Virginia-Carolinas Peanut Advisory Committee Reports

2022

Virginia-Carolinas Peanut Promotions

Mailing Address: P.O. Box 8 *Shipping Address:* 103 Triangle Court
Nashville, NC 27856-0008
Telephone: (252) 459-9977 FAX: (252) 459-7396
Email: marianne@aboutpeanuts.com
web site: http://www.aboutpeanuts.com

Marianne Copelan
Executive director

VC Peanut Promotions Report
January 2022

❖ **2022 Winter VC Peanut News:**

- We printed and published our 2022 Winter Virginia Carolinas Peanut News the first week of January. This issue featured marketing updates, current research topics and grower meeting announcements. We also added our peanut proud donation, past promotions and Premium Peanut new facility breaking ground in South Carolina. We are thankful for our sponsors Birdsong Peanut Company, National Peanut Board, The Peanut Institute and Premium Peanut.

- We've increased our ways of promoting this paper by adding an eblast (electronic message) to reach many audiences by promoting our paper through emails. Once each issue is placed in the mail, goes live on our website; we then email our issue to 500+ people within the industry.

❖ **iHeartMedia:**

- We ran a 30 second peanut message to consumers tuning into various podcast through the following cities Washington, DC, Virginia- Richmond, Suffolk, Williamsburg, Fredericksburg, North Carolina- Charlotte, Raleigh, Greenville, South Carolina- Columbia, Charleston and Myrtle Beach during the month of November. The message was promoting the health benefits of peanut butter and promoting November as National Peanut Butter Lover's Month. We had over 175,000 consumers hear our messaging throughout the cities mentioned above during the month of November. With March National Peanut Month only a few days away we've created a new peanut message highlighting peanuts as an important snack that gives back. This commercial will air March 1-31, 2022 in regions such as major cities within our three prospective states.

❖ **Social Media:**

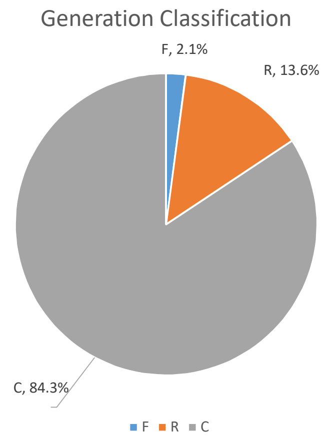
- During December into January, we continued to provide recipes for various activities to utilize during the holidays into the new year. We promoted our retailers listed on our website as well as promoted our 2022 Winter issue of the VC Peanut News. During the holidays we held a peanut contest on our Facebook that post reached over 11,000 people had 451 engagements, 289 people liked the post, 12 people commented on the post and 10 people shared our post. This contest you had to tell us your favorite way to eat peanuts and people's reactions were quite comical. The winner received a box full of gourmet peanuts, hand sanitizers, squeeze peanuts and our winner (Adrian Scruggs) was from Appomattox, Virginia.

- **Spring Promotions:**
    - I am currently working on a few promotions scheduled for March National Peanut Month. I've partnered with two chefs and restaurants throughout the VC to promote peanuts. The two Chefs one of which is a New York times best-selling author Mrs. Vivian Howard and the other is a well-known Chef in the Richmond area by the name of Mr. Andrew Manning. Mrs. Vivian Howard is featuring a Warm Pork, Peanut and Cabbage Salad with Pickled Ginger Vinaigrette to place on the menu at the Chef and the Farmer restaurant in Kinston, North Carolina as well as featuring Smoked Trout Hush Puppies with Peanut Romesco entrée on the menu at Lenoir restaurant in Charleston, South Carolina. Mr. Andrew Manning has created a flavorful dish featuring a chilled cream of peanuts and scallops served with a delicious peanut themed dessert. This collaboration is new and we're excited to highlight peanuts into dishes at various restaurants in the region.

- **Upcoming Meetings:**
    - NC county producer meetings- Nash/Edgecombe- Feb. 23
    - Virginia Peanut Growers Annual Meeting- Feb. 24
    - Peanut Leadership Academy- Feb. 28- March 2
    -

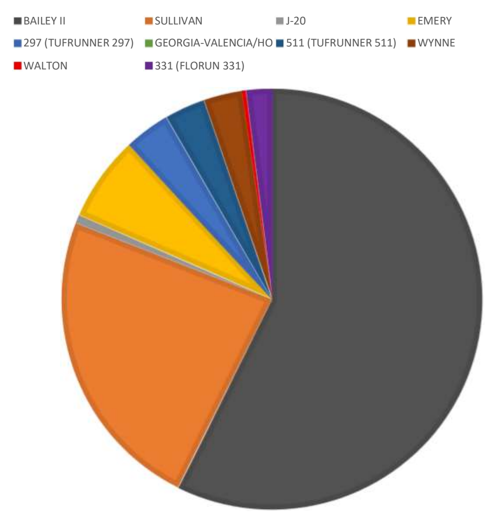
NC Certified Peanut Acres

- Total Certified acres in 2021 was 19,682 acres
- This is down 9% compared to 2020
- Supply and quality appears to be in good shape with no shortages perceived



Variety Distribution

- All Peanut Seed Producers have shifted to all High Oleic Varieties
- 10 different varieties inspected with 2 making up 81% of the total acres
- Bailey II at 57%
- Sullivan at 24%



North Carolina
Foundation Seed Producers, Inc.

2021 was a good year for our foundation peanut producers. NCFSP will be able to fill all orders for 2022. Shell out for seed has been in the mid-30s partially due to larger seeded varieties. NCFSP grew three varieties – Bailey II, Emery, and Sullivan and plans are to continue producing the same three in 2022.

Charles Barnes
8220 Riley Hill Rd
Zebulon, NC 27597
919-269-5592

- Acres nationwide rose to an all-time high in 2017 which was the final year of generic acres brought about by the 2014 Farm Bill. The resulting surplus of peanuts coupled with low commodity prices led to a 24% drop in acres in 2018. Since that time acres have begun a gradual climb in the Southeast and Southwest but have remained relatively flat in the V-C.

- 7 states averaged over 4000 pounds per acre in 2021 led by Arkansas with 5000 pounds per acre, Virginia with 4700, and Georgia with 4450. The US has only averaged over 4000 pounds per acre three times – 2012, 2013, and in 2021. The US average for 2021 is 4140 pounds per acre.

- 2021 was the 6th highest year for acres planted nationwide but the third highest year for production. South Carolina should average over 4000 pounds per acre for the first time and Texas benefitted from rainfall with their best state average since 2015. Record yields were achieved in South Carolina, Oklahoma, and Virginia. You can see that the V-C area will average around 4349 pounds per acre, over 150 pounds better than our previous high in 2019.

- Runner production was led by the Southeast with 85% of all runners grown there followed by 10% in the Southwest and 5% in the V-C. 80% of Virginia type production was grown in the V-C with the other 20% coming from the Southwest.

- Total demand for peanuts is expected to be down for the current year by 5% following the record levels of last year. For the Aug – Nov 21 period compared to a year ago, peanut candy is up 11.3%, snack peanuts are down 4.5%, peanut butter is down 3.3%, and inshells are down .5%. All edible usage is down 1.4%.

- The majority of the demand decrease for this year will be due to fewer exports. The US saw an increase in peanut exports in 2019 and 2020. The main reason for these increases were substantial shipments to mostly China of farmer stock to be crushed for oil. These supplies were available due to aflatoxin issues in our southeastern crop in 2018 and particularly in 2019. While

China shipments increased, shipments to some of our important overseas markets, such as the UK, Netherlands, Japan, Germany, and Spain decreased. Now that we have had two excellent quality years in the US concerted efforts are being made to get these higher value markets back to previous levels. Our two largest markets, Mexico and Canada, have seen increased exports or at least have remained stable. Our abilities to export have been hampered by competition from a good Argentine crop, inspection issues with the UK, and container shortages.

