



AG RESEARCH



2023 Partners in Progress

Peanut Report

Partners in Progress Peanut Report

2023 Edition

by

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2023 Disease Evaluations and Agronomic Traits of Advanced Peanut Breeding Lines

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Overview

- A total of 28 breeding lines and reference cultivars were evaluated at the Caddo Research Station for agronomic characteristics and soilborne diseases (Sclerotinia blight and pod rot).
- The six-entry runner trial included Lariat, FloRun '107', Southwest Runner, ACI 509, IPG517 and one USDA-ARS breeding line. The 14-entry Spanish/Valencia trial tested four Spanish and one small-seeded runner breeding line from USDA-ARS, six Valencia breeding lines from New Mexico State University, and cultivars IPG 1288, OLé, and TAMVal OL14. The Virginia trial evaluated eight entries: Jupiter, Comrade, Bailey II, Emery and four breeding lines from USDA-ARS.
- The 28-entry disease trial was planted on June 21 and dug 136 days after planting (Nov. 3), accumulating 2,823 growing degree days (GDD) in Fahrenheit. The season was marked by above-average temperatures for August and September (both 3 degrees above the 15-year mean). Compared to the 15-year average for rainfall, June and July experienced more, while August and September had less. Moderate to moderately high levels of Sclerotinia blight were observed in the runner and Virginia genotypes, but little pod rot was observed in this trial. The field also had high levels of parasitic nematodes.
- Moderately low levels of pod rot were present in the Virginia pod rot nursery. Jupiter and the susceptible genotype PI 378012 had 21% and 28% pod rot, respectively.

A major goal of the ARS peanut research program in Stillwater is to develop and release high-oleic peanut cultivars for the Southwest with improved yield, disease resistance and seed characteristics. In 2023, we evaluated commercial and advanced breeding lines of runner, Spanish/Valencia and Virginia peanuts in small plots at Oklahoma State University's Caddo Research Station in Fort Cobb. The objectives of these field studies were:

1. To compare advanced breeding lines to commercially available cultivars for resistance to Sclerotinia blight and agronomic characteristics, such as yield, seed, and pod qualities.
2. To evaluate a selection of Virginia entries for pod rot resistance in a field where soilborne levels of the pathogens causing peanut pod rot were promoted by planting susceptible genotypes the previous year.

Methods for Evaluating Advanced Breeding Lines and Cultivars

A total of 28 breeding lines and reference cultivars (6 runner, 14 Spanish/Valencia and 8 Virginia market types) were evaluated. Runner and Virginia peanut market types were each grown and evaluated separately, but Spanish and Valencia entries were combined in the same field and analyzed together. All advanced breeding lines were high oleic. Each entry was planted at a density of 5 seeds/ft in plots consisting of two 15-foot-long rows with 36-inch-wide beds. A randomized complete block design was used by dividing the field into four sections (blocks) to account for potential disease gradients and environmental variables. All plots were planted approximately one month later than normal (June 21) to ensure green foliage was available for late-season development of Sclerotinia blight. All plots were inverted on Nov. 3, 136 days after planting, and threshed on Nov. 6, 2023.

Additional water was applied to all plots 14 times (total 9.95”) between June 30 and Oct. 4, using a center pivot system. Each row in the two-row plots was inoculated with 0.5 grams of *Sclerotinia minor* sclerotia on Sept. 12. Fields were managed for weeds, foliar diseases and southern blight (caused by *Agroathelia rolfsii*) following Extension recommendations but were not managed for Sclerotinia blight, pod rot or nematodes. Entries were evaluated for Sclerotinia on Oct. 13. Disease incidence was measured by counting the number of 6-inch sections within each plot that had symptoms of Sclerotinia blight. On Aug. 21 and Oct. 10, approximately 20 soil cores were collected near the taproots from the four plots planted with Jupiter for nematode counts. All plots were examined for pod rot on the same day the plants were inverted.

Peanut grades were determined following USDA-Agricultural Marketing Service guidelines, using two 200-gram samples from each plot. Two 500-gram samples per plot were used to determine pod sizes in the Virginia entries. Yield was adjusted by factoring in the area lost by plots in the path of the center pivot wheels. Data were analyzed using one-way ANOVA in PROC GLIMMIX of SAS (ver. 9.4).

The Type I error rate for pairwise comparisons of breeding lines and cultivars was controlled at $\alpha = 0.05$ using the ADJUST=TUKEY option. Crop value for each market type was calculated using the following 2023 contract prices per ton: \$650, runner; \$950, Valencia; \$700, Spanish; and \$725, Virginia.

The pod rot nursery was planted on June 21 to reduce the number of volunteers, and plots were dug and rated for pod rot on Oct. 17.

Summary of 2023 Field Conditions

A total of 2,823 growing degree days in Fahrenheit accumulated for the 2023 disease trial. The season was characterized by above-average temperatures for August and September (+3F from 15-year mean), above-average rainfall for June and July, and below-average rainfall for August and September (Table 1). Cooler evening temperatures in October favored the development of Sclerotinia blight. Little southern blight and pod rot were observed. The nematology lab at Oklahoma State University found 331 ring and 20 root-knot nematodes per 100 cc (=3.4 oz.) of soil in the Aug. 21 samples. By Oct. 10, there was an average of 910 ring and 1,050 root-knot nematodes per 100 cc of soil (Kelli Black and Nathan Walker, pers. communication) – numbers considered to be very high levels of infestation for both nematodes.

Performance of the Six Runner Market-type Entries

- Runner entries with the highest yield ($\geq 4,584$ lbs. per acre) and crop values ($\geq \$1,049$ per acre) were Southwest Runner, ARSOK R109-1 and Lariat (Table 2). Average seed grade varied among entries from 61% to 72%.
- Moderately high levels of Sclerotinia blight were observed in mid-October, and the most resistant entries included Southwest Runner (<1%), Lariat (9%) and ARSOK R109-1 (12%).
- Three-year averages were calculated for four entries (Table 3), but plots from 2021 and 2022 were in the field 30 and 12 days longer, respectively, than in 2023. Lariat, Southwest Runner and ARSOK R109-1 had similar yields. Seed grade for Lariat was higher than FloRun '107' and Southwest Runner but not significantly different than R109-1. Southwest Runner had more resistance to Sclerotinia blight than FloRun '107' and R109-1 but was similar to Lariat in resistance.

Performance of the 14 Spanish/Valencia Market-type Entries

- OLé and ARS small-seeded runner breeding line ARSOK R58B had the highest numerical yields (4,811 and 4,244 pounds per acre, respectively; Table 4). Yields among Valencia market-type entries were statistically similar.
- Crop value was highest for all Valencia market type entries except NM310 due to the higher contract price for Valencia. Within the Valencia entries, NM16-17 had the highest numerical yield (4,039 lbs/A), and IPG 1288 had the best grade at 72%.
- OLé had the highest yield of the entire Spanish/Valencia trial at 4,811 lbs/A. The small-seeded runner, ARSOK R58B, was among the highest yielding (4,244 lbs/A) and had the best grade at 74%.
- Minimal Sclerotinia blight (<2%) was observed except in IPG 1288 which had 38% disease.
- OLé had the highest numerical yield among the seven entries evaluated for the past three years (Table 5). Few differences in seed grade were observed, and the entries had little Sclerotinia blight.

Performance of the Nine Virginia Market-type Entries

- Among the Virginia entries, ARSOK V99 had the highest crop value (\$1,120/A; Table 6) and the highest numerical yield (4,537 lbs/A).
- Average seed grade was relatively low, ranging from 65% to 68% but did not differ significantly among entries. ARSOK entries V98, V99 and V103-1 had the lowest levels of Sclerotinia blight (<11%), while Emery was the most diseased (39%).
- Entries differed significantly in number of pods per ounce (Table 6) and pod size distribution (Figure 1). ARSOK V103-3 (81%) and Comrade (75%) had the largest percentage of super jumbo pods by weight.
- Over the past three years, ARSOK V99 had the highest numerical yield (4,400 lbs/A) and the least amount of Sclerotinia blight (6%; Table 7). Seed grade was highest in Comrade and ARSOK V99 (69 and 68%, respectively).

Pod Rot Nursery

In 2023, moderately low levels of pod rot were observed in the pod rot nursery (Table 8). The susceptible control PI 378012 and Jupiter had above 20% pod rot. Comrade had intermediate levels of disease (11%), and all other entries had 5% or less pod rot.

Acknowledgements

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Table 1. Monthly rainfall and average air temperature from Mesonet for 2023 field season at the Caddo Research Station in Fort Cobb.¹

Month	Air Temperature (°F)				Rainfall (inches)		Total
	Avg. Max.	Avg. Low	Daily Mean	Dep. 15-Yearly Avg.	Total	Dep. 15-Yearly Avg.	Degree Days (°F)
June	88 (92)	66 (71)	77 (81)	-3	6.7 (2.0)	+3.05	354 (166)
July ²	93	70	81	-1	5.2	+2.23	514
August ²	96	69	82	+3 ³	0.6	-1.98	471
September ²	89	64	76	+3	1.5	-1.36	307
October	75	49	61	0	2.8	-0.29	93

¹ All plots planted June 21 and dug Nov. 3. June data for entire month and after planting (in parentheses).
² Incomplete Mesonet records. August departure from 15-year average temperature from Hinton due to extensive incomplete records for Fort Cobb.

Table 2. Crop value, yield, grade, Sclerotinia blight and shelling characteristics in advanced runner breeding lines and commercial cultivars planted at the Caddo Research Station in Fort Cobb on June 21, 2023.¹

Entry	Revenue (\$/A) ²	Yield (lbs/A)	Grade ³	SM ⁴	100-seed (g)	VDK (%) ⁵	Hull (%)
SW Runner	1089a	4746a	70.6ab	0.4d	57.7c	0.4	27.3ab
ARSOK R109-1	1080a	4628a	71.7a	12.2b-d	66.3ab	0.2	24.3c
Lariat	1049a	4584a	70.4ab	9.2cd	69.7a	0.2	24.6c
FloRun '107'	851b	3778b	69.4bc	54.4a	63.8b	0.6	26.5b
IPG 517	736c	3357b	67.5c	30.0b	62.5b	0.2	28.6a
ACI 509	695c	3088b	69.4bc	20.4bc	55.8c	0.5	25.8bc

¹ Entries sorted by highest to lowest contract revenue per acre. Runners were dug Nov. 3 (136 days after planting; 2,823 growing degree days in Fahrenheit). Numbers with the same lowercase letter within columns are not significantly different ($\alpha = 0.05$). No differences among entries if letters absent in column.
² Based on a contract price per ton of \$650 for runners. Calculations do not include deductions for excess splits or damaged and other kernels.
³ Grade = % total sound mature kernels + sound splits.
⁴ Incidence of Sclerotinia blight rated on Oct. 13.
⁵ VDK, visibly damaged kernels.

