

cont.

Table 2. cont.

| Treatment | Rate/1000 ft ² b | Applic. Interval | I | II | III | IV | AVG LSD(.05)a | |
|----------------------------------|-----------------------------|------------------|----|----|-----|----|---------------|-----|
| Chipco 26019 50WP | 1.5 oz | 14 days | 5 | 50 | 35 | 10 | 25.0 | D-J |
| Actinovate | 3#/acre/season | 14 days | 65 | 5 | 60 | 0 | 32.5 | F-J |
| Companion 2 | 4 fl oz | 14 days | 25 | 25 | 80 | 0 | 32.5 | F-J |
| Chipco 26019 WDG | 1.5 oz | 14 days | 30 | 20 | 30 | 50 | 32.5 | F-J |
| Chipco 26019 F | 3 fl oz | 14 days | 20 | 30 | 30 | 50 | 32.5 | F-J |
| Procymidone | 5 oz | 14 days | 55 | 55 | 10 | 15 | 33.75 | G-J |
| Untreated control ---- | ---- | ---- | 60 | 30 | 30 | 25 | 36.25 | IJ |
| Chipco 26019 F | 4 fl oz | 14 days | 30 | 20 | 25 | 80 | 38.75 | J |
| Chipco 26019 F + Clearys 3336 | 2 fl oz + 2 fl oz | 14 days | 25 | 85 | 90 | 80 | 70.0 | K |

aTreatments followed by the same letter are not significantly different from each other at the 5% level (LSD).

bRates represent formulated product.

cMild phytotoxicity observed on

d Amv treatments plugged sprayer screens and had to be filtered before each application.

Take-all Fungicide Studies-1996

Fungicide studies for the preventive control of take-all patch (*Gaeumannomyces graminis*) on creeping bentgrass were established on irrigated fairways on two Michigan golf courses with a history of take-all patch disease. The Lakewood Shores Golf Club (Oscoda, MI) study was initiated in early spring 1996.

Treatments were applied to four replicate 6'x9' plots in both studies using equipment and procedures previously described in this report (refer to snow mold section). Treatments were generally re-applied monthly or as cited in the data tables and the studies (non-fertility treatments) were fertilized monthly with Lebanon Country Club fertilizer (18-5-9) at 0.5 lb nitrogen/1000 ft².

Lakewood Shores Golf Club, Oscoda, MI

This study was established on a perennially infected bentgrass fairway on May 2, 1996, shortly after the second mowing of the season. No pre-treatment disease ratings were taken because the disease was not active. The spring-initiated fungicide treatments were applied on May 2 and re-applied on June 5 (except as noted in the data tables), while the fertilizer treatments were applied May 2 and monthly throughout the growing season.

As the data in table 3, 4, & 5 indicate, on all these rating dates, the one pound rates of ammonium sulfate, IBDU, and sulfur-coated urea produced statistically significant disease management compared to the controls (fertilized and unfertilized). The high rate fertility treatments also produced the best quality turf. The fungicides also provided some disease management, although the differences were statistically different from the fertilized control treatments, except for the Rubigan (1oz.) and the Banner (4fl.oz) treatments on Oct 19 (Table5).

Table 3. Lakewood Shores Golf Club Take-all Patch Fungicide Study-1996

Rating Scale: Percent plot area infected by take-all patch (*Gaeumannomyces graminis*). Quality rating: (10)=best, (0)=worst, (7)=acceptable.

