

APPLE (*Malus domestica* 'Braeburn')
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 diseases on Braeburn, 2017

Fungicide treatments were arranged in a randomized complete block design in an orchard of 'Braeburn' apples on ELMA-111 rootstock planted in 1995 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 was applied per 4 trees (109 to 163 gal/A). Treatments were applied on 28 Mar (green tip to tight cluster), 11 Apr (tight cluster), 23 Apr (pink to king full bloom), 6 May (petal fall), 19 May (1st cover), 2 Jun (2nd cover), and 14 Jun (3rd cover). No fertilizer was spread within tree rows. Trees were pruned on 8 to 13 Mar. A dormant oil spray of Omni supreme-oil (1.5 gal/A) was applied on 14 Feb and Assail 70 WP (3 oz/A) was applied on 26 May for aphid management. 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. Rely 280 (2 qt/A) was applied on 15 May for weed management. 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 10 infection periods were detected from late Mar through Jun: 6 high infection periods (28 Mar, 6, 16 and 23 Apr, 12 May and 9 Jun) and 4 low infection periods (9, 11 and 13 Apr and 8 Jun). The incidence of leaf scab and powdery mildew was determined on 12 to 13 Jul, by examining all leaves from 20 arbitrarily selected vegetative shoots (286 to 354 leaves with an average of 316 except non-treated trees with an average of 191 leaves) from each tree. Incidence of scab on fruit and fruit russet was determined on 30 to 31 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. Scab was first observed on crabapple pollenizers on 27 Mar and then on non-treated trees on 17 Apr. Shoots covered with powdery mildew due to infection the previous year were observed by 1 May. Non-treated trees has poor fruit set and fewer leaves per shoot than fungicide treated trees. All trees treated with fungicide had significantly less apple scab on leaves and significantly less powdery mildew than non-treated trees. Lowest amount of leaf scab was found on trees treated with Luna Sensation alternated with Procure plus Koverall, however, leaf scab on trees treated with a program of Vanguard, Captan and Inspire Super were not significantly different. Lowest amount of fruit scab was found on trees treated with a program of Vanguard, Captan, Luna Sensation or A19649 alone and Inspire Super, however, fruit scab on trees treated with other programs of Vanguard, Captan and Inspire Super, or Procure plus Koverall alternated with Merivon were not significantly different. Lowest amount of powdery mildew was found on trees treated with Luna Sensation alternated with Procure plus Koverall, however, powdery mildew found on all other fungicide-treated trees was not significantly different. There were no significant differences in fruit russet found among the various fungicide treatments. No phytotoxicity was observed in trees treated with any of the various materials used.

Treatment & Rate/A or /100 gal as indicated below	Time of Application*	Apple Scab**		Powdery Mildew	Fruit Russet
		Leaves (%)	Fruit (%)	Leaves (%)**	(%)**
Non-treated	None.....	92.3 a	---	23.5 a	---
Luna Sensation at 5 fl oz plus Induce at 16 fl oz/100 gal	All.....	17.8 c	24.3 a	1.0 b	28.5
Luna Sensation at 5 fl oz plus Induce at 16 fl oz/100 gal alternate with Procure 480 SC at 12 fl oz plus Koverall 75 DF at 3 lb	A, C, E, G B, D, F.....	7.5 d	12.5 b	0.6 b	19.5
Procure 480 SC at 12 fl oz plus Koverall 75 DF at 3 lb alternate with Merivon SC at 5.5 fl oz.....	A, C, E, G B, D, F.....	35.8 b	6.8 bc	0.7 b	28.0
Vanguard 75 WG at 5 oz then Koverall 75 DF at 3 lb plus Captan 80 WDG at 2.5 lb then Luna Sensation at 5 fl oz plus Induce at 16 fl oz/100 gal then Inspire Super EW at 12 fl oz.....	A B, C D, E F, G.....	11.5 cd	1.0 c	0.6 b	23.0
Vanguard 75 WG at 5 oz then Koverall 75 DF at 3 lb plus Captan 80 WDG at 2.5 lb then A15457 SC at 5.5 fl oz then Inspire Super EW at 12 fl oz.....	A B, C D, E F, G.....	13.3 cd	3.0 c	2.5 b	28.3
Vanguard 75 WG at 5 oz then Koverall 75 DF at 3 lb plus Captan 80 WDG at 2.5 lb then A19649 SC at 2.74 fl oz then Inspire Super EW at 12 fl oz.....	A B, C D, E F, G.....	9.9 cd	1.0 c	1.9 b	21.0
Vanguard 75 WG at 5 oz then Koverall 75 DF at 3 lb plus Captan 80 WDG at 2.5 lb then A19649 SC at 2.74 fl oz plus Captan 80 WDG at 2.5 lb then Inspire Super EW at 12 fl oz.....	A B, C D, E F, G.....	9.3 cd	1.3 c	2.5 b	24.8

* Treatments were applied on A = 28 Mar (green tip to tight cluster), B = 11 Apr (tight cluster), C = 23 Apr (pink to king full bloom), D = 6 May (petal fall), E = 19 May (1st cover), F = 2 Jun (2nd cover), and G = 14 Jun (3rd cover).

**Means followed by the same letter do not differ significantly based on Fisher's protected LSD ($P=0.05$). Means without letters do not differ significantly.