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### **On Farm Peanut Variety Trials**

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Researchers know that small plot research enables us to reduce the amount of variability that we have in our soils by randomization of treatments in a small area. However, farmers are often suspicious of small-plot data when they farm large acreages. Tomato Spotted Wilt Virus (TSWV) is a huge problem in peanut production. TSWV is carried by thrips that overwinter in the soil and emerge in the spring. The Auburn University peanut variety trial on the Wiregrass Research and Extension Center has heavy TSWV pressure. Our objective was to evaluate some of those same varieties on growers' fields to see how they respond. In spite of the fact that planting and harvesting would be slowed, we found growers willing to work with us. In 2005, three on-farm variety trials were established. One in Covington County and two in Washington County with different rotations to determine the effects from disease due to continuous peanuts for two and three years in a row.

In the past, there has been a great deal of on-farm peanut fertility research with the goal of developing a nutrient response curve for peanuts. The researcher would look at all the soil samples that Auburn's Soil Testing Lab ran until he found one that was deficient in a particular nutrient. He would then contact the grower to see if he could conduct an on-farm test on this field. This system has worked well. Over time, farms increased in size and so did farmers' equipment. This did not leave any room for the small plot work on farms. Now we have a way to go back to on-farm research.

#### Methods

Varieties were randomized and planted at each of the three locations. This was possible because the rows were already laid off with a strip-till at the Covington County location and rip and bedder at the Washington County locations. This allowed skipping around and planting all the strips across the field of one variety before cleaning out the planter for the next variety. At the Covington County location, all varieties were planted in twin rows at 3 seed per foot of row with 4 lb. Temik® per acre in each twin row. At the Washington County location, all varieties were in single rows at 6 seed per foot of row with 5 lb Phorate® per acre. The only purchases we had to make for this on-farm research was a large dump cart with scales in which the farmer could dump his peanut picker basket and a global positioning system (GPS) to measure plot length. Each of the varieties were replicated four times and evaluated for leaf spot, TSWV, white mold, yield, and grade.

## Results

Only data from the same location can be compared. Data show that AP-3 is a variety that stands out above the rest. It produced significantly higher yields at all three locations under different conditions. The Covington County site (Table 1) had more disease pressure than the other two sites because this location has been in peanut production for several years. The Washington County locations have only recently been planted to peanuts. AP-3 also had less TSWV, leaf spot, and white mold than the other varieties at this location. The diseases did not seem to reduce the yield as much as it did on the other varieties with the AP-3 variety at the Washington County site (Table 2) where peanuts were in a 3-yr rotation compared to the other Washington County site (Table 3) with a 2-yr rotation. AP-3 had the highest yield in the peanut variety test at the Wiregrass Research and Extension Center in 2005. Data show that AP-3 is a proven producer in peanuts due to its resistance to diseases and tomato spotted wilt virus.

Georgia Green is a variety that yields higher in the on-farm trials than in the university trials. This is due to the fact that TSWV pressure is higher in the university trial than in the on-farm trial. The virus pressure is greater in the university trial due to the smaller plots with more border effect. The increase in border increases access of thrips to plots from edges and borders. Georgia Green had 16 hits/40 ft. in the university trial and only 15 hits/100 ft. in the on-farm trial. This shows us that the increase in virus pressure decreases the yield potential of that variety. However both tests have the same ranking of the varieties, they are just at different severity levels of virus due to the planting data, location, and size of the plots tested.

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Table 1. Covington County on-farm peanut variety trial

<u>Variety</u>	<u>TSWV Hits per 100 ft</u>	<u>Leaf Spot Rating</u>	<u>White mold Hits per 200 ft.</u>	<u>Yield lbs/ac</u>	<u>Grade TSMK</u>
AP-3	8.0 c	2	12.5 d	4,055 a	67.0 a
AT 3081	25.0 a,b	3	17.0 c,d	3,735 b	66.8 a,b
Ga Green	28.75 a	3	24.25 a,b	3,140 c	68.5 a
Carver	26.5 a,b	4	27.5 a	3,060 c,d	67.25 a
Andru II	21.5 b	3	21.25 b,c	2,930 d	63.25 b

Table 2. Washington County on-farm peanut variety Trial 1 (2005) on a site following 3 years of peanuts.

<u>Variety</u>	<u>TSWV Hits per 100 ft.</u>	<u>Leaf Spot Rating</u>	<u>White mold Hits per 200 ft.</u>	<u>Yield lbs/ac</u>	<u>Grade TSMK</u>
AP-3	16.0 a	3	8.2 b	5,070 a	65.1 b
Ga Green	14.7 a	3	12.0 a	3,985 b	71.0 a
Carver	15.0 a	3	13.2 a	3,885 b	67.3 b

Table 3. Washington County On Farm Peanut Variety Trial 2 (2005) on a site following 2 years of peanuts.

<u>Variety</u>	<u>TSWV Hits per 100 ft.</u>	<u>Leaf Spot Rating</u>	<u>White mold Hits per 200 ft.</u>	<u>Yield lbs/ac</u>	<u>Grade TSMK</u>
AP-3	7.75 a	3	6.75 a	5,235 a	65.0 c
Ga Green	8.0 a	3	12.0 a	4,370 b	71.75 a
Carver	10.2 a	3	9.25 a	4,155 b	68.0 b

*This Timely Information sheet was edited and prepared for posting by Charles C. Mitchell, Extension Agronomist-Soils.*