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Final + Summary

Yield and quality evaluation of five peanut varieties at three planting dates

OBJECTIVE: To evaluate yield potential and quality of five peanut varieties at three planting dates (PD).

METHODS: The study was conducted at the North Florida Research and Education center, Quincy, FL during April to October, 2016. The soil was a Dothan-Fuquay with 2% OM, 80% sand, 12 % Silt and 8% Clay, pH 6.2. Total rainfall during the study was 22 inches and total irrigation received was 4.8 inches on 3 separate occasions.
On April 13, a TS110 and KMC striptill implement were used to prepare plots for the study. The studies for PD 1-3 were planted on April 20, May 13, and June 3, respectively. The 6 varieties used in this study were: 1) Florun107, 2) FL297, 3) FL511, 4) FL 157, 5) GA12Y, and 6) GA06G.
Herbicide applications comprised Strongarm@0.45 oz/a + Pendimethalin @40 oz/A + Interline @32 oz/A for pre-emergent weed control and Parazone @ 6 oz/A + Stalwart@ 21 oz/A for post-emergent weed control. Fungicide applications consisted of Echo @ 24 oz/A and Muscle ADV @ 32 oz/A.Early and late leafspot disease evaluations were done on 119, 132, 142, and 152 DAP. Area under disease progress curves (AUDPC) were calculated to see the progress of disease among the various varieties for a given planting date. White mold (WM) ratings were done immediately after harvest.
Peanuts were inverted and harvested between 146 and 156 DAP for all the PD. Wet weights were recorded. Dry weights were recorded on a 10 lb sub-sample. A 600 g sub-sample of dried peanuts was shelled and graded to determine percentage of sound mature kernels (SMK), other kernels (OK) and damaged/diseased kernels.

Summary

RESULTS: GA12Y was the highest yielding variety across planting dates. Among the Florida varieties FL 297 was the highest yielding and not significantly different from GA12Y. Disease (early and late leafspot and white mold) were also the lowest in GA12Y across planting dates. FL297 was significantly superior in terms of peanut quality with a higher percentage of SMK. Planting date 3 was the highest yielding across varieties and was significantly different from PD 1 and 2. Irrigation was not a significant factor for peanut yield, disease or peanut quality across varieties and PD. Despite being the highest yielding, early and late leafspot was highest in PD3. White mold was significantly higher in PD1.White mold was significantly correlated to yield (R^2 = 0.49; P<0.0001). AUDPC was also significantly correlated to other kernel (R^2 =0.57; P<0.0001) but not to yield.

DISCUSSION: GA12Y and FL297 were the top yielders in 2016. Disease pressure on these varieties were also relatively less. Early and late leafspot did not seem to be correlated with yield whereas white mold was. This was evident in PD3 yields that were the highest despite having highest leafspot incidence. Perhaps the AUDPC rating reflects late leafspot more than early leafpsot, the former likely not significantly impacting yield. White mold however had a significant impact on yield.

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Table 1

VARIETY	YIELD (lb/A)	SMK (%)	OK (%)	DAMAGED (%)	AUDPC	WM
FloRun 107	5053 c	69.27 b	3.49 a	1.15 a	126.88 ab	3.33 a
FL 297	6055 ab	73.66 a	1.96 c	1.49 a	119.11 bc	2.55 ab
FL511	5283 bc	73.05 a	2.14 c	0.80 a	147.94 a	3.66 a
FL157	5078 c	71.44 ab	2.63 a-c	1.45 a	120.72 b	3.44 a
GA12Y	6467 a	69.27 b	3.21 ab	1.18 a	97.38 c	1.38 b
GA06G	5507 bc	73.33 a	2.22 bc	0.99 a	111.16 bc	2.72 ab
Mean	5574	71.67	2.61	1.18	120.53	2.85

SMK=Sound mature kernels; OK=Other kernels; Column means followed by the same letters are not significantly different according to Tukey's Honest Significant Difference at P<0.05

Table 2

PD	YIELD (lb/A)	SMK (%)	OK (%)	DAMAGED (%)	AUDPC	WM
April 20	4625.9 c	70.11 b	3.84 a	1.11 a	96.75 b	3.47 a
May 13	5824.2 b	71.30 b	2.08 b	1.31 a	131.58 a	2.72 ab
June 3	6272.1 a	73.61 a	1.90 b	1.11 a	133.27 a	2.36 b
Mean	5418	71.67	2.61	1.18	120.53	2.85

SMK=Sound mature kernels; OK=Other kernels; Column means followed by the same letters are not significantly different according to Tukey's Honest Significant Difference at P<0.05

Table 3A

	YIELD LB/A		
VARIETY	**PD 1**	**PD 2**	**PD 3**
FloRun 107	3895 b	5533 a	5730 a
FL 297	4874 c	6304 b	6987 a
FL511	4458 c	5234 b	6156 a
FL157	4106 b	5302 a	5825 a
GA12Y	5563 b	6999 a	6840 a
GA06G	4858 b	5570 a	6093 a

SMK=Sound mature kernels; OK=Other kernels; Row means followed by the same letters are not significantly different according to Tukey's Honest Significant Difference at P<0.05

Table 3 B

	AUDPC		
VARIETY	**PD 1**	**PD 2**	**PD 3**
FloRun 107	99.1 b	136.1 a	145.3 a
FL 297	91.6 b	133.1 a	132.5 a
FL511	131.3 b	165.3 a	147.1 b
FL157	96.1 b	130.0 a	136.0 a
GA12Y	77.0 b	99.83 a	115.3 a

GA06G	85.1 b	125.0 a	123.3 a

SMK=Sound mature kernels; OK=Other kernels; Row means followed by the same letters are not significantly different according to Tukey's Honest Significant Difference at P<0.05

Table 4A

VARIETY	IRRIGATED YIELD (lb/A)	NON-IRRIGATED YIELD (lb/A)
FloRun 107	5214 a	4891 a
FL 297	5991 a	6119 a
FL511	5120 a	5446 a
FL 157	5376 a	4780 a
GA12Y	6651 a	6283 a
GA06G	5604 a	5410 a
Mean	5659	5488

SMK=Sound mature kernels; OK=Other kernels; Row means followed by the same letters are not significantly different according to Tukey's Honest Significant Difference at P<0.05

Table 4B

Planting Date	IRRIGATED YIELD (lb/A)	NON-IRRIGATED YIELD (lb/A)
April 20	4771 a	4480 a
May 13	5863 a	5784 a
June 3	6344 a	6199 a
Mean	5659	5488

SMK=Sound mature kernels; OK=Other kernels; Row means followed by the same letters are not significantly different according to Tukey's Honest Significant Difference at P<0.05