
Final Report:
Control of grape powdery mildew with
synthetic, biological and organic
fungicides: 2015 field trials

W. Douglas Gubler, Trang T. Nguyen, and Nicholas S. Morris

Department of Plant Pathology, University of California, Davis, CA, 95616

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Department of Plant Pathology,
University of California, Davis, October 2015

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Report Summary

Powdery mildew is an economically important disease of grapes worldwide. This report details the findings of our annual powdery mildew fungicide trials on grapevine (*Vitis vinifera*, Cultivar Chardonnay). Trials were conducted at Rio Viento Vineyards, near Walnut Grove, California in 2015. Treatments were placed in four adjacent trials in the vineyard in a complete randomized design. Spraying commenced on April 13. Powdery mildew pressure increased slowly, held in check by cool temperatures after disease onset. Spraying was completed at veraison on July 16 and treatments were evaluated for disease incidence and severity on July 20.

The trials consisted of soft chemistry products, experimental, as well as synthetics. Spray frequencies varied from weekly applications to 21 day intervals. Some applications were based on the Gubler-Thomas Risk Index, with application intervals based on the index.

Temperatures were mild and humidity was low during much of the 2015 growing season. Overall disease pressure was moderate to low. By early June, mildew was evident on untreated clusters. By the time of disease evaluation, disease incidence in untreated plots in all trials reached 83-94%.

Materials and Methods

A. Experimental design

| | | | |
|---------------------|---|----------------|-----------------------|
| Experimental design | Complete randomized design with 5 replicates. | | |
| Experimental unit | 2 adjacent vines = 1 plot | | |
| Plot area | 154 ft ² (row spacing = 10 ft, vine spacing = 5 ft) | | |
| Area/treatment | 500 ft ² (5 reps x 2 vines = 1 treatment) | Area/treatment | 0.0115 acre/treatment |
| Volume water/acre | 50 gallons (certain programs) = 0.6 gallons/5 replicates 100 gallons (pre-bloom in mid-April) = 1.2 gallons/5 replicates 150 gallons (pre-bloom to pea-sized berries, late April – early June) = 1.8 gallons/5 reps 200 gallons (late season) = 2.4 gallons/5 reps | | |
| Application method | Handgun sprayers (attached to Nifty Fifty brand 25 or 50 gallon sprayers). | | |

B. Experimental treatments

The treatments described in this report were conducted for experimental purposes only and crops treated in a similar manner may not be suitable for commercial or other use.

Trial I (Row 144 – 137 West End)

| No. | Flag | Treatment | Frequency (days) | Application rate (per acre) | FP/ 5 replicates |
|-----|------|--|------------------|--|---|
| 1 | W | Untreated Control | None | None | None |
| 2 | KC | (Vivando then Pristine then Quintec then Switch then Torino then Luna Tranquility) + Syl-Coat | 14 | (15.4 fl oz then 12.5 oz then 6.6 fl oz then 14 oz then 3.4 fl oz then 16 fl oz) + 8 fl oz/100 gal | (5.2 ml then 4.1 g then 2.2 ml then 4.6 g then 1.2 ml then 5.4 ml) + 2.8 ml at 100 gal or 4.3 ml at 150 gal or 5.7 ml at 200 gal or 6.9 ml at 250 gal |
| 3 | GKS | (Vivando alt Pristine) + Syl-Coat | 14 | (15.4 fl oz alt 12.5 oz) + 8 fl oz/100 gal | (5.2 ml alt 4.1 g) + 2.8 ml at 100 gal or 4.3 ml at 150 gal or 5.7 ml at 200 gal or 6.9 ml at 250 gal |
| 4 | GS | (Vivando alt Pristine) + Syl-Coat | 14 | (15.4 oz alt 23 oz) + 8 fl oz/100 gal | (5.2 ml alt 7.5 g) + 2.8 ml at 100 gal or 4.3 ml at 150 gal or 5.7 ml at 200 gal or 6.9 ml at 250 gal |
| 5 | PKS | Microthiol Disperss then (from bloom) Luna Experience + Syl-Coat | 7 then 21 | 5 lb then (from bloom) 8.6 fl oz + 6.4 fl oz/100 gal | 26.1 g then (from bloom) 2.9 ml + 2.3 ml at 100 gal or 3.5 ml at 150 gal or 4.6 ml at 200 gal or 5.8 ml at 250 gal |
| 6 | OS | Microthiol Disperss then (from bloom) Luna Tranquility + Syl-Coat | 7 then 14 | 5 lb then (from bloom) 12 fl oz + 6.4 fl oz/100 gal | 26.1 g then (from bloom) 4.1 ml + 2.3 ml at 100 gal or 3.5 ml at 150 gal or 4.6 ml at 200 gal or 5.8 ml at 250 gal |
| 7 | GD | Microthiol Disperss then (from bloom)Luna Tranquility + Syl-Coat | 7 then 14 | 5 lb then (from bloom) 16 fl oz + 6.4 fl oz/100 gal | 26.1 g then (from bloom) 5.4 ml + 2.3 ml at 100 gal or 3.5 ml at 150 gal or 4.6 ml at 200 gal or 5.8 ml at 250 gal |
| 8 | OKD | Microthiol Disperss then (from bloom) (Luna Experience then Flint then Sonata then Luna Tranquility then Serenade Optimum then Quintec) + Syl-Coat | 7 then 14 | 5 lb then (from bloom) (8.6 fl oz then 3 oz then 3 qt then 16 fl oz then 16 oz then 4 fl oz) + 6.4 fl oz/100 gal | 26.1 g then (from bloom) (2.9 ml then 1.0 g then 32.6 ml then 5.4 ml then 5.2 g then 1.4 ml) + 2.3 ml at 100 gal or 3.5 ml at 150 gal or 4.6 ml at 200 gal or 5.8 ml at 250 gal |

| | | | | | |
|----|-----|--|----|---|--|
| 9 | GKD | (Torino alt Quintec) + Syl-Coat | 14 | (3.4 fl oz alt 4 fl oz) + 8 fl oz/100 gal | (1.2 ml alt 1.4 ml) 2.8 ml at 100 gal or 4.3 ml at 150 gal or 5.7 ml at 200 gal or 6.9 ml at 250 gal |
| 10 | OKS | (Inspire Super alt Quintec) + Syl-Coat | 14 | (20 fl oz alt 4 fl oz) + 8 fl oz/100 gal | (6.8 ml alt 1.4 ml) + 2.8 ml at 100 gal or 4.3 ml at 150 gal or 5.7 ml at 200 gal or 6.9 ml at 250 gal |
| 11 | KD | Quintec + Syl-Coat | 21 | 6.6 fl oz + 8 fl oz/100 gal | 2.2 ml + 2.8 ml at 100 gal or 4.3 ml at 150 gal or 5.7 ml at 200 gal or 6.9 ml at 250 gal |
| 12 | KS | (Luna Experience alt Quintec) + Syl-Coat | 21 | (8 fl oz alt 6.6 fl oz) + 8 fl oz/100 gal | (2.8 ml alt 2.2 ml) + 2.8 ml at 100 gal or 4.3 ml at 150 gal or 5.7 ml at 200 gal or 6.9 ml at 250 gal |
| 13 | YKD | (Pristine alt Quintec) + Syl-Coat | 21 | (12.5 oz alt 6.6 fl oz) + 8 fl oz/100 gal | (4.1 g alt 2.2 ml) + 2.8 ml at 100 gal or 4.3 ml at 150 gal or 5.7 ml at 200 gal or 6.9 ml at 250 gal |
| 14 | YKC | (Viticulture alt Quintec) + Vintre | 14 | (6 fl oz alt 4 fl oz) + 0.25% (v/v) | (2 ml alt 1.4 ml) + 11.4 ml at 100 gal or 17.2 ml at 150 gal or 22.8 ml at 200 gal or 28.6 ml at 250 gal |
| 15 | BD | (Viticulture alt Quintec) + Vintre | 14 | (8 fl oz alt 6.6 fl oz) + 0.25% (v/v) | (2.8 ml alt 2.2 ml) + 11.4 ml at 100 gal or 17.2 ml at 150 gal or 22.8 ml at 200 gal or 28.6 ml at 250 gal |
| 16 | YS | (Viticulture alt Pristine) + Vintre | 14 | (6 fl oz alt 10.5 oz) + 0.25% (v/v) | (2 ml alt 3.4 g) + 11.4 ml at 100 gal or 17.2 ml at 150 gal or 22.8 ml at 200 gal or 28.6 ml at 250 gal |
| 17 | YKS | (Viticulture alt Pristine) + Vintre | 14 | (8 fl oz alt 12.5 oz) + 0.25% (v/v) | (2.8 ml alt 4.1 g) + 11.4 ml at 100 gal or 17.2 ml at 150 gal or 22.8 ml at 200 gal or 28.6 ml at 250 gal |
| 18 | YD | (Viticulture alt Vivando) + Vintre | 14 | (6 fl oz alt 10.3 fl oz) + 0.25% (v/v) | (2 ml alt 3.5 ml) + 11.4 ml at 100 gal or 17.2 ml at 150 gal or 22.8 ml at 200 gal or 28.6 ml at 250 gal |
| 19 | B | (Viticulture alt Vivando) + Vintre | 14 | (8 fl oz alt 15.4 fl oz) + 0.25% v/v) | (2.8 ml alt 5.2 ml) + 11.4 ml at 100 gal or 17.2 ml at 150 gal or 22.8 ml at 200 gal or 28.6 ml at 250 gal |

