JACKLIN SEED by Simplot

Volume 17, Issue 4
September 2014

RESEARCH NEWSFLASH

Battling Rust

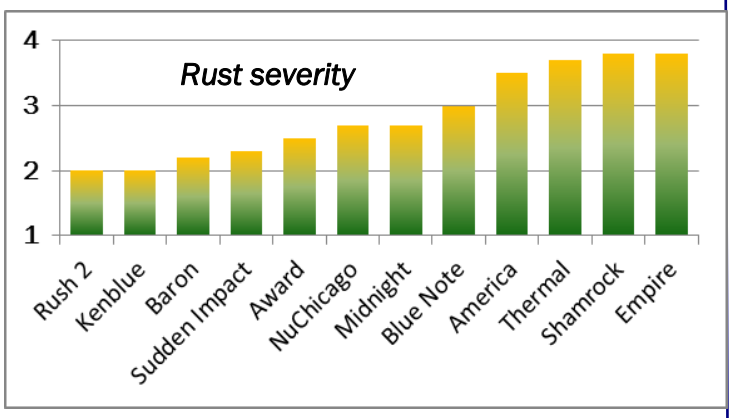
by Doug Brede, Ph.D.

An August 2014 rust flareup on Kentucky bluegrass

A study by professors Paul Koch and Bruce Schweiger of the University of Wisconsin-Madison finds that the new Jacklin bluegrass variety, **Rush 2** (J-1770), is leading the pack in rust resistance among popular bluegrass varieties (see graph). The study, initiated in 2013 and sponsored by the Wisconsin Sod Producers Association, is taking an integrated pest management approach to controlling rust. The study consists of 4 sites – 3 on commercial sod farms and one at the O.J. Noer turfgrass research facility in Madison. The researchers add that "all but one [of the field trials] are in good shape."

Rust is a particularly menacing pathogen because it comes in so many different species, races, and types of spores, not to mention that it mutates into more virulent forms.

Continued p. 2



Rust severity among bluegrass varieties at sod production trials in Wisconsin. Larger numbers indicate more disease.

Goodbye Dollar Spot?

by Doug Brede, Ph.D.

Dollar spot epidemic at the O.J. Noer test plots in Madison, WI, June 2014. Note the 'V8' plot is free of disease.

As you are reading this, V8 creeping bentgrass is being planted in a second consecutive series of NTEP trials at universities across the country. V8 is Jacklin Seed's new high density, dollar spot resistant creeping bentgrass. The difference in NTEP this time is that V8 was entered gratis as a "standard entry," because it aced the 2008-2013 trial. NTEP generally extends an offer to reenter the top-performing variety into a second set of trials to serve as a standard for future varieties.

One of the outstanding features of V8 is its disease resistance. V8 is the state-of-the-art in bentgrass breeding for dollar spot control. For example, at Virginia Tech in Blacksburg, V8 was tied for #1 in least amount of dollar spot among creeping bentgrasses and scored 8.3 on a scale of 1 to 9, with 9 equal to no dollarspot. By comparison, the variety Pure Distinction had the greatest amount of dollar spot, and a resistance rating of 4.7. Similar results can be found at the University of Arkansas in Fayetteville, where V8 scored 8.7 in dollar spot resistance, compared to 5.9 for Pure Distinction. V8 also tied for #1 at Rutgers University in New Jersey with a resistance rating of 7.7, compared to 4.0 for Pure Distinction. Seed of V8 is available this year in limited quantities.

Turf breeders are challenged to stay one step ahead of this rapidly evolving fungus.

"Over the past ten years, increased susceptibility to rust has been observed for several Kentucky bluegrass cultivars in the US, most notably the once highly resistant 'Midnight' types," reports Bruce Clarke and his colleagues from a rust study at Rutgers University. "It has been theorized that new races or even new species of the pathogen may be responsible for this shift in cultivar susceptibility."

"With nearly 5,000 different species of rust, the likelihood of variation in rust pathogens on turf would be expected," says Karl Danneberger, turfgrass professor at Ohio State University.

On Kentucky bluegrass, stem rust is the most widespread. Crown rust is the most widespread on tall fescue and perennial ryegrass, reports Danneberger.

The rust organism is challenging because it can dine on different hosts in the landscape, and it camouflages itself with different spore types. Tom Hsiang, turf pathology specialist at the University of Guelph in Ontario, reports that common barberry (the prickly shrub used for hedges) acts as an alternate host for *Puccinia graminis*, as does wheat. The fungus needs both the grass host and alternate host to complete a full life cycle.

Hsiang explains the complex spore morphing that keeps the plant's defenses from arresting the pathogen: "In the spring, overwintering spores (teliospores) produce other spores (basidiospores), which only infect the alternate host. A few weeks later, a third set of spores (aeciospores) are produced in late spring or early summer. These consequently infect the grass host. Infections on the grass host lead to production of pustules that bear many more spores (uredospores) to re-infect grass."

Rust produces spores at a range of temperatures, but 68 to 86°F (20-30°C) is optimal for epidemics. Rust epidemics are most common in late summer (August and September), but they also can occur in late spring and even late fall. Summer epidemics are usually the most destructive because they can occur after the grass has been weakened by summer heat and shortening roots. That's at a time when the grass is running low on nitrogen following a spring feeding. Rust tends to be a low nitrogen disease.

Many sod producers have noticed that rust is primarily a "first year" disease. It occurs in the late seedling stage and often doesn't reoccur once the turf has thickened up. By the time the sod has been cut and laid in the customer's yard, it is past the juvenile stage and gets little to no rust.

Rust is also a threat to grass seed production, because epidemics flare up just as the seeds are filling.

Scientists theorize that the rust organism is exploiting the same genetic weakness in grass that allows the pollen tube to enter the plant and grow to the ovary. Left unchecked, a rust epidemic can result in seed with low germination and low bushel-weight.

Rust control

If desired, azoxystrobin and propiconazole fungicides are effective in eradicating rust. But for the majority of cases, fungicides are not warranted. They may kill the fungus, but unless the grass starts growing again, symptoms may remain for months.

Once cooler fall temperatures and precipitation arrive, most rust outbreaks cure themselves. If you want to do something extra, a shot of ammonium sulfate fertilizer usually helps. The ammonium will make the turf grow faster while the sulfate acts as a fungicide. Double score.

And to stay ahead of the evolving fungus, be sure to use the most modern genetics available, like Jacklin's new **Rush 2** rust resistant bluegrass (seed is available for sale right now).

Childers Joins Jacklin R&D Staff

Jacklin Seed welcomes Margaret Childers as a new Research Project Lead. She will assist research scientists and breeders in the design and execution of turf experiments. Margaret recently returned to work after staying home for seven years to raise her two sons, Jett (11) and Cameron (9). She is new to the turfgrass industry, but has experience working in forestry and natural resource recreation, and she has a love of gardening and botany.

Margaret received her BS in Resource Recreation and Tourism from the University of Idaho in 1997, and following that worked as the Park Interpreter at two Idaho State Parks, Harriman and Farragut. Her jobs involved designing and presenting programs for park visitors to educate them on the native plants and animals in the parks. She also helped expand the parks' native plant guides and collect field data on invasive weeds within the parks.

Margaret's hobbies include hiking, running, reading, and doing yard work. Margaret has enjoyed her first season working in the field at Jacklin, and is looking forward to continuing to expand her knowledge in turfgrass.