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Research Newsflash

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Bentgrass Resistance to Pink Snow Mold Disease

by Christian Baldwin, Ph.D.

Test green in Idaho where the study was run. Plots with a light pink cast were heavily infected with disease.

Pink snow mold is caused by the fungal pathogen *Microdochium nivale* and is generally most problematic in cool (30 to 60°F) and wet environments. Most cool-season turfgrasses are susceptible, but this disease appears most damaging to annual bluegrass.

Eighteen creeping bentgrass cultivars mowed at 0.100, 0.125, or 0.156 inches five days a week from August 28 to October 15, 2008 were evaluated to determine if any cultivars exhibit resistance to pink snow mold disease. Fungicides were not applied to any creeping bentgrass cultivar. Following a natural outbreak, percent area of pink snow mold infection per plot was evaluated on March 4, 2009. At the time of rating, the area had withstood 84 inches of snowfall.

Mowing height did not influence pink snow mold ratings; therefore, data collected were averaged across mowing heights. **L-93, T-1,** Penn A-1, and Declaration showed best tolerance to snow mold with plots less than 20% infected. The most sensitive cultivar was Tyee with greater than 70% infection. Other sensitive cultivars included Penn G-6, LS-44, Mackenzie, Penn A-4, Penn G-2, Penncross, and Seaside II (>30% plot infection). Cultivars with moderately good pink snow mold resistance (20-30% plot infection) included **Alpha**, Authority, CY-2, 007, Penn A-2, and Shark.

Severity of the symptoms was rated on a scale from 0 to 5, where 0 = individual spots, not coalesced, 3 = half of the spots have coalesced, 5 = all spots coalesced. Similar to percent infection, Tyee had the highest severity rating (>3), while **L-93, T-1**, Authority, CY-2, Declaration, 007, and Shark had the lowest severity ratings (<1).

Unlike what its name suggests, snow cover is not necessary for snow mold development; however, snow cover prolongs conditions favorable for disease development. Symptoms include a white/pink mycelium on leaves, while individual spots can range in size from 2 to 24 inches in diameter. The spots appear water soaked and can have a tan or brown color. In severe cases, individual spots can coalesce to form large areas of infected turf, as was seen in this study for certain cultivars (i.e., Tyee).

Cultural practices to minimize pink snow mold include maintaining soil pH near neutral (7), avoiding excessive fall fertilization that can lead to a flush of susceptible vertical growth, and minimizing shade. Shade can lead to extended periods of moisture that remain on the leaf surface.

Overall, no cultivar was completely disease-free; however, there was diversity among cultivars. This study suggests that some creeping bentgrass cultivars such as **L-93** and **T-1**, may require fewer fungicide applications or reduced application rates for winter pink snow mold control.

Scientists Considering Name Change for Tall Fescue

by Jon Schnore, assistant plant breeder

To coin a phrase "would a rose by any other name not smell as sweet?" Tall fescue, the grass formerly known as *Festuca arundinacea*, has recently been given a new name, *Lolium arundinacea* by a leading grass taxonomist. Taxonomists are those people given the task of naming plants and teasing out their associations. This new name is a response to better understanding the relationship between our beloved tall fescue and its kin perennial ryegrass, *Lolium perenne*.

"The association between the two grasses and their relatedness to the overall taxonomy of *Lolium* and *Festuca* is ill-defined and there is no comprehensive or definitive worldwide taxonomic treatment. These grasses are commonly referred to as the *Festuca-Lolium* complex," wrote the Australian Government Office of Gene Technology Regulator, 2008. They went on to say that "*Lolium* is thought to be of more recent origin than *Festuca* via an inflorescence transformation from panicle to spike. Furthermore viable hybrids can be made between tall fescue and perennial ryegrass, which illustrates how closely related these two really are."

Tall fescue is still the bunch type grass we are all familiar with. The name change is to show a closer relationship with perennial ryegrass. US turf scientists gathered recently at a convention in Pittsburgh cast a unanimous vote against making the name change until more is known.

So if you want to raise some eyebrows and get folks talking, start using the new Latin today. For more information see **www.ogtr.gov.au/internet/ogtr/publishing.nsf/Content/ryegrass-3/$FILE/biologyryegrass08.pdf**

Factors Contributing to Faster Germination in Creeping Bentgrass

by Doug Brede, Ph.D.