- You have seen the first movements of contracts for the 2022 crop year. As is usually the case, a lot of factors are at play this year. Commodity prices are up but are being adversely affected by high fertilizer prices and input costs. The last two years have been excellent quality years, meaning more usable kernels in inventory and fewer kernels destined for oil crushing. Higher production average yields caused USDA to raise its ending stocks figure to its highest level in 3 crop years. The estimated carry out of 1,125,000 is about twice as high as the level needed for improving contracting conditions.

- While at least in Virginia the current contract offer is being accepted, growers are very concerned about rising input costs and the loss of Lorsban.

South Carolina Peanut Update
Virginia-Carolina Peanut Advisory Committee

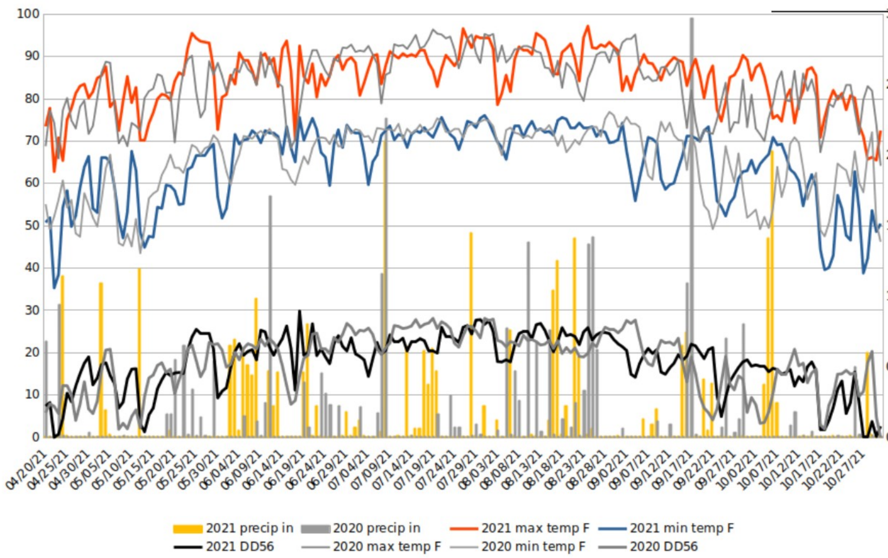
Dan Anco, Justin Hiers, Kyle Kinard
Clemson University

Seed quality in 2021 was much improved compared to that seen at the start of the 2020 growing season. Degree day accumulation in 2021 from April 20 through October 31 was close to values seen during 2020 for both Blackville and Florence. Blackville received about 2 inches more rain in 2021, whereas Florence received approximately 11 inches less rain in 2021. As in 2020, varieties exhibited a gradual, and sometimes slow, progression to optimum maturity near the end of the growing season. This was more pronounced for certain runner cultivars, particularly TUFRunner 297 and FloRun 331. Overall production statewide was estimated at 4,200, with official yields currently pending. In some situations with higher disease pressure for late leaf spot, extended interval fungicide programs were accompanied with greater than anticipated leaf loss at the end of the growing season. A few farmer fields were dug prematurely due to this.

2021 Weather Similar to 2020

Location	2021	2020
Blackville	3458 cDD 30.4" precip.	3471 cDD 28.2" precip.
Florence	3483 cDD 23.5" precip.	3444 cDD 34.4" precip.

Apr 20 to Oct 31



2021 Virginia variety trial, Blackville, SC.

Variety	TSW	Yield (lb/A)	TSMK	ELK	Acre value ($/A)	Seed/lb
Bailey	7.3% BC	4251	68.0% B	37.0% D	746	495 AB
Bailey II	5.4% C	4024	66.3% C	41.6% BC	694	519 A
Contender	21.9% A	4084	69.6% A	45.2% AB	736	473 B
Emery	11.9% B	3973	67.0% BC	46.8% A	695	471 B
Sullivan	2.5% C	4052	66.0% C	39.5% CD	695	524 A
Walton	6.7% BC	4049	66.9% BC	35.6% D	700	519 A

2021 runner variety trial, Blackville, SC.

Variety	TSW	WM	Yield (lb/A)	TSMK	Acre value ($/A)	Seed/lb
AU NPL 17	5.0% CD	5.7% AB	4924 A	71.0% DE	847 ABC	687 DE
FloRun 331	16.6% A	3.0% BC	4544 AB	70.4% E	772 BCDE	735 BC
Georgia 06G	12.3% ABC	4.0% ABC	4166 BC	73.4% BC	736 DE	669 EF
Georgia 09B	17.5% A	3.0% BC	3953 C	74.1% B	701 E	709 CD
Georgia 12Y	3.2% D	2.3% BC	4907 A	70.0% E	837 ABCD	756 B
Georgia 14N	11.8% ABC	1.0% C	4182 BC	74.1% B	746 CDE	796 A
Georgia 16HO	15.0% AB	4.7% ABC	4874 A	73.4% BC	858 AB	669 EF
Georgia 18RU	11.4% ABC	6.3% AB	4564 AB	76.2% A	818 ABCD	696 DE
Georgia 20VHO	5.7% CD	7.7% A	4513 AB	74.6% B	802 ABCD	762 AB
TifNV-High O/L	11.4% ABC	5.1% ABC	4244 BC	72.2% CD	737 DE	636 FG
TUFRunner 297	7.5% BCD	2.7% BC	5046 A	73.4% BC	888 A	607 G

Variety Development for Virginia-Carolinas Region | 2021 Update

Virginia-Carolinas Peanut Advisory Meeting

Jeffrey Dunne, Ryan Andres and Andrew Oakley
North Carolina State University

February 9, 2022

1. NCSU Testing Program

Each year, the North Carolina State University (NCSU) peanut breeding program evaluates breeding lines in the advanced testing program (ATP). The ATP is a composite of ~100 lines developed through the advanced disease pipeline, which utilizes the winter nursery program in Ponce, Puerto Rico, or through the generational pipeline. These lines are previously evaluated in the preliminary testing program (PTP) and were selected based on agronomic, grade and disease resistance performance. Lines are selected to be entered into the Peanut Variety and Quality Evaluations (PVQE) annually until release. Attached the list of entries that were entered into the 2021 PVQE evaluations (Table 1.1), the line performance in the NCSU ATP (Table 1.2) and the line performance in the PVQE (Table 1.3).

2. NCSU Peanut Research Projects

I. Marker-Assisted Selection

The cultivars Bailey and Bailey II were developed using diploid, peanut wild species germplasm, specifically A. cardenasii PI 262141 x A. hypogaea PI 261942 (Figure 1). This process provided hexaploid materials that later reverted back to the tetraploid level that could then be used in the cultivated breeding program to improve resistance to multiple diseases that affect production acreage in the Virginia-Carolina region. During the time of development, a series of germplasm materials were developed known as the GP-NC WS series, which included a number of introgression blocks (i.e. gene blocks), conferring resistance to these diseases. Two introgression blocks, one on chromosome 2 and the other on chromosome 8, were identified in Bailey and Bailey II, likely providing resistance to early leaf spot (Figure 2). Since the release of Bailey (and subsequently Bailey II), early leaf spot (ELS) pressure has been significantly reduced; however, the absence of ELS provided an opportunity for late leaf spot (LLS) pressure to increase, which Bailey and Bailey II are susceptible.

