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

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EXPERIMENTAL FUNGICIDES FOR CONTROL OF APPLE SCAB AND POWDERY MILDEW, 2001: 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 100 psi at a rate of 140-190 gal water/A. Approximately 5-7 gal of a spray suspension were applied per 4 trees depending on the time of year. Treatments were applied on 12-13 Apr (82% Pink), 25 Apr (50% Bloom), 9-10 May (99% Petal Fall), 23 May (1st cover), 6-7 Jun (2nd cover) and 23 Jun (3rd cover). Urea fertilizer was spread within tree rows on 16 Mar at 27 lb/A. Insecticides were applied to the entire block using a Rear's air blast speed sprayer on 22 May (Diazinon 50W 2 lb/A), 13 Jun (Diazinon 50W 4 lb/A), and 14 Aug (Success 8 oz/A) for leaf roller and coddling moth management. Weeds were controlled in the tree row floor by using Roundup Ultra (2 qt/A) tank mixed with Goal 2xl (3 qt/A) applied on 20 Feb; Gramoxone Xtra applied 3 May at 3 pt/A and again on 22 May at 2 qt/A. Apple scab infection periods were monitored using a Luft Agro-Meterological station (HP-100). 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 Mar through Jun: 3 high infection periods (27 Mar, 14 May and 26 Jun); 3 moderate infection periods (24 Mar, 4 and 11 Jun); and 4 light infection periods (10, 27 and 30 Apr and 24 Jun). The most important periods were likely those on 24 and 27 Mar and on 14 May. The incidence of leaf scab and powdery mildew was determined on 18 Jun by examining all leaves from 20 vegetative shoots (280-382 leaves) randomly selected from the lower portion of each tree. On 4 Jun, 50 vegetative shoots from each tree were examined for the presence of leaves with slight marginal necrosis. Incidence of fruit scab and russet was evaluated on 17 Oct by picking and examining 50-100 fruit/tree. (Relatively few trees had less than 100 fruit.)

Spring weather conditions in Western Oregon were considered dry with 50% below normal rainfall. Apple scab disease pressure was considered low. The entire trial was delayed several weeks due to the late arrival of experimental fungicides. Thus all trees were unprotected during the first 3 scab infection periods resulting in overall poor scab control. All fungicide treated trees had significantly less apple scab on leaves or fruit than nontreated trees. In general, higher rates of each fungicide resulted in better control of all fruit scab but it was only significant for XF-00183. If blossom end scab is excluded (due to the late start of the trial) then the amount of fruit scab found on trees treated with the highest rate of each fungicide was significantly lower than that found on trees treated with the lowest rate, except for XF-00047. All fungicide treated trees had significantly less powdery mildew on leaves than nontreated trees. Best control of powdery mildew was detected on trees treated with the highest rate of XF-00047, however, the amount of powdery mildew found on trees treated with lower rates of XF-00047, the two highest rates of XF-00182 and the highest rate of XF-00183 were not significantly different. Trees treated with the highest rate of XF-00183 or the lowest rate of XF-00182 had fruit russet that was not significantly different from that found on nontreated trees. Note that increasing rates of XF-00183 resulted in significantly better powdery mildew control but at a possible cost of increased fruit russet. Further research on 'Golden Delicious' apples would help determine the russet potential of these experimental fungicides. No real phytotoxicity was observed on any trees. It was suspected that one or more of the materials produced a marginal leaf necrosis early in the year but there was no significant difference among the treatments, including nontreated trees, when rated (data not shown). Also, it was noticed that one tree treated with the high rate of XF-00182 had very few fruit. Although yield was not taken directly, estimates indicate that yield should be examined more closely in future years if XF-00182 is continued.

Treatment & Rate/A	Apple Scab*			Powdery Mildew	Fruit Russet
	Leaves (%)	All Fruit (%)	Fruit excluding blossom end scab (%)**	Leaves (%)*	(%)*
Nontreated ……	51.2 a	98.2 a	97.9 a	31.7 a	22.1 a
XF-00049 at 2.85 fl oz (0.21 l/Ha)….	6.4 b	37.3 bc	9.3 c	10.9 bc	8.8 bcd
XF-00049 at 5.7 fl oz (0.42 l/Ha)…..	4.7 b	31.5 cde	4.8 de	11.8 bc	11.0 bcd
XF-00049 at 8.55 fl oz (0.63 l/Ha)…	3.8 b	29.3 cde	1.5 e	6.7 cde	3.0 d
XF-00183 at 2.85 fl oz (0.21 l/Ha)...	7.7 b	41.3 b	22.8 b	12.1 b	8.8 bcd
XF-00183 at 5.7 fl oz (0.42 l/Ha)…....	5.2 b	30.0 cde	9.5 c	9.1 bcd	11.8 bcd
XF-00183 at 8.55 fl oz (0.63 l/Ha)…	2.3 b	11.0 f	2.2 e	4.2 def	17.3 ab
XF-00182 at 2.85 fl oz (0.21 l/Ha)...	3.9 b	32.5 bcde	10.0 c	7.5 bcde	15.0 abc
XF-00182 at 5.7 fl oz (0.42 l/Ha)…....	3.4 b	27.8 de	3.3 de	4.4 def	7.0 cd
XF-00182 at 8.55 fl oz (0.63 l/Ha)…	4.6 b	23.8 e	2.1 e	4.2 def	10.2 bcd
XF-00047 at 0.71 oz (0.05 Kg/Ha)…	4.3 b	35.3 bcd	6.8 cd	3.5 ef	4.8 d
XF-00047 at 1.43 oz (0.1 Kg/Ha)….	5.0 b	32.3 bcde	3.3 de	3.1 ef	5.5 d
XF-00047 at 2.14 oz (0.15 Kg/Ha)…	4.5 b	34.0 bcd	3.5 de	1.2 f	3.3 d
XF-00078 at 3.99 oz (0.28 Kg/Ha)…	3.3 b	29.0 cde	3.8 de	2.8 ef	3.5 d

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

** Only fruit with scab on areas of the fruit other than the bloom end are included in this data.