DISEASE EVALUATIONS AND AGRONOMIC TRAITS OF ADVANCED PEANUT BREEDING LINES IN 2021

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- A total of 44 breeding lines and reference cultivars were evaluated at the Caddo Research Station for agronomic characteristics and soilborne diseases (Sclerotinia blight and pod rot).
- The runner trial included Lariat, FloRun '107', Southwest Runner, IPG 914, ACI 080, ACI 476, ACI 3321 and 10 breeding lines from USDA-ARS. The Spanish/Valencia trial tested OLé, Schubert, Span 17, IPG 3628, Valencia C, six USDA-ARS Spanish breeding lines and four New Mexico State University Valencia breeding lines. The Virginia trial evaluated 12 entries: Jupiter, ACI 351, Contender, Comrade and two and six breeding lines from North Carolina State University and USDA-ARS, respectively.
- The Spanish/Valencia plots were dug 148 days after planting (DAP). Runner and Virginia plots were dug 166 DAP. Environmental conditions were unfavorable for Sclerotinia blight until October. Moderate to low levels of pod rot were observed in the advanced breeding line/cultivar trial.
- Numerically, the top runner entries for revenue and yield were Lariat ($787 per acre) and ARSOK R96-8 (3,993 pounds per acre), respectively. Little Sclerotinia blight and pod rot were observed.
- No significant differences were observed among entries in the Spanish/Valencia trial for revenue per acre and yield. The top entries numerically for revenue and yield were Span 17 ($561 per acre, 2,565 pounds per acre) and OLé ($556 per acre, 2,615 pounds per acre), respectively. Moderately low levels of pod rot were observed.
- In the Virginia trial, the breeding line ARSOK V99 had the highest numerical crop value and yield ($767 per acre and 3,630 pounds per acre, respectively). Entries differed significantly in distribution of pod size classes by weight and pod sizes (number per ounce). Moderate to moderately low levels of pod rot were observed.

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 2021, 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 agronomic characteristics, such as yield and seed qualities, and resistance to soilborne diseases, and 2) to evaluate a selection of Virginia entries for pod rot resistance in fields where soilborne levels of the pathogens causing peanut pod rot were promoted by planting susceptible genotypes.

Methods and Field Conditions for Evaluating Advanced Breeding Lines and Cultivars

A total of 44 breeding lines and reference cultivars (17 runner, 15 Spanish/Valencia and 12 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 five 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 on May 14, 2021. The Spanish/Valencia entries were dug on Oct. 8 (148 days after planting) and threshed on Oct. 15. The runner and Virginia fields were dug 166 days after planting on Oct. 26 and threshed on Oct. 29. A total of 3,254- and 3,409-degree day heat units (in Fahrenheit) accumulated for the Spanish/Valencia and runner/Virginia trials, respectively.

The pod rot nursery was planted one month later on June 17 to reduce the number of volunteers, and plots were dug on Oct. 5. After pod rot nursery plots were rated, pods were left in the field to retain pathogen inoculum. Additional water was applied to all plots 17 times (total 9.25 inches) between May 28 and Oct. 4 using a center pivot system.

All plots were inoculated with 0.25 grams of Sclerotinia minor sclerotia on Sept. 7. Fields were managed for weeds, foliar diseases and southern blight (caused by Athelia rolfsii) following Extension recommendations but were not managed for Sclerotinia blight, pod rot or nematodes. Entries were evaluated for Sclerotinia and southern blight on Sept. 27 in the Spanish/Valencia plots and on Oct. 22 for the Virginia and runner plots. Disease incidence was measured by counting the number of 6 inch-sections within each plot that had symptoms of Sclerotinia blight and southern blight. All plots were examined for pod rot within three hours of digging. Environmental conditions in 2021 were not favorable for Sclerotinia blight due to little rainfall in September (total of 0.58 inches) in addition to +3-4°F above-average temperatures in September and October (Table 1). Little southern blight was observed, but moderate to moderately low levels of pod rot were observed in the Spanish/Valencia and Virginia trials.