While working on identifying materials that could improve LLS resistance among the NCSU peanut breeding and genetics program's elite breeding materials, one line was identified that provided a level of resistance similar to Bailey and ELS. IAC 322 is a germplasm line coming from a breeding program in Brazil that traces its ancestry back to a line in the GP-NC WS series. IAC 322 resulted from a cross from an ICRISAT line, ICGV 86687 x Runner IAC 886 (Brazil). In an attempt to understand the source of the resistance coming from IAC 322, this line along with 94 other breeding materials and germplasm lines were whole-genome sequenced to identify the introgression blocks from A. cardenasii that were involved. Through whole-genome sequencing, two blocks appeared within IAC 322 that are missing in modern cultivars, one on chromosome 2 and the other on chromosome 13. Understanding that the resistance may already be included in advanced breeding or germplasm materials within the NCSU peanut breeding and genetics program, KASP (Kompetitive Allele Specific PCR) markers were designed that flank the regions on chromosome 2 and 13 identified within IAC 322. These markers are currently being used to screen all materials to identify those containing these additional introgression blocks.

In addition to IAC 322, whole-genome sequencing revealed an additional germplasm line among the SPT series that included the same block on chromosome 13, thought to provide LLS resistance. Not only does SPT 10-12 include the same block on chromosome 13 as IAC 322, but it includes an additional block on chromosome 7 found in the GP-NC WS series and the variant on chromosome 19 (FAD2B) that increases the conversion rate of linoleic-to-oleic acid (i.e. high-oleic trait). In order to move these introgressions into the background of Bailey II, a crossing block was developed during the summer of 2021 to cross Bailey II x IAC 322 and Bailey II x SPT 10-12. Several F1 seeds were harvested off the female (Bailey II) plants and genotyped to confirm crosses. To continue the progress towards bringing these introgression blocks into the background of Bailey II, a second crossing block was developed to increase the number of F1 seeds recovered from the initial Bailey II x IAC 322 and Bailey II x SPT 10-12 crosses and to develop backcrossed Bailey II x (Bailey II x IAC 322) and Bailey II x (Bailey II x SPT 10-12) seed. The backcrosses provide progeny that include more of the recurrent parent genome (~75% Bailey II) in an attempt to capture the high-yielding and grade performance of Bailey II, with the small segments coming from SPT 10-12. In addition, the backcrosses may reduce the size of the introgression segment that will aid in fine mapping the causal gene responsible for the increased LLS resistance (Figure 3). Ultimately, the recovery of lines including segments on chromosome 2, 8 and 13 along with the high-oleic trait will be more efficient in crosses between Bailey II x SPT 10-12.

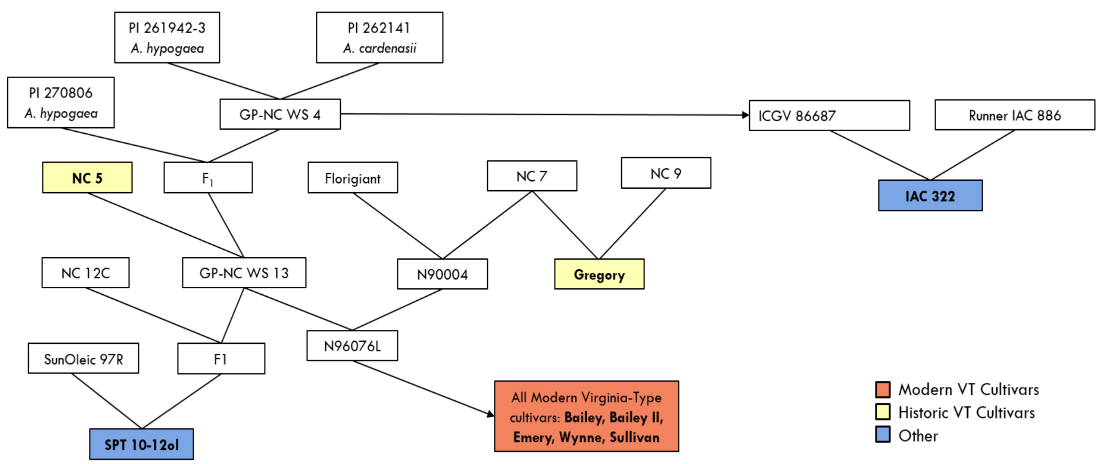


Figure 2.1. Pedigree of introgressions coming from the GP-NC WS series for resistance to early and late leaf spot

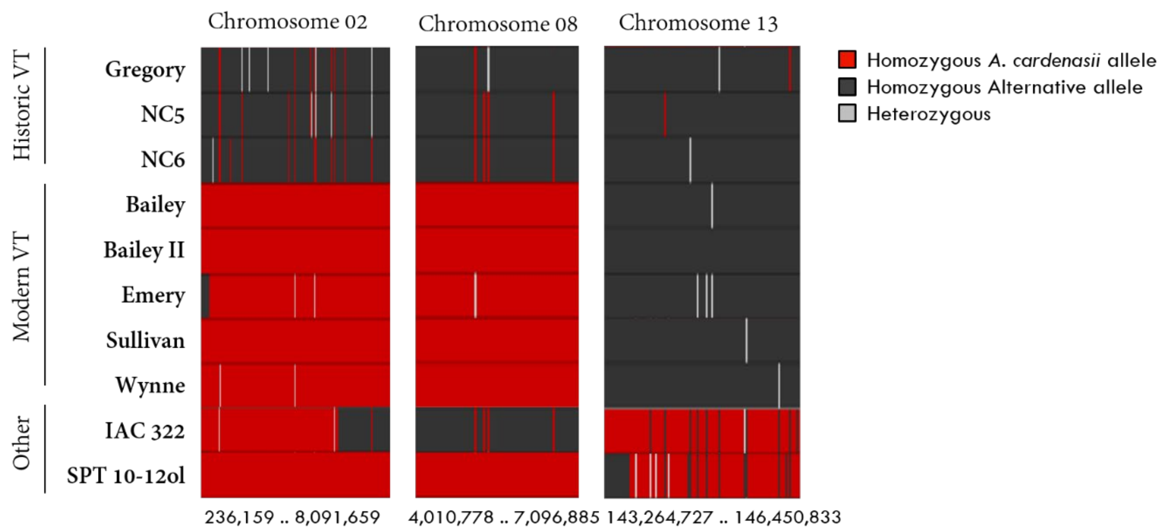


Figure 2.2. Identification of three introgression blocks (chromosome 2, 8 and 13) among historic, modern and other Virginia-type breeding materials in the NCSU peanut breeding and genetics program.

