Systemic Fungicides
Powerful Tool In Disease Control

By DR. PAUL SARTORETTO
Technical Director
W. A. Cleary Corporation

SYSTEMICS are expensive. So make sure you are getting your dollar's worth. Use them properly and try to milk all the protection you can get out of them.

Improper use of systemic fungicides has resulted in disgruntled customers and a condemnation of these excellent fungicides. In addition, there are instances of "systemics" tolerant to dollarspot, a disease that has proven to be a pushover for these "systemics."

Of all diseases, the most prevalent and the most easily controlled disease by these "systemics" on golf courses is dollarspot. It is possible that tolerant strains are developing and will become significant, but we must await future developments. In the reported instances of failure to control, investigation of conditions indicate that severe attack of dollarspot was in progress even before the first application of the systemic. With that kind of head start, the dollarspot had an opportunity to reach full bloom before the systemic had a chance to attack it. There is also confusion in the accurate identification of the fungus.

A systemic fungicide is distinguished from contact fungicides because of its ability to also diffuse into the plant to give curative action. This is accomplished not so much through foliar absorption, but mainly by way of soil-root diffusion and thence by transpiration action throughout the grass blade cells. When sufficient systemic works its way into the plant tissues, it immunizes the grass blade against the fungus surface attack.

The process does not happen overnight. As a matter of fact, most of the systemics are incapable of movement or activity until they begin to hydrolyze to soluble active metabolites. Laboratory tests indicate that this chemical procedure is slow, often taking as long as two weeks before even 50 percent of the active metabolite is available. Reports on some "systemics" indicate that more than six weeks are required for 90 percent hydrolysis.

This phenomena should not be construed as a disadvantage or a deterrent to the use of "systemics;" indeed, it can be capitalized upon and converted to the golf superintendent's benefit.

If the golf course superintendent were to draw upon his many years of experience and knowledge of working with slow release organic fertilizers and apply that same concept to "systemics" he can begin to appreciate the necessity for proper timing and use of systemic fungicides.

The "systemic," through both contact protective as well as slow release systemic action, is very much like ureaform. It experiences slow release and long residual. On the other hand, the contact fungicide acts very much like the water soluble fertilizer that is immediately available for activity, and just as sudenly dissipates.

The superintendent has learned by experience that the slow release nitrogen will last for several months, and may take him through the entire summer depending upon the rate of his spring application.

On the other hand, he may elect to supplement his spring feeding with small increments of more ureaform throughout the summer. With a slow release nitrogen he has latitude, whereas with a soluble fertilizer he is confined to a constant demand feeding rate.

Systemic fungicides do not last nearly as long as ureaform, but can be expected to last four to six weeks. However, the repeat application should be applied before the first application is completely dissipated. Therefore it would appear that a substantial application of systemic fungicide in early spring would be in order, followed by a constant release of active metabolite. This is ideal for fairway applications.

Greens, however must be treated differently. Because the green clippings are collected, it is estimated that as much as half of the systemic could be lost via the clippings during periods of frequent mowing. This is why the rate of treatment is usually doubled and the frequency of application is recommended at weekly or ten day intervals. The pattern begins to develop in the mind of the superintendent that the systemic is a powerful tool; and, that he should strive to maintain a release of miniscule amounts in the plant to kill the germinating spore in much the same way that a preemergent herbicide works on the weed seedling.

The success story of systemic fungicides is definitely tied into their role as preventives (fungistatic activity) as well as curative for specific disease organisms. There is still need to leave the role of fungicidal control for non-sensitive organisms up to the powerful, quick acting contact fungicides supplementing the systemic whenever the occasion arises. This should seldom occur if the systemic is applied properly. □