

Summer Patch Disease: Identification and Prevention

by Doug Brede, Ph.D.



No white roots. This close-up of a plug extracted from the field below, shows only brown necrotic roots, with an occasional white rhizome. Summer patch is a disease that targets the root system.

Summer patch disease, caused by the *Magnaporthe poae* fungus, has become the common cold of Kentucky bluegrass. Many years ago the most nagging diseases of bluegrass were leaf spot, melting out, and stripe smut – all three of which punished Merion and many of the early bluegrasses. Advances in blue-

grass breeding since 1990 have all but stricken those diseases from the record. Today, summer patch remains as bluegrass's prime adversary.

For much of its history, summer patch disease has been misdiagnosed. It was confused with another root-gnawing fungus, *Leptosphaeria korrae*, which causes necrotic ring spot. Together the disease complex was erroneously referred to as Fusarium blight. Fusarium is a decomposer fungus that is extremely easy for pathologists to isolate from disease samples. It's literally everywhere. Some of them jumped to the conclusion that Fusarium was the causal agent and not a bystander, hence leading to the mis-naming. **Page 2**



Severe summer patch symptoms on a susceptible bluegrass turf near Washington, DC.

Jacklin Seed Celebrates 75th Year in Business

by Doug Brede, Ph.D.

Jacklin Seed was founded during the Great Depression by Arden Jacklin, his father, brothers, and a few miscellaneous in-laws. Arden's father was a Wisconsin farmer who moved his family west in search of a good place to grow seed.

March 2010 marks the start of Jacklin Seed's 75th year in business. Throughout the year we're going to share with you old stories about these grass seed pioneers. Their history is made possible by memoirs left behind by Arden. Excerpts of his memoirs will appear in a turf history book that Dr. James Beard is presently writing.

Arden's father moved west alone. He sent money back to the family to pay their way out, using income he earned as a dry pea breeder for Spokane Seed Company. The Jacklin Seed partnership was formally signed March 1, 1936 and was "capitalized at \$25,000, with considerable indebtedness." The company's first vehicle was a Model T touring car, in addition to "a few horses and buggies."

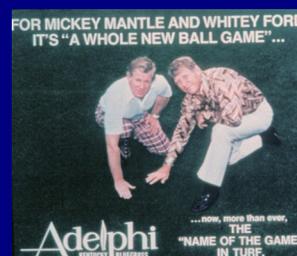
The company's first seed crop was not grass seed but peas and beans. The young business flourished during the war years, supplying dried foodstuffs through government contracts to the military. A side business of raising and selling horses and ponies also proved lucrative. Arden remarked that his dad was "a great horse trader."

It wasn't until 1942 that the family tried their first grass seed crop. No, it wasn't Kentucky bluegrass; it was creeping red fescue. And it almost ended in disaster when a passerby threw a lit cigarette into the field in the fall and burned it into charcoal. That event later revolutionized seed production. 🏠



Arden and Stella Jacklin hosting the research staff at their cabin in the early 1990's. Before turning over the reigns, Arden's business card read: "Company President and Research Director."

Early ads for Jacklin Seed's proprietary Kentucky bluegrasses



Summer patch, continued

Modern Kentucky bluegrasses have made great strides in conquering summer patch, as evidenced by test data (Table 1). Although no one is yet using the word “cure,” we certainly have substantial suppression of disease symptoms in many of the newer varieties. In fact, I believe the #1 quality performance of **Nu Destiny** in the 2000-05 NTEP was directly due to its enhanced level of summer patch resistance.

In the early stages, this disease can be difficult to diagnose by symptoms alone. The disease begins as small, round scattered patches of thin, wilted or slow growing turf. Initial patches may be only 1-3 inches across, later enlarging to about 12 inches. In rare circumstances, patches may grow to twice that size. As they enlarge, patches coalesce or form crescents of yellow or tan turf.

