

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

J. W. Pscheidt, J. P. Bassinette and L. Merlot  
Dept. of Botany and Plant Pathology  
Oregon State University  
Corvallis, OR 97331-2903

### **Evaluation of fungicides for management of apple scab and powdery mildew on Rome, 2017**

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 5 to 6 gal of a spray suspension were applied per 4 trees (136 to 164 gal/A) depending on the time of year. Treatments were applied on 14 Apr (tight cluster), 23 Apr, 28 Apr (full bloom), 6 May, 10 May (petal fall), 19 May, 25 May (1<sup>st</sup> cover), 7 Jun, 14 Jun (2<sup>nd</sup> cover) and 21 Jun. No fertilizer was spread within tree rows. A dormant oil spray of Omni supreme-oil (1.5 gal/A) was applied on 14 Feb for aphid and mite control. Assail 70 WP (3 oz/A) was applied on 26 May and Success (5.5 fl oz/A) was applied 27 Jun for aphid and codling moth management. Insecticide sprays were applied to the entire block using a Rear's air blast speed sprayer. Casoron 4G (40 lb/A) was applied on 17 Feb for weed control. Apple scab infection periods were monitored using an Adcon 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 7 infection periods were detected from mid Apr through Jun: 4 high infection periods (16 and 23 Apr, 12 May and 9 Jun) and 3 low infection periods (11 and 13 Apr and 8 Jun). The incidence of leaf scab and powdery mildew was determined on 1 and 2 Aug, by examining all leaves from 20 arbitrarily selected vegetative shoots (179 to 342 leaves for an average of 282) from each tree. Incidence of scab on fruit and fruit russet was determined on 24 and 25 Aug by examining 100 fruit arbitrarily selected from each tree.

Spring weather conditions for 2017 were considered cool and wet but with more normal plant growth and disease pressure relative to time of year. Shoots covered with powdery mildew due to infection the previous year were observed on 17 Apr. Scab was first observed on non-treated crabapple trees in a nearby block on 27 Mar, on nearby non-treated trees on 17 Apr and in this block prior to 12 Jun. All fungicide treated trees had significantly fewer leaves or fruit with scab or leaves with powdery mildew or russeted fruit than non-treated trees. Lowest level of apple scab on leaves was found in trees treated with Fontelis plus Koverall, however, leaf scab on trees treated with the high rate of pyraziflumid plus Koverall or the 8% formulation of SP 2700 were not significantly different. Lowest level of apple scab on fruit was also found in trees treated with Fontelis plus Koverall, however, fruit scab on trees treated with the 2 highest rates of pyraziflumid, Microthiol Disperss, or either SP 2700 formulation were not significantly different. Lowest level of powdery mildew was found in trees treated with the highest rate of pyraziflumid alone, however, powdery mildew on trees treated with any rate of pyraziflumid, Microthiol Disperss, or either SP 2700 formulation were not significantly different. Lowest level of fruit russet was found on trees treated with the lowest rate of pyraziflumid, however, russet on all other treated trees were not significantly different, except for trees treated with lime sulfur. The 3 higher rates of pyraziflumid had similar levels of disease as did trees treated with pyraziflumid plus Koverall or Fontelis plus Koverall. There were few differences between SP 2700 formulations except trees treated with the 8% formulation has significantly less powdery mildew. Trees treated with the high rate of pyraziflumid alone had some marginal leaf necrosis on a few branches of every tree on 6 Jul but it was not severe enough to assess with a numerical rating. Addition of Capsil adjuvant with SP 2700 and Koverall resulted in major foaming problems and after application the mix was difficult to rinse from the spray tank.

Treatment & Rate/A or /100 gal as indicated below	Time of Application*	Apple Scab**		Powdery Mildew Leaves (%)**	Fruit Russet (%)**
		Leaves (%)	Fruit (%)		
Non-treated .....	None .....	44.0 a	59.0 a	57.8 a	27.3 a
Pyraziflumid 20 SC at 0.929 fl oz plus Induce at 16 fl oz/100 gal .....	A, C, E, G, H, J	20.5 b	23.0 bc	3.3 e	7.8 c
Pyraziflumid 20 SC at 1.86 fl oz plus Induce at 16 fl oz/100 gal .....	A, C, E, G, H, J	12.8 c	15.5 cd	1.3 e	15.5 bc
Pyraziflumid 20 SC at 3.09 fl oz plus Induce at 16 fl oz/100 gal .....	A, C, E, G, H, J	10.3 cd	11.0 de	1.8 e	8.0 c
Pyraziflumid 20 SC at 4.64 fl oz plus Induce at 16 fl oz/100 gal .....	A, C, E, G, H, J	10.8 cd	13.0 de	0.2 e	9.5 c
Pyraziflumid 20 SC at 4.64 fl oz plus Koverall 75 WG at 3 lb plus Induce at 16 fl oz/100 gal .....	A, C, E, G, H, J	3.0 e	5.0 e	0.9 e	9.5 c
Fontelis at 20 fl oz plus Koverall 75 WG at 3 lb plus Induce at 16 fl oz/100 gal .....	A, C, E, G, H, J	2.3 e	3.8 e	1.6 e	11.8 bc
Green Cypress Lime Sulfur (29%) at 1.5 gal.....	A, C, E, G, H, I and J.....	14.5 bc	25.5 b	19.8 c	18.8 b
Microthiol Disperss at 15 lb.....	A, C, E, G, H, I and J.....	11.0 cd	6.8 de	28.5 b	9.5 c
SP 2700 8% AS at 44 fl oz/100 gal + Koverall 75 WG at 3 lb plus Capsil at 12 fl oz/100 gal .....	All.....	5.5 de	7.5 de	19.5 c	14.3 bc
SP 2700 56% SP at 7.8 fl oz/100 gal + Koverall 75 WG at 3 lb plus Capsil at 12 fl oz/100 gal .....	All.....	9.8 cd	12.5 de	13.8 d	10.8 c

\* Treatments were applied on A = 14 Apr (tight cluster), B = 23 Apr, C = 28 Apr (full bloom), D = 6 May, E = 10 May (petal fall), F = 19 May, G = 25 May (1<sup>st</sup> cover), H = 7 Jun, I = 14 Jun (2<sup>nd</sup> cover) and J = 21 Jun.

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