



## DISEASE EVALUATIONS AND AGRONOMIC TRAITS OF ADVANCED PEANUT BREEDING LINES IN 2022

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### 2022 Progress Made Possible Through Oklahoma Peanut Commission and National Peanut Board Support

- A total of 43 breeding lines and reference cultivars were evaluated at the Caddo Research Station for agronomic characteristics and soilborne diseases (Sclerotinia blight and pod rot).
- The 16-entry runner trial included Lariat, FloRun '107', Southwest Runner, ACI 080, ACI 476, ACI 3321, IPG 914 and nine breeding lines from the United States Department of Agriculture-Agricultural Research Service. The 15-entry Spanish/Valencia trial tested six USDA-ARS Spanish breeding lines, four New Mexico State University Valencia breeding lines and the cultivars OLé, IPG 3628, Schubert, Span 17 and Valencia C. The Virginia trial evaluated 12 entries: Jupiter, ACI 351, Contender, Comrade, and two breeding lines from North Carolina State University and six from USDA-ARS.
- All plots were planted in June to ensure green foliage was present in case conditions were favorable for Sclerotinia blight in late September to October. Plots were planted on June 6 and dug 148 days after planting (Oct. 31). The season was marked by unusually high average temperatures for July (5 degrees above 15-year mean) and below-average rainfall from July to September. The 2022 disease trial had a total of 3,203F degree days.
- Numerically, the top two runner entries for revenue were Lariat (\$1,270 per acre) and ARSOK R109-1 (\$1,241 per acre) at a contract price of \$675 per ton. Average seed grade varied among entries from 72 to 61%. Moderately high levels of Sclerotinia blight were observed in mid-October, and the most resistant entries included Southwest Runner (10%), ARSOK R96-8 (18%) and Lariat (25%). Little pod rot was observed.
- OLé and ARS Spanish breeding lines S105-2E, S105-4E and S96-5 had the highest numerical crop value and yields when priced at \$700 per ton (>\$1,150 and >4,875 lbs. per acre). As in past years, Valencia entries generally yielded less than most Spanish entries. High levels of Sclerotinia blight were observed in the small-seeded runners Span 17 and IPG 3628 (54 and 80%, respectively). Little Sclerotinia blight (<12%) was present on the Valencia and true Spanish entries.
- All Virginia entries yielded above 4,300 lbs. per acre except ACI 351, but average seed grade was relatively low, ranging from 61 to 67%. Numerically, entries with the three highest crop values were ARSOK V98, Comrade and ARSOK V99 (>\$1,090 per acre). Sclerotinia blight was highest in ACI 351, Jupiter and Comrade (>58%) and lowest in ARSOK V99 (6%). Little pod rot was observed. The entries differed significantly in pod size distribution, and Comrade had the largest percentage of super jumbo pods by weight.

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- Little pod rot was present in the Virginia pod rot nursery, and high levels of root-knot nematodes were present in the disease trial field.

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 2022, 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 and seed qualities 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 the previous year.

## Methods and Field Conditions for Evaluating Advanced Breeding Lines and Cultivars

A total of 44 breeding lines and reference cultivars (16 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 approximately one month later than normal (June 6) to ensure green foliage was available for late-season epidemics of *Sclerotinia* blight. All plots were inverted on Oct. 31, 148 days after planting and threshed on Nov. 2-3. The pod rot nursery was planted on June 27 to reduce the number of volunteers, and plots were dug on Oct. 26.

Additional water was applied to all plots 19 times (total 10.85") between June 17 and Oct. 14 using a center pivot system. Each row in the two-row plots was inoculated with 0.5g 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 blights on Sept. 30 and on Oct. 12 and 14. Disease incidence was measured by counting the number of 6-inch sections within each plot that had symptoms of *Sclerotinia* blight and southern blight. On Oct. 18, approximately 10 soil cores were collected near the taproots from three plots planted to 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=SIMULATE option.

