WATERMELON (*Citrullus lanatus* 'Sugar Baby')
Fusarium wilt; *Fusarium oxysporum* f. sp. *niveum*

K. L. Everts and R. C. Korir
University of Maryland, 27664 Nanticoke Road, Salisbury, MD 21801; and
University of Delaware, 16483 County Seat Hwy., Georgetown, DE 19947

Evaluation of Proline and Topsin fungicides for management of Fusarium wilt on watermelon, 2015.

The experiment was conducted at the University of Maryland's Lower Eastern Shore Research and Education Center, Salisbury, as a randomized complete block design with six fungicide treatments and four replications. Plots consisted of one raised bed, 80 ft long, on 7-ft centers using 1.25-mil plastic and one line of 8-in. emitter spaced drip tape. The beds were shaped and covered with plastic in a one pass operation on 13 May. Four-week-old seedlings were removed from the greenhouse to begin hardening off on 24 May. They were transplanted into the field 36 in. apart with a 20-20-20 (N-P-K) (2.5 lb/150 gal water) starter solution on 29 May. Soil moisture was maintained by drip irrigation as needed. Fungicide applications began on 2 Jun, and were applied weekly until 22 Jul. Fungicides were applied through the drip irrigation or as a foliar spray by a tractor-mounted sprayer that delivered 45 gal/A at 43 psi through six D4-45 hollow-cone nozzles mounted in a directed pattern. Individual vines were measured from four plants from each plot on 19 Jun. On 29 Jun, the percent of plants per row that were wilted was determined and the percentage of wilted foliage was evaluated on 7 and 22 Jul. The percent of foliage that demonstrated phytotoxicity symptoms of leaf margin necrosis was rated on a whole plot basis on 1 Aug. Gummy stem blight severity was also evaluated on the whole plot on 1 Aug. All mature and marketable fruits from each plot were harvested, counted, and weighed on 4 Aug. A total of five plants were collected from each plot, and fresh and dry weights were taken on 4 and 11 Aug, respectively.

Proline applied three times through the drip reduced Fusarium wilt severity on July 22 as compared to both the non-treated plots and plots treated with Topsin. Proline applied once through the drip on 2 Jun or on 17 Jun and followed by foliar applications also reduced Fusarium wilt compared to the non-treated control. Vines were longest in plots where Proline was applied through the drip just after transplant. Gummy stem blight remained low throughout the season, and there were no statistically significant differences among treatments (data not shown). Due to high Fusarium wilt, which caused plant stunting, wilting and death, yield was extremely low in the field. There were no differences in total fruit weight or fruit number among treatments. In addition, no differences were observed in fresh or dry vine weight. A low level of phytotoxicity (less than 2%) was observed in plots where Proline was applied once through drip and then applied to the foliage on 24 June and 15 July.

Treatment and rate/A	Application timing[z]		% Fusarium wilt[y]			Vine length (in.)
	Drip	Foliar	29 Jun	7 Jul	22 Jul	19 Jun
Proline 480SC, 5.7 fl. oz	1,2,4		11.4 a[x]	27.0 a	60.0 c	17.2 a
Topsin 4.5FL, 10 fl. oz	1,2,4		32.2 a	48.8 a	77.5 ab	13.0 c
Proline 480SC, 5.7 fl. oz	1	3,6	15.7 a	23.8 a	66.3 bc	17.3 a
Proline 480SC, 5.7 fl. oz	1	5,6	26.6 a	43.8 a	72.5 abc	16.5 ab
Proline 480SC, 5.7 fl. oz	2	5,7	21.6 a	32.0 a	66.3 bc	13.2 c
Non-treated	-	-	32.3 a	42.0 a	88.8 a	13.7 bc
P value[w]			0.0962	0.1174	0.0252	0.0183

[z]Application dates were 1=2 Jun; 2=17 Jun; 3=24 Jun; 4=1 Jul; 5=2 Jul; 6=15 Jul; 7=22 Jul.
[y]Percent wilt incidence on 29 Jun was evaluated as the percent of plants within a row that were wilted; on 7 and 22 Jul the severity of Fusarium wilt was rated as the percent of wilted vines and overall stunting.
[x]Mean values within each column followed by the same letter are not significantly different at $P=0.05$ according to Fisher's protected LSD.
[w]*P* values ≤ 0.05 indicate significant differences are likely to exist among treatments.