Test 1

Fungicide	Formulation	Rate per 1000 sq ft	Disease severity 9 days[1]	16 days[1]
Check			3.7[2] a[3]	9.0 a
P368	75W	2.0 oz	1.3 b	9.7 a
Banol	6S	0.6 fl oz	1.2 bc	8.7 ab
Aliette	80W	2.7 oz	1.0 bcd	8.3 abc
Subdue	2E	0.25 fl oz	0.8 bcd	8.8 a
Banol	6S	2.0 fl oz	0.5 bcd	4.7 e
Subdue	2E	2.0 fl oz	0.5 bcd	6.0 de
Subdue	2E	0.25		
+ Banol	6S	0.6 fl oz		
+ Aliette	80W	2.7 oz	0.5 bcd	5.5 e
Aliette	80W	8.0 oz	0.3 cd	2.0 f
Pace	77W	3.5 oz	0.2 d	7.0 cd
P368	75W	4.0 oz	0.2 d	9.0 a
Pace	77W	7.0 oz	0.2 d	7.3 bcd
Koban	30W	2.0 oz		
+ Subdue	2E	2.0 oz	0.2 d	5.5 e
Koban	30W	2.0 oz		
+ Aliette	80W	8.0 oz	0.2 d	2.5 f
Subdue	2E-S	2.0 fl oz	0.2 d	5.5 e

[1] Post-treatment interval

[2] 0-10 visual rating scale, where 0 = no disease, 1 = 10% of plot area blighted, 10 = complete blighting of all grass in plot; mean of 3 replications.

[3] Within columns, means followed by the same letter are not statistically different, using Waller-Duncan K-ratio t test.

Test 2

Fungicide	Formulation	Rate per 1000 sq ft	Disease severity 9 days[1]
Check			8.3[2] a[3]
Banol	6S	0.6 fl oz	3.3 b
P368	75W	2.0 oz	2.5 bc
Subdue	2E	0.25 fl oz	2.3 bcd
Aliette	80W	2.7 oz	1.3 cde
Banol	6S	2. fl oz	1.2 cde
Koban	30W	2.0 oz	
+ Subdue	2E	2.0 fl oz	0.8 de
P368	75W	4.0 oz	0.8 de
Subdue	2E	0.25 fl oz	
+ Banol	6S	0.6 fl oz	
+ Aliette	80W	2.7 oz	0.7 e
Subdue	2E	2.0 fl oz	0.7 e
Subdue	2E-S	2.0 fl oz	0.5 e
Aliette	80W	8.0 oz	0.5 e
Koban	30W	2.0 oz	
+ Aliette	80W	8.0 oz	0.3 e
Pace	77W	3.5 oz	0 e
Pace	77W	7.0 oz	0 e

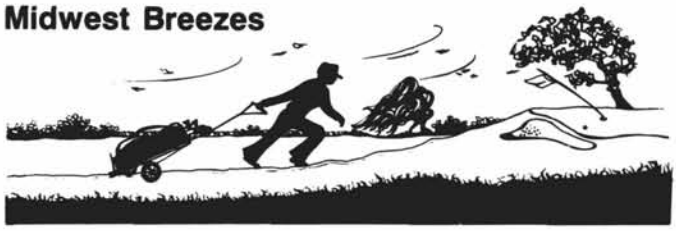
[1] Post-treatment interval

[2] 0-10 visual rating scale, where 0 = no disease, 1 = 10% of plot area blighted, 10 = complete blighting of all grass in plot; mean of 3 replications.

[3] Within columns, means followed by the same letter are not statistically different, using Waller-Duncan K-ratio t test.

Credit — PTC Keynoter

Midwest Breezes



Upcoming Events — Mark Your Calendar

June 10 — MAGCS monthly meeting at Naperville C.C.
July 15 — MAGCS monthly meeting at Golf Club of Illinois
July 4-7 — Western Open at Dubsdred
July 30 — MRTF Field Day & Trade Show at Purdue
August 12 — MAGCS monthly meeting at Woodmar C.C.
September — MAGCS monthly meeting at Ridgemoor C.C.
October — MAGCS monthly meeting at Biltmore C.C.
November 6 — Midwest Clinic at Medinah C.C.
December 3-5 — NCTE at Pheasant Run Resort
January 1992 — Arrowhead Golf Club
January 20-22 — MRTF Conference & Show, Indianapolis Convention Center
April 1992 — Geneva Golf Club
June 22, 1992 — River Forest Golf Club
July 13, 1992 — Briar Ridge Golf Club
August 1992 — Mt. Prospect Golf Club
October 1992 — Settlers Hill Golf Club