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## Summary of 2022 Field Conditions

A total of 3,203-degree day heat units (in Fahrenheit) accumulated for the 2022 disease trial. The season was characterized by unusually high temperatures for July (+5F above average) and below average rainfall from July to September (Table 1). Cooler evening temperatures in September and October facilitated the development of Sclerotinia blight. Little southern blight and pod rot were observed. The nematology lab at Oklahoma State University found 276 root-knot nematodes per 100 cc soil in the soil cores, levels considered to be well above recommended thresholds (Nathan Walker, pers. communication). Little pod rot was observed in the Virginia pod rot nursery, so ratings were not taken.

## Performance of the Runner Market-Type Entries

Sixteen 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, for reference
- Nine breeding lines from ARS-Stillwater

Statistical differences were found among runner entries for crop value, yield and all-shelling characteristics (Table 2). Numerically, the top two runner entries for crop value or revenue – a combined measure of yield and seed grade – and yield were Lariat (\$1,270 per acre; 5,324 lbs. per acre) and ARSOK R109-1 (\$1,241 per acre; 5,215 lbs. per acre) at a contract rate of \$675 per ton. Average seed grade among entries was 68%, and six entries produced seed grades of 70% or higher: Lariat, ACI 080 and ARSOK lines R109-1, R106-9, R107-2 and R93-1. High levels of Sclerotinia blight were observed in the susceptible control FloRun '107' (88%) and in all ACI cultivars, IPG 914 and multiple breeding lines ( $\geq 50\%$ ). The most Sclerotinia-resistant entries were Southwest Runner, ARSOK 96-8 and Lariat (10 to 25%).

Many of the same entries from 2022 were also evaluated in 2021, albeit in a field that consistently produces lower yields (Table 3). Over both years, Lariat produced the highest numerical yield and grade. Conditions in 2021 were unfavorable for Sclerotinia blight, but the most susceptible and resistant entries over both years were the control entries FloRun '107' and Southwest Runner, respectively.

## 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 4). The 2022 contract price for Valencia peanuts was \$950 per ton (N. Puppala, pers. communication), but all entries were analyzed using the Spanish contract price of \$700 per ton to facilitate comparisons between the market types. In 2022, yields and crop values from several Spanish entries numerically exceeded those from the small-seeded runners Span 17 and IPG 3628. Yields in Span 17 and IPG 3628 were likely limited due to being severely affected by Sclerotinia blight (54 and 80%, respectively). In comparison, relatively little Sclerotinia blight was observed on Spanish and Valencia entries. As in past years, Valencia entries generally yielded

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less than Spanish entries. While yields in 2021 were markedly less than in 2022, the Spanish/Valencia entries performed similarly over both years (Table 5).

## Performance of the Virginia Market-Type Entries

A total of 12 Virginia peanut entries were evaluated in 2022 (Table 6):

- Jupiter and high-oleic cultivars ACI 351, Comrade and Contender
- Two early-maturing breeding lines from North Carolina State University, N15041 and N17045
- Six USDA-ARS breeding lines

The Virginia entries differed statistically in all categories except visibly damaged kernels (Table 6). At a contract price of \$675 per ton, six entries (Comrade, Contender and ARSOK lines V98, V99, V103-2 and V101-1) had crop values significantly greater than ACI 351 (>\$1,060 vs. \$794 per acre). Despite being planted in June, crop yields for six entries exceeded or approached 5,000 pounds per acre. However, seed grades were low, averaging 64%, and Comrade had the highest grade at 67%. Several entries, including Comrade and ACI 351, were as susceptible to Sclerotinia blight as Jupiter (>58%). The most resistant Virginia entry was ARSOK V99 at 6% disease incidence. Significant differences were observed among the Virginia entries for number of pods per ounce for each of the pod size classes (Table 6) in addition to the distribution of pod size classes by weight (Figure 1). Comrade, ACI 351, V103-3, V103-1 and Jupiter had the greatest percentage of super jumbo pods ( $\geq 65\%$ ).

Over the past two years, ARSOK V99 had the highest average yield (4,332 pounds per acre) and the least amount of Sclerotinia blight (7%; Table 7). The two-year seed grade average in Comrade (69%) was significantly greater than in Jupiter (63%). All Virginia entries except ARSOK V99 and V98 appeared moderately or highly susceptible to Sclerotinia blight.

