

Field evaluation of materials for control of fire blight infection of apple blossoms, 2002.

The efficacy of a biocontrol agent (Serenade), two SAR inducers (Messenger and Physpe), three copper formulations (Cuprofix, Phyton 27, and STBX-016), a quinoline compound (S-0208, oxolinic acid) and three antibiotics (streptomycin, GWN-920, and Genevacin) 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. Idared trees were inoculated at full bloom (7 May) with *Erwinia amylovora* strain Ea273 at 1×10^7 CFU ml⁻¹ using a Solo back-pack sprayer. 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. 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. Data were analyzed by Waller-Duncan K-ratio t test using SAS.

The weather during bloom was cooler and bloom was longer than usual, but sufficient infection took place (65.5% blossom clusters blighted [BCB] on the untreated inoculated trees) for good separation of treatments. Greatest reduction in BCB resulted from Agrimycin (streptomycin), S-0208, and Cuprofix applied 1 day before and 1 day after inoculation; from Agrimycin applied 1 day after inoculation only; and from Agrimycin applied 1 day before inoculation plus Serenade applied 1 day after inoculation. Other treatments with these materials, including Serenade alone, and with Phyton 27, STBX-016 and Messenger also resulted in significant control but were not as effective as the best treatments. Genevacin and Physpe had no significant effect on BCB. Cuprofix was the only treatment that resulted in a significant increase in russeting (11.4% of fruit surface), in contrast with the other copper materials, Phyton 27 and STBX-016, which showed no significant increase in russeting.

Materials	Rate /50 L	Surfactant / 50 L	Timing of application ^z	% blossom clusters blighted ^y	% fruit surface russeted ^y
None/ inoculated ^x	-	-	-	65.5 a	1.4 b
Agrimycin 17WP	14.7 g	Regulaid 15 ml	3, 4	8.9 g	1.5 b
Agrimycin 17WP	14.7 g	Regulaid 15 ml	3	29.4 f	1.8 b
Agrimycin 17WP	14.7 g	Regulaid 15 ml	4	15.1 g	1.6 b
GWN-920 10WP	125.0 g	Regulaid 15 ml	3, 4	31.2 ef	2.1 b
GWN-920 10WP	125.0 g	Regulaid 15 ml	3	41.5 de	1.7 b
GWN-920 10WP	187.0 g	Regulaid 15 ml	3	35.1 ef	1.4 b
GWN-920 10WP	250.0 g	Regulaid 15 ml	3	34.6 ef	0.8 b
Genevacin	11.5 g	Regulaid 15 ml	3, 4	60.6 ab	0.9 b
S-0208 20WP	29.3 g	Regulaid 15 ml	3, 4	12.0 g	2.3 b
S-0208 20WP	29.3 g	Regulaid 15 ml	3	29.7 f	2.2 b
Serenade WP10	180.0 g	-	3, 4	32.9 ef	1.7 b
Serenade WP10	180.0 g		3		
Agrimycin 17WP	14.7 g	4	27.2 f	1.8 b
Agrimycin 17WP	14.7 g		3		
Serenade WP10	180.0 g	4	4.0 g	1.6 b
Cuprofix Disperss DF ...	262.8 g	Regulaid 15 ml	3, 4	12.8 g	11.4 a
Phyton 27 EC	125.0 ml	Regulaid 15 ml	3, 4	45.6 cd	1.7 b
STBX-016	125.0 ml	Regulaid 15 ml	3, 4	41.3 de	2.1 b
Messenger WG	25.0 g	Regulaid 45 ml	1, 2	54.9 bc	1.9 b
Physpe G	23.5 ml	Regulaid 15 ml	1, 2, 3	56.7 ab	1.5 b
Physpe G	56.2 ml	Regulaid 15 ml	1, 2, 3	58.6 ab	1.8 b
Physpe G	84.7 ml	Regulaid 15 ml	1, 2, 3	58.2 ab	2.1 b

^z 1, early pink (23 Apr); 2, late pink (1 May); 3, 24 hr before inoculation (6 May); 4, 24 hr after inoculation (8 May).

^y Mean separation by Waller-Duncan K-ratio t-test ($P \leq 0.05$).

^x All treatments were inoculated on 7 May with *Erwinia amylovora* strain Ea273 at 1×10^7 CFU ml⁻¹.