Partners in Progress
PEANUTS

Peanut Research at OSU 2011

Supported by the

Oklahoma Peanut Commission

and the

National Peanut Board

Oklahoma State University
Division of Agricultural Sciences
and Natural Resources
Oklahoma Agricultural Experiment Station
Oklahoma Cooperative Extension Service

In cooperation with
U.S. Department of Agriculture -
Agricultural Research Service

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Foreword

We have had a long-standing partnership with the Oklahoma Peanut Commission (OPC) and the peanut producers of this state. There have been good times and bad times in terms of state budget restraints, shifts in peanut production locations in the state and changes in the federal peanut program. Together, we have survived and are looking forward to a brighter future.

Our *2011 Partners in Progress - Peanuts* report serves as a means to highlight significant accomplishments in research and Extension programs that have been supported in partnership with the OPC and the National Peanut Board (NPB). With all of the work that has been accomplished, it is important to recognize that much more research and Extension programming needs to be done to keep our peanut producers competitive and in business. Therefore, our work must be focused to solve meaningful issue-based problems facing the peanut producers in Oklahoma.

This report is one means of being accountable for the funds we have received and communicating the latest results of our programs to peanut producers as rapidly as possible.

Jonathan Edelson,
Interim Associate Director
Oklahoma Agricultural Experiment Station
Division of Agricultural Sciences and Natural Resources
Oklahoma State University

Oklahoma State University Division of Agricultural Sciences and Natural Resources Mission Statement

The Mission of the Oklahoma State University Division of Agricultural Sciences and Natural Resources is to discover, develop, disseminate, and preserve knowledge needed to enhance the productivity, profitability, and sustainability of agriculture; conserve and improve natural resources; improve the health and well-being of all segments of our society; and to instill in its students the intellectual curiosity, discernment, knowledge, and skills needed for their individual development and contribution to society.

Mother-Nature Rules!

I learned early in 2011 how to spell disaster ... La Niña! Technically speaking, during La Niña, ocean temperatures in the eastern equatorial Pacific Ocean are unusually cold. Weather conditions tend to be wetter than normal across the Pacific northwest and drier and warmer than normal in the southern and central United States. In practical terms, the latter was definitely true.

For peanut producers in Oklahoma, the old 'benchmark' year of 1980 was, shall we say, "left in the dust." The record books will be forever changed to mark 2011 as the most extreme weather year in Oklahoma history. January was the 33rd coldest and the sixth driest since 1895. February recorded record lows and record highs and two blizzards followed by the 31st driest and eighth warmest March since 1895. Remember April and May and the 96 twisters that hit the state? And the strongest surface wind ever measured in Oklahoma ... 151 mph May 24 in El Reno; and the largest hail stone ever recorded (6-inch diameter) fell in Gotebo.

During the summer growing season, June through August was the hottest summer for any state since records began, beating the 1934 record by 1.6 degrees … an average of 86.8 degrees (including night time temps). And how about those 20-40 mph winds during the period? Because of the high temps, most of the peanut crop wasn't set until mid-late August. Early pegging was often aborted due to extreme soil surface temperatures, unless early irrigation gave cover and shade for nut set. On Sept. 4, an unusually strong cold front hit the state dropping temps to the mid-30s, just after the month started above 100°F. The month ended as the 20th driest on record.

Normal harvest months of October and November extended to year's end and beyond, as the late maturing crop was salvaged between freezing temps and much needed moisture relief. And, though not weather related, let's not forget the series of earthquakes initiated with the magnitude 5.6 tremor following Oklahoma State University's victory over K-State Nov. 5!

The good news is the industry survived the most challenging year in history. A mixed bag of yields and grades across the state, dependant upon available rainfall/irrigation and timing; as well as critical management decisions unlike a normal production year.

Improved marketing opportunities at planting resulted in a 2 percent - 3 percent increase in planted acres and much needed optimism at the farm gate. Dampened by the reality of the season, acre abandonment reduced harvested acres and conditions affected crop quality. Average yields in Oklahoma dropped below 2,800 pounds. The good news was improved contracts reflected the crop shortage across all states and all regions.

Not unlike the hardship experienced on the farm, your peanut research team fell victim as well ... particularly at the Caddo Research Station near Fort Cobb. Heavy May rains destroyed a large portion Kelly Chamberlin's advanced breeding lines, and a late season tornado destroyed the station's critical irrigation system. One can be replaced, the most important cannot.

The OPC and the NPB salute Chad Godsey, John Damicone and Joe Armstrong for their leadership as principal investigators for the 2011 projects funded in part by producer assessments. And a special acknowledgement to USDA/ARS scientists, Hassan Melouk and Kelly Chamberlin for their contribution as members of the Oklahoma Peanut Improvement Team.

The *2011 Partners in Progress - Peanuts* report highlights the results of laboratory, greenhouse and field plot studies on several projects identified by producers as priorities for investigation. These and other related studies are made possible via the partnership among OSU, USDA/ARS, the OPC and the NPB. Without saying, the partnership would not be complete without the input and support of Oklahoma's peanut producers.

Mike Kubicek, Executive Secretary
Oklahoma Peanut Commission

Peanut Variety Tests

C.B. Godsey and W. Vaughan
Department of Plant and Soil Sciences

2011 progress made possible through OPC and NPB support

- **Red River Runner, GA-09B, and Florida 107 were top yield performers in most locations.**
- **Tamnut 06 and AT 98-99-14 were the two Spanish varieties that consistently performed well at most locations over the last several years.**

Variety Tests

All variety tests were conducted under an extensive pest management program. The objective was to prevent as much outside influence from pest pressures (weed, disease and insect) on yield and grade as possible. Variety X location interaction was significant so the results were separated by county (Tables 1 - 7). Since the varieties and advanced lines response differed by location, growers may find the data for the county closest to their location to be the most useful in selecting a variety or varieties to grow. All test plots were planted using two 36-inch rows that were 20 feet long. Plots were seeded at a rate of five seeds per row foot (139,392 seeds/A). At planting, liquid inoculant formulation was applied with the seed. Tests were conducted using randomized, complete block design with five replications. The entire plot was dug and then thrashed three to four days later. Peanuts were placed in a drier until moisture reached 10 percent. Total sound mature kernels (TSMK) was determined on a 200 g sample from each plot.

This said Tables 1-3. Shouldn't it be Tables 1-7 to cover all counties?

Interpreting Data

Details of establishment and management of each test are listed in footnotes below the tables. Least significant differences (LSD) are listed at the bottom of all but the Performance Summary tables. Differences between varieties are significant only if they are equal to or greater than the LSD value. If a given variety out yields another variety by as much or more than the LSD value, then we are 95 percent sure the yield difference is real, with only a 5 percent probability the difference is due to chance alone. For example, if variety X is 500 lbs/A higher in yield than variety Y, then this difference is statistically significant if the LSD is 500 or less. If the LSD is 500 or greater, then we are less confident that variety X really is higher yielding than variety Y under the conditions of the test.

The coefficient of variation (CV) value listed at the bottom of each table is used as a measure of the precision of the experiment. Lower CV values will generally relate to lower experimental error in the trial. Uncontrollable or immeasurable variations in soil fertility, soil drainage and other environmental factors contribute to greater experimental error and higher CV values.

Results reported here should be representative of what might occur throughout the state but would be most applicable under environmental and management conditions similar to those of the tests. The relative yields of all peanut varieties are affected by crop management and environmental factors including soil

type, summer conditions, soil moisture conditions, diseases and insects.

Beckham County

Location: Erick
Date Planted: 5/9/2011
Date Dug and Harvested: 10/24/2011 and 10/26/2011

The trial was planted May 9 into a strip-till seedbed. No significant foliar diseases were observed during the growing season. The only yield limiting disease observed in the plots was pod rot. Pod rot was severe in the Virginia varieties.

Average yield for the runner test was 5,238 lbs/A with an average grade of 71 percent (Table 1). Red River Runner, GA-09B, and Florida 107 had a higher yield when compared to the other varieties. Red River Runner and GA-09B also had a higher grade when compared to the other varieties.

Table 1. Peanut yields, pod rot observations and grades from Beckham County variety tests in 2011.