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**Table 1.** Monthly rainfall and average air temperature from Mesonet for 2022 field season at the Caddo Research Station in Fort Cobb.<sup>1</sup>

Month	Air Temperature (°F)				Rainfall (Inches)	
	Avg. Max.	Avg. Low	Daily Mean	Departure from 15-Year Average	Total	Departure from 15-Year Average
June	91	69	79.9	+1	5.08	+1.01
July <sup>2</sup>	101	73	87.1	+5	1.03	-2.03
August <sup>2</sup>	96	70	82.7	+1	2.25	-0.84
September <sup>2</sup>	91	61	75.7	+2	1.98	-0.83
October	75	48	61.1	0	4.36	+1.29

<sup>1</sup> All plots planted June 6 and dug Oct. 31.

<sup>2</sup> Mesonet temperature data from Chickasha 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 6, 2022. <sup>1</sup>

Entry	Revenue (\$/A) <sup>2</sup>	Yield (lbs/A)	Grade <sup>3</sup>	SM <sup>4</sup>	100-Seed (g)	VDK (%) <sup>5</sup>	Hull (%)
Lariat	1270a	5324a	71.1a	25.4c-e	60.7d-e	0.5ab	25.4bc
R109-1	1241ab	5215a	70.6a	49.6a-d	59.0fg	0.4b	25.6bc
SW Runner	1140a-c	4925ab	68.2a-c	10.4e	48.6h	0.8ab	29.2a-c
ARSOK R95-1	1116a-c	4852a-c	68.9ab	34.6b-e	64.6b-d	0.5ab	27.3bc
ACI 3321	1091a-d	4731a-c	68.5a-c	56.3a-c	60.3e-g	0.3b	26.2bc
ARSOK R106-9	1086a-d	4525a-c	71.7a	59.2a-c	62.3c-f	0.7ab	24.0c
ARSOK R91-2	1075a-d	4695a-c	68.9ab	35.8b-e	66.7bc	1.0ab	27.0bc
ARSOK R92-13	1065a-d	4695a-c	68.0a-c	45.4b-e	68.0ab	0.6ab	28.5a-c
ARSOK R107-2	1060a-d	4392a-c	72.3a	65.8ab	59.1fg	0.6ab	23.7c
ARSOK R93-1	1034a-d	4421a-c	69.7a	51.7a-d	64.2b-e	1.0ab	26.1bc
ACI 476	1018a-d	4610a-c	66.5a-c	55.0a-d	49.7h	0.4b	30.3a-c
ARSOK R96-8	982b-d	4780a-c	62.2c	17.5de	71.9a	0.7ab	35.7a
ARSOK R93-10	916cd	4114bc	66.9a-c	40.0b-e	57.4g	1.3ab	28.0bc
IPG 914	911cd	4392a-c	62.5bc	61.7a-c	58.2fg	0.6ab	33.0ab
ACI 080	906cd	3787c	70.6a	66.7ab	56.1g	0.9ab	25.2c
FloRun '107'	828s	3775c	66.2a-c	87.9a	59.5e-g	1.6a	28.3a-c

<sup>1</sup> Entries sorted by highest to lowest contract revenue per acre. Runners were dug Oct. 31 (148 days after planting; 3,203 degree days in Fahrenheit). No differences among entries if letters absent in column. Numbers with the same lowercase letter within columns are not significantly different ( $\alpha = 0.05$ ).

<sup>2</sup> Based on a contract price per ton of \$675 for runners. Calculations do not include deductions for excess splits or damaged and other kernels.

<sup>3</sup> Grade = % total sound mature kernels + sound splits.

<sup>4</sup> Incidence of Sclerotinia blight rated on Oct. 12-14.

<sup>5</sup> VDK, visibly damaged kernels.



