Agronomy and Pest Management

David Jordan
Department of Crop and Soil Sciences
North Carolina State University

Table 8-1. Peanut yield (pounds/acre) from 2014 to 2019

Year	State Average	Grower Meetings Participants	5,000 Pound Club
2014	4,320	4,860 (3,600 to 6,400)	5,660
2015	3,400	4,080 (0 to 5,700)	5,700
2016	3,450	3,840 (0 to 5,740)	5,540
2017	4,030	4,650 (2,300 to 6,530)	5,500
2018	3,780	4,340 (600 to 6,010)	5,470
2019	4,490	4,860 (2,500 to 6,600)	5,720

Table 2-2. Percentage of Acres of Varieties Certified in North Carolina, 2015 – 2020

Variety	2015	2016	2017	2018	2019	2020
Bailey	64.7	47.4	40.5	36.6	32.1	13.0
Gregory	2.1	0	0.4	2.7	0	0
Sugg	9.7	1.9	0.1	0	0	0
Sullivan	4.8	28.7	40.2	46.1	49.9	28.9
Wynne	5.3	13.5	7.5	5.2	3.6	3.9
Emery	0	0	0.1	0.2	2.4	5.9
Bailey II	0	0	0	0.3	3.8	43.6
Georgia 09B	9.9	6.2	10.5	5.0	1.1	0
TUFRunner 511					2.9	0.1
TUFRunner 297					4.6	3.6

General Production Practices

- **Apply nutrients based on soil test (pH 5.8 to 6.2)**
- **Avoid excessive Mg and K**
- Avoid fields with zinc
- Establish good rotations (cotton, corn, sorghum)
- Plant improved varieties in May
- 5 seed per foot of row on 36-inch rows
- Conventional tillage
- Irrigate if possible
- **Inoculate with *Bradyrhizobia* for BNF**
- Apply calcium at pegging
- Apply boron and manganese as needed
- Dig and harvest in a timely manner
- Control pests using IPM practices

TABLE 3 Number of samples received from 2015 to 2018 to determine lime and fertilizer recommendations for peanut grown primarily in North Carolina

pH category	Samples from 2015–2018 (*n*)	Acreage estimate for pH categories (% of samples)
<5.4	859	5.6
5.4–5.7	2,969	19.3
5.8–6.2	8,255	53.7
>6.2	3,279	21.4
Total	15,362	–

Peanut response to soil pH and gypsum rate.[a]

Soil pH	Gypsum rate		
	0	0.5X	1.0X
	Percent of maximum yield		
4.5	42 f	55 e	55 e
5.2	55 e	56 e	59 e
5.6	78 c	78 c	69 d
6.0	84 b	97 a	95 a

[a]Data are pooled over 3 years.

Potash Recommendations for Peanuts as Related to Potassium Soil Test Index (K-I), NCDA&CS.*

Soil Test K-I	Potash (K_2O) in lbs/acre
0	150
10	120
20	90
30	70
40	40
50	30
60	10
70	0

*Crop fertilization based on N.C. soil tests; based on equation 15 for calculating rates of fertilizer https://www.ncagr.gov/agronomi/pdffiles/obook.pdf.

Table 3-4. Peanut Yield Response and Economic Return at a Price of $535 per ton in Fields without a History of Peanuts versus Fields with Frequent Plantings of Peanuts (1999 – 2017). Trials were conducted in North Carolina, South Carolina, and Virginia with Virginia market type varieties.

	New Peanut Fields		Fields with a Recent History of Peanuts	
Inoculant Use	**Yield (lb per acre)**	**Economic return ($ per acre)**	**Yield (lb per acre)**	**Economic return ($ per acre)**
No inoculant	3,460	5	4,280	227
Inoculant	4,660	323	4,450	268
Difference	1,200	318	170	41
Number of Trials	52	52	43	43
Years	1999 – 2017		1999 – 2017	

Applying Nitrogen to Peanuts

- Consider about 20 pounds N/acre on sandy soils to promote more rapid canopy closure and cooler soils at initial pegging
- Apply 500 pounds AMS/acre as soon as you notice symptoms of N deficiency and it is apparent that nodulation is poor (less than 15 nodules per plant 45 days after planting)
- Wet fields can decrease activity of nodules and cause peanuts to have a yellow cast – when fields dry they recover and generally the peanuts become green again
- Applied N is not recommended as a general rule for peanuts

Table 3-5. Peanut Response from 14 Trials to Inoculation and Ammonium Sulfate at 571 lb/acre (120 lb actual N/acre) Applied when Nitrogen Deficiency Is First Visible.

Inoculant	Ammonium Sulfate	Pod Yield (lb/acre)	Net Return ($/acre)
No	No	3,530 c	20 c
Yes	No	4,850 a	353 a
No	Yes	4,550 b	271 b

Means followed by the same letter are not significantly different at $p < 0.05$.

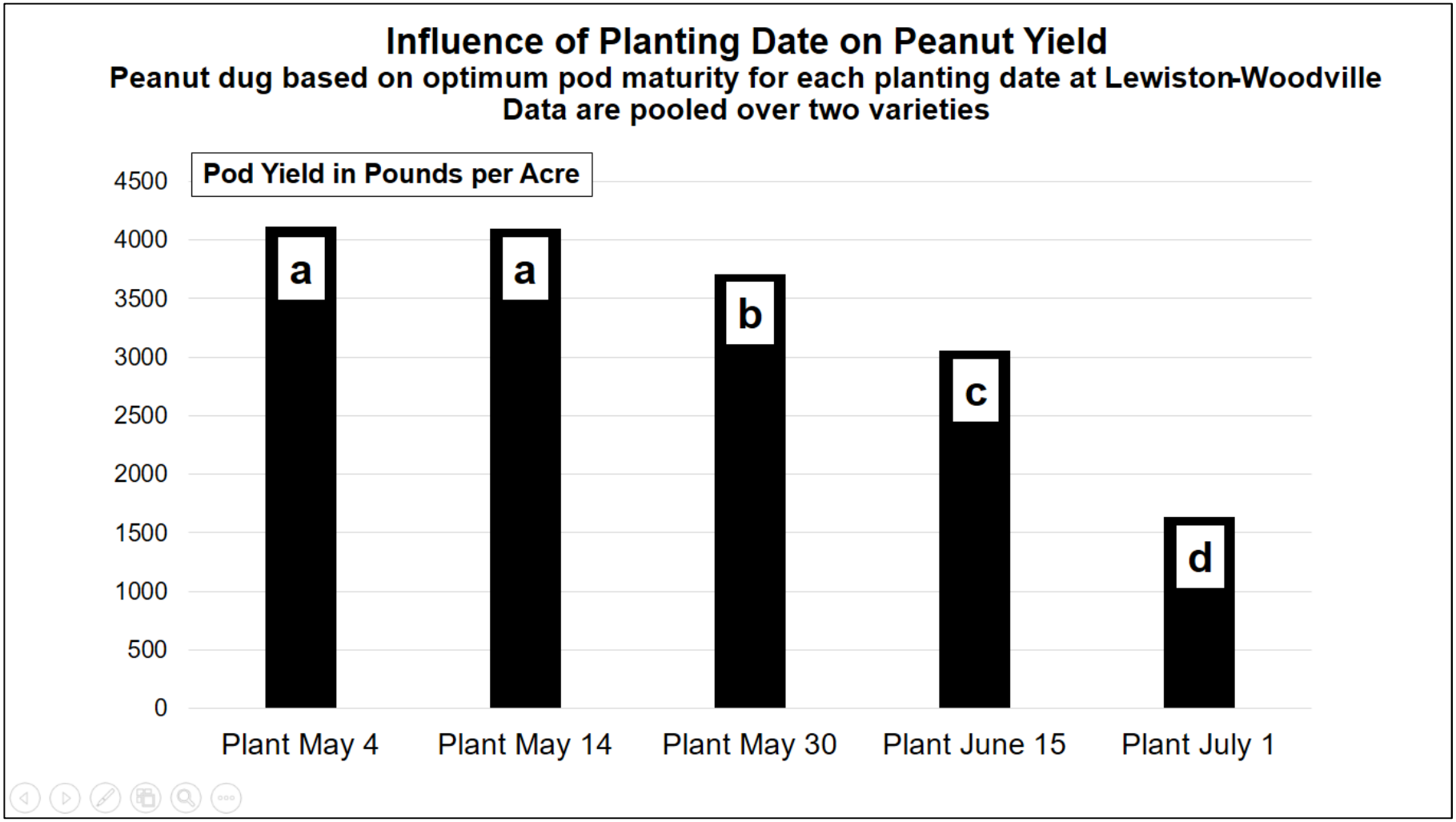
Should I have done anything?

General Production Practices

- Apply nutrients based on soil test (pH 5.8 to 6.2)
- Avoid excessive Mg and K
- Avoid fields with zinc
- **Establish good rotations (cotton, corn, sorghum)**
- Plant improved varieties in May
- 5 seed per foot of row on 36-inch rows
- Conventional tillage
- Irrigate if possible
- Inoculate with *Bradyrhizobia* for BNF
- Apply calcium at pegging
- Apply boron and manganese as needed
- Dig and harvest in a timely manner
- Control pests using IPM practices

General Production Practices

- Apply nutrients based on soil test (pH 5.8 to 6.2)
- Avoid excessive Mg and K
- Avoid fields with zinc
- Establish good rotations (cotton, corn, sorghum)
- **Plant improved varieties in May**
- 5 seed per foot of row on 36-inch rows
- Conventional tillage
- Irrigate if possible
- Inoculate with *Bradyrhizobia* for BNF
- Apply calcium at pegging
- Apply boron and manganese as needed
- Dig and harvest in a timely manner
- Control pests using IPM practices



Walton (3,483 lbs/acre) versus Bailey II (3,158 lbs/acre)

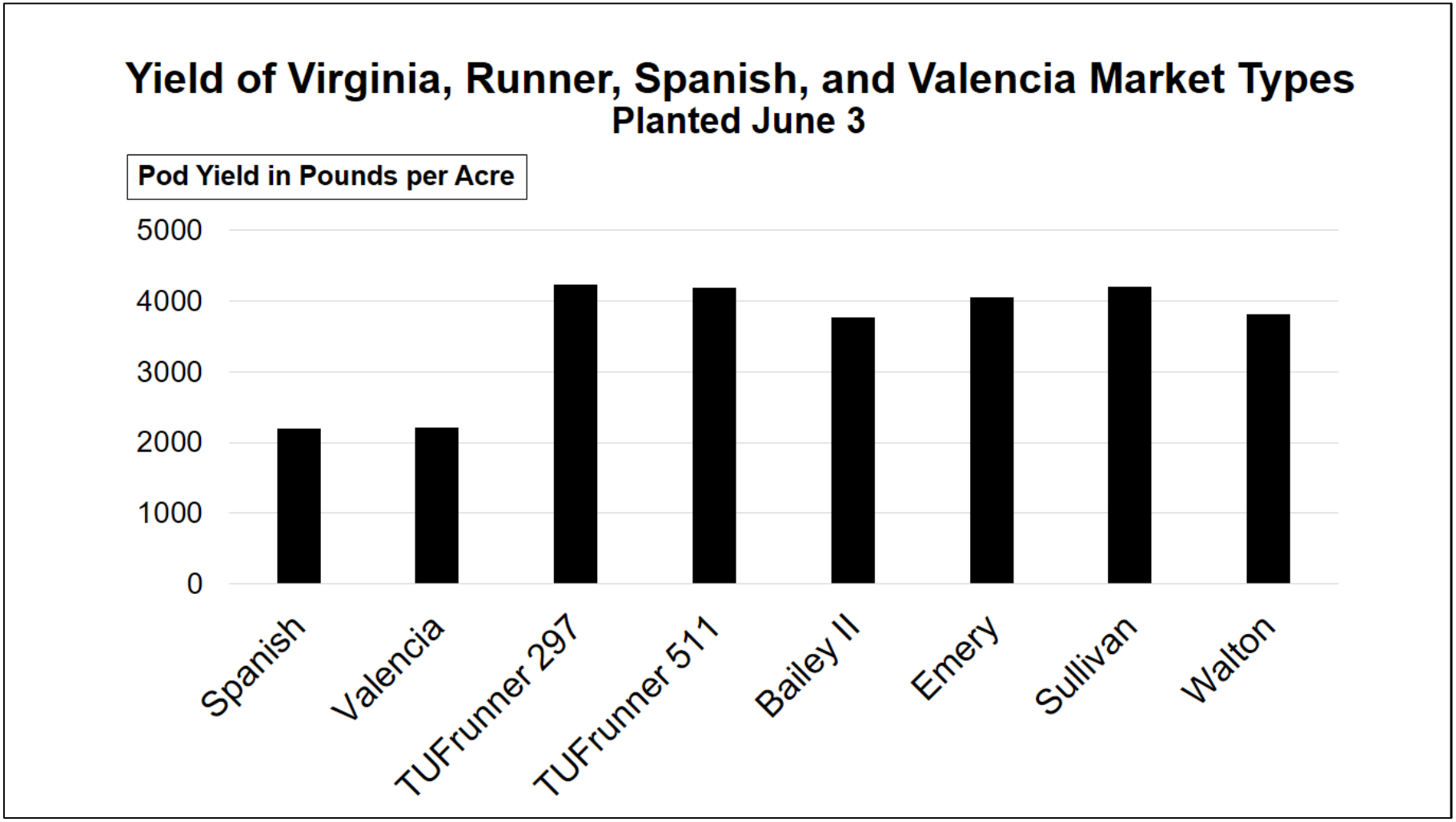
Planted May 4, image taken July 31

Planted May 14, image taken July 31

Planted May 30, image taken July 31

Planted June 15, image taken July 31

Planted July 1, image taken July 31


Yield of Virginia, Runner, Spanish, and Valencia Market Types
Planted June 3
Pod Yield in Pounds per Acre
5000
4000
3000
2000
1000
0
Spanish
Valencia
TUFrunner 297
TUFrunner 511
Bailey II
Emery
Sullivan
Walton

General Production Practices

- Apply nutrients based on soil test (pH 5.8 to 6.2)
- Avoid excessive Mg and K
- Avoid fields with zinc
- Establish good rotations (cotton, corn, sorghum)
- Plant improved varieties in May
- 5 seed per foot of row on 36-inch rows
- Conventional tillage
- Irrigate if possible
- Inoculate with *Bradyrhizobia* for BNF
- Apply calcium at pegging
- Apply boron and manganese as needed
- **Dig and harvest in a timely manner**
- Control pests using IPM practices

NC STATE EXTENSION

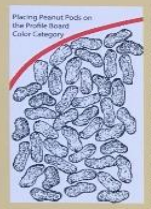
Determining Peanut Pod Maturity and Estimating the Optimal Digging Date

Using Pod Mesocarp Color for Digging Virginia Market Type Peanut

Using the Peanut Profile Board

Gather 150 harvestable pods from each field or from each variety within a field, collecting pods from four or five locations. Keep pods in water until pod blasting. Use a pressure washer equipped with a turbo nozzle to remove the outer hull and expose the mesocarp color layer. Your county Extension agent can assist with this procedure.