| | | | | | |
|----|-----|--|----|---|---|
| 20 | BKS | (Quintec alt Rhyme then Pristine then Quintec alt Rhyme then Pristine then Elevate) + Dyneamic | 14 | (4 fl oz alt 5 fl oz then 12.5 oz then 4 fl oz alt 5 fl oz then 12.5 oz then 4 fl oz alt 5 fl oz then 16 oz) + 0.25% (v/v) | (1.4 ml alt 1.7 ml then 4.1 g then 1.4 ml alt 1.7 ml then 4.1 g then 1.4 ml alt 1.7 ml then 5.2 g) + 11.4 ml at 100 gal or 17.2 ml at 150 gal or 22.8 ml at 200 gal or 28.6 ml at 250 gal |
| 21 | Pu | (Quintec alt Rhyme then Fracture then Quintec alt Rhyme then Fracture then Quintec alt Rhyme then Elevate) + Dyneamic | 14 | (4 fl oz alt 5 fl oz then 18.3 fl oz then 4 fl oz alt 5 fl oz then 18.3 fl oz then 4 fl oz alt 5 fl oz then 16 oz) + 0.25% (v/v) | (1.4 ml alt 1.7 ml then 6.2 ml then 1.4 ml alt 1.7 ml then 6.2 ml then 1.4 ml alt 1.7 ml then 5.2 g) + 11.4 ml at 100 gal or 17.2 ml at 150 gal or 22.8 ml at 200 gal or 28.6 ml at 250 gal |
| 22 | BS | (Quintec alt Rhyme then Fracture then Quintec alt Rhyme then Fracture then Quintec alt Rhyme then Elevate) + Dyneamic | 14 | (4 fl oz alt 5 fl oz then 20.5 fl oz then 4 fl oz alt 5 fl oz then 20.5 fl oz then 4 fl oz alt 5 fl oz then 16 oz) + 0.25% (v/v) | (1.4 ml alt 1.7 ml then 7.0 ml then 1.4 ml alt 1.7 ml then 7.0 ml then 1.4 ml alt 1.7 ml then 5.2 g) + 11.4 ml at 100 gal or 17.2 ml at 150 gal or 22.8 ml at 200 gal or 28.6 ml at 250 gal |
| 23 | RKD | (Rhyme alt Fracture then Fracture then Rhyme alt Quintec then Fracture then Rhyme alt Quintec then Elevate) + Dyneamic | 14 | (5 fl oz alt 18.3 fl oz then 18.3 fl oz then 5 fl oz alt 4 fl oz then 18.3 fl oz then 5 fl oz alt 4 fl oz then 16 oz) + 0.25% (v/v) | (1.7 ml alt 6.2 ml then 6.2 ml then 1.7 ml alt 1.4 ml then 6.2 ml then 1.7 ml alt 1.4 ml then 5.2 g) + 11.4 ml at 100 gal or 17.2 ml at 150 gal or 22.8 ml at 200 gal or 28.6 ml at 250 gal |
| 24 | RD | (Rhyme alt Fracture then Fracture then Rhyme alt Quintec then Fracture then Rhyme alt Quintec then Elevate) + Dyneamic | 14 | (5 fl oz alt 20.5 fl oz then 20.5 fl oz then 5 fl oz alt 4 fl oz then 20.5 fl oz then 5 fl oz alt 4 fl oz then 16 oz) + 0.25% (v/v) | (1.7 ml alt 7.0 ml then 7.0 ml then 1.7 ml alt 1.4 ml then 7.0 ml then 1.7 ml alt 1.4 ml then 5.2 g) + 11.4 ml at 100 gal or 17.2 ml at 150 gal or 22.8 ml at 200 gal or 28.6 ml at 250 gal |

Trial II (137 East End – 133 East End)

| No. | Flag | Treatment | Frequency (days) | Application rate (per acre) | FP/5 replicates |
|-----|------|---|------------------|--|--|
| 1 | W | Untreated Control | None | None | none |
| 2 | KC | Viathon | 14-21 (RI) | 2 pts | 10.9 ml |
| 3 | OKS | ((Luna Experience then Inspire Super then Quintec) + Syl-Coat) (2x) | 14-21 (RI) | ((8 fl oz then 20 fl oz then 5 fl oz) + 4 fl oz/100 gal) (2x) | ((2.8 ml then 6.8 ml then 1.7 ml) + 1.4 ml at 100 gal or 2.1 ml at 150 gal or 2.8 ml at 200 gal or 3.4 ml at 250 gal) (2x) |
| 4 | OKD | ((Aprovia then Inspire Super then Quintec) + Syl-Coat) (2x) | 14-21 (RI) | ((8.5 fl oz then 20 fl oz then 5 fl oz) + 4 fl oz/100 gal) (2x) | ((2.9 ml then 6.8 ml then 1.7 ml) + 1.4 ml at 100 gal or 2.1 ml at 150 gal or 2.8 ml at 200 gal or 3.4 ml at 250 gal) (2x) |
| 5 | GS | ((Aprovia then Inspire Super then Quintec) + Syl-Coat) (2x) | 14-21 (RI) | ((10.5 fl oz then 20 fl oz then 5 fl oz) + 4 fl oz/100 gal) (2x) | ((3.6 ml then 6.8 ml then 1.7 ml) + 1.4 ml at 100 gal or 2.1 ml at 150 gal or 2.8 ml at 200 gal or 3.4 ml at 250 gal) (2x) |
| 6 | GD | (Inspire Super alt Quintec) + Syl-Coat | 14-21 (RI) | (20 fl oz alt 5 fl oz) + 4 fl oz/100 gal | (6.8 ml alt 1.7 ml) + 1.4 ml at 100 gal or 2.1 ml at 150 gal or 2.8 ml at 200 gal or 3.4 ml at 250 gal |
| 7 | OS | Topguard | 14 | 5 fl oz | 1.7 ml |
| 8 | KS | Topguard | 14 | 6 fl oz | 2.0 ml |
| 9 | KD | Rhyme | 14 | 5 fl oz | 1.7 ml |
| 10 | GKS | Rhyme + Dyneamic | 14 | 5 fl oz + 0.25% (v/v) | 1.7 ml + 11.4 ml at 100 gal or 17.2 ml at 150 gal or 22.8 ml at 200 gal or 28.6 ml at 250 gal |
| 11 | GKD | Luna Experience + Syl-Coat | 14-21 (RI) | 8 fl oz + 4 fl oz/100 gal | 2.8 ml + 1.4 ml at 100 gal or 2.1 ml at 150 gal or 2.8 ml at 200 gal or 3.4 ml at 250 gal |
| 12 | YKC | SA19 + Syl-Coat | 14-21 (RI) | 5.13 fl oz + 4 fl oz/100 gal | 1.7 ml + 1.4 ml at 100 gal or 2.1 ml at 150 gal or 2.8 ml at 200 gal or 3.4 ml at 250 gal |
| 13 | YKS | SA29 + Syl-Coat | 14-21 (RI) | 13.7 fl oz + 4 fl oz/100 gal | 4.7 ml + 1.4 ml at 100 gal or 2.1 ml at 150 gal or 2.8 ml at 200 gal or 3.4 ml at 250 gal |
| 14 | YS | (Mettle alt Torino) + Dyneamic | 14 | (5 fl oz alt 3.4 fl oz) + 0.25% (v/v) | (1.7 ml alt 1.2 ml) + 11.4 ml at 100 gal or 17.2 ml at 150 gal or 22.8 ml at 200 gal or 28.6 ml at 250 gal |

| | | | | | |
|----|-------|--|-----------------------|--|--|
| 15 | YKD | (Mettle then Pristine (21d) then Torino then Mettle then Quintec then Torino) + Dyneamic | 14-21 | (5 fl oz then 12.5 oz then 3.4 fl oz then 5 fl oz then 6 fl oz then 3.4 fl oz) + 0.25% (v/v) | (1.7 ml then 4.1 g then 1.2 ml then 1.7 ml then 2 ml then 1.2 ml) + 11.4 ml at 100 gal or 17.2 ml at 150 gal or 22.8 ml at 200 gal or 28.6 ml at 250 gal |
| 16 | RD | GWN-10250 + Dyneamic | 14 | 24 fl oz + 0.25% (v/v) | 8.2 ml + 11.4 ml at 100 gal or 17.2 ml at 150 gal or 22.8 ml at 200 gal or 28.6 ml at 250 gal |
| 17 | BKS | (Rally alt Quintec) + Dyneamic | 14 | (5 oz alt 4 fl oz) + 0.25% (v/v) | (1.6 g alt 1.4 ml) + 11.4 ml at 100 gal or 17.2 ml at 150 gal or 22.8 ml at 200 gal or 28.6 ml at 250 gal |
| 18 | RKS | (Rally alt Quintec) + Dyneamic (addition of OR-099 at 1st and 4 weeks later) | 14 | (5 oz alt 4 fl oz) + 0.25% (v/v) + 16 fl oz (1st and 4 weeks after) | (1.6 g alt 1.4 ml) + 11.4 ml at 100 gal or 17.2 ml at 150 gal or 22.8 ml at 200 gal or 28.6 ml at 250 gal + 5.4 ml |
| 19 | K | (Rally alt Quintec) + Dyneamic (addition of OR-099 at 1st and 4 weeks later) | 14 | (5 oz alt 4 fl oz) + 0.25% (v/v) + 32 fl oz (1st and 4 weeks after) | (1.6 g alt 1.4 ml) + 11.4 ml at 100 gal or 17.2 ml at 150 gal or 22.8 ml at 200 gal or 28.6 ml at 250 gal + 10.9 ml |
| 20 | KS/Pu | PSG alt Taegro + PSG | 7-10 alt 7-14 (RI) | 1% (v/v) alt 5.2 oz + 0.5% (v/v) | 45.6 ml at 100 gal or 68.8 ml at 150 gal or 91.2 ml at 200 gal or 114.4 ml at 250 gal alt 1.7 g + 22.8 ml at 100 gal or 34.4 ml at 150 gal or 45.6 ml at 200 gal or 57.2 ml at 250 gal |
| 21 | BS | PSG (2x) then ((Rhyme then Quintec then Sovran) + PSG)(2x) | 10 14 | 1% (v/v) (2x) then ((5 fl oz then 4 fl oz then 4 oz) + 0.5% (v/v)) (2x) | 45.6 ml at 100 gal or 68.8 ml at 150 gal or 91.2 ml at 200 gal or 114.4 ml at 250 gal (2x) then ((1.7 ml then 1.4 ml then 1.3 g) + 22.8 ml at 100 gal or 34.4 ml at 150 gal or 45.6 ml at 200 gal or 57.2 ml at 250 gal) (2x) |
| 22 | BD | ((Rhyme then Quintec then Sovran) + PSG) (2x) then Rhyme + PSG | 14 | ((5 fl oz then 4 fl oz then 4 oz) + 1% (v/v) (2x) then 5 fl oz + 1% (v/v) | ((1.7 ml then 1.4 ml then 1.3 g) + 45.6 ml at 100 gal or 68.8 ml at 150 gal or 91.2 ml at 200 gal or 114.4 ml at 250 gal (2x) then 1.7 ml + 45.6 ml at 100 gal or 68.8 ml at 150 gal or 91.2 ml at 200 gal or 114.4 ml at 250 gal (2x) |

| | | | | | |
|----|-----|---|----|--|---|
| 23 | RKD | (Rhyme then Quintec then Sovran) + Syl-Coat) (2x) then Rhyme + Syl-Coat | 14 | ((5 fl oz then 4 fl oz then 4 oz) + 4 fl oz/100 gal) (2x) then 5 fl oz + 4 fl oz/100 gal | (1.7 ml then 1.4 ml then 1.3 g) + 1.4 ml at 100 gal or 2.1 ml at 150 gal or 2.8 ml at 200 gal or 3.5 ml at 250 gal) (2x) then 1.7ml + 1.4 ml at 100 gal or 2.1 ml at 150 gal or 2.8 ml at 200 gal or 3.5 ml at 250 gal |
| 24 | Pu | (Rhyme then Quintec then Sovran) + PSG then (Rhyme then Quintec) + PSG | 21 | (5 fl oz then 4 fl oz then 4 oz) + 1% (v/v) then (5 fl oz then 4 fl oz) + 1% (v/v) | (1.7 ml then 1.4 ml then 1.3 g) + 45.6 ml at 100 gal or 68.8 ml at 150 gal or 91.2 ml at 200 gal or 114.4 ml at 250 gal then (1.7 ml then 1.4 ml) + 45.6 ml at 100 gal or 68.8 ml at 150 gal or 91.2 ml at 200 gal or 114.4 ml at 250 gal |
| 25 | B | Pyriofenone | 14 | 5 fl oz | 1.7 ml |
| 26 | YD | Pyriofenone | 21 | 5 fl oz | 1.7 ml |

