FINAL REPORTS FOR PEANUT BOARD SPONSORED PROJECTS CONDUCTED IN 2011

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PEANUT DISEASE MANAGEMENT PROJECTS

Objective 1: IMPROVING ON THE MANAGEMENT OF PEANUT POD ROT.

The effect of fungicide applications based on a threshold system versus calendar based applications for management of peanut pod rot.

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Summary

Fungicides were applied in two peanut fields to manage pod rot based either on the experience of the producers, without input from scouting; or on a threshold of pod rot of 1-2% (low), 3-4% (moderate) or 5-6% (high). Plots were scouted for pod rot from the time of early pod formation through the end of the season. Both sites started with primarily *Pythium* pod rot, which was low in incidence and generally didn't show up until August or September. *Rhizoctonia* pod rot was also found in both fields, and it became the dominant problem in one field in September and early October. Pod rot tended to be lower in plots where the producer made earlier applications based on their experience (called calendar applications) and before pod rot had been found, than delaying application for a low threshold to trigger. Yield was similar across all treatments in both fields. In the field with lower pod rot (Virginia peanuts), grade, damaged kernels, etc. were similar across all treatments, and most treatments returned about the same value. The exception was plots treated twice with Ridomil Gold SL + Provost, with had higher chemical costs and resulted in less profit/acre. In the Runner field, which had slightly more pod rot, the grade and value of the crop/ton was higher with calendar applications that had Abound FL applied twice, and deductions were less with this treatment. However, when chemical costs were included, then all treatments gave similar profitability.

Materials and methods

The two test sites were setup similarly, with 7 treatments replicated four times at each site. Plot size was 4 rows wide (36-inch centers) and 1,000 ft. long. Calendar applications were made based on the experience of the producer and not in regards to scouted disease in the field. The treatments were: calendar applications with Abound FL; calendar applications with Abound FL rotated with a combination of Ridomil Gold + Provost; calendar applications with Ridomil Gold + Provost; applications with Abound FL made when pod rot reached at least 1% in scouted plots (low threshold); applications with Abound FL made when pod rot reached at least 3% in scouted plots (moderate threshold); applications with Abound FL made when pod rot reached at least 5% in scouted plots (high threshold); no fungicide applied. Plots were scouted weekly at 5 locations/plot where the scouted points were 1.5 ft. in length and were selected randomly within the plot.

Sites were harvested with a four-row peanut thrasher and the contents of the plot was dumped into a trailer on load cells and weighed. Three subsamples were taken from each harvested plot in the trailer and kernels were graded to determine % sound mature kernels, % sound splits, % damaged kernels, % other kernels, % foreign matter, and with the Virginia peanut field, % extra large kernels.

Results and discussion

Jackson field: The calendar based applications were made on 22 July and 28 August. One low threshold based application was made on 10 September after pod rot averaged 1.5% in the nontreated check on 9 September. Pod rot averaged over the entire season was similar across all treatments (including a nontreated check), and the pods had a low incidence of *Pythium* spp. and a very low incidence of *Rhizoctonia*. *Pythium* spp. was isolated from rotted pods starting on 15 Aug., while the first isolates of *Rhizoctonia* were found on 2 September (Fig. 1). Pod rot was < 1% all season for calendar applications of Abound FL (AA) and Ridomil Gold EC+ Provost (RR) (Fig. 2). There was considerable damage by worms during the season to pods, but the scouts did not call it pod rot, unless there were symptoms of rot in the absence of worm holes. There were no differences between calendar, threshold, or no fungicide treatments with respect to peanut grade, % damaged kernels, % extra large kernels, value of the peanuts/ton, yield, yield x value/ton (Table 1), but the plots treated with Ridomil Gold + Provost returned less ($557/acre) than did all other treatments with Abound FL, Abound FL rotated with Ridomil Gold + Provost, or the nontreated check (average of all other treatments was $652/acre).

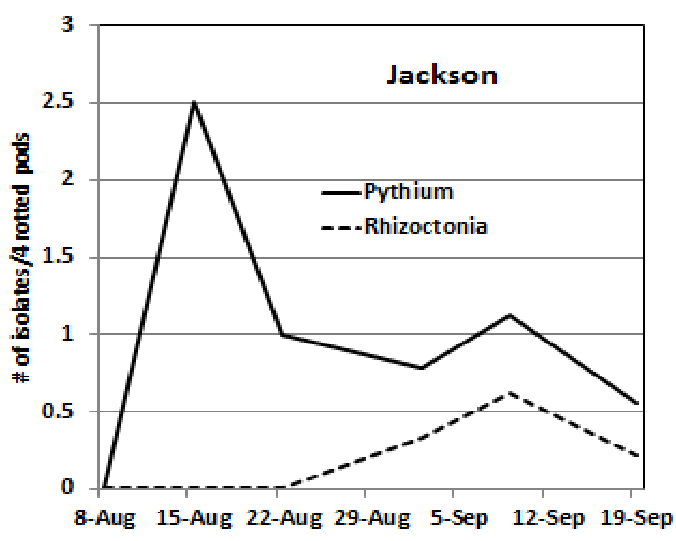

Figure 1. Number of isolations of *Pythium* and *Rhizoctonia* spp. at the Jackson field over time, when 4 or fewer rotted pods/sample were examined. Averaged across all fungicide treatments, since there were no differences between fungicide treatments.

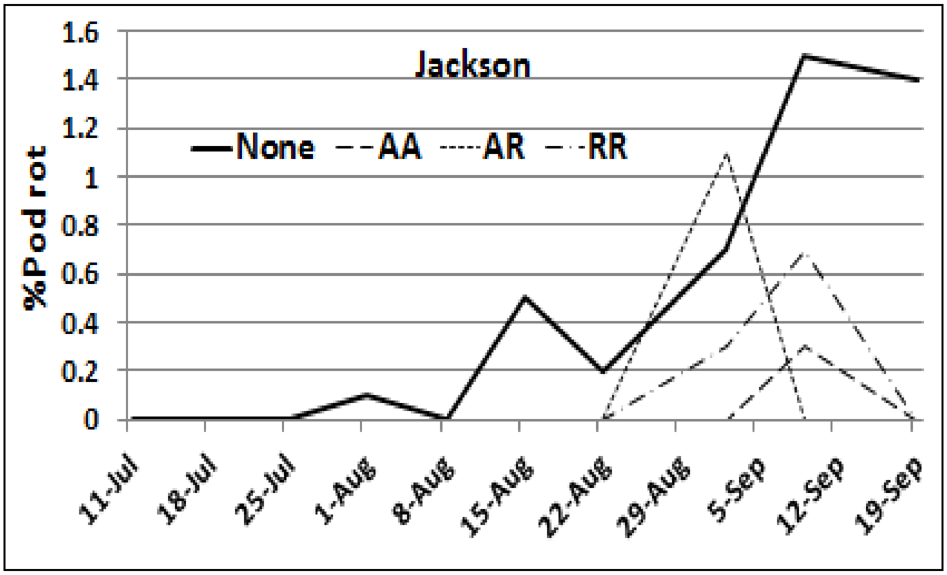

Figure 2. Percent pod rot over time for various fungicide application strategies at the Jackson field. None=no fungicides for pod rot applied; AA = 2 applications with Abound FL (calendar timed); AR = 1 application with Abound FL and one with Ridomil Gold SL + Provost (calendar timed); and RR = 2 applications with Ridomil Gold SL + Provost (calendar timed).

Table 1. Effect of treatments on pod rot, kernel grades, and yield at the Jackson field.

Trt[1]	**Yield (lb/a)**	**Value**[2] **($/ton)**	**Value**[2] **($/a)**	**Return**[3] **($/a)**	**Grade (%)**	**DK**[2] **(%)**	**Ded**[2] **DK ($/ton)**	**Pod rot (%)**	**Pyt**[4]	**Rhiz**[4]
A/A	3,983	349	694.32	644 a	67	0.7	49	0.0	0.00	0.000
A/RP	3,938	350	689.23	624 a	68	0.8	49	0.1	0.00	0.005
RP/RP	3,675	347	637.53	557 b	67	1.0	50	0.1	0.05	0.005
Low	3,978	352	700.95	676 a	68	0.8	52	0.4	0.04	0.013
None	3,803	348	662.46	662 a	68	1.0	48	0.4	0.01	0.000
Prob.>t	0.36	0.70	0.25	0.015	0.72	0.52	0.42	0.24	0.09	0.62

[1]A=Abound FL; RP = Ridomil Gold + Provost; Low=low threshold; None indicates no fungicides sprayed.
[2]Value/ton was calculated at ($4.947 x Grade)+($1.40 x %Other kernels)+($0.35 x %Extra large kernels (ELK)) – deduction from damaged kernels (DK). Value/acre was calculated by multiplying value/ton x the number of tons/acre.
[3]The chemical (Chem) costs per acre were calculated at: $6.51/oz for Ridomil Gold SL, $1.91/oz for Abound FL, and $2.21/oz for Provost. Rates applied (banded in 20 inches) for Abound FL (A) were 24.8 oz/acre; Ridomil Gold SL (R) at 8 oz/acre, and Provost at 10.7 oz/acre.
[4]Pyth = isolation frequency for *Pythium* spp. from rotted pods, and Rhiz=isolation frequency for *Rhizoctonia* spp. from rotted pods. Generally pods selected for isolation had relatively new lesions.

Johnson field: The calendar based application was made on 10 August. A low threshold application was made on 1 September and 3 October, and a moderate threshold application was made on 3 October. *Pythium* pod rot was present in August, but *Rhizoctonia* pod rot began to dominate later in the season (Fig. 3). Pod rot remained above 1% for nonfungicide plots from 31 August until 12 October, except for one sampling date (Fig. 4). Plots treated with the moderate threshold and no fungicides had more *Rhizoctonia* pod rot than did plots treated with Abound FL/calendar or Ridomil+Provost/calendar (Table 2). The % of pod rot averaged across all sampling dates was higher for plots treated with the moderate threshold (average of 1.8%) than all other treatments, including the nontreated checks (% pod rot average ranged from 0.5 to 1.0%) (Table 2). Plots treated with Abound FL/calendar had a higher grade (73%) than did plots treated with the low or moderate threshold (69% grade) (Table 2). The % damaged kernels and deductions for damaged kernels were higher for the low, moderate, and nontreated plots than for the calendar treated plots. The value/ton for peanuts was highest in plots treated by the calendar with Abound FL once during the season ($353/ton) and lowest for plots with the low and moderate thresholds ($333 and $331/ton, respectively). Yield was similar across all treatments, as was the final value of the treatments ($/acre) after subtracting chemical costs.

Table 2. Effect of treatments on pod rot, kernel grades, and yield at the Johnson field.

Trt[1]	Yield (lb/a)	Value[2] ($/ton)	Value[2] ($/a)	Return[3] ($/a)	Grade (%)	DK[2] (%)	Ded[2] DK ($/ton)	Pod rot (%)	Pyt[4]	Rhiz[4]
A	3,474	353 a[5]	619	593	73 a	1.0 b	0.4 c	0.5 b	0.03	0.08 c
RP	3,664	345 ab	635	594	70 ab	1.1 b	1.1 bc	0.6 b	0.07	0.16 abc
Low	3,717	333 b	619	567	69 b	1.9 a	3.5 ab	1.0 b	0.04	0.27 a
Mod	3,213	331 b	512	486	69 b	2.3 a	5.5 a	1.8 a	0.04	0.17 ab
None	3,327	339 ab	564	564	71 ab	2.0 a	3.4 ab	0.8 b	0.06	0.06 c
Prob.>t	0.71	0.015	0.46	0.59	0.041	0.001	0.0003	0.0001	0.69	0.002

[1]A=Abound FL; RP = Ridomil Gold + Provost; Low=low threshold; None indicates no fungicides sprayed.
[2]Value/ton was calculated at ($4.85 x Grade)+($1.40 x %Other kernels) – deduction from damaged kernels (DK) and sound splits. Value/acre was calculated by multiplying value/ton x the number of tons/acre.
[3]The chemical (Chem) costs per acre were calculated at: $6.51/oz for Ridomil Gold SL, $1.91/oz for Abound FL, and $2.21/oz for Provost. Rates applied (banded in 20 inches) for Abound FL (A) were 24.8 oz/acre; Ridomil Gold SL (R) at 8 oz/acre, and Provost at 10.7 oz/acre.
[4]Pyt = isolation frequency for *Pythium* spp. from rotted pods, and Rhiz=isolation frequency for *Rhizoctonia* spp. from rotted pods. Generally pods selected for isolation had relatively new lesions.
[5]Differences between treatments that are significant at a Prob$\leq$0.05 have different letters.

