TOMATO (*Lycopersicon esculentum*)
Bacterial spot; *Xanthomonas perforans*

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Evaluation of bactericides and Actigard for management of bacterial spot of tomato, spring 2010.

On 16 Mar 2010, plots were established at the University of Florida's Gulf Coast Research and Education Center in Balm, FL to assess the effect of bactericides and Actigard on the control of bacterial spot of tomato. Plots consisted of 3 adjacent 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 cv. XP-200 seedlings were transplanted at 18-in spacing along beds skipping a 4-ft alley between plots as a buffer. Bactericide and Actigard treatments were applied on 23 Apr, 7 May, 14 May, 21 May, 28 May, and 10 Jun (corresponding with applications 1 to 6 below) with a tractor sprayer calibrated to deliver 60 (app. 1), 90 (apps. 2,3), and 120 gal/A (apps. 4,5,6) at 210 psi. Treatments, including a non-treated control, were arranged in a randomized complete block design with each treatment repeated four times. The outer bed of each plot was inoculated 1 May with a suspension (10^6 cfu/ml) of *Xanthomonas perforans* race 4 using a backpack sprayer. Plots were monitored regularly for bacterial spot, and rated on 18 May, 8 Jun, and 23 Jun after disease reached appreciable levels. Marketable yield was assessed from two hand harvests on 2 Jun and 15 Jun. Alternating applications of Revus Top (7.7 floz/A) and Quadris (16.4 fl oz/A) was carried out on 14 May, 21 May, 28 May, and 10 Jun to minimize the impact of early blight, target blight, and late blight, which were critical when conducive conditions occurred in the latter half of May.

Based on disease severity on 18 May, only Kocide 3000, BX-09 (1.5 pt/A)-Penncozeb, and BX-09 (0.5 pt/A)-Penncozeb significantly reduced disease severity in comparison to the non-treated control. For the later two disease ratings, no significant difference was detected in disease severity between treatments. Based on area under the disease progress curves (AUDPC), only Kocide 3000 significantly reduced disease development. There were no significant differences in marketable yields between treatments.

	Disease severity (%)[y]				**Marketable fruit yield[w]**	
Treatment, rate/A (application)[z]	**18 May**	**8 June**	**23 June**	**AUDPC[x]**	**Weight (boxes/A)**	**Extra large (numbers/A)**
Cuprofix Ultra 40D, 3 lb (1-6); Penncozeb 75DF, 2 lb (1-6)……..	67.3 abc[v]	90.6	95.2	3051 a-d	1385	41961
BX-9, 1.5 pt (1-6); Penncozeb 75DF, 2 lb (1-6)……..	50.1 d	91.9	95.3	2894 b-e	1421	42342
BX-9, 1 pt (1-6); Penncozeb 75DF, 2 lb (1-6)……..	71.9 abc	90.9	96.8	3101 ab	1540	44649
BX-9, 0.5 pt (1-6); Penncozeb 75DF, 2 lb (1-6)…….	50.1 d	89.3	96.3	2855 cde	1542	44964
BX-9, 1.5 pt (1-6)……	56.3 cd	84.8	94.5	2824 de	1490	41090
BX-9, 1 pt (1-6)……...	62.4 bcd	83.8	94.9	2859 cde	1539	44976
BX-9, 0.5 pt (1-6)……	67.1 abc	90.9	94.9	3037 a-e	1465	40947
Kasumin 2L, 100 ppm (1-6); Surfix, 0.06 % v/v (1-6); Actigard 50WG, 0.33 oz (1-6)…….	67.1 abc	89.6	96.7	3027 a-e	1493	45358
Kasumin 2L, 100 ppm (1-6); Surfix, 0.06 % v/v (1-6)……	67.3 abc	87.0	95.1	2984 a-e	1556	46109
EXP 1, 2.30 pt/100 gal (2-6)…..……..	65.9 abc	94.2	96.4	3108 ab	1555	46807
EXP 1, 6.88 pt/100 gal (2-6)…….....	62.5 bcd	92.8	95.5	3043 a-e	1503	46436
EXP 2, 2.30 pt/100 gal (2-6)……...	71.8 abc	90.5	96.1	3144 a	1358	39943
EXP 2, 6.88 pt/100 gal (2-6)…….....	79.0 a	92.8	96.1	3222 a	1486	48219
EXP 3, 1.95 pt/100 gal (2-6)…….……..	62.5 bcd	90.1	94.8	3006 a-e	1457	40966
Kocide 3000, 3.53 oz/100 gal (1-6).....	49.8 d	86.9	95.3	2805 e	1413	43101
Actigard 50WG, 0.33 oz (1-6)…….	76.8 ab	86.8	93.8	3089 abc	1459	44931
Agriphage, 2 pt/100gal (1-6)……...	76.8 ab	87.7	94.9	3114 ab	1524	43851
Non-treated control……	67.6 abc	90.3	95.6	3064 a-d	1321	37756
P > F	*0.0046*	*0.3189*	*0.2445*	*0.0295*	*0.7498*	*0.9168*

[z] Listed treatment rates are on a per acre basis unless noted otherwise.
[y] The severity of bacterial spot was assessed as the percentage of canopy affected. The Horsfall-Barratt scale was used for all ratings, but values were converted to mid-percentages prior to statistical analyses.
[x] Area under the disease progress curves (AUDPC) was calculated using the formula: $\Sigma([(x_i+x_{i-1})/2](t_i-t_{i-1}))$ where x_i is the rating at each evaluation time and (t_i-t_{i-1}) is the time between evaluations.

[w] Marketable yield is based on two harvests on 2 Jun and 15 Jun, assumes 4356 plants/A and 20 lb/box, and includes medium, large, and extra-large fruits.
[v] Values followed by the same letter are not statistically significant ($P = 0.05$) according to Fisher's LSD test.