Using the images of pods at the top of each column, place pods on the profile board under the appropriate mesocarp color category. Lay pods loosely as shown here.

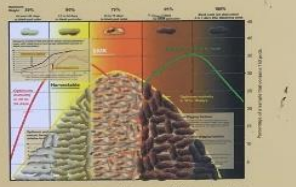


Lay pods on the chart and place them loosely within the appropriate mesocarp color category from the bottom line of the category upward. The percentage value on the right-hand side of the chart can be used to compare percentages of pods among color categories. In most cases samples will resemble a bell-shaped curve. However, this occurs only when rainfall and temperatures promote predictable maturation. When weather conditions are unfavorable or when peanuts are damaged by pesticides, samples may not be uniformly distributed. This makes predicting the optimum digging date more difficult.

Use the percentage value on the right-hand side of the chart to determine if peanuts are at optimum maturity. When the percentages of both brown and black pods are at least 30 to 35%, peanuts are at optimum maturity.

The darker the mesocarp color, the more mature the peanut pod. Darker pods are heavier, will shrink less and will grade better than pods with a lighter mesocarp color.

Peanuts in the image below placed on a peanut profile board will reach optimum maturity in 10 to 14 days.

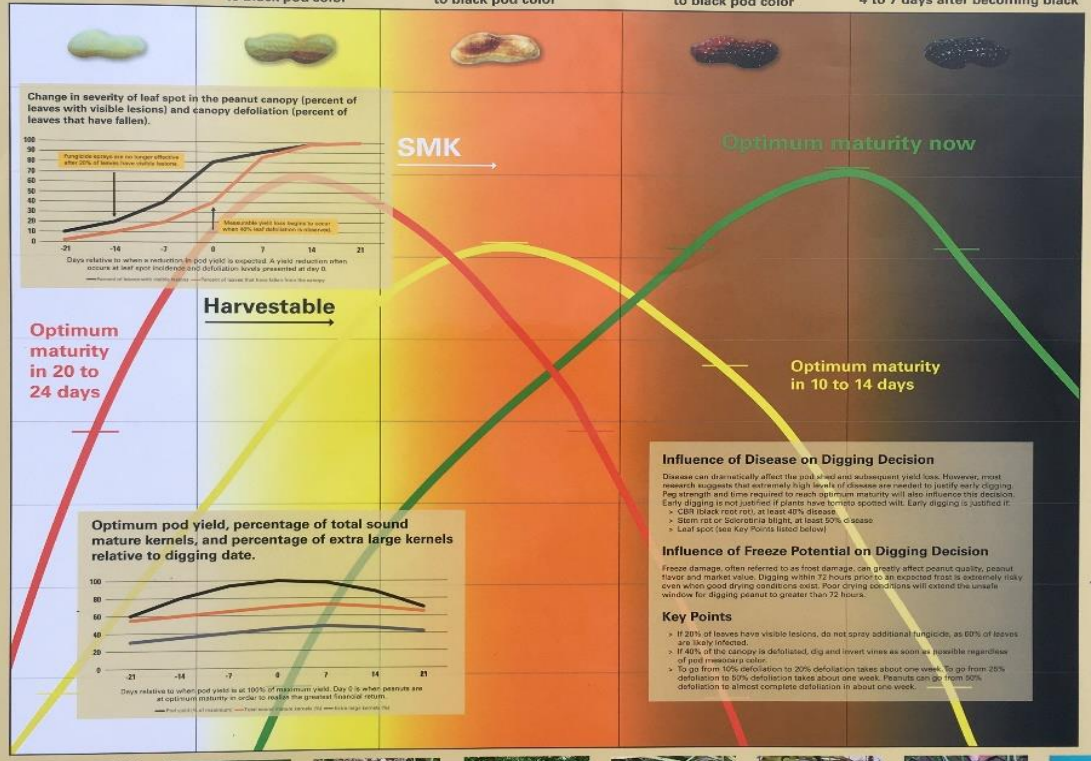


Sampling two or three times during the fall gives the best indication of the rate of peanut maturity. This is particularly important when examining pods that are black. These pods will eventually be lost and sampling only once does not give you enough information to determine when pods in the black category are likely to be lost. Using heat unit accumulations also can help you know when to begin determining maturity.

Note that when early morning temperatures are in high 40° F range for two days, pod maturation may not develop further unless there is a prolonged and unseasonal warming period.

Maximum Weight

30%	50%	75%	95%	100%
At least 35 days to black pod color	21 to 24 days to black pod color	14 to 17 days to black pod color	7 days to black pod color	Black pods can shed within 4 to 7 days after becoming black




Sclerotinia blight stem shredding and bleaching


Spider mites


Pod symptoms from southern stem rot


Drought


Late leaf spot


Peanut root-knot nematode


Rhizoctonia


Black root rot (CBR)


Black root rot (CBR)


Southern corn rootworm damage


Cutworm damage


Wireworm damage


Freeze damage


Physical damage


Calcium deficiency


Lesions caused by Rhizoctonia

Heat Unit Accumulation

Temperature and moisture influence growth and development

Minor contribution from photoperiod

DD_{56} (Growing Degree Days) – Base 56, Ceiling, 95

Average temperature for the day – 56 = Heat Units for that day

Sum heat unit accumulation from emergence to a given point

Dry heat

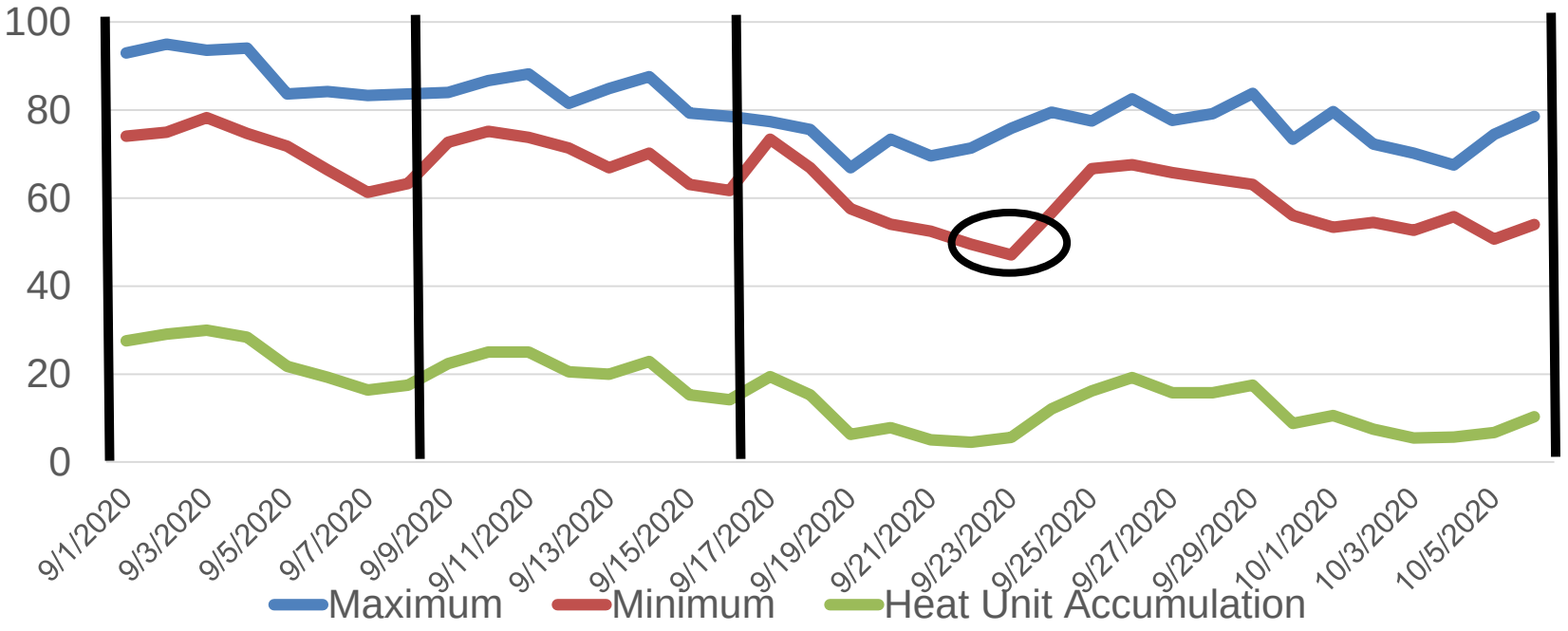
Injury from abiotic and biotic stresses can affect growth and development

Heat units accumulation is a good indicator of when to begin

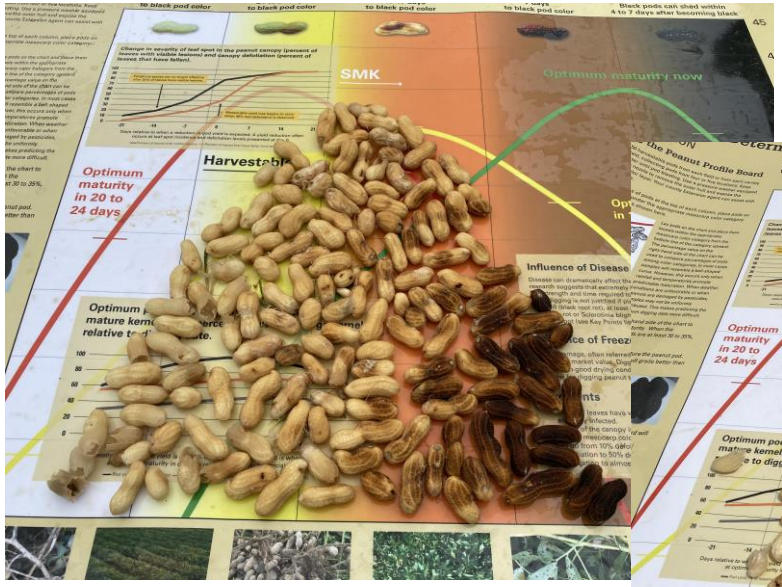
Pod mesocarp color on a field by field basis is key

2600 DD_{56} needed for most Virginia market types

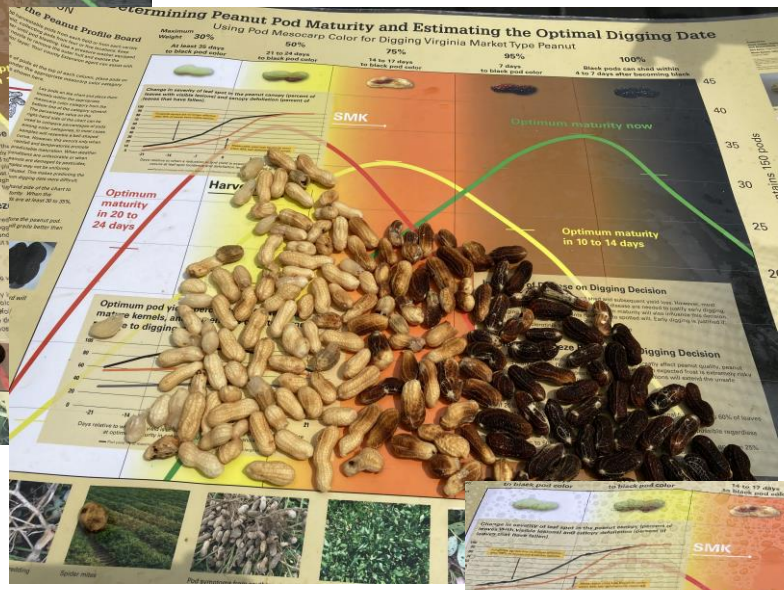
Maximum and Minimum Air Temperatures and Heat Unit Accumulation from September 1through October 6 Whiteville



