

## Planning for the worst: spring reseeding on winter-damaged golf courses

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Reports are just starting to trickle in as golf course superintendents are watching the turf samples they brought into their office over the last few weeks. It's important not to jump to conclusions if the plugs don't green-up immediately, some may take two to three weeks to green up. In a few occasions, turf areas that actually looked the worst in the field were the first to recover once we brought them inside (Figure 1). Turf color in the field can be misleading, so use plugs to monitor areas that look the worst. It's still far too early to predict how the turf fared this winter, but we'll know more in the next few weeks with warming temperatures. Winterkill can be extremely variable and inconsistent from site to site, even when sites are immediately adjacent to each other.



**Figure 1. Recovery**

The perennial ryegrass and rough bluegrass plugs haven't recovered after two weeks in the greenhouse. The bentgrass in the bottom left was paper white in the field and recovered in only a few days.

Following are our thoughts to date:

- Our concern is primarily on the high value greens, tees, and fairways, but higher mowed rough height turf may also have suffered some damage.
- Well-established Kentucky bluegrass or creeping bentgrass should survive fairly well, especially if watered sometime over the winter since desiccation should be the primary cause of winter damage.
- Conversely, perennial ryegrass or annual bluegrass are the species most susceptible to desiccation and other forms of winterkill.
- Recovery will come from new leaf growth from the crown and not leaf green-up.
- Winter irrigation may have helped reduce desiccation injury.
- Turf on soils that went into the winter dry and/or dried out during the winter will be most affected by winterkill.
- Turf on windblown north facing slopes, south-facing slopes with maximal radiation and daytime heating, and/or otherwise exposed sites will be most affected by winterkill.
- Turf seeded last fall will be susceptible to winterkill, especially the later seeded turf.
- Turf that was trafficked during the winter will be more susceptible to winterkill.
- Turf that is compromised in some other way will be more susceptible to winterkill. For example, shade, poor drainage, compacted soils, low mowing heights, etc. may decrease winter survival.
- Any combination of the above will increase susceptibility to winterkill.

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Assuming some degree of damage, areas will need reseeding. Following are a few suggestions to maximize seeding success:

- Creeping bentgrass should be seeded wherever feasible since it is one of the most winter and summer tolerant grasses for NE, but it may not make sense on your particular course. Kentucky bluegrass also has good tolerance to summer and/or winter, but it is so slow to germinate. Our current research suggests a 90%:10% or 80%:20% mix of Kentucky bluegrass:perennial ryegrass provides quick cover in fairways but also maximizes establishment of Kentucky bluegrass. We'd avoid 100% perennial ryegrass in most cases, based on its relatively poor tolerance to both summer and winter stresses. More information is available at ([http://turf.unl.edu/pdfctarticles/Aug\\_8\\_reseeding%20fairwayswithpoacontrol.pdf](http://turf.unl.edu/pdfctarticles/Aug_8_reseeding%20fairwayswithpoacontrol.pdf)).
- Seed as soon as possible after damage is confirmed to maximize the amount of time seedlings have to get established before summer weather. Mid-May is usually the cut-off for spring seeding and later seeding dates increase the chances for having to do it over in August.
- Improve the seed-soil contact by aerifying, power raking, and/or hand raking before seeding. After seeding, a light raking, dimpling with tires of the sand rake, or a light rolling will push the seed into better contact with soil. Seed blankets could also be used to speed germination.
- Water lightly and often to keep the seedbed moist. Mulch will also work to conserve water, but use sparingly and so at least 30-40% of the soil is still visible through the mulch.
- Avoid any preemergence crabgrass herbicides until the extent of damage has been determined.
- Weed control is important because crabgrass and broadleaf weeds will quickly take advantage of the thin turf. Following are general guidelines, but check the label of your product for specifics:
  - Mesotrione (Tenacity™) or siduron (Tupersan™) can be used in the seed bed and will likely provide three to four weeks of PRE control of crabgrass. It can be applied POST to Kentucky bluegrass or tall fescue at 28 days after emergence (DAE) to control crabgrass and some broadleaf weeds.
  - Quinclorac (DRIVE XLR8™, Quinstar™, Quinclorac™, and others) can be applied PRE or 28 DAE of Kentucky bluegrass or anytime over tall fescue for POST control of crabgrass and some broadleaf weeds
  - Carfentrazone (QuickSilver™) can be applied at any time after seeding for POST broadleaf weed control
  - SquareOne™ (quinclorac+carfentrazone) can be applied within 7 days after emergence (DAE) of tall fescue or Kentucky bluegrass for POST control of crabgrass and broadleaf weeds.
  - Dithiopyr (Dimension™, Dithiopyr™) can be applied once the root system is well established and after at least two mowings for PRE/POST control of crabgrass.
- Since the seedlings will not develop a good root system until next fall, low rates of fertilizer applied frequently will be most effective. Applying 0.5 to 0.75 lbs N/1000 sq ft every 4 to 6 weeks until mid-June should help the grass fill in. Use a starter fertilizer containing phosphorus to aid in establishment.
- Again because of poorly developed root systems, keep the newly seeded areas well-watered all summer.
- Mow as soon as the first few seedlings reach the mowing height for the area. Early and frequent mowing will encourage the seedlings to spread.
- If hot and humid weather is in the forecast, a fungicide application maybe needed to minimize damping off, pythium, and/or brown patch. Night temperatures >68F are conducive to these diseases, but hopefully will not occur for a couple of months.

It is also a safe to assume that some of the damaged turf will be annual bluegrass, so the soil seed bank of annual bluegrass seed will start to germinate as soon as any species we seed. Allowing the annual bluegrass to germinate will heal the area most rapidly, but also maintains or increases the susceptibility to future damage from winter and summer stresses. Therefore, the most sustainable choice is to limit the annual bluegrass competition through aggressive herbicides use during seeding:

- Mesotrione (Tenacity™) can be used in the seedbed and/or 28 days after emergence (DAE) to control annual bluegrass in seedings of Kentucky bluegrass and/or perennial ryegrass.
- Bispyribac (Velocity™) can be applied 30 days after emergence (DAE) of creeping bentgrass or perennial ryegrass.
- Ethofumesate (Prograss™) can be 1-2 weeks after emergence (WAE) of perennial ryegrass, 3-4 WAE of creeping bentgrass, or 8 WAE of Kentucky bluegrass.

We will try to provide constant updates and let us know if we can help in any way. Please keep us posted with what you are seeing and also complete our winterkill survey <http://goo.gl/KZA7i1>

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