Peanut grades were determined by following USDA-Agricultural Marketing Service guidelines and using two 200-gram samples from each plot. One 500-gram sample per plot was 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 (version 9.4). The Type I error rate for pairwise comparisons of breeding lines and cultivars was controlled at $\alpha = 0.05$ using the ADJUST=SIMULATE option.

Performance of the Runner Market Type Entries

Seventeen runner peanut entries were evaluated (Table 2): high-oleic cultivars Lariat, ACI 080, ACI 476, ACI 3321 and IPG 914; the Sclerotinia blight-susceptible and resistant cultivars FloRun '107' and Southwest Runner, respectively; and 10 breeding lines from the ARS-Stillwater peanut program. Statistical differences were found among runner entries for yield and most shelling characteristics. Numerically, the top two runner entries for crop value or revenue, a combined measure of yield and seed grade, were Lariat ($787 per acre) and ARSOK R96-8 ($774 per acre). ARSOK R96-8 and Southwest Runner had the highest yields at 3,993 and 3,860 pounds per acre, but the grades for both these entries were significantly lower (at 69%) than the other top-yielding entries, Lariat and ARSOK R95-1 (75% and 74%, respectively). Little Sclerotinia blight was observed, even in the highly susceptible control FloRun '107' (10%).

Performance of the Spanish/Valencia Market Type Entries

Six Spanish breeding lines from ARS-Stillwater and four Valencia lines from New Mexico State University were evaluated in addition to cultivars Valencia C, OLé, Schubert, IPG 3628 and Span 17 (Table 3). The 2021 contract price for Valencia peanuts was $750 per ton (N. Puppala, pers. communication), but all entries were analyzed using the Spanish contract price of $600 per ton to facilitate comparisons between market types. No statistical differences were found among the Spanish and Valencia entries for revenue and yield per acre, but there were significant differences for all seed characteristics (Table 3). OLé, ARSOK lines S105-3E and S96-5 and Span 17 had the highest numerical yields (≥2565 pounds per acre). ARSOK S104-2E and Span 17 had the highest numerical seed grades (≥73%). Moderately low levels of pod rot were observed. Valencia C, NM16-42 and NM-M7 (all ≥25%) had more pod rot than ARSOK lines S105-4E and S104-3E (≤ 3.5%).

Performance of the Virgina Market Type Entries

A total of 12 Virginia peanut entries were evaluated (Tables 4 and 5): Jupiter and high-oleic cultivars ACI 351, Comrade and Contender; two early maturing lines from North Carolina State University, N15041 and N17045; and six USDA-ARS breeding lines. The Virginia entries differed statistically in revenue per acre, yield and grade. The entry with the highest value and yield was ARSOK V99 ($767 and 3,630 pounds per acre), followed by Contender ($690 and 3,364

pounds per acre). Numerically, Comrade had the highest grade at 72%, followed by ARSOK lines V103-1, V101-1 and V99 (70-71%). Little Sclerotinia blight was observed, and the susceptible control Jupiter had only 14% disease. The Virginia entries differed significantly in pod size and distribution of pod sizes (Table 5). Comrade, ARSOK lines V103-3 and V103-1, and ACI 351 had the largest percentage of super jumbo pods (>70%). The smallest percentage of super jumbo pods were observed in Contender and ARSOK V101-1 (40% and 38%, respectively).

Pod Rot in Virginia Entries

In 2021, more pod rot was observed in the advanced breeding line disease trial than in the pod rot nursery (Table 6). The month-long difference in planting dates may have contributed to the different levels of pod rot. In the 2021 cultivar/breeding line trial, ARSOK lines V103-3 and V103-1 had the least pod rot. The susceptible cultivar Jupiter consistently had the most pod rot over multiple trials. Levels of pod rot in Comrade fluctuated among fields and years.

