye mix at the beginning.

vital and you should not take shortcuts. Experimenting with the process to fit your program and to potentially improve it is certainly encouraged.

**Pre-germinated 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 pre-germinated 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 pre-germinated seed, sand, a drying agent such as calcined clay, and green dye.** Many topdressing suppliers now will formulate a divot mix of sand, dye, and other amendments to make our jobs easier. If you go this route, simply add pre-germinated seed to the prepared divot mix.

On the day you want to seed, remove the seed bag from the pre-germination contain-

until you have a layered pile. Shovel the pile to one side and then back again to mix. The recipe is 15 pounds of perennial rye or



Dyed divot mix in final form.

that seed is mixed throughout a volume of sand and then the mixture is placed at various depths depending on the depth of the divot.

Seed visible on the surface 1/16-inch dries out and seldom establishes. Likewise, seed planted too deep, below a 1/2 inch, will not germinate. The seeds that actually make plants germinate from a 1/8-inch zone that lies at the depth of 1/16 inch to 3/16 inch below the surface for Kentucky bluegrass and in a 1/4-inch zone that lies at a depth of 1/16 inch to 3/8 inches below the surface for perennial ryegrass and tall fescue.

For each home game we mix about eight 5-gallon buckets of sand with 15 pounds of perennial ryegrass or 10 pounds of Kentucky bluegrass seed. After filling divots we feel that we are getting about 100 seedlings per square inch. At this rate the divots fill quickly without a negative effect from seedling overcrowding. 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 due to germination time requirements may not adequately fill divots when seeded in October. During October we switch to perennial ryegrass because it establishes until the end of that month and even into early November. Pre-germinated 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. Pre-germination fills the divots twice as fast as seeding without pre-germination.

One advantage of the pre-germinated divot mix over non-germinated seed is that the pre-germinated 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.

We make no changes in our normal in-season irrigation schedules to accommodate for growing in the newly seeded divots. They seem to thrive fine without being micro-managed. ■

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Taking the post-game divot filling walk.



Divot mix seedlings at 4 days.



One-week old divot fuzz.