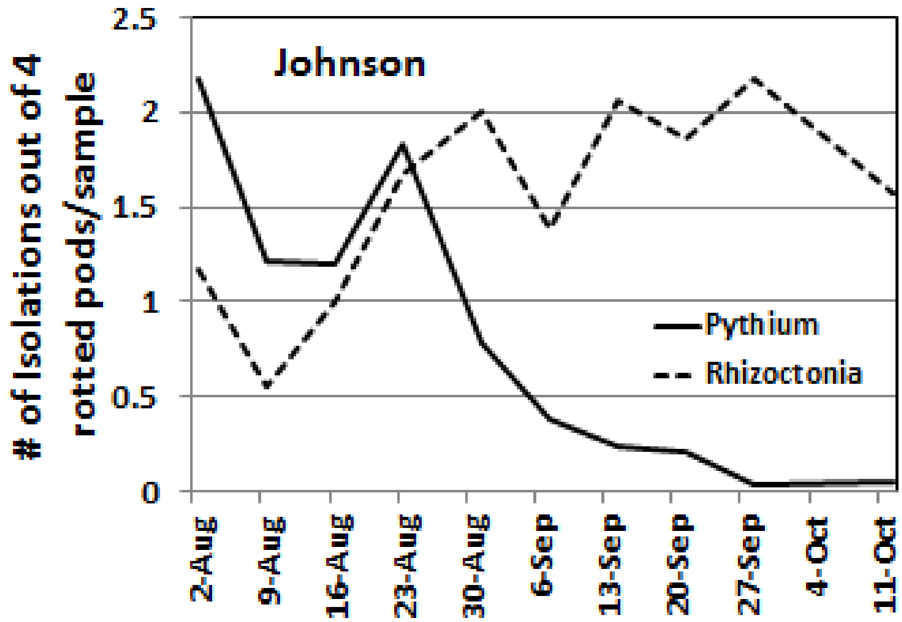

Figure 3. Number of isolations of *Pythium* and *Rhizoctonia* spp. at the Johnson field over time, when 4 or fewer rotted pods/sample were examined.

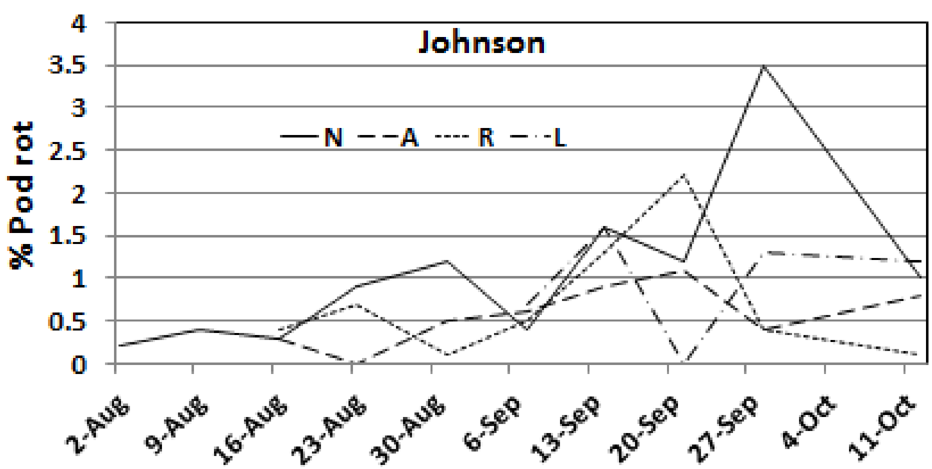

Figure 4. Percent pod rot over time for various fungicide application strategies at the Johnson field. N=no fungicides for pod rot applied; A = 1 application with Abound FL (calendar timed); R = 1 application with Ridomil Gold SL + Provost (calendar timed); L = 2 applications with Abound FL timed when % pod rot reached 1% (1 Sept.) and again on 3 October.

How many samples are sufficient to adequately estimate pod rot?

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Materials and methods

The Johnson field described in the above section, was divided into a series of small grids, excluding the area where the plots were in the previous section. 80 of these grids were selected at random each week, starting at 16 August and continuing until 29 Sept. The GPS points were obtained and these locations were sampled. The number of pods with pod rot were counted and divided by the total number of pods in a 1.5 long section of row.

The average percentage of rotted pods in a field over the 80 samples was calculated for each sampling time (7 sampling times), and a 95% confidence interval was constructed around the mean. Ten simulations were run on each sampling week, by sampling at random among the 80 samples that were taken. Simulations were run for 5, 10, 15, 20, 25, and 30 random samples among the 80 that were taken (60 simulations were run in total). The means were estimated for each of the simulations, and then these means were compared against the mean and confidence interval for the 80 samples. If the simulated mean fell outside of the confidence interval, then it was considered wrong. The average number of wrong estimates was calculated.

Results and discussion

The number of wrong estimates for 5, 10, 15, 20, 25, and 30 random samples are presented in Table 3. In general, the more samples that were taken, the fewer wrong estimates. In previous years, 20 samples were considered the minimum to adequately estimate % pod rot. This year, 20 samples would have been wrong an average of 29% of the time (Table 3). Twenty samples are again the number recommended for consultants.

Table 3. Percentage of times a sampling estimate was wrong out of 10 simulations

Number of samples	16 Aug.	23 Aug	31 Aug	7 Sep	14 Sep	21 Sep	28 Sep	Average overall
5	90	80	50	90	80	60	50	71
10	80	30	50	50	50	50	30	49
15	50	20	50	40	30	60	20	39
20	40	10	0	30	40	60	20	29
25	20	10	0	20	40	30	10	19
30	20	10	0	20	30	0	0	11
Mean of 80 samples	**0.9**	**0.2**	**1.0**	**1.3**	**1.3**	**1.9**	**0.2**	

Fungicide efficacy, timing, and application methods for improved management of pod rot in the High Plains of Texas.

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Summary

Pod rot of peanut is an economically important disease in the Southern High Plains of Texas, and is caused by *Rhizoctonia solani* Kühn AG-4 and several *Pythium* spp. A large plot fungicide trial was conducted in the growing seasons of 2010 and 2011 to study the effects of delaying initial applications of Abound and Ridomil on disease development. Initial applications were made 68 or 82 days after planting (DAP) with subsequent applications using a banded spray application. In 2010, the percentage of pods affected and percent damaged kernels were reduced by early applications of Ridomil and Abound. The Convoy treatment in 2010 showed the greatest improvement in yield compared to the control. The 2011 trial was greatly affected by drought, and no appreciable differences were seen for any of the parameters evaluated.

Materials and methods

<u>Fungicide timing.</u> Large plot fungicide trials were conducted in Gaines County, Texas in 2010 and 2011 in fields with a history of pod rot. Plots were four rows wide by 1,000 feet, approximately 0.25 acres. The runner cultivar Flavorrunner 458 was used in 2010 and the Virginia cultivar Gregory was used in 2011. Three fungicides were evaluated: Abound 2.08F, Ridomil Gold 4F, and Convoy 3.8F. A non-treated control was used for comparison of fungicide applications. The first treatment was the industry standard of two applications of Abound at 68 and 98 DAP. The second treatment is considered a maximum input treatment consisting of Ridomil at 68 DAP, and Abound at 98 and 128 DAP. A *R. solani* treatment, Convoy was applied at 68 and 98 DAP. Treatments were arranged in a randomized complete block design with four replications. Initial applications of fungicides were made at 68 or delayed until 82 days after planting (DAP) with subsequent applications made 30 days thereafter. Fungicide applications were applied in a banded application via spider sprayer (Lee Inc, Idalou, TX).

<u>Data collection and analysis.</u> Pod rot incidence was determined by estimating the proportion of pods exhibiting symptoms within 25 arbitrarily chosen regions of approximately 1-3 feet and examining the number of affected plants. Pod yields were determined by weighing plots in drying trailers with load cells. Grade data were obtained using Federal Inspection Service Guidelines by determining the percentage sound mature kernels plus sound splits (SMK+SS) of 250 g sub-samples. The percentage of damaged kernels was used to compare treatments. Pod rot, yield, grade, and damaged kernels data were analyzed using Proc ANOVA (Statistical Analysis System, version 9.2, Cary, NC) and Fisher's protected least significant differences were calculated for the separation of means. Subsequent references to significant differences among means are at the $P \leq 0.05$ level, unless otherwise specified.

Results and discussion

A treatment by year interaction was observed; therefore, data for the two years will be presented separately. Differences in environmental conditions clearly contributed to the trends observed between the two years. The precipitation in 2010 was 15.3 inches, and 3.5 inches for 2011 with no appreciable precipitation between April and September.

Pod rot. All applications of fungicides reduced pod rot incidence compared to the non-treated control in 2010 (Table 4). In 2010, a trend in percent pod rot (LSD = 2.5; $p \geq 0.0109$) was observed where early applications (68 DAP) of fungicides reduced pod rot, and later applications of fungicides led to pod rot similar to that of the control (Table 4). Treatments with early applications of Abound and Ridomil (3.4 - 3.7 %) showed the greatest reduction of pod rot compared to the control (7.5 %) (Table 4). 2011 showed a trend in pod rot percentage (LSD = 1.4; $p \geq 0.1237$). Treatments with early applications of fungicides (2.1 – 3.8 %) were not significantly different from the control (3.9 % pod rot) (Table 5). Differences not shared between years may be attributed to the harsh environmental conditions of 2011. In general, fungicides reduced the pod rot seen in 2010 and 2011. Delayed applications of fungicides may have led to higher percentages of pod rot due to the interception of fungicides with the increased canopy density later in the season. Delayed Ridomil applications may have been less effective than earlier applications due to the affinity of Ridomil to the foliage.

Pod yield. In 2010, fungicide treatments improved yields (LSD = 435; $p \geq 0.0485$); the control yielded 4,009 lb/A and treated plots yielded 4,093 to 4,702 lb/A (Table 4). Similarly to the pod rot results, treatments with early applications of Ridomil and Abound provided a significant increase in yield (4,311 to 4,369 lb/A) (Table 4). In the 2010 trial, the Convoy treatment provided the largest yield (4,720 lb/A) compared to the control (4,009 lb/A) (Table 4). Differences in yield between treatments in 2010 may be the result of treatments with fungicides reducing disease. 2011 showed no appreciable differences in yield for any treatment (4,585 to 4,792 lb/A) (Table 5). The similarities in yield between treatments in 2011 may be attributed to the limited precipitation and disease pressure.

