

New horizons in disease control

New formulations, packaging and use rates make control products easier to use and more effective, as the green industry charts its course into the new century.

Control product manufacturers and end-users continue to find better product formulations and new strategies for prevention at lower rates.

Here's an exclusive look at some of the people—from manufacturers, to research professionals, to superintendents—who are finding new ways to get the job done.

—Terry McIver, Managing editor

Summer decline less complex with new control combination



The edict that golf greens be "short and fast" puts added stress on turf root systems, which adds to disease control problems.

■ Just three years ago, few people understood what caused summer decline complex on bentgrass golf greens. Even worse, no one knew how to control it.

In 1992, North Carolina State University researcher Dr. Leon Lucas found that 4-8 oz. of Chipco Aliette WDG and 4-8 oz. of Fore WP brand fungicides—applied every 14 days—provided excellent control.

Tests conducted in South Carolina by

Dr. Bruce Martin and research in other states have confirmed Dr. Lucas's results.

"We're seeing more evidence that high levels of fertilizers and especially potassium fertilizers, contribute to the onset of pythium diseases," says Lucas.

"For years there has been a move toward using more potassium because many people feel it helps turf tolerate heat and drought better. This seems like the ideal thing to do if you want to help cool-

season turf hold up better during the summer.

"But the levels of soluble salts are climbing too high, and we're seeing a clear connection between high amounts of salts from fertilizers and disease damage. These high salt levels can develop quickly on new, high-sand-content green mixtures with low cation exchange capacities.

"Applying high levels of potassium can cause direct damage to roots and stolons, making them more vulnerable to infection from pythium and rhizoctonia species," Lucas explains.

"In addition, it is believed that potassium may create a favorable environment in which pythium species can more easily reproduce."

Lucas recommends using potassium at rates of 5-6 lbs./1000 sq. ft. each year, provided potassium levels are monitored through soil tests and tissue analyses.

"In many of the cases where we see summer decline complex being most severe, we also see high levels of soluble salts in the soil," reports Lucas.

"Roughly 150-250 parts per million should be sufficient for optimal plant growth. As an extra precaution, I recommend one-half the recommended rate twice as often to further protect against injury. When I find salt levels above 300 ppm during dry weather, root rot and decline of bentgrass is more severe."

It is important to note, Lucas emphasizes, that the same soluble-salt fertilizer levels that are completely harmless during wetter weather may actually cause injury during drier periods. The only way to remove the high salt levels is to apply enough water to leach the salts deeper into the soil. Applying this extra water during hot weather, however, can actually encourage disease development.

New formulations—One new tool

superintendents now have for enhanced protection from summer decline complex is the option of using the flowable formulation of Fore fungicide.

Because of earlier difficulties with maintaining a suspension of the formulation, recommendations initially called for Chipco Aliette WDG fungicide to be mixed

remain healthy throughout the summer."

According to Lucas, the combination has been used on bermudagrass, with good results.

"We don't fully understand all the synergistic effects of combining Chipco Aliette and Fore just yet," says Lucas, "but it does provide enhanced disease control. We also see improvements in turf quality that cannot be attributed to disease control alone."

Despite the enthusiastic reports from superintendents throughout the U.S., Dr. Lucas still stresses the importance of accuracy in applications. Of critical importance with the Aliette/Fore combination is timing. For best results, apply the combination in early summer, when daytime temperatures reach the high 80s or low 90s, and when night time temperatures remain near 70 degrees.

"It's also important that superintendents continue making the applications at 14-day intervals throughout the summer as long as heat and humidity remain high," says Lucas. "Some people have waited until later in the season, or have tried applying the combination every four to six weeks when they see clear symptoms of decline. They do get significant curative effects but not nearly the dramatic improvements in turf quality and disease control that you get from being on the regular program."

Precautions—Research in 1994 showed a potential for phytotoxicity and thinning on high sand content greens when using the combination at the 4- and 8-oz. rates on newly-emerged bentgrass seedlings. Thinning was not observed on plots treated with Aliette alone. Based on these preliminary observations, caution should be used when treating newly

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Turf Quality and Color of Bentgrass Tests Conducted at North Carolina State University

Pesticide(s)	Turf Quality (Scale: 1-9)	Turf Color (Scale: 1-9)
CHIPCO® ALIETTE® WDG (4oz.) + Fore® FLO (13fl. oz.) + Blendex (1.25oz.)	8.5	7.8
CHIPCO® ALIETTE® WDG (4oz.) + Fore® WP (8oz.)	7.8	7.5
CHIPCO® ALIETTE® WDG (4oz.) + Dithane WP (8oz.)	5.8	6.0
Control	3.3	4.0

Note: Rates are in oz./1,000ft. Fungicides were not washed off of leaf surfaces (watered in) after application. Blendex® was used at a rate of 0.5 oz./gal. of mix; 2-5 gal. of water used/1,000ft. Turf quality rated 1-9, with 9 being best. Turf color rated 1-9, with 9 being the darkest green. July, 1994 - NCSU

Chipco Aliette and Fore: data from research of Dr. Leon Lucas.

