

APPLE (*Malus domestica* 'Rome')  
Scab; *Venturia inaequalis*  
Powdery Mildew; *Podosphaera leucotricha*

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### **Evaluation of fungicides for control of apple scab and powdery mildew on Rome apples, 2007**

Fungicide treatments were arranged in a randomized complete block design in a block of 'Rome' apples on M-7 rootstock planted in 1979 on 20 x 20 ft spacing. Each treatment consisted of 4 single tree replicates. Fungicide treatments were applied using a hydraulic handgun sprayer at approximately 110 psi such that 4 to 6 gal of a spray suspension were applied per 4 trees (108 to 162 gal/A) depending on the time of year. Treatments were applied on 10 Apr (pink), 23 Apr (full bloom), 30 April (late bloom), 11 May (petal fall), 22 May (1<sup>st</sup> cover), 5 Jun (2<sup>nd</sup> cover), 11 Jun (2<sup>nd</sup> cover) and 19 Jun (3<sup>rd</sup> cover). No fertilizer was spread within tree rows. Trees were pruned from 6 to 16 Feb. Insecticides were applied to the entire block using a Rear's air blast speed sprayer. Omni dormant oil spray (4 gal/A) was applied on 4 Mar for Aphid control. Assail 70 WDG (2 oz/A) was applied on 25 May and 10 Jul and Success (8oz/A) was applied on 8 Jun for codling moth management. Weeds, in the tree row, were treated with Buccaneer (16 oz/A) plus Goaltender (8 oz/A) on 13 Mar and with Buccaneer (16 oz/A) plus Rely (16 oz/A) on 8 May. The entire block of trees was irrigated with low angle sprinklers for 8 hours in late Aug. Apple scab infection periods were monitored using an Adcon A730 weather station equipped with standard sensors. Using a modified primary infection model (wet periods start with rain and end with 8 hr drying time), a total of 10 infection periods were detected from bud break in late Mar through Jun: 3 high infection periods (8, 11 and 21 Apr); 2 moderate infection periods (16 Apr and 3 May) and 5 low infection periods (7 Apr, 1, 18 and 20 May and 9 Jun). The incidence of leaf scab and powdery mildew was determined on 14 and 16 Aug by examining all leaves from 20 arbitrarily selected vegetative shoots (174 to 302 leaves) from each tree. Incidence of scab on fruit and fruit russet was evaluated on 22 Aug by picking and examining 100 fruit arbitrarily selected from each tree.

Spring weather conditions in Western Oregon were considered average with plenty of wet periods at moderate temperatures resulting in several infection periods for various diseases. Flag shoots infected with powdery mildew the year before were observed 16 Apr and first scab lesions were observed on 9 Apr on crabapple pollenizers in a nearby apple block. All fungicide treated trees had significantly less apple scab, powdery mildew and fruit russetting than nontreated trees. Lowest amount of leaf scab was found on trees treated with the high rate of DPX-LEM 17 on 3 week intervals, however, trees treated with all other fungicide treatments (except Procure plus Manzate) were not significantly different. Lowest amount of scab on fruit was found on trees treated with the high rate of DPX-LEM 17 on 2 week intervals, but trees treated with Flint, the high rate of DPX-LEM 17 on 3 week intervals or the low rate on 2 week intervals were not significantly different. Lowest amount of powdery mildew was found on trees treated with Procure plus Manzate alone, however, trees treated with Procure+Manzate/Flint at 2 week intervals, DPX-LEM 17 on 2 week intervals, or the high rate of DPX-LEM 17 on 3 week intervals were not significantly different. It was noted on 7 May that flag shoot treated with Procure were not as white as flag shoots on other trees indicating a reduction in sporulation. Lowest amount of fruit russet was also found on trees treated with Procure plus Manzate alone and all other fungicide treatments (except Flint alone) were not significantly different. There did not seem to be a difference in disease control between 2 and 3 week intervals except powdery mildew control was significantly better when Procure + Manzate/Flint was used at 2 week intervals. The high rate of DPX-LEM 17 at 3 week intervals was significantly better than the low rate when fruit scab and powdery mildew were compared; otherwise there were no significant difference. No phytotoxicity was observed on any trees treated with fungicide.

| Treatment & Rate/A              | Time of Application* | Apple Scab** |           | Powdery Mildew | Fruit Russet |
|---------------------------------|----------------------|--------------|-----------|----------------|--------------|
|                                 |                      | Leaves (%)   | Fruit (%) | Leaves (%)**   | (%)**        |
| Nontreated .....                | None .....           | 68.5 a       | 64.5 a    | 35.5 a         | 41.8 a       |
| Flint 50 WDG at 2.5 oz.....     | A, B, D, E, F, H...  | 15.8 c       | 14.8 d    | 16.5 c         | 23.5 b       |
| Procure 480 SC at 12 fl oz plus |                      |              |           |                |              |
| Manzate Pro-stik at 3 lb.....   | A, B, D, E, F, H...  | 32.3 b       | 37.3 b    | 7.0 e          | 5.0 c        |
| Procure 480 SC at 12 fl oz plus |                      |              |           |                |              |
| Manzate Pro-stik at 3 lb        | A, D, F              |              |           |                |              |
| alternate with                  |                      |              |           |                |              |
| Flint 50 WDG at 2.5 oz.....     | B, E, H .....        | 24.5 bc      | 21.3 bcd  | 10.5 cde       | 7.0 c        |
| Procure 480 SC at 12 fl oz plus |                      |              |           |                |              |
| Manzate Pro-stik at 3 lb        | A, E                 |              |           |                |              |
| alternate with                  |                      |              |           |                |              |
| Flint 50 WDG at 2.5 oz.....     | C, G .....           | 16.0 c       | 20.3 cd   | 24.5 b         | 12.3 bc      |
| DPX-LEM 17 at 14.3 fl oz .....  | A, B, D, E, F, H ... | 19.8 c       | 20.8 bcd  | 9.5 de         | 15.0 bc      |
| DPX-LEM 17 at 20.6 fl oz.....   | A, B, D, E, F, H ... | 16.8 c       | 10.3 d    | 10.0 cde       | 9.0 c        |
| DPX-LEM 17 at 14.3 fl oz.....   | A, C, E, G.....      | 22.3 bc      | 31.8 bc   | 16.0 cd        | 16.8 bc      |
| DPX-LEM 17 at 20.6 fl oz .....  | A, C, E, G.....      | 14.5 c       | 13.5 d    | 8.8 e          | 13.8 bc      |

\* Treatments were applied on A = 4 Apr (pink), B = 23 Apr (full bloom), C = 30 Apr (late bloom), D = 11 May (petal fall), E = 22 May (1<sup>st</sup> cover), F = 5 Jun (2<sup>nd</sup> cover), G = 11 Jun (2<sup>nd</sup> cover) and H = 19 Jun (3<sup>rd</sup> cover).

\*\* Means followed by the same letter do not differ significantly based on Fisher's protected LSD (P=0.05).