

Evaluation of insecticides for management of thrips and tomato spotted wilt on 'TUFRunner 511' peanut, 2016.

'TUFRunner 511' peanuts were planted at Edisto Research and Education Center in Blackville, SC on 6 May. Soil type was a Barnwell loamy sand. Rotation history was corn, cotton, and peanut in 2015, 2014, and 2013, respectively. Plots were four 40-foot rows on 38 in. centers with treatments replicated six times and applied according to a randomized complete block design. Blocks were separated by 10-ft alleys. Admire Pro and Velum Total were applied with a D2 orifice set to deliver 8.7 gal/A at 32 psi. Orthene and Vydate were applied using two DG8002 nozzles/row (19 in. spacing) delivering 15 gal/A. Thimet was applied with a SmartBox calibrated to deliver 4.7 lb/A. Extension recommendations were used to manage tillage, weeds, other diseases, nutrition and irrigation. Thrips damage was rated 18 May, 27 May, and 7 Jun using a 0 to 10 scale where 1 = no injury and 10 = dead plants. Percent phytotoxicity was rated 27 May and 7 Jun. Tomato spotted wilt stunting was rated by visually estimating the % of row exhibiting stunting symptoms of the disease (based on loci counts per row where 1 locus was \leq 1 ft of consecutive tomato spotted wilt stunted plants) on 28 Jun and 23 Aug. On 22 Aug, ratings for tomato spotted wilt incidence was conducted. Two yield rows per plot were dug on 23 Sep and combined 5 Oct with yield reported at 10% moisture. SAS 9.4 PROC GLIMMIX was used to determine effects of treatments, with mean separations compared according to Fisher's Protected LSD at $\alpha = 0.05$. Yield data were modeled according to a negative binomial distribution. Average monthly temperatures for the growing season are as follows: 73.0 (May), 82.9 (Jun), 86.0 (Jul), 81.0 (Aug), 74.3 (Sep), and 65.8°F (Oct).

The amount of thrips damage on 18 May was fairly low; all treatments displayed statistically less damage than the untreated control. By 27 May, thrips damage increased noticeably. The untreated control had the most damage, and the treatments in the lowest statistical grouping that did not overlap with the mid grouping consisted of Admire Pro and Thimet + Orthene. The presence of Thimet was generally associated with increased levels of characteristic phytotoxicity, though the untreated control interestingly was in the upper statistical grouping at 12.3% (this was not observed during the 7 Jun rating). During both tomato spotted wilt stunting ratings, the untreated control was in the upper statistical grouping but was surpassed by greater stunting in the Velum Total treatment. Aside from the untreated control, treatments including imidacloprid (Admire Pro and Velum Total) had the highest levels of stunting, and treatments containing phorate (Thimet) had the least stunting. Acephate (Orthene) improved tomato spotted wilt control in combination with imidacloprid treatments but did not improve control provided by phorate. Similarly, Vydate + Thimet did not reduce tomato spotted wilt stunting beyond that of Thimet alone. The lowest yield was associated with the untreated control. The grouping with yield significantly greater than the lowest ranking grouping consisted of Admire Pro + Orthene, Thimet + Orthene and Velum Total. Thimet and Velum Total + Orthene were also in the upper most grouping, but their values were not significantly different from those of the lowest grouping.

Treatment and rate/A	Timing ^z	Thrips damage (0-10 scale) ^{y,v}				Phytotoxicity (%) ^v		TSW % stunting ^{x,v}		TSW % incidence ^{w,v}	Yield (lb/A) ^{v,u}
		18 May	27 May	2 Jun	7 Jun	27 May	7 Jun	28 Jun	23 Aug		
Untreated check	---	1.8 a	5.8 a	5.0 a	8.7 a	12.3 ab	3.3 c	8.8 a	18.5 ab	24.6 ab	4587 c
Thimet 20G 4.7 lb	A	0.8 b	3.4 b	0.6 b	4.2 bc	15.6 a	15.0 a	4.3 c	3.8 d	9.4 de	5126 abc
Admire Pro 10 fl oz	A	1.0 b	2.5 c	0.6 b	3.8 c	7.3 d	6.5 bc	7.9 ab	16.3 ab	22.1 ab	4902 bc
Velum Total 18 fl oz	A	0.5 b	3.2 bc	1.0 b	4.8 bc	8.7 cd	4.7 bc	10.0 a	20.0 a	27.1 a	5528 ab
Thimet 20G 4.7 lb	A	0.7 b	3.8 b	0.6 b	4.0 bc	13.5 ab	13.2 a	5.4 bc	4.2 d	6.9 e	5006 bc
Vydate 17 fl oz	B										
Thimet 20G 4.7 lb	A	0.7 b	3.3 bc	1.1 b	3.7 c	11.0 bc	14.2 a	4.4 c	5.0 d	9.8 de	5607 ab
Orthene 12 oz	B										
Admire Pro 10 fl oz	A	1.0 b	3.2 bc	0.8 b	4.2 bc	6.2 d	4.8 bc	7.7 ab	9.6 cd	14.6 cd	5879 a
Orthene 12 oz	B										
Velum Total 18 fl oz	A	0.7 b	3.2 bc	1.0 b	4.3 bc	6.8 d	6.8 b	8.1 ab	12.9 bc	17.7 bc	5173 bc
Orthene 12 oz	B										

^z Timing: A: 6 May (in-furrow at planting), B: 30 May.

^y Thrips damage was based on a 0 to 10 scale where 0 = no visible thrips damage and 10 = plant death.

^x TSW stunting is expressed as the percent of the number of stunted loci per 80 ft of row (1 locus = \leq 1 ft of consecutive stunted plants).

^w TSW incidence is expressed as the percent of the number of symptomatic loci per 80 ft of row (1 locus = \leq 1 ft of consecutive symptoms of the disease).

^v Means followed by the same letter are not significantly different according to Fisher's Protected LSD at $\alpha = 0.05$.

^u Yield data were modeled according to a negative binomial distribution with inverse-link means of the original scale presented.