**Table 3.** Two-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 (2021-2022). <sup>1</sup>

Entry	2021-2022			2022			2021			
	Yield	Grade <sup>2</sup>	SM <sup>3</sup>	Yield	Grade	SM	Yield	Grade	SM	
Runner					148 DAP/3203 DD <sup>4</sup>			166 DAP/3409 DD		
Lariat	4471a	73.3a	14.6b-d	5324a	71.2a	25.4c-e	3618ab	75.1a	3.8b-e	
SW Runner	4392ab	68.5b-d	5.2d	4925a	68.2a-c	10.4e	3860ab	68.9c	0.0e	
ARSOK R96-8	4386ab	65.5d	9.2cd	4780ab	62.2c	17.5de	3993a	68.8c	0.9de	
ARSOK R109-1	4277a-c	71.2ab	32.7a-c	5215a	70.6a	49.6b-d	3340ab	71.8a-c	15.8a-c	
ARSOK R95-1	4162a-c	71.4ab	18.8b-d	4852a	68.9ab	34.6b-e	3473ab	74.0ab	2.9c-e	
ACI 476	3987a-d	68.5b-d	30.4a-d	4610ab	66.5a-c	55.0a-d	3364ab	70.6a-c	5.8a-e	
ACI 3321	3987a-d	69.9a-c	34.8a-c	4731ab	68.5a-c	56.3a-c	3243ab	71.4a-c	13.4a-d	
ARSOK R91-2	3939a-d	71.0ab	20.6b-d	4695ab	68.9ab	35.8b-e	3182ab	73.0a-c	5.4a-e	
ARSOK R93-1	3907a-d	71.9ab	31.0a-d	4421ab	69.7a	51.7a-d	3352ab	73.6ab	10.4a-e	
ARSOK R106-9	3872a-d	72.7a	34.2a-c	4525ab	71.7a	59.2a-c	3219ab	73.8ab	9.2a-e	
ARSOK R92-13	3866a-d	70.3ab	25.2b-d	4695ab	68.0a-c	45.4b-e	3037ab	72.6a-c	5.0a-e	
ARSOK R107-2	3745a-d	72.4ab	37.7ab	4392ab	72.3a	65.8ab	3098ab	72.4a-c	9.6a-e	
IPG 194	3606b-d	66.1cd	39.8ab	4392ab	62.5bc	61.7a-c	2819b	70.1bc	17.9a	
FloRun '107'	3508cd	68.5b-d	52.1a	3775b	66.2a-c	87.9a	3179ab	70.4bc	16.3ab	
ACI 080	3352d	71.7ab	38.6ab	3787b	70.6a	66.7ab	2916ab	72.9a-c	10.4a-e	

<sup>1</sup> Entries are sorted from highest to lowest two-year average yield. Numbers with the same lowercase letter within columns are not significantly different ( $\alpha = 0.05$ ). No differences among entries if letters absent in column.

<sup>2</sup> Grade = % total sound mature kernels + sound splits.

<sup>3</sup> SM, % incidence of Sclerotinia blight.

<sup>4</sup> Days after planting (DAP) when dug; peanut degree-day (DD) heat units in Fahrenheit calculated by Mesonet. The 2021 plots were planted May 14 and dug Oct. 26; the 2022 plots were planted June 6 and dug Oct. 31.



**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 6, 2022.<sup>1</sup>

Entry	Revenue (\$/A) <sup>2</sup>	Yield (lbs/A)	Grade <sup>3</sup>	SM <sup>4</sup>	100-Seed (g)	VDK (%) <sup>5</sup>	Hull (%)
ARSOK S105-2E	1209a	5231a	66.4	12.5cd	43.6e	0.5	31.6
ARSOK S105-4E	1169a	4913a	67.9	5.4cd	48.9b-e	0.6	30.0
OLé	1159a	4868a	68.5	2.5cd	44.6e	0.7	28.5
ARSOK S96-5	1152a	4876a	66.7	0d	55.4a	0.6	30.9
ARSOK S104-2E	1113a	4586ab	69.6	5.0cd	46.1de	0.3	28.7
ARSOK S105-3E	1099a	4725a	66.1	4.2cd	49.2b-e	0.7	31.9
ARSOK S104-3E	1068ab	4574ab	66.6	10.0cd	45.8de	0.5	30.8
Span 17	1039ab	4538ab	67.0	54.2b	51.0a-d	0.5	29.8
Schubert	989ab	4320a-c	63.5	2.9cd	46.5c-e	1.0	34.0
NM16-42	970ab	4054a-c	68.3	17.9c	47.0b-e	0.9	28.7
NM16-17	896ab	3908a-c	65.3	7.9cd	47.4b-e	1.0	32.2
NM-M2	820ab	3449bc	67.8	3.3cd	49.1b-e	0.7	29.4
IPG 3628	809ab	3400bc	68.2	80.4a	48.6b-e	0.8	28.7
Valencia C	797ab	3545bc	64.0	10.9cd	51.7a-c	0.9	33.6
NM-M7	769b	3303c	66.8	3.3cd	52.0ab	1.1	30.2