Table 3. Three-year averages for Sclerotinia blight, yield (pounds per acre) and seed grade in runner advanced breeding lines and commercial cultivars at the Caddo Research Station in Fort Cobb (2021-2023).¹

Entry	2021-2023			2023			2022			2021		
	Yield	GRD ²	SM ³	Yield	GRD	SM	Yield	GRD	SM	Yield	GRD	SM
Runner				136 DAP/2823 GDD ⁴			148 DAP/3203 GDD			166 DAP/3409 GDD		
Lariat	4509a	72a	13bc	4584a	70ab	9b	5324a	71a	25c	3618	75a	4b
FloRun '107'	3599b	69c	53a	3778b	69b	54a	3775b	66b	88a	3183	70b	16a
SW Runner	4510a	69bc	4c	4746a	71ab	0b	4925a	68ab	10c	3860	69b	0b
ARSOK R109-1	4394a	71ab	26b	4628a	72a	12b	5215a	71a	50b	3340	72ab	16a

¹ Numbers with the same lowercase letter within columns are not significantly different ($\alpha = 0.05$).
² Grade = % total sound mature kernels + sound splits.
³ SM, % incidence of Sclerotinia blight. Sclerotinia blight-susceptible (FloRun '107) and resistant (Southwest Runner) controls.
⁴ Days after planting (DAP) when dug; peanut growing degree days (GDD) heat units in Fahrenheit calculated by Mesonet. Planting and digging dates: 2023, June 21 and Nov. 3; 2022, June 6 and Oct. 31; 2021, May 14 and Oct. 26.

Table 4. Crop value, yield, grade, Sclerotinia blight and shelling characteristics in advanced Spanish/Valencia breeding lines and commercial cultivars planted at the Caddo Research Station in Fort Cobb on June 21, 2023.¹

Entry	Market Type	Revenue (\$/A) ²	Yield (lbs/A)	Grade ³	SM ⁴	100-seed (g)	VDK (%) ⁵	Hull (%)
NM16-17	Valencia	1351a	4039bc	70.4bc	0b	53.5cd	0.7ab	27.6ab
NM16-42	Valencia	1317ab	3951bc	70.2b-d	0b	53.3cd	0.7ab	27.2bc
NMPR25	Valencia	1282a-c	3891bc	69.4b-d	0.8b	52.7cd	0.5ab	28.2ab
TAMVal OL14	Valencia	1281a-c	3889bc	69.3b-d	0b	57.3ab	1.2a	28.2ab
IPG 1288	Valencia ⁶	1255a-d	3656bc	72.2ab	38.3a	59.0a	0.7ab	24.9cd
NM-KC25	Valencia	1251a-d	3743bc	70.4bc	1.7b	54.1b-d	0.8ab	27.8ab
NM-M6	Valencia	1190b-e	3596bc	69.7b-d	0b	53.0cd	0.6ab	28.3ab
OLé	Valencia	1183c-e	4811a	70.3b-d	0b	44.2e	0.5ab	27.1bc
NM310	Valencia	1127d-f	3527c	67.3d	0b	51.6d	0.7ab	29.8a
ARSOK R58B	Spanish ⁶	1093e-g	4244ab	73.6a	0.8b	56.2a-c	0.4b	24.8d
ARSOK S105-4E	Spanish	1008f-h	4167a-c	69.2cd	0b	54.3b-d	0.6ab	28.3ab
ARSOK S105-3E	Spanish	988gh	4011bc	70.4bc	1.3b	54.7b-d	0.5ab	27.5b
ARSOK S104-3E	Spanish	979gh	3993bc	70.2b-d	0b	52.8cd	0.5ab	27.9ab
ARSOK S104-2E	Spanish	947h	3867bc	70.0b-d	0b	51.9d	0.5ab	27.8ab

¹ Entries sorted by highest to lowest contract revenue per acre. Peanuts were dug Nov. 3 (136 days after planting; 2,823 growing degree days in Fahrenheit). Numbers with the same lowercase letter within columns are not significantly different ($\alpha = 0.05$). No differences among entries if letters absent in column.

² Based on a contract price per ton of \$700/ton for Spanish and \$950/ton for Valencia. Calculations do not include deductions for excess splits or damaged and other kernels.

³ Grade = % total sound mature kernels + sound splits.

⁴ Incidence of Sclerotinia blight rated on Oct. 13.

⁵ VDK, visibly damaged kernels.

⁶ IPG 1288, red-seeded runner; ARSOK R58B, small-seeded runner.

Table 5. Three-year averages for Sclerotinia blight, yield (pounds per acre) and seed grade in Spanish advanced breeding lines and commercial cultivars at the Caddo Research Station in Fort Cobb (2021-2023).¹

Entry	2021-2023			2023			2022			2021		
	Yield	GRD ²	SM ³	Yield	GRD	SM	Yield	GRD	SM	Yield	GRD	SM
Runner				136 DAP/2823 GDD ⁴			148 DAP/3203 GDD			166 DAP/3409 GDD		
OLé	4084a	70ab	1b	4811a	70	0	4804	69	3b	2614	70a-c	—
ARSOK S104-2E	3584bc	71a	3ab	3867b	70	0	4586	70	5ab	2299	74a	—
ARSOK S104-3E	3658a-c	69ab	5ab	3993b	70	0	4574	67	10ab	2408	71ab	—
ARSOK S105-3E	3794a-c	69ab	2ab	4011b	70	1	4753	66	4b	2589	70a-c	—
ARSOK S105-4E	3866ab	69ab	3ab	4167b	69	0	4913	68	5ab	2517	71ab	—
NM16-17	3363c	68b	4ab	4039b	70	0	3908	65	8ab	2178	66c	—
NM16-42	3487bc	69ab	9a	3951b	70	0	4054	68	18a	2456	69bc	—

¹ Numbers with the same lowercase letter within columns are not significantly different ($\alpha = 0.05$).

² Grade = % total sound mature kernels + sound splits.

³ SM, % incidence of Sclerotinia blight. No Sclerotinia ratings taken in 2021 in the Spanish/Valencia trial due to low levels of disease.

⁴ Days after planting (DAP) when dug; peanut growing degree days (GDD) heat units in Fahrenheit calculated by Mesonet. Planting and digging dates: 2023, June 21 and Nov. 3; 2022, June 6 and Oct. 31; 2021, May 14 and Oct. 26.

Table 6. Crop value, yield, grade, Sclerotinia blight, pod and shelling characteristics in advanced Virginia breeding lines and commercial cultivars planted at the Caddo Research Station in Fort Cobb on June 21, 2023.¹

Entry	Revenue (\$/A) ²	Yield (lbs/A)	Grade ³	SM ⁴	100-seed (g)	VDK (%) ⁵	Hull (%)	Super Jumbo (%)	Jumbo (no./oz) ²	Fancy (no./oz) ²
ARSOK V99	1120a	4537a	68.1	5.0b	83.0cd	0.8	30.0b	12.7a	14.7bc	19.7d-f
Comrade	1009b	4103ab	67.8	23.3ab	98.1a	0.5	30.8ab	10.0d	15.3b	23.5bc
Jupiter	974b	4092ab	65.6	21.1ab	88.8b	0.7	32.9ab	11.3bc	14.0cd	21.0cd
ARSOK V103-3	969b	4014a-c	66.5	25.8ab	89.5b	1.1	31.5ab	11.9ab	17.7a	26.9a
ARSOK V98	962b	4026a-c	65.9	4.6b	88.1bc	0.7	32.6ab	11.0c	12.9d	17.6ef
ARSOK V103-1	920bc	3921a-c	64.8	10.7b	90.2b	0.9	33.4a	11.8ab	17.1a	25.6ab
Bailey II	846c	3531bc	66.1	22.9ab	82.1d	0.7	31.8ab	11.4bc	12.9d	16.9f
Emery	825c	3395c	67.1	38.8a	86.6b-d	0.5	31.4ab	11.2bc	14.1c	20.7c-e

¹ Entries sorted by highest to lowest contract revenue per acre. Peanuts were dug Nov. 3 (136 days after planting; 2,823 growing degree days in Fahrenheit). Numbers with the same lowercase letter within columns are not significantly different ($\alpha = 0.05$). No differences among entries if letters absent in column.

² Based on contract price of \$650/ton. Calculations do not include deductions for excess splits or damaged and other kernels.

³ Grade = % total sound mature kernels + sound splits.

⁴ Incidence of Sclerotinia blight rated on Oct. 13.

⁵ VDK, visibly damaged kernels.

⁶ Number of pods per ounce for pods riding slotted screens sized for super jumbo (40/64 x 3" slots), jumbo (37/64 x 3"), fancy (32/64 x 3")

Figure 1. Percent pod size distribution by weight among Virginia entries in 2021 and 2022 disease trials. Pods were sorted using slotted screens sized for super jumbo (40/64 x 3" slots), jumbo (37/64 x 3") and fancy (32/64 x 3"). Pass-through pods fit through 32/64 x 3" screen.

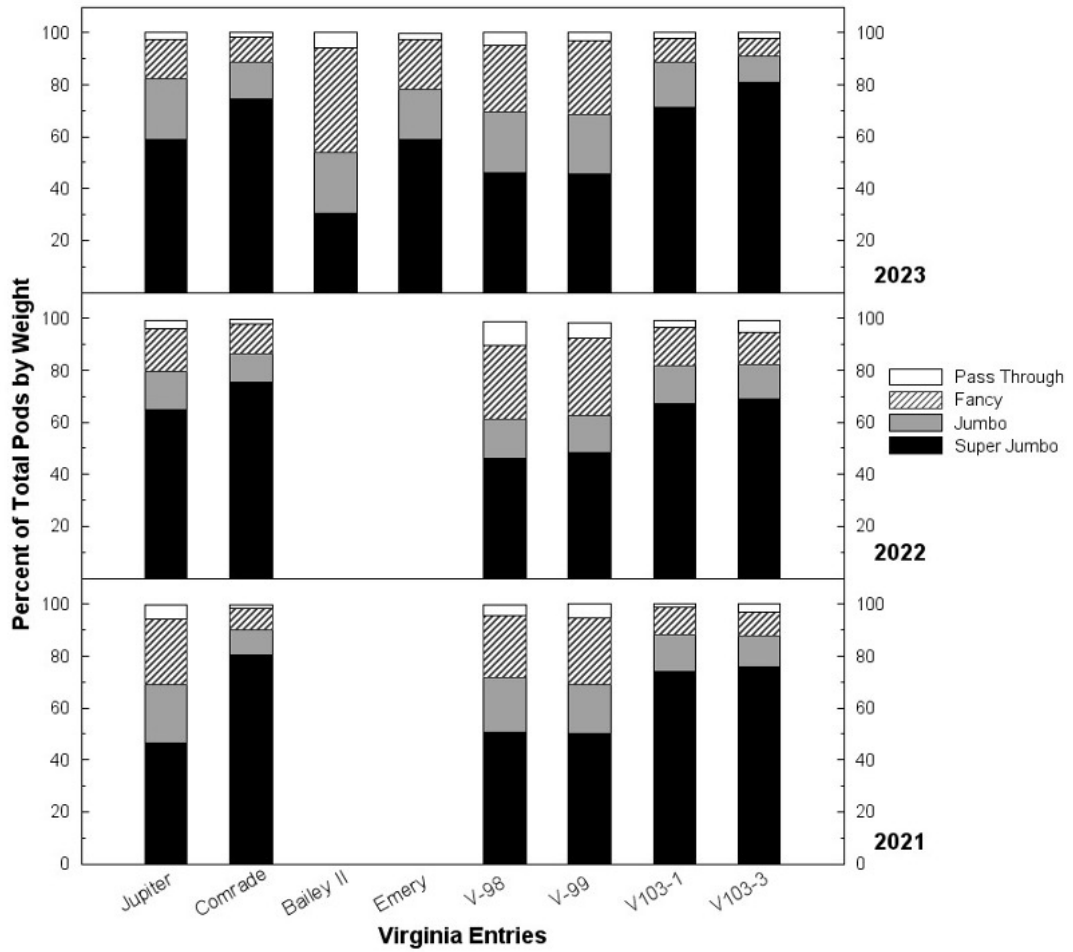


Table 7. Three-year averages for Sclerotinia blight, yield (pounds per acre), and seed grade in Virginia advanced breeding lines and commercial cultivars at the Caddo Research Station in Fort Cobb (2021-2023).¹

