

CHERRY (*Prunus avium* 'Bing')
Powdery Mildew; *Podosphaera clandestina*
Leaf Spot; *Blumeriella jaapii*

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

Comparison of fungicides for management of cherry diseases, 2019.

Treatments were arranged in a randomized complete block design in a 'Bing' sweet cherry orchard on Mazzard F12-1 rootstock planted in 1995 on 20 x 20 ft spacing and grafted in 1998. Each treatment consisted of 4 single tree replicates. Fungicides were applied using a hydraulic handgun sprayer at 100 psi, such that 4 to 5 gal of a spray suspension were applied per 4 trees (109 to 136 gal water/A). Fungicide treatments were applied on 2 May (shuck split), 9 May, 16 May (fruit set), 23 May, 30 May (1st cover), 4 Jun, and 13 Jun (color change). Omni Supreme oil (1.5 gal/A) was applied to the entire block on 13 Feb for Aphid management. Assail 20 WP (4 oz/A) was applied on 5 Jun to manage western cherry fruit fly and aphids. Insecticides were applied using a Rear's air blast speed sprayer. Makaze (32 fl oz/A) plus Goal 2XL (32 fl oz/A) was applied on 12 Mar and Rely 280 (4 qt/A) was applied on 29 May for weed control. Fertilizer (Urea 46-0-0 at 50 lb/A) was broadcast applied on 1 April. Trees were pruned from 29 Jan to 8 Feb. Fungal infection periods were monitored using an Adcon weather station equipped with standard sensors. A total of 6 cherry leaf spot infection periods were detected from bud break through mid-Jun: 2 high infection periods (1 and 6 Apr), 2 medium infection periods (4 and 11 Apr) and 2 light infection periods (18 and 21 May). Incidence of powdery mildew was evaluated on 18 to 20 Jun by examining the last (distal) five (5) fully expanded leaves on each of 20 shoots from around the tree. To compensate for variations in tree vigor only shoots showing high vigor and strong growth were selected for disease evaluation. Powdery mildew on fruit was not assessed. Incidence of cherry leaf spot was evaluated on 25 to 26 Jun by examining all leaves on each of 15 vigorous shoots from around the tree (average of 241 leaves per 15 shoots ranging from 213 to 263 leaves).

Rainfall for the growing season (Oct 2018 to Sep 2019) was approximately 5 inches below the 115 yr average but temperatures were at the average of 59.2°F. March precipitation was 3 in below normal while April was 3 in above normal which led to localized flooding from April 9 to 11 in parts of the orchard. Cherry growth started later than normal but unusually warm and dry weather at the end of April through mid-May accelerated tree growth. Cherry leaf spot was first observed on 6 May while powdery mildew was first observed on 13 May. Note that fungicide applications focused on powdery mildew started after 4 of the 6 leaf spot infection periods. Highest amount of leaf spot was found on trees treated with Sonata. The amount of cherry leaf spot found on most fungicide treated trees was not significantly different from leaf spot found on non-treated trees. Lowest amount of leaf spot was found on trees treated with pyraziflumid which was significantly less than that found on all other trees. Highest amount of powdery mildew was also found on trees treated with Sonata. The amount of powdery mildew found on trees treated with JMS Stylet Oil, Experimental A, Sonata or XF-17001 were not significantly different from powdery mildew found on non-treated trees. Lowest amount of powdery mildew was found on trees treated with pyraziflumid but the amount found on trees treated with Quintec or the lowest rate of Gatten was not significantly different. A very minor phytotoxicity was observed in trees treated with XF-17001 on 13 May in the form of necrosis of the serrated tips along the leaf margin. This minor necrosis was more easily observed on trees treated with the high rate of XF-17001.

The high viscosity of Experimental A made it very difficult to handle. Addition of the material (stored at 60°F) into 55°F water in the spray tank (with or without warm water dilution) during 34°F ambient air temperature resulted in clumping. After tank recirculation and application some of the material was noted on screens. Viscosity declined as storage temperatures increased to above 75°F or when allowed to warm in sunshine for an hour.

Treatment & Rate/A or /100 gal as indicated below	Time of Application*	Cherry Leaf Spot	Powdery Mildew
		(% leaves)**	(% leaves)**
		26 Jun	20 Jun
Non-treated.....	None.....	33.8 a	89.5 a
Quintec at 7 fl oz	A, C, E, and G..	41.8 a	27.0 bc
Gatten at 6 fl oz plus			
Silwet at 16 fl oz/100 gal	A, C, E, and G..	32.5 a	30.5 bc
Gatten at 8 fl oz plus			
Silwet at 16 fl oz/100 gal	A, C, E, and G..	40.3 a	52.8 b
Pyraziflumid 20 SC at 3.1 fl oz plus			
Silwet at 16 fl oz/100 gal	A, C, E, and G..	2.8 b	20.3 c
JMS Stylet Oil at 6 qt/100 gal	A, C, E, and G..	33.8 a	81.5 a
Experimental A EC at 4 qt/100 gal....	A, C, E, and G..	39.3 a	81.3 a
Experimental A EC at 6 qt/100 gal....	A, C, E, and G..	37.8 a	82.5 a
Sonata SC at 3 qt/100 gal.....	All.....	42.0 a	94.0 a
XF-17001 at 32 fl oz/100 gal.....	All.....	35.0 a	81.0 a
XF-17001 at 44.8 fl oz/100 gal.....	All.....	33.8 a	84.3 a

* Fungicide treatments were applied on A = 2 May (shuck split), B = 9 May, C = 16 May (fruit set), D = 23 May, E = 30 May (1st cover), F = 4 Jun, and G = 13 Jun (color change).

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