<sup>1</sup> Market types were analyzed separately and are ordered by highest to lowest contract revenue per acre. Spanish/Valencia plots were dug on Oct. 31 (148 days after planting; 3,203 degree days in Fahrenheit). No differences among entries if letters absent in column. Numbers with the same lowercase letter within columns are not significantly different ( $\alpha = 0.05$ ).

<sup>2</sup> Based on a contract price per ton of \$700 to facilitate comparisons between Spanish and Valencia. Actual 2022 contract price for Valencia was \$950/ton. Calculations do not include deductions for excess splits or damaged and other kernels.

<sup>3</sup> Grade = % total sound mature kernels + sound splits.

<sup>4</sup> Incidence of Sclerotinia blight rated on October 12.

<sup>5</sup> Spanish/Valencia screen sizes: ELK, extra-large kernels, 19/64; medium kernels, 17/64; small kernels, 15/64; VDK, visibly damaged kernels.





**Table 5.** Two-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 (2021-2022).<sup>1</sup>

Entry	2021-2022			2022			2021		
	Yield	Grade <sup>2</sup>	SM <sup>3</sup>	Yield	Grade	SM	Yield	Grade	SM
<b>Spanish</b>				148 DAP/3203 DD <sup>4</sup>			148 DAP/3254 DD		
ARSOK S105-2E	3733a	69.0ab	-	5231a	66.4	12.5cd	2529	70.6a-d	-
OLé	3729a	69.3ab	-	4868a	68.5	2.5cd	2614	70.3a-d	-
ARSOK S96-5	3727a	69.2ab	-	4876a	66.7	0d	2577	71.7a-c	-
ARSOK S105-4E	3715a	69.5ab	-	4913a	67.9	5.4cd	2517	71.0a-d	-
ARSOK S105-3E	3680a	68.3ab	-	4725ab	66.1	4.2cd	2589	70.4a-d	-
Span 17	3572ab	69.2ab	-	4538a-d	67.0	54.2b	2565	72.8ab	-
ARSOK S104-3E	3491ab	69.1ab	-	4574a-c	66.6	10.0cd	2408	71.5a-c	-
S104-2E	3442ab	71.6a	-	4586a-c	69.6	5.0cd	2299	73.6a	-
Schubert	3373ab	65.1b	-	4320a-d	63.5	2.9cd	2436	68.3b-d	-
NM16-42	3255ab	68.5ab	-	4054a-d	68.3	17.9c	2456	68.7b-d	-
NM16-17	3023ab	65.7b	-	3908a-d	65.3	7.9cd	2178	66.8cd	-
Valencia C	2928ab	65.4b	-	3545b-d	64.0	10.9cd	2311	66.8cd	-
IPG 3628	2874ab	70.1ab	-	3400cd	68.2	80.4a	2347	72.1a-c	-
NM-M2	2850b	67.1ab	-	3449cd	67.8	3.3cd	2251	66.3d	-
NM-M7	2735b	66.9ab	-	3303d	66.8	3.3cd	2166	66.9cd	-

<sup>1</sup> Entries are sorted from highest to lowest two-year average yield. Numbers with the same lowercase letter within columns are not significantly different ( $\alpha = 0.05$ ). No differences among entries if letters absent in column.

<sup>2</sup> Grade = % total sound mature kernels + sound splits.

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

<sup>4</sup> Days after planting (DAP) when dug; peanut degree-day (DD) heat units in Fahrenheit calculated by Mesonet. The 2021 plots were planted May 14 and dug Oct. 8; the 2022 plots were planted June 6 and dug Oct. 31.



