

Suppression of fire blight on Idared apple blossoms, 2016.

Treatments involving eleven different products were compared to streptomycin (Firewall), alone and in integrated schedules, for blossom blight control and fruit finish effects. The test was established in four randomized blocks on 33-yr-old 'Idared' apple trees, using single-tree replications with border rows between treatment rows. The test strategy was to make applications in the morning before inoculating in the evening in anticipation of a relatively warm day to follow. Treatments were applied to both sides of the tree with a Swanson Model DA-400 airblast sprayer at 100 gallons per acre as follows: 14 Apr (early bloom, B1 1, all treatments); 18 Apr (mid-bloom, B1 2, all treatments), 21 Apr (late-bloom, B1 3, all treatments); 27 Apr (petal fall, PF, all treatments). Four selected branches per tree, each with about 25 blossom clusters, were inoculated by spraying to wet with a bacterial suspension containing 1×10^6 *Erwinia amylovora* cells/ml in the evenings of 14 Apr, 18 Apr and 21 Apr. Trees were not inoculated after the fourth (petal fall) application 27 Apr. Infection data were based on counts of number of blossom clusters present on the inoculated branch at the time of the first inoculation. A cluster was rated as infected if it had at least one blossom with any fire blight symptoms on 5 May. Fruit finish was rated on 25-fruit harvest samples 29 Aug.

Inoculation resulted in strong blossom blight test conditions. Treatments involving the four-application schedule of streptomycin (Firewall, in treatments #1, 12 and 14-16), performed as expected under these conditions, with significant suppression of cluster infection. Treatment #2, which had the second and third applications of streptomycin omitted from the sequence, was ineffective. Treatments receiving alternative treatments in the second and third applications were not significantly different ($p=0.05$) from #2 or the non-treated trees, including: Treatment #3 (Fracture), #4 (Serenade Optimum), and #5 (Blossom Protect). Several treatments had complete schedules and fewer clusters infected, but were not significantly different than non-treated trees, including #6 (Blossom Protect), #7 (Kasumin), #8 (F1781aa), #9 (F1781ab), #10 and #11 (Kasumin/ARY-0627), and #13 (HM0303). Four applications of Blossom Protect (#6) significantly increased russet and opalescence compared to non-treated trees, but a schedule that included Blossom Protect only at the second and third applications did not affect fruit finish ratings.

Treatment and amount/A	Timing				Fire blight		Fruit finish ratings (0-5) ^y	
	Bloom #				% clusters infected	% control	Russet	Opalescence
	1	2	3	PF				
0 No treatment	--	--	--	--	50.4ef ^z	--	1.8ab	1.0a
1 Firewall 17 1.5 lb + Regulaid 1 pt/100 gal	X	X	X	X-	21.4ab	57	2.1bc	1.3ab
2 Firewall 17 1.5 lb + Regulaid 1 pt/100 gal	X	--	--	X	51.3ef	-2	2.0a-c	1.3ab
3 Firewall 17 1.5 lb + Regulaid 1 pt/100 gal Fracture 2.12SL 30.4 fl oz	X --	-- X	-- X	X --	38.1b-f	24	1.9ab	1.1ab
4 Firewall 17 1.5 lb + Regulaid 1 pt/100 gal Serenade Optimum 26.2WP 20 oz	X --	-- X	-- X	X --	36.8a-f	27	1.7a	1.0a
5 Firewall 17 1.5 lb + Regulaid 1 pt/100 gal Blossom Protect 20 oz + Buffer Protect 8.75 lb	X --	-- X	-- X	X --	38.6b-f	23	1.8a	1.0ab
6 Blossom Protect 20 oz + Buffer Protect 8.75 lb	X	X	X	X	49.6ef	2	2.4c	1.5b
7 Kasumin 2L 2 qt + Regulaid 1 pt/100 gal	X	X	X	X	33.8a-e	33	1.8a	1.1ab
8 F1781aa 1 qt + Regulaid 1 pt/100 gal	X	X	X	X	47.5ef	6	2.0ab	1.2ab
9 F1781ab 1 qt + Regulaid 1 pt/100 gal	X	X	X	X	41.0c-f	19	1.8a	1.1ab
10 Kasumin 2L 2 qt + ARY-0627-002 14 fl oz + Regulaid 1 pt/100 gal	X	X	X	X	43.3ef	14	1.9ab	1.2ab
11 Kasumin 2L 2 qt + Regulaid 1pt/100 gal ARY-0627-002 14 fl oz + Regulaid 1 pt/100 gal	X --	-- X	X --	-- X	44.3ef	12	1.9ab	1.2ab
12 Firewall 17 1.5 lb	X	X	X	X	23.6a-c	53	2.0a-c	1.3ab
13 HM0303 2 qt	X	X	X	X	53.0f	-5	1.7a	1.3ab
14 Firewall 17 1.5 lb + HM0303 2 qt	X	X	X	X	28.0a-d	44	1.7a	1.4ab
15 Firewall 17 1.5 lb + HM1611 1 qt/100 gal	X	X	X	X	27.9a-d	45	1.7a	1.1ab
16 Firewall 17 1.5 lb + HM0303 2 qt + HM1611 1 qt	X	X	X	X	18.8a	63	1.8ab	1.2ab

^zMean separation by Waller-Duncan K-ratio t-test ($p=0.05$). Four single-tree reps with border rows between treatment rows.

A cluster was rated as infected if it had at least one blossom with any fire blight symptoms on 5 May.

^y Fruit finish was rated on 25-fruit harvest samples 29 Aug using a scale of 0-5 (0=perfect finish; 5=severe russet or opalescence).