Whiteville, 2020



August 25

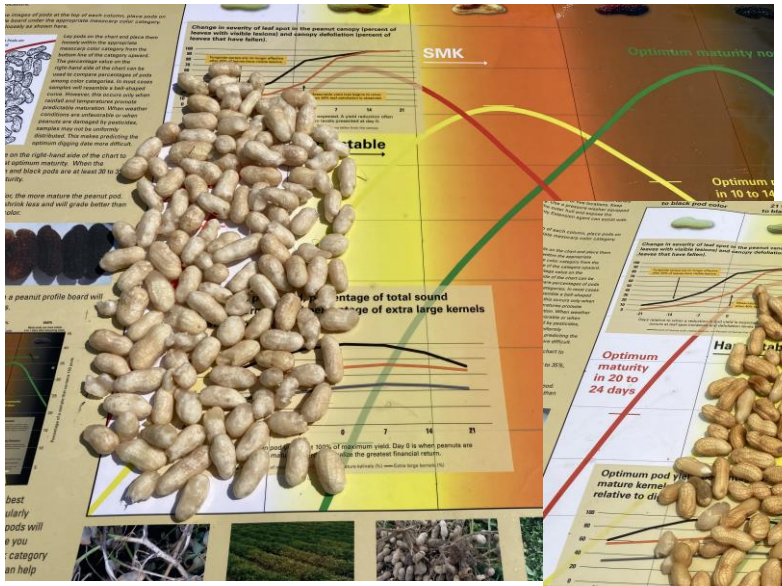


September 8

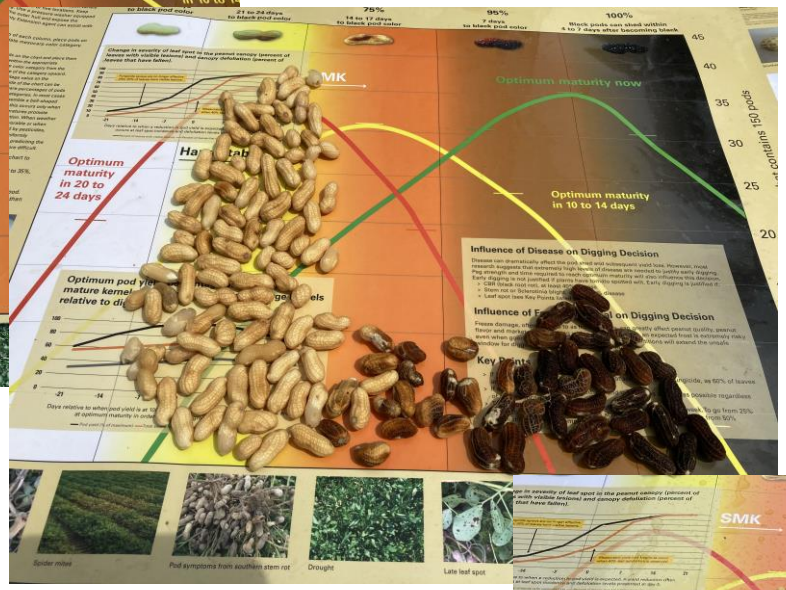
Normal Progression

September 16

Whiteville, 2020



August 25

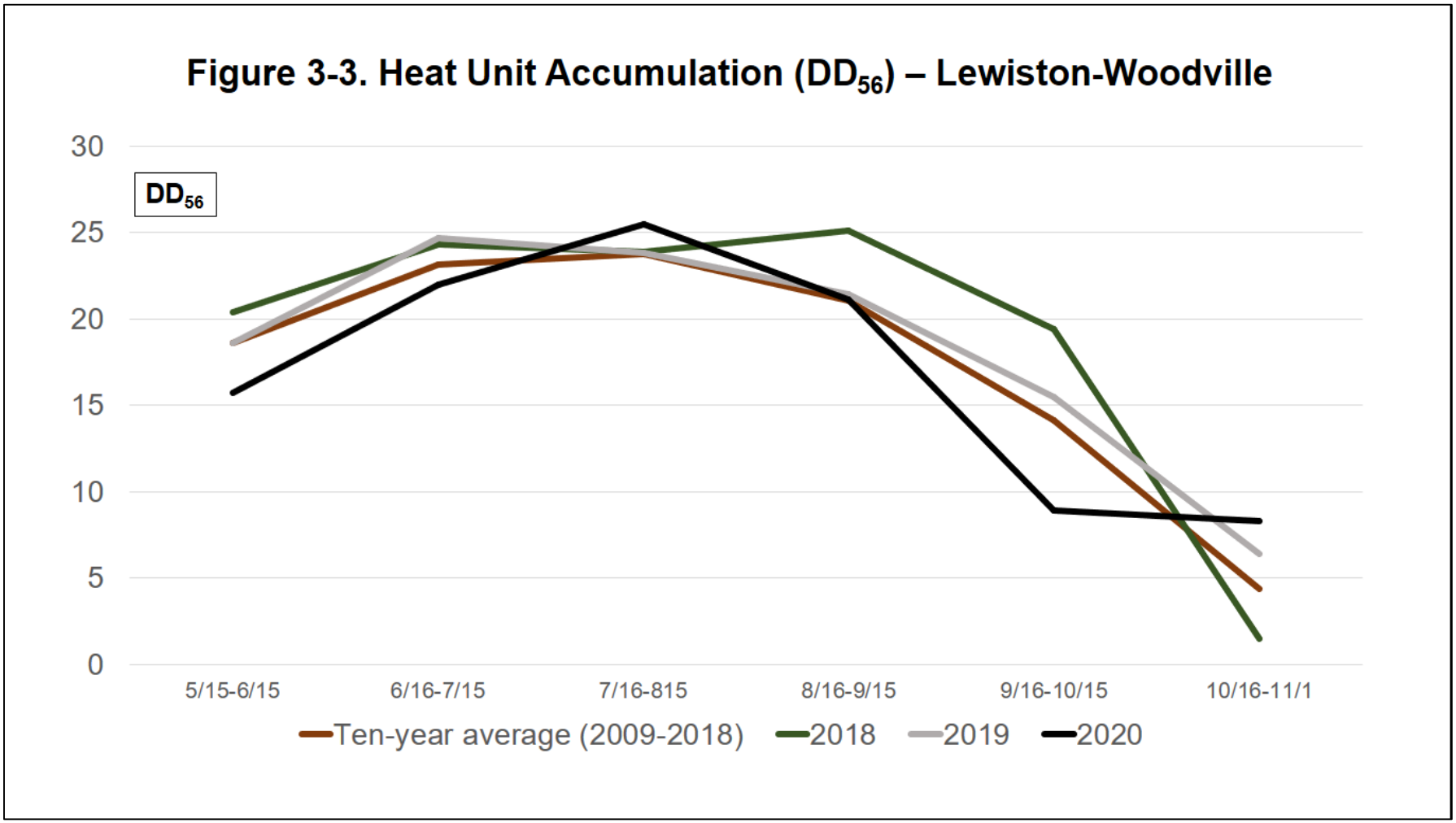


September 8

Split Crop?

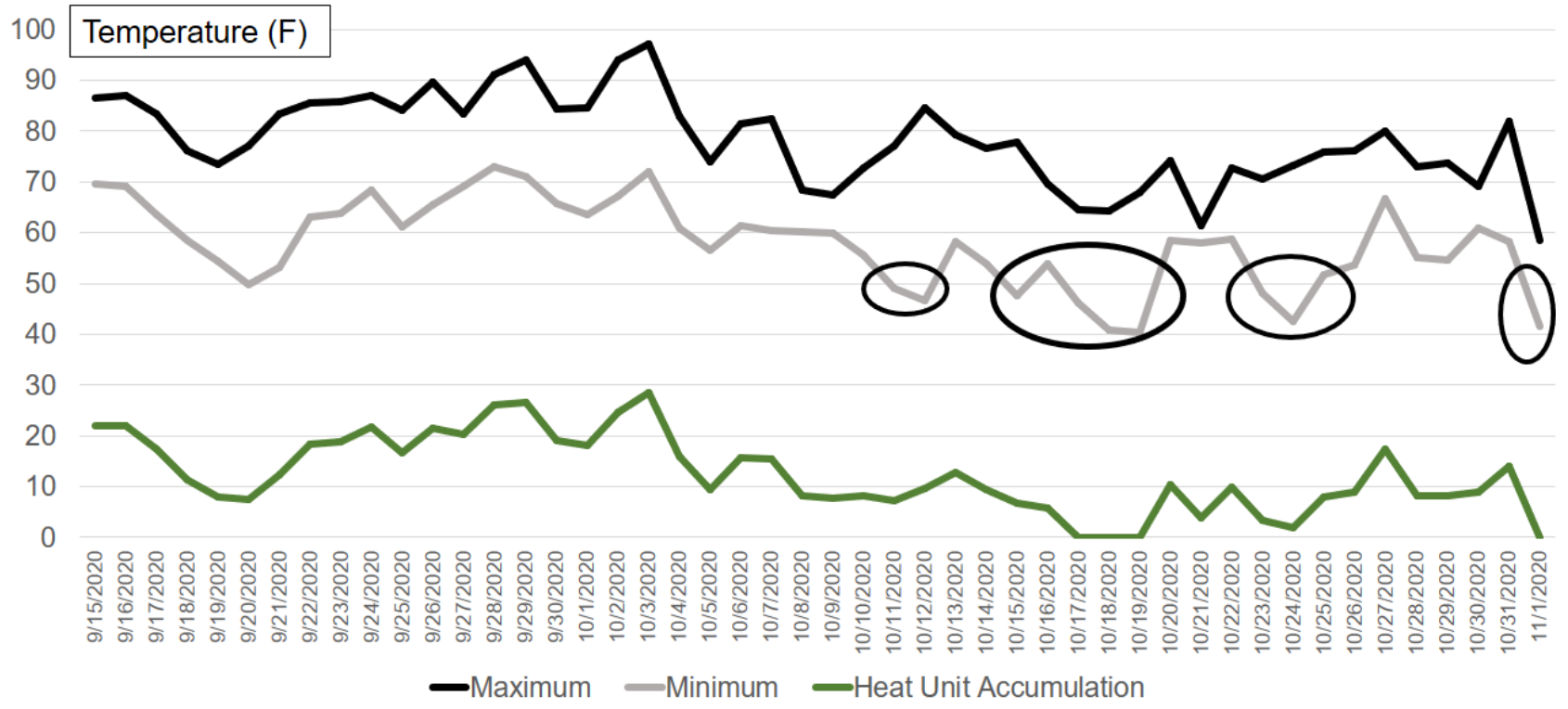
September 16

Heat Unit Accumulation
Lewiston-Woodville



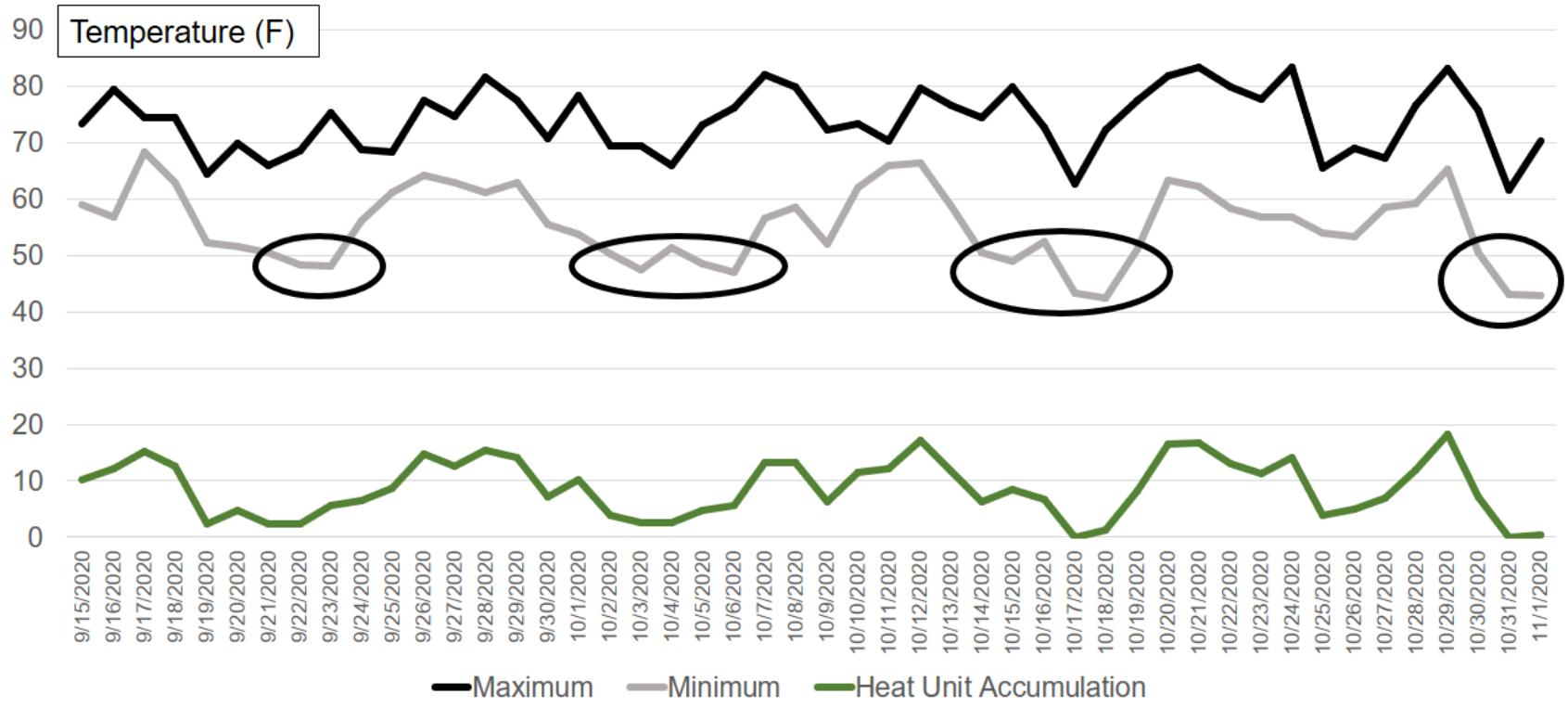
Lewiston-Woodville, 2019

Figure 3-4. Maximum and Minimum Air Temperatures and Heat Unit Accumulation September 17 - November 1, 2019, Lewiston-Woodville, NC



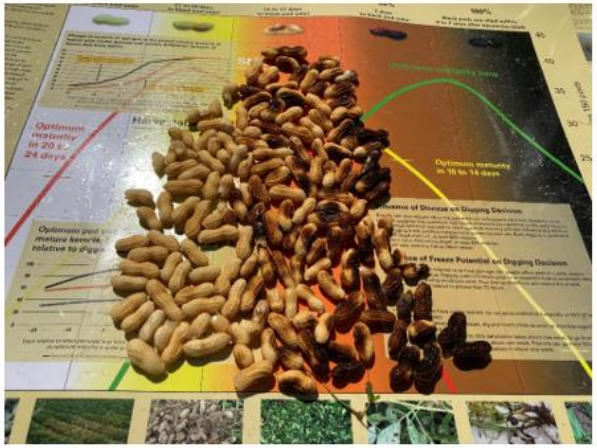
Lewiston-Woodville, 2020

Figure 3-5 Maximum and Minimum Air Temperatures and Heat Unit Accumulation September 17 - November 1, 2020, Lewiston-Woodville, NC