Grade and damaged kernels. The grade percentages for 2010 showed no significant differences from the control. The control graded 70.2% and the treatments ranged from 74.2 to 75.8% (Table 4), and despite no significant differences, treatments tended to have higher grades than the control. In 2011, a difference was observed in grade percentages (LSD = 1.7; $p \geq 0.0005$). The control grade percentage was 68.2% and the treatments ranged from 64.7 to 68.1% (Table 5). The threshold for losses due to damaged kernels was reached in 2010 by the control at 2.5% damaged kernels (Table 4). All treatments in 2010 reduced damaged kernels (LSD = 1.4; $p \geq 0.0896$). Early applications of Abound and Ridomil reduced damaged kernels compared to the control in 2010, with damaged kernels ranging from 0.6 to 0.8% for those treatments (Table 4). No appreciable differences in damaged kernels were observed in 2011. The control had 2.1% damaged kernels, and the treated plots had from 0.6 to 2.3% damaged kernels (Table 5).

Conclusions

Pod rot pathogens are ubiquitous organisms with a broad host range; furthermore, they are necrotrophs are capable of surviving saprophytically on organic matter. Most all peanut tissues are susceptible to infection throughout any point in the growing season. Information on peanut resistance to pod rot is limited, and in this region peanut is rotated with cotton, which is also a susceptible host to *R. solani* and *Pythium* spp. Fungicides are widely used to manage diseases caused by soilborne pathogens, and are the primary management method for pod rot in West Texas.

In this trial, fungicide treatments reduced damage to pods and kernels caused by pod rot pathogens. Early applications of Abound and Ridomil showed the greatest reduction in pod rot percentage and damaged kernels. Despite pod set in this region not occurring after 82 DAP, early applications at 68 DAP provided better control of pod rot in peanuts in this region than later applications beginning at 82 DAP.

Because environmental conditions were drastically different from 2010 to 2011, trends were not consistent between the two years. Further studies are necessary to better identify when applications should be initiated to manage losses due to pod rot. Identifying the ideal application initiation may better protect plants from pod rot later in the season without increasing fungicide applications, increasing the profitability of the crop.

Table 4. Effect of initial fungicide application timing on peanut pod rot in the Southern High Plains of Texas in 2010

Treatment	**Rate (fl oz/A)**	**Timing (DAP[w])**	**Pod rot incidence (%)**	**Yield (lb/A)**	**Grade (%[x])**	**Diseased kernels (%)**
Control	-----	-----	7.5 a[z]	3,577 b	70.2	2.5 a
Abound	24.5	82 & 112	5.7 abc	3,652 b	75.8	1.1 bc
Ridomil Abound	8.0 24.5	68 98 & 128	3.4 c	3,847 ab	75.7	0.7 bc
Ridomil Abound	8.0 24.5	68 98	3.6 c	3,605 b	75.7	0.6 c
Ridomil Abound	16.0 24.5	68 98	3.7 c	3,898 ab	72.1	0.8 bc
Abound Ridomil	24.5 16.0	68 98	4.5 bc	3,857 ab	74.9	0.8 b
Abound Ridomil	24.5 16.0	82 112	6.5 ab	3,754 b	74.6	2.0 abc
Ridomil Abound	16.0 24.5	82 112	7.3 a	3,761 b	75.6	2.1 ab
Convoy	32.0	68 & 98	6.2 ab	4,195 a	74.2	1.4 abc
	LSD		2.5	435	ns[y]	1.4
	p-value		0.0109	0.0485		0.0896

[w] Application timing in number of days after planting (DAP)
[x] Grade percentage was obtained using Federal Inspection Service Guidelines (USDA-AMS, 2003).
[y] Not significant
[z] Means followed by the same letter are not significantly different at the *P*=0.05 level.

Table 5. Effect of initial fungicide application timing on peanut pod rot in the Southern High Plains of Texas in 2011

Treatment	**Rate (fl oz/A)**	**Timing (DAP[w])**	**Pod rot incidence (%)**	**Yield (lb/A)**	**Grade (%[y])**	**Diseased kernels (%)**
Control	-----	-----	3.9	4,090	68.2	2.1
Abound	24.5	82 & 112	3.8	4,139	68.1	1.1
Ridomil	8.0	68	2.1	4,235	66.6	0.6
Abound	24.5	98 & 128				
Ridomil	8.0	68	3.2	4,250	67.6	1.7
Abound	24.5	98				
Ridomil	16.0	68	3.1	4,267	65.6	2.3
Abound	24.5	98				
Abound	24.5	68	3.8	4,164	68.2	0.6
Ridomil	16.0	98				
Abound	24.5	82	2.7	4,100	67.9	1.0
Ridomil	16.0	112				
Ridomil	16.0	82	2.8	4,308	66.9	1.0
Abound	24.5	112				
Convoy	32.0	68 & 98	2.6	4,274	64.7	2.0
	LSD		1.4	ns[z]	1.7	ns
	p-value		0.1237		0.0005	

[x] Application timing in number of days after planting (DAP).
[y] Grade percentage was obtained using Federal Inspection Service Guidelines (USDA-AMS, 2003).
[z] Not significant

Large plot comparison ACI-149, Flavor Runner 458 and Tamrun OL07.

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Materials and methods

Plots (four rows by 1,000 feet) of the cultivars ACI-149, Flavor Runner 458 and Tamrun OL07 were arranged in a randomized complete block design with four replications. An additional entry of Flavor Runner 458 was included in each replicate to evaluate the response of this susceptible cultivar to the phosphate pod rot fungicide Prophyte. The persistence of hot and dry conditions greatly hindered pod rot development; therefore, no applications were made. Pod yields were estimated by harvesting plots with a four-row KMC combine and weighing drying trailers with digital highway scales. Sub-samples of pods were subjected to Federal Inspection Service Guidelines. Data were analyzed via analysis of variance (ANOVA) using SAS v.9.2. Comparison of means were carried out using Fisher's protected least significant differences ($P<0.05$).

Results and discussion

Pod rot was not detected due to adverse environmental conditions. Yields differed among the three cultivars (Fig. 5). Flavor Runner 458 and ACI-149 had similar yields (2,250 lb/A); whereas, an increase of 450 lb/A was observed for Tamrun OL07. Overall, grades were low and ranged from 63.2 to 64.1% total sound mature kernels + sound splits (data not shown).

Conclusions

Additional studies evaluating the response of susceptible cultivars (Flavor Runner 458) and partially resistant cultivars (Tamrun OL07 and ACI-149) are needed. In addition, high yielding and high grading cultivars, such as Tamrun OL11, need to be included in future studies as well.

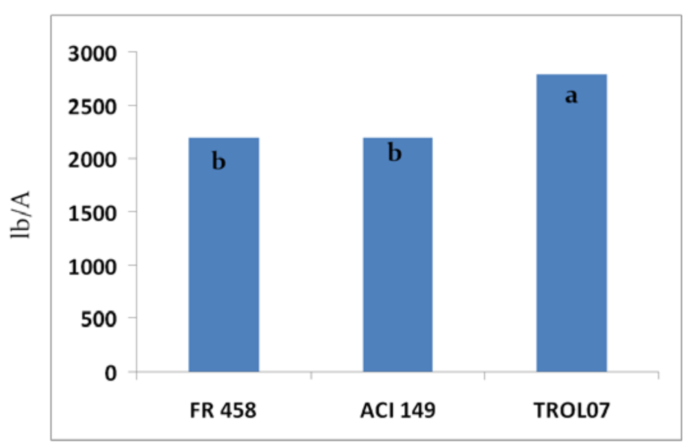

Figure 5. Pod yields of three Runner cultivars. Bars with the same letter are not statistically different.

Impact of soil chemistry and nutrient availability on pod rot development.

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Lindsey Thiessen and Becky Grubbs, Texas Tech University, Lubbock

Summary

Soil and water samples were taken bi-weekly and analyzed to determine changes in chemical composition (primarily pH, total soluble salts, sum of cations, calcium, nitrates, potassium and sodium). Marked changes in pH were observed in both irrigation water and the soil over time. Nitrogen concentrations in the soil followed a non-linear depletion curve; whereas, zinc concentrations increased slightly. Soil concentrations of all other parameters were unchanged throughout the growing season. Slight changes in the parameters evaluated were observed among the sampling dates, with the most notably being pH. When plotting cations against pH values, it appears that changes in the availability these ions occur between a pH of 7.7 and 7.8. Corresponding field studies were lost due to extreme growing conditions that were not conducive for peanut development. Additional greenhouse studies are currently pending.

Materials and methods

Field trials: Small plot trials were initiated at the AG-CARES and Halfway research farms to determine the affect of calcium on pod yield and grades. Applications of calcium comprising five treatments (control, 750 and 1500 lb gypsum per acre, and 15 and 30 gal N-Cal per acre) were arranged in a randomized complete block with four replications. A total five trials were initiated with varying irrigation levels. A total of three runner trials were established under base - 33%, base and base + 33% and representing low, moderate and high irrigation levels, respectively. An additional Virginia trial was established under the base irrigation level. A similar Spanish trial was conducted under moderate irrigation at the Halfway location. Gypsum treatments were applied with a modified drop spreader (Fig. 6a); whereas, the N-Cal treatments were made with a chemigation simulator (Fig. 6b).

Figure 6. Chemigation simulator (left) and modified drop spreader (right) used to administer liquid calcium and gypsum treatments, respectively in field studies.

Greenhouse studies: Greenhouse studies were proposed looking at the influence of soil chemistry on pod rot development.

Soil and water monitoring: Ten geo-referenced areas (4 rows x 50-feet) were established in a field with a history of pod rot. Water and soil samples were collected bi-weekly throughout the growing season, starting 68 days after planting, DAP and sent to a commercial laboratory (Wards Laboratories, Kearny, NE) for analysis. Two peanut plants were destructively sampled from each plot to assess leaf area index (estimating canopy closure), flowers, pegs and pods. Pods were scored for pod rot and isolations were made from symptomatic samples to determine the causal agent(s).

Results and discussion

Soil monitoring: Few changes in any of the soil parameters were observed throughout the study period (data not shown). Regressions of calcium, magnesium, phosphorus, potassium and sodium showed no accumulation over time (Table 6). Soil pH increased over time; whereas, nitrate nitrogen was depleted and zinc levels increased (Fig. 7). This trend may be attributed to the addition of irrigation water with relatively high amounts of calcium, and a lack of rainfall to leach any calcium from the pegging zone.

Table 6. Changes in soil chemical parameters over time[1]

DAP	Soluble salts (mmho/cm)	Organic matter (%)	P	K	Ca	Mg	Na	S	Sum of cations (CEC)
			----------	----------	----------	ppm	----------	----------	
	0.564	0.42	45.0	111.5	729.3	159.0	73.4	40.6	5.57
68	(0.116)	(0.04)	(8.0)	(23.8)	(87.0)	(19.3)	(9.4	(7.5)	(0.45)
	0.522	0.52	52.3	153.8	1004.0	200.3	83.3	37.9	7.45
82	(0.135)	(0.04)	(9.3)	(24.6)	(201.3)	(15.9)	(16.5	(10.2)	(0.95)
	0.407	0.47	88.7	220.5	971.3	192.1	80.1	35.7	7.37
96	(0.114)	(0.05)	(14.3)	(27.8)	(244.0)	(11.2)	(21.2	(13.1)	(1.09)
	0.273	0.47	60.8	173.8	855.4	193.4	55.2	15.8	6.58
110	(0.054)	(0.22)	(10.0)	(20.5)	(99.1)	(8.0)	(7.2	(6.9)	(0.43)
	0.304	0.35	66.3	169.5	856.9	185.1	64.0	27.9	6.54
124	(0.095)	(0.05)	(8.8)	(19.0)	(150.3)	(8.1)	(19.4)	(9.9)	(0.67)
	0.685	0.44	63.5	133.6	963.4	180.6	116.5	51.1	7.17
138	(0.140)	(0.05)	(9.0)	(30.5)	(129.2)	(23.4)	(24.2)	(6.8)	(0.65)
	0.170	0.50	60.6	150.5	889.7	184.6	31.1	13.2	6.51
152	(0.026)	(0.05)	(11.3)	(24.0)	(47.5)	(9.2)	(7.9)	(5.6)	(0.21)

[1]Abbreviations: DAP = days after planting, P = phosphorus, K = potassium, Ca = calcium, Na = sodium, S = sulfate. Values in parenthesis represent the standard deviation of the mean.