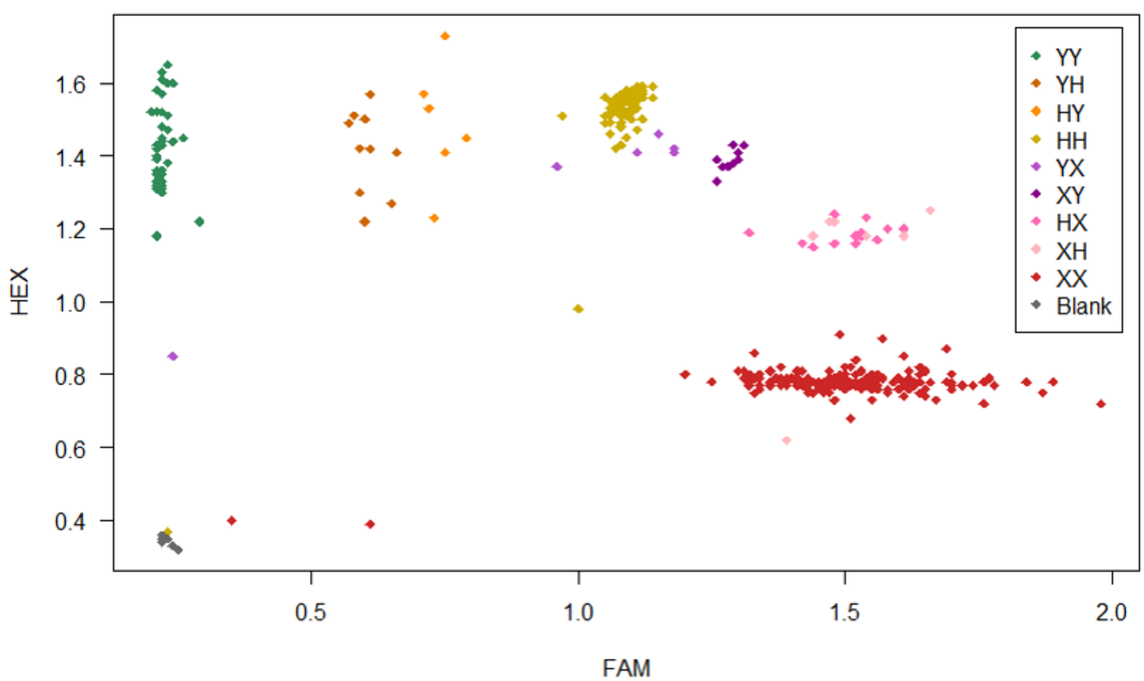


Figure 2.3. Segregation pattern of two flanking markers for the identification of F1 and backcrossed materials

II. Leaf Spot Evaluations

A total of 220 genotypes were grown at the Peanut Belt Research Station (Lewiston-Woodville, NC) in 2020 for the characterization of leaf spot pressure and differentiation in the resistance among genotypes. In 2021, the number of genotypes increased to 265 lines to incorporate novel breeding lines and germplasm material coming through the breeding pipeline; furthermore, the 265 lines were grown at the Peanut Belt Research Station (Lewiston-Woodville, NC) and the Upper Coastal Plains Research Station (Rocky Mount, NC). In both years, plots were visually rated routinely by the peanut breeder using the Florida Scale (1-9), leaf tissue from each plot was evaluated for percent leaf spot lesions and aerial images using a Mavic 2 Pro drone were captured to estimate percent defoliation. The purpose was to correlate the visual ratings to the weighted, visual evaluation on percent leaf spot lesions and defoliation. In addition to the Mavic 2 Pro drone, plots grown in 2021 were imaged using a Micasense RedEdge Dual Multi-Spectral camera and the high-resolution DJI Zenmuse P1 camera for a more high-throughput approach. Results from 2020 can be compiled into a few basic correlations and predictive values when comparing the visual ratings to the objective evaluations of leaf spot percentage on the leaf surface (tissue), the defoliation percentage (drone) or a combination of the two ratings using the first principal component (PC1). In each instance, the evaluation type was highly correlated with the visual rating (Tissue: 0.637, $P<0.001$; Drone: 0.713, $P<0.001$; PC1: 0.756, $P<0.001$). In addition, the visual score (1-9) was also modeled using a logistic regression to determine the predictive potential of each evaluation type to the visual score. Based on the models evaluated [tissue alone, drone alone, PC1 and the full model (tissue + drone)], there is an increase in concordance when considering more parameters, but it seems the PC1 that explains ~79.1% of the variation is similar to the full model. That being said, there isn't much of a difference in concordance when using tissue or defoliation data alone. The odds increase with the number of parameters too. For tissue alone, there is 1.3 times the odds of being in a higher visual score when the percentage of leaf spot surface area increases. Under the PC1, we're 10 times more likely to be in a higher visual score when the two components, (Tissue and Drone) increase together. Ultimately, the point is to pair the GBS- or amplicon-based genotyping platform to high-quality leaf spot ratings in order to identify genic regions that are influencing leaf spot resistance.

Table 2.1 Correlation coefficients for the comparison of visual ratings (1-9) to percent lesions (tissue), defoliation (drone) and the principal component between percent lesion and defoliation scores.

Evaluation Type	Pearson's Correlation	Spearman's Correlation
Tissue	0.637***	0.713***
Drone	0.713***	0.746***
PC1 (Tissue + Drone) [79.1%]†	0.756***	0.797***

*** Denotes a significant correlation at the <0.0001 level

† Percent variation explained by principal component

Table 2.2 Percentage of concordance and odds likelihood ratios of leaf spot evaluation methods including percent lesions (tissue), defoliation (drone), the principal component between percent lesion and defoliation scores and the two independent evaluations modeled together

Evaluation Type	Concordant	Odds Ratio
Tissue	81.5%	1.3*
Drone	83.3%	1.2*
PC1 (Tissue + Drone) [79.1%]†	86.3%	10.0*
Full Model (Tissue + Drone)	86.3%	1.2* (Tissue), 1.2* (Drone)

* Denotes a significant correlation at the <0.05 level

† Percent variation explained by principal component

III. Pod and Seed Size Evaluations

In addition to the development of peanut breeding lines with the *A. cardenasii* introgression from chromosome 13, defining molecular markers characterizing pod and seed size would provide the NCSU peanut breeding and genetics program the ability to make wider crosses while recovering the Virginia-type seed quality. One of the barriers in defining pod and seed size is the current phenotyping method. To determine pod and seed size quality, data is collected through the standardized pod and seed grading procedure; however, this method bins pods and seed sizes into classes where the accuracy is a concern. In order to combat the higher than normal error rates in mechanical separation and define a more accurate distribution, peanut breeding lines have been subject to pod and seed size classification through imaging. For pod sizes, we've developed an image processing script in Python to measure pod length, width and Hunter color scores (Figure 2.1). This allows us to expand the current scope of grading, from three bins (Jumbo, Fancy and No. 1) to sizes corresponding to each pod independently. This provides a distribution for which to compare each of the breeding lines. From a seed size standpoint, the NCSU peanut breeding and genetics program purchased a QualySense QSorter Explorer (Figure 2.2), which not only measures seed size more accurately than the vibratory shaker with grate system of grading, but it can also quantify oleic acid content, moisture content, splits, damaged kernels and seed coat color. We're using this equipment to better define pod and seed size phenotypes for which to develop molecular markers in association with these traits, improving the overall selection efficiency when crossing among runner-, Spanish- and Valencia-types.