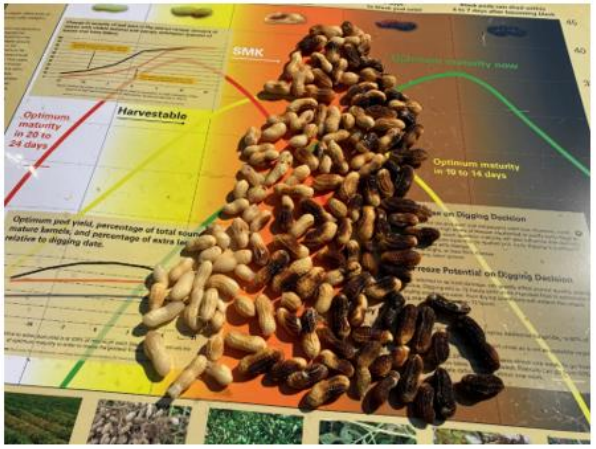
Seed Field Sep 17

Seed Field Sep 24



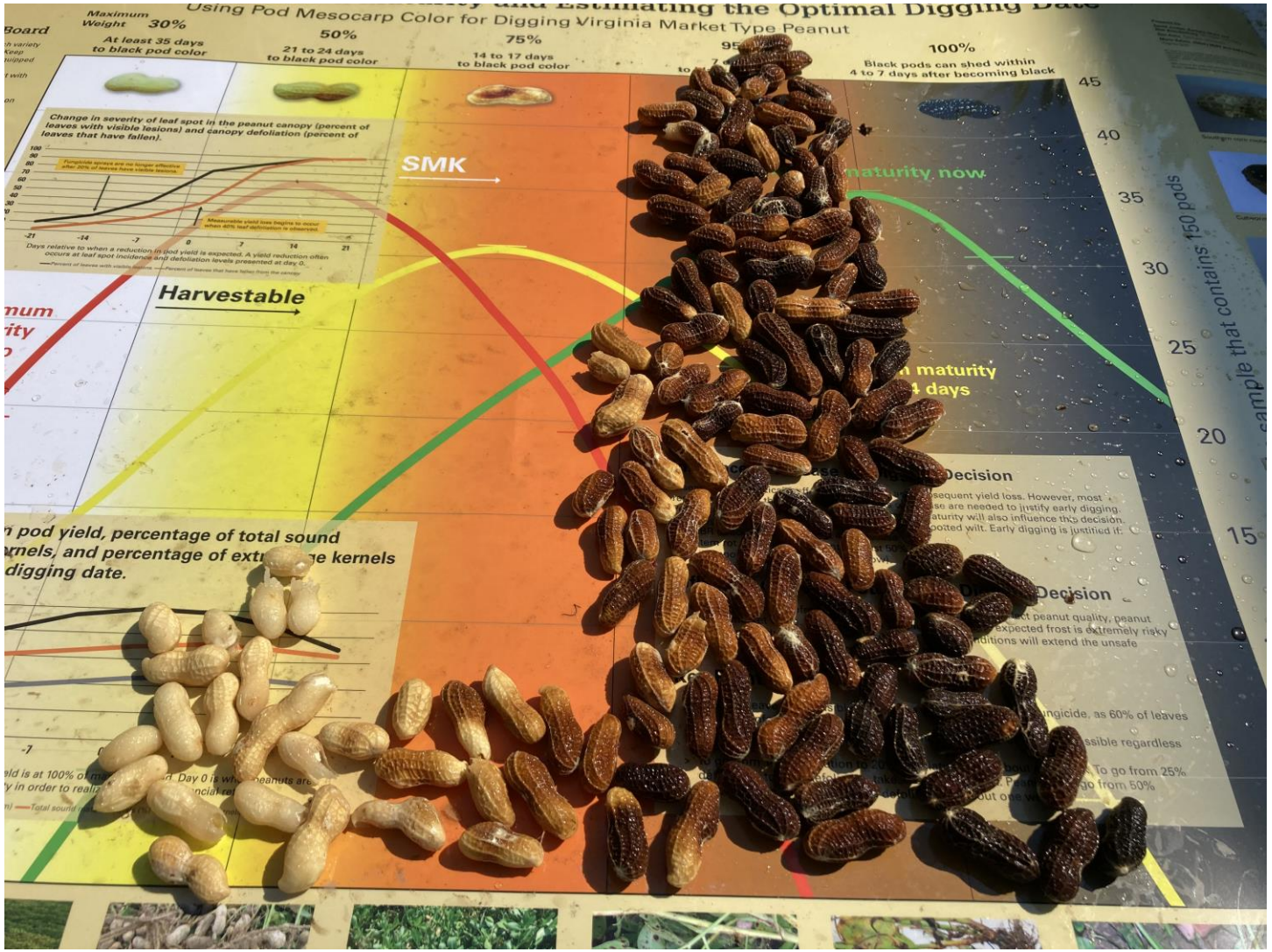
Seed Field Sep 29

Seed Field Oct 7



Seed Field Oct 15

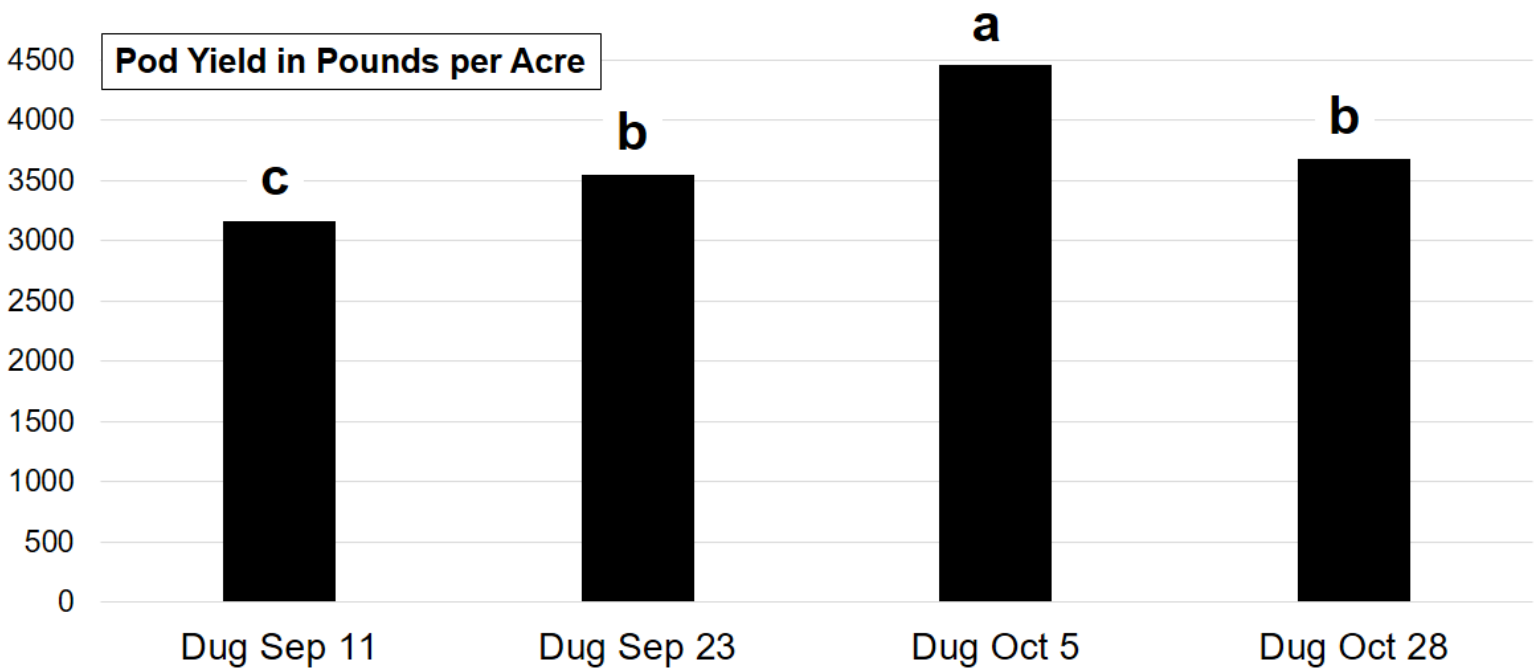
Figure 3-6. Peanut Maturity Samples for the Variety Bailey II at Lewiston-Woodville from September 17 through October 15, 2020.


Using Pod Mesocarp Color for Digging Virginia Market Type Peanut
Maximum Weight 30%
At least 35 days to black pod color
50%
21 to 24 days to black pod color
75%
14 to 17 days to black pod color
100%
Black pods can shed within 4 to 7 days after becoming black
SMK
Harvestable
digging date.
Decision
Decision
45
40
35
30
25
20
15

Fusarium

Influence of Digging Date on Peanut Yield

Peanut planted on May 14, 2020 at Lewiston-Woodville
Data are pooled over four varieties

