

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

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Evaluation of fungicides for management of apple diseases on Braeburn, 2022

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 5 single tree replicates. Fungicide treatments were applied using a hydraulic handgun sprayer at approximately 100 psi such that 4 to 5 gal of a spray suspension was applied per 5 trees (87 to 109 gal/A). Treatments were applied on 30 Mar (green tip, tight cluster), 8 Apr (pink), 22 Apr (full bloom), 4 May (petal fall), 19 May (fruit set, traditional 1st cover), 2 Jun (2st cover) and 15 Jun (3rd cover). No fertilizer was spread within tree rows. Trees were pruned from 15 to 16 Feb. A dormant oil spray of Omni supreme-spray (1.5 gal/A) was applied on 11 Feb and Movento (4 fl oz/A) was applied on 26 May for aphid and San Jose scale management. Insecticide sprays were applied to the entire block using a Rear's air blast speed sprayer. Makaze (4 pt/A) plus Goal 2XL (5 pt/A) were applied on 9 Feb for management of weeds. Apple scab infection periods were monitored using a Meter Atmos 41 weather station equipped with standard sensors including one for leaf wetness. Using a modified primary infection model (wet periods start with rain and end with 8 hr drying time), a total of 14 infection periods were detected from Apr through Jun: 4 high infection periods (27 Apr, 5 May, 3 and 10 Jun), 6 moderate infection periods (9, 20 and 21 Apr, 7 and 13 May and 9 Jun) and 4 low infection periods (2, 12 and 28 May and 6 Jun). The incidence of leaf scab and powdery mildew was determined on 15 Jul, by examining all leaves from 20 arbitrarily selected vegetative shoots (232 to 362 leaves with an average of 286) from each tree. Incidence of necrotic leaf spot (unknown cause) was determined on 8 Aug by examining all leaves from 20 arbitrarily selected vegetative shoots. The number of fruit per tree was determined on 14 Sep.

Rainfall during the dormant season 2021-22 was 5.4 inches below normal but spring weather conditions were very wet with the second wettest spring on record. Scab was first observed on crabapple pollenizers on 18 Apr and then on non-treated trees on 2 May. Shoots covered with powdery mildew due to infection the previous year were first observed on 9 May. Symptoms of the unknown disease called necrotic leaf spot were first observed on 25 Apr. Overall, disease pressure from apple scab was very high, low for powdery mildew and high for necrotic leaf spot. There were no significant differences in any disease measure among the various treatments including the non-treated control. Fruit set was very low due to a heavy crop load the preceding year and high scab pressure. Significantly more fruit set on trees treated with Inspire Super/Fontelis/Merivon than on any other trees. No phytotoxicity was specifically observed in trees treated with any of the materials used.

Treatment & rate/A or /100 gal as indicated below	Time of application ^x	Apple scab	Powdery mildew	Necrotic Leaf Spot	Number of Fruit ^z
		Leaves (%) ^y	Leaves (%) ^y	Leaves (%) ^y	
Non-treated	None	45.4	16.5	45.0	3.0 b
Inspire Super at 12 fl oz then Fontelis at 20 fl oz then Merivon at 5 fl oz	A, D and G B and E C and F.....	26.7	18.7	47.4	16.6 a
Regalia at 1 qt plus Jet-Ag at 128 fl oz/100 gal alternated Regalia at 1 qt plus Omni Supreme Spray at 128 fl oz/100 gal	A, C, E and G B, D and F...	48.5	13.1	46.6	0.8 b
Ninja at 4 oz.....	All.....	46.6	15.4	42.7	0.0 b
Ninja at 8 oz.....	All.....	47.7	13.8	51.9	1.2 b
Ninja at 12 oz.....	All.....	42.1	17.1	52.2	1.2 b

^x Treatments were applied on A = 30 Mar (green tip, tight cluster), B = 8 Apr (pink), C = 22 Apr (full bloom), D = 4 May (petal fall), E = 19 May (fruit set, traditional 1st cover), F = 2 Jun (2nd cover), and G = 15 Jun (3rd cover).

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

^z Analysis of variance was based on log (x+1) transformation. Means followed by the same letter do not differ significantly based on Fisher's protected LSD ($P=0.05$).