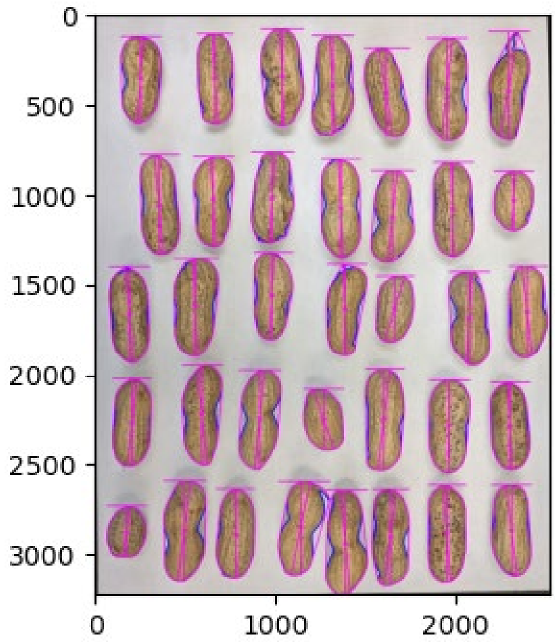


Figure 2.1. Imaging and analysis of peanut pods for length and width of each individual pod from a single peanut breeding line

Figure 2.2. QualySense QSorter Explorer used to define peanut seed size, oleic acid content, moisture content, splits and seed coat color

Table 1.1 NCSU breeding line(s) and cultivars tested in the Peanut Variety and Quality Evaluations (PVQE) in 2021

Line	Identity or Parentage	Pedigree	OAG†
N14001	N02006 // X05012, N02006 / N02064ol	BC1F1-7-2-1-1-1-2: F9	ol ol
N14002	N03079FT // X05024, N03079FT / N02064ol	BC1F1-1-1-2-1-1-1: F9	ol ol
N14007	Phillips / N99121CSm, X00044 /3/ X05036, Phillips / N99121CSm, X00044 // N02064ol	BC1F1-3-1-1-2-2-3: F9	ol ol
N14009	Phillips / N99121CSm, X00044 /3/ X05036, Phillips / N99121CSm, X00044 // N02064ol	BC1F1-3-1-3-1-2-1: F9	ol ol
N14017	N02054ol // N02005 / N02054ol, X03138 /3/ N03084FT	F2-2-S-1-1-2: F9	ol ol
N14027	Bailey /4/ X07019, Bailey // X05028, Bailey / N02064ol, X05250 /3/ Bailey	BC3F1-3-1-S-2-S-1: F9	ol ol
N15017	Bailey /4/ X07018, Bailey // X05028, Bailey / N02064ol, X05250 /3/ Bailey	BC3F1-1-3-2-2-2-2: F9	ol ol
N15039	N03079FT*2 / N02054ol, X03153 // N05042F	F1-1-5-S-1-1-1: F9	ol ol
N15039	N03079FT*2 / N02054ol, X03153 // N05042F	F1-1-5-S-1-1-1: F9	ol ol
N15041	N03079FT*2 / N02059ol, X03155 // N05044FCSm	F1-1-4-S-3-1-1: F9	ol ol
N15044	N03079FT*2 / N02059ol, X03155 // N05044FCSm	F1-1-6-S-2-2-2: F9	ol ol
N16005	Bailey*2 / Brantley, X03157 // GP-NC WS 16	F1-3-3-2-1-2-1: F9	ol ol
N16012	N08082olJCT /3/ X09008, N08082olJCT // SPT 07-01, NC-V 11 / GP-NC WS 11	BC1F1-11-2-S-2-2-1: F9	ol ol
N16021	N08082olJCT // X09019, N08082olJCT / Florida Fancy	BC1F1-1-1-S-3-1-1: F9	ol ol
N17036	Emery /3/ N11035olSrT, N03079FT*2 / Brantley, X03151 // Sugg	F1-2-1-S-2-S-3: F9	ol ol
N17037	Emery /3/ N11035olSrT, N03079FT*2 / Brantley, X03151 // Sugg	F1-2-1-S-2-S-5: F9	ol ol
N17040	N03079FT*2 / Brantley, N10047ol // N12010ol, Bailey*4 / N02060ol	F1-1-1-S-3-S-2: F9	ol ol
N17041	N03079FT*2 / Brantley, N10047ol // N12010ol, Bailey*4 / N02060ol	F1-1-1-S-3-S-3: F9	ol ol
N17044	Bailey*2 / Brantley, N10053ol // Bailey II, Bailey*4 / N02060ol	F1-1-3-S-3-S-5: F9	ol ol
N17045	Bailey*2 / Brantley, N10053ol /3/ CRSP 1050-110, Florida MDR 98 / Bayo Grande, 0020-20 // FNC94022-1-2-1-1-b3-B , N91026E / PI 576638	F1-1-2-S-2-S-1: F9	ol ol
N17047	Bailey*2 / Brantley, N10053ol /3/ CRSP 1050-110, Florida MDR 98 / Bayo Grande, 0020-20 // FNC94022-1-2-1-1-b3-B , N91026E / PI 576638	F1-1-2-S-2-S-4: F9	ol ol

†Oleic Acid Genotype - 'ol ol' represents high-oleic homogeneous, 'ol +' represents high-oleic heterogeneous and '+ +' represents normal-oleic homogeneous

Table 1.2. Agronomic and disease resistance traits for NCSU breeding line(s) and cultivars tested in the NCSU testing program from 2014-2021 at three locations in North Carolina [Peanut Belt Research Station (PBRS), Lewiston-Woodville, NC; Upper Coastal Plains Research Station (UCPRS), Rocky Mount, NC; and Border Belt Tobacco Research Station (BBTRS), Whiteville, NC]