Average Performance over the past three years (2019-2021)

Nine runner, seven Spanish and four Virginia entries were evaluated from 2019 through 2021 (Table 7). When data from multiple years are combined, significant differences in Sclerotinia blight, yield and grade were found among the runner entries. The highest numerical yields were obtained from Lariat and ARSOK R96-8. ARSOK R96-8 also had low levels of Sclerotinia blight in addition to relatively low seed grade. Among the Spanish entries, the highest numerical yield and grade were found in ARSOK S96-5 and Span 17, respectively. The four Virginia entries (Jupiter, Contender, Comrade and ACI 351) did not differ significantly in Sclerotinia blight or yield. Comrade's seed grade (70%) was significantly higher than Jupiter's (66%).

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Table 1. Monthly air temperature and rainfall for 2021 field season at the Caddo Research Station in Fort Cobb, Oklahoma from Mesonet.

Month	Daily Mean	Departure from 15-Year Average	Total	Departure from 15-Year Average
	___ Air Temperature (ºF) ___		___ Rainfall (Inches) ___	
May 14-31[1]	68.9	-3	3.29	-1.01
June[2]	77.2	-2	7.37[2]	+3.56
July	78.8	-3	2.71	+0.91
August	79.2	-1	2.62	-0.56
September	75.4	+3	0.58	-2.35
October 1-26[1]	66.0	+4	4.71	+1.78

[1] Mean temperature and rainfall are for May 14 (planting date) to May 31 and Oct. 26 (last digging date). Departures from 15-year average includes all days in May and October.
[2] Data from some days is not available due to incomplete Mesonet records.

Table 2. 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 May 14, 2021.[1]

Entry	Revenue ($/A)[2]	Yield (lbs/A)	Grade[3]	Sclerotinia[4]	100-Seed (g)	ELK (%)[5]	Medium (%)[5]	Small (%)[5]	VDK (%)[5]	Hull (%)
Runner										
Lariat	787	3618ab	75.1ab	2.3bc	72.4ef	40.3e-g	29.4b-d	3.0a-d	1.0	22.3d
ARSOK-R96-8	774	3993a	68.8d	0.5c	89.0a	58.7a	5.9j	0.8f	1.3	29.2a
Southwest Runner	761	3860ab	68.9d	0.0c	53.9l	4.10e-g	24.7d-g	2.3de	1.5	28.4ab
ARSOK-R95-1	735	3473ab	74.0a-c	1.8bc	73.5d-f	40.4e-g	29.1b-e	2.0d-f	1.0	23.6cd
ARSOK-R90-12	709	3219ab	76.1a	4.0a-c	71.4e-g	43.1d-f	27.5b-f	2.3de	0.9	22.0d
ARSOK-R93-1	705	3352ab	73.6a-c	6.3a-c	75.1c-e	52.8ab	17.2i	1.4ef	2.3	22.9d
ARSOK-R109-1	689	3340ab	71.8a-d	9.5ab	71.1e-g	41.9e-g	25.4d-g	2.9b-d	1.2	25.0b-d
ACI 476	685	3364ab	70.6b-d	3.5a-c	57.8lk	33.4h-j	32.1a-c	3.9ab	0.8	26.4a-c
ARSOK R106-9	682	3219ab	73.8a-c	5.5a-c	68.6f-h	45.5c-e	23.1f-h	2.3de	0.8	23.5cd
ARSOK R91-2	664	3182ab	73.0a-d	3.3a-c	80.6b	52.0b	17.9hi	1.1ef	1.2	24.9cd
ACI 3321	664	3243ab	71.4b-d	8.0a-c	70.4e-g	35.9g-i	30.1b-d	3.8a-c	1.4	25.1b-d
FloRun ‘107’	654	3181ab	70.4cd	9.8ab	66.7g-i	37.6f-h	27.2c-f	3.8ab	1.0	26.2a-c
ARSOK R107-2	643	3098ab	72.4a-d	5.8a-c	64.0h-i	64.0h-i	23.6e-h	3.2a-d	1.4	24.0cd
ARSOK-R94-4	638	3098ab	73.0a-d	4.5a-c	80.0bc	80.0bc	19.7g-i	2.4c-e	2.4	23.3cd
ARSOK R92-13	637	3037ab	72.6a-d	3.0a-c	78.4b-d	78.4b-d	18.6hi	2.1d-f	2.0	24.0cd
ACI 080	613	2916ab	72.9a-d	6.3a-c	60.1jk	60.1jk	36.9a	4.5a	1.2	23.5cd
IPG914	574	2819b	70.1cd	10.8a	61.9i-k	61.9i-k	33.2ab	4.3ab	0.8	26.6a-c

