TOMATO (*Lycopersicon esculentum*)
Bacterial spot; *Xanthomonas perforans*
Bacterial speck; *Pseudomonas syringae* pv. *tomato*

G. E. Vallad, R. Willis, H. Adkison, and M. Middleton
Department of Plant Pathology
University of Florida, GCREC
Wimauma, FL 33598

Comparison of copper-alternatives and plant defense activators for controlling bacterial spot and speck on tomatoes, fall 2012.

On 4 Sept 2012, plots were established at the University of Florida's Gulf Coast Research and Education Center in Balm, FL to assess the effect of several plant defense activators and several copper-alternatives on the control of bacterial spot of tomato. Plots consisted of 25 ft-long bed sections within 300 ft-long, raised beds with 5 ft center-to-center bed spacing. Beds were covered with black virtually impermeable mulch and irrigated with a drip system. Tomato seedlings (cv. Charger) were transplanted at 18-in spacing along beds skipping a 4-ft alley between plots as a buffer. Treatments, including a water-treated and a non-treated control, were arranged in a completely randomized design with each treatment repeated four times. The treatments were applied weekly or twice weekly beginning on 10 Sep through the week of 26 Nov. Foliar treatments were applied with a CO_2 back pack sprayer calibrated to deliver 60, 90, and 120 gal/A at 40 psi. Plots were inoculated on 18 Sep with a suspension (10^6 cfu/ml) of a race 4 strain of *Xanthomonas perforans* using a backpack sprayer; a natural outbreak of Pseudomonas syringae pv. tomato developed in the latter half of October. Plots were monitored regularly for bacterial spot and speck, and rated for both diseases on 15 Oct, 26 Oct, and 8 Nov as symptoms developed. Marketable yield was assessed from two separate hand harvests on 27 Nov and 18 Dec.

	Bacterial Spot Severity (% foliage):				**Diseased Fruit**	
Treatment, rate/A	**15-Oct**	**26-Oct**	**8-Nov**	**AUDPC**	**No.**	**Weight (lbs)**
Cuprofix 40D, 3 lb; Penncozeb 75DF, 1.25 lb…..	31.4 a	18.4 bcd	55.0	1150	0.3	0.4
Non-treated Control, - ……	22.1 ab	18.4 bcd	42.6	1025	1.9	1.6
Actigard, 0.5 oz……..	18.4 bc	15.5 cd	42.6	900	1.2	1.4
Actigard, 0.25 oz…….	22.1 ab	18.5 bcd	42.6	1153	0.9	0.8
Water-treated Control, - -……...	18.5 bc	15.5 cd	48.4	1068	1.1	1.1
Actinovate, 6 oz…….	22.1 ab	12.9 d	55.0	1207	0.4	0.6
Actinovate, 6 oz; Actigard, 0.25 oz……	18.5 bc	26.3 ab	37.5	892	0.2	0.4
Actinovate, 6 oz; Kocide 3000, 1 lb……...	18.5 bc	22.0 abc	55.0	1186	0.2	0.4
Serenade Max, 2 lb…….	22.1 ab	18.5 bcd	35.7	957	0.7	0.8
Serenade Max, 2 lb; Kocide 3000, 1 lb……..	18.5 bc	18.5 bcd	42.6	980	0.6	0.8
Synbiont, 48 floz…….	22.1 ab	26.3 ab	42.6	922	0.2	0.6
Synbiont, 64 floz…….	26.3 ab	31.4 a	48.4	1268	0.9	1.0
Synbiont, 96 floz…….	22.1 ab	22.1 abc	37.5	954	1.7	1.6
Synbiont, 124 floz……..	18.5 bc	26.3 ab	42.6	1077	0.9	1.3
Synbiont (2-3d), 48 floz; Acitgard, 0.5 oz…….	18.5 bc	26.3 ab	37.5	892	0.1	0.3
Synbiont (7d), 48 floz; Acitgard, 0.5 oz……	18.5 bc	22.1 abc	48.4	1112	0.3	0.6
Synbiont (2-3d), 96 floz; Acitgard, 0.5 oz……..	12.9 c	22.1 abc	37.5	860	0.4	0.5
Synbiont (7d), 96 floz; Acitgard, 0.5 oz……	18.5 bc	22.1 abc	48.4	1088	0.5	0.7
P =	***0.0743***	***0.0568***	***0.2568***	***0.3175***	***0.6069***	***0.4465***

	Marketable Yield (lbs)				
Treatment, rate/A	**Small**	**Medium**	**Large**	**Ex. Large**	**Total**
Cuprofix 40D, 3 lb; Penncozeb 75DF, 1.25 lb……..	11.4 abc	21.1	33.0 b-e	68.7	134.2
Non-treated Control, - ……..	11.4 abc	23.0	34.4 a-e	74.1	142.9
Actigard, 0.5 oz…….	9.4 c	18.1	34.6 a-e	78.1	140.2
Actigard, 0.25 oz……...	9.8 c	20.1	37.5 ab	77.5	144.8
Water-treated Control, - -……..	9.8 c	18.9	38.1 a	75.8	142.6
Actinovate, 6 oz…….	10.3 bc	19.5	36.6 abc	80.5	146.9
Actinovate, 6 oz; Actigard, 0.25 oz……..	9.6 c	19.1	30.9 de	74.4	134.0
Actinovate, 6 oz; Kocide 3000, 1 lb……..	11.3 abc	20.5	34.9 a-e	72.5	139.1
Serenade Max, 2 lb……	9.0 c	19.6	33.4 a-e	68.9	130.8
Serenade Max, 2 lb; Kocide 3000, 1 lb…….	13.5 a	19.1	38.0 a	62.1	132.7
Synbiont, 48 floz……...	9.5 c	17.8	30.6 e	75.1	132.9
Synbiont, 64 floz……...	13.4 a	18.5	32.1 c-e	70.2	134.2
Synbiont, 96 floz……...	11.0 abc	22.2	33.4 a-e	61.9	128.5
Synbiont, 124 floz…….	12.9 ab	22.7	35.6 a-d	62.4	133.6
Synbiont (2-3d), 48 floz; Acitgard, 0.5 oz……	10.9 abc	19.4	33.8 a-e	69.3	133.3
Synbiont (7d), 48 floz; Acitgard, 0.5 oz……	10.5 abc	16.8	32.6 b-e	76.9	136.8
Synbiont (2-3d), 96 floz; Acitgard, 0.5 oz……	9.3 c	19.1	30.4 e	71.9	130.8
Synbiont (7d), 96 floz; Acitgard, 0.5 oz……	8.9 c	18.9	32.9 b-e	75.9	136.5
P =	***0.0462***	***0.6018***	***0.0458***	***0.1482***	***0.3407***