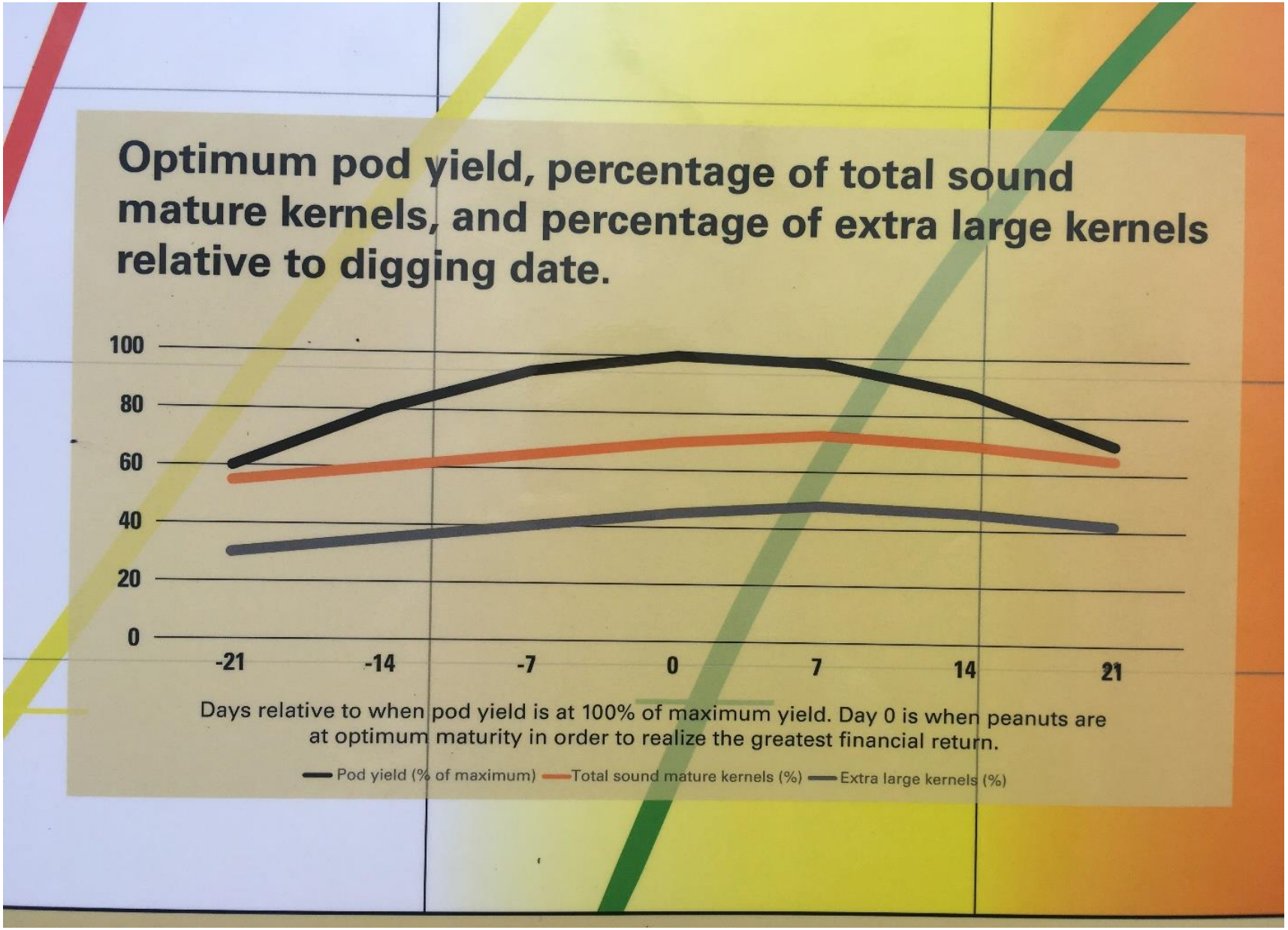


Lewiston-Woodville
Planted May 14
Image October 13

Bailey II

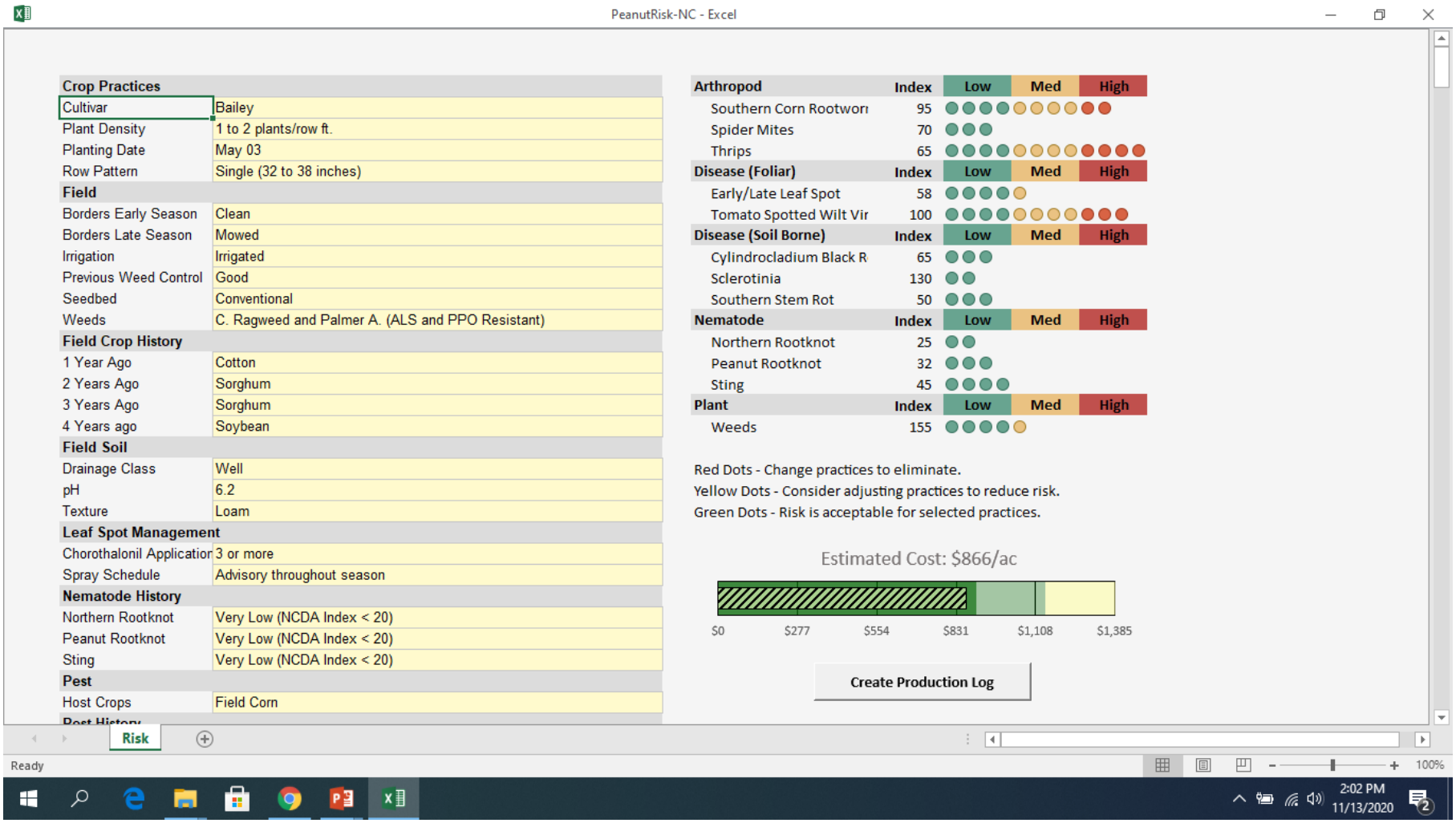
Emery

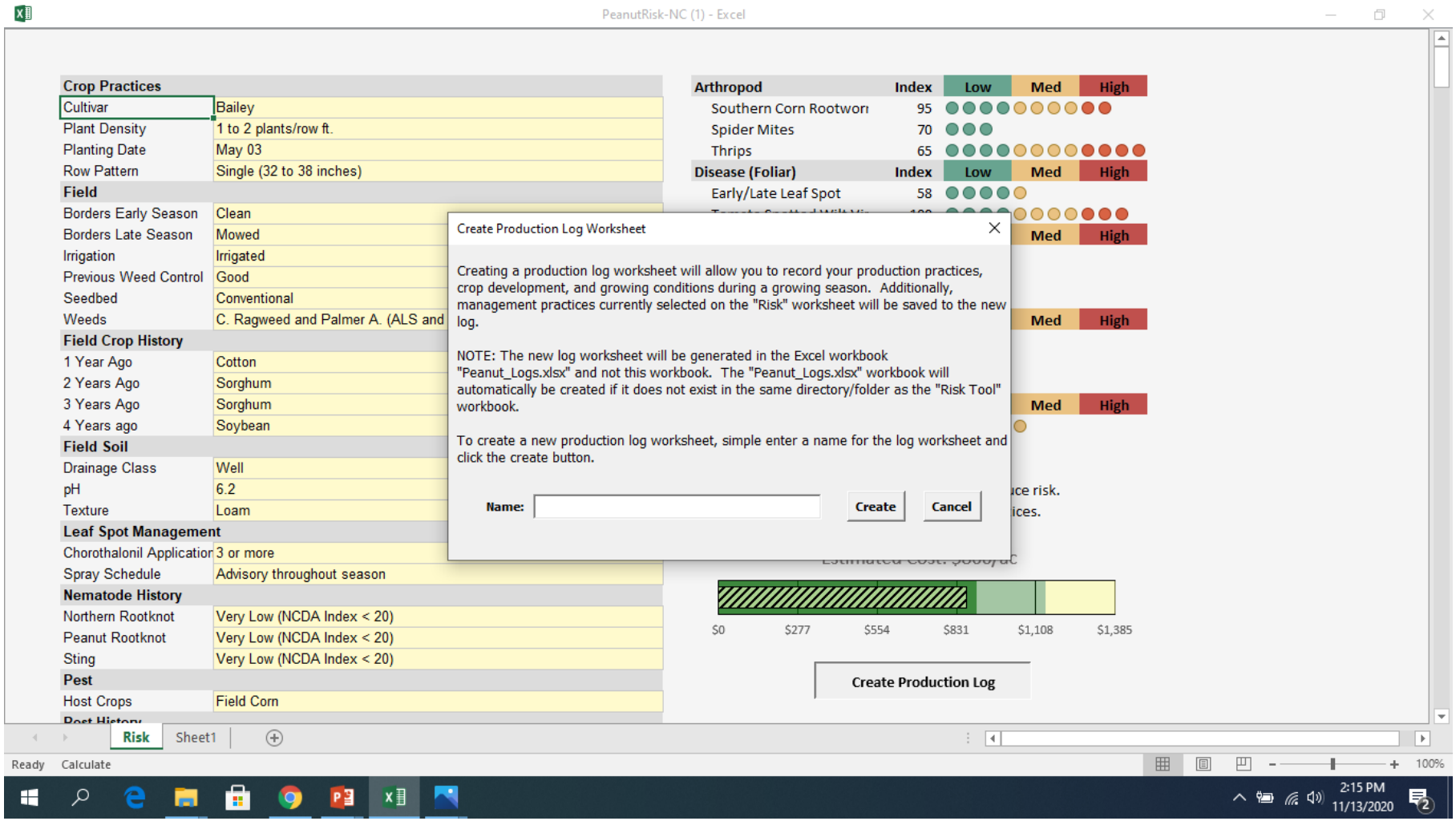
Sullivan

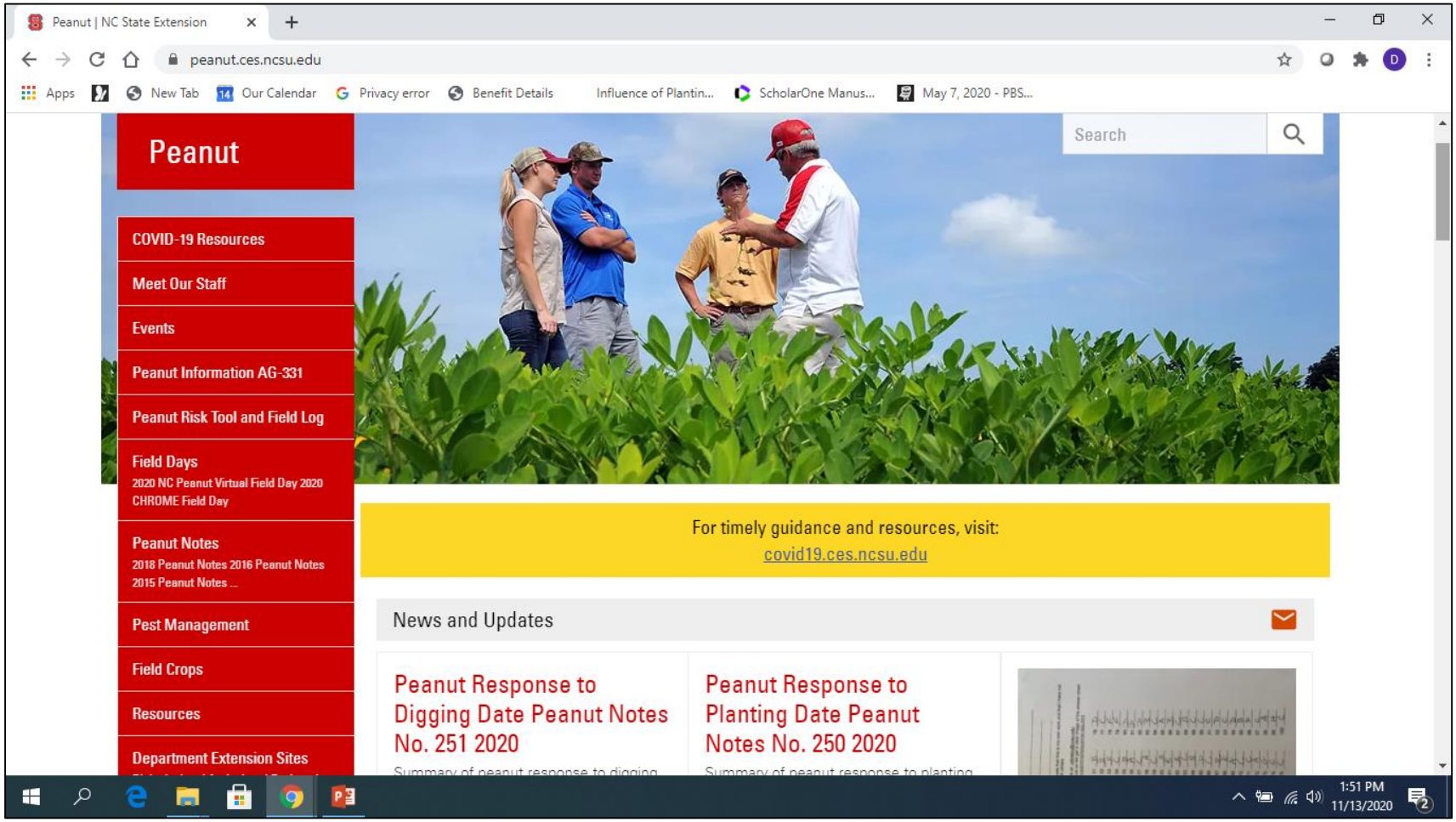

Optimum pod yield, percentage of total sound mature kernels, and percentage of extra large kernels relative to digging date.
100
80
60
40
20
0
-21
-14
-7
0
7
14
21
Days relative to when pod yield is at 100% of maximum yield. Day 0 is when peanuts are at optimum maturity in order to realize the greatest financial return.
Pod yield (% of maximum)
Total sound mature kernels (%)
Extra large kernels (%)

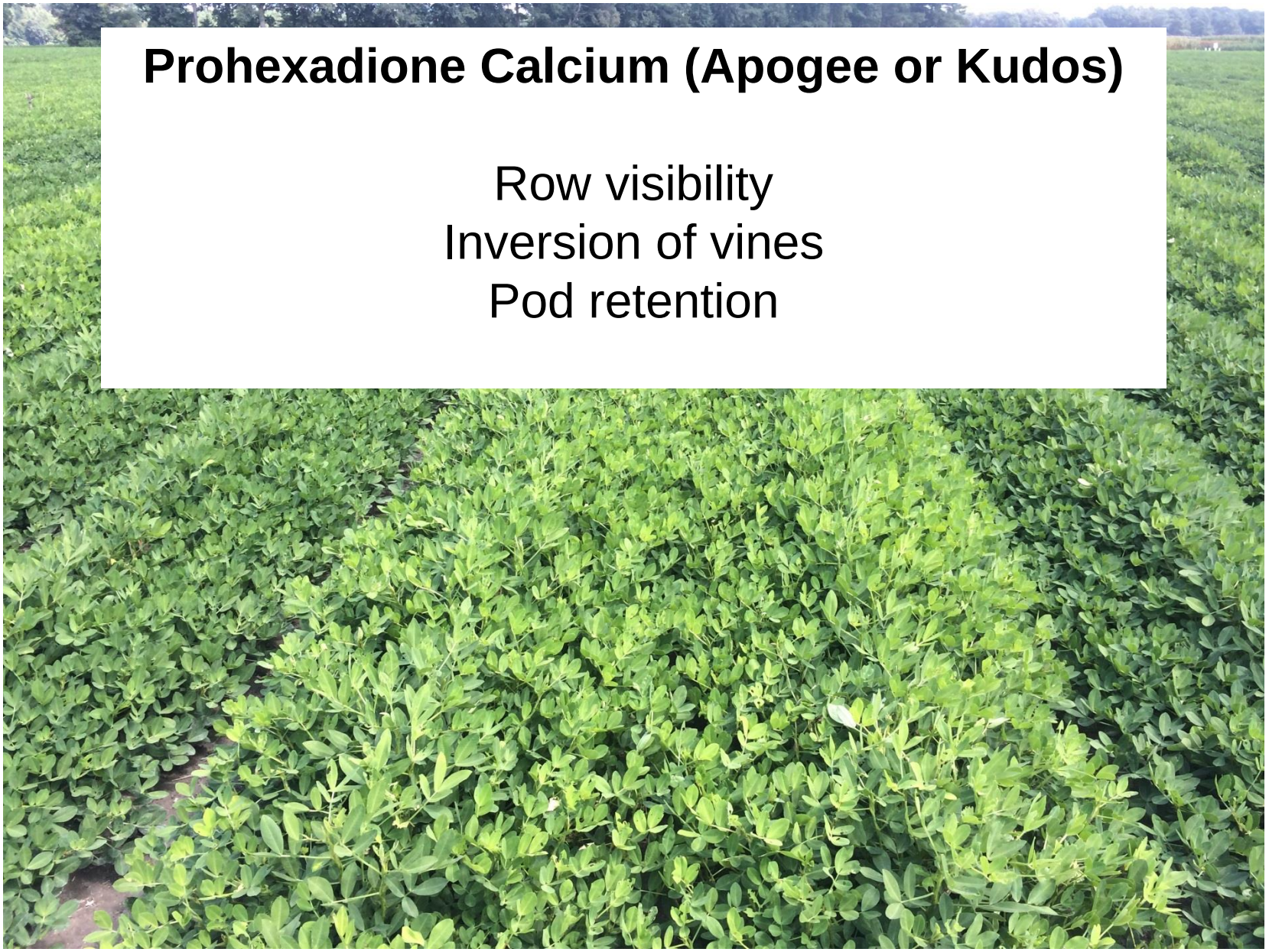
Peanut Risk Tool


PeanutRisk-NC (1) - Excel
File
Home
Insert
Sign in
Share
Cut
Copy
Format Painter
Paste
Clipboard
Sort & Filter
Find & Select
sel_Crop_...
Crop Practices
Cultivar
Plant Density
Planting Date
Row Pattern
Field
Borders Early Season
Borders Late Season
Irrigation
Previous Weed Contr
Seedbed
Weeds
Field Crop History
1 Year Ago
2 Years Ago
3 Years Ago
4 Years ago
Field Soil
Drainage Class
pH
Texture
Leaf Spot Managen
Risk
Ready
100%
2:02 PM
11/13/2020
FEED THE FUTURE
The U.S. Government's Global Hunger & Food Security Initiative
Peanut Risk Management Tool - North Carolina
David Jordan, Greg Buol, and Gail Wilkerson
Department of Crop and Soil Sciences
Barbara Shew and Rick Brandenburg
Department of Entomology and Plant Pathology
North Carolina State University, Raleigh NC
Press 'Enter' or 'Click' Here to Use the Risk Tool
Editor's Password:
USAID
FROM THE AMERICAN PEOPLE
NC STATE UNIVERSITY
North Carolina Peanut Growers Association, Inc.
Peanut Innovation Lab
College of Agricultural & Environmental Sciences
UNIVERSITY OF GEORGIA


PeanutRisk-NC - Excel
Crop Practices
Cultivar Bailey
Plant Density 1 to 2 plants/row ft.
Planting Date May 03
Row Pattern Single (32 to 38 inches)
Field
Borders Early Season Clean
Borders Late Season Mowed
Irrigation Irrigated
Previous Weed Control Good
Seedbed Conventional
Weeds C. Ragweed and Palmer A. (ALS and PPO Resistant)
Field Crop History
1 Year Ago Cotton
2 Years Ago Sorghum
3 Years Ago Sorghum
4 Years ago Soybean
Field Soil
Drainage Class Well
pH 6.2
Texture Loam
Leaf Spot Management
Chorothalonil Application 3 or more
Spray Schedule Advisory throughout season
Nematode History
Northern Rootknot Very Low (NCDA Index < 20)
Peanut Rootknot Very Low (NCDA Index < 20)
Sting Very Low (NCDA Index < 20)
Pest
Host Crops Field Corn
Arthropod Index Low Med High
Southern Corn Rootwor 95
Spider Mites 70
Thrips 65
Disease (Foliar) Index Low Med High
Early/Late Leaf Spot 58
Tomato Spotted Wilt Vir 100
Disease (Soil Borne) Index Low Med High
Cylindrocladium Black R 65
Sclerotinia 130
Southern Stem Rot 50
Nematode Index Low Med High
Northern Rootknot 25
Peanut Rootknot 32
Sting 45
Plant Index Low Med High
Weeds 155
Red Dots - Change practices to eliminate.
Yellow Dots - Consider adjusting practices to reduce risk.
Green Dots - Risk is acceptable for selected practices.
Estimated Cost: $866/ac
$0 $277 $554 $831 $1,108 $1,385
Create Production Log
Risk
Ready
100%
2:02 PM
11/13/2020


