

Field evaluation of materials for control of fire blight infection of apple blossoms, 2001.

The efficacy of a biocontrol agent (Serenade), two SAR inducers (Messenger, Oxycom), a copper compound (Cuprofix) and a quinoline compound (S-0208, oxolinic acid) was evaluated on Idared apple trees in a research orchard at Geneva, NY. Treatments were replicated five times with up to 200 blossom clusters per single tree replication in a randomized complete block design. The products were applied to runoff to entire trees, at timing(s) depending on their mode of action, with a single nozzle handgun sprayer at 10.3 kg cm⁻² (150 psi). About 200 blossom clusters/tree (or all blossoms on trees with light flowering) were inoculated at full bloom (8 May) with *E. amylovora* strain Ea. 273 at 1×10⁷ CFU ml⁻¹ using a Solo backpack sprayer. Numbers of blighted and healthy blossom clusters were recorded 4 wk after inoculation. The proportion of blighted blossom clusters was determined and used as the measure of disease. The proportion of the surface of 20 fruits that became russeted was determined 6 wk after the last blossom spray.

Weather during and after bloom was conducive for fire blight development, and untreated inoculated trees had 60.8% blossom clusters blighted (BCB). Agrimycin (streptomycin) applied 1 day before and 1 day after inoculation resulted in 27.0% BCB (56% control), but applied only 1 day before inoculation, it resulted in 49.6% BCB (18% control). The best treatments were S-0208 and Cuprofix, each applied 1 day before and 1 day after inoculation, resulting in 22.2% BCB (62% control) and 22.3% BCB (62% control), respectively. Serenade, applied 1 day before and 1 day after inoculation, gave moderate (28%) control (43.8% BCB). Other Serenade treatments with one to three applications before inoculation, but no application after inoculation, did not give significant control. No Messenger treatment either alone, or in combination with a pre-inoculation Agrimycin or Serenade application, gave significant control. Oxycom did not give significant control. Cuprofix treatment resulted in 23.6% of fruit surface area russeted, which would greatly reduce value of the crop for the fresh market. S-0208 treatment resulted in 3.01% of fruit surface area russeted, which was significantly greater than in the untreated check. Whether this level of russetting would be important commercially requires further study.

Material(s)*	Rate (g/50L)	Timing of application(s)	% blighted blossom clusters**	% fruit surface russeted**
None (inoculated)	-	60.8 abcd	0.25 c
Agrimycin 17W	14.7	1 day pre-inoc	49.6 de	0.10 c
Agrimycin 17W	14.7	1 day pre-inoc		
		1 day post-inoc	27.0 f	0.21 c
Messenger EC	33.7	7 days pre-inoc (pink)	62.9 abc	0.29 c
Messenger EC	33.7	10 days (pre-pink)		
		5 days pre-inoc (pink+2 days)..	71.3 a	0.35 c
Messenger EC	33.7	7 days pre-inoc		
Serenade WP	113.5	1 day pre-inoc	57.8 bcd	0.13 c
Messenger EC	33.7	7 days pre-inoc		
Agrimycin 17W	14.7	1 day pre-inoc	63.1 abc	0.50 c
Serenade WP	113.5	10 days pre-inoc (pre-pink)		
		7 days pre-inoc (pink)	56.2 cde	0.08 c
Serenade WP	113.5	10 days pre-inoc (pre-pink)		
		7 days pre-inoc (pink)		
		1 day pre-inoc	68.8 ab	0.17 c
Serenade WP	113.5	7 days pre-inoc (pink)	68.1 ab	0.09 c
Serenade WP	113.5	1 day pre-inoc	62.5 abc	0.37 c
Serenade WP	113.5	1 day pre-inoc		
		1 day post-inoc	43.8 e	0.57 c
Cuprofix	262.8	1 day pre-inoc		
		1 day post-inoc	22.3 f	23.63 a
S-0208 20 WP	24.2	1 day pre-inoc		
		1 day post-inoc	22.2 f	3.01 b
Oxycom	131.5	7 days pre-inoc (pink)		
		4 days post-inoc	60.5 abcd	0.40 c

* All treatments included 15 ml Regulaid surfactant/50L, except Messenger (100 ml Reguard/50L) and Serenade (none).
 ** Means within a column followed by the same letter did not differ significantly (*P* <0.05) as determined by Waller-Duncan K-ratio t test.