Julius Albaugh sent in a clipping stating that the Japanese have come out with pantyhose that has insecticide impregnated in it. They claim the insecticide is harmless to humans. They state that 400,000 pairs have been sold to office workers to ward off spiders and cockroaches. The following is Julius's note to the Editor: Dear Fred — The enclosed article appeared in the local paper last week. Thie type of thing could have a bearing on our golf course operations. (1) In a year or so, there could be an outbreak of rash or infections among Japanese women linked to this product. When the EPA gets wind of the problem, we are likely to lose another good insecticide. Or-(2) If the insecticide is indeed found to be harmless to humans, we could see this item sold in Pro Shops along with other golf attire. It could take the place of insecticide repellents. Our problem of green footprints in the middle of brown singed turf could be lessened. What's next?

"Rhyme and Reason"

June will start off Summer's Song,
To a Tune We Hummed all Winter long.
Summer's pleasures seem to forgive,
The Hectic Cycle in which We live.
While some work as others play,
Blessed be those Summer Days.
There between Rhyme and Reason,
Lay the Heart of the Golfing Season.

Kenneth R. Zanzig

NECROLOGY

It is with a deep sense of loss that we announce the death of Bill Boyd's wife who passed away on May 2nd, 1991. Bill is well known to many superintendents for his excellent work of grading and remodeling work.

Kevin Czerkies, superintendent of Sportsman C.C. has recently become a Certified Golf Course Superintendent. Congratulations Kevin!

Bob Kohlstedt is looking for an assistant's job. He is a recent graduate of the University of Illinois. Call 708/349-2629.

Two new golf courses under construction are looking for assistant superintendents. One 9 hole opening spring '92 in the Oakbrook area, and one 18 holes, with 9 holes opening this year in Lake Moor. Must be knowledgeable in trees, shrubs, flowers and turf. Call Lee Schnieders, CGCS, 708/420-0197.

Future GCSA Conference Sites
1992 — New Orleans; 1993 — Anaheim; 1994 — Dallas; 1995 — San Francisco; 1996 — Orlando; 1997 — Las Vegas; 1998 — Anaheim; 1991 — Orlando.

For Sale

Make Offer

Toro 76: Professional; Jari Sickle Bar; David Bradley Drop Spreader 8 Ft.; Gravely with Snow Plow — Rotary Plow — Rotary Mower; Ford F-350 Dump Truck with Snow Plow and Meyer Spreader; 935 John Deere Diesel with 72'' Deck and Rotary Broom; International Harvester 240 Utility Tractor with Woods Bush Hog Mower; Trac Vac 10 hp.; Ryau R-96 Renovaire; Chevrolet ½ Ton Pick-up. Phone: (708) 566-6401. Len Schnepf, Grounds.

Marv Gruening and Ed Stewart at Ed's Retirement Party.

Editor's Note —
I must apologize for the lateness of this issue of **The Bull Sheet.** It seems our fine postal service lost the issue I put together and mailed on May 23. The printer called me on June 2, inquiring why I was so late. Needless to say I was shocked to find out they had not received the rough copy for June.

(cont'd. page 20)

Scale Insects Difficult Pests of Ornamentals

by James A. Fizzell, Sr. Ext. Advisor
Horticulture, Univ. of Illinois

There are few plants that are not subject to attack by one or more species of scale. All are well adapted for survival under adverse conditions and, as a group, they are very difficult to control.

Scales belong to the Hemiptera insect order. They are sucking insects that spend most of their lives beneath the protective shells from which they get their name. They are divided into two large groups, the armored scales and the soft scales.

Armored scales

Armored scales produce a waxy shell that is separate from their bodies. They begin life as eggs, usually laid beneath the shell of a mature female. Crawlers hatch from eggs and move out from under the shell to find suitable feeding sites. Once such sites are located, the crawlers begin to feed, molt and start producing their characteristic covering.