Entry	2021-2023			2023			2022			2021		
	Yield	GRD ²	SM ³	Yield	GRD	SM	Yield	GRD	SM	Yield	GRD	SM
Virginia				136 DAP/2823 GDD ⁴			148 DAP/3203 GDD			166 DAP/3409 GDD		
Jupiter	4007ab	64c	34a	4092	66	21ab	4711	61c	58a	3219ab	64c	23a
Comrade	3985ab	69a	31a	4103	68	23ab	4852	67a	62a	3001ab	72a	8ab
ARSOK V98	3911ab	67a-c	10b	4014	66	5b	5106	64ab	21bc	2614b	69a-c	5b
ARSOK V99	4400a	68a	6b	4537	68	5b	5034	65ab	6c	3630a	70ab	8ab
ARSOK V103-1	3957ab	67ab	30a	3921	65	26a	4925	64a-c	46ab	3025ab	71ab	17ab
ARSOK V103-3	3794b	65bc	19ab	4026	66	11ab	4501	62bc	25bc	2856ab	66bc	24a

¹ Entries are sorted from highest to lowest two-year average yield. Numbers with the same lowercase letter within columns for each market type are not significantly different ($\alpha = 0.05$). No differences among entries if letters absent in column.
² Grade = % total sound mature kernels + sound splits.
³ SM, % incidence of Sclerotinia blight.
⁴ Days after planting (DAP) when dug; peanut growing degree day (GDD) heat units in Fahrenheit calculated by Mesonet. Planting and digging dates: 2023, June 21 and Nov. 3; 2022, June 6 and Oct. 31; 2021, May 14 and Oct. 26.

Table 8. Pod rot in Virginia entries planted in the 2023 pod rot nursery and 2021 cultivar/advanced breeding line trial at the Caddo Research Station, Fort Cobb.¹

Entry	Pod Rot %	
	2023 Pod Rot Nursery	2021 Cultivar/Breeding Lines
Bailey II	5.3c	—
Comrade	11.3bc	31.3ab
Emery	1.3c	—
Jupiter	20.5ab	43.8a
ARSOK V99	4.0c	20.5bc
ARSOK V103-1	1.3c	10.5c
ARSOK V103-3	2.3c	4.0c
PI 365553 (resistant)	1.0c	—
PI 378012 (susceptible)	27.5a	—

¹ 2023 pod rot nursery planted on June 17; 2021 plots planted on May 14. Numbers with the same lowercase letter within columns for each market type are not significantly different ($\alpha = 0.05$).

² Percentage of pods with symptoms of pod rot estimated within 3 days after digging.

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2023 Peanut Weed Management Report

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Peanut weed management trials were conducted at the Oklahoma State University Caddo Research Station near Fort Cobb. Peanuts were planted on May 8, 2023, in 36-inch rows. Preemergence (PRE) treatments were applied immediately after planting. The volunteer cotton trial received an overlay of Prowl (1 qt/A) + Valor (2 oz/A) PRE. All trials received a postemergence (POST) application of Select (1 pt/A) + Dyne-Amic (6 fl oz/A). The preemergence herbicide and Brake tolerance trials received Butyrac 200 (1 pt/A) + Dyne-Amic (6 fl oz/A) POST. These trials were irrigated and maintained throughout the growing season. Trials were visually evaluated for peanut response and weed control. Peanuts were dug, field dried and harvested (10/11/23).

The first trial was established to evaluate preemergence herbicides for peanut response and weed control. Preemergence herbicides evaluated included BAS 85001H, a new PPO herbicide for potential use in peanut. Additional herbicides included Valor, Prowl H2O and Pursuit. Peanut stand reduction was 5% or less for all treatments (data not shown). Peanut injury was initially less than 5% for all treatment (Table 1). Peanut injury four weeks after planting (WAP) was greater than 5% with BAS 85001H at 2 fl oz/A and Valor + Pursuit with and without Prowl H2O. Late-season peanut injury was not observed for any treatment. Palmer amaranth (Table 2) and Texas panicum (Table 3) control was at least 98% all season long with all treatments applied. Ivyleaf morningglory (Table 4) control was 100% (2 WAP) and was at least 97% for all treatments except BAS 85001H (0.68 fl oz/A) and Prowl H2O. When evaluated, 12 WAP ivyleaf morningglory control was 99-100% with all Valor + Pursuit combinations. Peanut yields were greater than 4,500 lbs/A for all treatments except where Prowl H2O was applied alone. (Table 1).

The second trial evaluated various in-season herbicides to control either Xtend or Enlist volunteer cotton in peanuts. Initial peanut injury was 10% with all Gramoxone and Aim treatments (Table 5). All peanut injury had subsided by four weeks after treatment (WAT). Xtend (dicamba tolerant) volunteer cotton control was 94% (4 WAT) and 83% (9 WAT) with 2,4-DB (Table 6). This compared to no control on Enlist (2,4-D tolerant) volunteer cotton (Table 6). Aim alone or in combination with Anthem Flex controlled 80-88% (4 WAT) and 68-73% (9 WAT) of both Xtend and Enlist volunteer cotton. Anthem Flex alone, which contains a low rate of Aim, only controlled 40-50% of either volunteer cotton. Gramoxone control was 55-69% of both Xtend and Enlist volunteer cotton. Control with Gramoxone was less than expected, which may have been due to the 8 fl oz/A rate. Peanut yields were not affected by any of the treatments applied (Table 5).

The third trial evaluated peanut variety response to Brake (fluridone) herbicide applied preemergence. Peanut stand reduction was 5% or less with all treatments applied (data not shown). Peanut stunting was 5% or less season long with Brake on OLé peanut variety (Table 7). Peanut stunting was less than 5% with Span17 peanut variety except with the 1X and 2X rate of Brake (4 WAP). Peanut stunting was 4-6% with the 1X and 2X rate of Brake with Lariat peanut variety.

Visual peanut injury (2-4 WAP) was 6-11% for all varieties. Visual peanut injury was 5% or less for all treatments except the 2X rate of Brake with the Lariat variety 8 WAP and injury was less than 5% for all varieties 12 WAP. Peanut yields were not statistically different for any treatments, however, yields of OLé treated with a 2X rate of Brake PRE were less than 5,000 lbs/A.

Two additional weed management trials were conducted on-farm. In one trial, weed control was at least 95% (Palmer amaranth, volunteer cotton, annual grass control) with various combinations of Anthem Flex (data not shown). In a second trial, late season of control of Palmer amaranth was poor with various combinations of Cobra applied POST (data not shown).

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Table 1. Peanut response to preemergence herbicides, Fort Cobb 2023.

Treatment	Rate		2 WAP	Peanut Injury	12 WAP	Peanut Yield
				4 WAP		
				%		(lb/A)
BAS 85001H	0.68	fl oz/a	0	4	0	4864
BAS 85001H	1	fl oz/a	3	5	0	5242
BAS 85001H	2	fl oz/a	3	6	0	4254
BAS 85001H	0.68	fl oz/a	0	0	0	5372
+ Prowl H2O	32	fl oz/a				
BAS 85001H	1	fl oz/a	4	5	0	4632
+ Prowl H2O	32	fl oz/a				
Valor EZ	3	fl oz/a	1	1	0	4821
+ Prowl H2O	32	fl oz/a	0	4	0	4269
Valor EZ	3	fl oz/a	3	0	0	5147
+ Prowl H2O	32	fl oz/a				
Valor EZ	3	fl oz/a	3	8	0	4951
+ Pursuit	4	fl oz/a				
Valor EZ	3	fl oz/a	1	8	0	5184
+ Prowl H2O	32	fl oz/a				
+ Pursuit	4	fl oz/a				
Valor EZ	2	fl oz/a	0	4	0	5097
+ Prowl H2O	32	fl oz/a				
+ Pursuit	2	fl oz/a				
+ Pursuit (At Crack)	2	fl oz/a				
LSD P= .10			4	3	NS	518
CV			157	56	0	9
All treatments applied immediately after planting unless otherwise noted. Entire trial area was treated with Select (8 fl oz/A) & 2,4-DB (16 fl oz/A) postemergence.						

Table 2. Palmer amaranth control with preemergence herbicides, Fort Cobb 2023.

Treatment	Rate		Palmer Amaranth Control		
			2 WAP	Peanut Injury 4 WAP	12 WAP
			%		
BAS 85001H	0.68	fl oz/a	100	100	98
BAS 85001H	1	fl oz/a	100	100	100
BAS 85001H	2	fl oz/a	100	100	100
BAS 85001H	0.68	fl oz/a	100	100	100
+ Prowl H2O	32	fl oz/a			
BAS 85001H	1	fl oz/a	100	100	100
+ Prowl H2O	32	fl oz/a			
Valor EZ	3	fl oz/a	100	100	100
+ Prowl H2O	32	fl oz/a	100	100	98
Valor EZ	3	fl oz/a	100	100	100
+ Prowl H2O	32	fl oz/a			
Valor EZ	3	fl oz/a	100	100	100
+ Pursuit	4	fl oz/a			
Valor EZ	3	fl oz/a	100	100	100
+ Prowl H2O	32	fl oz/a			
+ Pursuit	4	fl oz/a			
Valor EZ	2	fl oz/a	100	100	100
+ Prowl H2O	32	fl oz/a			
+ Pursuit	2	fl oz/a			
+ Pursuit (At Crack)	2	fl oz/a			
LSD P= .10			NS	NS	3
CV			0	0	3
All treatments applied immediately after planting unless otherwise noted. Entire trial area was treated with Select (8 fl oz/A) & 2,4-DB (16 fl oz/A) postemergence.					

Table 3. Texas panicum control with preemergence herbicides, Fort Cobb 2023.

Treatment	Rate		Texas Panicum Control		
			2 WAP	Peanut Injury 4 WAP	12 WAP
			%		
BAS 85001H	0.68	fl oz/a	100	100	100
BAS 85001H	1	fl oz/a	100	100	100
BAS 85001H	2	fl oz/a	100	100	100
BAS 85001H	0.68	fl oz/a	100	100	100
+ Prowl H2O	32	fl oz/a			
BAS 85001H	1	fl oz/a	100	100	100
+ Prowl H2O	32	fl oz/a			
Valor EZ	3	fl oz/a	100	100	100
+ Prowl H2O	32	fl oz/a	100	100	98
Valor EZ	3	fl oz/a	100	100	100
+ Prowl H2O	32	fl oz/a			
Valor EZ	3	fl oz/a	100	100	100
+ Pursuit	4	fl oz/a			
Valor EZ	3	fl oz/a	100	100	100
+ Prowl H2O	32	fl oz/a			
+ Pursuit	4	fl oz/a			
Valor EZ	2	fl oz/a	100	100	100
+ Prowl H2O	32	fl oz/a			
+ Pursuit	2	fl oz/a			
+ Pursuit (At Crack)	2	fl oz/a			
LSD P= .10			NS	NS	2
CV			0	0	1
All treatments applied immediately after planting unless otherwise noted. Entire trial area was treated with Select (8 fl oz/A) & 2,4-DB (16 fl oz/A) postemergence.					