Trial III (133 West End – 130 West End)

| No. | Flag. | Treatment | Frequency (days) | Application rate (per acre) | FP/5 replicates |
|-----|-------|--|----------------------|---|--|
| 1 | W | Untreated Control | None | None | None |
| 2 | BD | Vigor Cal | 14 | 2 qt | 21.8 ml |
| 3 | BS | Vigor Cal + Vigor SeaCal | 14 | 2 qt + 2 qt | 21.8 ml + 21.8 ml |
| 4 | RKD | Sysstem Cal | 14 | 2 qt | 21.8 ml |
| 5 | RD/YC | Sysstem Cal + Dyneamic | 14 | 2 qt + 1% (v/v) | 21.8 ml + 45.6 ml at 100 gal or 68.8 ml at 150 gal or 91.2 ml at 200 gal or 114.4 ml at 250 gal |
| 6 | BKS | Sysstem SeaCal | 14 | 2 qt | 21.8 ml |
| 7 | RD | Vigor SeaCal | 14 | 4 qt | 43.6 ml |
| 8 | RKS | GOP-1 Bran + GOP-1 Oil | 7 | 7 oz/25 gal + 32 fl oz/25 gal | 9.5 g + 45.4 ml at 100 gal or 14.3 g + 68.1 ml at 150 gal or 19.1 g + 90.8 ml at 200 gal or 23.0 g + 109.8 ml at 250 gal |
| 9 | YKS | WXF-15001 | 7 | 1.75% (v/v) | 79.5 ml at 100 gal or 119.3 ml at 150 gal or 159.0 ml at 200 gal or 198.8 ml at 250 gal |
| 10 | YC | WXF-15002 | 7 | 0.5% (v/v) | 22.8 ml at 100 gal or 34.4 ml at 150 gal or 45.6 ml at 200 gal or 57.2 ml at 250 gal |
| 11 | OKS | (K-PHITE 7LP (2x) then K-PHITE 7LP + Luna Experience then K-PHITE 7LP then K-PHITE 7LP + Quintec then K-PHITE 7LP (2x)) + Tactic | 14 | (3 qt (2x) then 3 qt + 8 fl oz then 3 qt then 3 qt + 6.6 fl oz then 3 qt (2x)) + 6 fl oz/100 gal | (32.6 ml (2x) then 32.6 ml + 2.7 ml then 32.6 ml then 32.6 ml + 2.2 ml then 32.6 ml (2x)) + 1.1 ml at 50 gal or 2.2 ml at 100 gal or 3.3 ml at 150 gal |
| 12 | GS | (K-PHITE 7LP then K-PHITE 7LP + Pristine then K-PHITE 7LP then K-PHITE + Quintec then K-PHITE 7LP then K-PHITE 7LP + Pristine then K-PHITE 7LP) + Latron | 14 | (3 qt then 3 qt + 12.5 oz then 3 qt then 3 qt + 6.6 fl oz then 3 qt then 3 qt + 12.5 oz then 3 qt) + 10 fl oz/100 gal | (32.6 ml then 32.6 ml + 4.1 g then 32.6 ml then 32.6 ml + 2.2 ml then 32.6 ml then 32.6 ml + 4.1 g then 32.6 ml) + 1.8 ml at 50 gal or 3.6 ml at 100 gal or 5.4 ml at 150 gal |
| 13 | KC | REX (rescue app after leaf removal 2 gal) | 14 (or 4-6in growth) | 1 gal | 43.5 ml |
| 14 | GKS | LSU (rescue app after leaf removal 2 gal) | 14 (or 4-6in growth) | 0.5 gal | 21.8 ml |
| 15 | GD | LSU (rescue app after leaf removal 2 gal) | 14 (or 4-6in growth) | 1 gal | 43.5 ml |

| | | | | | |
|----|-----|---|-------------------------|---|--|
| 16 | OS | Microthiol Disperss (2x) then AG Copp 75 + Microthiol Disperss + HML32 | 10-14 (RI) | 5 lb (2x) then 60 g/100 L + 5 lb + 1.25 L/100 L | 26.1 g (2x) then 2.7 g at 100 gal or 4.1 g at 150 gal or 5.5 g at 200 gal or 6.6 g at 250 gal + 26.1 g + 56.8 ml at 100 gal or 85.2 ml at 150 gal or 113.6 ml at 200 gal or 142.0 ml at 250 gal |
| 17 | KS | Inspire Super + JMS Stylet Oil then (Luna Experience then Flint) + Dyneamic | 14-21 (RI) | 10.5 fl oz + 0.5% (v/v) then 6 fl oz then 2 oz then 10.5 fl oz + 0.5% (v/v) then (6 fl then 2 oz) + 0.25% (v/v) | 3.6 ml ml + 22.8 ml at 100 gal or 34.4 ml at 150 gal or 45.6 ml at 200 gal or 57.2 ml at 250 gal then (2.0 ml then 0.7 g) + 11.4 ml at 100 gal or 17.2 ml at 150 gal or 22.8 ml at 200 gal or 28.6 ml at 250 gal |
| 18 | GKD | Regalia | 7-10 (RI) | 2 qt | 21.8 ml |
| 19 | OKD | Regalia + JMS Stylet Oil | 7-10 (RI) | 2 qt + 0.5% (v/v) | 21.8 ml + 22.8 ml at 100 gal or 34.4 ml at 150 gal or 45.6 ml at 200 gal or 57.2 ml at 250 gal |
| 20 | Pu | Regalia + JMS Stylet Oil then (Luna Experience then Flint) + Dyneamic | 7-10 (RI) 14-21 (RI) | 2 qt + 0.5% (v/v) then (6 fl oz then 2 oz) + 0.25% (v/v) | 21.8 ml + 22.8 ml at 100 gal or 34.4 ml at 150 gal or 45.6 ml at 200 gal or 57.2 ml at 250 gal then (2.0 ml then 0.7 g) + 11.4 ml at 100 gal or 17.2 ml at 150 gal or 22.8 ml at 200 gal or 28.6 ml at 250 gal |
| 21 | YKD | Regalia then Inspire Super + JMS Stylet Oil then Luna Experience + Dyneamic then Inspire Super + JMS Stylet Oil then Luna Experience + Dyneamic then Regalia | 7-10 (RI) 14-21 (RI) | 2 qt then 10.5 fl oz + 0.5% (v/v) then 6 fl oz + 0.25% (v/v) then 10.5 fl oz + 0.5% (v/v) then 6 fl oz + 0.25% (v/v) then 2 qt | 21.8 ml then 3.6 ml + 22.8 ml at 100 gal or 34.4 ml at 150 gal or 45.6 ml at 200 gal or 57.2 ml at 250 gal then 2.0 ml + 11.4 ml at 100 gal or 17.2 ml at 150 gal or 22.8 ml at 200 gal or 28.6 ml at 250 gal then 3.6 ml + 22.8 ml at 100 gal or 34.4 ml at 150 gal or 45.6 ml at 200 gal or 57.2 ml at 250 gal then 2.0 ml + 11.4 ml at 100 gal or 17.2 ml at 150 gal or 22.8 ml at 200 gal or 28.6 ml at 250 gal then 21.8 ml |

C. Maps

Trial I

| Row: | 144 | 143 | 142 | 141 | 140 | 139 | 138 | 137 |
|------|-----|-----|-----|-----|-----|-----|-----|-------|
| | W | B | BKS | KD | OS | GD | KS | W |
| | KC | YD | BS | KC | W | YKC | OKD | KC |
| | GKS | YKS | Pu | OKD | BS | GS | RKD | OKS |
| | GS | YS | RD | BS | BKS | OS | B | OKD |
| | PKS | BD | RKD | PKS | YKC | GKD | KC | GS |
| | OS | YKC | GS | Pu | KC | BS | YKS | GD |
| | GD | YKD | BD | BKS | YKS | PKS | YS | OS |
| | OKD | KS | GD | W | BD | GKS | KD | KS/Pu |
| | | KD | B | RKD | B | YD | BKS | KD |
| | | OKS | YKC | YKS | RD | RD | Pu | GKS |
| ← N | | GKD | YKD | YS | OKD | BD | KD | GKD |
| | | | OKS | GKD | RKD | OKS | OKD | YKC |
| | | | YD | RD | GD | W | BD | YKS |
| | | | | KS | YKD | YKD | RD | YS |
| | | | | GKS | PKS | YD | B | YKD |
| | | | | | GS | OS | Pu | |
| | | | | | Pu | GKS | BKS | |
| | | | | | YS | KD | RKD | PKS |
| | | | | | | OKS | KS | YS |
| | | | | | | KS | GKD | YKD |
| | | | | | | GKD | GKS | GD |
| | | | | | | | YKS | BS |
| | | | | | | | W | KC |
| | | | | | | | OS | YKC |
| | | | | | | | | GS |
| | | | | | | | | YD |
| | | | | | | | | OKS |
| | | | | | | | | |

| Color: | | Pattern: | |
|--------|--------|----------|---------|
| B | Blue | C | Checker |
| G | Green | D | Dot |
| K | Black | S | Stripe |
| O | Orange | | |
| P | Pink | | |
| Pu | Purple | | |
| R | Red | | |
| Y | Yellow | | |
| W | White | | |

Trial II

| | | | | Row: | 137 | 136 | 135 | 134 | 133 |
|--------|--------|--|----------|---------|-------|-------|-------|-----|-------|
| Color: | | | Pattern: | | W | GKS | BKS | K | GD |
| B | Blue | | C | Checker | KC | GS | YKS | Pu | KS/Pu |
| G | Green | | D | Dot | OKS | BD | YKC | BD | W |
| K | Black | | S | Stripe | OKD | YD | RKS | RD | YKD |
| O | Orange | | | | GS | OKD | OKS | GKS | OKD |
| P | Pink | | | | GD | B | RKD | W | YKS |
| Pu | Purple | | | | OS | YS | BS | YKD | B |
| R | Red | | | | KS/Pu | YKD | KC | GKD | GKD |
| Y | Yellow | | | | KD | W | KS | BKS | GS |
| W | White | | | | GKS | RD | OKD | KS | KS |
| | | | | | GKD | Pu | KS/Pu | YKC | YD |
| | | | | | YKC | KD | RD | GS | RKS |
| | | | | | YKS | KS/Pu | YS | YD | YS |
| | | | | | YS | K | RKS | RD | OKS |
| | | | | | YKD | OS | RKD | BD | BS |
| | | | | | | GKD | YD | RKS | KD |
| | | | | | | GD | GKS | YKS | YKC |
| | | | | | PKS | YD | GD | BS | OS |
| | | | | | YS | B | YKC | OS | KC |
| | | | | | YKD | K | K | RKD | BKS |
| | | | | | GD | Pu | GS | GD | RKD |
| | | | | | BS | | B | B | |
| | | | | | | RKD | | | |
| | | | | | KC | BD | BKS | K | |
| | | | | | YKC | BS | YKD | OKS | W |
| | | | | | GS | KS | OS | KC | BD |
| | | | | | YD | RKS | YKS | OKD | RKD |
| | | | | | OKS | BKS | Pu | KD | BKS |
| | | | | | | RD | BD | GKS | RD |
| | | | | | | | KC | KS | RD/YC |
| | | | | | | | W | Pu | BS |
| | | | | | | | KS/Pu | YS | RKS |
| | | | | | | | GKD | OKS | YKS |
| | | | | | | | | KD | YC |
| | | | | | | | | BS | OKS |
| | | | | | | | | | GS |
| | | | | | | | | | KC |
| | | | | | | | | | |