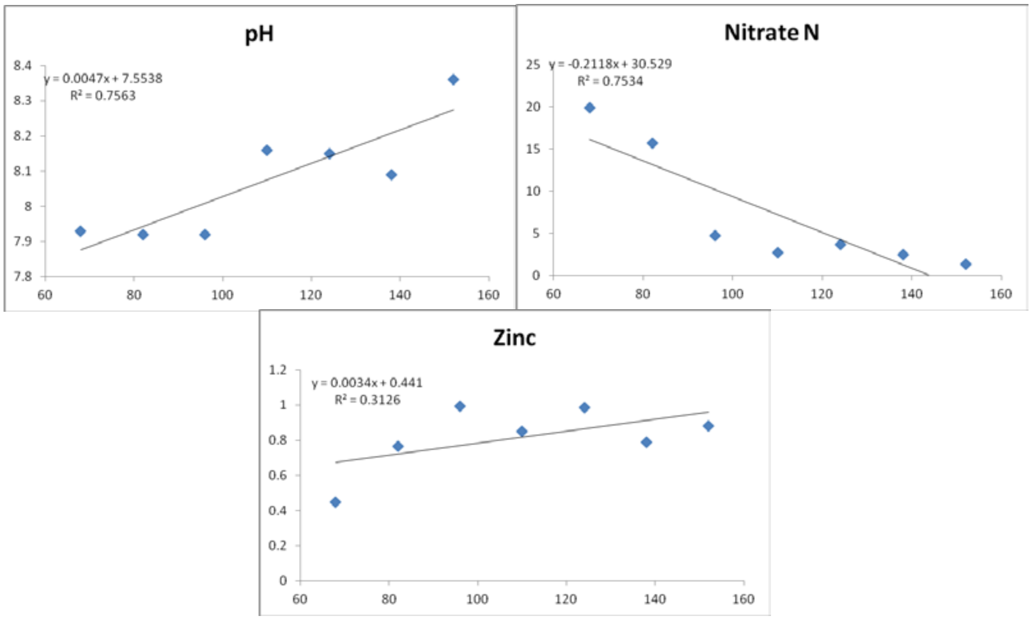

Figure 7. Changes in soil pH (top left), nitrate nitrogen (top right) and zinc concentrations. Nitrate and zinc concentrations are in parts per million (ppm).

Water monitoring: Regressions of calcium, magnesium, phosphorus, potassium and sodium showed no accumulation over time (data not shown). The pH of irrigation water increased substantially over the test period (7.6 to 8.1) (Fig. 8 a). When looking at the relationship between total cations such as calcium, magnesium, sodium, potassium and zinc and the pH of the irrigation water, it appears that those ions are more readily available and pH levels ≤ 7.7 (Fig. 8 b). Cation concentrations did not differ at pH levels 7.8 to 8.3.

Peanut growth and development: The density of the peanut canopy followed a linear trend (Fig. 9 a). This was evident throughout the growing season, as complete canopy was not observed until late October. The sparse canopy developed contributed to the lack of humidity, which resulted in delayed flowering (Fig. 9 b). The delayed development of pegs and pods (Fig. 9 b), also contributed to the lateness of the crop.

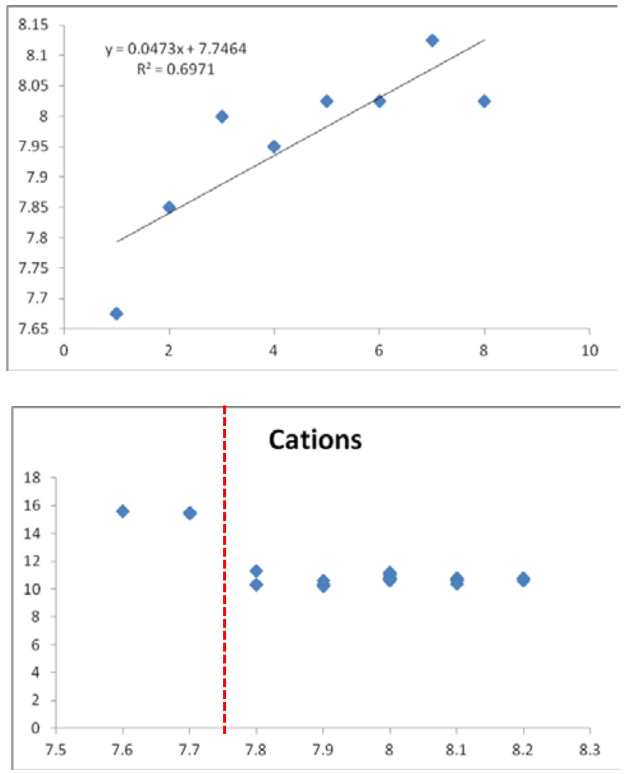

Figure 8. Changes in pH of irrigation water over time (top) and relationship of cations (positively charged ions) and the pH of irrigation water. The vertical red line denotes potential differences in plant available ions (such as calcium).

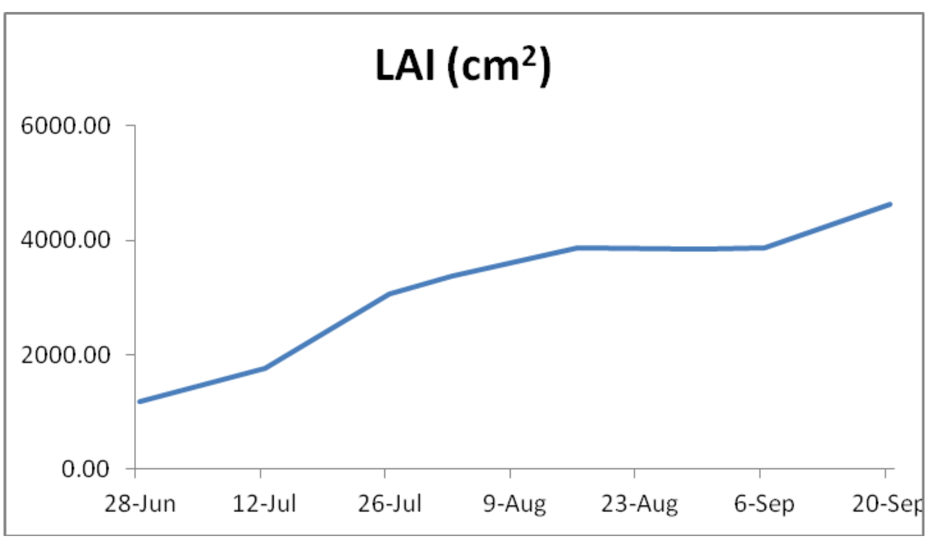

Figure 9. Estimates of canopy denisty, based on leaf area index (LAI), throughout the growing season.

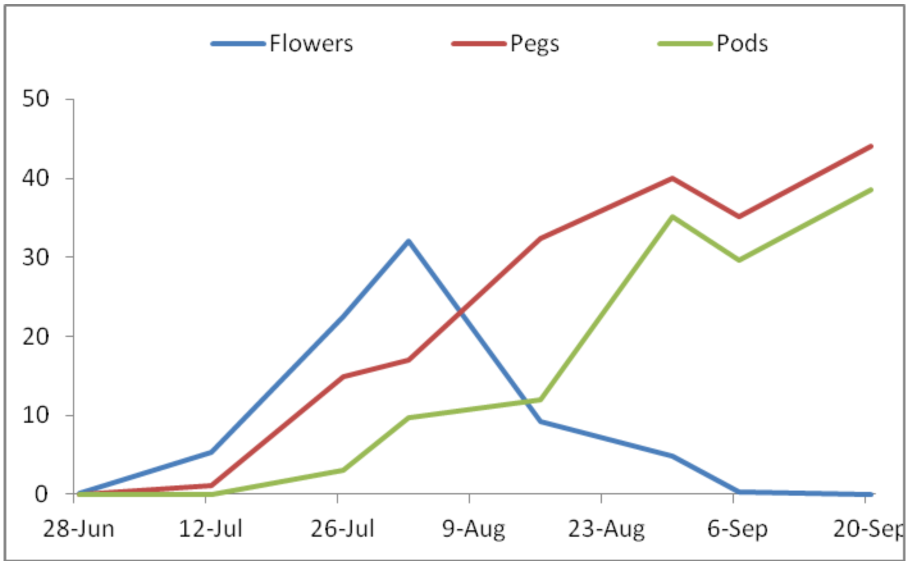

Figure 10. Estimates of the number of flowers, pegs and pods produced throughout the growing season.

Field trials: Field trials conducted at the AG-CARES facility and Halfway farm were lost due to poor pollination and pod set resulting from extremely high temperatures, low humidity within the canopy, a lack of rainfall and supplemental irrigation being provided via drag hoses (low-energy precision application system; LEPA).

Greenhouse studies: These studies have yet to be initiated.

Conclusions

Pod rot management in Georgia is achieved mostly through the use of calcium sources, such as gypsum. This response in calcium is observed due to low soil concentration and near neutral soil pH conditions. In contrast, soils in the Southern High Plains have relatively high levels of calcium and are alkaline (pH greater than 7.5). Very seldom is a response to supplemental calcium observed in the region. Results from these studies suggest that the pH of soil and/or irrigation may adversely affect the availability of calcium, thus potentially contributing to the severity of pod rot in the High Plains. As pod rot remains the most economically important disease throughout much of Texas, additional studies evaluating the interaction(s) among irrigation and soil chemical parameters are warranted.

Diagnosis of peanut diseases in 2011.

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Summary

Overall, pod rot pressure was low in 2011. Several samples of Pythium (Fig. 10) and Rhizoctonia (Fig. 11) were diagnosed through the lab. Despite a general lack of pod rot several unique diseases were observed in peanuts during the course of the year. This was more than likely due to the severity of the drought and high temperatures experienced throughout much of the season. An increase in Southern blight, caused by *Sclerotium rolfsii*, (Fig. 12) incidence was noted in several fields in Gaines and Terry counties as well as areas off of the High Plains, predominantly Collingsworth Co. Southern blight generally occurs later in the growing season as the residual effects of fungicide applications targeting pod rot break. Fewer fungicide applications were made in 2011 for pod rot, thus the onset of Southern blight was earlier. Furthermore, fluctuations in soil temperature and moisture may have contributed to increased incidence of the disease. Likewise, these conditions were favorable for the development of crown rot, caused by *Aspergillus niger*, (Fig. 12). Observations of crown rot killing completely mature plants, predominantly Spanish market-types, were made late in the season (mid to late August). Currently, there are no fungicides labeled for crown rot in peanut; therefore, management options are limited. Fortunately, the potential for severe losses to be incurred were minimal due to the late onset of the disease. Despite the hot, dry conditions no samples diagnosed throughout the year showed positive for aflatoxin (or isolation of *A. flavus* or *A. parasiticus*). Numerous samples exhibiting salt damage (Fig. 13) were received by the lab. Of which a *Fusarium* sp. was routinely isolated from damaged plants. Salt injury was similar in appearance to Verticillium wilt; however, subtle differences in the progression of symptoms (most notably the discoloration of xylem elements in petioles) were used to differentiate the two.

Figure 11. Symptoms of Pythium pod rot (left) and cultural characteristics of the fungus on potato dextrose agar.

Figure 12. Symptoms of Rhizoctonia pod rot (left) and cultural characteristics of the fungus on potato dextrose agar.

Figure 13. Appearance of Southern stem rot (left) and Aspergillus crown rot (right) on peanut plants in the field.

