SUMMER PATCH

By Dr. Bruce Clark, Specialist in Turfgrass Pathology, Rutgers University

Summer patch was first recognized as a disease of cool-season turfgrasses in 1984. Prior to that time, it was an unidentified component of Fusarium blight. Summer patch has bee reported in North America on Festuca glacua, F. longifolia, F. ovina, F. rubra, Poa Annua, and P. pratensis. The causal agent has also been isolated on occasion from Agrostis palustris and Lolium perenne. The disease generally occurs on turf that has been established for more than two years.

SYMPTOMS

On P. pratensis, symptoms first appear in early summer as small, circular patches of wilted turf 3 to 8 cm in diameter. Patches may enlarge to more than 60 cm, but generally remain in the 6 to 30 cm range. Affected leaves rapidly fade from a grayish-green to a light straw color during sustained hot weather (daytime highs 28-35C and nighttime temperatures exceeding 20C). Irregular patches, rings, frog-eye and crescent patterns may also develop and coalesce into large areas of blighted turf.

In mixed stands of Agrotis and Poa maintained under putting green conditions, patches are circular and range from 3 to 30 cm in diameter. As P. annua yellows and declines, Agrotis spp. frequently recolonize patch centers. On fairways and lawns, rings or frog-eye patches may not develop. In such cases, symptoms may appear as diffuse patterns of yellowed or straw colored turf that are easily confused with heat stress, insect damage, or other diseases. Infected roots, rhizomes, and crowns turn brown as they are killed. Examination of these tissues typically reveals a network of sparse, dark brown to black, ectotrophic hyphae from which hyaline penetration hyphae invade the underlying vascular tissue. In the latter stages of infection, vascular discoloration and cortical rot are extensive. No fruiting structures have been observed under field conditions.

CAUSAL AGENT

Magnaporthe poae Landschoot and Jackson, the casual agent of summer patch, is a newly described heterothallic fungus show anamorph had previously been misidentified as Phialophor graminicola (Deacon) J. Walker. The fungus forms dark brown to black, septate, ectotrophic runner hyphae on roots, crowns, and rhizomes of turfgrass hosts. Perithecia, which have only been observed in culture, are black, spherical (252-556 um in diameter), and have long (357-756 um) cylindrical necks. Asci are unitunicate, cylindrical (63 x 108 um long), and bear eight ascospores. At maturity, ascospores are 23-42 um long and 4-6 um in diameter. Ascospores are tri-septate with two intermediate dark brown cells and tow hyaline terminal cells.

On half strength PDA, mycelial growth is appressed, olive brown to black, and curls back towards the center of the colony. Phialospores of the anamorph are hyaline, 3-8 um long, and 1-3 um wide. Hyphopodia are globose, dark brown, and occasionally found in nature on stem bases and roots.

DISEASE CYCLE

The pathogen is believed to survive the winter months as mycelia in previously colonized plant debris and in perennial host tissue. Colonization and suppression of root growth has been shown to occur between 21 and 35C under controlled environmental conditions, with optimum disease development at 28C. In the field, infection commences in late spring when soil temperatures stabilize between 18 and 20C. The fungus moves from plant to plant by growing along roots and rhizomes. symptoms develop during g hot (30-35C), rainy weather or when high temperatures follow periods of heavy rainfall. Patches may continue to expand through the summer and early autumn and are often still evident the following growing season. Summer patch may be spread by aerification and dethatching equipment as well as by the transport of infected sod.

EPIDEMIOLOGY

Summer patch is most severe during hot, wet years and on poorly drained, compacted sites. Although heat stress plays an important role in disease development, drought stress is usually not a predisposing factor. Under ideal conditions, the causal agent can spread along roots, crowns, and stem tissue at a rate of up to 3 cm per week. Symptom expression has been shown to increase with the use of arsenate herbicides, quick release nitrogen fertilizers, and several contact fungicides. The disease is frequently stimulated when turfgrass is maintained under conditions of low mowing height and frequent, light irrigation. Soil pH, a major factor in the development of take-all patch, apparently does not affect the incidence of summer patch.

NTROL

Because summer patch is a root disease, cultural practice that alleviate stress and promote root development will reduce disease severity. Since low mowing enhances symptom expression, avoid mowing turf below recommended heights, particularly during periods of heat stress. In the Northeast, symptoms are less apparent when lawns are maintained at a height of 5 to 7 cm, respectively. Fertilize turf with a slow release nitrogen source such as sulfur-coated urea. Irrigate deeply and as infrequently as possible without inducing drought stress. Syringing to reduce heat stress, aerification, improving drainage, and reducing compaction are other practices that will aid in the control of this disease.

Overseeding affected areas with L. perenne, F. arundinacea, or resistant cultivars of P. pratensis represent one of the most cost-effective means of controlling summer patch. Use mixtures or blends of resistant turf cultivars or species for best results. Conversions of golf areas from Poa to Agrotis spp. will also reduce disease incidence.

Fungicides are available that can effectively control summer patch. Applications should commence on a preventative basis in late spring or early summer when soil temperatures stabilize between 18 and 20C. Systemic fungicides have proven to be most effective but must be applied at high label rates and repeated two to three times at 21-28 day intervals. Efficacy is enhance when products are applied in at least 1600 L of water per hectare. Certain contact fungicides may stimulate symptom severity when used repeatedly at high rates.

Article seen in Connecticut Clippings, January 1992.

THANKS RICK

Many thanks to our host **Rick Key**for hosting theFebruary meeting at Ridgemark Golf and Country Club. The luncheon was great and we all found Jeff Kollenkark from Ciba-Geigy presentation on plant growth regulators and their application on golf courses very informative.

TURFGRASS MANAGEMENT FOR PROFESSIONALS

Current techniques and research results pertaining to turfgrass integrated pest management are the focus of this two-say course. It should be of special interest to golf course superintendents, park and recreation site managers, cemetery and sports turf managers, horticultural consultants, turf and seed sod suppliers, landscape managers, pest control advisors and other professional turf and landscape managers. Ten hours of CDFA continuing education credit pending.

Topics of discussion include: Turf Selection; The first step in pest management; Insect turfgrass pest management; Pre-emergent turf weed management and control; Post-emergent turf weed management and control; Rodents and other turf animal pests; Turfgrass nematode diseases; Turfgrass management to reduce diseases; Low and high temperature turf diseases.

This class will be held on March 24, 25; 9 am to 4 pm at the University Club, UC Davis. For more information call (916) 757-8899.