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Trial III

| Color: | | Pattern: | |
|--------|--------|----------|---------|
| B | Blue | C | Checker |
| G | Green | D | Dot |
| K | Black | S | Stripe |
| O | Orange | | |
| P | Pink | | |
| Pu | Purple | | |
| R | Red | | |
| Y | Yellow | | |
| W | White | | |

← N

| Row: | 133 | 132 | 131 | 130 |
|------|-------|-------|-------|-----|
| | GD | YKS | KC | PKS |
| | KS/Pu | RKD | RD | GD |
| | W | BD | YC | KC |
| | YKD | BS | OS | GD |
| | OKD | BKS | GS | KC |
| | YKS | KS | GKS | OS |
| | B | GD | YKD | PKS |
| | GKD | BD | YKC | PKS |
| | GS | GKD | RKS | GD |
| | KS | OS | GKD | PKS |
| | YD | BKS | OKD | BKS |
| | RKS | OKS | RD/YC | OS |
| | YS | RD/YC | W | BKS |
| | OKS | RKS | OKS | OS |
| | BS | KS | Pu | KC |
| | KD | RKD | OKD | BKS |
| | YKC | RD | GKS | OS |
| | OS | GD | W | BKS |
| | KC | GS | GKD | OS |
| | BKS | YKC | KC | PKS |
| | RKD | YKD | RKS | KC |
| | | GKS | YC | BKS |
| | | YKS | BS | GD |
| | W | BS | GD | KC |
| | BD | W | BD | GD |
| | RKD | Pu | RD | |
| | BKS | YC | YKS | |
| | RD | KC | YKC | |
| | RD/YC | OKD | BKS | GKD |
| | BS | YKC | YKD | KS |
| | RKS | YKD | OS | RD |
| | YKS | Pu | RD/YC | RKS |
| | YC | OKD | OKS | W |
| | OKS | GKD | KS | BKS |
| | GS | KS | RKD | BS |
| | KC | OS | GS | GS |
| | | GKS | Pu | YC |
| | | GD | RD/YC | OKD |
| | | | YKC | GKS |
| | | | Pu | YKS |
| | | | RKD | OS |
| | | | KC | GD |
| | | | | BD |
| | | | | YKD |
| | | | | OKS |

Overview map

| Row: | 144 | 143 | 142 | 141 | 140 | 139 | 138 | 137 | 136 | 135 | 134 | 133 | 132 | 131 | 130 |
|------|-----|-----|-----|-----|-----|-----|-----|-------|-------|-------|-----|-------|-------|-------|-----|
| | W | B | BKS | | OS | GD | KS | W | | | | | YKS | KC | PKS |
| | | | | KD | | | | | GKS | BKS | K | GD | RKD | RD | GD |
| | KC | YD | BS | KC | W | YKC | OKD | KC | GS | YKS | pU | KS/Pu | BD | YC | KC |
| | GKS | YKS | Pu | OKD | BS | GS | RKD | OKS | BD | YKC | BD | W | BS | OS | GD |
| | GS | YS | RD | BS | BKS | OS | B | OKD | YD | RKS | RD | YKD | BKS | GS | KC |
| | PKS | BD | RKD | PKS | YKC | GKD | KC | GS | OKD | OKS | GKS | OKD | KS | GKS | OS |
| | OS | YKC | GS | Pu | KC | BS | YKS | GD | B | RKD | W | YKS | GD | YKD | PKS |
| | GD | YKD | BD | BKS | YKS | PKS | YS | OS | YS | BS | YKD | B | BD | | PKS |
| | OKD | KS | GD | W | BD | GKS | KD | KS/Pu | YKD | KC | GKD | GKD | GKD | RKS | GD |
| | | KD | B | RKD | B | YD | BKS | KD | W | KS | BKS | GS | OS | GKD | PKS |
| | | OKS | YKC | YKS | RD | RD | Pu | GKS | RD | OKD | KS | KS | BKS | OKD | BKS |
| | | GKD | YKD | YS | OKD | BD | KD | GKD | Pu | KS/Pu | YKC | YD | OKS | RD/YC | OS |
| | | | OKS | GKD | RKD | OKS | OKD | YKC | KD | RD | GS | RKS | RD/YC | W | BKS |
| | | | YD | RD | GD | W | BD | YKS | KS/Pu | YS | YD | YS | RKS | OKS | OS |
| | | | | | | | | | K | RKS | RD | OKS | KS | Pu | KC |
| | | | | KS | YKD | YKD | RD | YS | OS | RKD | BD | BS | RKD | OKD | BKS |
| | | | | GKS | PKS | YD | B | YKD | GKD | YD | RKS | KD | RD | GKS | OS |
| | | | | | GS | OS | Pu | | GD | GKS | YKS | YKC | GD | W | BKS |
| | | | | | Pu | GKS | BKS | | YD | GD | BS | OS | GS | GKD | OS |
| | | | | | YS | KD | RKD | PKS | B | YKC | OS | KC | | KC | PKS |
| | | | | | | OKS | KS | YS | K | K | RKD | BKS | YKD | RKS | KC |
| | | | | | | KS | GKD | YKD | Pu | GS | GD | RKD | GKS | YC | BKS |
| | | | | | | GKD | GKS | GD | | | | | YKS | BS | GD |
| | | | | | | | YKS | BS | RKD | B | B | | BS | GD | KC |
| | | | | | | | W | KC | BD | BKS | K | | W | BD | GD |
| | | | | | | | OS | YKC | BS | YKD | OKS | W | Pu | RD | |
| | | | | | | | | GS | KS | OS | KC | BD | YC | YKS | |
| | | | | | | | | YD | RKS | YKS | OKD | RKD | KC | | |
| | | | | | | | | OKS | BKS | Pu | KD | BKS | OKD | BKS | GKD |
| | | | | | | | | | RD | BD | GKS | RD | | YKD | KS |
| | | | | | | | | | | KC | KS | RD/YC | YKD | OS | RD |
| | | | | | | | | | | W | Pu | BS | Pu | RD/YC | RKS |
| | | | | | | | | | | KS/Pu | YS | RKS | OKD | OKS | W |
| | | | | | | | | | | GKD | OKS | YKS | GKD | KS | BKS |
| | | | | | | | | | | | KD | YC | KS | RKD | BS |
| | | | | | | | | | | | BS | OKS | OS | GS | GS |
| | | | | | | | | | | | | GS | | | |
| | | | | | | | | | | | | KC | GKS | Pu | YC |
| | | | | | | | | | | | | | GD | RD/YC | OKD |
| | | | | | | | | | | | | | | | GKS |
| | | | | | | | | | | | | | | Pu | YKS |
| | | | | | | | | | | | | | | RKD | OS |
| | | | | | | | | | | | | | | KC | GD |
| | | | | | | | | | | | | | | | BD |
| | | | | | | | | | | | | | | | YKD |
| | | | | | | | | | | | | | | | OKS |

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D. Application history

Trial I

| Ttr no. Treatment | | Dates product applied | | | | |
|----------------------|-----------------------------|-----------------------|-------|-----|------|------|
| | | March | April | May | June | July |
| 1 | Unsprayed control | | | | | |
| | Vivando, 15.4 fl oz | | x | | | x |
| | Pristine, 12.5 oz | | | x | | |
| | Quintec, 6.6 fl oz | | | | x | |
| 2 | Switch, 14 oz | | | | x | |
| | Torino, 3.4 fl oz | | | | | x |
| | Luna Tranquility, 16 fl oz | | | | | x |
| | Syl-Coat, 8 fl oz/100 gal | | x | x | x | x |
| 3 | Vivando, 15.4 fl oz | | x | x | x | x |
| | Pristine, 12.5 oz | | | x | x | x |
| | Syl-Coat, 8 fl oz/100 gal | | x | x | x | x |
| 4 | Vivando, 15.4 fl oz | | x | x | x | x |
| | Pristine, 23.0 oz | | | x | x | x |
| | Syl-Coat, 8 fl oz/100 gal | | x | x | x | x |
| 5 | Microthiol Disperss, 5lb | | x | x | | |
| | Luna Exp, 8.6 fl oz | | | x | | x |
| | Syl-Coat, 6.4 fl oz/100 gal | | | x | x | x |
| 6 | Microthiol Disperss, 5lb | | x | x | | |
| | Luna Tranquility, 12 fl oz | | | x | x | x |
| | Syl-Coat, 6.4 fl oz/100 gal | | | x | x | x |
| 7 | Microthiol Disperss, 5lb | | x | x | | |
| | Luna Tranquility, 16 fl oz | | | x | x | x |
| | Syl-Coat, 6.4 fl oz/100 gal | | | x | x | x |
| 8 | Microthiol Disperss, 5lb | | x | x | | |
| | Luna Exp, 8.6 fl oz | | | x | | |
| | Flint, 3 oz | | | | x | |
| | Sonata, 3 qt | | | | | x |
| | Luna Tranquility, 16 fl oz | | | | | x |
| | Serenade Optimum, 16 oz | | | | | x |
| | Quintec, 4 fl oz | | | | | x |
| | Syl-Coat, 6.4 fl oz/100 gal | | | x | x | x |
| 9 | Torino, 3.4 fl oz | | x | x | x | x |
| | Quintec, 4 fl oz | | | x | x | x |
| | Syl-Coat, 8 fl oz/100 gal | | x | x | x | x |
| 10 | Inspire Super, 20 fl oz | | x | x | x | x |
| | Quintec, 4 fl oz | | | x | x | x |
| | Syl-Coat 8 fl oz/100 gal | | x | x | x | x |
| 11 | Quintec, 6.6 fl oz | | x | x | x | x |
| | Syl-Coat, 8 fl oz/100 gal | | x | x | x | x |
| 12 | Luna Exp, 8 fl oz | | | | x | x |
| | Quintec, 6.6 fl oz | | | x | x | x |
| | Syl-Coat, 8 fl oz/100 gal | | | x | x | x |
| 13 | Pristine, 12.5 oz | | x | | x | x |
| | Quintec, 6.6 fl oz | | | x | x | x |
| | Syl-Coat, 8 fl oz/100 gal | | | x | x | x |
| 14 | Viticure, 6 fl oz | | x | x | x | x |
| | Quintec, 4 fl oz | | | x | x | x |
| | Vintre, 0.25% (v/v) | | x | x | x | x |
| 15 | Viticure, 9 fl oz | | x | x | x | x |
| | Quintec, 6.6 fl oz | | | x | x | x |
| | Vintre, 0.25% (v/v) | | x | x | x | x |
| 16 | Viticure, 6 fl oz | | x | x | x | x |
| | Pristine, 10.5 oz | | | x | x | x |
| | Vintre, 0.25% (v/v) | | x | x | x | x |
| 17 | Viticure, 8 fl oz | | x | x | x | x |
| | Pristine, 12.5 oz | | | x | x | x |
| | Vintre, 0.25% (v/v) | | x | x | x | x |
| 18 | Viticure, 6 fl oz | | x | x | x | x |
| | Vivando, 10.3 fl oz | | | x | x | x |
| | Vintre, 0.25% (v/v) | | x | x | x | x |
| 19 | Viticure, 9 fl oz | | x | x | x | x |
| | Vivando, 15.4 fl oz | | | x | x | x |
| | Vintre, 0.25% (v/v) | | x | x | x | x |
| 20 | Quintec, 4 fl oz | | x | | x | x |
| | Rhyme, 5 fl oz | | | x | | x |
| | Pristine, 12.5 oz | | | x | | x |
| | Elevate, 16 oz | | | | | x |
| | Dyneamic, 0.25% (v/v) | | x | x | x | x |
| 21 | Quintec, 4 fl oz | | x | | x | x |
| | Rhyme, 5 fl oz | | | x | | x |
| | Fracture, 18.3 fl oz | | | x | | x |
| | Elevate, 16 oz | | | | | x |
| | Dyneamic, 0.25% (v/v) | | x | x | x | x |
| 22 | Quintec, 4 fl oz | | x | | x | x |
| | Rhyme, 5 fl oz | | | x | | x |
| | Fracture, 20.5 fl oz | | | x | | x |
| | Elevate, 16 oz | | | | | x |
| | Dyneamic, 0.25% (v/v) | | x | x | x | x |
| 23 | Rhyme, 5 fl oz | | x | | x | x |
| | Fracture, 18.3 fl oz | | | x | | x |
| | Quintec, 4 fl oz | | | x | | x |
| | Elevate, 16 oz | | | | | x |
| | Dyneamic, 0.25% (v/v) | | x | x | x | x |
| 24 | Rhyme, 5 fl oz | | x | | x | x |
| | Fracture, 20.5 fl oz | | | x | | x |
| | Quintec, 4 fl oz | | | x | | x |
| | Elevate, 16 oz | | | | | x |
| | Dyneamic, 0.25% (v/v) | | x | x | x | x |