Variety	Pod Rot (% of plot)	Yield (lbs/A)	Percent of Trial Average	Grade (% TSMK)[2]	Revenue ($/A)
Runner[1]					
Red River Runner	0	5,615	107%	73.6	1,025
GA-09B	0	5,554	106%	74.1	1,013
Florida 107	0	5,543	106%	70.2	962
ACI149	0	5,209	99%	70.6	913
ARSOK-R29-3	0	5,173	99%	68.8	881
ARSOK-R36-1	0	5,140	98%	68.6	876
Flavor Runner 458	0	5,129	98%	68.5	873
Tamrun OL07	0	5,049	96%	69.2	868
ARSOK-R34-1	0	4,730	90%	71.5	833
CV		5.5		2.4	
LSD 0.05		375		2.2	
Spanish[1]					
AT 98-99-14	0	4,563	118%	67.9	754
Olin	0	3,920	102%	67.2	644
140-1OL	0	3,772	98%	65.6	604
Tamspan 90	0	3,496	91%	67.4	576
Tamnut OL06	0	3,532	92%	64.8	559
CV		12.0		2.0	
LSD 0.05		633		1.8	
Virginia[1]					
GA-08V	8	5,253	104%	69.8	968
Jupiter	9	4,930	98%	71.8	930
N0807	3	4,988	99%	70.7	928
Champs	7	5,024	100%	68.9	910
AT-07V	8	5,351	106%	61.6	865
N08081	2	4,632	92%	69.6	851
CV	33	8.5		4.5	
LSD 0.05	3	568		4.1	

[1] Market type.

[2] % TSMK = Percent total sound mature kernels.

Table 2. Peanut yields and grades from Beckham County variety tests in 2009-2011 and two- and three-year averages.

Variety or line	Yield (lbs/A)	Grade (% TSMK)[2]	Yield (lbs/A)	Grade (% TSMK)	Yield (lbs/A)	Grade (% TSMK)	Yield (lbs/A)	Grade (% TSMK)	Yield (lbs/A)	Grade (% TSMK)
	- - - - 2009 - - - -		- - - - 2010 - - - -		- - - - 2011 - - - -		- - - - 2-yr Avg. - - - -		- - - - 3-yr Avg. - - - -	
Runner[1]										
Red River Runner	4,461	78.2	5,223	73.7	5,615	73.6	5,419	73.6	5,100	75.2
GA-09B	--[3]	--	5,359	70.4	5,554	74.1	5,456	72.3	--	--
Florida 107	--	--	--	--	5,543	70.2	--	--	--	--
ACI 149	--	--	--	--	5,209	70.6	--	--	--	--
ARSOK-R29-3	--	--	5,081	71.3	5,173	68.8	5,127	70.1	--	--
ARSOK-R36-1	--	--	na	na	5,140	68.6	--	--	--	--
Flavor Runner 458	4,352	76.3	4,866	75.0	5,129	68.5	4,997	71.8	4,782	73.3
Tamrun OL07	4,229	74.0	5,064	71.2	5,049	69.2	5,056	70.2	4,781	71.5
ARSOK-R34-1	--	--	--	--	4,730	71.5	--	--	--	--
LSD 0.05	ns	1.5	ns	ns	375	2.2				
Spanish[1]										
Tamnut OL06	3,939	70.6	5,374	67.1	3,532	64.8	4,453	66.0	4,282	67.5
AT 98-99-14	4,320	73.4	4,411	69.2	4,563	67.9	4,487	68.6	4,431	70.2
Tamspan 90	3,576	72.2	5,271	67.5	3,496	67.4	--	--	--	--
140-1OL	--	--	--	--	3,772	65.6	3,772	65.6	3,772	65.6
OLin	3,530	72.1	4,206	67.3	3,920	67.2	4,063	67.3	3,885	68.9
LSD 0.05	502	1.4	706	4.3	633	1.8				
Virginia[1]										
AT-07V	--	--	--	--	5,351	61.6	--	--	--	--
N08081	--	--	4,256	69.2	4,632	69.6	4,444	69.4	4,444	69.4
Jupiter	4,034	70.8	3,528	65.3	4,930	71.8	4,229	68.6	4,164	69.3
Champs	--	--	4,030	68.6	5,024	68.9	4,527	68.8	--	--
GA-08V	--	--	3,800	65.7	5,253	69.8	4,527	67.7	--	--
LSD 0.05	ns	ns	ns	3	568	46				

[1] Market type.
[2] % TSMK = Percent total sound mature kernels.
[3] Data was not available because variety was not included in the trial.

In 2011, average yield and grade for the Spanish test were 3,857 lbs/A and 67 percent TSMK, respectively. In the Spanish test, AT 98-99-14 was the top yielding variety.

Average yield and grade in the Virginia test were 5,030 lbs/A and 69 percent TSMK, respectively. Yields and grades were lower than normal due to pod rot problems.

Caddo County

Location: Fort Cobb
Date Planted: 5/27/2011
Date Dug and Harvested: 10/31/2011 and 11/3/2011

The trial was planted May 27 into a strip-till seedbed. No significant foliar diseases were observed during the growing season.

Average yield for the runner test was 4,057 lbs/A with an average grade of 59 percent (Table 3). Red River Runner and Florida 107 had a higher yield when

Table 3. Peanut yields and grades from Caddo County variety tests in 2011.

Variety	Yield (lbs/A)	Percent of Trial Average	Grade (% TSMK)[2]	Revenue ($/A)
Runner[1]				
Florida 107	4,614	116%	63.1	734
Red River Runner	4,497	113%	63.5	720
GA-09B	4,080	102%	62.8	638
ARSOK-R36-1	4,378	110%	55.0	620
Flavor Runner 458	3,968	100%	57.6	584
ACI149	3,993	100%	57.5	584
Tamrun OL07	3,884	98%	54.8	551
ARSOK-R29-3	3,558	89%	56.4	518
ARSOK-R34-1	3,539	89%	57.5	517
CV	7		5.9	
LSD 0.05	496		4.5	
Spanish[1]				
WT 09-0243	4,044	116%	64.0	652
WT 09-0240	4,048	116%	63.0	643
AT 98-99-14	3,739	107%	60.6	564
Tamspan 90	3,380	97%	60.7	516
140-1OL	3,238	93%	61.1	493
Olin	3,002	86%	60.9	457
Tamnut OL06	2,973	85%	58.7	437
CV	11		3.6	
LSD 0.05	542		2.9	
Virginia[1]				
Champs	4,048	120%	63.2	674
GA-08V	3,717	110%	63.8	625
Jupiter	3,430	102%	65.7	592
N0807	3,132	93%	63.4	520
AT-07V	3,492	103%	55.5	508
N08081	2,454	73%	66.6	430
CV	16		3.9	
LSD 0.05	758		3.2	

[1] Market type.
[2] % TSMK = Percent total sound mature kernels.

The caption said three year and the table said four year. Which is correct?

Table 4. Peanut yields and grades from Caddo County variety tests in 2009-2011 and a three-year average.

Variety or line	Yield (lbs/A)	Grade (% TSMK)	Yield (lbs/A)	Grade (% TSMK)	Yield (lbs/A)	Grade (% TSMK)	Yield (lbs/A)	Grade (% TSMK)
	- - - - 2009 - - - -		- - - - 2010 - - - -		- - - - 2011 - - - -		- - - - 3-yr Avg. - - - -	
Runner[1]								
Florida 107	-	-	-	-	4,614	63.1	4,614	63
ARSOK-R36-1	-	-	-	-	4,378	55.0	4,378	55
Red River Runner	4,068	65.2	4,519	71.7	4,497	63.5	4,361	67
GA-09B	-	-	4,559	69.6	4,080	62.8	4,320	66
ACI 149	-	-	-	-	3,993	57.5	3,993	58
Tamrun OL 07	3,480	61.4	4,218	68.9	3,884	54.8	3,861	62
Flavorunner 458	3,063	63.2	4,116	69.4	3,968	57.6	3,716	63
ARSOK-R29-3	-	-	-	-	3,558	56.4	3,558	56
ARSOK-R34-1	-	-	-	-	3,539	57.5	3,539	58
LSD 0.05	779	ns	452	1.9	496	4.5		
Spanish[1]								
WT 09-0240	-	-	-	-	4,048	63.0	4,048	63
WT 09-0243	-	-	-	-	4,044	64.0	4,044	64
AT 98-99-14	3,006	65.8	3,989	65.8	3,739	60.6	3,578	64
Tamspan 90	3,002	63.3	4,120	65.5	3,380	60.7	3,501	63
Tamnut 06	2,937	63.8	3,881	64.2	2,973	58.7	3,264	62
140-1OL	-	-	-	-	3,238	61.1	3,238	61
OLin	3,118	65.2	3,441	63.4	3,002	60.9	3,187	63
LSD 0.05	414	ns	459	1.7	542	2.9		
Virginia[1]								
GA-08V	-	-	5,224	68.0	3,717	63.8	4,470	66
Champs	3,536	63.2	4,596	64.2	3,430	65.7	3,854	64
Jupiter	-	-	3,599	62.7	4,048	63.2	3,823	63
N08081	-	-	-	-	3,492	55.5	3,492	56
N0807	-	-	4,273	67.8	2,454	66.6	3,364	67
AT-07V	-	-	-	-	3,132	63.4	3,132	63
LSD 0.05		ns	ns		706	1.3	758	3.2