Table 4. Ivyleaf morningglory control with preemergence herbicides, Fort Cobb 2023.

Treatment	Rate		Ivyleaf Morningglory Control		
			2 WAP	Peanut Injury 4 WAP	12 WAP
			%		
BAS 85001H	0.68	fl oz/a	100	81	80
BAS 85001H	1	fl oz/a	100	100	95
BAS 85001H	2	fl oz/a	100	97	89
BAS 85001H	0.68	fl oz/a	100	99	96
+ Prowl H2O	32	fl oz/a			
BAS 85001H	1	fl oz/a	100	99	89
+ Prowl H2O	32	fl oz/a			
Valor EZ	3	fl oz/a	100	100	93
+ Prowl H2O	32	fl oz/a	100	85	83
Valor EZ	3	fl oz/a	100	100	93
+ Prowl H2O	32	fl oz/a			
Valor EZ	3	fl oz/a	100	100	100
+ Pursuit	4	fl oz/a			
Valor EZ	3	fl oz/a	100	100	99
+ Prowl H2O	32	fl oz/a			
+ Pursuit	4	fl oz/a			
Valor EZ	2	fl oz/a	100	100	100
+ Prowl H2O	32	fl oz/a			
+ Pursuit	2	fl oz/a			
+ Pursuit (At Crack)	2	fl oz/a			
LSD P= .10			NS	14	10
CV			0	13	9
All treatments applied immediately after planting unless otherwise noted. Entire trial area was treated with Select (8 fl oz/A) & 2,4-DB (16 fl oz/A) postemergence.					

Table 5. Peanut response to postemergence herbicides, Fort Cobb 2023.

Treatment	Rate		Peanut Injury		Peanut Yield (lb/A)
			2 WAP	4 WAP	
		%			
XTEND Cotton					
Gramoxone	8	fl oz/a	10	0	5561
2,4-DB	24	fl oz/a	3	0	5881
Anthem Flex	3	fl oz/a	4	0	5750
Aim	1	fl oz/a	10	0	5460
Anthem Flex	3	fl oz/a	10	0	5431
+ Aim	0.6	fl oz/a			
Enlist Cotton					
Gramoxone	8	fl oz/a	10	0	5721
2,4-DB	24	fl oz/a	0	0	5866
Anthem Flex	3	fl oz/a	4	0	5503
Aim	1	fl oz/a	10	0	5721
Anthem Flex	3	fl oz/a	10	0	5605
+ Aim	0.6	fl oz/a			
LSD P= .10 CV			3 37	NS 0	NS 9

Table 6. Peanut response to postemergence herbicides, Fort Cobb 2023.

Treatment	Rate		Volunteer Cotton Control	
			4 WAT	9 WAT
		%		
XTEND Cotton				
Gramoxone	8	fl oz/a	60	60
2,4-DB	24	fl oz/a	94	83
Anthem Flex	3	fl oz/a	45	48
Aim	1	fl oz/a	85	73
Anthem Flex	3	fl oz/a	80	70
+ Aim	0.6	fl oz/a		
Enlist Cotton				
Gramoxone	8	fl oz/a	69	55
2,4-DB	24	fl oz/a	0	0
Anthem Flex	3	fl oz/a	50	40
Aim	1	fl oz/a	88	73
Anthem Flex	3	fl oz/a	80	68
+ Aim	0.6	fl oz/a		
LSD P= .10 CV			8 13	11 20

Table 7. Peanut response to preemergence herbicides, Fort Cobb 2023.

Treatment	Rate	2 WAP	Peanut Stunting			Peanut Injury			12 WAP	Peanut Yield	
			4 WAP	8 WAP	12 WAP	2 WAP	4 WAP	8 WAP			
Ole											
Brake 0X	0	fl oz/a	0	0	0	0	0	0	0	0	5336
Brake 1X	16	fl oz/a	0	0	0	0	9	6	0	0	5474
Brake 2X	32	fl oz/a	1	1	4	0	11	9	5	4	4930
Span 17											
Brake 0X	0	fl oz/a	0	0	0	0	0	0	0	0	5910
Brake 1X	16	fl oz/a	1	6	3	0	8	8	3	1	5968
Brake 2X		fl oz/a	4	6	4	0	11	10	4	3	5830
Lariat											
Brake 0X	0	fl oz/a	0	0	0	0	0	0	0	0	5975
Brake 1X	16	fl oz/a	4	6	5	0	8	10	5	1	5902
Brake 2X	32	fl oz/a	5	6	6	0	11	9	6	3	5881
LSD P= .10			3	3	2	NS	3	3	2	2	NS
CV			138	76	79	0	33	48	67	139	10

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2023 Oklahoma Peanut Variety Trials

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Overview

- Performance of runner entries varied, but averages across locations in 2023 indicated that cultivars ACI 3321 and Lariat were the top entries in yield and value per acre.
- The small-seeded runner types marketed as Spanish (AT9899 and Span17) were the leading cultivars in value per acre among the Spanish trial entries. Among the true Spanish entries, cultivar OLé and breeding line ARSOK S104-2E yielded best at 4,745 and 4,898 pounds per acre.
- Valencia cultivars and breeding lines performed well across locations, indicating this market type may be a good fit for production in Oklahoma.
- Significant differences were not noted in Virginia entry yields across locations and years. Cultivar Comrade was consistently the top performer for yield and value per acre.

Peanut production in Oklahoma is generally located in three geographical regions: southwestern, west-central and northwest. Each region differs from the others in environmental and biological stressors that affect crop production, so the same peanut cultivar will likely perform differently in each growing region. Therefore, the Oklahoma Peanut Variety Trials are conducted in each region annually and are designed to test the performance of commonly grown cultivars and potential cultivar releases against each other. In 2023, Valencia breeding lines and cultivars were added as trial entries due to industry interest in growing this market type in the state. Also included in the trial are several small-seeded runner lines or cultivars that are intended to be marketed as Spanish peanuts. These entries are noted as small-seeded runners in trial data tables. Like in 2022, the 2023 growing season was unusually hot with temperatures above 100 °F for part of July without any rainfall or relief. However, the crop did not suffer as severely as in 2022, showing less of a split in maturity. The results of these annual trials can serve as a guide for producers when choosing a cultivar to plant.

Variety Trial Methods

All entries (cultivars and advanced breeding lines) in the Oklahoma Peanut Variety Trials were high-oleic. The following entries were included in all locations in 2023:

- 8 runner types: cultivars ACI 080, ACI 476, ACI 509, ACI 3321, and Lariat and breeding lines ARSOK 95-1, ARSOK R106-9L and ARSOK R109-1L

- 8 true Spanish types: cultivars OLé and Schubert and breeding lines ARSOK S104-2E, ARSOK S104-3E, ARSOK S105-3E and ARSOK S105-4E
- 4 small-seeded runner types (marketed as Spanish): Cultivars AT9899 and Span17 and breeding lines ARSOK S95-1 and ARSOK S107-1L
- 5 true Valencia types: Cultivar TamVal14 and New Mexico State University breeding lines NM310, NMKC5, NMM6 and NMPR25
- 1 small-seeded runner type (marketed as Valencia): IPG 1288
- 8 Virginia types: Cultivars Bailey II, Comrade, and Emery and breeding lines ARSOK V-98, ARSOK V99, ARSOK V102-5, ARSOK V103-1 and ARSOK V103-3

All variety trials were conducted under an extensive pest management program. The objective was to prevent as much outside influence from pest pressures (weeds, disease and insects) on yield and grade as possible. The interaction between variety and location was significant, so the results were separated by location. Averages across locations and years were included to give producers a better estimate of line performance. Since the varieties and advanced line responses 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. Due to space limitations, a reduced number of runner and Virginia entries were included in the Davidson, Oklahoma, location. All test plots were planted using two 36-inch rows that were 15 feet long. Plots were seeded at a rate of 5 seeds/row foot (139,392 seeds/A). Trials were conducted using a randomized, complete block design with four replications. The entire plot was dug and then thrashed two to three days later. Peanuts were placed in a dryer until moisture reached 10%. The percentage of total sound mature kernels (% TSMK) was determined on a 200-gram sample from each plot.

Analysis of variance procedures were used to assess the effect of variety on the multiple response variables. SAS Version 9.4 (PROC MIXED) was used to conduct the analysis. Statistical significance was determined by market type, with Spanish and Valencia types being analyzed together. A randomized complete block design was used, and block is specified as a random effect in the model. Post-hoc comparisons using Tukey adjustments are reported when the overall variety effect is significant in the analysis of variance. Two means reported with the same letter are not significantly different at the 0.05 level.

Means for all observations were calculated for each entry and the overall trial. Suppose a given variety out-yields another variety by as much or more than the standard error value. In that case, we are 95% sure the yield difference is real, with only a 5% probability the difference is due to chance alone. Results reported here should be representative of what might occur throughout the state but would be most applicable under environmental management conditions like those of the trials. The relative yields of all peanut varieties are affected by crop management and environmental factors, including soil type, summer conditions, soil moisture, disease, and insects. Value/acre was determined by converting estimated plot yields to tons/acre and using the 2023 contract price values for each market type (\$675 for runner types, \$700 for Spanish and Virginia types, and \$950 for Valencia types). No adjustments were made for damaged kernels or concealed damage. Virginia \$/A values may be underestimated as grade is not as large a factor for in-shell peanuts, and the extra-large kernels (ELK) bonus was not added to the final value/acre figure. Calculations of \$/A are based on yield and grade only and do not include possible input costs. The following formula was used: $\$/A = \text{yield (tons/A)} * \text{contract price (\$/ton)} * \text{grade}$.

2023 Caddo County Peanut Variety Trial

Location:	Fort Cobb
Date Planted:	May 17, 2023
Dig Date:	
Spanish/Valencia:	September 9, 2023
Runner/Virginia:	October 16, 2023
Thresh Date:	
Spanish/Valencia:	October 2, 2023
Runner/Virginia:	October 19, 2023

The trial was planted on May 17, 2023. Two digging dates were used based on entry market type. A conventional till seedbed was used and managed for foliar and soil-borne disease throughout the season. The average yield for the runner test was 4,071 lbs/A, and the average grade was 74% TSMK (Table 1). In general, grades were normal and not affected by the extremely hot summer. Entries ACI 080, ACI 3321, ACI 476 and Lariat had higher yields than other genotypes tested. Despite the extreme heat experienced in the 2023 growing season, yields were higher for most entries than in past years.

Among the Spanish and Valencia-type entries tested, the average yield and grade were 3,748 lbs/A and 66% TSMK, respectively. In Caddo County, statistical differences among entries were reported for yield. For true Spanish types, breeding line ARSOK S104-3E had the highest yield numerically at 4,122 lbs/A, but this was not significantly different than yields for several other lines or the cultivar OLé. Due to differences in growth habits between runner and Spanish-type peanut plants, small-seeded runners (marketed as Spanish) normally have a slightly higher yield than traditional Spanish. Among the true Valencia-type entries, NMPR25 and TamVal14 had the highest yields at 3,490 and 3,071 lbs/A, respectively. Entry IPG 1288, a small-seeded runner marketed as a Valencia type, had the highest overall yield at 4,592 lbs/A and the highest value per acre at \$1,396.

