

RED RASPBERRY (*Rubus idaeus* 'Meeker')  
Fruit rot; *Botrytis cinerea*

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### **Evaluation of biofungicides and conventional fungicides for control of fruit rot in raspberries, 2001.**

This trial was conducted in a field of 12-year-old 'Meeker' raspberries at OSU's North Willamette Research and Extension Center near Aurora, OR. Experimental design was a randomized complete block with four replications of 8-plant plots. Untreated plant rows, serving as buffers, separated the treated plant rows. Treatments were applied to the entire plant canopy with a CO<sub>2</sub> backpack sprayer equipped with a 3-nozzle (TeeJet 8002 flat fan) boom at 50 psi, at a rate of 50 gallons of water per acre. Surfactant was not added to any of the treatments. Water for the Messenger treatment was de-chlorinated with an additive provided by the manufacturer. Weather during the trial period was unusually dry. Plots were irrigated with overhead sprinklers approximately one inch every seven days beginning on 23 May and continuing until after all harvests. On 29 Jun and 6 Jul, fruit clusters were inspected for sporulation of *Botrytis* (preharvest or field rot). Phytotoxicity (necrosis, chlorosis or other signs of toxicity) was evaluated on 23 May, 6 Jun, and 18 Jun. On 2 Jul and 9 Jul, 50 ripe, healthy-appearing berries were harvested by hand (latex gloves worn and changed between treatments). Berries were placed in a moist chamber and incubated at approximately 70° F. Berries were visually inspected every day, for three days, for sporulation of *Botrytis cinerea*. All ripe fruits, from the center three plants per plot, were harvested approximately two times per week during the harvest season (18 Jun to 23 Jul) to determine total yield. Twenty-five berries were randomly selected from each plot at each harvest to determine average berry size.

#### Treatments:

BAS 516 = boscalid + pyraclostrobin

Elevate = fenhexamid

Messenger = Harpin protein\*

Rovral = iprodione

Serenade ASO = *Bacillus subtilis* (liquid formulation)\*

Serenade OR = *Bacillus subtilis* (dry formulation)\*

Switch = cyprodinil + fludioxonil

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\* = biofungicide

#### **Results:**

There was no evidence of *Botrytis* on preharvested fruit in any of the treatments on 29 Jun or 6 Jul (data not shown). At first harvest (2 Jul), all treated plants except Serenade OR had significantly less postharvest rot caused by *Botrytis cinerea* than non-treated plants. At second harvest (9 Jul), all treated plants except Serenade AS had significantly less postharvest rot caused by *Botrytis cinerea* than non-treated plants. Plants did not show signs of phytotoxicity (data not shown). There were no statistically significant differences in marketable fruit yield or fruit size due to any of the treatments.

Treatment and rate/A	Time of application <sup>w</sup>	Incidence of <i>Botrytis</i> (%) <sup>x</sup>		Yield <sup>y</sup> (kg)	Berry size (g)
		2 July	9 July		
BAS 516 1.45 lb.....	C, D, E, F, G .....	3 a <sup>z</sup>	0 a	5.6	2.73
Elevate 50 WDG 1 lb .....	C, E, G				
Captan 50WP 4 lb.....	D, F .....	29 b	47 cd	6.5	2.84
Elevate 50 WDG 1 lb .....	C, E, G				
Switch 62.5 WG.....	D, F .....	28 b	44 cd	4.9	2.56
Messenger 5.5 oz.....	B				
Messenger 5.5 oz+Rovral 4F 1 qt..	C, E, G				
Captan 50 WP4 lb.....	D, F.....	39 bc	35 bc	5.6	2.57
Rovral 4F 1 qt.....	C, E, G				
Captan 50WP 4 lb.....	D, F .....	11 a	24 b	5.7	2.75
Serenade AS 1.335 gal.....	A, B, C, D, E, F, G.....	43 c	81 e	5.4	2.46
Serenade OR 4.15 lb.....	A, B, C, D, E, F, G .....	63 d	56 d	6.0	2.52
Untreated Check .....	None .. .....	69 d	84 e	6.9	2.88

<sup>w</sup> Application dates: A = 3 May (two weeks prior to first bloom), B = 10 May (one week prior to first bloom), C = 17 May (1-5% bloom), D = 29 May (50% bloom), E = 7 June (50% bloom + 50% green fruit), F = 18 June (green fruit), G = 2 July (ripe fruit, 0-day PHI)

<sup>x</sup> Postharvest fruit rot, after three days in incubation chamber

<sup>y</sup> Total seasonal yield from three plants/plot

<sup>z</sup> Means followed by the same letter within a column do not differ significantly, based on Fisher's protected LSD ( $P \leq 0.05$ ); no letter indicates a non-significant ANOVA.