**Table 6.** Crop value, yield, grade, Sclerotinia blight and shelling characteristics in advanced Virginia breeding lines and commercial cultivars planted at the Caddo Research Station in Fort Cobb on June 6, 2022.<sup>1</sup>

Entry	Revenue (\$/A) <sup>2</sup>	Yield (lbs/A)	Grade <sup>3</sup>	SM <sup>4</sup>	100-Seed (g)	VDK (%) <sup>5</sup>	Hull (%)	Super Jumbo (no./oz) <sup>2</sup>	Jumbo (no./oz) <sup>2</sup>	Fancy (no./oz) <sup>2</sup>
ARSOK V98	1106a	5106a	64.5b	20.8cd	77.6c-e	1.1	32.8a-c	11.4cd	15.0c-e	19.1ef
Comrade	1096a	4852ab	66.7a	61.7a	97.2a	0.7	31.6c	9.8e	14.8de	21.5b-d
ARSOK V99	1091a	5034a	64.6ab	5.8d	75.2de	1.3	32.3bc	12.9ab	16.6ab	20.5de
Contender	1068a	4937ab	64.6ab	47.1a-c	84.6b-d	1.2	32.5a-c	10.5de	13.6e	18.0f
ARSOK V103-1	1067a	4925ab	63.8ab	25.4b-d	84.9bc	0.7	34.5a-c	11.6c	16.5a-c	22.7a-c
ARSOK V101-1	1061a	4973ab	62.8ab	39.2a-c	68.8e	1.1	35.4a-c	13.5a	16.2a-d	21.2b-e
N17045	1025ab	4743ab	62.9ab	56.3ab	87.5b	1.1	34.6a-c	10.4de	13.8e	20.7c-e
ARSOK V102-5	995ab	4695ab	61.7b	37.1a-d	83.2b-d	1.0	36.1ab	11.3cd	15.7b-d	21.3b-e
Jupiter	990ab	4711ab	61.4b	58.3a	77.2c-e	1.0	36.6a	11.7c	15.5b-d	20.9c-e
ARSOK V103-3	945ab	4501ab	62.3ab	46.3a-c	81.8b-d	1.2	35.1a-c	12.0bc	17.6a	23.8a
N15041	932ab	4368ab	63.8ab	57.5a	78.5b-d	1.1	33.5a-c	11.3cd	14.9de	20.9c-e
ACI 351	794b	3787b	63.3ab	66.3a	87.8ab	0.6	34.1a-c	11.7c	17.1ab	23.4ab

<sup>1</sup> Entries sorted from highest to lowest contract revenue per acre. Plots dug on Oct. 31 (148 days after planting; 3,203 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.

<sup>2</sup> Based on contract price of \$675/ton. Calculations do not include deductions for excess splits or damaged and other kernels.

<sup>3</sup> Grade = % total sound mature kernels + sound splits.