Figure 14. Symptoms of salt injury on the margin of peanut leaves.

Objective 2: IMPROVING ON THE MANAGEMENT OF PEANUT LEAF SPOT.

Use of varieties, fungicides and spray programs in south Texas peanut production

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James Grichar, Texas AgriLife Research, Beeville
Jason Woodward, Texas AgriLife Extension, Lubbock
Michael Baring, Texas AgriLife Research, College Station

Summary

Six peanut varieties and two separate fungicide spray programs were evaluated for yield and economic value in the 2011 test. Disease control for foliar and soilborne disease were not evaluated due to hot, dry, scarce rainfall conditions (drought of 2011) which resulted in non-existent conditions for disease development. Three commercial varieties and three advanced breeding lines were included in the test. Commercial varieties included Red River Runner, Tamrun OLO7 and FloRun 107. Breeding lines included PM-2, Line 1304, and Tamrun OL11. Spray program 1 used Bravo WeatherStik fungicide. Spray program 2 used Provost, Abound, and Bravo WeatherStik fungicide. There was no statistical difference between respective variety and spray program including unsprayed. Red River Runner, Tamrun OL11 and FL07 had the highest values from yield, grade and dollar per acre across treatments. PM-2, 1304 and Tamrun OLO7 provided respectable yields although grades were lower than the other treatments.

Materials and methods

All peanut entries in the test were high oleic type. The test was located in a south Texas grower field near Dilley, Texas in Frio County. The test was planted in a split – plot design with three replicates. Plots were two rows spaced 36 inches apart, each 20 feet long. Peanuts were planted with a precision cone planter. Blocks of each of the six peanut entries were planted in each of the replicates to be unsprayed and sprayed three times each under two separate fungicide programs. Spray program 1 used Bravo WeatherStik (1.5 pt. /A) for sprays 1, 2, and 3. Spray program 2 used Provost (8.0 fl. oz. /A) for spray 1, Abound (18.4 fl. oz. /A) for spray 2, and Bravo WeatherStik (1.5 pt. /A) for spray 3. Fungicides for each program were applied at 36, 98 and 127 days after planting. Fungicides were applied with a CO^2 pressurized (56 psi) belt-pack sprayer equipped with a two-row hand-held boom with three nozzles (D2 tips, #23 cores and slotted strainers) per row. Spray rate was 15 gallons per acre at 3.0 mph walking speed. The grower followed standard practices for land preparation, fertility and weed control. The field was sprinkler irrigated as needed with a center pivot system. The test plots were dug with a tractor mounted mechanical digger which inverted the plants. Plants were air dried in the field until test plots were combined and pods sacked. Samples were then force air dried to 10% moisture, cleaned of debris and weighed to determine yield. Grade samples were removed from each plots yield to determine grade and economic value. Data from the test was statistically analyzed.

Results and discussion

The growing season was characterized as very hot and dry with temperatures over 100° F and scarce rainfall (2011 drought). Although the test field was irrigated, humidity level and leaf wetness periods were not conducive to disease development. As a result, disease ratings for foliar disease and soilborne disease were omitted due to lack of these symptoms caused by these pathogens. Red River Runner, Tamrun OL11 and FLO7 had top values for yield, grade and economic value. PM-2, 1304 and Tamrun OLO7 had respectable yields although grades were lower than the other varieties (Table 7).

Table 7. Variety/Fungicide Data from Frio County, 2011[1]

Variety/Program	Yield lb/A	Grade	$/Acre
PM-2 (Unsprayed)	4780 d	68 gh	821.55 de
PM-2 (3 Spray 1)	4961 cd	68 gh	849.73 cde
PM-2 (3 Spray 2)	5360 bcd	69 e-h	929.73 b-e
1304 (Unsprayed)	5082 cd	67 h	857.73 cde
1304 (3 Spray 1)	5506 a-d	67 h	925.76 cde
1304 (3 Spray 2)	5929 a-d	68 h	1000.78 a-e
Red River Runner (Unsprayed)	6014 a-d	74 a-d	1105.96 abc
Red River Runner (3 Spray 1)	6607 ab	73 a-d	1200.52 ab
Red River Runner (3 Spray 2)	6474 abc	75 ab	1200.86 ab
Tamrun OL11 (Unsprayed)	5990 a-d	74 abc	1105.13 abc
Tamrun OL11 (3 Spray 1)	5556 a-d	74 a-d	1025.88 a-e
Tamrun OL11 (3 Spray 2)	5723 a-d	76 a	1075.30 a-d
Florida-07 (Unsprayed)	5566 a-d	72 b-e	990.36 a-e
Florida-07 (3 Spray 1)	5627 a-d	71 c-f	989.86 a-e
Florida-07 (3 Spray 2)	6958 a	71 d-g	1216.02 a
Tamrun OLO7 (Unsprayed)	5288 bcd	67 h	894.92 cde
Tamrun OLO7 (3 Spray 1)	5143 bcd	68 fgh	879.77 cde
Tamrun OLO7 (3 Spray 2)	4536 d	69 eh	785.03 e

[1] Means in a column followed by the same letter indicate Duncan's New Multiple Range groupings of treatments which do not differ significantly (P=0.05).

Objective 3: IMPROVING ON THE MANAGEMENT OF VERTICILLIUM WILT.

Screening for resistance to Verticillium wilt in commercially available peanut cultivars and advanced breeding lines.

Jason Woodward, Texas AgriLife Extension Service, Lubbock
Todd Baughman, Texas AgriLife Extension Service, Vernon

Summary

Two Runner trials and one Virginia trial were conducted on the Southern High Plains of Texas to evaluate the performance of peanut cultivars and breeding lines in fields with a history of Verticillium wilt. Disease onset was delayed until mid-September due to the hot, dry conditions experienced throughout much of the growing season; however, relatively high levels of disease were observed at all locations. Differences in disease incidence were observed among the cultivars and breeding lines evaluated in both market-types. Pod yields were negatively correlated with disease incidence in both Runner trials, but not in the Virginia trial. Tamnut OL06 had among the highest incidence in both Runner trials. Spanish types are reported to be more susceptible to Vertcillium wilt.

Materials and methods

Field trials were conducted in fields with a history of Verticillium wilt. The Runner cultivars ACI-149, Flavor Runner 458, Georgia-09B, McCloud, Red River Runner, Tamnut OL06, Tamrun OL02 Tamrun OL07 and Tamrun OL1 and breeding lines PR-2, TX 1304, TX 1816 and TX 1821 as well as the Virginia cultivarsAT-07-V, Florida Fancy, Georgia-08V and Gregory and breeding lines AU-1101, NC08070OLJC and NC08085OLJCT were evaluated. Treatments were arranged in a randomized complete block design with 4-6 replications. All production practices were at the discretion of the collaborating producer. Disease assessments were made prior to digging by assessing the number of plants within one foot of row exhibiting Verticillium wilt symptoms (Fig. 14).

Figure 15. Foliar symptoms of Verticillium wilt (left) and discolored petioles of symptomatic peanut leaves.

Results and discussion

While the environmental conditions experienced throughout the growing season were not favorable Verticillium wilt development appreciable levels of disease were observed in all trials. The late on-set of disease mitigated losses as severity of disease was moderate (data not shown). This tended to corresponded with cooler temperatures and continued irrigation late in the growing season. None of the infected plants died due to the disease. The majority of symptoms were observed in the upper canopy.

Runner trial (Terry Co.): Disease incidence ranged from 10.0 to 64.7% for the breeding lines PR-2 and TX06182, respectively (Table 8). The breeding line TX1304 and cultivar Tamrun OL11 also exhibited relatively low levels of disease. Cultivars developed at the University of Florida (FloRun 107 and McCloud) and The University of Georgia (Georgia-09B) exhibited similar levels of disease. Disease incidence of Tamnut OL06, which is a Spanish market-type and serves as a susceptible control, was similar to breeding lines TX06128 and TX061816. Yields were highest for Red River Runner, FloRun 107, Tamrun OL11, Tamrun OL02, PR-2, TX1304, Tamrun OL07 and Flavor Runner 458. The range for the aforementioned cultivars ranged from 3,201 to 4,131 lb/A. Yields for TX061816, Tamnut OL06, Georgia-09B and TX06182 were less than 2,800 lb/A. Grades were greatest for TX1816 (62.4%) and lowest for ACI-149 (47.5%).

Table 8. Performance of Runner peanut cultivars in a field with a history of Verticillium wilt in Terry Co.[1]

Cultivar or *breeding line*	**Disease incidence (%)**		**Pod yield (lb/acre)**		**Grade (TSMK+SS)**
Red River Runner	35.3	b-f	4,131	a	53.2 b-e
FloRun 107	22.7	fg	3,911	ab	59.3 a-c
Tamrun OL11	22.7	fg	3,754	a-c	50.1 de
Tamrun OL02	44.7	b-d	3,605	a-d	56.2 a-e
PR-2	10.0	g	3,350	a-e	51.9 b-e
TX1304	21.3	fg	3,341	a-e	53.5 b-e
Tamrun OL07	34.0	b-f	3,218	b-e	50.9 c-e
Flavor Runner 458	41.3	b-e	3,201	b-f	49.4 de
McCloud	26.7	d-g	2,937	c-g	52.6 b-e
ACI-149	32.0	c-f	2,830	d-g	47.5 e
TX061821	64.7	a	2,772	d-g	57.4 a-d
Georgia-09B	26.0	e-g	2,670	e-g	60.3 ab
Tamnut OL06	52.0	ab	2,318	fg	55.0 a-e
TX061816	46.7	a-c	2,148	g	62.4 a

[1]Data are the means of six replications. Means within a column followed by the same letter are not significantly different according to Fisher's protected LSD. Disease incidence was assessed prior to digging by determining the number of row feet exhibiting symptoms of Verticillium wilt. TSMK+SS represents total sound mature kernels + sound splits.

Runner trial (Gaines Co.): Disease incidence ranged from 9.8 to 55.8% for the Tamrun OL11 and Tamnut OL06, respectively (Table 9). The cultivars Tamrun OL07 and Georgia-09B and the breeding line PR-2 had a low incidence (<15%) of Verticillium. Disease incidence for the breeding lines TX06128 and TX061816 were similar to Tamnut OL06. Yields were highest for Red River Runner, TX1304, ACI-149, Tamrun OL07, Tamrun OL11, McCloud, PR-2, Flavor Runner 458 and Georgia-09B. Yields were lowest for Tamnut OL06 (2,143 lb/A0 and intermediate for breeding lines TX06128 and TX061816 (3880 and 3657 lb/A, respectively) and Tamrun OL02 (4,220 lb/A). Grades were generally high, with ACI-149, Flavor Runner 458 and Georgia-09B having the highest grades (72.3%). Several cultivars and breeding lines had grades greater than 71.0%. Grades were lowest for PR-2, Tamnut OL06 and Tamrun OL07.

Table 9. Performance of Runner peanut cultivars in a field with a history of Verticillium wilt in western Gaines Co.[1]

Cultivar or *breeding line*	**Disease incidence (%)**		**Pod yield (lb/acre)**		**Grade (TSMK+SS)**	
Red River Runner	35.3	b-f	4,813	a	71.2	a-c
TX1304	22.3	cd	4,737	ab	71.0	a-d
ACI-149	28.0	bc	4,657	ab	72.3	a
Tamrun OL07	14.8	e	4,513	a-c	70.0	b-e
Tamrun OL11	9.8	e	4,440	a-c	72.2	a
McCloud	25.0	bc	4,400	a-c	70.6	a-d
PR-2	14.8	de	4,347	a-d	69.4	b-e
Flavor Runner 458	32.3	b	4,340	a-d	72.3	a
Georgia-09B	12.5	de	4,273	a-d	72.3	a
Tamrun OL02	26.8	b	4,220	b-d	71.2	a-c
TX1821	45.0	a	3,880	c-e	72.0	a
TX1816	45.8	a	3,657	de	72.5	a
Tamnut OL06	55.8	a	2,143	f	69.6	b-e

[1]Data are the means of six replications. Means within a column followed by the same letter are not significantly different according to Fisher's protected LSD. Disease incidence was assessed prior to digging by determining the number of row feet exhibiting symptoms of Verticillium wilt. TSMK+SS represents total sound mature kernels + sound splits.

