

What's First the Chicken or the Egg?

(Disease or Nutrient Problems?)

By Larry Thornton

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Is the turf dying because a disease or a complex of diseases is attacking it? Or is it because the turf is weakened due to poor nutrient uptake and utilization? Being predisposed to disease is a common occurrence on the golf course.

Agronomically speaking, have we mixing up our philosophies about why we have turf decline? Sometimes the more information we receive tends to cloud water that is already murky. If that sounds vague it is because we are crossing into the "Too Many Variables Zone". Very similar to the Twilight Zone but not fictitious.

In a nutshell Superintendents are trying so many things at the same time it is impossible to scientifically evaluate the cause and magnitude of the result of specific practices. We need to get back to basics. The basics for growing great turf are a combination of solid science, prioritizing, good cultural practices, the proper utilization of tools, hard work, people skills and innovation.

A new trend in golf course management is the utilization of phosphorus spray supplements on fairways. There are numerous phosphorus products on the market that show a benefit to disease and stress reduction. Other than commonly used phosphorus sources such as Monoammonium phosphate (MAP) and Diammonium Phosphate (DAP), there are three basic sources that are receiving attention.

Potassium Phosphite, Phosphorus Acid, and Mono Potassium Phosphate have some registrations as fungicides and can also be available as plant foods. In fact, I have been selling or formulating with Mono Potassium Phosphate for over ten years. It is an excellent water-soluble product.

Where does MKP (Monopotassium Phosphate) or (Potassium Dihydrogen Phosphate) fit into the golf course tool list? It is less important than good irrigation, good drainage, aerification, sharp mowers, good soils, good water, variety selection, and basic fertility requirements. However, the use of phosphorus based spray supplements

has shown to improve turf quality in scientific study when mixed with contact fungicides thus reducing Summer Stress Syndrome. Potassium, phosphorus, and calcium applications have been known to reduce the effects of phythium and seedling damping off for decades.

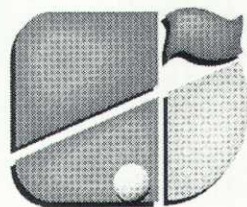
MKP is a fine white crystal with excellent solubility. The recommend-

ed use rate ranges from 2-4 ounces per 1,000 square feet or 6-11 pounds per acre every 7-14 days. MKP, Phosphorus Acid, and Potassium Phosphite are labeled as plant foods and fungicides. The cost of application of MKP can range from \$4-\$10 per acre per application, being considerably cheaper than phosphorus acid or potassium phosphite. Potassium Phosphite and Phosphorus Acid should offer longer residual activity respectively due to better translocation than MKP but good results have been seen with MKP in helping to reduce summer stress syndrome. The effectiveness and longevity of these products needs more research under high disease pressure.

MKP has an extremely low salt index and burn potential. The salt index of MKP is about one ninth that of urea. It also has a pH of 4.5 making it an excellent acidifying agent for high bicarbonate water. This also helps in keeping the phosphorus from reacting with bicarbonates and can help stabilize some fungicides. In addition, low pH can create some micronutrients to become toxic to plants.

When spraying nutrients water volume can enhance or detract from foliar uptake. One gallon of water per 1,000 sq. ft. is a normal rate for MKP at 10 lbs. per acre. The higher the water volume the more likely the application will become a soil application. In general, flat fan nozzles will give more complete coverage than many of the other spray tips. One draw back of low volume can be burn potential, especially when tank mixing. Watch out for micronutrients in tank mixes. Low volume can reduce creativity in tank mixing. Low volume sprays can create water volume conflicts when tank mixing various fungicides. Always read and follow label directions. There are wide swings in recommended water volumes do to a number of variables.

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Chicken or the Egg?

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Other phosphorus-based products require higher water volume than MKP.

Taking greens practices to fairways is an old philosophy. From light -weight mowing to high intensity coring and now tank mixing chemistry and nutritionally based products. Spraying nutrients on fairways is not new but growing in popularity. The idea of spraying nutrients to prevent stress on greens has been done for decades. Shallow rooted plants with poor nutrient uptake lend themselves to foliar feeding. Phosphorus products are not the only nutrients to show a relationship in reducing disease incidence. There are numerous scientific studies that show reduction in Dollar Spot, Patch Diseases, Phythiom, Brown Patch and Anthracnose. The proper selection, rate, use, and timing of fertilizer applications can improve quality, disease resistance, wear tolerance and hardiness.

Supplemental nutrition from foliar application for turf is a sound practice but does not replace soil fertility practices. Environmental factors influence cool season grass roots and turf nutrient utilization.

Poor drainage, poor soils, too much water and or heat all can create nutrient availability and utilization problems. In addition, irrigation water can negatively influence nutrient

availability. High or low water pH, high bicarbonates, excess sodium and high salt, can also limit soil and plant nutrient availability.

Starting a supplemental spray program before a reduction in plant health and vigor is a proven practice.

Over the years turf quality has continued to improve because of improvements in our tools. Better cultural practices have given superintendents that extra edge to survive more turf stress than in the past. It is important to utilize all our agronomic and cultural practices to continue making advancements in fine turf. Solid plant nutrition is a basic turf requirement.

Better nutrition can help overall plant health but should not be depended on to replace the use of traditional fungicides. In a perfect world turf would always be healthy. The reality is dealing with plant

Stress from numerous directions, storms, floods, excessive play, limitations in labor, proper timing of sprays, equipment failure, limited cultural practices, time limitations, budgetary restrictions, and so on.

So what was first, the chicken or the egg, (the disease or nutrient deficiency)? Sometimes it might be the chicken, sometimes it might be the egg or even both at the same time, and it may not matter. The real challenge becomes implementing new tools without losing sight of our priorities for healthy and durable playing surfaces.

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