Entries in the Virginia test yielded lower than in past years, averaging 3,079 lbs/A with an average grade of 63% TSMK. Statistical differences were reported for yield and grade. Breeding line ARSOK V103-1 was the top yielder at 3,538 lbs/A but was statistically indistinguishable from cultivars Comrade at 3,479 lbs/A and Emery at 3,465 lbs/A.

Table 5 contains yield and grade data averaged across 2022-2023 for the Caddo County trial. Not all entries included in the 2023 trial were included in 2022. The average yield among runner entries for the two years was 4,952 lbs/A, and the average grade was 71% TSMK. Significant differences in yield were reported for runner entries over the two-year period. For Spanish entries, significant differences in yield were also observed. As expected, the small-seeded runner cultivars, AT9899 and Span17, were the top yielders, averaging 4,838 and 5,164 lbs/A., respectively. Cultivars OLé and Schubert averaged 4,638 and 4,237 lbs/A, respectively. The average yield for Virginia entries in 2022-2023 was 4,474 lbs/A, and statistical differences in yield were seen among entries. The top-yielding cultivar was Comrade at 4,990 lbs/A.

2023 Blaine County Variety Trial

Location:	Hydro (Schantz Farms)
Date Planted:	May 15, 2023
Dig Date:	
Spanish/Valencia:	October 2, 2023
Runner/Virginia:	October 17, 2023
Thresh Date:	
Spanish/Valencia:	October 6, 2023
Runner/Virginia:	October 20, 2023

The trial was planted on May 15, 2023, into a conventional till seedbed and managed for weeds as well as foliar and soil-borne diseases throughout the season. Heavy rains and cool weather after planting resulted in a slow start for this trial. However, at the end of the growing season, this trial location proved to be the top performer for 2023. The average yield for the runner test (Table 2) was 6,548 lbs/A with an average grade of 73% TSMK. Statistical differences for yield and grade were reported, but the top-yielding cultivar was Lariat at 7,275 lbs/A. Breeding line ARSOK R109-1L also performed exceptionally well, yielding 7,088 lbs/A. For all entries, yields and grades were generally above normal.

Similar results were seen for the Spanish and Valencia entries at this location. For the true Spanish-type entries, cultivar OLé yielded 4,890 lbs/A, and breeding lines ARSOK S104-2E, ARSOK S104-3E and ARSOK S105-3E all had exceptional yields at 5,273, 5,591 and 5,057 lbs/A. Among small-seeded runners to be marketed as Spanish, cultivar Span17 was the top yielder at 6,568 lbs/A, but breeding line ARSOK S107-1L was impressive, yielding 5,953 lbs/A. The trial averaged 5,005 lbs/A and 64% TSMK.

Valencia entries also did well at this location. Entries TamVal14 and NMPR25 were exceptional, yielding 4,689 and 4,569 lbs/A, respectively. Small-seeded runner (marketed as a Valencia) IPG 1288 yielded 5,774 lbs/A with a grade of 71% TSMK.

Virginia entries averaged 6,706 lbs/A and a grade of 68% TSMK, which was much higher than in previous years. Cultivar Comrade topped the group, yielding 7,703 lbs/A with a grade of 70% TSMK. Breeding lines ARSOK V103-1 and ARSOK V103-3 also yielded well, each just over 6,800 lbs/A. No two-year averages were calculated since no trial was held in this location in 2022.

2023 Tillman County Variety Trial

Location:	Davidson (Joe D. White Farms)
Date Planted:	May 7, 2023
Dig Date:	
Spanish/Valencia:	October 9, 2023
Runner/Virginia:	October 17, 2023
Thresh Date:	
Spanish/Valencia:	October 12, 2023
Runner/Virginia:	October 20, 2023

The trial was planted on May 17, 2023, into a conventional till seedbed and managed for foliar and soil-borne diseases throughout the season. Table 3 shows the 2023 yield and grade data from Tillman County. Overall, yields were average, considering the stress of the growing season. Statistical differences were seen among entries. The average yield and grade for the runner test was 5,178 lbs/A and 73% TSMK. ACI 3321 had the highest yield among cultivars tested in the trial at 5,661 lbs/A, followed by Lariat at 5,318 lbs/A. Due to space limitations, ARS breeding lines were not included at this location.

Spanish and Valencia entries performed well in Tillman County in 2023 with the average yield being 4,541 lbs/A and an average grade of 66% TSMK. For the true Spanish type entries, cultivar OLé and breeding line ARSOK S104-2E yielded best at 5,300 and 5,348 lbs/A. Small-seeded runner breeding line IPG 1288 performed exceptionally well, yielding 5,868 lbs/A, which was similar to cultivar Span17 at 5,813 lbs/A.

The average yield and grade for Virginia-type entries were average for Tillman County at 5,260 lbs/A and 68% TSMK. Due to space limitations, Virginia breeding lines were not included at this location. Significant differences in yield were not reported.

Table 6 contains yield and grade data averaged across 2022-2023 for the Tillman County trial. Not all entries included in the 2023 trial were included in the 2022 trial. The average yield among runner entries for the two years was 6,096 lbs/A, and the average grade was 73% TSMK. Significant differences in yield were reported for runner entries over the two years, and cultivar Lariat was the top yielder at 6,452 lbs/A. For Spanish entries, significant differences in yield were also observed. As expected, the small-seeded runner cultivar Span17 was the top yielder, averaging 6,429 lbs/A. True Spanish cultivars OLé and Schubert averaged 6,277 and 5,284 lbs/A, respectively. The average yield for Spanish entries in 2022-2023 was 5,743 lbs/A. No data for Virginia entries was averaged over the two years due to a lack of common entries.

Performance Across Locations

Table 4 includes Oklahoma Variety Trial yield and grade data averaged across locations for 2023. Statistical differences for yield were reported for runner and Spanish/Valencia entries but not for Virginia entries. Among the runner types tested, cultivars ACI 3321 and Lariat had the highest yields at 5,761 and 5,448 lbs/A, respectively. Yields were similar when compared to years past, despite the extreme weather experienced in both years. On average, the top yielding small-seeded runner entry was Span17 at 5,453 lbs/A, and the top true Spanish entry was cultivar OLé at 4,745 lbs/A. Among the true Valencia entries, NMPR25 yielded the best at 4,088 lbs/A. Across locations, the Virginia-type cultivars performed similarly with no significant differences in yield noted. Cultivar Comrade had the top yield at 5,511 lbs/A.

Table 7 shows results from the Oklahoma Peanut Variety Trial common entries averaged across locations (Caddo and Tillman counties) for two years (2022-2023). Averaged over the years and across locations, the runner cultivars tested were not significantly different. The mean yield for runner-type entries was 5,587 lbs/A. Among the Spanish entries, the mean yield was 5,126 lbs/A with the small-seeded runner-types Span17 and AT9899 yielding the highest at 5,797 and 5,484 lbs/A, respectively. The poorest average yield for Spanish entries was Schubert at 4,760 lbs/A. No data for Virginia entries was averaged over the two years due to a lack of common entries.

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Table 1. Agronomic and shelling characteristics for entries in the 2023 Oklahoma Peanut Variety Trial. Location: Caddo Research Station in Fort Cobb.⁶

	Yield	% of Trial	Grade ²	SMK/100 ³	ELK ⁴	MED ⁴	No.1 ⁴	Shelling	Value ⁵
Entry	(lb/A)	Average	(%TSMK)	(g)	%				(\$/A)
Runner¹									
ACI 080	4789a	118	72d	66d	33d	39a	23cd	73e	1,164
ACI 476	4210c	103	73c	65d	48a	31c	20e	74d	1,037
ACI 509	3511e	86	74b	63e	40c	37b	22d	75c	877
ACI 3321	4515b	111	74b	73b	44b	29d	35a	76b	1,128
Lariat	3975cd	98	76a	73b	48a	26e	20e	77a	1,020
ARSOK R95-1	3852d	95	73c	76a	44b	24f	30b	75c	949
ARSOK R106-9L	3906d	96	73c	70c	46ab	26e	20e	75c	962
ARSOK R109-1L	3810d	94	74b	71c	45b	28d	24c	76b	952
Mean	4071		74	70	44	2	24	75	
Standard Error	250		0.9	1.4	2	1.8	1.7	0.7	
Spanish*** Valencia** Small Seeded Runner*^{1,7}									
AT9899 (S)*	4122bc	110	68b	51de	53i	27b	19c	70d	981
OLé***	3992c	106	64d	54d	74c	17e	8f	67g	894
Schubert***	3921cd	104	64d	47f	47j	28b	25b	67g	851
Span17 (S)*	4278bc	114	72a	56c	66e	25c	16d	74b	1078
TamVal OL14**	3071e	82	62e	54d	54hi	20d	25b	65h	904
ARSOK S95-1 (S)*	4232bc	112	68b	59b	72d	11h	15d	71c	1007
ARSOK S104-2E***	3819bc	102	67b	53c	76d	17e	6g	69e	896
ARSOK S104-3E***	4122c	110	65c	51d	72d	20d	5h	68f	895
ARSOK S105-3E***	3996c	107	64d	53cd	72d	14g	14b	67g	895
ARSOK S105-4E***	3894d	104	65c	55cd	79c	16f	3i	68f	886
ARSOK S1071L (S)*	4394ab	117	72a	59b	87b	8i	3i	75a	1107
NM310**	2680g	72	64d	47f	55gh	28b	20c	67g	814
IPG 1288 (V)*	4592a	123	72a	63a	91a	8i	1j	74b	1396
NMKC5**	2776g	74	64d	54d	56g	25c	28a	67g	844
NMM6**	2584g	69	64d	50e	60f	25c	13e	67g	786
NMPR25**	3490e	93	64d	47f	38k	31a	20c	68f	1060
Mean	3748		66	53	66	20	14	69	
Standard Error	172		0.8	1.4	2.2	1	1.3	0.6	
Virginia¹									
Bailey II	2748c	89	68c	95b	46bc	12cd	26c	70c	654
Comrade	3479a	113	70a	106a	44c	11d	32b	71b	852
Emery	3465a	113	67d	93bc	48ab	11d	21d	69d	813
ARSOK V98	2603c	85	66e	94bc	40d	18a	30b	70c	601
ARSOK V99	3188b	104	69b	92bcd	50a	13c	30b	72a	770
ARSOK V102-5	2786c	90	66e	91cd	40d	16b	40a	68e	644
ARSOK V103-1	3538a	115	63f	94bc	45c	13c	30b	69d	780
ARSOK V103-3	2825c	92	63f	90d	38d	17a	40a	67f	623

Mean Standard Error	3079 246		67 0.8	94 3	44 2	14 1.2	31 2	69 0.8	
¹ Market Type. ² % TSMK = Percent total sound mature kernels. ³ SMK/100 = Weight of 100 sound mature kernels. ⁴ ELK = % Kernels riding a 21.5/64" X 1" slotted screen for Virginia and 21/64" X 3/4" screen for runner and Spanish; MED = % Kernels riding a 18/64" but falling through a 21.5/64" or 21/64" screen; No.1 = % Kernels riding a minimum grade screen (16/64" for runner and Spanish, and 15/64 for Virginia) but falling through a 18/64" ⁵ Calculated based on peanut market-type contract price per ton 2023 (\$675, runners; \$700, Spanish and Virginia; \$950, Valencia). ELK bonus not added for Virginias. ⁶ Values within the same column followed by the same letter are not significantly different at P = .05. ns = no significant differences. ⁷ Small seeded runners marketed as Spanish (S) or Valencia (V)									