Rating Date: Aug. 2, 1996

| Treatment | Rate/1000ft ² b | Applic. Timing | I | II | III | IV | AVG TUKEYS(.05)>a |
|------------------------|----------------------------|---------------------------|-------|-------|-------|-------|-------------------|
| Sulfur Coated Urea | 1#N/MO. | Monthly | 5(9) | 0(9) | 2(9) | 0(9) | 1.8(9.0) B |
| Amm. Sulfate | 1#N/MO. | Monthly | 2(10) | 3(9) | 2(8) | 0(10) | 1.8(9.3) B |
| IBDU | 1#N/MO. | Monthly | 5(9) | 0(8) | 5(8) | 3(9) | 3.3(8.5) B |
| Banner | 4 fl oz | 5/2, 6/5 | 7(7) | 10(7) | 10(7) | 5(8) | 8.0(7.8) B |
| Amm. Sulfate | 1/2#N/MO. | Monthly | 15(8) | 0(8) | 15(7) | 5(8) | 8.8(7.8) B |
| Sulfur Coated Urea | 1/2#N/MO. | Monthly | 15(6) | 15(7) | 5(9) | 3(8) | 9.5(7.5) B |
| Rubigan (WP)c | 2 oz | 5/2 only | 10(8) | 25(6) | 5(8) | 10(6) | 12.5(7.0) B |
| Fluazinam 500 | 1.5 fl oz | 5/2, 6/5 | 30(6) | 15(7) | 0(7) | 10(7) | 13.8(6.8) AB |
| Clearys 3336 (WP)c | 8 oz | 5/2, 6/5 | 30(7) | 10(8) | 15(6) | 0(10) | 13.8(7.8) AB |
| IBDU | 1/2#N/MO. | Monthly | 20(8) | 10(7) | 15(7) | 10(8) | 13.8(7.5) AB |
| Fluazinam 500 | 0.5 fl oz | 5/2, 6/5 | 25(7) | 7(7) | 10(8) | 20(6) | 15.5(7.0) AB |
| Fluazinam 500 | 1 fl oz | 5/2, 6/5 | 20(7) | 5(8) | 5(7) | 40(6) | 17.5(7.0) AB |
| Control (fertilized) | 1/2 lb N | Monthly | 40(6) | 10(7) | 10(7) | 10(8) | 17.5(7.0) AB |
| Rubigan (WP)c | 1 oz | 5/2, 6/5, 2 fall apps. | 20(7) | 20(7) | 25(7) | 10(7) | 18.8(7.0) AB |
| Rubigan (WP)c | 1 oz | 5/2, 6/5 | 10(8) | 15(7) | 35(6) | 30(6) | 22.5(6.8) AB |
| Control (unfertilized) | _____ | _____ | 25(6) | 35(5) | 40(5) | 50(6) | 37.5(5.5) A |

aTreatments followed by the same letter are not significantly different from each other at the 5% level (Tukeys Honestly Significant Differences Test).

bRates are formulated product

cTreatments watered in before dry on foliage

Table 4. Lakewood Shores Golf Club Take-all Patch Fungicide Study - 1996

Rating Scale: Percent plot area infected by take-all patch (*Gaeumannomyces graminis*). Quality rating: (10)=best, (0)=worst, (7)=acceptable

Rating Date: Sept. 4, 1996

| Treatment | Rate/1000 ft ² ^b | Applic. Timing | I | II | III | IV | AVG.(TUKEYS.05) ^a |
|---------------------------|--|--------------------------|-------|-------|-------|-------|------------------------------|
| Amm. Sulfate | 1 lb N | Monthly | 0(9) | 0(9) | 0(10) | 0(9) | 0(9.3) B |
| Sulfur Coated Urea | 1 lb N | Monthly | 0(10) | 0(9) | 0(10) | 0(10) | 0(9.8) B |
| IBDU | 1 lb N | Monthly | 0(9) | 0(10) | 0(9) | 0(10) | 0(9.5) B |
| Amm. Sulfate | 1/2 lb N | Monthly | 5(8) | 0(8) | 3(8) | 0(8) | 2.0(8) B |
| Banner | 4 fl oz | 5/2, 6/5 | 8(8) | 0(8) | 3(7) | 0(8) | 2.8(7.8) B |
| Clearys 3336 ^c | 8 oz | 5/2, 6/5 | 10(7) | 0(8) | 3(7) | 2(8) | 3.8(7.5) B |
| IBDU | 0.5 lb N | Monthly | 10(8) | 0(8) | 7(8) | 0(8) | 4.3(8) B |
| Rubigan (WP) ^c | 2 oz | 5/2 only | 3(9) | 10(6) | 0(8) | 10(7) | 5.8(7.5) B |
| Sulfur Coated Urea | 1/2 lb N | Monthly | 15(7) | 7(8) | 0(9) | 2(9) | 6.0(8.3) B |
| Rubigan (WP) ^c | 1 oz | 5/2, 6/5 | 0(8) | 3(7) | 20(7) | 10(7) | 8.3(7.3) AB |
| Fluazinam 500 | 1.5 fl oz | 5/2, 6/5 | 25(6) | 5(7) | 0(8) | 10(7) | 10.0(7) AB |
| Rubigan (WP) ^c | 1 oz | 5/2, 6/5, 2 fall apps | 20(7) | 5(7) | 15(6) | 3(8) | 10.8(7) AB |
| Fluazinam 500 | 0.5 fl oz | 5/2, 6/5 | 15(7) | 3(7) | 15(6) | 3(8) | 10.8(6.8) AB |
| Fluazinam | 1 fl oz | 5/2, 6/5 | 15(7) | 0(8) | 0(8) | 30(5) | 11.3(7) AB |
| Control (fertilized) | 1/2 lb N | Monthly | 30(6) | 10(7) | 5(7) | 5(7) | 12.5(6.8) AB |
| Control (unfertilized) | _____ | _____ | 5(6) | 25(5) | 35(5) | 50(4) | 28.8(5) A |

^aTreatments followed by the same letter are not significantly different from each other at the 5% level (Tukey's Honestly Significant Differences Test).

