

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

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

Evaluation of TopGuard for control of apple scab and powdery mildew on Braeburn apples, 2006

Fungicide treatments were arranged in a randomized complete block design in a block 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 3 to 8 gal of a spray suspension were applied per 4 trees (108 to 217 gal/A) depending on the time of year. Treatments were applied on 29 Mar (green-tip), 9 Apr (pink), 24 Apr (full bloom), 7 May (petal fall), 24 May (1st cover), and 5 Jun (2nd cover). No fertilizer was spread within tree rows. Trees were pruned on 23 Jan. Insecticides, bactericides, and fruit thinning sprays were applied to the entire block using a Rear's air blast speed sprayer. Omni dormant oil spray (4 gal/A) was applied on 16 Feb for aphid control and Assail 70 WDG (5 oz/A) was applied on 7 Jun for codling moth management. Agri-mycin 17 (28.8 oz/A) was applied on 28 Apr for Fire Blight prevention/control. Fruitone was applied on 17 May (5 PPM) as a fruit thinning agent. Weeds, in the tree row, were treated with Round-up UltraMax (32 oz/A) on 3 Mar, Buccaneer (16 oz/A) plus Rely (4qt/A) on 9 May. The entire block of trees was irrigated using low angle sprinkler heads 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: 2 high infection periods (7 and 22 May); 4 moderate infection periods (2 Apr, 21, 27 and 31 May) and 4 low infection periods (28 Mar, 15 Apr, and 1 and 3 Jun). The incidence of leaf scab and powdery mildew was determined on 31 Jul, by examining all leaves from 20 arbitrarily selected vegetative shoots (249 to 380 leaves) from each tree. Incidence of scab on fruit and fruit russet was evaluated on 24 Jul by picking and examining 100 fruit arbitrarily selected from each tree.

Spring weather conditions in Western Oregon were considered cold and wet. First scab lesions were observed on 7 Apr on crabapple pollenizers and 10 Apr on some nontreated Braeburn trees. Fungicide applications that may have influenced the trial include one on 29 Mar one day after our first infection period and one on 7 May the day of our first high infection period. Analysis of weather data indicated that the 7 May application may have been washed off with 0.21 in rain before it had time to dry. There also were 2 more apple scab infection periods before the next fungicide application. This may in part be why scab ratings seemed especially high this year on fungicide treated trees. All fungicide treated trees had significantly less apple scab on leaves than nontreated trees. Lowest amount of leaf scab was found on trees treated with Rally tank mixed with Captan, however, trees treated with TopGuard tank mixed with Captan were not significantly different. Lowest amount of scab on fruit was found on trees treated with TopGuard tank mixed with Captan but trees treated with Rally mixed with Captan or the low rate of TopGuard were not significantly different. All fungicide treated trees had significantly less powdery mildew on leaves than nontreated trees. There were no significant differences among the various fungicide treatments with respect to powdery mildew control. There was no significant difference among various treatments with respect to fruit russetting. 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	71.8 a	100.0 a	18.3 a	0.8
Rally 40W at 5 oz plus					
Captan 50WP at 4 lb	All.....	23.3 d	39.8 b	1.3 b	1.3
TopGuard 125 SC at 4.3 oz then					
Captan 50WP at 4 lb	A, B, C, D E, F.....	36.8 bc	50.8 b	3.5 b	1.8
TopGuard 125 SC at 8.7 oz then					
Captan 50WP at 4 lb	A, B, C, D E, F.....	43.3 b	82.8 a	6.3 b	0.5
TopGuard 125 SC at 4.3 oz plus					
Captan 50WP at 3 lb then	A, B, C, D				
Captan 50WP at 4 lb	E, F.....	27.3 cd	31.0 b	6.0 b	0.8

- * Treatments were applied on A = 29 Mar (green-tip), B= 9 Apr (pink), C = 24 Apr (full bloom), D = 7 May (petal fall), E = 24 May (1st cover), and F = 5 Jun (2nd cover).
- ** Means followed by the same letter do not differ significantly based on Fisher's protected LSD (P=0.05). Means without letters were not significantly different.