[1] Market types were analyzed separately and were ordered by highest to lowest contract revenue per acre. Runners were dug Oct. 26 (166 days after planting). No differences among entries if letters absent in column. Numbers with the same lowercase letter within columns for each market type are not significantly different (α = 0.05).
[2] Based on a contract price per ton of $575 for runners. Calculations do not include deductions for excess splits or damaged and other kernels.
[3] Grade = percent total sound mature kernels + sound splits.
[4] Incidence of Sclerotinia blight rated on Oct. 22. Percentage of pods with symptoms of pod rot estimated after digging.
[5] Runner screen sizes: ELK (extra-large kernels), 21/64; medium kernels, 18/64; small kernels, 16/64; VDK (visibly damaged kernels).

Table 3. Yield, grade, Sclerotinia blight, and shelling characteristics in advanced runner and Spanish/Valencia breeding lines and commercial cultivars planted at the Caddo Research Station in Fort Cobb, Oklahoma on May 14, 2021.[1]

Entry	Revenue ($/A)[2]	Yield (lbs/A)	Grade[3]	Pod Rot[4]	100-Seed (g)	ELK (%)[5]	Medium (%)[5]	Small (%)[5]	VDK (%)[5]	Hull (%)
Runner										
Span 17	561	2565	72.7ab	21.3a-d	54.3b	48.0b-d	19.1d-g	3.0bc	0.9bc	24.9b
OLé	556	2614	68.5a-c	10.5a-d	47.7de	40.3de	21.3c-f	5.1ab	0.8c	29.0a
ARSOK S96-5	553	2577	71.7ab	19.8a-d	59.9a	59.0a	6.9h	2.6c	1.8bc	27.8ab
ARSOK S105-3E	550	2589	70.4a-c	6.0b-d	51.2b-e	52.7a-c	12.8gh	2.3c	1.3bc	27.9ab
ARSOK S105-4E	535	2517	71.0a-c	3.3d	52.2b-d	50.8a-c	14.9fg	2.6c	1.0bc	27.6ab
ARSOK S105-2E	534	2529	70.6a-c	7.5b-d	48.8c-e	47.0b-d	18.1e-g	2.5c	1.6bc	29.3a
ARSOK S104-3E	515	2408	71.5a-b	3.5d	50.1b-e	44.9cd	20.1d-f	3.3bc	1.1bc	24.6b
NM16-42	512	2456	68.7a-c	26.3ab	49.4b-e	30.0f	32.5a	5.0ab	2.3a-c	26.1ab
ARSOK S104-2E	512	2299	73.6a	6.3b-d	53.1bc	51.9a-c	16.3fg	2.8c	0.9bc	26.9ab
IPG 3628	505	2347	72.1ab	19.3a-d	50.9b-e	54.9ab	11.9gh	2.4c	1.1bc	27.1ab
Schubert	501	2436	68.3a-c	4.0cd	48.2c-e	32.3ef	29.6ab	6.0a	2.0a-c	27.3ab
Valencia C	453	2311	66.8ab	31.3a	47.5de	33.4ef	26.0a-d	6.0a	2.7ab	25.3ab
NM-M2	451	2251	66.3c	20.5a-d	46.7e	32.0ef	27.4a-c	6.3a	3.8a	28.0ab
NM-M7	434	2166	66.9bc	25.0a-c	47.7de	35.6ef	24.6b-d	5.9a	3.0ab	25.0ab
NM16-1	380	2178	66.8bc	16.3a-d	46.6e	29.2f	30.3ab	5.9a	3.1ab	27.4ab

