

PUBLICATIONS

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FRUIT AND NUT CROPS RESEARCH IN TEXAS, 1987

| Page | Participating Scientists | Crops |
|----------------|--------------------------|------------------|
| 3, 5 | David H. Byrne | Peach |
| 3, 5 | Terry Bacon | Plums |
| 7 | J. Dan Hanna | Apricots |
| 9 | Calvin G. Lyons | Grapes |
| 11, 12 | T. Lynn Littleton | Pecans |
| 10 | G. R. McEachern | |
| 19, 20, 48 | Bert Johnson | |
| 12 | J. Benton Storey | |
| 48 | Berry Tompkins | |
| 15 | R. D. Marquard | Pecan |
| 17 | L. Austin Stockton | Grapes Apples |
| 19, 20, 21, 23 | John A. Lipe | Peach |
| 19, 20 | Duery Menzies | Pecan |

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| | | |
|------------|------------------------|-----------|
| 32, 34, 38 | Larry A. Stein | Peaches |
| 34, 38 | J. W. Worthington | Plums |
| 34, 38 | James (Jack) [unclear] | Hickories |
| 34 | M. J. McFarland | Apricots |
| 34 | Susan Steinberg | Grapes |
| 34 | Michael Glenn | Pecans |
| 34, 38 | J. S. Newman | Others |

The Texas Agricultural Experiment Station, Neville P. Clarke, Director,
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SUBJECT TOPIC: Effect of PostHarvest Foliage Fungicides on Severity of Peach Rust (Tranzschelia discolor Pers.)

INVESTIGATOR(S): Benard Mitchell - TAEX, Wharton
 Jerral Johnson - TAEX, College Station
 Jerry Trampota - TAEX, Plant Pathology

CROP(S): Peach

ABSTRACT:

Objectives:

To evaluate potential fungicides for the control of peach rust.

General Approach:

Commercial peach production in South Texas will be significantly handicapped if an effective control for rust is not developed. Sulfur is currently the only fungicide approved for control of this fungus disease. Producers using sulfur report poor to no control when it is applied on a regular schedule.

A block of 42 trees was selected on the property of Walter Gundermann to evaluate fungicides for the control of peach rust. The trees were divided into 21, two tree plots. One tree in each plot received 0.23 kg (0.5 lb) of ammonium nitrate on July 31. Each treatment was replicated three times.

All trees were sprayed with a John Bean hydraulic sprayer equipped with a 18.9 l/min (5 gpm) pump and a hand gun. Each tree received 7.6 l (2 gal) of spray solution. This resulted in a coverage near the drip point.

Fungicides and Rates Used:

Bravo 500 5.2 l/ha (4.5 pts/acre) (4 applications)
 Bravo 500 7.0 l/ha (6.0 pts/acre) (4 applications)

Orbit 0.6 l/ha (4 oz/acre) (4 applications)
 Orbit 1.2 l/ha (8 oz/acre) (4 applications)
 Orbit 1.2 l/ha (8 oz/acre) (1 application, Sept. 4)
 Sulfur 4.1 l/ha (3.5 pts/acre) (4 applications)

Spray Dates:

July 3, July 31, Aug. 21 and Sept. 4

FINDINGS:

Effect of Fungicides on Peach Rust.

| Fungicide | Rate /ha | Rate/ acre | Nitrogen | Sept. 4 | Rust Rating ^{1/} | | Oct. 29 | % Defol- iation Oct. 29 |
|--------------------------|-------------|---------------|----------|---------|---------------------------|----------|---------|-------------------------------|
| | | | | | Sept. 17 | Sept. 29 | | |
| Bravo 500 | 5.2 l | 4.5 pts | + | 1.1 | 1.3 | 1.7 | 6.0 | 40 |
| Bravo 500 | 5.2 l | 4.5 pts | - | 1.1 | 1.2 | 1.2 | 5.3 | 52 |
| Bravo 500 | 7.0 l | 6.0 pts | + | 1.3 | 1.4 | 1.2 | 2.3 | 32 |
| Bravo 500 | 7.0 l | 6.0 pts | - | 1.1 | 1.5 | 1.5 | 2.8 | 33 |
| Orbit 3.6E | 0.6 l | 4 fl oz | + | 1.6 | 2.4 | 7.4 | 10.0 | 95 |
| Orbit 3.6E | 0.6 l | 4 fl oz | - | 1.5 | 2.5 | 5.9 | 10.0 | 96 |
| Orbit 3.6E | 1.2 l | 8 fl oz | + | 1.3 | 1.3 | 2.5 | 9.8 | 93 |
| Orbit 3.6E ^{2/} | 1.2 l | 8 fl oz | - | 1.2 | 1.3 | 2.2 | 9.5 | 92 |
| Orbit 3.6E ^{2/} | 1.2 l | 8 fl oz | + | 2.1 | 1.8 | 4.9 | 10.0 | 93 |
| Orbit 3.6E ^{2/} | 1.2 l | 8 fl oz | - | 1.8 | 1.9 | 3.7 | 10.0 | 96 |
| Super Six | 4.1 l | 3.5 pts/ | + | 3.3 | 8.3 | 8.9 | 10.0 | 98 |
| (sulfur) | 379 l | 100 gals | | | | | | |
| Super Six | 4.1 l | 3.5 pts/ | - | 2.4 | 7.8 | 8.6 | 10.0 | 99 |
| | 379 l | 100 gals | | | | | | |
| Unsprayed | | ----- | + | 2.3 | 5.9 | 8.3 | 10.0 | 95 |
| Unsprayed | | ----- | - | 2.0 | 5.8 | 7.9 | 10.0 | 96 |
| LSD probability | | 0.05% | | 0.64 | 1.35 | 1.43 | 0.67 | 11 |

^{1/} Rust Ratings:

1 = no disease, 2 = 1-5 pustules/leaf, 3 = 6-10 pustules/leaf, 4 = 11-15 pustules/leaf, 5 = 16-20 pustules/leaf, 6 = 21-25 pustules/leaf, 7 = 26-30 pustules/leaf, 8 = 31-35 pustules/leaf, 9 = 36-40 pustules/leaf, and 10 = 41+ pustules/leaf.