In the molting stage, the scale has no body parts, eyes, wings or legs. It is simple a sack with a thread-like beak that inserts into the host plant tissue. Over this sack is a protective covering.

Females of most species never complete their metamorphosis, but instead spend the rest of their lives in this form. Males, however, leave this protective covering and develop into tiny, two-winged insects which are capable of flying to the immobile females to mate and then die. After mating, the females deposit their eggs, shrivel to one end of their shell and die.

Soft shell scales

Soft scales' shells do not separate from their bodies. Their life history is like that of the armored scales, except the females retain their legs and antennae throughout their life cycle. They reproduce by eggs generally, though live young are produced in some cases.

Why control is difficult

Two factors make scales difficult to control. Because of their size and coloring, they are often overlooked until well established. And once they develop their protective covering, they are unaffected by applications of sprays.

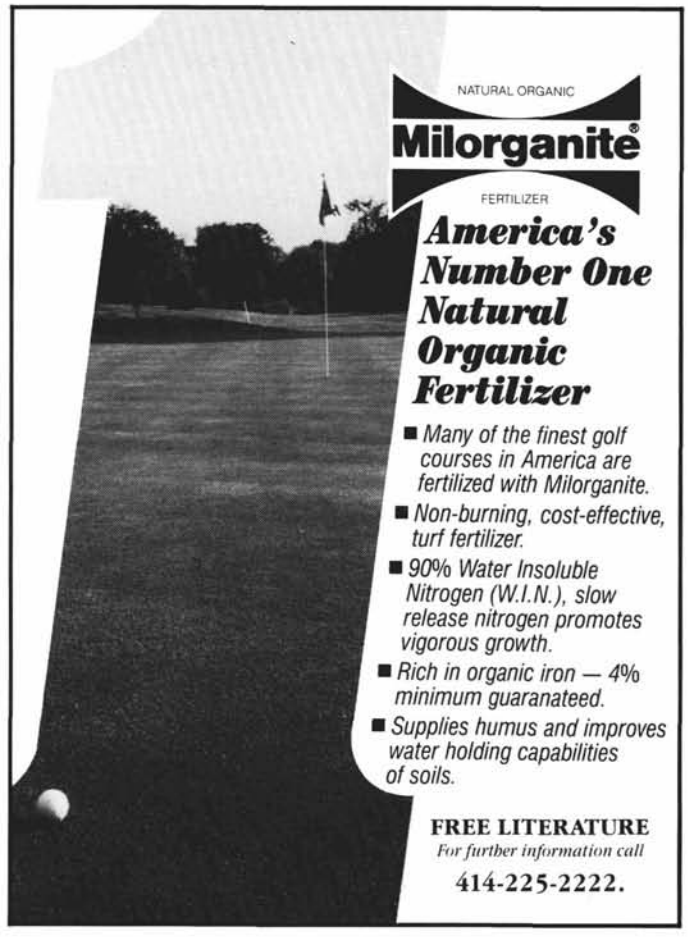
There are parasites that keep scale populations in check. But the problem is that most scales are not native to the United States, but have been inadvertently introduced. Unless the natural parasites are also introduced, the pst population grows unchecked. When single plant species are extensively planted, this creates an abundance of ideal feeding sites. A case in point is the proliferation of cottony maple scale.

By introducing the natural parasites and using cultural practices favorable to these parasites, some spectacular successes in control have been seen. In California, for example, cottony cushion scale of oranges has been controlled by a ladybug; black scale has been controlled through the introduction of several species of chalcidoid wasps.

Within the nursery industry, control of scales by parasites and predators is in its infancy. As a result, a carefully planned spray program is needed to produce clean stock.

To develop an effective program, the particular scale needs to be identified and its life cycle determined to find the "weak link" for proper timing of spraying.

(cont'd. page 18)



(Scale cont'd.)

Recommended control measures

The most common scales we see in the extension offices are oystershell, lecanium, cottony maple scale and euonymous.

Oystershell scale

Oystershell is a small, brownish, hard-shelled scale about 1/8 inch long and 1/16 inch wide, with a curved shape like a miniature oyster shell. These scales can completely cover the bark of affected plants. They overwinter as eggs, hatching into crawlers in late spring. This scale is especially troublesome on ash, lilac and dogwood. While there are several natural predators to keep the population down, dormant oil also provides some control. Malathion or dimethoate should be applied in June when the crawlers are exposed. In some areas, a second generation of crawlers is produced in early August.