[1] Market types were analyzed separately and were ordered by highest to lowest contract revenue per acre. Spanish/Valencia plots were dug on Oct. 8 (148 days after planting). No differences among entries if letters absent in column. Numbers with the same lowercase letter within columns for each market type are not significantly different (α = 0.05).
[2] Based on a contract price per ton of $600 for Spanish/Valencia to facilitate comparisons. Actual 2021 contract price for Valencia was $750/ton. Calculations do not include deductions for excess splits or damaged and other kernels.
[3] Grade = percent total sound mature kernels + sound splits.
[4] Percentage of pods with symptoms of pod rot estimated after digging. Little Sclerotinia blight observed so ratings not taken.
[5] Spanish/Valencia screen sizes: ELK (extra-large kernels), 19/64; medium kernels, 17/64; small kernels, 15/64; VDK (visibly damaged kernels).

Table 4. Yield, grade, Sclerotinia blight and shelling characteristics of advanced Virginia breeding lines and commercial cultivars planted at the Caddo Research Station in Fort Cobb on May 14, 2021.[1]

Entry	Revenue ($/A)[2]	Yield (lbs/A)	Grade[3]	Sclerotinia[4]	100-Seed (g)	ELK (%)[5]	Medium (%)[5]	Small (%)[5]	VDK (%)[5]	Hull (%)
Virginia										
ARSOK V99	767a	3630a	70.2a-c	4.5c	94.7b-d	56.2a	11.6	1.8ab	2.0ab	31.8a
Contender	690ab	3364ab	67.7a-d	5.0a-c	95.4b-d	53.4a-c	10.2	1.0b	3.0ab	28.9a-c
ARSOK V103-1	632a-c	3025a-c	71.2ab	14.7ab	104.6ab	56.4a	12.5	1.2b	1.1b	28.4a-c
ARSOKV101-1	622a-c	2904a-c	70.5ab	8.8a-c	85.1d	55.3ab	12.3	1.5ab	1.5b	27.3bc
Comrade	620a-c	3001a-c	71.9a	5.0a-c	110.3a	56.7a	11.9	1.6ab	0.7b	28.0a-c
Jupiter	616a-c	3219ab	64.5cd	13.8ab	94.8b-d	49.6a-c	11.3	1.6ab	2.9ab	30.5a-c
ACI 351	601a-c	2952a-c	68.2a-c	7.3a-c	101.0a-c	49.0a-c	15.3	2.1ab	1.9b	26.9c
ARSOK V103-3	561a-c	2856a-c	65.7b-d	10.0a-c	92.5b-d	47.9a-c	14.6	2.2ab	2.1ab	28.2a-c
ARSOK V98	540bc	2614bc	68.7a-c	3.3c	96.3a-d	52.3a-c	13.1	1.5ab	2.4ab	27.3bc
N17045	494bc	2481bc	66.7a-d	5.3a-c	86.5d	44.1bc	17.7	3.3a	1.4b	27.3bc
ARSOK V102-5	462c	2493bc	61.8d	5.3a-c	87.1cd	42.7c	15.3	2.8ab	5.0a	32.0a
N15041	453c	2178c	68.9a-c	4.8bc	94.4b-d	47.4a-c	16.1	2.5ab	2.0ab	31.3ab

[1] Entries sorted from highest to lowest contract revenue per acre. Plots dug on Oct. 26 (166 days after planting). Numbers with the same lowercase letter within columns for each market type are not significantly different (α = 0.05). No differences among entries if letters absent in column.
[2] Based on contract price of $600/ton. Calculations do not include deductions for excess splits or damaged and other kernels..
[3] Grade = percent total sound mature kernels + sound splits.
[4] Incidence of Sclerotinia blight rated on Oct. 22.
[5] Virginia screen sizes: ELK (extra-large kernels), 21.5/64; medium kernels, 18/64; small kernels, 15/64; VDK (visibly damaged kernels)