Virginia trial: Disease incidence was greatest for the breeding line NC-8085 (49.3%) and lowest for NC-8070 (20.0%) (Table 10). Florida Fancy, Gregory and AT07-V exhibited disease levels similar to NC-8070; whereas, disease incidence for AU1101 and Georgia-08V were intermediate. Pod yields were not correlated with disease incidence. Yields were lowest for Gregory (2,923 lb/A) and highest for the breeding lines NC-8085 and AU-1101 (4,043 and 3,740 lb/A, respectively) and the cultivar Georgia-08V (3,479 lb/A). Yields of Florida Fancy, NC-8070 and AT07-V were intermediate ranging from 3,168 and 3,336 lb/A. No differences in any of the grade factors were observed among the cultivars or breeding lines evaluated.

Table 10. Performance of Virginia peanut cultivars in a field with a history of Verticillium wilt in Terry Co.[1]

Cultivar or breeding line	Disease incidence (%)		Pod yield (lb/acre)		Grade (TSMK+SS)		Jumbo (%)	
NC-8085	49.3	a	4,034	a	55.2	a	25.0	a
AU-1101	38.0	ab	3,740	ab	55.1	a	26.0	a
Georgia-08V	40.7	ab	3,479	a-c	56.2	a	29.2	a
Florida Fancy	20.7	b	3,336	bc	60.4	a	27.8	a
NC-8070	20.0	b	3,267	bc	57.0	a	29.8	a
AT07-V	25.3	b	3,168	bc	58.3	a	29.9	a
Gregory	22.0	b	2,923	c	53.3	a	22.5	a

[1]Data are the means of four replications. Means within a column followed by the same letter are not significantly different according to Fisher's protected LSD.

Conclusions

Verticillium wilt is an increasingly important disease on the Southern High Plains. Differences in cultivars were observed among the Runner and Virginia genotypes evaluated. Overall, the majority of peanut cultivars evaluated can tolerate moderate to high levels of disease; however, producers continue to be concerned about the declining appearance and integrity of vines in the field. This often results in plants being dug prematurely to minimize harvest loss. Additional studies are needed to better determine the performance of cultivars and breeding lines under field conditions.

Objective 4: **IMPROVING UPON THE MANAGEMENT OF SCLEROTINIA BLIGHT.**

Fungicide efficacy and the response of peanut genotypes for management of Sclerotinia blight in Texas.

Jason Woodward, Texas AgriLife Extension, Texas Tech University, Lubbock
Todd Baughman, Texas AgriLife Extension Service, Vernon

Summary

Sclerotinia blight, caused by the soilborne fungus *Sclerotinia minor*, is a devastating disease of peanut. Effective management strategies for this disease contain combinations of cultural practices such as crop rotation, utilization of partially resistant cultivars, and preventative applications of fungicides. Small plot studies conducted at the Texas AgriLife Research and Extension Center in Stephenville are conducted to evaluate both cultivar performance and fungicide efficacy. Results have shown a yield response in partially resistant cultivars, such as red River Runner, Tamrun OL07 and Tamrun OL11 to the fungicides Omega and Endura. Additional studies have shown that the products Fontelis and Propulse from DuPont and Bayer respectively have activity on Sclerotinia blight. Additional studies are needed to better define use rates and application timings for these products.

Materials and methods

These trials are planted late in the growing season (15-June) in order to maximize the potential for disease development late in the growing season. The fields, which are characterized as Sclerotinia nurseries have a history of severe disease. Studies are repeated in these fields for several years to maximize disease potential. Abundant supplemental irrigation is applied throughout the season to promote dense plant growth and create conducive environmental conditions.

Fungicide × cultivar trial: A field trial was conducted at to evaluate the interaction between fungicides with Sclerotinia activity and cultivars with varying disease responses. Plots (two 36-in rows by 25 ft) were arranged in a split-plot design with four replications. Whole plot treatments consisted of the fungicide Propulse (13.7 fl oz/A) and an untreated control, the cultivars Flavor Runner 458, Tamrun OL02, Red River Runner, Tamrun OL07 and Tamrun OL11 served as sub-plots. Applications were made 75 and 105 days after planting (DAP). Plots were cover sprayed with Bravo WeatherStik to minimize leaf spot development. Disease ratings were made mid-season and just prior to digging.

Fungicide efficacy trials: An additional trial was planted to evaluate the performance of the fungicide Fontelis. Similar studies have been conducted over the past three years. A comprehensive summary of the performance of this product is included in this report. Treatments in this trial were arranged in a randomized complete block with 5 and 8 replications for the two trials, respectively.

Results and discussion

Fungicide × cultivar trial: Overall, disease severity was high in all plots and differences in disease control were observed (Table 11). There was no significant cultivar × fungicide interaction; therefore, data were pooled across cultivars and fungicide treatments (allowing for the comparison of main effects). Disease incidence was 25.3 and 22.9% for Flavor Runner 458 and Tamrun OL02, respectively. Disease incidence was lower for Tamrun OL11 (10.2%), Tamrun OL07 (14.2%) and Red River Runner (15.2%). Increased disease incidence negatively affected yield. Pod yields were lowest for Tamrun OL02 and Flavor Runner 458 at 1,693 and 1,912 lb/A. respectively; whereas, yields for Tamrun OL07, Red River Runner and Tamrun OL11 were 3,070, 3,124 and 3,851 lb/A, respectively. When averaged across all cultivars, the application of Propulse reduced disease incidence by 66% compared to the non-treated control. A corresponding increase in yield approximately 800 lb/A was achieved with the use of Propulse.

Table 11. Performance of Runner peanut cultivars and the fungicide Propulse in a field with a history of severe Sclerotinia blight in Erath Co.[1]

Main effects	**Disease incidence**		**Pod yield**	
Cultivar	**(%)**		**(lb/acre)**	
Flavor Runner 458	25.3	a	1,912	b
Tamrun OL02	22.9	a	1,693	b
Red River Runner	15.2	b	3,124	a
Tamrun OL07	14.2	b	3,070	a
Tamrun OL11	10.2	b	3,851	a
Fungicide				
Non-treated	21.3	A	2,332	B
Propulse (10.7 fl oz/A)	14.1	B	3,128	A

[1]Data are the means of six replications. Means within a column followed by the same letter are not significantly different according to Fisher's protected LSD. Disease incidence was assessed prior to digging by determining the number of row feet exhibiting symptoms of Sclerotinia blight or signs of *Sclerotinia minor*.

Fungicide efficacy trials: Disease incidence in 2011was comparable to what has been observed in previous years (Table 12). In general, higher rates of Fontelis (1.5 pt/A) provided better control of Sclerotinia blight compared to the lower (1.0 pt/A) rate; however, the performance of Fontelis is more sporadic than Omega or Endura. In 2011, the higher rate of Fontelis provided a similar level of disease control compared to Omega; however, yields for Fontelis treated plots were 461 lb/A lower than plots treated with Omega. While yields for the 1.0 pt/A rate of Fontelis did not differ from the control, an increase of approximately 1,400 lb/A over the control was achieved when the 1.5 pt/A rate was used.

Table 12. Comprehensive summary on the performance of the fungicide Fontelis in fields with a history of severe Sclerotinia blight in Erath Co.[1]

Fungicide (rate/A)	2008	2009	2010	2011
	Disease incidence (%)			
Control	49.0 a	52.3 a	44.8 a	42.8 a
Omega (1.5 pt)	31.7 b	27.5 b	13.2 c	6.4 d
Endura (10 oz)	24.2 b	21.3 b	- - -	- - -
Fontelis (1.0 pt)	36.0 ab	20.6 b	43.2 a	26.8 b
Fontelis (1.5 pt)	33.7 ab	27.1 b	28.4 b	12.8 cd
	Pod yield (lb/A)			
Control	3,688 c	2,785 c	2,834 b	2,226 c
Omega (1.5 pt)	4,575 a	3,460 ab	3,386 a	4,095 a
Endura (10 oz)	4,308 ab	3,703 a	- - -	- - -
Fontelis (1.0 pt)	3,775 bc	3,037 bc	2,840 b	2,430 c
Fontelis (1.5 pt)	4,150 ab	3,424 a-c	3,113 ab	3,634 b

[1]Data are the means of four to six replications. Means within a column followed by the same letter are not significantly different according to Fisher's protected LSD. Disease incidence was assessed prior to digging by determining the number of row feet exhibiting symptoms of Sclerotinia blight or signs of *Sclerotinia minor*.

Conclusions

The selection of partially resistant cultivars is critical for minimizing losses due to Sclerotinia blight; however, the application of fungicides generally improved yields. Results from these studies verify previous reports that yields for Tamrun OL07 are generally 500 to 1,100 lb/A greater than Flavor Runner 458. Moreover, yields of Tamrun OL11 (previously tested as TX55308) are superior (~800 lb/A) to Tamrun OL07 and Red River Runner. Furthermore, grades for Tamrun OL11 are equivalent to or greater than Flavor Runner 458, and substantially higher than Tamrun OL07. The fungicides Omega and Endura remain the commercial standards for Sclerotinia blight control and exhibit value when preventative applications are made. The new fungicides Fontelis and Propulse appear to have activity against *S. minor*, providing additional chemical management options for controlling this disease. Continued research is needed to fully understand the benefits these products provide. Additional studies evaluating the response of commercially available cultivars and advanced breeding lines to these and other fungicides are need so that yields and profits can be maximized.

2011 Texas Peanut Variety Survey

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Summary

Texas peanut variety usage in 2011 was estimated from USDA FSA County Acreage Reporting by market type, a survey of peanut seed companies in Texas, Oklahoma, and New Mexico that sold seed for planting in Texas, and other sources. Compared to 2010, Texas growers decreased plantings of all market type: runner (-25%), virginia (-28%), spanish (-69%) and valencia (-46%). Total 2011 peanut planted acres were 35.4% less than 2010 and 35.0% less than 2009. Percent market type acres in 2011 were 55% runner, 30% virginia, 9% spanish, and 6% valencia. Flavor Runner 458 remained the most commonly planted variety in Texas (20% overall, 36% of runners). Gregory was second most commonly planted variety and the most common virginia variety (17% overall, 55% of virginias). Florida 07 was the third most commonly planted variety in Texas and the second most common runner variety (12% overall, 22% of runners). TamrunOL07 was the fourth most commonly planted variety and the third most common runner variety (10% overall, 18% of runners). Florida Fancy was the fifth most commonly planted variety and the second most used virginia variety (8% overall, 25% of virginias). High OL oil varieties were planted on approximately 73,248 acres (71%) in Texas in 2011, and these acres were 77% runner, 12% Spanish, 11% virginia, and 0% valencia. Acres planted with high OL varieties represented 100% of runner, 25% of virginia, 100% of spanish, and 0% of valencia market types. Varieties released by TAMU plant breeders were planted on 25% of all peanut acres (19% '97, 21% '98, 29% '99, 20% '00, 22% '01, 24% '02, 29% '03, 33% '04, 38% '05, 40% '06, 36% ‘07, 35% ‘08, 31% ‘09, 26% ‘10) representing 32% of all runner, 82% of all spanish, and 0% of virginia and valencia acres.