^{2/} Single application made on September 4 after pustules were observed on the leaf.

Bravo 500 at 5.2 l/ha (4.5 pts/acre), effectively controlled peach rust for 25 days after the last application. By the last evaluation, which was made at 54 days after the last application, control of rust had increased significantly.

Bravo at 7.0 l/ha (6.0 pts/acre) was still effective after 54 days. Based on these results, it is suggested that the 5.2 l/ha rate be used when the spray program is going to be repeated in 2-3 weeks. The last application should be 7.0 l/ha. This will give protection until normal defoliation.

Orbit 3.6E at 0.6 l/ha (4 fl oz/acre) was effective as long as the spray schedule was on a 2-3 week schedule based on the September 4 to September 17 evaluation. The 1.2 l/ha (8.0 fl oz/acre) rate was more effective and held the fungus under control for 25 days but by the 54-day evaluation, it was not longer effective. If used, it will need to be applied on a 3-week schedule to maintain its effectiveness. The single application of Orbit at 1.2 l/ha was effective for only 2 weeks. It could be used if the fungus has started developing in the tree. Once the initial spray was made, the rate could then be reduced to 0.6 l/ha and used on a 2-week interval.

Super Six is a flowable form of sulfur which is currently cleared for peach rust. In this trial, it was not effective against the rust fungus. Unfortunately, sulfur is the only fungicide currently cleared by EPA for use on rust.

The sulfur and unsprayed plots completely defoliated once and by the last evaluation (October 29), the second crop of leaves had become infected and dropped from the tree. Trees in both the unsprayed and sulfur plots were blooming on October 29. Although the Orbit plots had prematurely defoliated, fruit buds had not forced.

Based on these results, there are fungicides available which will control peach rust if used on a regular schedule and at the correct rate. Bravo 500 is currently cleared on peaches for scab in bloom and shuck split period and as a dormant application for peach leaf curl. Rust needs to be added to this label and this is being pursued by the company.

Orbit is currently not cleared on peaches for any use at this time. The company is pursuing a label for brown rot on peach.

| Plot | Treatment | Defoliation (%) | Yield (lb/acre) | Quality | Notes |
|------|------------|-----------------|-----------------|---------|----------------------|
| 1 | Control | 100 | 0 | 0 | Complete defoliation |
| 2 | Sulfur | 100 | 0 | 0 | Complete defoliation |
| 3 | Orbit 1.0 | 100 | 0 | 0 | Complete defoliation |
| 4 | Orbit 2.0 | 100 | 0 | 0 | Complete defoliation |
| 5 | Orbit 3.0 | 100 | 0 | 0 | Complete defoliation |
| 6 | Orbit 4.0 | 100 | 0 | 0 | Complete defoliation |
| 7 | Orbit 5.0 | 100 | 0 | 0 | Complete defoliation |
| 8 | Orbit 6.0 | 100 | 0 | 0 | Complete defoliation |
| 9 | Orbit 7.0 | 100 | 0 | 0 | Complete defoliation |
| 10 | Orbit 8.0 | 100 | 0 | 0 | Complete defoliation |
| 11 | Orbit 9.0 | 100 | 0 | 0 | Complete defoliation |
| 12 | Orbit 10.0 | 100 | 0 | 0 | Complete defoliation |

1 = no disease, 2 = 1-5 pustules/leaf, 3 = 6-10 pustules/leaf, 4 = 11-15 pustules/leaf, 5 = 16-20 pustules/leaf, 6 = 21-25 pustules/leaf, 7 = 26-30 pustules/leaf, 8 = 31-35 pustules/leaf, 9 = 36-40 pustules/leaf, and 10 = 41+ pustules/leaf.

Single application made on September 4 after pustules were observed on the leaf. Bravo 500 at 2.5 lbs (4.8 pps/acre), effectively controlled peach rust for 25 days after the last application. By the last evaluation, which was made 24 days after the last application, control of rust had increased significantly.

Bravo at 7.0 lbs (8.0 pps/acre) was still effective after 84 days. Based on these results, it is suggested that the 2.5 lbs rate be used when the spray program is going to be repeated in 2-3 weeks. The last application should be 7.0 lbs. This will give protection until normal defoliation.

Orbit 7.0 at 0.8 lbs (4.7 oz/acre) was effective as long as the spray schedule was on a 2-3 week schedule based on the September 4 to September 17 evaluation. The 1.5 lbs (8.0 pps/acre) rate was more effective and held the fungus under control for 25 days but by the 24-day evaluation, it was not longer effective. If used, it will need to be applied on a 2-week schedule to maintain its effectiveness. The single application of Orbit at 1.5 lbs was effective for only 2 weeks. It could be used if the fungus has started developing on the tree. Once the initial spray was made, the rate could then be reduced to 0.8 lbs and used on a 2-week interval.