Table 5. Pod size characteristics (number per ounce) in advanced Virginia breeding lines and commercial cultivars planted at the Caddo Research Station in Fort Cobb on May 14, 2021[1]

Entry	Super Jumbo (no./oz)[2]	Jumbo (no./oz)[2]	Fancy (no./oz)[2]	Pass Through (%)[2]	Super Jumbo (no./oz)[2]	Jumbo (no./oz)[2]	Fancy (no./oz)[2]
Virginia							
ARSOK V99	50.1cd	19.0a-c	25.6ab	5.4	11.6a	13.9ab	17.8cd
Contender	40.1d	23.3a	31.4ab	5.2	9.8de	11.4c	16.6cd
ARSOK V103-1	73.9ab	14.5a-c	10.5c	1.1	10.0c-e	13.0a-c	19.2bc
ARSOK V101-1	38.0d	22.1a	36.8a	3.1	11.3ab	13.2a-c	16.8cd
Comrade	80.6a	9.7c	8.2c	1.4	9.3e	13.4a-c	21.3ab
Jupiter	46.5cd	22.5a	25.3ab	5.6	10.8a-d	12.2bc	16.5cd
ACI 351	70.5ab	15.3a-c	12.1c	2.1	10.8a-d	14.5ab	22.6a
ARSOK V103-3	75.8a	11.9bc	9.3c	3.1	11.1ab	15.0a	21.2ab
ARSOK V98	50.6cd	21.0a	24.2b	4.1	10.4b-e	12.7a-c	16.1d
N17405	47.3cd	21.6a	25.3ab	5.8	11.3ab	13.9a-c	18.6c-d
ARSOK V102-5	59.9bc	14.3a-c	20.6bc	5.2	10.8a-d	14.9a	19.7a-c
N15041	50.3cd	20.5ab	24.8b	4.4	11.0a-c	13.3a-c	17.6cd

[1] Entries sorted from highest to lowest contract revenue per acre from Table 4. Plots dug on Oct. 26 (166 days after planting). 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] Percentage of pods by weight and number of pods per ounce for pods riding slotted screens sized for super jumbo (40/64 x 3-inch slots), jumbo (37/64 x 3-inch) and fancy (32/64 x 3-inch). Pass-through pods fit through 32/64 x 3-inch screens.

Table 6. Pod rot in Virginia entries planted in the pod rot nursery and cultivar/advanced breeding line trial at the Caddo Research Station in Fort Cobb (2019-2021).[1]

	Pod Rot (%)[2]				
Entry	**2021 Cultivar/ Breeding Lines**	**2021 Pod Rot Nursery**	**2020 Pod Rot Nursery**	**2019 Cultivar/ Breeding Lines**	**2019 Pod Rot Nursery**
Jupiter	43.8a	17.5a	52.5	42.5	42.9a
ACI 351	35.0ab	16.3a	48.0	27.5ab	31.3b
Comrade	31.3a-c	15.0a	36.2	18.0b	13.5c
Contender	36.3ab	8.8ab	45.0	23.75b	37.5ab
ARSOK V98	32.5ac	-	-	-	-
ARSOK V99	20.5a-d	4.5ab	-	-	-
ARSOK V101-1	18.8b-d	-	-	-	-
ARSOK V102-5	18.8b-d	-	-	-	-
ARSOK V103-3	4.0d	-	-	-	-
ARSOK V103-1	10.5cd	-	-	-	-
N17045	24.3a-d	-	-	-	-
N15041	25.0a-d	-	-	-	-
PI 36553 (resistant)	-	0.0d	-	-	-

[1] In 2021, plots in the cultivar/breeding line trials were planted on May 14; the pod rot nursery was planted on June 17. Numbers with the same lowercase letter within columns for each market type are not significantly different (α = 0.05).
[2] Percentage of pods with symptoms of pod rot estimated within three days after digging.

