

BIOLOGICALS , SAR INDUCERS, COPPER COMPOUNDS, AND OTHER CHEMICALS FOR BLOSSOM BLIGHT CONTROL ON APPLE, 2000: Two biocontrol agents (Serenade, BlightBan C9-1), two SAR inducers (Actigard, Messenger), two copper compounds (Mankocide, Phyton 27), and a quinoline compound (S-0208) (Group I) were evaluated on Idared apple trees in a research orchard at Geneva, NY. A second trial with a third biocontrol agent (Group II) was done 2 days after the main trial. Treatments were replicated five times with 150-200 blossom clusters per replication in a randomized complete block design. The products were applied to entire trees at pre-pink, pink, 25% bloom, 50-70% bloom, 24 h before, and 24 h after inoculation, based on their mode of action, by using a single nozzle handgun sprayer at 150 psi and spraying to run off. Approximately 200 blossom clusters on each tree were inoculated at full bloom with *E. amylovora* strain Ea. 273 at 1×10^7 CFU ml⁻¹ using a Solo backpack sprayer. Numbers of infected and healthy blossom clusters were recorded 2 weeks after inoculation. The proportion of infected blossom clusters was determined and used as the measure of disease. Fruit russeting was noted 4 weeks after the last blossom spray. Data were analyzed by a General Linear Model (GLM) procedure (SAS) and difference among treatments was determined by Waller-Duncan K-ratio T test.

In 2000, warm weather during bloom was very conducive for fire blight development. During bloom Maryblyt™ predicted 6 high-risk days. Due to a very high level of infection of clusters on inoculated branches, disease incidence was measured on adjacent branches on which 61.4% of clusters on the untreated inoculated trees became infected. Data from those branches also gave better statistical separation of treatments. In Group I, the Agrimycin (streptomycin) standard treatment had 22.2% clusters infected (64% control). The best treatments with S-0208 (71.5% control), Serenade (64.3%), Messenger (58.3%), and Phyton 27 (46.1%) gave control statistically indistinguishable from Agrimycin. Blightban C9-1 (33.4%) gave significant control but combining it with Actigard (35.8%) did not improve control. Mankocide (36.2%) gave significant control but significantly less than Agrimycin, and Mankocide caused a high level of fruit russeting. The other copper material, Phyton 27, while giving control statistically indistinguishable from Agrimycin, caused very little russeting, statistically not different from the untreated control. In Group II, TM434 gave significant control (38.9%), statistically indistinguishable from Agrimycin.

Treatment	Product (g/50L)	Surfactants (rate/50L)	Time of ¹ application	% infected ² blossom clusters	% Russeted ³ fruit	% Russeted ⁴ surface
Group I						
Untreated control....				61.4 a	0.0 c	0.00 c
Agrimycin 17 W.....	14.7	Regulaid 15 ml	5,6	22.2 e	3.1 bc	0.32 bc
S-0208 20 WP.....	24.2	Regulaid 15 ml	5,6	25.2 de	5.4 bc	0.20 bc
S 0208 20 WP.....	48.4	Regulaid 15 ml	5,6	17.5 e	11.0 b	0.61 b
Mankocide 15 WP...	79.7	Regulaid 15 ml	5,6	39.2 bcd	78.3 a	2.10 a
Phyton 27 EC.....	128.2 ml	Regulaid 15 ml	5,6	33.1 cde	4.5 bc	0.10 bc
Serenade WP.....	113.5		1,2, 6	21.9 e	0.0 c	0.00 c
Serenade WP.....	113.5		5,6	32.1 cde	0.4 c	0.04 c
BlightBan C9-1.....	13.0	Breakthru 25ml	4	40.9 bcd	6.6 bc	0.20 bc
Actigard 50 WG.....	10.0	Regulaid 15 ml	1,2,6	53.7 ab	4.0 bc	0.04 c
Actigard 50 WG +.	10.0	Regulaid 15 ml	1,2,6	39.4 bcd	0.0 c	0.00 c
BlightBan C9-1.....	13.0		4			
Messenger WP.....	25.0	Reguard 100 ml	1,2,6	41.1 bcd	1.2 c	0.06 c
Messenger WP.....	25.0	Reguard 100 ml	2	25.6 de	0.9 c	0.40 bc
Group II						
Untreated control...				46.5 z	1.8 z	0.06 z
Agrimycin 17 W.....	14.7	Regulaid 15 ml	7,8	29.5 y	0.0 z	0.00 z
TM 434 WP.....	50.0		9	28.4 y	2.3 z	0.10 z

¹For Group I, 1= Pre-pink (27 April), 2=pink (3 May), 3= 25% bloom (5 May), 4= 50-70% bloom (6 May), 5= 24 h before inoculation (7 May), 6=24 h after inoculation (9 May). For Group II, 7= 24 h before inoculation (9 May), 8=24 h after inoculation (11 May), 9= 2 days before inoculation (8 May).

²Treatments followed by the same letter did not differ significantly ($P>0.05$) as determined by Waller grouping.

³Fruit with any russet.

⁴Cumulative russeting.