Results and discussion

Relative runner usage in Texas rebounded a little in 2011 (average 75% acres ’97-'02; average 60% acres '03-'08, average 49% acres '09-'10, 55% acres ’11)(Table 13). Percent acres planted to FlavorRunner458 was the lowest in 12 years (overall: 25% '00, 29% '01, 33% '02, 36% '03, 32% '04, 28% '05, 29% '06, 31% '07, 37% ‘08, 31% ‘09, 23% ‘10, 20% ‘11). FlavorRunner458 has been the most commonly planted peanut variety in Texas for 12 consecutive years. Relative use of TamrunOL07 increased in 2011 (overall: 0.01% '06, 0.2% '07, 2% ‘08, 6% ‘09, 8% ‘10, 10% ‘11). Use of TamrunOL01 peaked in 2005 (overall: 0.3% '02, 6% '03, 12% '04, 14% '05, 8% '06, 11% '07, 8% ‘08, 7% ‘09, 4% ‘10, 7% ‘11). Use of TamrunOL02 continued to decrease after peaking in 2006 (overall: 0.2% '03, 2% '04, 6% '05, 21% '06, 12% '07, 12% ‘08, 5% ‘09, 1% ‘10, 0.8% ‘11).

Virginia market type usage in Texas set a second consecutive record high in 2011 (10% '97, 14% '98, 10% '99, 11% '00, 9% '01, 12% '02, 16% '03, 19% '04, 14% '05, 13% '06, 20% '07, 17% ‘08, 19% ‘09, 27% ‘10, 30% ‘11). Gregory (within market type: 0.1%

'00, 0% '01, 6% '02, 1% '03, 7% '04, 13% '05, 29% '06, 49% '07, 58% ‘08, 56% ‘09, 48% ‘10, 55% ‘11) continues to lead replacements for the former standard NC 7 (within market type: 100% '97, 100% '98, 98% '99, 75% '00, 81% '01, 65% '02, 59% '03, 37% '04, 40% '05, 40% '06, 30 '07, 13% ‘08, 5% ‘09, 4% ‘10, 0% ‘11). Florida Fancy was the second most used virginia in 2011 (within market type: 0.3% ‘09, 16% ‘10, 25% ‘11).

Relative use of spanish market type varieties was similar to the lows of 1999 to 2001 (17% '97, 12% '98, 10% '99, 9% '00, 10% '01, 14% '02, 19% '03, 14% '04, 18% '05, 16% '06, 16% '07, 15% ‘08, 16% ‘09, 18% ‘10, 9% ‘11). Tamnut OL06 , the most common spanish variety in 2011 (within market type: 0.3% '06, 4% '07, 25% ‘08, 43% ‘09, 42% ‘10, 72% ‘11) has seed size and shape similar to most runners, but spanish plant type and days-to-maturity.

Valencias had the lowest usage among market types in 2011 (3% '97, 3% '98, 1% '99, 1% '00, 2% '01, 2% '02, 4% '03, 4% '04, 7% '05, 9% '06, 9% '07, 7% ‘08, 14% ‘09, 8% ‘10, 6% ‘11). Valencia C was the most common valencia variety in 2011 (49% within market type; 3% overall).

Varieties released by TAMU plant breeders were planted on 25% of all peanut acres in 2011 (20% '97, 21% '98, 30% '99, 20% '00, 22% '01, 24% '02, 29% '03, 33% '04, 38% '05, 40% '06, 36% ‘07, 35% ‘08, 31% ‘09, 26% ‘10), accounting for 32% of runner, 82% of spanish, 0% of virginia, and 0% of valencia acres. TAMU breeders recently began work on virginia market types.

Preference for varieties with improved oil quality (high O:L ratio) continued in Texas in 2011 (overall acres: 5% '97, 6% '98, 18% '99, 28% '00, 32% '01, 41% '02, 45% '03, 50% '04, 54% '05, 68% '06, 65% '07, 70% ‘08, 68% ‘09, 70% ‘10, 71% ‘11). Total acres planted with high OL oil varieties in 2011 were mostly runners (77% runner, 12% spanish, 11% virginia, 0% valencia). High OL varieties in 2011 accounted for 100% of runner, 100% of spanish, 25% of virginia, and 0% of Valencia acres.

Factors affecting variety choice include yield and grade potential; high OL oil; other seed quality issues; seed size; partial resistance to Sclerotinia blight (caused mostly by *Sclerotinia minor*) and spotted wilt (caused by *Tomato spotted wilt virus*); and early maturity; and yield and quality loss from pod disorders (“pod rots”).

The top four peanut producing counties in Texas were Gaines (19,188 acres), Frio (14,460 acres), Yoakum (10,155 acres) and Terry (10,000 acres).

Table 13. 2011 Texas Peanut Variety Survey.

A. Variety[y] within market type

		Pounds	Percent lbs.	Acres	Percent acres[z]
Runner	*FlavorRunner458*	2,290,000	37.1	20,265	35.9
	Florida07	1,391,050	22.6	12,310	21.8
	TamrunOL07	1,040,500	16.9	10,405	18.4
	TamrunOL01	789,400	12.8	6,986	12.4
	Georgia09B	144,650	2.4	1,447	2.6
	Red River Runner	83,410	1.4	834	1.5
	Other (3)	427,050	6.9	4,272	7.6
All runner					
		6,166,060	100	56,518	100
Virginia	Gregory	1,797,100	54.6	16,954	54.6
	FloridaFancy	829,350	25.2	7,824	25.2
	Perry	229,200	7.0	2,162	7.0
	Other (2)	434,397	13.2	4,098	13.2
All Virginia		3,290,047	100	31,038	100
Spanish	*TamnutOL06*	837,630	72.3	6,443	72.3
	Other (2)	320,220	27.7	2,463	27.7
All spanish		1,157,850	100	8,907	100
Valencia	ValenciaC	234,080	48.5	3,121	48.5
	Other (8)	248,970	51.6	3,319	51.6
All valencia		483,050	100	6,441	100

B. Overall by variety

Market type, Variety		Pounds	Percent lbs.	Acres	Percent acres
Runner	*FlavorRunner458*	2,290,000	20.6	20,265	19.7
	Florida07	1,391,050	12.5	12,310	12.0
	TamrunOL07	1,040,500	9.4	10,405	10.1
	TamrunOL01	789,400	7.1	6,986	6.8
	Georgia09B	144,650	1.3	1,447	1.4
	Red River Runner	83,410	0.8	834	0.8
	Other (3)	427,050	3.9	4,272	4.2
Virginia	Gregory	1,797,100	16.2	16,954	16.5
	FloridaFancy	829,350	7.5	7,824	7.6
	Perry	229,200	2.1	2,162	2.1
	Other (2)	434,397	3.9	4,098	4.0
Spanish	*TamnutOL06*	837,630	7.6	6,443	6.3
	Other (*2*)	320,220	2.9	2,463	2.4
Valencia	ValenciaC	234,080	2.1	3,121	3.0
	Other (8)	248,970	2.2	3,319	3.2
All varieties		11,097,007	100	102,903	100

Table 13. cont.

C. Overall by market type

Market type	Pounds	Percent lbs.	Acres	Percent acres
Runner	6,166,060	55.6	56,518	54.9
Virginia	3,290,047	29.7	31,038	30.2
Spanish	1,157,850	10.4	8,907	8.7
Valencia	483,050	4.4	6,441	6.3
All market types	11,097,007	100	102,903	100

[y]Variety name in *italics* indicates high OL seed oil. One mid OL variety was not included in estimates of high OL variety usage.

[z]Assumptions: estimated average seeding rates in 2011 by variety or market type for both irrigated and dryland acres were runner 113 lb/ac (FlavorRunner458, Florida07, TamrunOL01), or 100 lb/ac (all others); virginia 106 lb/ac; spanish 130 lb/ac; and valencia 75 lb/ac.

PEANUT PRODUCTION PROJECTS (AGRONOMY)

Performance of peanut cultivars in the High Plains and Rolling Plains of Texas.

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Summary

Cultivar selection is one of the most economically important decisions peanut producers make. The development of cultivars capable of maintaining yield and grade under a wide range of conditions is important so that profitability can be maximized. Issues such as declining irrigation capacity and diseases limit production in parts of Texas. Efforts of the Texas AgriLIFE Peanut Breeding Program are to develop cultivars with improved yield potential, grades, and disease resistance. Cultivar trials were conducted throughout the High Plains, Rolling Plains and southern production region to evaluate yield potential and quality parameters of commercially available cultivars and advanced breeding lines.

Materials and methods

Small plot trials (2-rows wide by 35 to 50 feet in length) were conducted throughout the Rolling Plains, Southern High Plains and south Texas to evaluate the performance of commercially available runner and Virginia cultivars and advanced breeding lines. Trials were established in Collingsworth, Frio, Dawson, Gaines, Wilbarger and Terry counties. Cultivars were arranged in a randomized complete block design with 3-4 replications. Agronomic practices were conducted at the discretion of the coordinating growers. An additional ten studies were conducted in Dawson county (at the AG-CARES facility) to evaluate cultivar performance and/or reduced seeding rates on pod yield under varying irrigation. Those trials were constructed in a similar fashion where three levels of irrigation (base and base +/- 33%, corresponding to low, moderate and high irrigation levels, respectively) were evaluated.

Results and discussion

Dawson co. cultivar and seeding rate trials. Despite efforts at achieving useful yields, these trials were abandoned due to severe drought conditions. This was a result of poor pollination and pod set resulting from extremely high temperatures, low humidity within the canopy, a lack of rainfall and supplemental irrigation being provided via drag hoses (low-energy precision application system; LEPA).

South Texas Runner cultivar trial. Yields from this trial were among the highest of all trials conducted in 2011 (Table 14). The breeding line TX1821 had the highest yields (5,062 lb/A) followed by Red River Runner, FloRun 107, Tamrun OL11, McCloud and PR-2 which yielded 4,788, 4,557, 4,557, 4,182 and 4,075 lb/A, respectively. Yields for

Tamrun OL01 and Tamrun OL07 were lowest (2,691 and 2,821); whereas, yields for the breeding lines TX1304 and TX1816 and the cultivar Georgia-09B were intermediate. Georgia-09B and Red River Runner had the highest grades 74.5 and 73.5%, respectively. Grades for all other cultivars and breeding lines were statistically similar, averaging 69.0%.

Table 14. Performance of Runner cultivars and breeding lines in Frio Co. Texas[1]

Cultivar or breeding line	Pod yield (lb/acre)		Grade (TSMK+SS)	
TX1821	5,062	a	68.7	b
Red River Runner	4,788	ab	73.5	a
FloRun 107	4,557	ab	69.3	b
Tamrun OL11	4,557	ab	70.5	b
McCloud	4,182	ab	68.7	b
PR-2	4,075	ab	68.3	b
TX1304	3,968	b	68.7	b
TX1816	3,861	b	68.5	b
Georgia-09B	3,800	b	74.5	a
Tamrun OL07	2,821	c	69.2	b
Tamrun OL01	2,691	c	69.5	b

[1]Data are the means of four replications. Means within a column followed by the same letter are not significantly different according to Fisher's protected LSD. TSMK+SS represents total sound mature kernels + sound splits.

Runner cultivar trials (High Plains). Peanut growth and development at the Gaines County location was adversely affected by extreme dry and hot conditions throughout much of the growing season (Table 15). Pod set was severely delayed until mid-to late August. Overall, yields were poor; however, differences in the cultivars and breeding lines evaluated were observed. Yields were greatest for the breeding line TX1304 (2,836 lb/A); likewise, grades for this line were among the highest (64.1%). Yields for the other cultivars and breeding lines ranged from 813 to 2,147 lb/A for TX1816 and ACI-149, respectively. Yields of Georgia-09B and TX1821 were similar to TX1816. Grades were lowest for Flavor Runner 458 and the breeding lines PR-2 and TX1816. Grades for all other cultivars and breeding lines were intermediate.