Table 2. Agronomic and shelling characteristics for entries in the 2023 Oklahoma Peanut Variety Trial. Location: Shantz Farms in Hydro.⁶

	Yield	% of Trial	Grade ²	SMK/100 ³	ELK ⁴	MED ⁴	No.1 ⁴	Shelling	Value ⁵
Entry	(lb/A)	Average	(%TSMK)	(g)	%				(\$/A)
Runner¹									
ACI 080	6669c	102	73a	62e	34cd	37a	24cd	75a	1,643
ACI 476	6822c	104	71b	61e	48a	29c	22d	73c	1,635
ACI 509	5044e	77	71b	58f	36c	35b	24cd	74b	1,209
ACI 3321	6947abc	106	72ab	66c	41b	29c	29b	75a	1,688
Lariat	7275a	111	72ab	68b	44b	27d	25c	75a	1,768
ARSOK R95-1	5667d	87	70c	67bc	32d	30c	35a	72d	1,339
ARSOK R106-9L	6869b	105	72ab	64d	45a	23e	25c	75a	1,669
ARSOK R109-1L	7088ab	108	73a	70a	42ab	27d	23cd	75a	1,746
Mean	6548		72	65	40	30	26	74	
Standard Error	371		1.3	1.8	3	1.6	2.5	0.8	
Spanish*** Valencia** Small Seeded Runner*^{1,7}									
AT9899 (S)*	5558bc	111	66b	48bc	58f	23cd	21b	69b	1,284
OLé***	4890c	98	64c	51b	77bc	16f	5e	68b	1,096
Schubert***	3455f	69	59ef	30d	46h	29a	23ab	64d	713
Span17 (S)*	6568a	131	71a	52b	73cd	20e	5e	73a	1,632
TamVal OL14**	4689de	94	62d	53b	53g	23cd	22ab	66c	1,381
ARSOK S95-1 (S)*	5456bc	109	64c	59a	69d	10g	15c	68b	1,222
ARSOK S104-2E***	5273cd	105	65b	46bc	66d	25bc	6d	68b	1,200
ARSOK S104-3E***	5591b	112	63cd	47bc	64e	20e	10d	66c	1,233
ARSOK S105-3E***	5057cd	101	63cd	48bc	73cd	17f	8de	67bc	1,115
ARSOK S105-4E***	4946cd	99	61de	50b	74c	15f	8de	66c	1,056
ARSOK S1071L (S)*	5953b	119	69a	58a	80b	11g	6e	72a	1,438
NM310**	3843ef	77	65bc	43c	47h	26b	23ab	69b	1,187
IPG 1288 (V)*	5774bc	115	71a	60a	94a	5h	0f	73a	1,947
NMKC5**	4330e	87	60e	48bc	40i	22de	21b	65cd	1,234
NMM6**	4128e	82	61de	47bc	49gh	21de	25a	66c	1,196
NMPR25**	4569de	91	63cd	45c	38i	26b	20b	68b	1,367
Mean	5005		64	49	63	19	14	68	
Standard Error	562		1.4	4	4	2	3	1.1	
Virginia¹									
Bailey II	6908b	103	68b	89	48a	37b	11d	69c	1,644
Comrade	7703a	114	70a	108	46b	38ab	10d	73a	1,887
Emery	7368ab	109	69ab	90	48a	37b	14c	71b	1,779
ARSOK V98	5794c	86	65c	87	39e	40a	18b	67e	1,318
ARSOK V99	6515b	97	68b	87	48a	31c	17b	69c	1,551
ARSOK V102-5	5733c	85	68b	82	43c	25d	21a	69c	1,364
ARSOK V103-1	6812b	101	68b	81	45b	28cd	18b	69c	1,621
ARSOK V103-3	6815b	101	66c	80	41d	30c	21a	68d	1,574
Mean	6706		68	88	45	33	16	69	
Standard Error	538		1	3	1.9	2.4	1.5	0.9	

¹ Market Type.

² % TSMK = Percent total sound mature kernels.

³ SMK/100 = Weight of 100 sound mature kernels.

⁴ ELK = % Kernels riding a 21.5/64" X 1" slotted screen for Virginia and 21/64" X 3/4" screen for runner and Spanish; MED = % Kernels riding a 18/64" but falling through a 21.5/64" or 21/64" screen; No.1 = % Kernels riding a minimum grade screen (16/64" for runner and Spanish, and 15/64 for Virginia) but falling through a 18/64"

⁵ Calculated based on peanut market-type contract price per ton 2023 (\$675, runners; \$700, Spanish and Virginia; \$950, Valencia). ELK bonus not added for Virginias.

⁶ Values within the same column followed by the same letter are not significantly different at P = .05. ns = no significant differences.

⁷ Small seeded runners marketed as Spanish (S) or Valencia (V)

Table 3. Agronomic and shelling characteristics for entries in the 2023 Oklahoma Peanut Variety Trial. Location: White Farms in Davidson.⁶

	Yield	% of Trial	Grade ²	SMK/100 ³	ELK ⁴	MED ⁴	No.1 ⁴	Shelling	Value ⁵
Entry	(lb/A)	Average	(%TSMK)	(g)	%				(\$/A)
Runner¹									
ACI 080	4758d	92	71c	55d	10c	36bc	7c	68c	1,140
ACI 476	5049c	98	72bc	62c	32a	35c	23a	71b	1,227
ACI 509	5103c	99	74a	52e	19b	43a	11b	74a	1,274
ACI 3321	5661a	109	73ab	65b	29a	40ab	22a	75a	1,394
Lariat	5318b	102	74a	69a	29a	34c	22a	74a	1,328
Mean	5178		73	60	24	38	17	72	
Standard Error	200		1.3	1.6	4	4.5	3	2.5	
Spanish*** Valencia** Small Seeded Runner*^{1,7}									
AT9899 (S)*	4972b	109	68b	50e	35fg	31bc	20a	71c	1,183
OLé***	5300bc	117	67bc	56c	60d	20g	17bc	70cd	1,243
Schubert***	4869c	107	62e	44g	21i	31bc	11e	64f	1,057
Span17 (S)*	5813a	128	72a	56c	62d	26e	10e	74b	1,465
TamVal OL14**	4145d	91	64d	49e	37f	28d	20a	67e	1,260
ARSOK S95-1 (S)*	4573bcd	101	68b	63a	68c	15h	15cd	71c	1,088
ARSOK S104-2E***	5348b	118	68b	52d	63d	24f	10e	69d	1,273
ARSOK S104-3E***	4930b	109	62e	49e	52e	26e	19ab	65f	1,070
ARSOK S105-3E***	4864c	107	66cd	53d	70c	20g	8f	67e	1,124
ARSOK S105-4E***	3575e	79	62e	49e	61d	20g	15cd	65f	776
ARSOK S1071L (S)*	5868a	129	72a	60b	80b	11i	6g	74b	1,479
NM310**	2645f	58	64d	46f	28gh	30c	17bc	68e	804
IPG 1288 (V)*	4887c	108	72a	61b	89a	9j	0h	75a	1,671
NMKC5**	3332e	73	66cd	47f	31g	32b	17bc	69de	1,045
NMM6**	3361e	74	65d	45g	26h	31bc	13d	69de	1,038
NMPR25**	4179d	92	66cd	47f	26h	35a	13d	70cd	1,310
Mean	4541		67	52	51	24	13	69	
Standard Error	445		1.3	1.1	4	1.4	2.4	0.8	
Virginia¹									
Bailey II	5312	101	69a	90b	47a	14b	32	71a	1,283
Comrade	5308	101	69a	94a	32b	23a	35	71a	1,282
Emery	5161	98	67b	79c	36b	24a	32	69b	1,210
Mean	5260		68	88	38	20	33	70	
Standard Error	435 (ns)		1.7	3.8	4.1	1.8	4.3 (ns)	1.4	
¹ Market Type. ² % TSMK = Percent total sound mature kernels. ³ SMK/100 = Weight of 100 sound mature kernels. ⁴ ELK = % Kernels riding a 21.5/64" X 1" slotted screen for Virginia and 21/64" X 3/4" screen for runner and Spanish; MED = % Kernels riding a 18/64" but falling through a 21.5/64" or 21/64" screen; No.1 = % Kernels riding a minimum grade screen (16/64" for runner and Spanish, and 15/64 for Virginia) but falling through a 18/64" ⁵ Calculated based on peanut market-type contract price per ton 2023 (\$675, runners; \$700, Spanish and Virginia; \$950, Valencia). ELK bonus not added for Virginias. ⁶ Values within the same column followed by the same letter are not significantly different at P = .05. ns = no significant differences. ⁷ Small seeded runners marketed as Spanish (S) or Valencia (V)									

Table 4. Agronomic and shelling characteristics for entries averaged across all locations in the 2023 Oklahoma Peanut Variety Trial.⁶

	Yield	% of Trial	Grade ²	SMK/100 ³	ELK ⁴	MED ⁴	No.1 ⁴	Shelling	Value ⁵
Entry	(lb/A)	Average	(%TSMK)	(g)	%				(\$/A)
Runner¹									
ACI 080	5437a	102	72c	60d	25c	37a	18b	74c	1,321
ACI 476	5394a	101	72c	63c	41a	32b	29a	74c	1,311
ACI 509	4636b	87	73b	58e	32b	38a	20b	75b	1,142
ACI 3321	5761a	108	72c	68b	38a	32b	30a	75b	1,400
Lariat	5448a	102	74a	70a	41a	28c	31a	76a	1,361
Mean	5335		73	64	35	33	26	75	
Standard Error	392		0.7	1.4	3.5	1.9	2.6	0.6	
Spanish*** Valencia** Small Seeded Runner*^{1,7}									
AT9899 (S)*	4891bc	110	67c	50f	49e	27bc	22c	70b	1,147
OLé***	4745c	106	65e	54d	70d	18f	10e	68d	1,079
Schubert***	4082d	92	62h	40j	38g	30a	22c	65g	886
Span17 (S)*	5453a	122	72a	55d	67d	24d	8ef	74a	1,374
TamVal OL14**	3919d	88	62h	51ef	46ef	24d	26a	66f	1,154
ARSOK S95-1 (S)*	4759c	107	66d	64a	69d	12g	7fg	70b	1,099
ARSOK S104-2E***	4898bc	110	66d	51ef	69d	22e	8ef	69c	1,131
ARSOK S104-3E***	4776c	107	63g	49f	62e	22e	10e	67e	1,053
ARSOK S105-3E***	4642c	104	65e	51ef	74c	18f	5g	67e	1,056
ARSOK S105-4E***	4642c	104	63g	52e	71c	17f	9ef	66f	1,024
ARSOK S1071L (S)*	5373ab	120	71b	59c	83b	10h	3g	74a	1,335
NM310**	3122f	70	64f	45i	43f	28b	23b	68d	949
IPG 1288 (V)*	5115b	115	71b	61b	91a	8i	0h	74a	1,725
NMKC5**	3509e	79	63g	50g	43f	26c	22c	67e	1,050
NMM6**	3375ef	76	64f	47h	44ef	27bc	23c	67e	1,026
NMPR25**	4088d	92	64f	46hi	33h	31a	17d	67e	1,243
Mean	4462		66	52	60	22	13	69	
Standard Error	310		0.8	1.6	3.4	1.3	2	0.6	
Virginia¹									
Bailey II	4940	94	68b	90	47a	13c	36b	70b	1,176
Comrade	5511	105	69a	102	40c	15b	40a	72a	1,331
Emery	5318	101	67c	87	44b	17a	37b	69c	1,247
Mean	5256		68	93	44	15	38	70	
Standard Error	639 (ns)		0.7	2.2	2.3	1.7	2.6	0.6	

¹ Market Type.