PeanutRisk-NC (1) - Excel
Crop Practices
Cultivar
Bailey
Plant Density
1 to 2 plants/row ft.
Planting Date
May 03
Row Pattern
Single (32 to 38 inches)
Field
Borders Early Season
Clean
Borders Late Season
Mowed
Irrigation
Irrigated
Previous Weed Control
Good
Seedbed
Conventional
Weeds
C. Ragweed and Palmer A. (ALS and
Field Crop History
1 Year Ago
Cotton
2 Years Ago
Sorghum
3 Years Ago
Sorghum
4 Years ago
Soybean
Field Soil
Drainage Class
Well
pH
6.2
Texture
Loam
Leaf Spot Management
Chorothalonil Application
3 or more
Spray Schedule
Advisory throughout season
Nematode History
Northern Rootknot
Very Low (NCDA Index < 20)
Peanut Rootknot
Very Low (NCDA Index < 20)
Sting
Very Low (NCDA Index < 20)
Pest
Host Crops
Field Corn
Arthropod
Index
Low
Med
High
Southern Corn Rootworn
95
Spider Mites
70
Thrips
65
Disease (Foliar)
Index
Low
Med
High
Early/Late Leaf Spot
58
Med
High
Med
High
Med
High
ice risk.
ices.
$0
$277
$554
$831
$1,108
$1,385
Create Production Log
Create Production Log Worksheet
Creating a production log worksheet will allow you to record your production practices, crop development, and growing conditions during a growing season. Additionally, management practices currently selected on the "Risk" worksheet will be saved to the new log.
NOTE: The new log worksheet will be generated in the Excel workbook "Peanut_Logs.xlsx" and not this workbook. The "Peanut_Logs.xlsx" workbook will automatically be created if it does not exist in the same directory/folder as the "Risk Tool" workbook.
To create a new production log worksheet, simple enter a name for the log worksheet and click the create button.
Name:
Create
Cancel
Risk
Sheet1
Ready
Calculate
100%
2:15 PM
11/13/2020


Peanut | NC State Extension
peanut.ces.ncsu.edu
Apps
New Tab
Our Calendar
Privacy error
Benefit Details
Influence of Plantin...
ScholarOne Manus...
May 7, 2020 - PBS...
Peanut
Search
COVID-19 Resources
Meet Our Staff
Events
Peanut Information AG-331
Peanut Risk Tool and Field Log
Field Days
2020 NC Peanut Virtual Field Day 2020 CHROME Field Day
Peanut Notes
2018 Peanut Notes 2016 Peanut Notes 2015 Peanut Notes ...
Pest Management
Field Crops
Resources
Department Extension Sites
For timely guidance and resources, visit:
covid19.ces.ncsu.edu
News and Updates
Peanut Response to Digging Date Peanut Notes No. 251 2020
Peanut Response to Planting Date Peanut Notes No. 250 2020
1:51 PM
11/13/2020



Prohexadione Calcium (Apogee or Kudos)

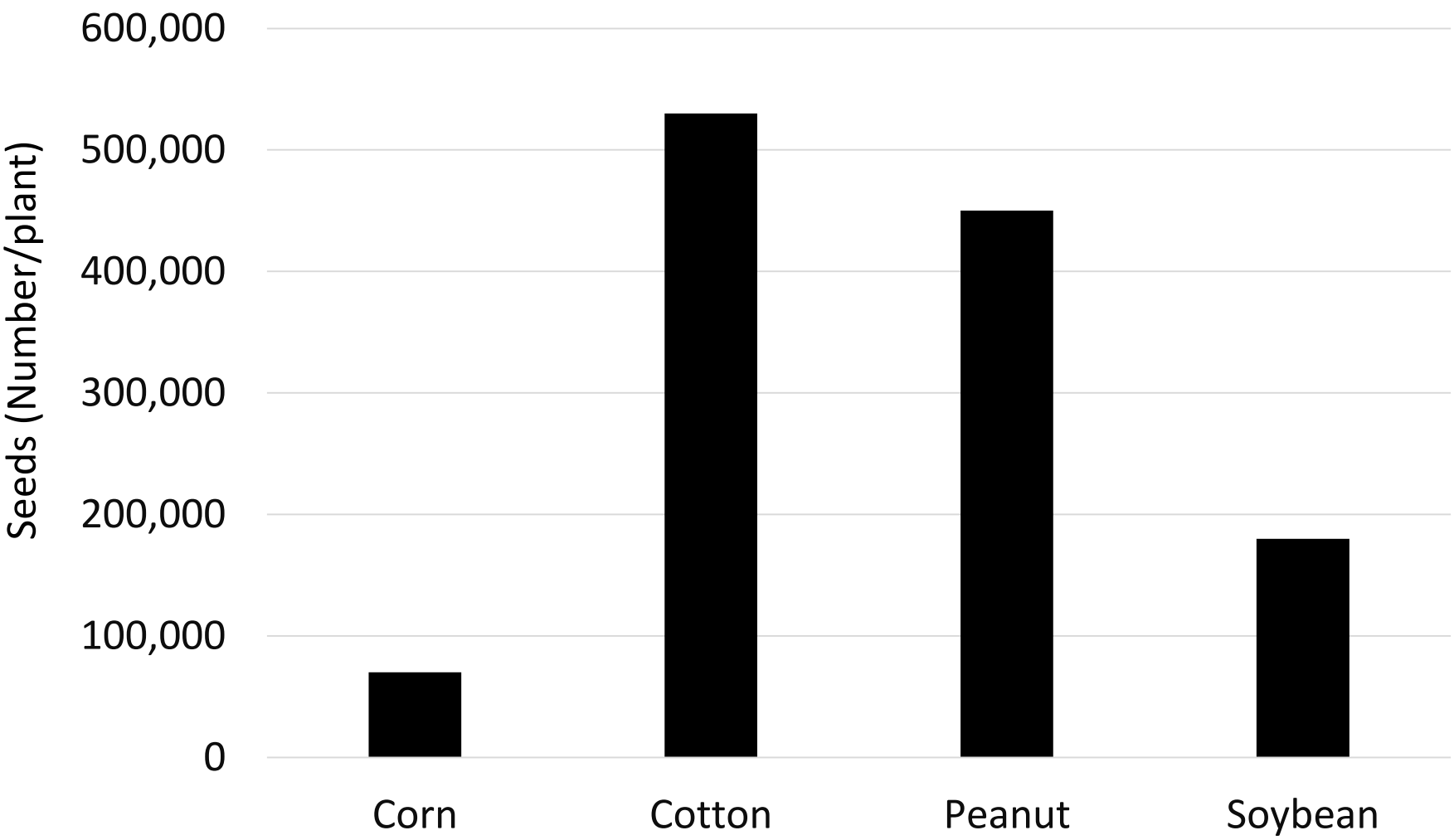
Row visibility
Inversion of vines
Pod retention

General Production Practices

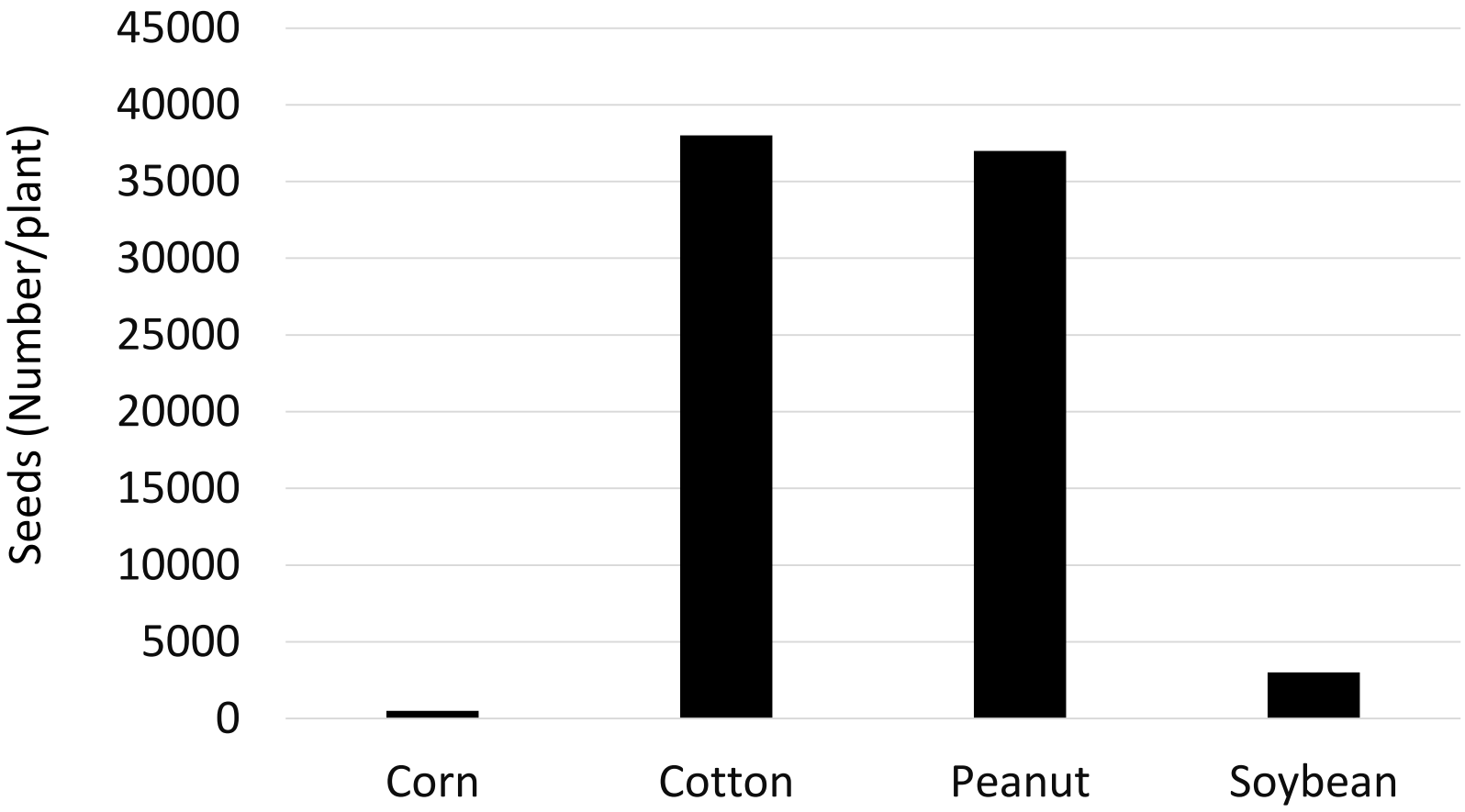
- Apply nutrients based on soil test (pH 5.8 to 6.2)
- Avoid excessive Mg and K
- Avoid fields with zinc
- Establish good rotations (cotton, corn, sorghum)
- Plant improved varieties in May
- 5 seed per foot of row on 36-inch rows
- Conventional tillage
- Irrigate if possible
- Inoculate with *Bradyrhizobia* for BNF
- Apply calcium at pegging
- Apply boron and manganese as needed
- Dig and harvest in a timely manner
- **Control pests using IPM practices**

Weed Control

Seed production when Palmer amaranth emerged with the crop



Seed production when Palmer amaranth emerged 3 weeks after the crop



Note Scale

Postemergence Options

- Paraquat applied within 28 days after emergence
- Basagran, Ultra Blazer, Storm, Cobra
- Cadre and Pursuit
- Various formulations of 2,4-DB
- Clethodim (various formulations), Poast, and Poast Plus
- **Dual, Dual Magnum, Warrant, Outlook, Zidua, Anthem Flex**
- Paraquat (wiper/roller application)

Peanut response and weed control with Gramoxone plus Basagran plus nonionic surfactant alone or with residual herbicides

	Rate	1 WAT	3 WAT				
Residual	**oz/a**	**Peanut**	**RW**	**LQ**	**TP**	**ELMG**	**Eclipta**
Control	-	0 c	0 d	0 d	0 c	0 c	0 c
None	-	28 ab	80 b	76 c	89 b	85 a	84 b
Dual Magnum	16	33 ab	87 ab	85 bc	95 a	86 a	93 ab
Warrant	48	24 b	86 ab	93 ab	95 a	86 a	97 a
Outlook	13	34 a	95 a	98 a	97 a	89 a	97 a
Zidua	2.5	28 ab	91 ab	96 ab	97 a	80 a	88 ab
Anthem Flex	2.7	31 ab	94 a	93 ab	97 a	88 a	97 a

Peanut response and weed control with Gramoxone plus Basagran plus nonionic surfactant alone or with residual herbicides

	Rate	3 WAT	6 WAT				
Residual	**oz/a**	**Peanut**	**RW**	**LQ**	**TP**	**ELMG**	**Eclipta**
Control	-	0	0 b	0 c	0 d	0 b	0 c
None	-	0	75 a	78 b	80 c	85 a	84 b
Dual Magnum	16	0	76 a	88 ab	90 abc	80 a	90 ab
Warrant	48	0	83 a	85 b	81 bc	81 a	91 ab
Outlook	13	0	86 a	97 a	88 abc	88 a	95 ab
Zidua	2.5	0	79 a	97 a	91 a	85 a	90 ab
Anthem Flex	2.7	0	83 a	97 a	93 a	99 a	97 a

Gramoxone plus Basagran with Residual Herbicides

Planted May 19
Lewiston-Woodville
Variety Bailey
No residual herbicides at planting
15 GPA, 31 psi
11002 Flat Fan Nozzles
Weeds 3 inches or less

Gramoxone plus Basagran with Residual Herbicides

Control 3 weeks after treatment

Non-treated control

Sprayed June 4
Gramoxone @ 8 oz/acre
Basagran @ 8 oz/acre
NIS @ 1 pint/100 gal

Sprayed June 4
Gramoxone @ 8 oz/acre
Basagran @ 8 oz/acre
Dual Magnum @ 16 ox/acre
NIS @ 1 pint/100 gal

Sprayed June 4
Gramoxone @ 8 oz/acre
Basagran @ 8 oz/acre
Warrant @ 48 oz/acre
NIS @ 1 pint/100 gal

Sprayed June 4
Gramoxone @ 8 oz/acre
Basagran @ 8 oz/acre
Outlook @ 13 oz/acre
NIS @ 1 pint/100 gal

Sprayed June 4
Gramoxone @ 8 oz/acre
Basagran @ 8 oz/acre
Zidua @ 2.5 oz/acre
NIS @ 1 pint/100 gal

Sprayed June 4
Gramoxone @ 8 oz/acre
Basagran @ 8 oz/acre
Anthem Flex @ 2.7 oz/acre
NIS @ 1 pint/100 gal

Gramoxone plus Basagran with Residual Herbicides

Control 6 weeks after treatment

Non-treated control

Sprayed June 4
Gramoxone @ 8 oz/acre
Basagran @ 8 oz/acre
NIS @ 1 pint/100 gal

Sprayed June 4
Gramoxone @ 8 oz/acre
Basagran @ 8 oz/acre
Dual Magnum @ 16 oz/acre
NIS @ 1 pint/100 gal

Sprayed June 4
Gramoxone @ 8 oz/acre
Basagran @ 8 oz/acre
Warrant @ 48 oz/acre
NIS @ 1 pint/100 gal

Sprayed June 4
Gramoxone @ 8 oz/acre
Basagran @ 8 oz/acre
Outlook @ 13 oz/acre
NIS @ 1 pint/100 gal

Sprayed June 4
Gramoxone @ 8 oz/acre
Basagran @ 8 oz/acre
Zidua @ 2.5 oz/acre
NIS @ 1 pint/100 gal

Sprayed June 4
Gramoxone @ 8 oz/acre
Basagran @ 8 oz/acre
Anthem Flex @ 2.7 oz/acre
NIS @ 1 pint/100 gal

Gramoxone plus Basagran with Residual Herbicides

What about Palmer amaranth?