[1] Market type.
[2] % TSMK = Percent total sound mature kernels.
[3] Data was not available because variety was not included in given year.

compared to the other varieties. Red River Runner, Florida 107 and GA-09B had higher grades when compared to the other varieties.

In 2011, average yield and grade for the Spanish test were 3,489 lbs/A and 61 percent TSMK, respectively. In the Spanish test, AT 98-99-14 was the top yielding variety along with two breeding lines.

Average yield and grade in the Virginia test were 3,379 lbs/A and 63 percent TSMK, respectively. Very little pod rot was observed. Champs and GA-08V had the highest yields at Fort Cobb.

Blaine County

Location: Weatherford, OK
Date Planted: 5/12/2011
Date Dug and Harvested: 10/24/2011 and 10/26/2011

The trial was planted May 12 into a strip-till seedbed. No significant foliar diseases were observed during the growing season.

Average yield for the runner test was 4,216 lbs/A with an average grade of 57 percent (Table 5). Red River Runner, Florida 107 and GA-09B had a higher yield

Table 5. Peanut yields, pod rot observations and grades from Blaine County variety tests in 2011.

Variety or line	Yield (lbs/A)	Percent of Trial Average	Grade (% TSMK)[2]	Revenue ($/A)
Runner[1]				
Red River Runner	4,784	113%	67	803
Florida 107	4,970	118%	61	763
GA-09B	4,821	114%	60	724
ARSOK-R36-1	4,291	102%	55	608
Tamrun OL07	4,095	97%	55	584
ACI149	4,149	98%	54	577
Flavor Runner 458	3,899	92%	53	548
ARSOK-R29-3	3,764	89%	56	535
ARSOK-R34-1	3,169	75%	57	458
CV	15		9	
LSD 0.05	823		6	
Spanish[1]				
AT 98-99-14	5,295	123%	59	787
140-1OL	4,545	106%	63	712
Tamspan 90	4,294	100%	62	678
Olin	3,557	83%	66	598
Tamnut OL06	3,793	88%	60	572
CV	14		4	
LSD 0.05	802		4	
Virginia[1]				
Jupiter	5,046	112%	61	806
Champs	4,842	108%	60	762
N08081	4,792	106%	59	747
AT-07V	4,454	99%	54	640
N0807	3,884	86%	60	614
GA-08V	3,993	89%	58	608
CV	18		5	
LSD 0.05	ns		4	

[1] Market type.
[2] % TSMK = Percent total sound mature kernels.
[3] Not significantly different at a probability level of 5%.

Table 6. Peanut yields and grades from Blaine-Custer County variety tests in 2009-2011 and two- and three-year averages.

Variety or line	Yield (lbs/A)	Grade (% TSMK)	Yield (lbs/A)	Grade (% TSMK)	Yield (lbs/A)	Grade (% TSMK)	Yield (lbs/A)	Grade (% TSMK)	Yield (lbs/A)	Grade (% TSMK)
	- - - - 2009 - - - -		- - - - 2010 - - - -		- - - - 2011 - - - -		- - - - 2-yr Avg. - - - -		- - - - 3-yr Avg. - - - -	
Runner[1]										
Florida 107	--[3]	--	--	--	4,970	61	--	--	--	--
GA-09B	--	--	6,679	68.5	4,821	61	5,750	64.8	--	--
Red River Runner	6,530	72.4	6,552	69.4	4,784	67	5,668	68.2	5,955	70
ARSOK-R36-1	--	--	--	--	4,291	55	--	--	--	--
ACI 149	--	--	--	--	4,149	54	--	--	--	--
Tamrun OL 07	6,716	68.2	7,162	68.4	4,095	55	5,629	61.7	5,991	64
Flavorunner 458	6,135	66.0	7,184	70.0	3,899	53	5,541	61.5	5,739	63
ARSOK-R29-3	--	--	--	--	3,764	56	3,764	56.0	--	--
ARSOK-R34-1	--	--	--	--	3,169	57	--	--	--	--
LSD 0.05	735	3.8	ns	ns	823	6				
Spanish[1]										
AT 98-99-14	7,743	70.3	6,803	64.9	5,295	59	6,049	62.0	6,614	65
140-1OL	--	--	--	--	4,545	63	--	--	--	--
Tamspan 90	5,550	68.0	6,244	64.3	4,294	62	5,269	63.2	5,363	65
Tamnut 06	6,312	67.5	5,852	65.3	3,793	60	4,822	62.7	5,319	64
OLin	6,248	69.9	5,427	65.3	3,557	66	4,492	65.7	5,077	67
LSD 0.05	976	ns	598	2.5	802	4	700	3.3	792	
Virginia[1]										
Jupiter	6,636	65.9	6,701	67.3	5,046	61	5,874	64	6,128	65
Champs	--	--	5,844	64.7	4,842	60	5,343	62	5,343	62
N08081	--	--	--	--	4,792	59	--	--	--	--
AT-07V	--	--	--	--	4,454	54	--	--	--	--
GA-08V	--	--	--	--	3,993	58	--	--	--	--
LSD 0.05	435	ns	ns	ns	ns	4				

[1] Market type.

[2] % TSMK = Percent total sound mature kernels.

[3] Data was not available because variety was not included in the trial.

when compared to the other commercially available varieties. Grade of Red River Runner was higher than all other varieties.

In 2011, average yield and grade for the Spanish test were 4,297 lbs/A and 62 percent TSMK, respectively. In the Spanish test, AT 98-99-14 was the top yielding variety.

Average yield and grade in the Virginia test were 4,502 lbs/A and 59 percent TSMK, respectively. Very little pod rot was observed. No differences were found between yields in the Virginia varieties.

Love County

Location: Thackerville
Date Planted: 5/18/2011
Date Dug and Harvested: 10/31/2011 and 11/3/2011

The trial was planted May 18 into a strip-till seedbed. No significant foliar diseases were observed during the growing season.

Average yield for the runner test was 4,847 lbs/A with an average grade of 63% percent(Table 7). Red River Runner

Table 7. Peanut yields and grades from Love County variety tests in 2011.

Variety	Yield (lbs/A)	Percent of Trial Average	Grade (% TSMK)[2]	Revenue ($/A)
Runner[1]				
Red River Runner	5,749	119%	67.8	980
Florida 107	5,489	113%	64.9	897
GA-09B	4,878	101%	65.4	800
ARSOK-R29-3	5,038	104%	59.5	765
ACI149	4,671	96%	63.4	750
ARSOK-R36-1	4,683	97%	61.3	728
Flavor Runner 458	4,569	94%	62.5	727
Tamrun OL07	4,486	93%	58.6	677
ARSOK-R34-1	4,060	84%	59.8	622
CV	12		3	
LSD 0.05	657		3.2	
Spanish[1]				
AT 98-99-14	5,390	123%	64.0	862
WT 09-0243	4,433	101%	65.7	740
Tamspan 90	4,630	106%	61.9	723
WT 09-0240	4,322	99%	64.6	709
Tamnut OL06	4,104	94%	58.6	603
140-1OL	3,997	91%	58.7	588
Olin	3,834	87%	59.4	575
CV	11		4.0	
LSD 0.05	838		4.2	
Virginia[1]				
GA-08V	6,036	108%	70.0	1,108
N08081	5,744	103%	63.0	947
N0807	5,881	106%	60.7	933
Champs	5,356	96%	62.9	883
AT-07V	5,434	98%	60.1	850
Jupiter	4,977	89%	62.6	814
CV	10		4.2	
LSD 0.05	ns[3]		4.1	

[1] Market type.
[2] % TSMK = Percent total sound mature kernels.
[3] Not significantly different at a probability level of 5%.

