Tomato (*Lycopersicon esculentum* 'FL 47')
Bacterial spot; *Xanthomonas perforans*
Early blight; *Alternaria solani*

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Evaluation of compounds for control of foliar diseases in tomato, fall 2007.

Tomato seedlings were transplanted on 4 Sep into Immokalee fine sand at the Southwest Florida Research and Education Center, Immokalee, FL. Treatments were arranged in a randomized complete block design with four replications. Each plot consisted of 15 plants spaced 18 in. apart within a 21 ft row with 10 ft between each plot and 6 ft between each row. Guidelines established by the University of Florida/IFAS were followed for land preparation, fertility, irrigation, weed management and insect control. Sprays were applied with a high clearance sprayer designed specifically for applications in staked tomato plots at 2 mph and at 200 psi. A double drop boom equipped with 6 nozzles delivered a spray volume of 66 gal/A. A suspension of the bacterial spot pathogens (*Xanthomonas vesicatoria* race 1 and *Xanthomonas perforans* race 3 at 1×10^8 CFU/ml) was inoculated onto plots on 4 Oct at approximately 15 ml/plant using a hand pump sprayer. A suspension of mycelia, sporangia and zoospores of *Phytophthora infestans* was applied to plants on 7 Nov. Disease ratings as disease severity (percentage symptomatic tissue) were partitioned for disease symptoms when both diseases were present. Fruit were harvested on 5 and 6 Dec. Fruit were categorized as either marketable or non-marketable (small, misshapen or diseased). The yield and AUDPC were subject to one-way ANOVA and significant differences between means were separated using Tukey Multiple Comparison. Average monthly high and low temperatures (°F) were 94 and 69 in Sep, 97 and 68 in Oct, 88 and 44 in Nov and 86 and 42 in Dec. Rainfall totals for Sep, Oct, Nov and Dec were 4.7, 3.4, 0.09 and 0.4 in., respectively.

Severe drought conditions prevailed during the fall 2007. Despite this, bacterial spot symptoms were severe and climbed to the top of the plants. Late blight did not establish on plants in this trial. Foliar damage due to the fungal disease early blight was observed and recorded. Microscopic examination confirmed presence of *Alternaria* sp. associated with typical early blight symptoms. Two ratings for bacterial spot are shown in the table. Treatments which were statistically reduced both rating dates compared to the untreated control were 2, 4, 7, 8,10, 11, 12, 13, 15, and 24. Treatment 7 which consisted only of Bravo Weather Stik appears to be an anomaly as this compound typically does not exhibit bacterial suppression. For foliar disease ratings, treatments 5, 11, and 19 were the only plants which were rated as significantly reduced compared to the untreated control; however this separation may be due more to difficulty in distinguishing symptoms of late blight in the presence of severe bacterial spot. As typical, yield differences were not noted. Ratings are representative of appearance of plants in the field as there was generally very little difference in overall plant appearance regardless of treatment. Overall, the severe drought undoubtedly impacted the results of this trial as plants were grown under considerable stress even with increased attention to irrigation and field moisture.