Everybody knows that the right mixture of water, fertilizer, air, and temperature is required to get seeds to sprout. If one of those ingredients is out of balance, seed may take many days or weeks to germinate. Fast sprouting is important to compete with weeds. But even on a golf course putting green with sterilized soil, faster germination is beneficial in holding the fragile sand mix in place and minimizing erosion.

> "Two days after planting I saw T-1 seeds germinating under the hand lens. By 3 weeks we were mowing."
>
> *— Richard Haas, grow-in superintendent at Canyon River GC, Missoula, MT*

New data from Ph.D. candidate Marcus Jones and professor Nick Christians at Iowa State Univ. in Ames, has shed light on varietal differences in germ speed and what physical seed properties favor emergence. The Iowa study was unique in that it looked at germination in a broader context.

NTEP traditionally tests varieties for germination across locations (see most recent averages below). But NTEP data is based on <u>one single seedlot</u>. A particularly good seedlot can make a mediocre cultivar appear to be a world-beater or vice versa. Many environmental conditions in the seed field go into making a seedlot faster or slower to sprout, including:

- Harvesting even a day or two early before the seed is totally ripe can stunt a seedlot's field emergence without affecting its lab germ figures. The seed tag numbers can look good but the lot is sluggish coming out of the ground.
- Final watering and crop drydown are a critical balancing act for the seed farmer. Water too late and the harvested seed will be damp and may mold. Dry down the crop too early and you can stunt the seed's carbo-loading.
- Many other subtle touches in the seed field such as fertilizer, pesticides, growth regulators – and the local weather – impact how fast your grass will emerge.

Seedling vigor of bentgrasses in the NTEP 2003-2008 Putting Green Trial. Data were averaged over university sites in Arkansas, Arizona, Kentucky, Michigan, New York, Pennsylvania, and Quebec.

T-1	6.5
PENNCROSS	6.4
PENNLINKS II	6.3
007 (DSB)	6.0
DECLARATION	6.0
ALPHA	6.0
INDEPENDENCE	6.0
LS-44	6.0
COBRA 2 (IS-AP 9)	5.9
SHARK (23R)	5.8
TYEE (SRX 1GD)	5.7
BENGAL	5.6
CY-2	5.6
VILLA (IS-AC 1)	5.6
MACKENZIE (SRX 1GPD)	5.5
KINGPIN (9200)	5.4
SR 7200	4.4
LSD VALUE	0.7

The Iowa State study was particularly insightful because it was the first to use <u>multiple seedlots</u> of each variety, thereby averaging across the ups and downs of seed farmers. The objective of this research was to study the germination characteristics of 15 modern cultivars of creeping bentgrass: **'L-93,' 'T-1,' 'Alpha,'** 'Penn A-1,' 'Penn A-4,' 'Crystal Bluelinks,' 'Pennlinks II,' 'Penncross,' 'Tyee,' '007,' 'Mackenzie,' 'SR1150,' 'Memorial,' 'Independence,' and 'Declaration.' For each variety they included 2 to 4 seedlots from production year 2007.

T-1 fairways 3 days after planting at Carmel Valley Ranch GC in Calif.

The researchers studied the seedlings in both the lab and field. ISU has one of the country's most respected seed science laboratories. Standard germination tests were conducted according to the rules established by the Association of Official Seed Analysts (AOSA).

They found that **T-1** had the highest seed final germination rate, synchrony, and seed weight compared to Penncross. Synchrony was defined as the amount of time between 25 and 75% germination. Better synchrony means fewer sluggish seed. Other cultivars that did well in synchrony were **Alpha**, Independence, and Declaration. Seed size did not correlate with speed of initial germination, but it did with final germination and synchrony.

Jones and Christians concluded that modern varieties do indeed have faster germination than Penncross. **T-1** surpassed Penncross in 3 germination parameters.

Jones speculated that the success people are having with interseeding **T-1** could be directly related to its faster, more synchronized germination. And perhaps past interseeding failures might be tied to using Penncross.

T-1 green 9 days after planting at La Monacilla GC, Seville, Spain