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# Is It Disease Or Nutrition?

By Ray Knapp

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Many times a problem is diagnosed as disease and it is really nutritional. We frequently conclude that off-colored turf is disease. Last season I saw two types of examples where disease appeared to be the problem, when it was really nutritional.

I was at West Bend Country Club in early May, 1988. Bruce Worzella had several greens that were declining. Over a five to six day period a few small areas of yellowish turf increased in size and the number of greens affected were increasing. Looking at the areas from a distance, there appeared to be an orange colored cast. All the symptoms appeared to indicate Toronto C-15 decline.

Bruce had made an application of a dry granular fertilizer and two applications of wetting agents. He was on a good preventive disease program and had put on his first application of fungicide.

Dr. Worf was out of town, so Bruce sent several cup-size green samples to Dr. Roberts from Michigan. The diagnosis Dr. Roberts sent back was unexpected. He concluded there was an extremely high pH at the surface of the green. This was tying up the availability of nitrogen and causing the decline. He recommended spraying on two applications of one-eighth pound of nitrogen per 1000 square feet. The second application should be a week after the first. The source of water soluble fertilizer didn't appear to be important.

Roberts reported to Bruce that this had been happening on courses in Michigan and Illinois. The dry spring had precipitated the problem.

Bruce followed Dr. Roberts' recommendation. A week after his second application, the greens were nearly completely recovered.

I saw this same thing twice within the next six weeks at Tom Kramer's course — Silver Spring Country Club, and at Gene Garvis' course — Peninsula State Park. This was the second season Gene had this problem. They both got the same good results using water soluble fertilizer.

The three courses had two things in common that may help one diagnose

the high pH surface problem. Theoretically, they had plenty of plant nutrition. However, it was tied up. Secondly, this occurred during a prolonged dry period. You wouldn't expect to see this during a period of normal rainfall.

I'm going to go out on a limb and say that many times on sandy greens where a problem was previously diagnosed as Pythium, the real cause was the high pH nitrogen tie-up syndrome. I think that this is true in some cases when results from pathological labs confirmed the presence of Pythium. I've always doubted some of the reports of Pythium on high sand greens.

The second nutritional disease problem occurred at Todd Rinks' course — Plum Lake Golf Course in Sayner. Todd had on and off problems for several years. He had sent several samples over that period to Dr. Gayle Worf. Most of the time, Dr. Worf wouldn't find any causal organisms. However, he did find *Fusarium* on one sample. Todd had used nearly every fungicide but none of them were really effective.

Todd's high sand green had purple-reddish spots over the entire surface. Some spots were small while others were the size of a soda can or a softball. Seeing this problem last fall, I recognized it as phosphorous deficiency.

Looking at Todd's soil test results, no one would have concluded this to be a possible problem. The greens had over 400 pounds per acre of phosphorous. For this laboratory test results of 200 pounds per acre would have been considered adequate. One thing Bill Kazda (former superintendent and manager for 35 years at Plum Lake) pointed out was that lead arsenate had been used in the past. It was possible that the arsenate was what was showing up as phosphorous in the soil test results.

Once the problem was diagnosed, many of the pieces of the puzzle fell in place for Todd.

In spring or fall he would send a purple-reddish sample to Dr. Worf. By the time it got to him, the soil would have warmed up, more phosphorous was then available and the symptom would disappear.

Todd also reported that because of the apparently high phosphorous levels, he had been using very little phosphorous for a nine year period.

For a field diagnosis of phosphorous deficient turf, you will always see the reddish or purplish areas. If you look at the individual grass plant, you will see the upper surface of the leaf has the typical deficient color while the lower surface will be a typically normal green.

In spring or fall when the symptoms appear one can bring a cup setter sized sample into room temperature. In 24 hours the deficiency symptoms will have disappeared because the higher soil temperatures will make phosphorous more mobile or available.

A quick way to eliminate these deficiencies is to apply .1 pound per 1000 square foot of phosphorous (P205) using monoammonium phosphorous (12-61-0). Any other form can be used. Some of the dry granulars will take a little longer because they need to get into the soil solution to become available to the plant.

In both these examples the superintendents were following sound fertility practices. Occasionally we will be involved in these unusual circumstances. Many times by pointing out these isolated instances, we find the problem is more widespread.

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