DISEASE EVALUATION

Trial II

| Trial II (Row 137-133) | | Dates product applied | | | | |
|------------------------|---------------------------|-----------------------|-------|-----|------|------|
| | | March | April | May | June | July |
| 1 | Unsprayed control | | | | | |
| 2 | Viathon, 2 pt | | x | x | x | x |
| 3 | Luna Eip, 8 fl oz | | x | | x | |
| | Inspire Super, 20 fl oz | | | x | | x |
| | Quintec, 5.0 fl oz | | | | x | x |
| 4 | Syl-Coat, 4 fl oz/100 gal | | x | x | x | x |
| | Aprovia, 8.5 fl oz | | x | | x | |
| | Inspire Super, 20 fl oz | | | x | | x |
| 5 | Quintec, 5.0 fl oz | | | | x | x |
| | Syl-Coat, 4 fl oz/100 gal | | x | x | x | x |
| | Aprovia, 10.5 fl oz | | x | | x | |
| 6 | Inspire Super, 20 fl oz | | x | | x | x |
| | Quintec, 5 fl oz | | | x | | x |
| | Syl-Coat, 4 fl oz/100 gal | | x | x | x | x |
| 7 | Topguard EQ, 5 fl oz | | x | x | x | x |
| 8 | Topguard EQ, 6 fl oz | | x | x | x | x |
| 9 | Rhyme, 5 fl oz | | x | x | x | x |
| 10 | Rhyme, 5 fl oz | | x | x | x | x |
| | Dyneamic, 0.25% (v/v) | | x | x | x | x |
| 11 | Luna Eip, 8 fl oz | | x | x | x | x |
| | Syl-Coat, 4 fl oz/100 gal | | x | x | x | x |
| 12 | SA19, 5.13 fl oz | | x | x | x | x |
| | Syl-Coat, 4 fl oz/100 gal | | x | x | x | x |
| 13 | SA29, 13.7 fl oz | | x | x | x | x |
| | Syl-Coat, 4 fl oz/100 gal | | x | x | x | x |
| 14 | Mettle, 5 fl oz | | x | x | x | x |
| | Torino SC, 3.4 fl oz | | | x | x | x |
| 15 | Dyneamic, 0.25% (v/v) | | x | x | x | x |
| | Mettle, 5 fl oz | | | | x | |
| | Pristine, 12.5 oz | | | x | | |
| 16 | Torino, 3.4 fl oz | | | x | | x |
| | Quintec, 6 fl oz | | | | x | |
| | Dyneamic, 0.25% (v/v) | | x | x | x | x |
| 17 | GVM-10250, 24 fl oz | | x | x | x | x |
| | Dyneamic, 0.25% (v/v) | | x | x | x | x |
| 18 | Rally, 5 oz | | x | x | x | x |
| | Quintec, 4 fl oz | | | x | | x |
| | Dyneamic, 0.25% (v/v) | | x | x | x | x |
| 19 | Rally, 5 oz | | x | x | x | x |
| | Quintec, 4 fl oz | | | x | | x |
| | DR-099, 32 fl oz | | x | x | | x |
| 20 | Dyneamic, 0.25% (v/v) | | x | x | x | x |
| | PSG, 1% (v/v) | | x | x | x | x |
| | Taegro, 5.2 oz | | x | x | x | x |
| 21 | PSG, 0.5% (v/v) | | x | x | x | x |
| | PSG, 1% (v/v) | | x | x | x | x |
| | Rhyme, 5 fl oz | | | x | | x |
| | Quintec, 4 fl oz | | | x | | x |
| 22 | Sovran, 4 oz | | | | x | x |
| | PSG, 0.5% (v/v) | | x | x | x | x |
| | Rhyme, 5 fl oz | | x | x | | x |
| | Quintec, 4 fl oz | | x | x | | x |
| 23 | Sovran, 4 oz | | | x | | x |
| | Syl-Coat, 4 fl oz/100 gal | | x | x | x | x |
| | Rhyme, 5 fl oz | | x | x | | x |
| | Quintec, 4 fl oz | | x | x | | x |
| 24 | Sovran, 4 oz | | | x | | x |
| | PSG, 1% (v/v) | | x | x | x | x |
| | Pyriofenone, 5 fl oz | | x | x | x | x |
| | Pyriofenone, 5 fl oz | | x | x | x | x |

LUNBASE EV ALLUUR LUON

Trial III

Trial III (133-130)

| Ttr No. | Treatment | March | April | | | May | | | June | | | July | | |
|---------|----------------------------|-------|-------|---|---|-----|---|---|------|---|---|------|---|---|
| | | | | | | | | | | | | | | |
| 1 | Unsprayed control | | | | | | | | | | | | | |
| 2 | Vigor Cal, 2 qt | | x | | x | | x | | x | | x | | x | |
| 3 | Vigor Cal, 2 qt | | x | | x | | x | | x | | x | | x | |
| | Vigor Sea Cal, 2 qt | | x | | x | | x | | x | | x | | x | |
| 4 | Sysstem Cal, 2 qt | | x | | x | | x | | x | | x | | x | |
| 5 | Sysstem Cal, 2 qt | | x | | x | | x | | x | | x | | x | |
| | Dynameic, 1% (v/v) | | x | | x | | x | | x | | x | | x | |
| 6 | Sysstem Sea Cal, 2 qt | | x | | x | | x | | x | | x | | x | |
| 7 | Vigor Sea Cal, 4 qt | | x | | x | | x | | x | | x | | x | |
| 8 | GOP-1 Bran, 7oz/25 gal | | x | x | x | x | x | x | x | x | x | x | x | x |
| | GOP-1 Oil, 32 oz/25 gal | | x | x | x | x | x | x | x | x | x | x | x | x |
| 9 | WXF-16001, 1.75% (v/v) | | x | x | x | x | x | x | x | x | x | x | x | x |
| 10 | WXF-16002, 0.5% (v/v) | | x | x | x | x | x | x | x | x | x | x | x | x |
| 11 | K-PHITE 7LP, 3 qt | | x | | x | | x | | x | | x | | x | |
| | Luna Experience, 3 qt | | | | | | x | | | | | | | |
| | Quintec, 6.6 fl oz | | | | | | | | | x | | | | |
| | Tactic, 6 oz/100 gal | | x | | x | | x | | x | | x | | x | |
| 12 | K-PHITE 7LP, 3 qt | | x | | x | | x | | x | | x | | x | |
| | Pristine, 12.5 oz | | | | x | | | | | | x | | | |
| | Quintec, 6.6 fl oz | | | | | | | | x | | | | | |
| | Latron, 10 oz/100 gal | | x | | x | | x | | x | | x | | x | |
| 13 | REX, 1 gal | | x | | x | | x | | | | x | | x | |
| | REX, 2 gal (1 rescue app) | | | | | | | | x | | | | | |
| 14 | LSU, 0.5 gal | | x | | x | | x | | | | x | | x | |
| | LSU, 2 gal (1 rescue app) | | | | | | | | x | | | | | |
| 15 | LSU, 1 gal | | x | | x | | x | | | | x | | x | |
| | LSU, 2 gal (1 rescue app) | | | | | | | | x | | | | | |
| 16 | AG Copp 75, 60 g/100 L | | | | x | | x | | x | | x | | x | |
| | Microthiol Dispers, 5 lb | | x | x | x | | x | | x | | x | | x | |
| | HML32, 1.25 L/100 L | | | | x | | x | | x | | x | | x | |
| 17 | Inspire Super, 10.5 fl oz | | x | | | | | | | | x | | | |
| | JMS Stylet Oil, 0.5% (v/v) | | x | | | | | | | | x | | | |
| | Luna Experience, 6 fl oz | | | | | | x | | | | | x | | |
| | Flint, 2 oz | | | | | | | | x | | | | | x |
| | Dynameic, 0.25% (v/v) | | | | | | x | | x | | | x | | x |
| 18 | Regalia, 2 qt | | x | x | x | x | x | x | x | x | x | x | x | x |
| 19 | Regalia, 2 qt | | x | x | x | x | x | x | x | x | x | x | x | x |
| | JMS Stylet Oil, 0.5% (v/v) | | x | x | x | x | x | x | x | x | x | x | x | x |
| 20 | Regalia, 2 qt | | x | | | | | | x | | | | | |
| | JMS Stylet Oil, 0.5% (v/v) | | x | | | | | | x | | | | | |
| | Luna Experience, 6 fl oz | | | | x | | | | | | x | | | x |
| | Flint, 2 oz | | | | | | | x | | | x | | | |
| | Dynameic, 0.25% (v/v) | | | | x | | | | x | | x | | | x |
| 21 | Regalia, 2 qt | | x | | | | | | | | x | | | |
| | Inspire Super, 10.5 fl oz | | | | x | | | | x | | | | | x |
| | JMS Stylet Oil, 0.5% (v/v) | | | | x | | | | x | | | | | x |
| | Luna Experience, 6 fl oz | | | | | | | x | | | x | | | |
| | Dynameic, 0.25% (v/v) | | | | | | | x | | | x | | | |

DISEASE EVALUATION

E. Vine Management

During the application period, vines were irrigated by drip irrigation. Sucker shoots were removed the first week of May 2015. Leaf removal around the clusters was conducted on the last week of May until second week of Jun.