Turf within the center of a patch may begin to recover as temperatures cool, forming a dead ring with a green center, similar to necrotic ring spot. Microscopic examination is necessary to determine which fungus is the culprit. Diagnosis of the correct fungus is important because varieties that are resistant to necrotic ring spot may or may not be resistant to summer patch. There does seem to be some correlation, however. Julia and many of the European bluegrasses are highly susceptible to both summer patch and necrotic ring spot.

Turf areas blighted by summer patch often occur in direct sun or on south-facing slopes, near sidewalks, driveways, buildings, or other hot spots or stressed areas.

Table 1. Three-year performance of Kentucky bluegrass varieties at Summit Hall Turf Farm in Poolesville, MD. Data are shown superimposed over an image of the actual test plots..

Variety	Summer patch	Turf density	Spring greenup	3-yr Quality
Awesome	8.0	6.5	4.0	6.1
Excursion	8.0	6.5	2.0	5.8
Sudden Impact	7.3	5.5	2.7	5.7
Beyond	8.0	5.0	2.0	5.6
Perfection	6.0	5.5	2.0	5.5
Nu Destiny	7.0	5.1	2.8	5.4
Liberator	9.0	6.5	5.0	5.3
Total Eclipse	5.0	5.0	4.0	5.2
Odyssey	8.0	6.0	5.0	5.0
Midnight	7.0	5.8	3.0	5.0
P-105	6.0	5.0	3.0	4.1
Absolute	2.0	5.0	3.0	4.0
Langara	6.0	4.5	5.0	3.9
Rambo	4.0	3.5	2.0	3.9
Apollo	5.0	4.0	4.0	3.9
Thermal	2.0	3.5	3.0	3.8
Moonshadow	6.0	3.5	3.0	3.6
Kelly	2.0	3.0	2.0	2.9

Varieties were scored on a 1 to 9 scale, with 9=best quality and resistance. Varieties in **bold** were bred at Jacklin Seed.

In autumn, the grass may begin to grow into these dead areas again. The disease, however, will likely reappear in these same areas the following summer, and may increase in intensity. One important difference with necrotic ring spot is that summer patch will not occur in the same exact rings the



Summer patch shows strong preference for certain varieties of Kentucky bluegrass. These breeding plots in Idaho mowed at 1/2 inch demonstrate the full range from resistant to susceptible. Summer patch outbreaks occur only every 5 years or so in Idaho, but when they do, it gives breeders the chance to select resistant lines.

following summer. Same general area, but not the same rings.

Summer patch usually occurs during the hotter part of the year (June, July, August). It is less of a problem during cool summers with adequate rainfall.

The reason Jacklin Seed has had such success in breeding for summer patch resistance is our 17-year history of testing bluegrasses in Maryland. Maryland is a pressure cooker for summer patch, which allows resistant lines to stand out.

All of the top performing entries in our trial (Table 1) were Jacklin varieties. **Liberator** scored a perfect “9” in resistance while **Beyond, Awesome, Odyssey** and others were right behind at “8.” Thermal Texas bluegrass and Kelly were among the most susceptible. Note that the top varieties in our Maryland trial were also the top varieties at 4 NTEP sites (see below), indicating similar resistance patterns from widely scattered fungi.

Lastly, it’s important to mention that seed blends have a different reaction with summer patch. With most diseases, you can mix susceptible cultivars with resistant ones and the turf will be disease free. Not so with summer patch. Experience has shown that having even one susceptible variety in a blend will make the turf prone to disease. 🏠

NTEP Rankings for Summer Patch Resistance

Varieties with best resistance (within one lsd of #1): Barrister, Nu Destiny, Arcadia, Award, Courtyard, Front Page, NuGlade, Odyssey, Rugby II, Liberator

Varieties with least resistance (within one lsd of last place): Julius, Limerick, Blue Knight, North Star, Langara, Baron, Brooklawn, Bodacious, Limousine, Julia

NTEP averages were based on ratings in Maine, New Jersey, North Carolina, and Rhode Island.