Table 4-7. Weed Response to Postemergence Herbicides — Peanuts

Species	Herbicides Key: PPI = Preplant Incorporated; PRE = Preemergence; AC = At-Cracking; POST = Postemergence																			
	Butyrac 200	Gramoxone [1]	Gramoxone + Basagran	Gramoxone + Storm	Basagran	Basagran +Butyrac 200	Ultra Blazer	Ultra Blazer + Butyrac 200	Ultra Blazer + Basagran [2]	Storm	Storm + Butyrac 200	Pursuit + Butyrac 200	Cadre or Impose	Cobra	Cobra + Basagran	Cobra + Basagran + Butyrac 200	Cobra + Cadre or Impose	Cobra + Pursuit	Poast or Poast Plus	Clethodim products
Bermudagrass	N	P	P	P	N	N	N	N	P	N	N	N	N	N	N	N	N	N	FG	G
Black nightshade	N	PF	PF	G	P	P	G[1]	G[1]	G[1]	G[1]	G[1]	G	G	G[1]	G[1]	G[1]	G	G	N	N
Broadleaf signalgrass	N	GE	E	GE	N	N	NP	NP	P	NP	NP	G	G	N	N	N	G	G	E	E
Carpetweed	P	FG	FG	G	P	P	GE	E	E	G	G	FG	FG	G	G	G	G	G	N	N
Cocklebur	E	G	E	E	E	E	G	E	E	E	E	E	E	G	G	E	E	E	N	N
Common ragweed	PF	F	G	E	G[4]	G[4]	E[1]	E[1]	E[1]	E[1]	E[1]	P	PF	E	E	E	E	E	N	N
Crabgrass	N	G	G	G	N	N	N	N	N	N	N	FG	FG	N	N	N	FG	FG	GE	GE
Crowfootgrass	N	GE	G	GE	N	N	P	P	P	P	P	P	G	N	N	N	G	P	F	G
Dayflower	—	G	G	FG	G	G	—	—	G	FG	FG	—	G	—	G	G	G	—	N	N
Eclipta	P	F	F	FG	FG	FG	G	G	G	FG	FG	P	F	G	G	G	G	G	N	N
Fall panicum	N	GE	G	GE	N	N	PF	PF	P	PF	PF	PF	G	N	N	N	G	PF	E	E
Florida beggarweed	P	G	GE	G	N	P	PF	F	F	P	P	P	F	F	F	F	F	F	N	N
Foxtails	N	GE	G	GE	N	N	PF	PF	P	PF	PF	G	G	N	N	N	G	G	E	E
Goosegrass	N	GE	G	GE	N	N	N	N	N	N	N	N	F	N	N	N	F	N	GE	GE
Jimsonweed	P	G	E	E	E	E	E	E	E	E	E	G	E	E	E	E	E	E	N	N
Johnsongrass, Seedling	N	GE	GE	GE	N	N	P	P	P	P	P	GE	E	N	N	N	E	GE	E	E
Johnsongrass, Rhizome	N	P	P	P	N	N	N	N	N	N	N	F	FG	N	N	N	FG	F	G	GE
Lambsquarters	PF	F	G	G	FG	G[4]	G	G	GE	G	G	P	PF	P	FG	G	PF	P	N	N
Morningglory, Pitted	FG	F	FG	E	P	G	E	E	E	E	E	G	GE	G	G	G	GE	G	N	N
Morningglory, Others	E	F	FG	E	P	E	GE	E	E	GE	E	E	G	G	G	E	G	E	N	N

(continued)

Table 4-5. Chemical Weed Control in Peanuts

Herbicide and Formulation	Pounds Active Ingredient Per Acre	Precautions and Remarks
Postemergence, Florida beggarweed		
chlorimuron, MOA 2 (Classic 0.25 DF)	0.008 (0.5 oz)	Use only for control of Florida beggarweed. Apply from 60 days after crop emergence to within 45 days of harvest. Application to peanuts less than 60 days old will result in crop injury and yield reduction. Apply before Florida beggarweed has begun to bloom and before it has reached 10 inches tall. Larger beggarweed may only be suppressed. Add 1 quart of nonionic surfactant per 100 gallons spray solution; do not add crop oil. May be tank mixed with 2,4-DB; see label for rates and precautions. Recommended as a salvage treatment only.
Postemergence, Yellow nutsedge		
bentazon, MOA 6 (Basagran 4 L)	0.75 to 1 (1.5 to 2 pt)	Apply when nutsedge is 6 to 8 inches tall. A repeat application 7 to 10 days later may be needed. Adding crop oil concentrate at 1 quart per acre will increase control. Do not apply more than 2 pints of Basagran per season. Not effective on purple nutsedge.
Postemergence, Yellow and purple nutsedge		
imazapic, MOA 2 (Cadre 2 AS) (Impose 2 AS)	0.063 (4 fl oz)	Apply postemergence when nutsedge is 4 inches or less. Add nonionic surfactant at 1 quart per 100 gallons or crop oil concentrate at 1 quart per acre. See label for rotational restrictions.
imazethapyr, MOA 2 (Pursuit 2 AS)	0.063 (4 fl oz)	Apply before nutsedge is larger than 3 inches tall. Add surfactant at 1 quart per 100 gallons or crop oil concentrate at 1 quart per acre. Do not mix with Basagran for nutsedge control. See label for rotational restrictions. A split application with half of the Pursuit applied preplant incorporated and half applied early postemergence may be more effective than applying all of the Pursuit at one time.

Peanuts planted May 10, emerged May 20
Scouting date June 15 (what if July 1)
Next crop will be cotton (what if soybean)
Weeds present: Palmer amaranth
Goosegrass
Common ragweed

		Palmer	Goose	Ragweed
1	Cadre	E	F	PF
2	Gramoxone	G	G	G
	Basagran			
3	Butyrac 200	PF	N	PF
	Clethodim	N	GE	N
4	Storm	E	N	E
5	Cobra	E	N	E
	clethodim	N	GE	N

WebHADSS™

North Carolina (Peanuts)

OPTIONS

- View Damage Estimates (Continue)
- Clear All Data
- Clear Only Weed Population Data
- Previous Page (Back)

FIELD AND CROP INFORMATION

Field Size: 40 acres

Soil Moisture: (•) Adequate ( ) Dry

Est. Weed-Free Yield: 4000.0 lb / acre

Crop Selling Price ($): 600.00 per Ton

Planting Date: May 06 2011

WEED SIZE

Avg. Weed Size: (•) Small (< 2 in.) ( ) Medium (2 to 4 in) ( ) Large (>= 4 in.)

POST TREATMENT DATA

Treatment Date: Jun 09 2011

Application Cost ($): 5.00 per acre

WEED POPULATIONS (weeds per 100 sq. ft.)

Weed Population Help

	amaranth, Palmer		groundcherry		panicum, Texas
	amaranth, Palmer, ALS resistant		horsenettle		pigweed, redroot
	anoda, spurred		jimsonweed		pigweed, smooth
	barnyardgrass		johnsongrass (rhizome)		poinsettia, wild
	beggarweed, Florida		johnsongrass (seedling)		purslane
	bermudagrass		lambsquarters		pusley, Florida
6.00	carpetweed		morningglory, entireleaf		radish / mustard, wild
	cocklebur		morningglory, ivyleaf	2.00	ragweed, common
	corn, volunteer		morningglory, pitted		sandbur, field
	crabgrass		morningglory, purple	4	sicklepod
	croton, tropic		morningglory, red		sida
	crowfootgrass	5.00	morningglory, tall		signalgrass, broadleaf
	dayflower		nightshade, Eastern black		smartweed
	eclipta		nutsedge, purple		spurge
	foxtail		nutsedge, yellow		velvetleaf
	goosegrass		panicum, fall		

Weed Identification Help

WebHADSS™

North Carolina (Peanuts)

OPTIONS

- View Recommendations (Continue)
- Previous Page (Back)

UNTREATED DAMAGE ESTIMATE

(Based on 4000.0 lb / acre weed-free yield and $600.00 per Ton selling price.)

Weed	weeds per 100 sq. ft.	Loss		
		lb / acre	% Yield	$ / Acre
morningglory, tall	5.00	640.00	16.00%	$192.00
sicklepod	4.00	576.00	14.40%	$172.80
ragweed, common	2.00	304.00	7.60%	$91.20
carpetweed	6.00	24.00	0.60%	$7.20
Total		**1,544.00**	**38.60%**	**$463.20**

WEED CONTROL WARNINGS

NONE

OPTIONS

- Herbicide Information
- Glyphosate Formulations
- Previous Page (Back)

To view treatment details click on the treatment name.

Herbicide Recommendations

Treatment		Net Return	Total Cost	After Treatment Yield Loss (Pounds)
Description (Rate per acre)	Warnings	per acre		
Ultra Blazer + Butyrac (1.5 pt + 16 oz)	View Details	$403.67	$20.41	130.40
Cobra + Butyrac (12.5 oz + 16 oz)	View Details	$386.60	$22.12	181.60
Cobra + Cadre / Impose (12.5 oz + 4 oz)	View Details	$386.52	$39.48	124.00
Basagran + Butyrac (1.5 pt + 16 oz)	View Details	$381.10	$25.23	189.60
Cadre / Impose + Butyrac (4 oz + 16 oz)	View Details	$367.87	$29.69	218.80
Storm + Butyrac (1.5 pt + 8 oz)	View Details	$363.87	$20.85	261.60
Pursuit + Butyrac (4 oz + 16 oz)	View Details	$359.87	$23.17	267.20
Cadre / Impose (4 oz)	View Details	$352.34	$26.02	282.80
Cobra (12.5 oz)	View Details	$347.07	$18.45	325.60
Butyrac (16 oz)	View Details	$342.46	$8.67	373.60
Cobra + Basagran (12.5 oz + 1 pt)	View Details	$336.03	$29.49	325.60
Cobra + Pursuit (12.5 oz + 4 oz)	View Details	$332.56	$32.96	325.60
Cobra + Basagran + Butyrac (12.5 oz + 1.5 pt + 8 oz)	View Details	$328.67	$36.85	325.60
Cobra + Basagran (12.5 oz + 2 pt)	View Details	$324.99	$40.53	325.60
Storm				

Treatment Details and Weeds Remaining

Weed Control Details

Weed	Weed Population (weeds per 100 sq. ft.)	
	Initial	After Treatment
morningglory, tall	5.00	0.00
sicklepod	4.00	0.80
ragweed, common	2.00	0.10
carpetweed	6.00	0.00

Estimated Yield Loss
(Based on 4000.0 lb / acre weed-free yield)

Weed	Yield Loss (lb / acre)	
	Untreated	After Treatment
morningglory, tall	640.00	0.00
sicklepod	576.00	115.20
ragweed, common	304.00	15.20
carpetweed	24.00	0.00
Total Estimated Loss	**1,544.00**	**130.40**

Purchase Information
(Based on 40 acres)

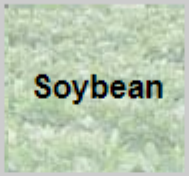
Herbicide Name	Rate per acre	Units Needed	Unit Cost	Cost
Butyrac 200	16.0 oz	5 (gal)	$29.32	$146.60
Ultra Blazer (2S)	1.5 pt	8 (gal)	$62.62	$500.96
Total Cost				**$647.56**

NC STATE UNIVERSITY

North Carolina Herbicide Selection Tool

Crop

Select crop for herbicide recommendation by clicking on crop name.



Weeds

Select or unselect weeds for herbicide recommendation by clicking on a weed name.

carpetweed
cocklebur, common
corn, volunteer
crabgrass, large
croton, tropic
crowfootgrass
dayflower, spreading
eclipta
foxtail, green
goosegrass
groundcherry, cutleaf
horsenettle
morningglory
entireleaf
ivyleaf
pitted
blue
red
purple/tall
mustard, wild
nightshade, black
nutsedge
purple
yellow
sandbur, field
sicklepod
sida, prickly
signalgrass, broadleaf
smartweed, Pennsylvania
spurge
velvetleaf

Selected Weeds	Comp. Index
amaranth, Palmer	4.0
millet, Texas	3.5

Clear Selected Weeds

Some weeds in North Carolina have resistance(s) to the following MOA(s). Check MOA(s) to exclude from recommendations because of confirmed resistance in any of the selected weeds or for management reasons to reduce the risk of developing herbicide resistance.

- ☐ **01** - Acetyl CoA Carboxylase (ACCase) Inhibitor
- ☐ **02** - Acetolactate Synthase (ALS) or Acetohydroxy Acid Synthase (AHAS) Inhibitor
- ☐ **03** - Mitosis Inhibitors
- ☐ **04** - Synthetic Auxins
- ☐ **05** - Photosystem II Inhibitors
- ☐ **09** - Enolpyruvyl Shikimate-3-Phosphate (EPSP) Synthase Inhibitors
- ☐ **10** - Glutamine Synthetase Inhibitors
- ☐ **14** - Protoporphyrinogen Oxidase (PPG oxidase or Protox) Inhibitors
- ☐ **17** - Nucleic Acid Inhibitors
- ☐ **27** - Carotenoid Biosynthesis Inhibitors

Clear Checked MOAs

Get Herbicide Recommendations

Herbicide Recomendations

Show or hide herbicide informtion by clicking on herbicide line.

