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IN THIS ISSUE

- Understanding Take-All Patch
- *Poa annua* Terminology Clarified
- Petroleum Spill Injury Symptoms
- Vegetative Planting Rates for Perennial Turfgrasses
- Annual Bluegrass Resistance to Dinitroaniline Herbicides Identified
- The Amazing Grass Plant
- Research Summary: Treatments of Petroleum Spills on Bermudagrass Turf
- Trees and Government
- J.B Comments: Failure to Use Chemical Soil Test Findings
- Ask Dr. Beard

Understanding Take-All Patch

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Take-all (formerly known as *Ophiobolus*) patch is incited by *Gaeumannomyces graminis* (Sacc.) Arx & Olivier var. *avenae* (Turner) Dennis and almost is exclusively a disease of creeping and colonial bentgrass turfs. It has been observed in annual bluegrass in England on rare occasions. Take-all was first reported in Holland in 1937 on a bentgrass putting green, but its occurrence in the United States was not documented until 1960, in western Washington. It was not until the 1970s that the disease was reported in the eastern United States. **Take-all is now known to occur anywhere bentgrass is grown. The fungal pathogen attacks roots and stems, and there are no distinctive leaf spot or sheath lesions.**

Take-all is most common on newly constructed golf courses, particularly those carved out of woodlands, peat

bogs, or other areas that have not supported crops or grasses for decades. This disease can be especially damaging to rebuilt greens or tees on old golf courses or where methyl bromide has been used for renovation. Take-all also can be imported on infected bentgrass sod that is installed on new high-sand mixes or existing mineral soils. The disease tends to spread more rapidly and occurs with greater severity in sandy soils. Take-all may appear as early as the spring immediately following an autumn seeding. It generally becomes most severe in the second year following seeding.

The pathogen actively attacks roots during cool and wet periods, but symptoms may not appear until the advent of warmer and drier conditions. Symptoms of the disease are most conspicuous from late April throughout the summer, and may recur in autumn. Bentgrass affected by take-all in the spring may recover by summer. However, if irrigation is withheld, those areas affected in the spring are the first to die from drought stress. Initially, the circular patches of take-all affected bentgrass are only a few inches (3–5 cm) in diameter and reddish-brown or orange-bronze in color. Turf in affected patches may first develop the blue-gray color associated with wilt. This is due to the impaired ability of roots to take up sufficient amounts of water. Patches may increase to two feet (0.6 m) or more in diameter, particularly on chronically affected bentgrass sites. **Most patches range from 3 to 12 in. (7–30 cm) in diameter**, but they may develop in tight clusters that give the appearance of a single, large, 2 to 3 foot (60–90 cm) diameter patch. Patches also may coalesce, resulting in large, irregular areas of dead turf. When the disease is active, the perimeter of the patch usually assumes a bronzed appearance, and the turf eventually turns a bleached or tan color. Patches also frequently appear reddish-brown in color, and bronzing may be absent. The small, circular patches increase in size over a number of years, and dead bentgrass in the center of the patch may be colonized by weeds if herbicide use is restricted. Sometimes, small horseshoe-shaped crescents are

Continued on page 2