Trt #	Treatment/Rate per A	Application timing[z]	10/18/2007 Bacterial spot % ds[y]	11/2/2007 Bacterial spot % ds	11/2/2007 Fungal % dis	Yield Marketable[x]	Weight Marketable	Yield Non-Marketable	Weight Non-Marketable
1	UTC	……	20 a[w]	21 ab	11 a	155 b-f	61 bcd	114 ab	38 a-d
2	Manzate Pro-Stick 75DG 2 lb	1-14……..	9 b-g	14 b-e	9 abc	166 b-f	57 cd	97 abc	35 a-d
	Kocide 3000 2 lb	1-14							
	Bravo Weather Stik 6F 3 pt	2, 3, 4, 6, 8, 10, 12, 14							
	Quadris 6 fl oz	5, 7, 9, 11, 13							
3	Manzate Pro-Stick 75DG 2 lb	1-14……	6 efg	18 a-d	12 a	176 a-f	65 bcd	65 cde	26 def
	Kocide 3000 2 lb	1-14							
	Bravo Weather Stik 6F 3 pt	2, 3, 4, 6, 8, 10, 12, 14							
	Evito 480SC 1.9 oz	5, 7, 9, 11, 13							
	Induce 0.25% v.v.	5, 7, 9, 11, 13							
4	Manzate Pro-Stick 75DG 2 lb	1-14……	7 c-g	8 e	5 bc	175 a-f	65 bcd	65 cde	26 c-f
	Kocide 3000 2 lb	1-14							
	Bravo Weather Stik 6F 3 pt	2, 3, 4, 6, 8, 10, 12, 14							
	Evito 480SC 3.8 oz	5, 7, 9, 11, 13							
	Induce 0.25% v:v	5, 7, 9, 11, 13							
5	Polyoxin-D 28 oz	1-14……	14 a-e	15 a-e	9 abc	178 a-e	69 a-d	100 abc	33 a-d
6	MF Chlorothalonil 6.0SC 1.5 pt	1-14……	14 a-e	20 abc	9 abc	133 ef	59 bcd	119 a	42 a
7	Bravo Weather Stik 6F 4.5 pt	1-14……	4 fg	11 de	6 abc	206 ab	76 ab	78 a-e	29 a-f
8	V-10161 4.00 SC 2 oz	1-14……	8 b-g	11 de	6 abc	173 b-f	72 abc	48 de	15 f
9	V-10161 4.00 SC 4 oz	1-14……	15 abc	18 a-d	11 a	144 c-f	61 bcd	110 ab	41 ab
10	V-10161 4.00 SC 2 oz	1-14……	9 b-g	13 cde	9 abc	163 b-f	66 bcd	99 abc	35 a-d
	Maneb 75DF 1.5 lb	1-14							
11	Oxidate 1/300 v:v	1-14……	3 g	13 cde	4 c	169 b-f	68 a-d	102 abc	37 a-d
	Manzate Pro-Stick 75DG 2 lb	1-14							
	Kocide 3000 2 lb	1-14							
	CAF-06 0.8 oz/gal	1-14							
12	Serenade Max 1 lb	1-14……	6 efg	13 cde	9 abc	185 a-d	70 a-d	85 a-e	29 a-f
	Cuprofix Ultra 40 DF 1.25 lb	1-14							
13	Milsana 0.5% v:v	1, 3, 5, 7, 9, 11, 13……....	7 defg	13 cde	6 abc	190 a-d	75 abc	73 b-e	30 a-e
	Manzate Pro-Stick 75DG 2 lb	2, 4, 6, 8, 10, 12, 14							
	Kocide 3000 2 lb	2, 4, 6, 8, 10, 12, 14							
14	Milsana 1% v:v	1, 3, 5, 7, 9, 11, 13……..	12 a-f	16 a-d	11 a	163 b-f	66 a-d	71 b-e	27 b-f
	Manzate Pro-Stick 75DG 2 lb	2, 4, 6, 8, 10, 12, 14							
	Kocide 3000 2 lb	2, 4, 6, 8, 10, 12, 14							
15	Cuprofix Ultra 40DF 1.5 lb	1-14……	9 b-g	14 b-e	8 abc	174 a-f	65 bcd	71 b-e	27 b-f
	Penncozeb 75DF 2 lb	1-14							
16	Cuprofix Ultra 40DF 1.5 lb	1-14……	4 g	19 a-d	8 abc	192 abc	76 ab	79 a-e	29 a-f
	Penncozeb 75DF 2 lb	1-14							
	Bravo Weather Stik 6F 3 pt	2, 3, 4, 6, 8, 10, 12, 14							
	Quadris 2.08SL 6 fl oz	5, 7 , 9, 11, 13							
17	Kasumin 64oz/100gal	1, 2, 4, 5, 7	12 a-f	16 a-d	11 ab	159 b-f	66 a-d	112 ab	41 abc
	Manzate Pro-Stick 75DG 2 lb	3, 6, 8, 9, 10, 11, 12, 13, 14							

	Kocide 3000 2 lb	3, 6, 8, 9, 10, 11, 12, 13, 14							
	Bravo Weather Stik 6F 3 pt	2, 3, 4, 6, 8, 10, 12, 14							
	Quadris 6 fl oz	5, 7, 9, 11, 13							
18	Kasumin 64 oz/100gal	1, 2, 4, 5, 7	10 b-g	14 b-e	7 abc	225 a	85 a	44 e	17 ef
	Kocide 3000 2 lb	1-14							
	Manzate Pro-Stick 75DG 2 lb	3, 6, 8, 9, 10, 11, 12, 13, 14							
	Bravo Weather Stik 6F 3 pt	2, 3, 4, 6, 8, 10, 12, 14							
	Quadris 6 fl oz	5, 7, 9, 11, 13							
19	Omega-Plus 2% v:v	1-14.....	16 ab	23 a	5 bc	162 b-f	63 bcd	101 abc	35 a-d
20	V-10161 4.00SC 4 oz	1-14.....	12 a-f	17 a-d	11 ab	169 b-f	67 a-d	91 a-d	30 a-e
	Maneb 75DF 1.5 lb	1-14							
21	Proud -3 2 qt	1-14.....	10 b-g	15 a-e	6 abc	124 f	51 d	114 ab	32 a-d
22	QRD 800 2.5 lb	1-14.....	7 d-g	16 a-d	10 ab	168 b-f	70 a-d	76 a-e	27 b-f
23	QRD 800 1.25 lb	1-14.....	14 a-d	13 cde	8 abc	177 a-e	75 abc	77 a-e	29 a-f
24	QRD 800 1.25 lb	1-14.....	9 b-g	13 cde	9 abc	139 def	63 bcd	101 abc	37 a-d
	Cuprofix Ultra 40DF 1.25 lb	1-14							

[z]1=11 Sep, 2 =18 Sep, 3 =25 Sept, 4 =2 Oct, 5 =9 Oct, 6 =16 Oct, 7 =23 Oct, 8 =30 Oct, 9 =6 Nov, 10 =12 Nov, 11=19 Nov,12 =26 Nov, 13 =3 Dec, 14= 10 Dec,

[y] %ds= percentage disease severity

[x] Mean weight of fruit per plot in lb

[w] Numbers followed by the same letter are not significantly different at P=0.05 by Tukey's multiple comparison.