Lecanium

Lecanium scales attack yews (Fletcher scale) and broadleaf trees and shrubs. These are soft-shelled scales that are brown, globe-shaped pests about 3/16 of an inch in diameter when mature. Half-grown fertile females spend the winter on the bark of twigs. Feeding resumes in the spring, and in early June eggs are deposited in a cavity beneath the female's body. After laying her eggs, the female dies. Crawlers hatch in a few days, move to the leaves and begin feeding by sucking the sap. During this period, honeydew drips from the scales and covers leaves, branches and objects beneath the tree. A sooty mold then grows on the honeydew.

By midsummer, the growing female scales relocate to the twigs where winged males find them, mate and die. The females continue to feed until cold weather, then go into hibernation. Thus the cycle repeats itself, with only one generation produced each year.

Fletcher scale should be sprayed with malathion in early April and again in June. Other species of lecanium scale respond to treatment with malathion or diazinon applied in mid-June and repeated in two weeks.

Cottony maple scale

Cottony maple scale is a soft-shelled species that commonly attacks silver maple and box elder, but can also be found on many other species where infestations on maple are severe. Honeylocust can also be severely injured by this scale.

The life cycle of cottony maple scale is essentially the same as that of lecanium scale. The most distinctive feature of this insect is its egg laying habits. In June, mature females deposit eggs in a cotton-like mass of wax several times larger than the insect itself. These masses look like popcorn strung on infested branches and are easily noticed.

Cottony maple scale is often controlled by the twice-stabbed ladybug, which feeds on the egg masses. This predator is a small, black beetle with a red spot on each wing cover. These beetles are to be protected so they can do their job. Dormant oil sprays applied prior to leaf-out will not harm the predators, and will reduce the population of overwintering females. Malathion or diazinon can be applied to the foliage after crawlers have hatched in July.

There is a regular cycle to the occurrence of cottony maple scale in a given area. As the population increases to the point where it becomes noticeable, you will see the predators begin to move in. After a season or two, the pests's population is

(cont'd. page 20)

(Scale cont'd.)

reduced to the point where it is no longer noticed. Then the predators move in. Eventually the cycle repeats itself.

Euonymous scale

Euonymous scale is the most destructive insect. Severe infestations will easily kill groundcover species. Females of this hard-shelled scale resemble oystershell scale. As such, they are not easily seen. But the white covering of the males is a conspicuous aid to identification. These insects spend the winter partially grown. In the spring, the females lay eggs which hatch into orange-colored crawlers. A close look at infested plants will reveal the exposed crawlers. They are vulnerable to spray applications at this time. A second generation hatches in late summer.

Euonymous scale is very difficult to control. Some Extension stations have reported success with a 3% dormant oil spray before plant growth begins in the spring. When you see crawlers about the first of June, spray with dimethoate, malathion or diazinon four times at ten-day intervals. Repeat this treatment in late August, when the second generation of crawlers can be seen.

(Editor's Note cont'd.)

Any advertisers that sent me special ads for the June issue were also lost. If these advertisers wish, they may get in touch with me and I will give them 50% credit for the June issue.

Kerry Blatteau's Director's Column is also missing. John Gurke had an excellent article with pictures. I have a copy of the article, but need the pictures. This will be used in July — if John still has the negatives.

Ed Stewart had a retirement party and many of his friends were invited. I took pictures of the event — they are lost. Again I will print this in July once I get the negatives and have another set printed. Speaking of Ed, he spent a few days in the hospital the first part of June. He should be out and at home when you read this. Give him a call to cheer him up at 309/463-2376.

The survey concerning the newsletter will also be in the July issue. We had a pretty good response and some cards are still trickling in.

It is amazing what one sees when you are visiting different courses. One fine "plantsman" I know painted some yews green because they had died over winter and he didn't have the time to get new ones in. He had me fooled and I never would have known if he hadn't pointed it out to me. Another superintendent, this one a "chemist" really had a witches brew going to spray his fairways. First time out with the "brew" he singed the grass. He took a pH reading and it registered 3.6! He then added another chemical to raise the pH and just about blew the lid off the tank — he took off running when he saw the chemical reaction. But it worked, the new pH was 6.8 and no burn to the grass.