APPLE (*Malus domestica* 'Rome')
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 fungicides for control of apple scab and powdery mildew on Rome apples, 2010 -2011.

Fungicide treatments were arranged in a randomized complete block design in a block of 'Rome' apples on M-7 rootstock planted in 1958 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 5 gal of a spray suspension were applied per 4 trees (109 to 136 gal/A) depending on the time of year. Treatments were applied on 1 Apr 10 (tight cluster), 15 Apr 10 (pink), 29 Apr 10 (full bloom), 12 May 10 (1st cover), 28 May 10 (2nd cover), 8 Jun 10 (3rd cover) and 24 Jun 10 (4th cover) for a total of 7 applications. No fertilizer was spread within tree rows. Trees were pruned from 4 to 14 Aug 09. Insecticide sprays were applied to the entire block using a Rear's air blast speed sprayer. A dormant oil spray of Omni supreme-oil (5 gal/A) was applied on 17 Feb 10 for aphid control. Acramite 50 WS (1 lb/A) and Pravado 1.6 F (8 fl oz/A) was applied on 8 Jun 10 also for aphid control. No insecticides were applied for control of coddling moth. No herbicides were applied in season for weed control. The entire block of trees was irrigated using low angle sprinkler heads for 8 hours on 11Aug 10. 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 12 infection periods were detected from early Apr through Jun: 2 high infection periods (28 Mar and 1 Jun); 5 moderate infection periods (2 and 27 Apr, 3 and 21 May and 3 Jun) and 5 low infection periods (19 and 26 Apr, and 19, 25 and 30 May). The incidence of leaf scab and powdery mildew was determined on 16 Jul 10, by examining all leaves from 20 arbitrarily selected vegetative shoots (115 to 310 leaves) from each tree. Incidence of scab on fruit and fruit russet was determined on 11 Aug 10 by examining 100 fruit arbitrarily selected from each tree. Due to high disease pressure, there were not enough fruits to sample from nontreated trees. The incidence of terminal buds infected with powdery mildew was determined on 27 May 11, by examining 100 terminals buds arbitrarily selected from each tree.

Western Oregon 2010 spring weather conditions were cold and wet during early shoot growth. Disease pressure was considered severe. Shoots covered with powdery mildew due to infection the previous year were easily observed on 26 May 10. Scab was first observed on nontreated trees in a nearby block on 12 May 10 and within this block on 26 May 10. Almost all leaves on nontreated trees had scab. All fungicide treatments had significantly less scab on leaves when compared to nontreated trees. Lowest scab on leaves was recorded on trees treated with Luna Sensation alone. Fruit heavily infected with scab typically falls off prior to disease ratings as happened on nontreated trees. Lowest scab on fruit was recorded on trees treated with Luna Sensation, however, fruit scab on trees treated with DPX-YT669 was not significantly different. Lowest powdery mildew was recorded on trees treated with Luna Sensation alone, however, powdery mildew on trees treated with Luna Sensation alternated with Procure or DPX-YT669 alone were not significantly different. Powdery mildew development on nontreated trees was just as low because most leaves were already infected with scab and there were significantly fewer leaves to be infected (number of leaves data not shown). There was no significant difference among fungicide treatments with regard to fruit russet. In general, alternating Luna Sensation with Procure plus Manzate was better for overall apple disease control than use of Pristine or Flint. Increasing the rate of Fontelis generally gave better disease control. No phytotoxicity was observed in trees treated with any of the various materials used. All fungicide treated trees had significantly less overwintering infected terminal shoots the next season when compared to nontreated trees, however, there was no significant difference among the various treatments.

Note: Write up is the same as found in last year's booklet except for the addition of the overwintering infected terminal shoot data for 2011.

Treatment & Rate/A	Time of Application*	Apple Scab** Leaves (%)	Apple Scab** Fruit (%)	Powdery Mildew Leaves (%)**	Fruit Russet (%)**	Powdery Mildew Terminals (%)
Nontreated ……………………..	None……….	99.3 a	---	1.5 d	---	13.8 a
Pristine 38 WG at 18.5 oz plus Break-Thru at 4 fl oz/100 gal	A, C, E, G					
alternate with Procure 480 SC at 12 fl oz plus Manzate Pro-Stick at 3 lb …	B, D, F………	61.3 b	53.5 b	9.5 ab	7.3	4.0 b
Luna Sensation 500 SC at 5 fl oz	A, C, E, G					
alternate with Procure 480 SC at 12 fl oz plus Manzate Pro-Stick at 3 lb …	B, D, F………	38.8 d	17.3 ef	3.0 d	5.8	5.0 b
Luna Sensation 500 SC at 5 fl oz..	All…………..	27.0 e	9.0 f	1.5 d	8.0	3.3 b
Flint 50 WG at 2.5 oz	A, C, E, G					
alternate with Procure 480 SC at 12 fl oz plus Manzate Pro-Stick at 3 lb …	B, D, F………	55.8 bc	45.3 bc	11.5 ab	11.0	4.0 b
Fontelis (LEM 17) at 12 fl oz ...	All…………..	62.3 b	78.5 a	9.3 ab	12.0	5.8 b
Fontelis at 12 fl oz plus Regulaid at 32 fl oz/100 gal..	All…………..	53.5 bc	52.8 b	13.5 a	12.0	4.5 b
Fontelis at 16 fl oz plus Regulaid at 32 fl oz/100 gal..	All…………..	53.5 bc	35.5 cd	8.3 b	13.3	1.5 b
Fontelis at 20 fl oz plus Regulaid at 32 fl oz/100 gal..	All…………..	47.3 cd	23.5 de	8.0 bc	12.3	3.3 b
DPX - YT669 at 12 fl oz plus Regulaid at 32 fl oz/100 gal..	All…………..	45.0 cd	19.5 ef	3.5 cd	15.8	2.5 b

*Treatments were applied on A = 1 Apr (tight cluster), B = 15 Apr (pink), C= 29 Apr (full bloom), D = 12 May (1st cover), E = 28 May (2nd cover), F = 8 Jun (3rd cover) and G= 24 Jun (4th 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.

--- There were not enough fruits to sample from nontreated trees.