Herbicide	Rating	
Gramoxone 2 SL + Storm 4 L	93 E	▼
Parazone 3 SL + Storm 4 L	93 E	▼
Cadre 2 AS	90 GE	▼
Impose 2 AS	90 GE	▼
Cobra 2 EC + Cadre 2 AS	90 GE	▼
Cobra 2 EC + Impose 2 AS	90 GE	▼
Gramoxone 2 SL	87 G	▼
Parazone 3 SL	87 G	▼
Gramoxone 2 SL + Basagran 4 L	85 G	▼
Parazone 3 SL + Basagran 4 L	85 G	▼
Zidua 4.17 SC	78 FG	▼
Zidua 85 WG	78 FG	▼
Pursuit 2 L (.5 PPI f/b .5 Post)	74 F	▼
Ultra Blazer 2 L	62 F	▼
Basagran 4 L + Ultra Blazer 2 L	62 F	▼
Cobra 2 EC + Pursuit 2 L	62 F	▼
Pursuit 2 L + Butyrac 200 2 L	62 F	▼
Storm 4 L	62 F	▼
Ultra Blazer 2 L + Butyrac 200 2 L	62 F	▼
Storm 4 L + Butyrac 200 2 L	62 F	▼

Cobra 2 EC + Basagran 4 L + Butyrac 200 2 L	51	PF
Clethodim Products	44	P
Poast 1.5 EC	44	P
Poast Plus 1 EC	44	P
Butyrac 200 2 L	27	NP
Basagran 4 L + Butyrac 200 2 L	20	N
Basagran 4 L	0	N

Herbicide Control Rating Key

E	Excellent 93% or better	PF	Poor/Fair 48% to 53%
GE	Good/Excellent 88% to 93%	P	Poor 28% to 48%
G	Good 83% to 88%	NP	Very Poor/Poor 23% to 28%
FG	Fair/Good 78% to 83%	N	None/Very Poor 0% to 23%
F	Fair 53% to 78%		

Challenges

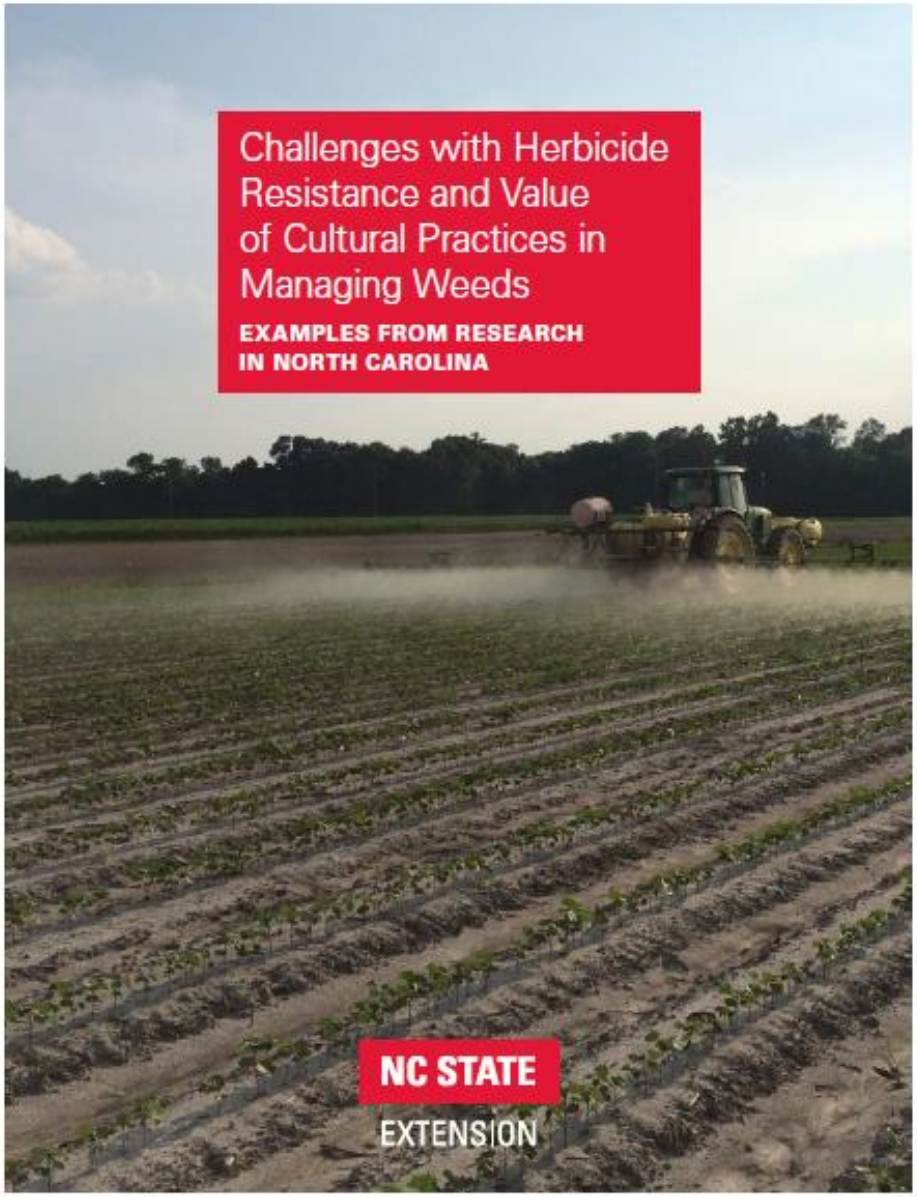
Herbicide Resistance Management

Residual herbicides

Timely applications

Multiple MOAs

Prevent production of weed seed


Challenges with Herbicide Resistance and Value of Cultural Practices in Managing Weeds
EXAMPLES FROM RESEARCH IN NORTH CAROLINA
NC STATE
EXTENSION

Disease Control

Seed Treatments

Dynasty PD (azoxystrobin, fludioxonil, mefenoxam)

Rancona V PD (carboxin, ipconazole, metalaxyl)

Nematode Control

Fumigation
Velum Total versus Velum
Propulse watered in

Rotations
Varieties

Pathogen Resistance to Fungicides

Pathogen Resistance to Varieties

Figure 6-2. Example of a fungicide resistance group label.

Many common peanut fungicides belong to resistance groups 3, 7, or 11 (Table 6-8). The resistance group is prominently displayed on the fungicide label (Figure 6-2). Continued use of fungicides from the same group (even if they have different active ingredients) may select for resistant strains of a fungus, causing the fungicide to lose effectiveness over time. To prevent fungicide resistance, use fungicides from different groups during the season (Table 6-6). To maintain fungicide efficacy:

- MIX or ALTERNATE fungicides with different group numbers or with a group M fungicide (such as chlorothalonil) during the growing season.
- DO NOT use fungicides at less than the recommended rates.
- STAY on a 14-day spray schedule unless the label or leaf spot advisories specifically indicate that it is safe to spray at longer intervals.
- DO NOT exceed the total number of sprays recommended under resistance management guidelines a particular fungicide or group number.
- USE chlorothalonil or another group M fungicide AT LEAST TWICE per season. Make one application (alone or mixed with another product) during the season and one application as the last spray of the season. Group M fungicides are not vulnerable to resistance problems.
- Maintain a good foliar disease control program throughout the growing season.
- NEVER rely on "rescue" treatments to clean up foliar disease problems. Rescue treatments increase risk of fungicide resistance and usually are ineffective.

Leaf Spots and Stem Rot Control

Provost Silver *(prothioconazole, tebuconazole)*
Provysol *(mefentrifluconazole)*
Revytek *(mefentriuconazole, pyraclostrobin, fluxapyroxad)*
Propulse *(prithioconazole, fluopyram)*
Lucento *(flutriafol, bixafen)*

Mixtures of other products

Clorothalonil

Spots caused by Provost formulation in 2020

Leaf Spot and Stem Rot Control
Miravis plus Elatus or Convoy

General Recommendations

Apply early in the season (mid-July)

Adequate control for 4 weeks

Rotate with effective fungicides with a different MOA

- Two sprays after Miravis with effective control and different MOA

DO NOT spray in August and walk away

Research Results

Contributions to logistics

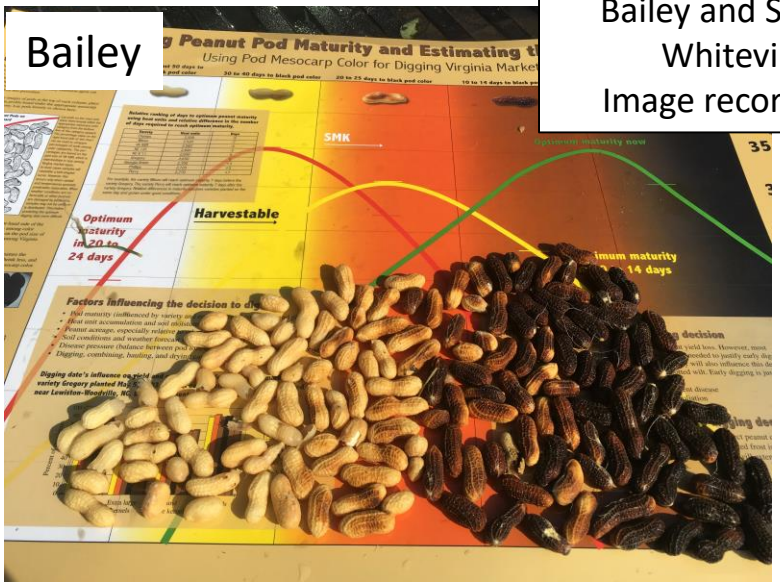
Currently outstanding with lasting control

Flexibility in timing of application

Sequential applications

Bailey and Sullivan planted at Whiteville on May 12
Image recorded September 1

Bailey



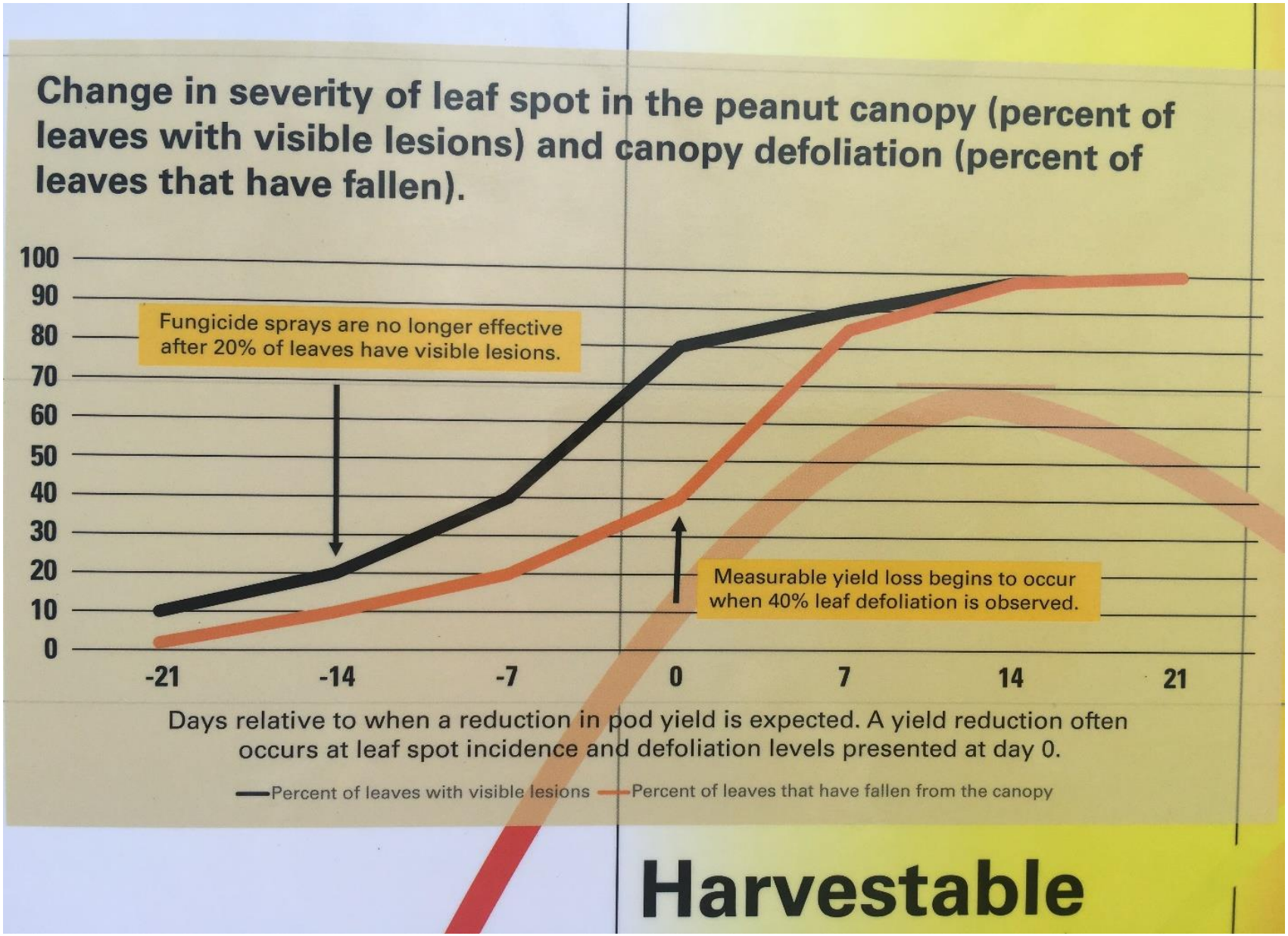
Sullivan

August 23

September 1

September 8

September 16


Change in severity of leaf spot in the peanut canopy (percent of leaves with visible lesions) and canopy defoliation (percent of leaves that have fallen).
100
90
80
70
60
50
40
30
20
10
0
Fungicide sprays are no longer effective after 20% of leaves have visible lesions.
Measurable yield loss begins to occur when 40% leaf defoliation is observed.
-21
-14
-7
0
7
14
21
Days relative to when a reduction in pod yield is expected. A yield reduction often occurs at leaf spot incidence and defoliation levels presented at day 0.
Percent of leaves with visible lesions
Percent of leaves that have fallen from the canopy
Harvestable

Tomato Spotted Wilt

Insect Control

Major Arthropod Pests in Peanut

- Tobacco thrips
- Southern corn rootworm
- Potato leafhoppers
- Fall armyworms
- Corn earworms
- Tobacco budworms
- Spider mites
- Lesser cornstalk borer
- Burrower Bug

Caterpillars and Worms

Fall armyworms, Corn earworms, Tobacco budworms

- Pyrethroids
- Non-pyrethroid
- Biological control

Spider Mites

- Dannitol
- Comite
- Portal

Southern Corn Rootworm

- No alternative to Lorsban
- Long-term registration unlikely

Thrips Control

- Phorate, Admire Pro and generics, AgLogic, and Velum Total control thrips equally when averaged across many environments
- Differences can be observed in any given year
- Acephate follow up


PEANUT TEAM