Yields were quite variable for the Runner trial conducted in Terry Co.; however, significant differences were observed among the cultivars and breeding line evaluated (Table 16). Yields were statistically similar for all cultivars and lines tested except for Georgia-09B, FloRun 107 and TX1816. Grades were similar for all cultivars and breeding lines evaluated.

Table 15. Performance of Runner cultivars and breeding lines under moderate irrigation in Gaines Co. Texas[1]

Cultivar or breeding line	Pod yield (lb/acre)		Grade (TSMK+SS)	
TX1304	2,836	a	64.1	a
ACI-149	2,147	b	62.1	ab
Red River Runner	2,038	bc	63.7	ab
Tamrun OL11	1,953	bc	61.8	ab
Flavor Runner 458	1,928	bc	58.4	b
Tamrun OL07	1,916	bc	61.7	ab
McCloud	1,815	bc	60.8	ab
PR-2	1,563	cd	58.5	b
Georgia-09B	1,167	de	62.0	ab
TX1821	1,153	de	58.6	ab
TX1816	813	e	60.0	b

[1]Data are the means of four replications. Means within a column followed by the same letter are not significantly different according to Fisher's protected LSD. TSMK+SS represents total sound mature kernels + sound splits.

Table 16. Performance of Runner breeding lines in Terry Co. Texas[1]

Cultivar or breeding line	Pod yield (lb/acre)		Grade (TSMK+SS)	
McCloud	4,661	a	60.2	b
ACI-149	4,656	a	64.3	ab
Tamrun OL11	4,532	ab	65.7	a
TX1304	4,243	ab	62.7	ab
PR-2	4,232	ab	65.2	a
Tamrun OL07	4,147	ab	60.4	b
TX1821	4,120	ab	65.2	a
Red River Runner	3,721	a-c	65.6	a
Flavor Runner 458	3,710	a-c	63.0	ab
Georgia-09B	3,424	bc	66.2	a
FloRun 107	3,399	bc	64.1	ab
TX1816	2,747	c	64.9	a

[1]Data are the means of four replications. Means within a column followed by the same letter are not significantly different according to Fisher's protected LSD. TSMK+SS represents total sound mature kernels + sound splits.

High Plains Virginia cultivar trial. Considering the year, yields from the Virginia trial conducted in Terry Co. were exceptional (Table 17). The trial average at this location was 4,592 lb/A with yields ranging from 4,054 to 5,030 lb/A. Such yields were comparable to results from the average of the highest yielding Runner cultivars (4,225 lb/A), which were planted in the same field in an adjacent trial. Yields were lowest for the breeding line NC8070 (4,045 lb/A). Despite numerical differences in grade factors, there were no statistical differences among any of the cultivars and breeding lines evaluated. This was due in part to the high degree of variability observed in the field (data not shown).

Table 17. Performance of Virginia cultivars and breeding lines in Terry Co. Texas[1]

Cultivar or breeding line	Pod yield (lb/acre)		Grade (TSMK+SS)		Jumbo (%)	
NC8085	5,030	a	63.2	a	35.2	a
AU-1101	5,024	a	62.0	a	34.5	a
Florida Fancy	4,659	ab	65.8	a	42.7	a
Georgia-08V	4,568	ab	62.6	a	39.4	a
AT07-V	4,496	ab	61.1	a	27.4	a
Gregory	4,312	ab	63.6	a	39.7	a
NC8070	4,054	b	63.6	a	36.4	a

[1]Data are the means of four replications. Means within a column followed by the same letter are not significantly different according to Fisher's protected LSD.

Rolling Plains Virginia cultivar trial. Few differences in pod yields were observed in this trial (Table 18). Yields ranged from 1,342 to 2,465 lb/A, and were lowest for the breeding line NC 08070 and highest for the breeding line AU-1101. Likewise, few differences in grade factors were observed. Percentages of extra large, jumbo and fancy kernels averaged 53.7, 46.2 and 38.9, respectively.

Table 18. Performance of Virginia cultivars and breeding lines in Wilbarger Co. Texas[1]

Cultivar or breeding line	Pod yield (lb/acre)		ELK (%)		Jumbo (%)		Fancy (%)	
AU-1101	2,465	a	52.7	ab	38.3	ab	48.7	a
Georgia-08V	2,305	a	49.1	b	51.0	ab	37.3	ab
AT07-V	2,294	a	52.9	ab	37.0	b	44.0	ab
Gregory	2,241	a	54.2	ab	49.7	ab	37.3	ab
Florida Fancy	1,964	ab	56.8	a	39.0	ab	43.3	ab
NC 08085	1,911	ab	56.4	a	49.0	ab	38.7	ab
NC 08070	1,342	b	53.9	ab	59.7	a	22.7	b

[1]Data are the means of four replications. Means within a column followed by the same letter are not significantly different according to Fisher's protected LSD.

Rolling Plains Runner cultivar trials. Pod yields for the Collingsworth county trial averaged 2,472 lb/A, and ranged from 1,737 to 3,045 lb/A for Florida Fancy and TX1304, respectively (Table 19). Yields for Red River Runner, Flavor Runner 458, ACI-149, McCloud, AT07-V, Georgia-09B, Tamrun OL11 and TX1821 were similar to Florida Fancy. Grades ranged from 44.0 to 57.2% for Red River Runner and ACI-149, respectively. The average grade of the trial was 51.6%. No differences in yields or grades were observed among the Runner cultivars or breeding lines evaluated in the Wilbarger county trial (Table 20).

Table 19. Performance of Runner and Virginia cultivars and Runner breeding lines in Collingsworth Co. Texas[1]

Cultivar or breeding line	Pod yield (lb/acre)		Grade (TSMK+SS)	
Florida Fancy	3,045	a	50.5	cd
Red River Runner	2,801	ab	57.2	a
Flavor Runner 458	2,740	ab	48.4	de
ACI-149	2,675	ab	44.0	e
McCloud	2,638	ab	53.2	a-d
AT07-V	2,595	ab	48.6	de
Georgia-09B	2,582	ab	56.1	ab
Tamrun OL11	2,554	ab	52.0	a-d
TX1821	2,487	abc	55.1	a-c
Tamrun OL07	2,061	bc	51.3	b-d
PR-2	1,749	c	51.0	b-d
TX1304	1,737	c	51.9	a-d

[1]Data are the means of four replications. Means within a column followed by the same letter are not significantly different according to Fisher's protected LSD. TSMK+SS represents total sound mature kernels + sound splits.

Table 20. Performance of Runner cultivars and breeding lines in Wilbarger Co. Texas[1]

Cultivar or breeding line	Pod yield (lb/acre)		Grade (TSMK+SS)	
McCloud	2,505	a	64.5	a
ACI-149	2,384	a	66.1	a
PR-2	2,200	a	64.4	a
Georgia-09B	2,074	a	64.5	a
Red River Runner	2,024	a	68.0	a
TX1821	1,961	a	66.3	a
B4308	1,953	a	64.5	a
TX1816	1,933	a	68.1	a
Flavor Runner 458	1,900	a	62.2	a
FloRun 107	1,862	a	66.2	a
Tamrun OL11	1,777	a	68.7	a
Tamrun OL07	1,722	a	63.7	a
B3108	1,601	a	62.6	a
B5007	1,581	a	62.2	a
TX1304	1,551	a	61.9	a

[1]Data are the means of four replications. Means within a column followed by the same letter are not significantly different according to Fisher's protected LSD. TSMK+SS represents total sound mature kernels + sound splits.

Conclusions

Significant differences in yield were observed in the majority of Runner and Virginia trials conducted in 2011. The extreme drought and high temperatures experienced throughout most of the growing season undoubtedly limited yield potential and contributed to below normal grades. Several consistent trends were observed within growing regions. The breeding line TX1304 performed well, ranking in the top group in both trials conducted in the High Plains. This trend was not consistent across trials conducted in the Rolling Plains or south Texas. In contrast, the overall performance of the cultivars Tamrun OL11 and Red River Runner was fairly consistent across most all trials.

Overall, yields of the Virginia cultivars or breeding lines evaluated were equivalent to or better than yields of Flavor Runner 458 (the current commercial standard). Differences in pod yields were observed in all of the Virginia trials conducted, and consistent trends were observed in both trials. Yields were lowest for the breeding line NC08070 and generally highest for the breeding line AU-1101 and Florida Fancy (even when compared to Runners as in the Collingsworth Co. trial, Table 19).

While direct statistical comparisons cannot be made across trials, peanut yields appeared to increase dramatically when comparing trials deemed as having low irrigation capacity to those characterized as having high capacity. Likewise, lower yields were observed in fields where irrigation was portioned to other fields or where well issues arose during bloom.

Grades in Runner trials were highly variable, due to the environmental conditions. Trends in grade similar to those observed in previous years were found. Grades of Flavor Runner 458 were intermediate compared to those of Tamrun OL11. Tamrun OL07 grades were consistently lower than Flavor Runner 458 and Red River Runner. Few differences in grades were observed in either of the Virginia trials conducted.

Cultivar performance and breeding line selection are critical for the success of production and breeding programs. Results from these studies suggest that several newly registered cultivars or advanced breeding lines yield equal to or greater than commercial standards. Continue efforts in evaluating cultivars and breeding lines under a range of different growing conditions and regions is needed in order to maximize yield and profitability.

Summary of Peanut Progress issues and Extension activities in 2011.

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Jason Woodward, Texas AgriLife Extension, Texas Tech University, Lubbock
Peter Dotray, Texas AgriLife Research & Extension, Texas Tech, Lubbock
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Peanut Progress. A total of seven issues of the Peanut Progress Newsletter were published in 2011. Contributed articles covered current and emerging issues such as, early season weed control, potential insect issues throughout the season, routine disease and production updates, irrigation issues, considerations for making fungicide applications, a weed resistance update and making harvest decisions. The newsletter is mailed electronically or physically to more than 500 recipients. Furthermore, electronic copies of each issue can be accessed at the Texas AgriLife Extension peanut website (peanut.tamu.edu). Preliminary statistics, based on the October, November and December reports of website traffic, indicate that there were approximately 2,595 visitors to the peanut website resulting in nearly 6,500 page views. In all, visits came from 24 countries with the majority of page views (48.2%) coming from the United States.

2011 Extension activities. Information on peanut production issues and strategies was disseminated at more than 15 Extension or industry sponsored conferences, turn-row meetings, or field days throughout Texas. Such educational activities resulted in several hundred continuing education units (CEU's) being awarded. In addition, to the formal activities mentioned numerous trips were made in response to producer and consultant requests. Furthermore, the American Peanut Research and Education Society (APRES) held its annual meeting in San Antonio July 12-14. Presentations over many of the projects funded by the Texas Peanut Producers Board and the National Peanut Board were made at this meeting (Table 21). Additional presentations were made at the American Phytopathological Society (APS) and Southern Division- APS meetings.

Table 21. List of presentations made at the Annual American Peanut Research and Education Society Meeting held in San Antonio, TX July 12-14

Author(s)	Title
M. Gregory, K. Moore, C. Holbrook, M. Burow and J. Woodward	Screening the U. S. peanut minicore collection for tolerance to Verticillium wilt and pod rot
S. Russell, T. Wheeler, M. Anderson and J. Woodward	Developing an economic threshold for peanut pod rot in the Texas South Plains
A. Jaks, W. Grichar and J. Woodward	Evaluation of LEM17 fungicide on foliar and soilborne disease of peanut in Texas
J. Woodward and T. Baughman	Effect of digger timing on pod yield and grade factors of Virginia and Valencia peanut
M. Vandiver and J. Woodward	Issues that affect peanut production in west Texas: A Bailey/Parmer County perspective

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