		Pod & Seed Grade													**Yield**		**Disease**		
Line	Number of Trials	Jumbo Pods	Jumbo Hunter L	Fancy Pods	Fancy Hunter L	Pod Weight	Foreign Material	Loose Shelled Kernels	Super Extra-Large Kernels SELK	Extra-Large Kernels ELK	Sound Mature Kernels SMK	Sound Splits SS	Other Kernels OK	Seed Weight	Pod Yield	Untreated Pod Yield	Leaf Spot	Tomato Spotted Wilt Virus	Sclerotinia Blight
Experimental	Count	%	Score	%	Score	g pod^{-1}	%	%	%	%	%	%	%	g $seed^{-1}$	lbs. $acre^{-1}$	lbs. $acre^{-1}$	Score	% Incidence	% Incidence
N14001	20	26.0	41.9	30.3	43.5	4.5	1.5	0.4	14.2	42.5	64.4	2.8	1.9	0.90	4109.0	3206.0	6.7	13.2	44.4
N14002	20	42.3	44.7	26.1	42.6	7.3	1.3	0.5	17.6	44.4	64.4	3.0	1.8	1.00	4179.3	3612.5	6.2	14.8	56.1
N14007	20	18.5	41.4	28.6	43.0	3.3	1.8	0.7	13.8	41.4	63.6	4.2	1.9	0.90	3931.0	3012.7	6.6	18.5	51.5
N14009	20	29.2	43.3	31.0	43.5	6.9	1.6	0.5	19.7	45.3	64.7	3.3	2.2	1.00	4246.2	3162.7	6.1	18.1	61.0
N14017	20	29.6	42.8	31.0	42.8	5.1	1.4	0.6	16.7	42.3	63.2	3.5	2.7	1.00	4429.6	3522.5	5.9	12.3	57.4
N14027	17	32.3	43.7	28.4	43.1	5.0	1.1	0.5	8.7	33.5	58.6	4.4	2.3	0.90	3875.5	3472.3	5.7	11.4	53.3
N15017	17	34.0	43.3	26.2	42.9	6.8	1.3	0.6	14.8	40.5	62.4	2.7	2.3	0.90	3782.8	2723.4	6.5	10.2	43.6
N15039	17	21.8	41.2	29.7	43.3	5.6	1.5	0.5	14.9	41.3	63.4	3.9	2.3	0.90	3916.6	3167.8	6.1	11.5	44.8
N15041	17	29.7	42.2	26.7	42.3	6.5	1.8	0.4	9.5	34.2	60.7	4.0	2.7	0.90	3966.9	2732.2	5.2	8.0	42.3
N15044	17	30.9	42.7	26.9	42.6	6.0	1.3	0.7	9.4	32.8	60.0	3.6	2.8	0.90	3981.3	2929.0	5.1	7.8	51.8
N16005	15	18.7	39.9	27.2	42.8	6.1	1.5	0.5	8.9	35.2	60.8	3.1	2.6	0.90	3985.6	3078.5	5.6	6.4	25.3
N16012	15	38.4	42.6	27.3	41.8	10.2	1.4	0.7	8.6	33.8	61.1	2.1	2.6	0.90	3827.1	3856.2	4.6	12.5	7.4
N16021	15	38.1	43.0	27.3	41.9	8.7	1.5	0.6	19.0	43.1	61.8	3.0	2.2	1.00	3912.7	2997.5	5.2	7.2	17.9
N17036	12	49.1	43.8	23.8	41.2	16.5	1.1	0.3	19.4	46.9	65.9	1.0	1.9	1.10	3872.1	3765.5	5.2	14.2	7.6
N17037	12	31.3	43.4	28.8	42.2	12.5	0.8	0.4	15.2	43.8	66.1	1.0	1.9	1.00	3886.7	3795.2	5.4	7.4	18.5
N17040	12	27.2	41.1	30.5	41.5	8.8	1.3	0.6	17.9	43.7	62.5	1.9	1.6	1.00	3442.8	3515.1	5.6	8.5	23.3
N17041	12	23.5	40.8	30.4	41.1	9.0	1.6	0.3	18.0	43.8	63.6	1.7	2.2	1.00	3548.8	3801.9	5.9	13.4	15.9
N17044	12	37.2	41.2	26.6	39.9	11.1	1.2	0.6	13.6	39.1	63.8	1.4	2.4	1.00	3367.9	3298.6	5.3	10.7	12.5
N17045	9	15.4	38.4	26.5	42.5	5.3	0.7	0.4	12.2	39.4	59.1	2.4	1.1	0.90	4087.2	2979.3	5.7	8.4	18.0
N17047	12	10.7	37.3	27.0	42.1	5.1	0.9	0.3	13.7	43.4	63.4	1.9	2.8	1.00	3529.3	3432.0	5.1	7.2	23.0
Cultivar																			
Bailey	20	14.6	36.1	24.0	41.7	3.3	2.1	0.5	8.7	35.9	64.6	3.3	2.3	0.80	3625.5	3236.2	5.7	12.0	66.0
Bailey II	20	18.1	47.2	26.8	42.3	3.7	1.7	0.6	12.2	41.1	63.5	3.9	2.5	0.90	3891.2	2994.0	5.8	8.7	37.9
Emery	20	29.5	42.5	31.2	43.5	5.0	1.5	0.4	15.7	45.6	65.9	2.7	1.9	0.90	4226.3	2824.2	6.5	15.5	65.3
NC 20	20	29.0	42.7	30.4	43.3	5.0	1.6	0.5	9.5	34.7	60.7	4.1	2.8	0.90	4012.9	3517.1	5.3	8.1	45.9
Sullivan	20	18.2	40.0	28.6	42.9	3.2	1.9	0.5	12.2	38.7	63.3	3.7	2.6	0.80	3734.0	2804.7	5.5	11.6	43.6
Wynne	20	37.9	44.4	29.6	42.8	6.3	1.2	0.7	16.0	43.0	64.4	2.9	2.1	1.00	3943.5	3048.9	6.2	16.5	57.9
LSD (α = 0.05)		4.5	5.4	3.3	1.1	4.9	0.5	0.2	2.9	3.4	2.5	0.7	0.7	0.00	613.2	279.7	0.3	3.6	8.5

† Mean differences within columns greater than LSD value are significantly different according to α = 0.05

Table 1.3. Agronomic and fatty acid content for NCSU breeding line(s) and cultivars tested in the Peanut Variety and Quality Evaluations (PVQE) from 2017-2021 at five locations (seven environments) in the Virginia-Carolinas (VC) region.

		Pod & Seed Grade											Yield	Fatty Acid Content		
Line	Number of Trials	Jumbo Pods	Jumbo Hunter L	Fancy Pods	Fancy Hunter L	Foreign Material	Loose Shelled Kernels	Super Extra-Large Kernels SELK	Extra-Large Kernels ELK	Sound Mature Kernels SMK	Sound Splits SS	Other Kernels OK	Pod Yield	Oleic Acid C 18:1	Linoleic Acid C 18:2	Oleic Linoleic Ratio
Experimental	Count	%	Score	%	Score	%	%	%	%	%	%	%	lbs. acre^{-1}	%	%	
N14001	21	57.1	48.3	35	47.2	1.3	0.7	14	41.4	63.3	4	2	4707.4	80.1	5.4	17.9
N14002	35	73.7	47.6	20.6	45.8	1.4	0.7	16.2	42.1	61.6	5.2	1.7	5155.6	80.2	4.7	18.9
N14007	28	42.4	47.6	45.1	47	1.2	0.7	13.1	39	63.9	6.1	1.9	4729.3	68.8	15.1	5.1
N14009	21	67.3	48.6	26.2	46.4	1.3	0.7	20	41.5	64.6	4.6	1.9	4308.9	80.7	4.9	18.8
N14017	15	65.1	47	28.1	46.3	1.6	0.6	15.1	36.1	63.3	4.3	1.7	5033.8	81.5	3.8	22.6
N14027	28	63.4	47.9	29.7	47.1	1.4	0.7	9.5	38.1	60.4	6.6	1.9	4708	76.3	8.8	13.9
N15017	28	67.2	48.9	26.4	47.1	1.3	0.8	12	43.8	63.4	4.4	2	4591.1	80	5	17.6
N15039	28	60.9	47.7	31.7	46.9	1.1	0.7	14.4	43	64.3	5.1	1.8	4669.8	78.9	6.3	17.6
N15041	28	64.2	48.1	29.5	46.5	1.4	0.7	8.1	36.6	60.2	6.3	2.2	4642.8	79.4	6	16.6
N15044	28	61.2	47.7	32.3	46.3	1.3	0.7	9	37.8	61.2	5.5	2.3	4689.1	77.5	7.6	14.5
N16005	21	53.1	50.4	38.6	49.3	1.5	0.7	7	40.9	61.6	4.6	2.1	4355.7	73.7	10.9	7.2
N16012	14	77.2	50.6	18.4	49.5	1.7	0.8	10.5	38.6	60.2	3.6	1.9	3756.7	80.6	5	16.7
N16021	14	68	50.6	26.1	48.6	1.9	0.9	14.1	42.3	61.5	4.3	1.9	3842.8	74.2	10.6	7.8
N17036	14	79	50.3	16.2	49.4	1.6	0.8	11.5	41.1	61.9	3.1	2.2	3997.1	78.6	6.7	16.1
N17037	14	73.8	50.8	19.5	49.5	1.8	0.9	12.1	41.4	62.1	2.9	2	3763.2	80.3	5.3	16.3
N17040	14	71.7	51.1	24.1	49.7	1.6	0.9	17	46.2	62.5	4.8	1.7	3840	80.2	5.6	15.2
N17041	14	71.6	52	23.9	50.3	1.5	0.9	18.8	48.6	63.1	4.8	1.7	3830.3	80.6	5.3	16.2
N17044	14	76.8	48.8	18.3	47.6	2.4	1	11.2	37	59.4	3.9	2.2	3388.6	81.4	3.5	24.1
N17045	14	64.2	50.6	31.2	49.8	1.9	0.7	14.6	45.7	63	4.3	1.8	3974.8	79.8	5.9	14.4
N17047	14	52.7	50.7	41.6	50.8	1.6	0.6	10.9	43.8	61.8	5.1	2.2	4188	81	4.8	17.2
Cultivar																
Bailey	28	40.1	46.7	47.4	45.6	0.9	0.7	9.8	37.9	63.9	5.5	2.2	5355.5	54.2	27.8	2.1
Bailey II	33	44.5	47.8	45.1	46.2	1.1	0.6	12.2	43.7	65.2	4.5	1.9	4998.6	78.8	6.4	15.5
Emery	35	61.7	47.3	30.3	45.5	1.1	0.7	14.6	42.2	65.1	4.3	1.6	4937.2	80.6	4.7	18.2
NC 20	28	64.1	45.5	29.2	44.0	1.1	0.7	9.6	34.6	60.1	7.0	2.2	5432.8	81.4	4.2	20.1
Sullivan	28	46.6	45.9	41.6	44.5	1.1	0.5	13.6	38.5	62.7	5.7	2.4	4928.1	78.6	6.2	15.6
Wynne	27	65.3	45.9	26.5	43.1	1.0	0.7	13.8	37.6	62.6	5.1	2.2	4952.3	77.0	7.6	11.4
LSD (α = 0.05)		6.1	1.8	5.1	1.8	0.7	0.3	3.2	4.9	2.7	1.3	0.4	615.2	1.7	1.4	2.2