Should this "yields" be "grades"? Yields is previously mentioned.

and Florida 107 had a higher yield when compared to the other varieties and also had relatively higher yields than other varieties.

In 2011, average yield and grade for the Spanish test were 4,387 lbs/A and 62 percent TSMK, respectively. In the Spanish test, AT 98-99-14 was the top yielding variety along with two breeding lines.

Average yield and grade in the Virginia test were 5,571 lbs/A and 63 percent TSMK, respectively. Very little pod rot was observed. No differences were found between Virginia varieties.

Evaluating Variable Rate Fungicide Applications for Control of Sclerotinia

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2011 progress made possible through OPC and NPB support

- **In years with light sclerotinia pressure, variable rate fungicide application appears to be profitable.**

Introduction

Oklahoma peanut growers continue to try to increase yields and reduce input costs. Perhaps the largest input in a peanut crop is fungicide applications. This is especially true for areas in the state that have high disease pressure from sclerotinia. On average, a single fungicide application costs $50-$60/acre to help control the disease.

A large portion of the Oklahoma peanut crop is still grown in areas where sclerotinia is present, so a solution to reduce fungicide input costs would greatly benefit producers struggling to control the disease.

Precision agricultural technologies (GPS, variable rate applicators, optical sensors, etc.) are currently available that provide producers with application options. Currently, very few precision agricultural technologies are used in peanut production. A potential technology that could be used to target applications of fungicide to high disease pressure areas is remote sensing (aerial photos). Aerial photos can be used to determine Normalized Difference Vegetation Index (NDVI), which is a simple numerical indicator that can be used to analyze remote sensing measurements and to assess whether the target being observed contains live green vegetation.

In 2009, one peanut field in Caddo County was identified that had visual evidence of sclerotinia. Early observations indicate that it looks promising that we can identify areas of higher sclerotinia pressure from NIR or other aerial photographs. This should enable us to target applications of fungicide to control the highest disease areas. In addition, some areas of the field may not need to be treated or could be treated with a reduced rate of fungicide. Depending on pressure level of disease in

What is NIR?

a field, it is believed that we may be able to reduce sclerotinia fungicide application costs by 15 percent - 35 percent. This is a very early estimate but savings should be realized.

Implementation of this on a producer level should be relatively inexpensive since most agricultural retailers have the capability to make variable rate prescription maps and apply products variably. If producers do their own spraying, costs to get set-up to make variable rate applications should be relatively inexpensive and costs could easily be recouped from fungicide savings. In addition, photographs would not be needed every year but only to indentify high disease pressure areas. The objective of this project is to evaluate the potential for variable rate application of fungicide to control sclerotinia.

So are you saying photographs are needed every year to ID pressure areeas?

Materials and Methods

Half-acre gril soil samples were taken on two fields with history of sclerotinia in 2011. Soil samples were taken to a depth of 3 inches an effort to characterize the number of sclerotia present. These sclerotia counts were used to determine areas of high sclerotia concentrations.

In an effort to evaluate variable rate fungicide applications, multiple strips across the field were applied variably depending on disease pressure from sclerotia density. A prescription map was created and given to the producer before Endura® was applied. Peanut yield from these strips was compared to adjacent strips across the field that received the recommended flat rate of fungicide. Yield data was collected with modifying a cotton yield sensor.

Results and Discussion

Figure 1 illustrates the sclerotia concentrations found in soil samples collected. The areas of highest sclerotia concentration was verified by the producer. Four strips were placed to intersect different areas of the field (Figure 2).

Paired comparisons of yield monitor data (Figure 4) did not indicate any significant differences in yield inside the application strip where no Endura® was applied when compared to adjacent areas outside of the application strip where a flat rate of 10 ounces of Endura® was applied (Table 8).

Figure 4 illustrates yield along one of the variable application strips and the adjacent strip that received a uniform rate of 10 oz/A. As you can see, a lot of variability exists along the strip. Several things besides sclerotinia are affecting yield.

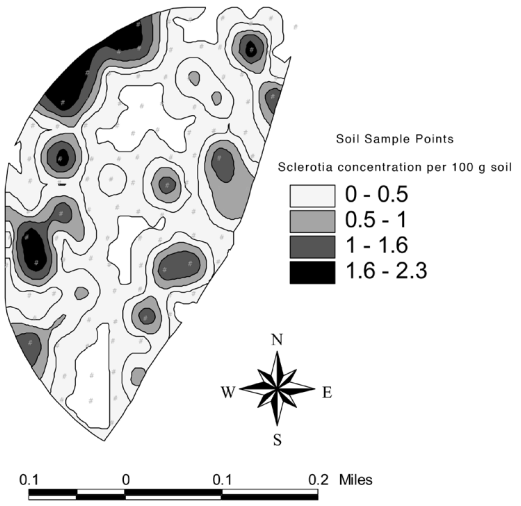

Figure 1. Sclerotia concentrations in Field 1.

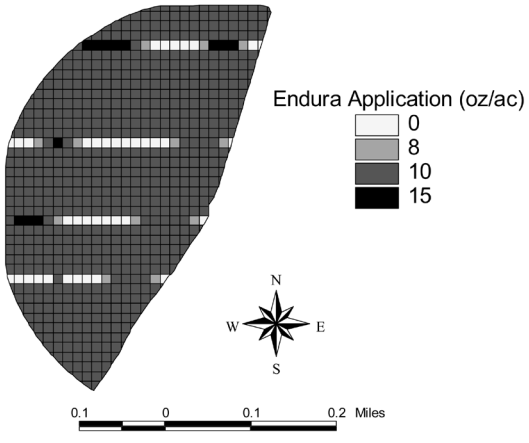

Figure 2. Variable rate fungicide application strips.

Sclerotinia was not severe in 2011, but results from this study indicate that fungicide applications can be reduced or eliminated in areas of the field where sclerotia counts were zero. If sclerotinia pressure was severe, a flat rate application may be warranted but in light pressure years a variable rate application appears to be feasible. A basic economic comparison indicates that applying fungicide variably across the entire 56 acres of the field, would result in a cost of $2,587 per application. In comparison, a flat rate across the field based on a 10 oz/A application rate would result in a cost of $3,474 per application. Variable rate application results in a savings of $887.

This study will be continued in 2012.

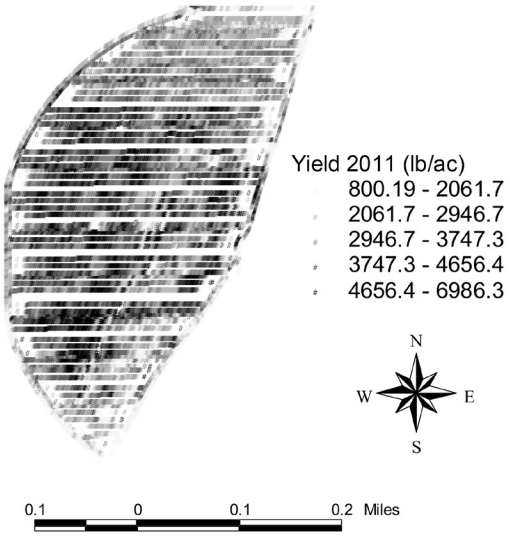

Figure 3. Yield map from peanut harvest in 2011.

Table 8. Yield comparison of inside (0 oz/ac) and outside (10 oz/ac) of the variable rate fungicide application strips.

Paired Comparison	0 oz/ac	Adjacent 10 oz/ac
1	2815	2962
2	3604	3584
3	3770	3593
Average	3396	3380

Table 9. Fungicide cost if variable rate application applied to the whole field based on sclerotia counts.