² % TSMK = Percent total sound mature kernels.

³ SMK/100 = Weight of 100 sound mature kernels.

⁴ ELK = % Kernels riding a 21.5/64" X 1" slotted screen for Virginia and 21/64" X 3/4" screen for runner and Spanish; MED = % Kernels riding a 18/64" but falling through a 21.5/64" or 21/64" screen; No.1 = % Kernels riding a minimum grade screen (16/64" for runner and Spanish, and 15/64 for Virginia) but falling through a 18/64"

⁵ Calculated based on peanut market-type contract price per ton 2023 (\$675, runners; \$700, Spanish and Virginia; \$950, Valencia). ELK bonus not added for Virginias.

⁶ Values within the same column followed by the same letter are not significantly different at P = .05. ns = no significant differences.

⁷ Small seeded runners marketed as Spanish (S) or Valencia (V)

Table 5. Two-year average (2022-2023) of agronomic and shelling characteristics for entries in the Oklahoma Peanut Variety Trial. Location: Caddo Research Station in Fort Cobb.⁵

	Yield	% of Trial	Grade ²	SMK/100 ³	ELK ⁴	MED ⁴	No.1 ⁴	Shelling	Value ⁵
Entry	(lb/A)	Average	(%TSMK)	(g)	%				(\$/A)
Runner¹									
ACI 080	5443a	110	70b	61c	24d	39a	15b	71c	1,286
ACI 476	5180ab	105	71b	60c	35c	33b	19ab	72bc	1,241
ACI 3321	5025ab	101	71b	67b	34c	29cd	22a	73ab	1,204
Lariat	4666c	94	72a	74a	38bc	29cd	22a	74a	1,134
ARSOK R95-1	4490c	91	70b	68b	49a	31bc	20ab	73ab	1,061
ARSOK R106-9L	4797b	97	71b	68b	42b	25e	17ab	74a	1,149
ARSOK R109-1L	5063ab	102	71b	69b	37c	28d	19ab	73ab	1,213
Mean	4952		71	67	37	31	19	73	
Standard Error	433		1.5	3	4	2.1	6.2	1.4	
Spanish*** Valencia** Small Seeded Runner*^{1,7}									
AT9899 (S)*	4838ab	107	59d	52d	43b	17ab	16b	61c	999
OLé***	4638bc	103	66bc	54c	65a	11c	22ab	68b	1,071
Schubert***	4237d	94	64c	48f	45b	20a	15b	67b	949
Span17 (S)*	5164a	115	72a	55bc	62a	16b	22ab	73a	1,301
ARSOK S104-2E***	4427cd	98	67b	52d	65a	13bc	23b	68b	1,038
ARSOK S104-3E***	4294d	95	67b	50e	60a	15b	21ab	68b	1,007
ARSOK S105-3E***	4218d	94	65bc	53cd	63a	11c	24a	67b	960
ARSOK S105-4E***	4248d	94	67b	57a	66a	11c	24a	68b	996
Mean	4508		66	53	59	14	21	68	
Standard Error	328		2.1	1.3	5	3	8	2.2	
Virginia¹									
Comrade	4990a	112	70a	103a	46a	13c	27	71a	1,223
ARSOK V98	3978c	89	66b	91b	39d	14c	22	69b	980
ARSOK V99	4409bc	99	69a	82c	44b	16b	27	71a	955
ARSOK V103-1	4517bc	101	62c	93b	42c	19a	24	67c	919
ARSOK V103-3	4474bc	100	61c	92b	40d	18a	22	66d	1,065
Mean	4474		66	92	42	16	24	69	
Standard Error	602		1.5	2.9	1.8	1.7	9.7 (ns)	0.5	

¹ Market Type.

² % TSMK = Percent total sound mature kernels.

³ SMK/100 = Weight of 100 sound mature kernels.

⁴ ELK = % Kernels riding a 21.5/64" X 1" slotted screen for Virginia and 21/64" X 3/4" screen for runner and Spanish; MED = % Kernels riding a 18/64" but falling through a 21.5/64" or 21/64" screen; No.1 = % Kernels riding a minimum grade screen (16/64" for runner and Spanish, and 15/64 for Virginia) but falling through a 18/64"

⁵ Calculated based on peanut market-type contract price per ton 2023 (\$675, runners; \$700, Spanish and Virginia; \$950, Valencia). ELK bonus not added for Virginias.

⁶ Values within the same column followed by the same letter are not significantly different at P = .05. ns = no significant differences.

⁷ Small seeded runners marketed as Spanish (S) or Valencia (V)

Table 6. Two-year average (2022-2023) of agronomic and shelling characteristics for entries in the Oklahoma Peanut Variety Trial. Location: White Farms in Davidson.⁶

	Yield	% of Trial	Grade ²	SMK/100 ³	ELK ⁴	MED ⁴	No.1 ⁴	Shelling	Value ⁵
Entry	(lb/A)	Average	(%TSMK)	(g)	%				(\$/A)
Runner¹									
ACI 080	5949bc	98	72b	58d	16b	39a	6c	72	1,446
ACI 476	6240ab	102	72b	62c	32a	35b	14a	72	1,516
ACI 3321	5743c	94	74a	66b	34a	34b	13b	73	1,434
Lariat	6452a	106	74a	68a	32a	33b	13b	73	1,611
Mean	6096		73	64	29	35	12	72.5	
Standard Error	484		1.3	1.5	3.5	3	4	1.3 (ns)	
Spanish*** Valencia** Small Seeded Runner*^{1,7}									
AT9899 (S)*	6129ab	107	72a	50d	44e	22a	13bc	74a	1,545
OLé***	6277a	109	69b	55a	57c	14c	20a	71b	1,516
Schubert***	5284b	92	65d	47e	33	23a	9c	67d	1,202
Span17 (S)*	6429a	112	73a	54ab	60ab	16bc	19a	75a	1,643
ARSOK S104-2E***	5688b	99	69b	53bc	59bc	17b	19a	71b	1,374
ARSOK S104-3E***	5728b	100	66cd	50d	51d	17b	16ab	68cd	1,323
ARSOK S105-3E***	5696b	99	67c	52c	63a	13c	20a	69bc	1,336
ARSOK S105-4E***	4715c	82	67c	50d	59bc	13c	18ab	69bc	1,106
Mean	5743		69	51	53	17	17	71	
Standard Error	469		1.5	1	3.4	3.8	6.3	1.2	
¹ Market Type. ² % TSMK = Percent total sound mature kernels. ³ SMK/100 = Weight of 100 sound mature kernels. ⁴ ELK = % Kernels riding a 21.5/64" X 1" slotted screen for Virginia and 21/64" X 3/4" screen for runner and Spanish; MED = % Kernels riding a 18/64" but falling through a 21.5/64" or 21/64" screen; No.1 = % Kernels riding a minimum grade screen (16/64" for runner and Spanish, and 15/64 for Virginia) but falling through a 18/64" ⁵ Calculated based on peanut market-type contract price per ton 2023 (\$675, runners; \$700, Spanish and Virginia; \$950, Valencia). ELK bonus not added for Virginias. ⁶ Values within the same column followed by the same letter are not significantly different at P = .05. ns = no significant differences. ⁷ Small seeded runners marketed as Spanish (S) or Valencia (V)									

Table 7. Two-year average (2022-2023) of agronomic and shelling characteristics for entries in the Oklahoma Peanut Variety Trials across all locations (Fort Cobb and Davidson).⁶

	Yield	% of Trial	Grade²	SMK/100³	ELK⁴	MED⁴	No.1⁴	Shelling	Value⁵
Entry	(lb/A)	Average	(%TSMK)	(g)	%				(\$/A)
Runner¹									
ACI 080	5696	102	71b	60c	20c	39a	11b	71c	1,196
ACI 476	5710	102	71b	61c	34b	34b	16a	72b	1,219
ACI 3321	5384	96	72ab	66b	34b	31c	18a	73a	1,244
Lariat	5559	99	73a	71a	35a	31c	17a	73a	1,381
Mean	5587		72	65	31	34	16	72	
Standard Error			1	1.5	2.8	1.7	3.6	0.9	
Spanish*** Valencia** Small Seeded Runner*^{1,7}									
AT9899 (S)*	5484a	107	65d	51d	43c	19b	15b	67d	1,248
OLé***	5457a	106	67bc	55a	61a	13d	21a	69bc	1,280
Schubert***	4760bc	93	65d	47f	39d	22a	12c	67d	1,083
Span17 (S)*	5797a	113	72a	55a	61a	16c	20a	74a	1,461
ARSOK S104-2E***	5057b	99	68b	52c	62a	15cd	21a	70b	1,204
ARSOK S104-3E***	5011b	98	66cd	50e	55b	16c	19ab	68cd	1,158
ARSOK S105-3E***	4957b	97	66cd	52c	63a	12e	22a	68cd	1,145
ARSOK S105-4E***	4482c	87	67bc	54b	63a	12e	21a	69bc	1,051
Mean	5126		67	52	56	16	19	69	
Standard Error	356		1.4	0.9	3.1	2.4	4.8	1.4	

¹ Market Type.
² % TSMK = Percent total sound mature kernels.
³ SMK/100 = Weight of 100 sound mature kernels.
⁴ ELK = % Kernels riding a 21.5/64" X 1" slotted screen for Virginia and 21/64" X 3/4" screen for runner and Spanish; MED = % Kernels riding a 18/64" but falling through a 21.5/64" or 21/64" screen; No.1 = % Kernels riding a minimum grade screen (16/64" for runner and Spanish, and 15/64" for Virginia) but falling through a 18/64"
⁵ Calculated based on peanut market-type contract price per ton 2023 (\$675, runners; \$700, Spanish and Virginia; \$950, Valencia). ELK bonus not added for Virginias.
⁶ Values within the same column followed by the same letter are not significantly different at P = .05. ns = no significant differences.
⁷ Small seeded runners marketed as Spanish (S) or Valencia (V)

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Evaluation of Foliar Fungicides for Control of Early Leaf Spot in Oklahoma in 2023

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Overview

- Levels of early leafspot were very low in the 2023 growing season.
- Early leaf spot was observed very early in the growing season in the lower canopy of all experimental plots. However, the high temperatures experienced in 2023 did not favor the development of the disease to the upper canopy, not even in the untreated check.
- No Sclerotinia blight or southern blight was observed in the plots in 2023.
- The reduced fungicide program with Lucento, applied 75 days after planting, resulted in the highest yield (5,612 pounds per acre) of all three experiments.