† Mean differences within columns greater than LSD value are significantly different according to α = 0.05

PVQE Update

In 2021, PVQE plots of 25 entries, 20 breeding lines and 5 checks, were planted at five locations and 7 agronomic conditions: at Tidewater Agricultural Research and Extension Center (TAREC) in Suffolk, VA; Williamston (Martin Co.), Rocky Mount and Council (Bladen Co.), NC; and Blackville, SC. The checks included 'Bailey II',' Emery', 'NC 20', 'Sullivan' and 'Walton'. In Suffolk and Williamston, separate plots were dug at the optimum maturity (Dig II) and 3 weeks earlier (Dig I).

In 2021, max and min temperatures varied by location. Blackville, SC, and Council, NC, were the hottest for the most part of the peanut growth season, while Suffolk, VA, and Williamston, NC were the coolest, in particular in May, which was also a dry month for these locations (Fig. 1 & 2).

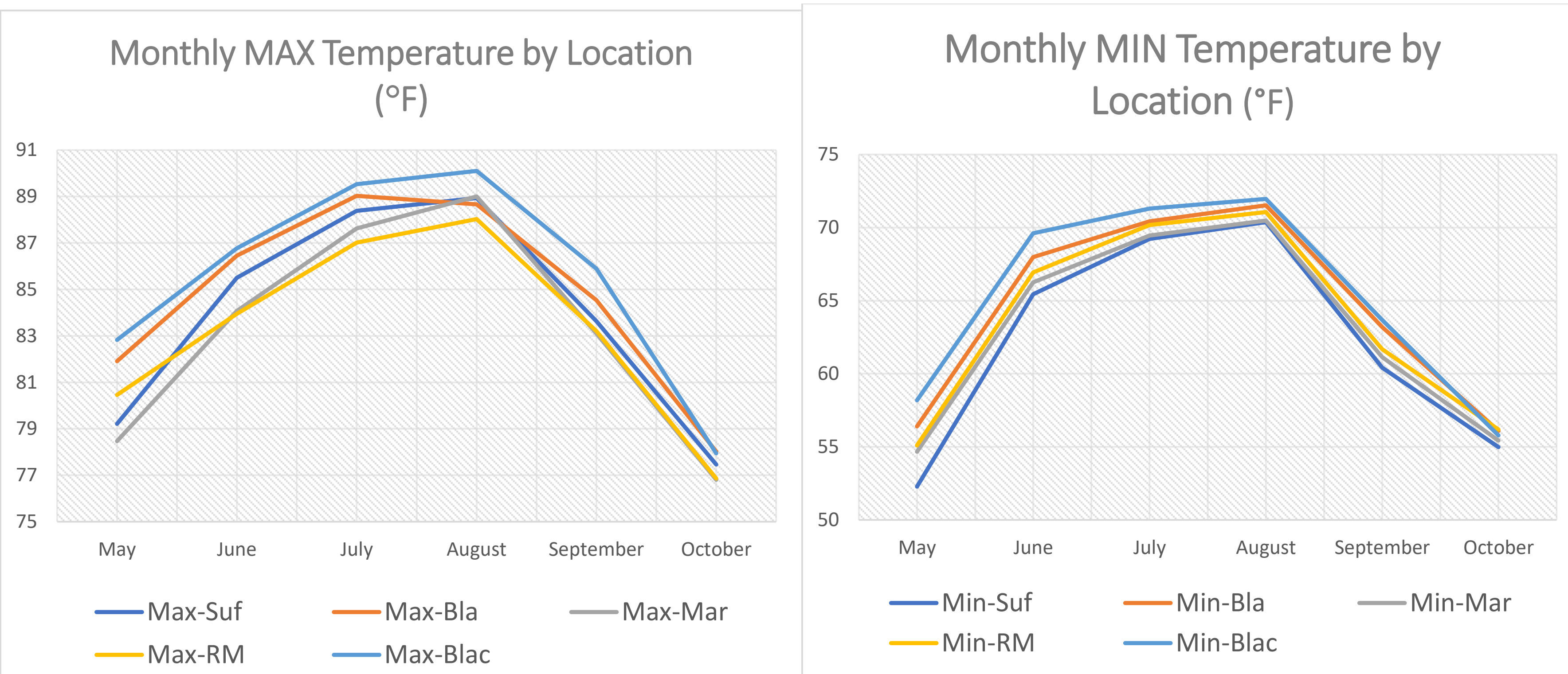


Figure 1. Min and Max temperature by location during 2021 peanut growing season.

Under these conditions, peanut reached the needed heat units for optimum maturity, which is around 2600 °F for virginia type peanut, by end of August at Blackville, mid-September in Council, NC, and end-September at the other locations (Fig. 2). Precipitation was least in May, and for Suffolk, Williamston and Rocky Mount, May was dry until the last days, creating poor conditions for germination and emergence. Growers in Virginia postponed planting because of the drought in May. Precipitation amount and distribution from May to September was also problematic. For example, at Williamston, after a dry May over a foot of rainfall was received in June, followed by 10 days or more of recurrent stray droughts in between rain events; and from end-August to end-September almost no rain was recorded. Under these conditions, Landplaster uptake was impaired, root-rot disease (in particular southern stem rot) (Fig. 3) developed on the plants and yield was severely reduced at this location (Table 1).