Sclerotia Count	Percent of field	Rate	Cost
0	35	0	0
0.3-0.8	43	8	1505
0.8-1.4	12	12	500
1.4-2.6	10	15	582
		Total Cost	$2587

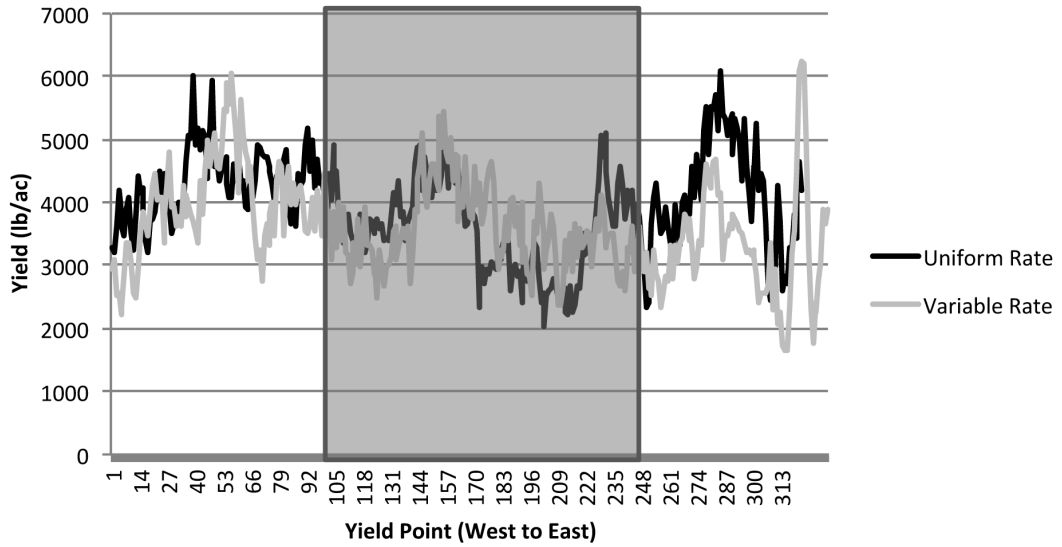

Figure 4. Yield along one of the variable application strips and the adjacent strip that received a uniform rate of 10 oz/A. The shaded area received no Endura® in the variable application strip.

Improving Weed Control in Peanuts with Preemergence Herbicides

J. Armstrong
Plant and Soil Sciences

2011 progress made possible through OPC and NPB support

- **Preemergence (PRE) herbicides are valuable and necessary to improve control of many weeds, including grass weeds, Palmer amaranth, yellow nutsedge and morningglory species in Oklahoma peanut production.**
- **Many of the PRE herbicides evaluated in this trial provided good to excellent early-season weed control at four weeks after planting (WAP).**
- **However, no single herbicide will be effective on all weeds, It is necessary to choose the appropriate combination of herbicides to maximize control of early season weeds present in each individual field.**

Introduction

Weed control continues to be a challenge for peanut production in Oklahoma. Several PRE herbicides are available for use at planting or as lay-by treatments with early postemergence (POST) treatments to improve early season weed control. PRE herbicides also are useful for controlling weeds that have developed resistance to other PRE and POST herbicides, such as ALS-resistant pigweed species.

What is ALS?

Materials and Methods

To evaluate the various PRE herbicide options available for peanut production in Oklahoma, a field trial was conducted at the OSU Caddo Research Station near Fort Cobb during the 2011 growing season. Tamspan 90 was planted May 19 at 80 lbs/A. PRE treatments were applied immediately after planting and were incorporated with a rainfall the evening after application. Each treatment was replicated four times and visual estimates of crop injury and weed control were collected by comparing herbicide treatments to the untreated control at multiple times during the growing season. Weed control was evaluated on a scale of 0 to 99 percent, where 0 represented no weed control and 99 percent represented complete control. In this report, weed control data collected four WAP is presented.

Results and discussion

At four WAP, crop injury in the form of peanut plant stunting and stand loss ranged from 0 to 23 percent for the commercially available PRE herbicides evaluated in this trial (Table 10). The relatively high levels of crop injury may have been due to the large amount of

rainfall received the evening after planting and PRE herbicide application, causing some of the herbicides to be moved into the soil closer to the seed. However, by eight WAP, the crop had outgrown this early season injury and continued normal growth and development.

Weed Control

Many of the PRE herbicides evaluated provided good to excellent control of the most prevalent weeds in this trial (Table 10). For large crabgrass control, the most effective treatments were those that included Dual Magnum® or Outlook®. Prowl® H_2O provided good control, but its effectiveness was most likely reduced by the large amount of rainfall received after application. The most effective treatments for PRE control of yellow nutsedge were Dual Magnum® and Outlook® and combinations that included these herbicides. Excellent control of Palmer amaranth and morningglory was achieved with most of the PRE herbicides and combinations evaluated in this trial, including Valor® SX and Pursuit® when used with Dual Magnum® or Outlook®. Despite having some activity on all weeds evaluated, Valor® SX should not be used by itself as a PRE treatment. The weed control data from this trial clearly indicates the need to choose the appropriate herbicide or combination of herbicides to sufficiently control the weeds present in each individual field.

In addition to the currently available PRE herbicide options, a yet-to-be released herbicide was also evaluated. Zidua®, a new PRE herbicide that will be sold by BASF initially for use in corn and soybean, contains pyroxasulfone as its active ingredient. Pyroxasulfone belongs to the same herbicide mode of action as Dual Magnum® and Outlook® and is very effective on a wide range of weed species. Based on these properties, it also is of interest for use in peanut. In this trial, a PRE application of Zidua® provided excellent control of annual grass weeds and Palmer amaranth (≥98 percent control). Zidua® also provided 88

Table 10. Visual estimates of crop injury and weed control at four weeks after planting (WAP) for various preemergence (PRE) herbicides for use in peanut production in Oklahoma. Treatments were applied May 19 immediately after planting. Data with an asterisk (*) indicate the treatments with the statistically highest levels of crop injury or weed control.

			% crop injury and weed control				
Treatment	Timing	Rate (per A)	injury	large crabgrass	yellow nutsedge	Palmer amaranth	morning-glory
Valor® SX	PRE	2 oz	1	61	48	96*	84
Dual Magnum®	PRE	1.33 pt	11	90*	92*	99*	96*
Prowl® H_2O	PRE	2 pt	0	79	54	80	99*
Outlook®	PRE	1 pt	21	97*	90*	97*	79
Valor® SX + Dual Magnum®	PRE	2 oz + 1.33 pt	20	98*	89*	99*	99*
Valor® SX + Prowl® H_2O	PRE	2 oz + 2 pt	1	81*	48	97*	95*
Valor® SX + Dual Magnum® + Prowl® H_2O	PRE	2 oz + 0.8 pt + 1.5 pt	10	92*	93*	99*	95*
Valor® SX + Outlook®	PRE	2 oz + 1 pt	15	96*	83*	99*	92*
Dual Magnum® + Pursuit®	PRE	0.8 pt + 1.44 fl oz	13	92*	95*	98*	90*
Prowl® H_2O + Pursuit®	PRE	2 pt + 1.44 fl oz	4	97*	66	96*	90*
Zidua®[a]	PRE	2 oz	46*	98*	66	99*	88*
Untreated			0	0	0	0	0
LSD[b] (5%)			9	19	24	9	13

[a] Zidua is not currently labeled for use in Oklahoma peanut production.
[b] LSD = least significant difference at the 5 percent significant level.

Can we remove the acknowledgements as we did in the soybean report?

percent control of morningglory. Despite the positive aspects for weed control, crop injury was very high (44 percent at four WAP and 25 percent at eight WAP). However, in another trial, a POST lay-by application of Zidua® did not cause crop injury. Zidua® is not currently available for use in Oklahoma, but registration is expected sometime in 2012 for use in corn and soybean.

Acknowledgements

Thank you to the OPC for providing funding for this research and to Bobby Wiedenmaier, Micheal Brantes and Michael Locke at the Caddo Research Station for their help with field work.