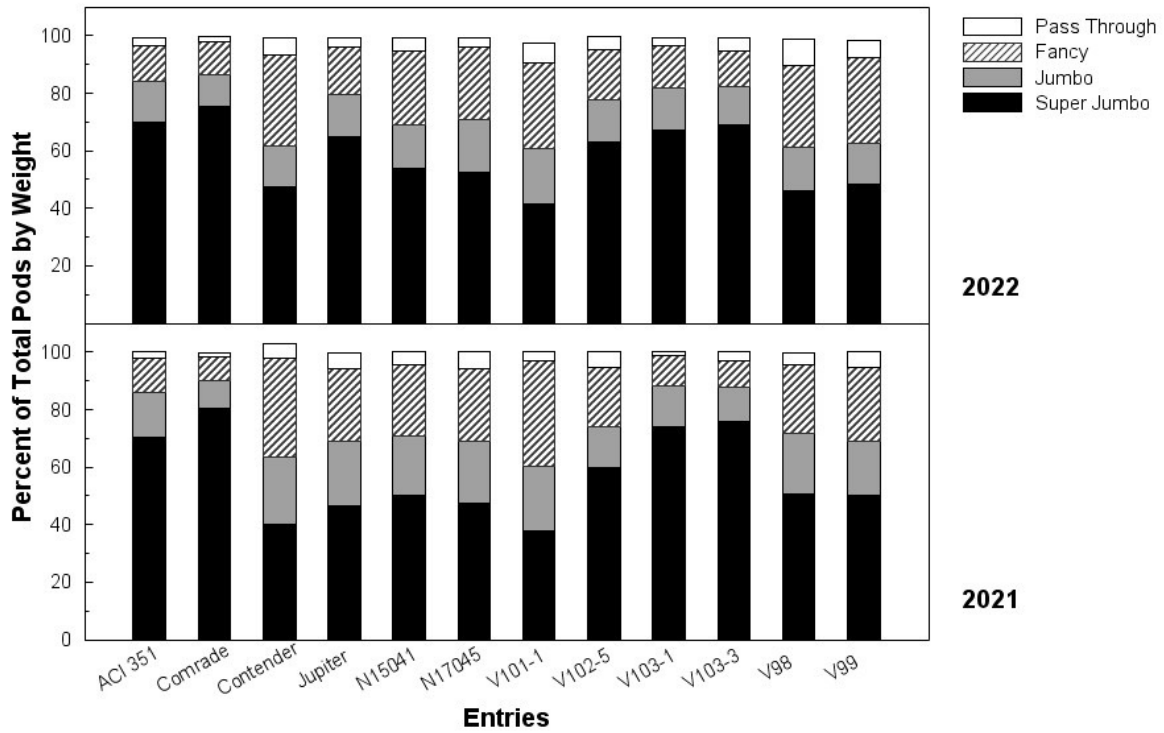
<sup>4</sup> Incidence of Sclerotinia blight rated on Oct. 12-14.

<sup>5</sup> VDK, visibly damaged kernels.

<sup>2</sup> 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 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.** Two-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 (2021-2022). <sup>1</sup>

Entry	2021-2022			2022			2021		
	Yield	Grade <sup>2</sup>	SM <sup>3</sup>	Yield	Grade	SM	Yield	Grade	SM
<b>Virginia</b>				148 DAP/3203 DD <sup>4</sup>			166 DAP/3409 DD		
ARSOK V99	4332a	67.4ab	6.7c	5034a	64.6ab	5.8d	3630a	70.2a-c	7.5b
Contender	4150ab	66.1a-c	27.7a-c	4937ab	64.6ab	47.1a-c	3364ab	67.7a-d	8.3ab
ARSOK	3975a-c	67.5ab	22.9a-c	4925ab	63.8ab	25.4b-d	3025a-c	71.2ab	24.5a
Jupiter	3965a-c	62.9cd	40.6a	4711ab	61.4b	58.3a	3219ab	64.5cd	22.9a
ARSOK V101-1	3939a-c	66.7a-c	26.9a-c	4973ab	62.8ab	39.2a-c	2904a-c	70.5ab	14.6ab
Comrade	3926a-c	69.2a	35.0ab	4852ab	66.7a	61.7a	3001a-c	71.9a	8.3ab
V98	3860a-c	66.6a-c	13.1bc	5106a	64.5ab	20.8cd	2614bc	68.7a-c	5.4b
ARSOK V103-3	3678a-c	64.0b-d	31.5ab	4501ab	62.3ab	46.3a-c	2856a-c	65.7b-d	16.7ab
N17045	3612a-c	64.8b-d	32.5ab	4743ab	62.9ab	56.3ab	2481bc	66.7a-d	8.8ab
ARSOK V102-5	3594a-c	61.7d	22.9a-c	4695ab	61.7b	37.1a-d	2493bc	61.8d	8.8ab
ACI 351	3370bc	65.7a-d	39.2a	3787b	63.3ab	66.3a	2952a-c	68.2a-c	12.1ab
N15041	3273c	66.2a-c	32.7ab	4368ab	63.8ab	57.5a	2178c	68.9a-c	7.9ab

<sup>1</sup> 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.

<sup>2</sup> Grade = % total sound mature kernels + sound splits.

<sup>3</sup> SM, % incidence of Sclerotinia blight.

<sup>4</sup> Days after planting (DAP) when dug; peanut degree-day (DD) heat units in Fahrenheit calculated by Mesonet. The 2021 plots were planted May 14 and dug Oct. 26; the 2022 plots were planted June 6 and dug Oct. 31.