F. Data Collection and Statistics

Daily temperature, precipitation and Gubler-Thomas Risk Index values were computed and obtained from an Adcon weather station in the trial site. Overall temperature were mild throughout the season (Figure 1), four precipitation events were recorded on Apr 24, 25, May 18 and Jun 10 as 0.6, 3.8, 0.4 and 2 respectively (Figure 2). Powdery mildew incidence and severity were assessed in each plot by evaluating twenty five random clusters. Incidence was defined as the proportion of clusters in a plot having some living powdery mildew. Severity was determined by estimating the percentage of area of a cluster that were infected; the severity value of all clusters was then averaged to give a plot-wide estimate of disease severity. Mean incidence and severity values for each treatment were computed. Trial models were analyzed using the ANOVA Tests for data. Means comparisons were made using Student's t-test with $\alpha=0.05$.

Phytotoxicity data were collected for all treatments (data not shown).

Figure 1. Daily temperature data from Apr 21 to Jul 21 2015.

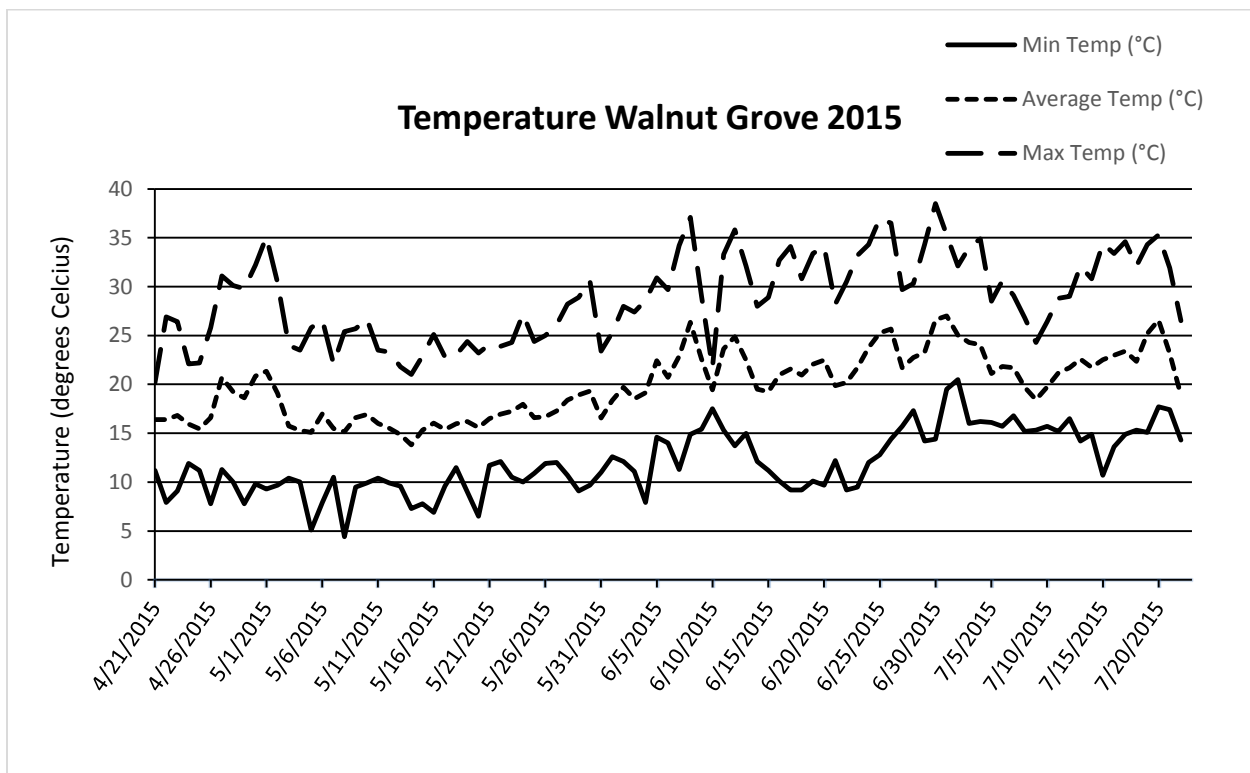


Figure 2. Daily precipitation data from Apr 21 to Jul 21 2015

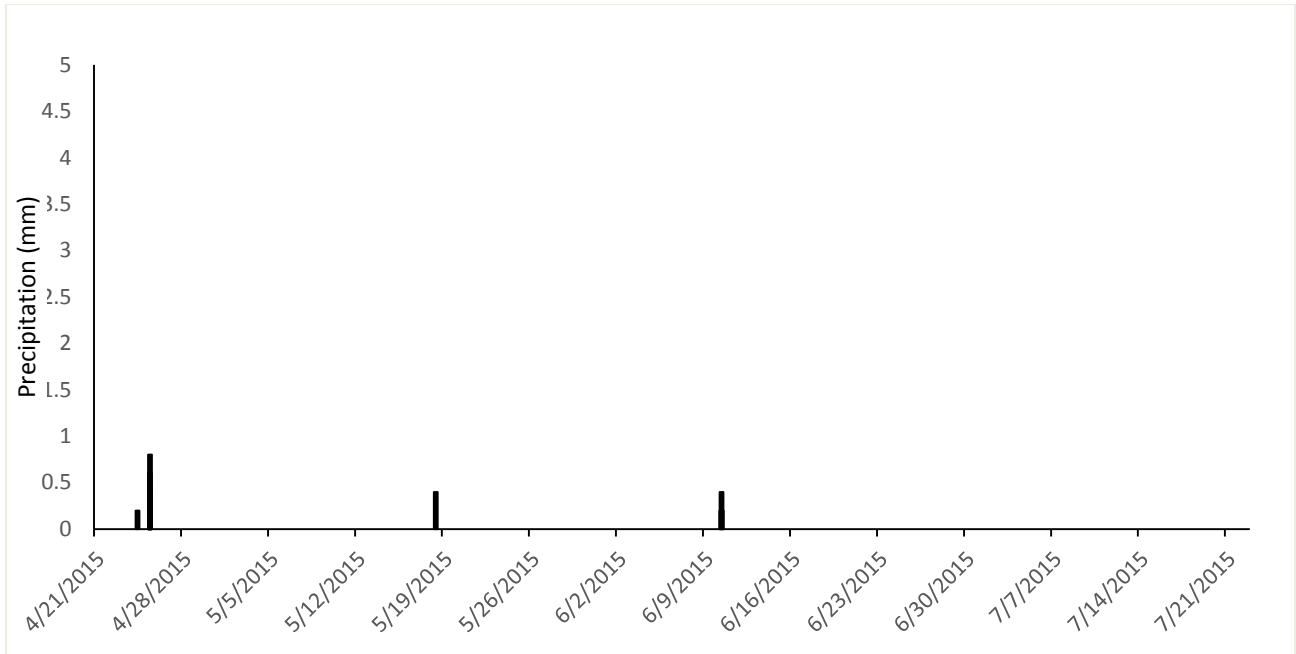


Figure 3. Thomas-Gubler Risk Index data from 21 Apr to 21 Jul. Red data points indicate risk index > 60 (high risk), yellow data points indicate risk index data between 30 and 60 (moderate risk) and green data points are values below 30 (no risk).

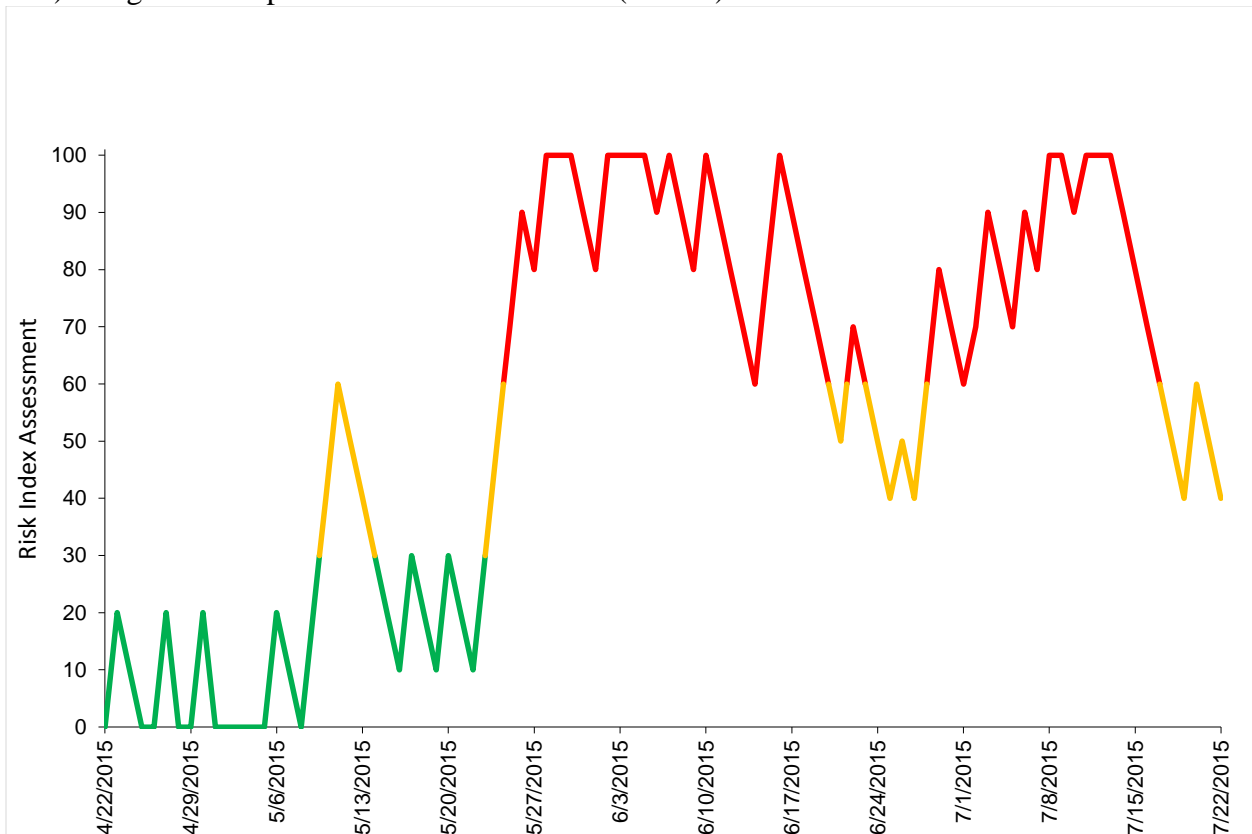
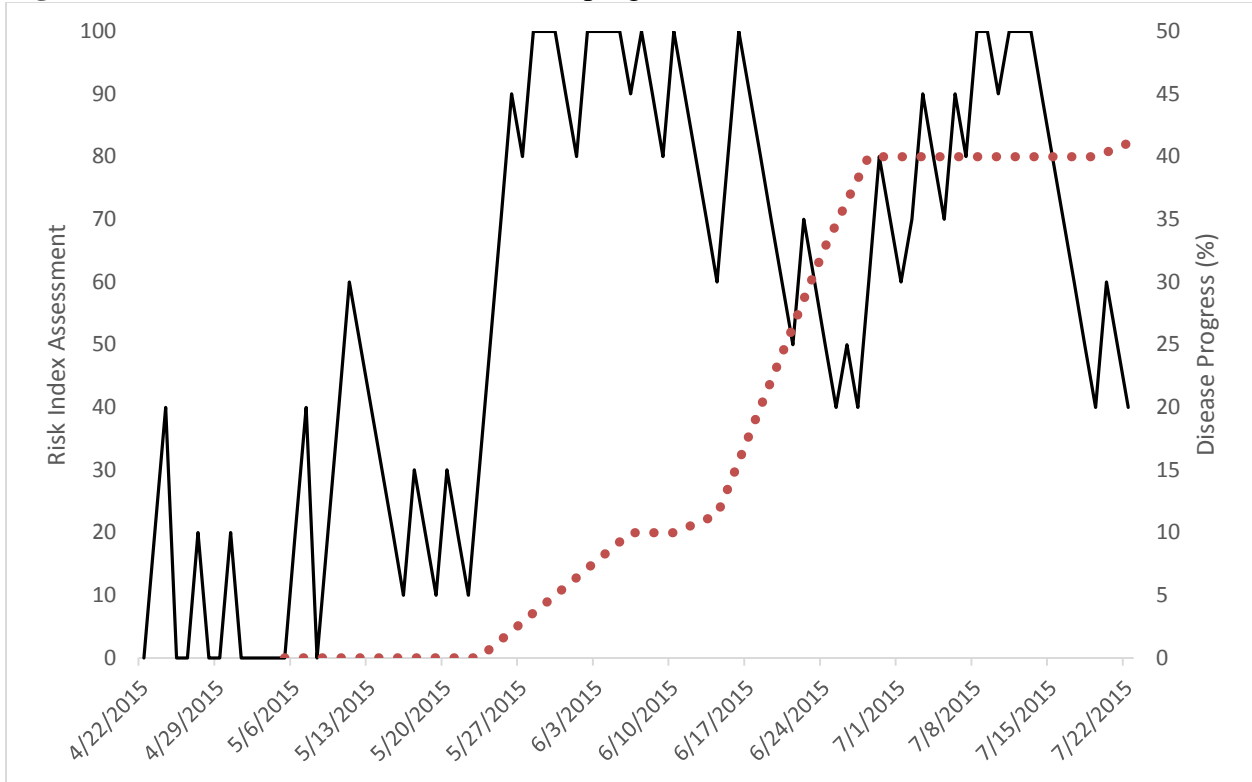