Peanut Disease Evaluation Research in 2011

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USDA-ARS, Entomology and Plant Pathology

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USDA-ARS, Plant and Soil Sciences

2011 progress made possible through OPC and NPB support

- **Due to the excessive and prevailing high temperature coupled with the lack of rain during the 2011 peanut growing season at the Caddo Research Stationnear Fort Cobb, incidence of Sclerotinia blight was extremely low and variable, and therefore, no disease data are included in this report.**
- **All Spanish and runner peanut breeding lines tested at the Caddo Research Station were high oleic.**
- **No significant difference was observed in yield and grade of all Spanish lines tested.**
- **One hundred seed weight of 140-1 OL, 103 and Tamnut OL06 was significantly (P= 0.05) higher than that of OLin.**
- **The 100 seed weight of the advanced breeding lines 140-1 OL, 103 and Tamnut OL06 was significantly (P= 0.05) greater than that of OLin.**
- **Overall, grades of the runner-type peanut entries ranged from 58 to 68.**
- **The newly released Red River Runner had the highest significant (P=0.05) grade of 68 compared to Tamrun OL07 at 63.**
- **Yield of the two high oleic runner cultivars Red River Runner and Tamrun OL07 was statistically (P=0.05) similar.**
- **Two runner breeding lines 29-3 and 32-1 statistically (P=0.05) graded similar to Red River Runner and Tamrun OL07.**

Introduction

Our peanut improvement efforts are focused on enhancing yield, quality and disease resistance. Therefore, the major emphasis of this research project is to develop high oleic peanut cultivars possessing disease resistance, and high yield and grade. All the plot research reported here was performed at the Caddo Research Station. Weed management protocol was implemented and a leaf spot fungicide advisory program was used to manage foliar diseases. All plots were irrigated as needed to ensure optimum moisture with a pivot system. All plots at the Caddo Research Station were planted May 17. On June 20, moderate damage due to thrips infestation was observed on the majority of the plots. Also, on June 20, moderate soil erosion that caused the crowns to be exposed was observed. Due to the excessive and prevailing high temperature coupled with

the lack of rain, incidence of Sclerotinia blight was extremely low and variable. Therefore, no disease data are included in this report. Plots were harvested over a two-week period starting Oct. 6. Also, yield and grade of all entries in the tests were determined under the prevailing environmental conditions.

Objectives of the small field plot studies performed were as follows: 1) to determine the agronomic qualities and incidence of Sclerotinia blight and Southern blight in field plots on selected Spanish type peanut lines, 2) to determine the agronomic qualities and incidence of Sclerotinia blight and Southern blight on selected runner-type peanut lines, and 3) to determine the agronomic qualities and incidence of Sclerotinia blight and Southern blight in selected Spanish X Runner-type peanut lines.

Incidence of Sclerotinia blight was too low and variable. Therefore, no disease data are presented in this report.

Performance of the Advanced Spanish Breeding Lines and Cultivars

Data of agronomic qualities (yield, grade, 100 seed weight and number of kernels [>21] per ounce) are presented in Table 11. No significant difference was observed in yield and grade of all lines tested. One hundred seed weight of 140-1 OL, 103 and Tamnut OL06 was significantly (P= 0.05) higher than that of OLin.

Performance of the Advanced Runner-type Breeding Lines and Cultivars

Data of agronomic qualities (yield, grade, 100 seed weight and number of kernels [>21] per ounce) of the 13 entries tested are presented in Table 12.

Table 11. Yield, grade and seed quality of advanced Spanish peanut breeding lines at the Caddo Research Station near Fort Cobb in 2011.

Entry	Yield (lbs/A)	Grade	Number seeds/oz*	100 seeds wt (g)
Olin	2,485	63	61	38
140-1 OL	2,485	60	55	45
Tamnut OL 06	2,840	60	54	46
Tamspan 90	3,017	62	55	44
99-2	2,226	64	65	36
103	2,646	63	57	41
108-1	2,210	62	67	33
112-2	2,162	64	66	35
113	2,291	62	68	33
129	2,256	62	60	39
133-2	1,936	60	66	37
133-3	2,291	62	67	35
135-1	1,904	64	62	37
LSD 0.05	ns**	ns	4	3

*number of seeds riding the 19/64 screen.
**ns indicates that differences in breeding lines and cultivars are not significant (P=0.05).

Table 12. Yield, grade and seed quality of advanced runner peanut breeding lines at the Caddo Research Station near Fort Cobb in 2011.

Entry	Yield (lbs/A)	Grade	Number seeds/oz*	100 seeds wt (g)
Okrun	4,066	63	39	64
Tamrun 96	4,776	67	40	62
Red River Runner	4,921	68	36	69
Tamrun OL 07	4,195	63	36	65
SW Runner	3,711	63	44	51
23-1	3,630	61	36	65
23-3	3,598	62	36	66
29-2	3,098	64	36	67
29-3	3,711	65	35	68
32-1	3,840	65	33	73
36-1	3,469	63	35	66
143-1	4,227	58	47	50
143-2	4,372	59	49	47
143-3	4,114	59	50	46
KC-35	5,308	66	37	69
KC-37	3,904	63	37	67
KC-47	4,179	59	41	60
LSD 0.05	889	5	2	3

*number of seeds riding the 21/64 screen

Table 13. Yield, grade and seed quality of advanced Spanish by runner peanut breeding lines at the Caddo Research Station near Fort Cobb in 2011.

Entry	Yield (lbs/A)	Grade	Number seeds/oz*	100 seeds wt (g)
Okrun	2,985	59	43	57
SW Runner	2,968	62	44	52
Tamspan 90	2,985	62	56	44
8-1	2,420	58	39	61
58	2,952	58	38	63
68-3	2,807	58	39	62
140-1	3,453	62	53	46
140-3	2,774	60	42	59
LSD 0.05	ns**	ns	2	3

*number of seeds riding the 21/64 or 19/64 screen depending upon cultivar.
** ns indicates that differences in breeding lines and cultivars are not significant (P=0.05).

The yield of the high oleic cultivars Red River Runner and Tamrun OL07 was not significantly (P=0.05) different at 4,921 lbs/A and 4,195 lbs/A, respectively. Overall, grades of the runner-type peanut entries ranged from 58 to 68. The newly released Red River Runner had the highest significant (p=0.05) grade of 68 compared to Tamrun OL07 at 63. Two runner breeding lines 29-3 and 32-1 statistically (P=0.05) graded similar to Red River Runner and Tamrun OL07.

Performance of the Spanish X Runner-type Breeding Lines

Data of agronomic qualities (yield, grade, 100 seed weight and number of kernels [>21] per ounce) of the seven Spanish X runner entries, and Okrun are presented in Table 13. The yield and grade of all lines tested were statistically (P=0.05) similar.

Further evaluations of all the peanut breeding lines discussed in this report will be conducted during the 2012 growing season at the Caddo Research Station.

Thanks to Doug Glasgow, Kenneth Jackson, Lisa Myers and Barbara Driskel of the USDA-ARS; and Bobby Weidenmaier and Mike Brantes of the Oklahoma Agricutlural Experiment Station for providing technical support in conducting this field research.

Integrated Management of Peanut Diseases

J. Damicone and T. Pierson
Entomology and Plant Pathology

2011 progress made possible through OPC and NPB support

- **Confirmed the activity of two experimental fungicides for control of Sclerotinia blight.**
- **Red River Runner produced the highest crop values ($/A) under pressure from Sclerotinia blight from a combination of high grades and moderate disease resistance.**
- **An alternative to aldicarb (Temik®) for control of root knot nematode showed moderate activity.**
- **During the hot and dry growing season of 2011, foliar disease did not develop as predicted by the Mesonet Agweather Peanut Leaf Spot Advisor.**

Introduction

Six field trials were completed in 2011 that addressed the management of important peanut diseases in Oklahoma. The management strategies that were evaluated included chemical control and disease-resistant varieties. Efforts were made to develop and demonstrate a range of input levels for the fungicide programs. The diseases studied included early leaf spot, web blotch, Sclerotinia blight and root knot nematode. Nathan Walker and Kelli Black, department of entomology and plant pathology, cooperated in the project by providing nematode counts. The excellent cooperation of Bobby Weidenmaier and the farm crew at the Caddo Research Station continues to be greatly appreciated.