Table 7. Three-year averages for Sclerotinia blight, yield (pounds per acre) and seed grade in advanced breeding lines and commercial cultivars at the Caddo Research Station in Fort Cobb (2019-2021).[1]

Entry	2019-2021			2021			2020			2019	
	SM[2]	Yield	Grade[3]	SM	Yield	Grade	SM	Yield	Grade	Yield	Grade
Runner											
Lariat	15.5ab	4501a	71.8ab	2.3b	3618	75.1a	28.8ab	6014a	69.7a	3872	70.6a
ARSOK R96-8	3.6b	4445a	66.0d	0.5b	3993	68.8c	6.7b	5518a-c	62.6b	3824	66.6c
ARSOK R92-13	15.5ab	4150ab	70.6a-c	3.0b	3037	72.6a-c	27.9ab	5602ab	69.3a	3812	69.9ab
ARSOK R95-1	12.1b	4058ab	70.1bc	1.8b	3473	74.0ab	22.5b	5118a-c	68.0ab	3582	68.3a-c
ARSOK R93-1	17.5ab	4005ab	71.1a-c	6.3ab	3352	73.6ab	28.7ab	5009a-c	70.1a	3654	69.9a-c
ARSOK R91-2	17.8ab	3989ab	70.5a-c	3.3ab	3182	73.0ab	32.4ab	4937a-c	69.8a	3848	68.9a-c
ARSOK R90-12	12.1b	3922ab	72.9a	4.0ab	3219	76.2a	24.1ab	5039a-c	71.9a	3509	71.1a
ARSOK R94-4	17.3ab	3856ab	69.3bc	4.5ab	3098	73.0ab	30.0ab	4441bc	69.0ab	4029	67.1bc
FloRun'107'	31.6a	3477b	68.3cd	9.8a	3166	70.6bc	53.5a	4054c	67.5ab	-	-
HarvestDAP/DD[4]				166 DAP/3409 DD			170 DAP/3133 DD			162 DAP/3387 DD	
Spanish											
ARSOK S96-5	–	3268a	66.4ab	–	2577	71.7ab	–	4477a	59.3b	2750a-c	68.2a
OLé	–	3224a	66.0a-c	–	2614	70.5a-c	–	3872ab	63.3ab	3187ab	64.2ab
SPAN 17	–	3218a	68.7a	–	2590	72.9a	–	4054ab	64.8a	2989a-c	68.4a
Schubert	–	3126ab	64.4bc	–	2414	68.3a-c	–	3535a-c	62.5ab	3351a	62.3b
Valencia C	–	2593bc	62.9c	–	2311	66.8bc	–	3061bc	61.1ab	2405c	60.9b
NM-M2	–	2525c	64.0bc	–	2251	66.3c	–	2626c	63.5ab	2698a-c	62.2b
NM-M7	–	2428c	64.8bc	–	2166	66.9bc	–	2602c	63.3ab	2517bc	64.2ab
Harvest DAP/DD				148 DAP/3254 DD			131 DAP/2871 DD			162 DAP/3387 DD	
Virginia											
Jupiter	24.2	4099	65.7b	13.8	3219	64.5b	36.4	5251	66.6	3848	65.1b
Contender	17.5	3985	68.0ab	5.0	3364	67.7ab	30.0	5421	69.5	3170	66.9b
Comrade	22.5	3972	70.2a	5.0	3001	71.8a	38.3	5112	68.2	3836	72.3a
ACI351	24.3	3783	68.1ab	7.3	2952	68.2ab	41.3	4876	65.9	3521	70.2ab
Harvest DAP/DD				166 DAP/3409 DD			170 DAP/3133 DD			162 DAP/3387 DD	

[1] Market types were analyzed separately, and entries are sorted from highest to lowest three-year average yield. Numbers with the same lowercase letter within columns for each market type are not significantly different (α = 0.05). No differences among entries if letters absent in column.
[2] SM, % incidence of Sclerotinia blight. No Sclerotinia ratings taken in 2019 due to unfavorable conditions and a severe early freeze.
[3] Grade = % total sound mature kernels + sound splits.
[4] Days after planting (DAP) when harvested; peanut degree-day (DD) heat units in Fahrenheit calculated by Mesonet