Using Stimplex for vegetable disease management

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Objective: Evaluate the use of Stimplex and Calcium silicate on diseases of tomato.

Trial design: Plots were 25 ft in length with 12 tomato plants (var. *Mt Fresh+*) per plot and 4 reps. Treatments consisted of 1. Grower Standard Control: Apply in alternating weeks chlorothalonil with Revus Top or Frontelis or Tanos and copper, 2. Control program + Stimplex at 2 qt/a every 2 weeks starting 2 weeks after transplanting, 3. Calcium silicate applied every 2 weeks starting 2 weeks after transplanting, and 4. Combine treatments 2 and 3. Disease ratings were taken every two weeks after the first sign of a foliar disease. Trial conducted at Upper Marlboro REC, June-September 2012.

Results: Disease incidence:

Bacterial leaf spot (*Xanthomonas euvesicatoria* and *Xanthomonas perforans*)

Date	Treatments							
	Control		Control+Stimplex		Silicate alone		Control + Stimplex + Silicate	
	% disease[1]	Severity[2]	% disease[1]	Severity[2]	% disease[1]	Severity[2]	% disease[1]	Severity[2]
7/19	18.3a	1.1a	21.4a	0.7a	25.4a	1.9a	12.6a	0.6a
8/2	29.5ab	2.1a	25.1a	1.8a	41.7b	2.4a	18.9a	1.6a
8/16	45.6a	2.7ab	31.6b	2.1b	66.5c	3.2a	22.3b	1.7b
8/30	72.7a	3.2ab	43.6b	2.5bc	88.3a	3.9a	35.2b	2.0c
9/13	93.2a	3.5a	65.3b	2.6b	100a	4.2a	52.9b	2.4b
9/27	100a	4.3ab	78.5a	3.5bc	100a	4.6a	75.3a	3.2c

Yields[3]:

Date	Treatments							
	Control		Control+Stimplex		Silicate alone		Control + Stimplex + Silicate	
	Yield	culls	Yield	culls	Yield	culls	Yields	culls
7/27	8.5a	0.9a	10.2a	0.5a	9.3a	0.8a	9.7a	0.3a
8/6	15.2a	1.5a	17.4a	0.7a	13.1a	1.9a	16.5a	0.7a
8/17	33.6ab	4.8a	39.9a	1.4b	23.5b	5.2a	41.2a	1.8b
8/22	41.3ab	5.6ab	48.7bc	3.4b	35.1a	8.2a	58.6c	2.8b
8/30	26.4ab	8.8a	35.1bc	4.1b	19.4a	10.5a	43.8c	4.3b
9/12	13.2a	6.5a	24.3b	6.8a	10.6a	7.1a	29.3b	5.9a
9/20	7.3a	6.5a	14.7a	3.6a	5.9a	5.6a	14.4a	3.2a

Discussion: Bacterial spot was the predominant foliar disease. It had never been very significant on this research farm before. This was a bad year for bacterial spot throughout the mid-Atlantic as growers' loss 20%-50% of their tomato yields to the disease. Treatments that included Stimplex and Stimplex plus silicone generally did better than treatments without in overall yield and in amount of culls. In the last few harvests culls made up almost half or more of the yield in the Control and Silicate alone treatments. The concentration of silicon in the product used was only 18%; a higher concentration might have resulted in a greater effect on plant disease. By the last harvest greater than 75% of all plants were infected with bacterial spot.

[1]Mean percentage of plants per row with bacterial spot. Comparisons are made between treatments on a date.
[2]Ratings are the mean percentage of foliage damaged with bacterial spot 1:-0-10%; 2:11-25%; 3: 26-50%, 4: 51-75% and 5: $\geq$76%
[3]Yields are based on harvesting only Number 1s and 2s, as these are the only sizes that go to market. Culls are the weight of non-marketable Number 1s and 2s taken at harvest.