

PART TWO

SPECIAL EDITION: SUMMER PATCH DISEASE IN CALIFORNIA

This is a follow-up **Special Release** regarding **The very Destructive Disease** infecting the vascular crown and root of *Poa annua* in golf course greens as evidenced by the numerous samples of grass plants submitted to Dr. Robert Endo, UC Riverside. The diligent research efforts of the University pathologists sparked by your many samples culminated to date in the findings reported in their release that follows:

Control of summer patch after infection has occurred and after the disease has developed above-ground symptoms is probably not attainable because systemic fungicides appear to be incapable of *curing* infecting plants of fungal diseases. Therefore, application of the above systemic chemicals to turfgrass plants already affected with summer patch is unlikely to do more than reduce spread to adjacent healthy plants. Since some adjacent plants may already be affected with root rot, but have not yet developed above-ground symptoms, even this limited objective may be difficult to attain.

Therefore, the only control measures that are available for *infected* plants are those that may help to render the *effects* of summer patch somewhat less severe, and thereby prolong the life of the infected plants. There are many such palliative measures available, because symptoms of the disease develop above-ground *only* when root damage below ground becomes severe enough to interfere with the normal growth of the foliage and stems. Examples of such mitigating factors are: 1) weekly fertilization with a very dilute solution of fertilizers to maintain "normal" foliage and root growth of the diseased plants for as long as possible. Since vascular tissues are frequently infected, nutrient uptake is usually reduced. Phosphorus is probably most important because it is necessary for the formation and growth of new roots, too much nitrogen must be avoided because it favors foliage growth at the expense of root growth; and 2) the avoidance and/or control of any factor that further stresses or weakens the diseased plants or interferes with their normal functioning such as compacted anaerobic soils,

salinity, insufficient water, reduced heights of cut, high temperatures, heavy traffic, aeration, renovation, severely drying winds, and fungal diseases of the foliage that develop on weakened stressed plants (e.g. anthracnose and dollar spot).

An indirect method of controlling summer patch of *P. annua* may be to either sow bentgrass seeds or replace with bentgrass sod, areas of *P. annua* greens that have been killed by *M. poae*. This *may* be effective because we have not yet seen bentgrass plants severely affected or killed by this fungus.

Ectotrophic fungal root pathogens are an entirely new ball game with regard to management and control because the diseases they cause occur below ground, out of sight and out of mind. What is particularly bad is that some of these fungi (e.g. *L. korrae*, *M. poae*, and *G. graminis* var. *avenae*) cause diseases that also affect the vital nutrient- and water conducting tissues of the root (xylem); therefore such diseases are very damaging and extremely difficult to control.

Remember the only method of controlling these diseases is *preventative*, i.e. to apply preventative applications of certain systemic fungicides to the soil in the spring *before* appreciable root infections occur. Therefore, if your *Poa annua* plants in your greens were affected with summer patch in 1988, you should seriously consider applying systemic fungicides as a "drench" to your greens in early spring of 1990.

In conclusion, the authors wish to point out that the results of fungicides control experiments carried out in the spring against summer patch in the eastern U.S. may differ greatly from those carried out in California because of the differences in winter soil temperatures between the two areas. In the very cold eastern U.S., infected plants that survived the summer and fall may possibly recover completely from infections in the winter and early spring. In California, in

contrast, infected plants may manifest complete recovery from above-ground symptoms during cooler weather, but continue to manifest moderate to mild root infections below ground. In the latter situation, fungicides applied in the spring in California would have been ineffective.

This winter we have already witnessed several greens in California that continued to manifest root rot although above-ground symptoms were lacking.

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