Figure 4. Risk index (solid line) and disease progress (%) (dotted curve).



Results

Table 1. Disease incidence and severity in trial I. Product names are followed by rate (per acre) and the frequency of application. Treatment means followed by the same letter are not significantly different according to Student's t-test at $\alpha=0.05$; alt = alternated with.

| Treatment | Incidence (%) | Severity (%) |
|--|---------------|--------------|
| (Quintec, 4 fl oz then Pristine, 12.5 oz then Rhyme, 5 fl oz then Pristine, 12.5 oz then Quintec, 4 fl oz then Rhyme, 5 fl oz then Elevate, 16 oz) + Dyneamic, 0.25% (v/v), 14d | 0.00 e | 0.000 c |
| Microthiol Disperss, 5 lbs, 7d (2x) then Luna Tranquility, 12 fl oz + Syl-Coat, 6.4 fl oz/100 gal, 14d | 1.60 e | 0.016 c |
| (Vivando, 15.4 fl oz alt Pristine, 12.5 oz) + Syl-Coat, 8 fl oz/100 gal, 14d | 2.40 e | 0.024 c |
| Microthiol Disperss, 5 lbs, 7d (2x) then Luna Experience, 8.6 fl oz + Syl-Coat, 6.4 fl oz/100 gal, 21d | 2.40 e | 0.024 c |
| Microthiol Disperss, 5 lbs, 7d (2x) then Luna Tranquility, 16 fl oz + Syl-Coat, 6.4 fl oz/100 gal, 14d | 3.20 e | 0.032 c |
| (Vivando, 15.4 fl oz alt Pristine, 23 oz) + Syl-Coat, 8 fl oz/100 gal, 14d | 3.20 e | 0.032 c |
| Microthiol Disperss, 5 lbs, 7d (2x) then (Luna Experience, 8.6 fl oz then Flint, 3 oz then Sonata, 3 qt then Luna Tranquility, 16 fl oz then Serenade Optimum, 16 oz then Quintec, 4 fl oz) + Syl-Coat, 6.4 fl oz/100 gal, 14d | 4.00 e | 0.040 c |
| (Quintec, 4 fl oz then Fracture, 20.5 fl oz then Rhyme, 5 fl oz then Fracture, 20.5 fl oz then Quintec, 4 fl oz then Rhyme, 5 fl oz then Elevate, 16 oz) + Dyneamic, 0.25% (v/v), 14d | 7.00 de | 0.080 c |
| (Rhyme, 5 fl oz then Fracture, 18.3 fl oz then Quintec, 4 fl oz then Fracture, 18.3 fl oz then Rhyme, 5 fl oz then Quintec, 4 fl oz then Elevate, 16 oz) + Dyneamic, 0.25% (v/v), 14d | 8.00 de | 0.140 bc |
| (Vivando, 15.4 fl oz then Pristine, 12.5 oz then Quintec, 6.6 fl oz then Switch, 14 oz then Torino, 3.4 fl oz then Luna Tranquility, 16 fl oz) + Syl-Coat, 8 fl oz/100 gal, 14d | 8.00 de | 0.150 bc |
| (Viticure, 6 fl oz alt Vivando, 10.3 fl oz) + Vintre. 0.25% (v/v), 14d | 11.20 de | 0.152 c |
| (Viticure, 8 fl oz alt Pristine, 12.5 oz) + Vintre. 0.25% (v/v), 14d | 9.60 de | 0.160 c |
| (Viticure, 8 fl oz alt Vivando, 15.4 fl oz) + Vintre. 0.25% (v/v), 14d | 11.20 de | 0.224 c |
| (Luna Experience, 8 fl oz alt Quintec, 6.6 fl oz) + Syl-Coat, 8 fl oz/100 gal, 21d | 6.00 e | 0.240 bc |
| (Pristine, 12.5 oz alt Quintec, 6.6 fl oz) + Syl-Coat, 8 fl oz/100 gal, 21d | 12.80 de | 0.264 bc |
| (Inspire Super, 20 fl oz alt Quintec, 4 fl oz) + Syl-Coat, 8 fl oz/100 gal, 14d | 12.80 de | 0.296 bc |
| (Quintec, 4 fl oz then Fracture, 18.3 fl oz then Rhyme, 5 fl oz then Fracture, 18.3 fl oz then Quintec, 4 fl oz then Rhyme, 5 fl oz then Elevate, 16 oz) + Dyneamic, 0.25% (v/v), 14d | 12.00 de | 0.336 bc |
| (Torino, 3.4 fl oz alt Quintec, 4 fl oz) + Syl-Coat, 8 fl oz/100 gal, 14d | 14.40 de | 0.424 bc |
| (Viticure, 6 fl oz alt Quintec, 4 fl oz) + Vintre. 0.25% (v/v), 14d | 21.60 cd | 0.432 bc |
| (Viticure, 8 fl oz alt Quintec, 6.6 fl oz) + Vintre. 0.25% (v/v), 14d | 30.40 c | 0.512 bc |
| (Viticure, 6 fl oz alt Pristine, 10.5 oz) + Vintre. 0.25% (v/v), 14d | 15.20 de | 0.568 bc |
| (Rhyme, 5 fl oz then Fracture, 20.5 fl oz then Quintec, 4 fl oz then Fracture, 20.5 fl oz then Rhyme, 5 fl oz then Quintec, 4 fl oz then Elevate, 16 oz) + Dyneamic, 0.25% (v/v), 14d | 30.40 c | 0.720 bc |
| Quintec, 6.6 fl oz + Syl-Coat, 8 fl oz/100 gal, 21d | 69.60 b | 2.568 b |
| Untreated Control | 94.00 a | 32.670 a |

Table 2. Disease incidence and severity in trial II. Product names are followed by rate (per acre) and the frequency of application. Treatment means followed by the same letter are not significantly different according to Student's t-test at $\alpha=0.05$; alt = alternated with.

| Treatment | Incidence (%) | Severity (%) |
|---|---------------|--------------|
| Luna Experience, 8 fl oz + Syl-Coat, 4 fl oz/100 gal, 14-21d (RI) | 2.00 g | 0.03 c |
| Rhyme, 5 fl oz, 14d | 1.60 g | 0.032 c |
| (Aprovia, 8.5 fl oz then Inspire Super, 20 fl oz then Quintec, 5 fl oz) +Syl-Coat 4 fl/100 gal) (2x), 14-21d (RI) | 5.00 fg | 0.050 c |
| (Aprovia, 10.5 fl oz then Inspire Super, 20 fl oz then Quintec, 5 fl oz) + Syl-Coat, 4 fl oz/100 gal) (2x), 14-21d (RI) | 4.80 fg | 0.112 c |
| Rhyme, 5 fl oz + Dyneamic, 0.25% (v/v), 14d | 5.60 fg | 0.136 c |
| Topguard, 5 fl oz, 14d | 11.20 efg | 0.192 c |
| (Mettle, 5 fl oz then Pristine, 12.5 oz then Torino, 3.4 fl oz then Mettle, 5 fl oz then Quintec, 6 fl oz then Torino, 3.4 fl oz) + Dyneamic, 0.25% (v/v), 14-21d | 6.40 fg | 0.192 c |
| SA19, 5.13 fl oz + Syl-Coat, 4 fl oz/100 gal, 14-21d (RI) | 8.00 fg | 0.200 c |
| (Rally, 5 oz alt Quintec, 4 fl oz) + Dyneamic, 0.25% (v/v), 14d | 8.00 fg | 0.210 c |
| (Luna Experience, 8 fl oz then Inspire Super, 20 fl oz then Quintec, 5 fl oz) + Syl-Coat, 4 fl oz/100 gal) (2x), 14-21d (RI) | 7.00 fg | 0.220 c |
| Pyriofenone, 5 fl oz, 14d | 5.60 fg | 0.232 c |
| SA29, 13.7 fl oz + Syl-Coat, 4 fl oz/100 gal, 14-21d (RI) | 12.80 efg | 0.256 c |
| GWN-10250, 24 fl oz + Dyneamic, 0.25% (v/v), 14d | 10.40 efg | 0.272 c |
| (Rhyme, 5 fl oz then Quintec, 4 fl oz then Sovran, 4 oz) + Syl-Coat, 4 fl oz/100 gal) (2x) then Rhyme, 5 fl oz + Syl-Coat, 4 fl oz/100 gal, 14d | 8.80 fg | 0.296 c |
| Pyriofenone, 5 fl oz, 21d | 12.00 efg | 0.304 c |
| (Mettle, 5 fl oz alt Torino, 3.4 fl oz) +Dyneamic, 0.25% (v/v), 14d | 8.80 ef | 0.328 c |
| Topguard, 6 fl oz, 14d | 12.00 efg | 0.360 c |
| PSG (2x), 1% (v/v), 10d then ((Rhyme, 5 fl oz then Quintec, 4 fl oz then Sovran, 4 oz) + PSG, 0.5% (v/v)) (2x), 14d | 12.00 efg | 0.460 c |
| (Inspire Super, 20 fl oz alt Quintec, 5 fl oz) + Syl-Coat, 4 fl/100 gal, 14-21 (RI) | 14.40 efg | 0.472 c |
| (Rally, 5 oz alt Quintec, 4 fl oz) + Dyneamic, 0.25% (v/v), 14d, OR-099, 16 fl oz (1st and 4th week) | 20.80 def | 0.816 c |
| (Rhyme 5 fl oz then Quintec 4 fl oz then Sovran 4 oz) + PSG, 1% (v/v)) (2x) then Rhyme, 5 fl oz + PSG, 1% (v/v), 14d | 26.40 cde | 1.688 bc |
| (Rhyme, 5 fl oz then Quintec, 4 fl oz then Sovran, 4 oz) + PSG, 1% (v/v) then (Rhyme, 5 fl oz then Quintec, 4 fl oz) + PSG, 1% (v/v), 21d | 36.00 cd | 1.768 bc |
| PSG, 1% (v/v), 7-10d (RI) alt Taegro, 5.2 oz + PSG, 0.5% (v/v), 7-14d (RI) | 32.80 cd | 2.096 bc |
| (Rally, 5 oz alt Quintec, 4 fl oz) + Dyneamic, 0.25% (v/v), 14d, OR-099, 32 fl oz (1st and 4th week) | 39.20 bc | 2.264 bc |
| Viathon, 2 pts, 14-21 (RI) | 53.60 b | 4.816 b |
| Untreated Control | 89.60 a | 20.408 a |