Methods for Conducting Field Experiments

Three field trials were conducted at the Caddo Research Station near Fort Cobb to quantify the effect of foliar fungicide on early leaf spot (ELS) severity (%), defoliation (%) and yield (lbs/A). The soil is classified as a Binger fine sandy loam and was previously cropped with peanuts. Granular fertilizer at 11-52-0 lbs/A of NPK was incorporated into the soil before planting on May 8 with the same process conducted for the fertilizer 0-0-60 lbs/A of NPK on May 11. The herbicide Valor SX 51WDG at 2 oz/A was applied preemergence at peanut planting on May 17. The experimental design was a randomized complete block with four blocks separated by a 5-ft-wide fallow buffer. Each plot consisted of four 25-ft-long rows spaced 36" apart. The peanut cultivar Olé, a Spanish market type susceptible to ELS, was planted on May 17. Fungicides were broadcast through flat-fan nozzles (8002vk) spaced 18" apart with a CO₂-pressurized wheelbarrow sprayer. The sprayer was calibrated to deliver 20 gal/A at 40 psi. All treatments were applied with Induce at 0.25% v/v.

Fungicide applications for experiments 1 and 2 (Tables 1 and 2) were conducted based on a 17-day calendar program. The fungicide sprays were conducted on July 13, July 31, Aug. 16, and Sept. 1 for experiment 1 and on July 13, July 31, Aug. 16, Sept. 1, and Sept. 18 for experiment 2. Fungicide applications for experiment 3 were conducted according to the recommendation of the decision support system called Leaf Spot Advisor, which runs on the Mesonet Oklahoma web page. Leaf Spot Advisor aims to help peanut growers make better

informed decisions regarding fungicide applications based on weather conditions experienced in the state. In experiment 3, fungicide applications were conducted on July 13, Aug. 16, and Sept. 18. All data were taken from the two center rows, including yield. ELS severity (% leaf with disease symptoms) and defoliation (%) were estimated for the whole plot on Sept. 30. The two center rows were dug and inverted on Oct. 6, windrowed for four days and harvested with a combine. Pods were dried and cleaned before taking weights (lbs/A). The data collected were subjected to mixed model analysis of variance, and means were separated by Fisher's Least Significant Difference Test, which was indicated by a significant ($P = 0.05$) treatment effect.

Summary of Field Conditions

The rainfall during the cropping period (May 17 to Oct. 10) totaled 1.62" for May, 6.68" for June, 5.24" for July, 0.6" for August, 1.54" for September and 0.15" for October. Minimum, average and maximum air temperatures for May (17-31), June, July, August, September, October (1-10) were 59.2, 66, 70, 69, 64 and 53.2 °F; 68.5, 76.5, 81.3, 82.3, 75.5 and 66.9 °F; and 78.9, 88, 93, 96, 89 and 81.9 °F, respectively. The rainfall totals during the 2023 peanut season were above normal (30-year average) in June and July but below normal in August, September and October. The average daily temperatures were normal (30-year average) from May to October. The frequent rainfalls experienced in May, June and July favored the early development of early leaf spot (*Passalora arachidicola*) in all three experiments. The disease was noticed in all plots during the first fungicide application on July 13. However, the high temperatures experienced in July, August and September, combined with the below-average rainfalls in August and September, stopped the development of the disease, which did not progress to the upper canopy of the peanut plants, not even in the untreated plots. No southern blight (*Agrothelia rolfsii*) or Sclerotinia blight (*Sclerotinia minor*) were observed in the plots during the experiments.

Results from Experiment 1 – Lucento Fungicide Program

All treatments reduced the severity of early leaf spot ($F = 20.2$; $P < 0.01$) and plant defoliation ($F = 20.1$; $P < 0.01$) compared to the untreated check (Table 1). All the treatments with Lucento provided the best disease control compared with others without Lucento. Interestingly, the reduced fungicide program with Lucento applied 75 days after planting resulted in the highest yield (5,612 lbs/A). The effect of the fungicide treatments on yield was statistically significantly different from the untreated control ($F = 2.2$; $P = 0.049$). The yield increase in the plots compared with the untreated check ranged from 94 to 653 lbs/A. None of the treatments caused phytotoxicity symptoms.

Results from Experiment 2 – Priaxor and Provysol Fungicide Program

All treatments reduced early leaf spot severity ($F = 24.6$; $P < 0.01$) and plant defoliation ($F = 20.4$; $P < 0.01$) compared to the untreated check. However, the effect of the fungicide treatments on yield was not significantly different from the untreated control ($F = 2.2$; $P = 0.13$). All treatments increased yield (290.4 to 406.5 lbs/A) compared to the untreated check. None of the treatments caused phytotoxicity symptoms.

Results from Experiment 3 – Fungicide Sprays Based on the Leaf Spot Advisor (Mesonet)

Results shown in Table 3 indicate that all treatments reduced early leaf spot ($F = 24.6$; $P < 0.01$) and plant defoliation ($F = 20.4$; $P < 0.01$) compared to the untreated check. However, the effect of the fungicide treatments on yield was not significantly different from the untreated control ($F = 2.2$; $P = 0.13$). The lowest disease severity and defoliation levels were observed in treatment 4 (Miravis + Elatus as the second application). In contrast, the highest yield return was observed in treatment 5 (Topguard as the second application). All treatments increased yield by 7.2 to 486.4 lbs/A compared to the untreated check. None of the treatments caused phytotoxicity symptoms.

Acknowledgments

Field trials were conducted during the 2023 peanut growing season to evaluate the efficacy of different fungicide programs to manage leaf spot diseases on Spanish market-type peanuts (cultivar OLé). The trials were possible because of the excellent cooperation established with Bobby Weidenmaier and the Caddo Research Station staff. A special thanks to the Oklahoma Peanut Commission and the National Peanut Board for funding to support this research. FMC and BASF provided additional funding for the trials.

Table 1. Evaluation of Lucento fungicide programs for control of early leaf spot in Oklahoma in 2023

Treatment ¹ : Product, rate, timing ²	Early leaf spot (%) 30 Sep ³	Defoliation (%) 30 Sep ⁴	Yield (lbs./A) ⁵
Untreated check	35.00 a	31.20 a	4,959 d
Lucento 5.5 fl. oz. (2, 4) Bravo 24 fl. oz. + Folicur 7.2 fl. oz. (3)	3.75 bc	3.25 c	5,612 a
Adastrio 8 fl. oz. (2, 4) Bravo 24 fl. oz. + Folicur 7.2 fl. oz. (3)	9.00 b	11.00 b	5,372 abc
Lucento 5.5 fl. oz. (2, 4) Headline 12 fl. oz. (3)	3.00 bc	3.50 c	5,300 abcd
Lucento 5.5 fl. oz. (2, 4) Abound 18.5 fl. oz.	2.50 bc	2.75 c	5,053 cd
Bravo 24 fl. oz. + Folicur 7.2 fl. oz. (1, 3) Lucento 5.5 fl. oz. (2, 4)	1.50 c	1.37 c	5,467 ab
Bravo 24 fl. oz. + Folicur 7.2 fl. oz. (1) Lucento 5.5 fl. oz. (2, 4) Headline 12 fl. oz. (3)	1.50 c	1.75 c	5,351 abcd
Bravo 24 fl. oz. + Folicur 7.2 fl. oz. (1) Lucento 5.5 fl. oz. (2, 4) Abound 18.5 fl. oz. (3)	1.75 c	2.00 c	5,460 ab
Bravo 24 fl. oz. + Folicur 7.2 fl. oz. (2) Abound 18.5 fl. oz. (3, 4)	8.25 bc	4.75 bc	5,184 bcd
LSD (P = 0.05) ⁶	6.97	6.25	398.47

¹ Treatments 1 - 9 were applied with Induce @ 0.25% v/v.
² Timing corresponds to the spray dates of 1=13 Jul, 2=31 Jul, 3=16 Aug, 4=1 Sep.
^{3,4,5} Values in a column followed by the same letter are not significant according to Fisher's least significant difference test at P=0.05.
⁶ Least significant difference.

Table 2. Efficacy of Priaxor and Provysol fungicides to manage early leaf spot in peanuts in 2023

Treatment ¹ : Product, rate, timing ²	Early leaf spot (%) 30 Sep ³	Defoliation (%) 30 Sep ⁴	Yield (lbs./A) ⁵
Untreated check	35.0 a	31.2 a	4,959
Bravo 24 fl. oz. (1, 5) Priaxor 8 fl. oz. (2, 4) Bravo 24 fl. oz. + Folicur 7.2 fl. oz. (3)	4.0 b	3.2 b	5,365
ABravo 24 fl. oz. (1, 5) Priaxor 8 fl. oz. (2, 4) Folicur 7.2 fl. oz. + Provysol 3 fl. oz. (3)	2.7 b	3.7 b	5,416
Bravo 24 fl. oz. (1, 5) Priaxor 8 fl. oz. (2, 4) Folicur 7.2 fl. oz. + Provysol 5 fl. oz. (3)	3.7 b	2.7 b	5,249
LSD (P = 0.05) ⁶	8.0	7.9	ns

¹ Treatments 1 - 5 were applied with Induce @ 0.25% v/v.
² Timing corresponds to the spray dates of 1 = 13 Jul, 2=31 Jul, 3 = 16 Aug, 4 = 1 Sep, 5 = 18 Sep.
^{3,4,5} Values in a column followed by the same letter are not significant according to Fisher's least significant difference test at P = 0.05.
⁶ Least significant difference.

Table 3. Evaluation of foliar fungicides for control of early leaf spot in Oklahoma in 2023 based on the Leaf Spot Advisor (Mesonet)

Treatment ¹ : Product, rate, timing ²	Early leaf spot (%) 30 Sep ³	Defoliation (%) 30 Sep ⁴	Yield (lbs./A) ⁵
Untreated check	35.00 a	31.25 a	4,959
Bravo 24 fl. oz. (1) Elatus 7.3 fl. oz. (2) Bravo 6F 24 fl. oz. + Folicur 7.2 fl. oz. (3)	9.25 cd	9.75 b	4,966
Bravo 24 fl. oz. + Folicur 7.2 fl. oz. (1, 3) Headline 12 fl. oz. (2)	4.50 de	6.75 bc	5,278
Bravo 24 fl. oz. + Alto 5.5 fl. oz (1) Elatus 7.3 fl. oz. + Miravis 3.4 fl. oz. (2) Bravo 6F 24 fl. oz. + Folicur 7.2 fl. oz. (3)	2.00 e	1.25 c	5,191
Bravo 24 fl. oz. + Folicur 7.2 fl. oz. (1, 3) Topguard 8 fl. oz. (2)	8.50 cde	7.75 bc	5,445
Bravo 24 fl. oz. + Folicur 7.2 fl. oz. (1, 3) Approach Prima 6.8 fl. oz. (2)	11.25 bc	10.00 b	5,191
Bravo 24 fl. oz. (1) Folicur 9 fl. oz. (2) Bravo 24 fl. oz. + Folicur 7.2 fl. oz. (3)	16.25 b	13.50 b	5,104
LSD (P = 0.05) ⁶	6.56	6.90	ns
¹ Treatments 1 - 7 were applied with Induce @ 0.25% v/v. ² Timing corresponds to the spray dates of 1–13 Jul, 2 = 16 Aug, 3 = 18 Sep. ^{3,4,5} Values in a column followed by the same letter are not significant according to Fisher's least significant difference test at P = 0.05. ⁶ Least significant difference.			

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