^bRates are formulated product.

^cTreatments watered in prior to drying on foliage

Table 5. Lakewood Shores Golf Club Take-all Patch Fungicide Study - 1996

Rating Scale: Percent plot area infected by take-all patch (*Gaeumannomyces graminis*). Quality rating: (10)=best, (0)=worst, (7)=acceptable.

Rating Date: Oct. 19, 1996

| Treatments | Rate/1000 ft ² ^b | Applic. Timing | I | II | III | IV | AVG. (TUKEYS.05) ^a | |
|--------------------------------|--|--------------------|-------|-------|-------|-------|-------------------------------|----|
| Amm. Sulfate | 1 lb N | Monthly | 0(9) | 0(9) | 0(9) | 0(9) | 0(9) | B |
| Sulfur Coated Urea | 1 lb N | Monthly | 0(9) | 0(9) | 0(9) | 0(8) | 0(8.8) | B |
| IBDU | 1 lb N | Monthly | 0(8) | 0(8) | 0(9) | 0(9) | 0(8.5) | B |
| Amm. Sulfate | 1/2 lb N | Monthly | 5(7) | 0(7) | 2(7) | 0(7) | 1.8(7.0) | B |
| Banner | 4 fl oz | 5/2, 6/5 | 5(7) | 0(6) | 5(7) | 0(7) | 2.5(6.8) | B |
| Rubigan (WP) ^d | 1 oz | 5/2, 6/5 | 0(7) | 3(7) | 7(7) | 7(6) | 4.3(6.8) | AB |
| IBDU | 1/2 lb N | Monthly | 7(7) | 3(7) | 5(7) | 5(7) | 5(7) | AB |
| Rubigan (WP) ^d | 2 oz | 8/2 only | 2(7) | 10(7) | 0(8) | 10(7) | 5.5(7.3) | AB |
| Clearys 3336 (WP) ^d | 8 oz | 5/2, 6/5, 10/2 | 7(7) | 3(7) | 5(7) | 10(7) | 6.3(7) | AB |
| Rubigan (WP) ^d | 2 oz | 5/2 only | 5(7) | 10(7) | 3(7) | 10(6) | 7(6.8) | AB |
| Bayleton ^{cd} | 4 oz | 8/2, 9/4 | 7(7) | 5(7) | 10(7) | 10(6) | 8(6.8) | AB |
| Rubigan (WP) ^d | 1 oz | 8/2, 9/4 | 5(7) | 10(7) | 7(7) | 10(6) | 8(6.8) | AB |
| Banner | 4 fl oz | 8/2, 9/4 | 20(6) | 7(6) | 5(6) | 0(6) | 8(6) | AB |
| Sulfur Coated Urea | 1/2 lb N | Monthly | 20(6) | 12(7) | 0(7) | 2(8) | 8.5(7) | AB |
| Fluazinam 500 | 0.5 fl oz | 5/2, 6/5 | 10(7) | 7(7) | 10(6) | 10(6) | 9.3(6.5) | AB |
| Fluazinam 500 | 1 fl oz | 5/2, 6/5 | 12(7) | 0(6) | 0(6) | 30(5) | 10.5(6) | AB |
| Lynx (250 EW) ^c | 1.92 fl oz | 8/2, 9/4 | 10(7) | 15(5) | 10(6) | 10(6) | 11.3(6) | AB |
| Rubigan (WP) ^d | 1 oz | 5/2, 6/5, 8/2, 9/4 | 15(7) | 10(6) | 10(6) | 10(6) | 11.3(6.3) | AB |
| Fluazinam 500 | 1.5 fl oz | 5/2, 6/5 | 25(6) | 10(6) | 0(6) | 10(7) | 11.3(6.3) | AB |
| Control (fertilized) | 1/2 lb N | Monthly | 25(6) | 10(6) | 15(7) | 5(7) | 13.8(6.5) | AB |
| Lynx (DF) ^c | 2 oz | 8/2, 9/4 | 25(6) | 10(6) | 3(7) | 25(6) | 15.8(6.3) | AB |
| Control (unfertilized) | _____ | _____ | 10(4) | 20(3) | 15(5) | 30(3) | 18.8(3.4) | A |

^aTreatments followed by the same letter are not significantly different from each other at the 5% level (Tukey's Honestly Significant Differences Test).

^bRates are formulated product.

^cTreatments applied in 2 gallons/1000 ft²

^dTreatments watered in before dry on foliage.