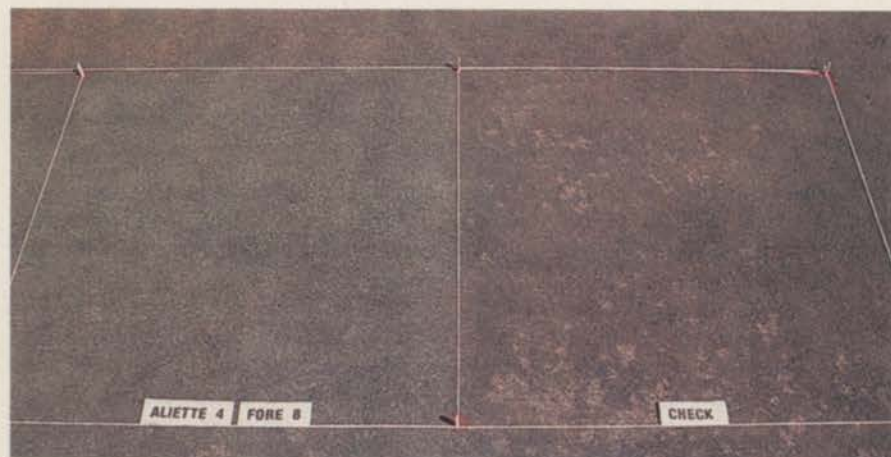
with Fore WP.

But research conducted by Dr. Lucas in 1994 shows that Chipco Aliette WDG can be mixed with Fore Flowable, provided that a compatibility agent is also used.

"We wanted to make sure this combination with Fore Flowable was safe and effective," explains Lucas. "What we found was that it actually provided even better turf quality than with Fore WP."

Superintendents have also begun using the fungicide combination on other grasses. Although formal scientific research is just getting started for many of these applications, reports from superintendents so far have been very positive.

"Some people have used the combination on other cool-season grasses such as tall fescue and had excellent results," reports Lucas. "I've personally seen two cases where the combination was used on home lawns—one with tall fescue and one with zoysia grass—and there was a dramatic improvement in the grass' ability to



The Aliette/Fore combination performs well on test plots in North Carolina.

Product mix proves two can be better than one

■ When dollar spot got in the way of his brown patch research, Dr. Pete Dernoeden tried a product mix that today is a new product for disease control.

The University of Maryland professor of agronomy was testing AgrEvo's Prostar 50 WP fungicide. "Before we could collect our brown patch data," remembers Dernoeden, "dollar spot would appear and wipe out our plots."

improved control of both diseases, with brown patch control going from 14-21 days to 21-28 days.

"The product combination appears to have an additive effect," says Dernoeden. "In other words, mixing the two products together provided better control of brown patch (rhizoctonia blight) than would have been expected with a normal use rate of Prostar alone."

Symptoms

■ On bentgrass golf courses, rhizoctonia blight symptoms first appear as tan blotches or lesions with reddish-brown margins.

The foliar blighting caused by rhizoctonia has a distinctive brown cast surrounded by a smoke ring effect when grass is wet. Large areas become blighted very quickly.

Rhizoctonia blight can often be misdiagnosed as pythium blight.

Couch recommends the Agri-Diagnostic kit now available to turf man-



agers. The chemical test is easy to administer and provides results in 20 minutes.

"Once turf managers know they have rhizoctonia blight, we suggest they spray with Prostar or Prostar Plus the first time that nighttime temperatures remain above 70 degrees," says Couch. "Temperature is the real key to rhizoctonia control, but when it also becomes humid, the fungus starts colonizing and you can get some serious disease outbreaks."

To gain control of the dollar spot problem, Dernoeden mixed Bayer Inc.'s Bayleton turf and ornamental fungicide with the Prostar. The combination

"A rate of two ounces of Prostar WP and one ounce Bayleton 25 DF per 1000 square feet provided a level of control equivalent to four ounces of Prostar."

emerged bentgrass greens. Tests are scheduled for this year to further verify any potential problems.

Lucas emphasizes the need for continued sound management practices, including fertilization levels, soil aeration as needed and air circulation around the greens.

"To get the best results, you have to look at the big picture and consider the entire biological system in which grass is grown."

On the market—The combination control product is now available as a "twin-pack," under the name Prostar Plus. After more than 50 university trials in 10 different states over seven years, brown patch control is consistent even under high disease pressure, according to AgrEvo.

Prostar Plus is packaged in water-soluble bags containing the lowest rates of both products. Each twin-pack covers 12,000 sq. ft. of turf at the normal usage rate. In addition, the combination provides control of 17 other turf disease, including pink and gray snow mold, summer patch, pink patch and Southern blight.

Another researcher who tested the product combination is Dr. Houston Couch of Virginia Tech. Couch described control of brown patch and dollar spot on a tall fescue sod farm as "extremely effective." An advantage of the tall fescue test was that researchers were able to count diseased leaves rather than estimate the percentage of blighted areas on bentgrass.

Couch recommends turf managers follow a preventive program of disease control rather than take a curative approach.

"They'll actually use less product this way," says Couch. "But the first step in proper disease management is accurate disease identification. Managers need to make sure which disease they are spraying."

Both Dernoeden and Couch suggest preventive brown patch control, during the first or second week in June on cool-season turf.