Results from 2011 are summarized in this report. In interpreting the results, small differences in treatment values should not be overemphasized. Unless two values differ by at least the LSD value shown, little confidence can be placed in the superiority of one treatment or variety over another.

Extreme weather conditions prevailed statewide in 2011. At the Caddo Research Station, rainfall was only 43 percent of normal from June through October. Average daily temperature was 5°F to 8°F above normal each month from June through August, and there were 64 days above 100°F. The summer cropping period was the hottest and driest on record. Plots received 24 applications of sprinkler irrigation at one-half inch to 1 inch per application, which totaled 24.5 inches of water. In general, diseases were minor problems in 2011. Foliar diseases such as leaf spot and web blotch did not develop. Southern blight, a hot weather disease, developed in September and reached moderate levels. Sclerotinia blight only reached low levels at the Caddo Research Station where it is normally severe. Pod rot also was a minor problem in 2011. Although, there were fewers acres of susceptible Virginia varieties planted. Yields and grades were generally below average as the intense heat delayed crop development.

Sclerotinia Blight

Sclerotinia blight remains a destructive disease in Oklahoma. Field trials at the Caddo Research Station were focused on evaluating new fungicides, developing effective reduced fungicide programs with registered fungicides, and determining the disease and yield responses of new, high oleic varieties and breeding lines to fungicide programs. Disease pressure was lower than normal for this site.

Evaluation of fungicides – Trial 1:

The objective of this study was to evaluate the experimental fungicides DPX-LEM17 and Propulse for control of Sclerotinia blight. The experimental fungicides were compared to the registered fungicides Omega® and Endura®. Fungicides were applied on a preventive schedule at 65 days and 95 days after planting, on a single application made on demand (when symptoms first appeared or by early September, whichever appears first), or on a 14-day schedule beginning in July.

The high summer temperatures delayed the appearance of disease until temperatures cooled in September. Southern blight appeared in early September and only reached low levels (<1 percent) by harvest. Sclerotinia blight did not appear until late September and only reached moderate levels by harvest compared to previous trials at this site. All of the treatments reduced the incidence of Sclerotinia blight on Nov. 11 compared to the untreated check (Table 1). Endura® and DPX-LEM17 generally provided the best control. Preventive and demand application schedules of Omega® and Endura® were similar in effectiveness. Levels of Verticillium wilt, normally a minor disease at this site, were unusually high but did not differ among treatments. Because disease developed late in the season, yield and crop value did not differ among treatments.

Evaluation of fungicides – Trial 2:

The objective of this study was to evaluate the experimental fungicides DPX-LEM17 and Propulse for control of Sclerotinia blight. The experimental fungicides were compared to the registered fungicides Omega® and

Table 14. Evaluation of fungicides and application timing for control of Sclerotinia blight of peanuts Flavor Runner 458, Trial 1 in 2011.

Treatment and rate/A (timing)[z]	Sclerotinia blight (%)	Verticillium wilt (%)	Yield (lbs/A)	Crop value ($/A)[y]
Omega® 4F 1.5 pt (P1, P2)	17.0 cd	19.2	2,940	465
Omega® 4F 1.5 pt (D)	17.7 cd	13.5	3,840	608
Omega® 4F 1 pt (P1, P2)	23.0 bc	13.2	3,550	562
Endura® 70WG 10 oz (P1, P2)	8.2 f	20.2	3,470	549
Endura® 70WG 8 oz (P1, P2)	9.5 ef	23.0	2,998	474
Endura® 70WG 10 oz (D)	11.0 def	32.5	3,014	481
Propulse 3.3F 13.7 fl oz (14-d)	15.5 de	12.2	3,767	596
DPX-LEM17 1.67F 1 pt (14-d)	10.0 ef	16.0	3,090	489
Tilt®/Bravo® 4.3F 1.5 pt + Omega® 4F 0.5 pt (14-d)	26.7 b	10.2	3,340	528
Untreated check	42.0 a	11.0	3,042	481
LSD (P=0.05)[w]	7.0	ns[v]	ns	ns

[z] P1 and P2 refer to preventive applications July 21 and Aug. 18, respectively. D refers to the demand application made Sept. 1. 14-d=July 21, Aug. 4, Aug. 18 and Sept.1.
[y] Based on an average grade of 63 percent TSMK.
[x] Values in a column followed by the same letter are not significantly different at P=0.05.
[w] Fisher's least significant difference (LSD).
[v] ns=treatment effect not significant at P=0.05.

Endura®. Fungicides were applied on a preventive schedule at 65 days and 95 days after planting, or on a 21-day schedule beginning in July.

The hot conditions delayed the appearance of disease until temperatures cooled in September. Southern blight appeared in early September and only reached low levels (<1 percent) by harvest. Sclerotinia blight did not appear until late Sep and only reached moderate levels by harvest compared to previous trials at this site. All of the treatments reduced the incidence of Sclerotinia blight compared to the untreated check (Table 15). Endura® generally provided the best control. Preventive® and 21-day application schedules were similar in effectiveness for each of the fungicides tested. Levels of Verticillium wilt, normally a minor disease at this site, were unusually high but did not differ among treatments. DPX-LEM17 (21-day) and Omega® at 1 pt/A (21-day) were the only treatments that had higher yields and crop values than the untreated check. The late disease development apparently minimized treatment effects on yield.

Variety Response to Fungicide Programs

The objective of this study was to evaluate the disease and yield responses of high oleic varieties (Tamrun OL02, Flavor Runner 458, Tamrun OL07, Tamnut OL06 and Red River Runner to various levels of fungicide input for control of Sclerotinia blight.

The high-input treatments consisted of two preventive applications. The low-input treatment was a single application made at the first appearance of disease (demand).

The hot conditions delayed the appearance of disease until temperatures cooled in September. Southern blight appeared in early September and only reached moderate levels (10 percent or less) by harvest (Table 16). On Flavor Runner 458, Omega® but not Endura®, treatments reduced Southern blight compared to the untreated check. Treatment effects on Southern blight were not significant for the other varieties. Sclerotinia blight did not develop until late September and only reached low levels (25 percent or less) by harvest compared to previous trials at

Why is demand in parenthesis? Can it be removed?

Table 15. Evaluation of fungicides and application timing for control of Sclerotinia blight of peanuts Flavor Runner 458, Trial 2 in 2011.

Treatment and rate/A (timing)[z]	Sclerotinia blight (%)	Verticillium wilt (%)	Yield (lbs/A)	Crop value ($/A)[y]
Omega® 4F 1.5 pt (P1, P2)	27.5 b	6.5	3,165 abcd	488 abcd
Omega® 4F 1 pt (P1, P2)	25.2 b	7.2	3,252 abc	501 abc
Omega® 4F 1 pt (21-d)	15.5 bcd	13.5	3,543 a	546 a
Endura® 70WG 8 oz (P1, P2)	7.7 cd	22.2	2,766 d	426 d
Endura® 70WG 8 oz (21-d)	5.2 d	10.7	3,049 bcd	470 bcd
DPX-LEM17 1.67F 24 fl oz (P1, P2)	24.5 b	8.5	3,122 abcd	481 abcd
DPX-LEM17 1.67F 24 fl oz (21-d)	16.7 bcd	10.0	3,463 ab	533 ab
Propulse 3.3F 13.7 fl oz (P1, P2)	17.0 bcd	13.2	2,737 d	422 d
Propulse 3.3F 13.7 fl oz (21-d)	18.5 bc	14.0	2,940 cd	453 cd
Untreated check	45.2 a	8.2	2,875 cd	443 cd
LSD (P=0.05)[w]	12.0	ns[v]	477	73

[z] P1 and P2 refer to preventive applications July 21 and Aug. 18, respectively. 21-d= July 21, Aug. 11 and Sept. 1.
[y] Based on an average grade of 61 percent TSMK.
[x] Values in a column followed by the same letter are not significantly different at P=0.05.
[w] Fisher's least significant difference (LSD).
[v] ns=treatment effect not significant at P=0.05.

There is no "x" mentioned in the table.

Table 16. Disease and yield responses of high oleic peanut varieties to fungicide programs for Sclerotinia blight at the Caddo Research Station in 2011.