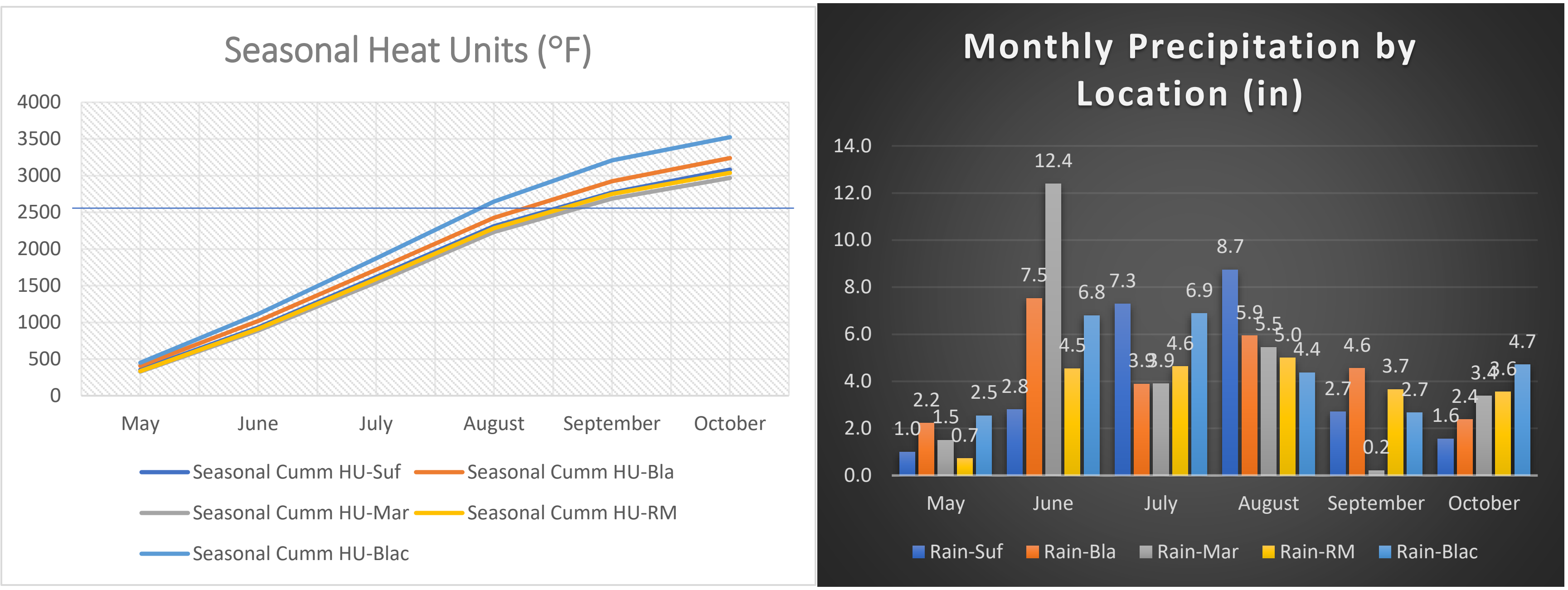


Figure 2. Seasonal cumulative heat units and precipitation by location during 2021 peanut growing season.

Highest yield and dollar return per acre were recorded at Council, Rocky Mount, and Suffolk dig I (optimum harvest maturity), followed by Blackville. At Martin and in Suffolk dig II (3 weeks earlier than optimum maturity) yields were drastically reduced (Table 1). In general, grades were good at all locations in 2021 except Williamston, NC.

Figure 3. Pods showing southern stem rot disease at digging.

Peanut Variety Update: Nothing to report other than I grew breeder seed of 'Walton' at TAREC, and I am sharing it with the Virginia Crop Improvement Association for increase in 2022. Walton produced in the PVQE, other tests, and in grower fields abundant yields in 2021; however, it had low germination percentage when germination was checked in Dec 2021. It is possible that Walton requires longer time to break dormancy or germinates slower than the other cultivars. In 2022, a test designed to clarify this issue will be implemented.

Table 1. 2021 PVQE pod yield summary table

Variety/Line	Trt	Suffolk Dig 1†	Suffolk Dig 2	Martin Dig 1	Martin Dig 2	RM	Bladen‡	Blackville	All Locations
Bailey II	1	3043a-c	4323gh	2119a	1284a	5363a	4721a	4619a	3644a
Emery	2	2766b-d	5406a	2256a	1412a	5000a	5204a	4703a	3825a
NC-20	3	3576a	4814b-f	2186a	1551a	5048a	5539a	4275a	3843a
Sullivan	4	2768b-d	3930hg	1134a	1744a	3661a	4873a	4046a	3165a
Walton	5	2978a-c	4953a-d	1865a	1962a	4656a	4968a	3444a	3546a
N14001	6	2763n-d	4927a-e	1437a	2046a	4528a	5214a	4224a	3575a
N14002olJ	7	3273a-c	5208ab	1380a	834a	5436a	4826a	4249a	3550a
N14007	8	2722b-d	4591c-g	993a	1121a	5219a	4585a	3815a	3271a
N14009	9	2253de	4268hg	1813a	1322a	4386a	4230a	3695a	3138a
N14017	10	2648cd	4826b-g	1481a	1237a	5279a	4404a	3848a	3389a
N14027olJ	11	3034a-c	4809b-g	2160a	1564a	5219a	5528a	4045a	3759a
N15017ol	12	2879a-c	4639c-g	1606a	1287a	5437a	4621a	3781a	3497a
N15039ol	13	3005a-c	4640c-g	1742a	1429a	4726a	5553a	4225a	3609a
N15041ol	14	3068a-c	5043a-d	2187a	1829a	4782a	5163a	3484a	3639a
N15044olF	15	3195a-c	5150a-c	1830a	1487a	4924a	5744a	4384a	3816a
N16005	16	3217a-c	5227ab	2330a	1012a	4464a	5125a	3869a	3606a
N16012	17	2714b-d	4676b-g	1614a	1016a	4655a	4154a	4318a	3290a
N16021	18	3075a-c	4520d-g	1962a	1128a	4525a	4995a	3911a	3477a
N17036	19	3070a-c	4904a-e	1819a	1556a	5074a	4822a	3779a	3582a
N17037	20	3098a-c	4346f-h	1527a	1538a	4169a	4885a	3878a	3387a
N17040	21	2922a-c	4925a-e	1631a	637a	5025a	4992a	4408a	3506a
N17041	22	3247a-c	4679b-g	1208a	1202a	4387a	5135a	4629a	3498a
N17044	23	2131e	4376e-h	1068a	803a	4100a	4946a	3675a	3033a
N17045	24	2954a-c	4918a-e	1557a	1380a	4832a	5137a	3851a	3518a
N17047	25	3386ab	5011a-d	1553a	1153a	5019a	5431a	4137a	3675a
Mean		**2951**	**4764**	**1698**	**1341**	**4797**	**4992**	**4052**	**3514**

† Dig 1 refers to an approximately 3-week earlier dig from the normal dig (Dig 2) at the physiological maturity or 140 days from planting in Virginia and northern North Carolina locations.

‡ At this location, excessive rainfall in May postponed planting in June. Crop matured late and digging, in extreme wet soils in Oct, resulted in substantial pod shedding, for which yields were very low at this location.

Report for Virginia Federal/State Inspection Service
For Peanut Advisory Committee Meeting February, 2022

Virginia hired 35 wage and seasonal employees this peanut season. It was a fast and furious season and was over with before it had hardly begun which was a good thing due to the personnel shortages but not a good thing as inspectors were worn out from the long days. We served 14 buying points around the state with only two area supervisors and for the biggest part of the season only one. We had some COVID issues which affected the hiring process but did not have very many cases of COVID with our personnel. Since our maintenance supervisor left us high and dry right before the season started, North Carolina maintenance crews came to Virginia and serviced all buying points and took care of maintenance problems that we had no one to handle throughout the entire season (for which I am eternally grateful for to Greg Hoggard and his maintenance team) we wouldn't have made it through the season without them. Virginia inspected approximately 66,116 tons (4,740 inspections) of Farmers' Stock peanuts both Runner and Virginia type and also inspected approximately 51,269 tons of regrades. Finding much needed help seems to be our biggest and most challenging issue. We have tried job fairs, printing fliers to put in stores, shops around each area, run ads in the paper and have even offered a bonus at the end of the season and we pick up a few new people but nothing like what is needed. We have full time salaried positions open that we are having a hard time filling so I don't foresee wage and seasonal positions filling any faster. Each year is more challenging than the last due to personnel issues.

Report: Roger Cross

The germination quality of the peanut samples tested so far has been good. The issue we are facing is that the peanuts are slow to break dormancy. We use ethylene gas and normally one treatment of 150ml. per germinator is enough. We have had to treat some samples up to three times. This means the germinators are full of slowly germinating samples which slows down the entire process. We are testing samples from one sheller and time will tell if other grower's peanuts have the same issue. We have no idea why this is occurring.