Table 3. Disease incidence and severity in trial III. Product names are followed by rate (per acre) and the frequency of application. Treatment means followed by the same letter are not significantly different according to Student's t-test at $\alpha=0.05$; alt = alternated with.

| Treatment | Incidence (%) | Severity (%) |
|--|---------------|--------------|
| Inspire Super, 10.5 fl oz + JMS Stylet Oil, 0.5% (v/v) then (Luna Experience, 6 fl oz then Flint, 2 oz) + Dyneamic, 0.25% (v/v), 14-21d (RI) | 0.00 f | 0.000 de |
| Regalia, 2 qts + JMS Stylet Oil, 0.5% (v/v) then (Luna Experience, 6 fl oz then Flint, 2 oz) + Dyneamic, 0.25% (v/v), 7-10d (RI) or 14-21d (RI) | 0.80 f | 0.008 e |
| (K-PHITE 7LP (2x), 3qts then K-PHITE 7LP, 3 qts + Luna Experience, 8 fl oz then K-PHITE 7LP, 3 qts then K-PHITE 7LP, 3 qts + Quintec, 6.6 fl oz then K-PHITE 7LP (2x), 3 qts)) + Tactic, 6 fl oz/100 gal, 14d | 4.80 ef | 0.120 e |
| Regalia, 2 qts then Inspire Super, 10.5 fl oz + JMS Stylet Oil, 0.5% (v/v) then Luna Experience, 6 fl oz + Dyneamic, 0.25% (v/v) then Inspire Super, 10.5 fl oz + JMS Stylet Oil, 0.5% (v/v) then Luna Experience, 6 fl oz + Dyneamic, 0.25% (v/v) then Regalia, 2 qts, 7-10d or 14-21d (RI) | 5.60 ef | 0.152 e |
| (K-PHITE 7LP, 3qts then K-PHITE 7LP, 3 qts + Pristine, 12.5 oz then K-PHITE 7LP, 3 qts then K-PHITE 7LP, 3 qts + Quintec, 6.6 fl oz then K-PHITE 7LP, 3 qts then K-PHITE 7LP, 3 qts + Pristine, 12.5 oz then K-PHITE 7LP, 3 qts) + Latron, 10 fl oz/100 gal, 14d | 9.60 ef | 0.296 e |
| LSU, 0.5 gal, 14d or 4-6in growth | 18.40 ef | 0.448 de |
| WXF-15001, 1.75% (v/v), 7d | 10.40 ef | 0.536 de |
| Microthiol Disperss (2x), 5 lb then (AG Copp 75, 60 g/100 L + Microthiol Disperss, 5 lb + HML32, 1.25 L/100 L) (7x), 10-14d (RI) | 12.80 ef | 0.560 de |
| WXF-15002, 0.5% (v/v), 7d | 11.20 ef | 0.600 de |
| Regalia, 2 qts + JMS Stylet Oil, 0.5% (v/v), 7-10d (RI) | 16.00 ef | 0.696 de |
| LSU, 1 gal, 14d or 4-6in shoot growth | 19.20 ef | 0.872 de |
| REX, 1 gal, 14d or 4-6in shoot growth | 30.00 de | 1.270 cde |
| Regalia, 2 qts, 7-10d (RI) | 22.40 ef | 1.280 de |
| System Cal, 2 qts + Dyneamic, 1% (v/v), 14d | 47.20 cd | 2.736 cde |
| System SeaCal, 2 qts, 14d | 57.00 bc | 3.560 bcde |
| Vigor SeaCal, 4 qts, 14d | 52.00 cd | 4.488 bcde |
| Vigor Cal, 2 qts, 14d | 65.60 abc | 4.704 bcde |
| GOP-1 Bran, 7 oz/25 gal + GOP-1 Oil, 32 fl oz/25 gal, 7d | 56.00 bc | 7.616 bcd |
| Vigor Cal, 2 qts + Vigor SeaCal, 2 qts, 14d | 76.80 ab | 8.528 bc |
| System Cal, 2 qts, 14d | 77.60 ab | 11.152 b |
| Untreated Control | 83.20 a | 21.640 a |

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Appendix: Materials

| Product | Active ingredient(s) and concentration | Manufacturer or distributor | Chemical class (after Adaskaveg et al. 2008) |
|-------------------------|--|--------------------------------|--|
| AG Copp 75 | cuprous oxide (75% copper) | American Chemet Corporation | inorganic (M1) |
| Aprovia | proprietary | N/A | proprietary |
| Dyne-Amic | polyalkyleneoxide modified polydimethylsiloxane, nonionic emulsifiers, methyl ester of C16-C18 fatty acids (99%) | Helena Chemical Co. | adjuvant |
| Elevate 50 WDG | fenhexamid (50%) | hydroxanilide (17) | Arysta LifeScience |
| Flint | trifloxystrobin (50%) | Bayer CropScience | QoI (11) |
| Fracture | BLAD (20%) | FMC Corporation | plant extract |
| Fulvic Acid | proprietary | N/A | proprietary |
| GOP-1 Bran | proprietary | N/A | proprietary |
| GOP-1 Oil | proprietary | N/A | proprietary |
| GWN-10250 | proprietary | N/A | proprietary |
| HML32 | proprietary | N/A | proprietary |
| Inspire Super | difenoconazole (8.4%), cyprodinil (24.1%) | Syngenta Crop Protection, Inc. | DMI (3)/anilinopyrimidine (9) |
| JMS Stylet-Oil | paraffinic oil (97.1%) | JMS Flower Farms, Inc. | oil |
| K-PHITE 7LP | potassium phosphite (56%) | Plant Food Systems, Inc. | phosphonates |
| Latron B-1956 | modified phthalic glycerol alkyd resin (77.0%) | Dow AgroSciences LLP | adjuvant |
| LSU (Lime Sulfur Ultra) | calcium polysulfide (28%) | Or-Cal, Inc. | mineral (M2) |
| Luna Experience | fluopyram (17.54%), tebuconazole (17.54%) | Bayer CropScience | SDHI (7)/DMI-triazole (3) |
| Luna Tranquility | fluopyram (11.3%) pyrimethanil (33.8%) | Bayer CropScience | SDHI (7)/AP (9) |
| Mettle 125 ME | tetraconazole (11.6%) | Gowan Co. | DMI-triazole (3) |
| Microthiol Disperss | sulfur (80%) | United Phosphorus Inc. | mineral (M2) |
| OR-099 | proprietary | N/A | proprietary |
| Pristine | pyraclostrobin (12.8%) boscalid (25.2%) | BASF | SDHI (7)/QoI(11) |
| Purespray Green | low range oil | Petro-Canada | oil |
| Pyriofenone | proprietary | N/A | proprietary |

| | | | |
|------------------|--|--------------------------|--|
| Quintec | quinoxifen (22.6%) | Dow AgroSciences LLC | quinoline (13) |
| Rally 40 WSP | myclobutanil (40%) | Dow AgroSciences LLC | DMI-triazole (3) |
| Regalia | extract of <i>Reynoutria sachalinensis</i> (5%) | Marrone Bio Innovations | plant extract |
| REX | calcium polysulfide (28%) | Or-Cal, Inc. | mineral (M2) |
| Rhyme | flutriafol (22.7%) | Chemnova | DMI-triazole (3) |
| SA19 | proprietary | N/A | proprietary |
| SA29 | proprietary | N/A | proprietary |
| Serenade Optimum | <i>Bacillus subtilis</i> QST 713 (26%) | Bayer CropScience | biological |
| Sonata | <i>Bacillus pumilus</i> QST 2808 (1.38%) | Bayer CropScience | biological |
| Sovran | kresoxim-methyl (50%) | Chemnova | QoI (11) |
| Switch | cyprodinil (37.5%), fludioxonil (25%) | Syngenta Crop Protection | anilinopyrimidine (9)/phenylpyrrole (12) |
| Syl-Coat | polyether-polymethylsiloxane-copolymer and Polyether (100%) | Wilbur-Ellis | adjuvant |
| System Cal | phosphoric acid (14%) calcium (4%) copper (0.25%) | Agro-K | inorganic salt |
| System SeaCal | phosphoric acid (14%) calcium (4%) | Agro-K | inorganic salt |
| Tactic | synthetic latex, 1,2-propanediol, Alcohol ethoxylate, silicone polyether copolymer (63.4%) | Loveland | adjuvant |
| Taegro 13 WP | <i>Bacillus subtilis</i> Strain FZB24 (13.0%) | Syngenta | biological |
| Topguard | flutriafol (11.8%) | Chemnova | DMI-triazole (3) |
| Torino SC | cyflufenamid (10%) | Gowan Co. | phenyl-acetamide (U6) |
| Viathon | potassium phosphite (49%), tebuconazole (3.3%) | Helena Chemical Co. | Phosphonates (33)/DMI-triazole (3) |
| Vigor Cal | calcium (5%) | Agro-K | inorganic salt |
| Vigor SeaCal | soluble potash (0.5%), calcium (5%) | Agro-K | inorganic salt |
| Vintre | alcohol ethoxylate (8.15%) | ORO Agri, Inc. | adjuvant |
| Viticulture | triflumizole (42.14%) | Chemtura | DMI-imidazole (3) |
| Vivando | metrafenone (25.2%) | BASF | benzophenone (U6) |
| WXF-15001 | proprietary | N/A | proprietary |
| WXF-15002 | proprietary | N/A | proprietary |

Appendix sources: (1) Adaskaveg, et al. 2012. Efficacy and timing of fungicides, bactericides and biologicals for deciduous tree fruit, nut, strawberry, and vine crops 2012, available at <http://ucanr.edu/sites/plp/files/146650.pdf>. (2) Gubler Lab field trials, available at http://plantpathology.ucdavis.edu/Cooperative_Extension/ (3) product-specific MSDS and/or labels.