Treatment and rate/A (timing)[z]	Tamrun OL02	Flavor Runner 458	Red River Runner	Tamrun OL07	Tamnut OL06	Avg[y]
Sclerotinia blight (%) – Nov. 11						
Omega® 4F 1.0 pt (P1,P2)	12.2	20.7	11.7	13.7	5.5	12.8 a[x]
Omega® 1.5 pt (D1)	5.7	11.2	4.2	5.2	2.0	5.7 b
Endura® 70WG 8 oz (P1,P2)	3.2	5.5	2.5	3.5	0.2	3.0 b
Endura® 70WG 10 oz (D1)	1.7	7.5	1.5	3.2	2.5	3.3 b
check	18.0	23.7	14.0	16.0	6.5	15.6 a
Avg[w]	8.2 b	13.7 a	6.8 b	8.3 b	3.3 c	
LSD[v] (P=0.05)						3.8[u]
Southern blight (%) – Nov. 11						
Omega® 4F 1.0 pt (P1,P2)	4.0	1.7 c	2.7 bc	2.0 b	1.2	2.3
Omega® 1.5 pt (D1)	3.2	3.2 bc	0.7 c	1.7 b	0.7	1.9
Endura® 70WG 8 oz (P1,P2)	1.2	8.0 abc	7.0 a	0.7 b	0.5	3.5
Endura® 70WG 10 oz (D1)	2.0	15.0 a	0.7 c	8.2 a	0.0	5.2
check	1.2	9.7 ab	5.7 ab	3.2 b	2.7	4.5
Avg	2.3	7.5	3.4	3.2	1.0	
LSD (P=0.05)	ns	7.4	3.9	3.0	ns	
Yield (lbs/A)						
Omega® 4F 1.0 pt (P1,P2)	3,712	4,374	4,320 c	3,866	3,458	3,946
Omega® 1.5 pt (D1)	4,438	4,238	5,626 a	3,875	3,503	4,336
Endura® 70WG 8 oz (P1,P2)	3,975	4,256	4,665 bc	4,501	3,612	4,202
Endura® 70WG 10 oz (D1)	4,601	3,984	5,318 ab	4,020	3,412	4,267
check	4,066	3,576	4,383 c	3,866	3,385	3,855
Avg	4,158	4,086	4,862	4,026	3,474	
LSD (P=0.05)	ns	ns	928	ns	ns	
Value[t] ($/A)						
Omega® 4F 1.0 pt (P1,P2)	591	710	741 c	628	542	642
Omega® 1.5 pt (D1)	707	688	964 a	629	548	707
Endura® 70WG 8 oz (P1,P2)	633	691	800 bc	731	565	684
Endura® 70WG 10 oz (D1)	733	647	912 ab	653	534	695
check	647	581	751 c	628	529	627
Avg	662	663	833	654	543	
LSD (P=0.05)	ns	ns	ns	ns	ns	

[z] P1 and P2 are preventive applications July 21 and Aug. 18, respectively. D1 is the demand application on Sept. 1.

[y] Averaged over variety.

[x] Values in a column or row followed by the same letter are not significantly different at P=0.05.

[w] Averaged over fungicide treatment. Least significant difference (LSD) between varieties for Sclerotinia blight =2.4.

[v] Fisher's least significant difference (LSD).

[u] ns=treatment effect not significant at P=0.05.

[t] Based on an average grade (% TSMK) of 64 for Tamrun OL02, 65 for Flavor Runner 458, 69 for Red River Runner, 65 for Tamrun OL07 and 64 for Tamnut OL06.

this site. Varieties responded similarly to fungicide programs for Sclerotinia blight. All treatments except the preventive program with Omega® reduced levels of disease compared to the untreated check. Endura® treatments provided the best control of Sclerotinia blight. In untreated plots, Flavor Runner 458 was most susceptible and Tamnut OL06 was most resistant with the other moderately resistant cultivars being intermediate. Yields were average and grades were below average compared to previous trials. All treatments except the preventive program with Omega® increased yields and crop value of Red River Runner. Treatment effects on yield and value of the other varieties were not statistically significant. Yields and crop values were highest for Red River Runner compared to the other varieties.

Root Knot Nematode

Root-knot nematodes are widely distributed in peanut production areas and are particularly severe in sandy soils. Both the northern and peanut root knot nematodes occur in Oklahoma, but the northern type is most common. Crop rotation with nonhost crops such as cotton, corn or sorghum is recommended to reduce nematode levels and resulting damage. However, use of a pre-plant nematicide treatment is beneficial and is a standard practice for problem fields. Over the years, registrations for nonfumigant nematicides have been lost. In 2011, Temik®, the only registered nonfumigant pre-plant nematicide was no longer available for nematode control in peanuts and other crops.

The objective of this trial was to evaluate the POST nematicide, Vydate, for control of northern root knot nematode of peanuts. The trial was conducted at the Caddo Research Station in a field previously cropped to peanuts. Temik® 15G was applied with a granular applicator in an 8-inch wide band over the top of shaped planting beds prior to planting. Foliar applications of Vydate® were made on three-week intervals after planting. Nematode populations were determined from soil cores taken from the root zone of each plot in October prior to harvest. Two days after planting in May, heavy rain (5.39 inches over a two-day period) severely eroded beds and may have affected the performance of the at-plant nematicide application. Above ground symptoms of nematode damage were not apparent. Root knot and ring nematodes were the primary nematodes recovered (Table 17). Treatment effects on nematode numbers were not statistically significant. However, levels of root knot

Table 17. Evaluation of nematicides for control of northern root knot nematode of peanuts in 2011.

Treatment and rate/A (timing)[z]	Root knot nematode (no./100 cc soil)	Ring nematodes (no./100 cc)	Yield (lbs/A)	Crop value ($/A)[y]
Untreated check	413	218	3,231	513
Temik® 15G 10 lbs (P)				
Vydate® CLV 3.77L 17 fl oz (1,2)	235	265	3,639	578
Vydate® CLV 3.77L 17 fl oz (1,2)	388	492	3,394	539
LSD (P=0.05)[x]	ns	ns	ns	ns

[z] P = 8-inch band over the row before planting. Timings 1 and 2 = foliar applications made June 8 and June 30.
[y] Based on an average grade of 65 percent TSMK.
[x] Fisher's least significant difference (LSD).
[w] ns=treatment effect not significant at P=0.05.

nematode were numerically reduced by the nematicide treatments. Similarly, treatment effects on yield and crop value were not statistically significant, but numerically responded to treatment reductions in rootknot nematode levels.

Foliar Diseases

Foliar diseases are widespread across all production areas of Oklahoma and can be damaging when severe. Where early leaf spot is not controlled, yield losses have averaged from 500 lbs/A to 700 lbs/A. However, losses exceeding 1,000 lbs/A are possible in years when weather favors severe disease development and vines become completely defoliated. Foliar diseases can be effectively controlled with a full-season fungicide program that consists of six sprays per season. However, reduced fungicide programs that are effective and utilize fewer sprays per season are needed to reduce the costs of peanut production. The objectives of the research on foliar diseases were to identify new fungicides and to develop effective reduced application programs.

Evaluations of fungicides – Trial 1:

The objective of this trial was to evaluate the experimental fungicide Topguard® at various rates in comparison to the registered fungicides Bravo®, Tilt®/Bravo®, Folicur®, Provost® and Headline. Fungicides were applied on a full-season, 14-day schedule that totaled six sprays, on a three-spray reduced calendar program, and according to the weather-based, Mesonet Agweather Peanut Leaf Spot Advisor (http://agweather.mesonet.org/).

Evaluations of fungicides – Trial 2:

The objective of this trial was to evaluate experimental fungicides (various DPX fungicides and Topguard®) in comparison with the registered fungicides Bravo®, Folicur®, Headline® and Provost®. Fungicides were applied on a full-season, 14-day schedule except for Bravo® + Folicur®, which was applied in a reduced (three applications) calendar program and according to the Mesonet Agweather Peanut Leaf Spot Advisor.

Because of the extreme summer heat, leaf spot only reached trace levels by harvest. The Mesonet Agweather Peanut Leaf Spot Advisor never recommended a fungicide application during the growing season. As a result of the low disease pressure, yields did not differ compared to the untreated check.


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