

# Row Crop Irrigation Scheduling and Profitability

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2024 Mississippi State University Row Crop  
Short Course

December 9, 2024  
Starkville, MS

# Irrigation Scheduling (2023)

- A technique that involves:
  - Determining how much water is needed
  - When to apply it to the field to meet crop demands.

<b>Irrigation Scheduling Method</b>	<b>Entire US (%)</b>	<b>AL (%)</b>	<b>FL (%)</b>	<b>GA (%)</b>	<b>SC (%)</b>	<b>MS (%)</b>
<b>Visible Stress</b>	78	87	80	80	81	83
<b>Feel of Soil</b>	40	39	44	37	52	39
<b>Soil Moisture Sensor</b>	13	14	16	16	11	30
<b>Scheduling Service</b>	8	1	5	11	2	6.5
<b>Weather Report</b>	7	2	6	7	2.5	4
<b>Calendar Schedule</b>	21	15	23	23	27	15
<b>When Neighbor Irrigates</b>	5	2	1	3	2	3

# Irrigation Information

- Where do farmer's get their info from??

<b>Irrigation Scheduling Method</b>	<b>Entire US (%)</b>	<b>AL (%)</b>	<b>FL (%)</b>	<b>GA (%)</b>	<b>SC (%)</b>	<b>MS (%)</b>
<b>University Extension</b>	46	56	78	74	74	58
<b>Private Consultant</b>	57	50	58	46	29	65
<b>Irrigation Equipment Dealer</b>	33	51	33	17	47	26
<b>Irrigation District</b>	14	4	40	1	0	1

# Barriers to Improvements in Water Conservation

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1. Investing in improvements is not a priority (34%)
2. Cannot afford improvements (32.2%)
3. Improvements won't reduce costs enough to cover new costs (22.4%)
4. Risk of reduced yield (17.4%)
5. Uncertainty about future water availability (11.7%)
6. Improvements will increase management time or cost (10.3%)
7. Won't be farming long enough to justify improvements (7.7%)
8. Landlord will not share in cost (7.7%)
9. Physical Field/Crop Limits Improvements (3.5%)

# Cost of Pumping Irrigation

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- Average Irrigation cost ~ \$12.00/ac-in applied:
  - ~\$8/ac-in for electric
  - ~\$16/ac-in for diesel
- Thus, for 500 acres of irrigated land @ 10 inches of irrigation:
  - \$60,000
- <https://agecon.uga.edu/extension/budgets.html>

# Level 0: ~~Valid~~ Irrigation Scheduling Tools

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- Irrigating when you see crop stress or just a set number of times per week:
  - Easy to do, doesn't take a lot of planning or scientific consideration of the crop
  - In almost all cases it does not maximize crop yield or IWUE
  - Generally default to this method when we are behind or have had equipment issues.

# Level I: Valid Irrigation Scheduling Tools

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- Checkbook Methods- Corn, Cotton, Peanut, Soybean:
  - Published in each production guide, Free, requires minimal input from user, is very conservative, meaning they tend to over-irrigate in wet years, and can under-irrigate in dry years.
  - I would not consider these to be very advanced, this is just one step above irrigating a set amount a set number of times per week.
  - The checkbook methods are all developed based on a historical average crop water use and evapotranspiration (ET).

# Level II: Valid Irrigation Scheduling Tools

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- Computer Models:
  - *SmartIrrigation Apps/PeanutFARM/IrrigatorPro*
  - Free, requires minimal input from user, uses real time daily data.
  - These use the checkbook as a backbone, but rely on daily real time data to make decisions. These methods also take soil type into consideration.
  - A localized computer model can be a very good option for a producer new to scheduling irrigation. It can help them keep a track of how much irrigation they need, and when to apply it based on current climatic conditions.



# Level II: Valid Irrigation Scheduling Tools

- Apps I recommend:



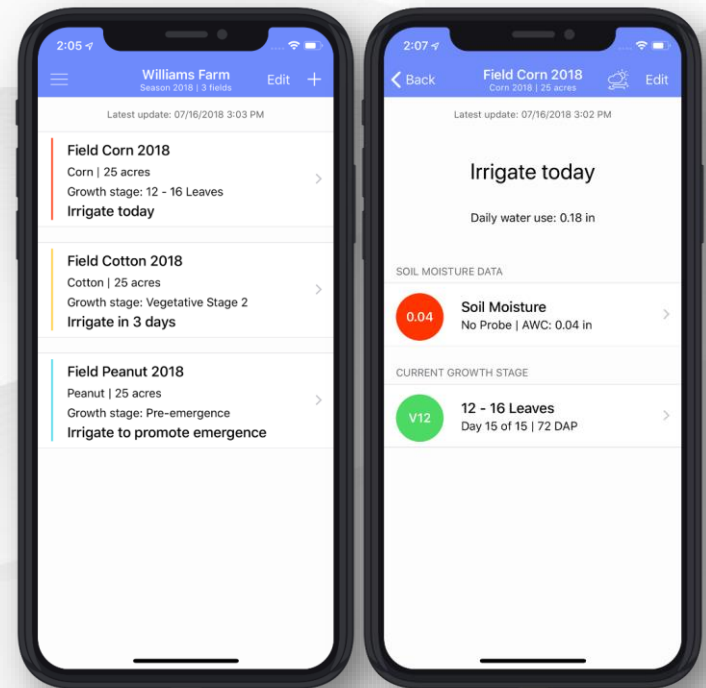
The screenshot shows the 'smartirrigation apps' website. At the top, there is a navigation menu with links for 'About', 'Apps', 'Science Behind the Apps', 'Media', 'Partners', and 'Contact Us'. Below the navigation is the heading 'Apps for Managing Urban & Agricultural Irrigation'. A grid of 12 icons represents different crops and categories:

- Avocado
- Blueberry
- Citrus
- Corn
- Cotton
- Peach (In Development)
- Pecan (In Development)
- Soybean
- Strawberry
- Turf
- Vegetable



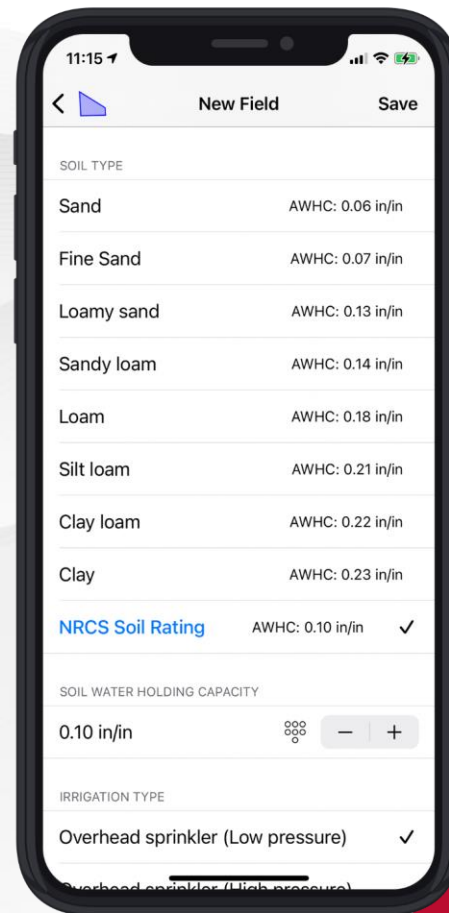
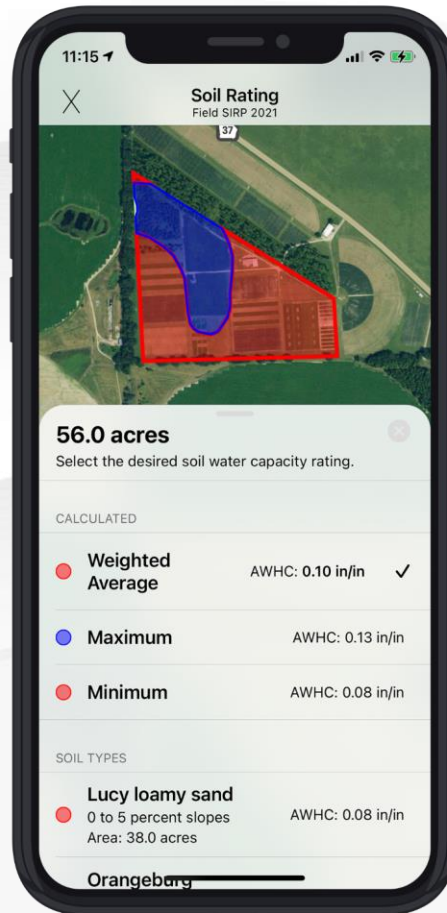
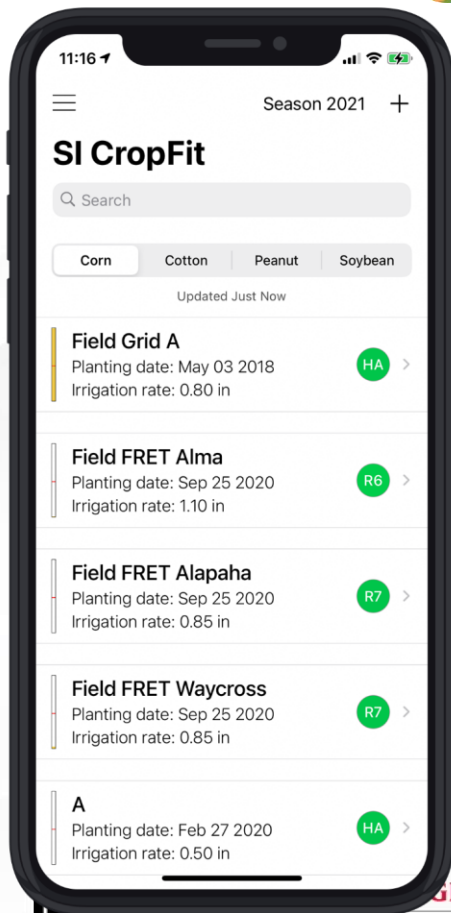
IrrigatorPro

<https://irrigatorpro.org/>



# Level II: Valid Irrigation Scheduling Tools

- Officially released 2/19/23, SI CropFit



# Level III: Valid Irrigation Scheduling Tools

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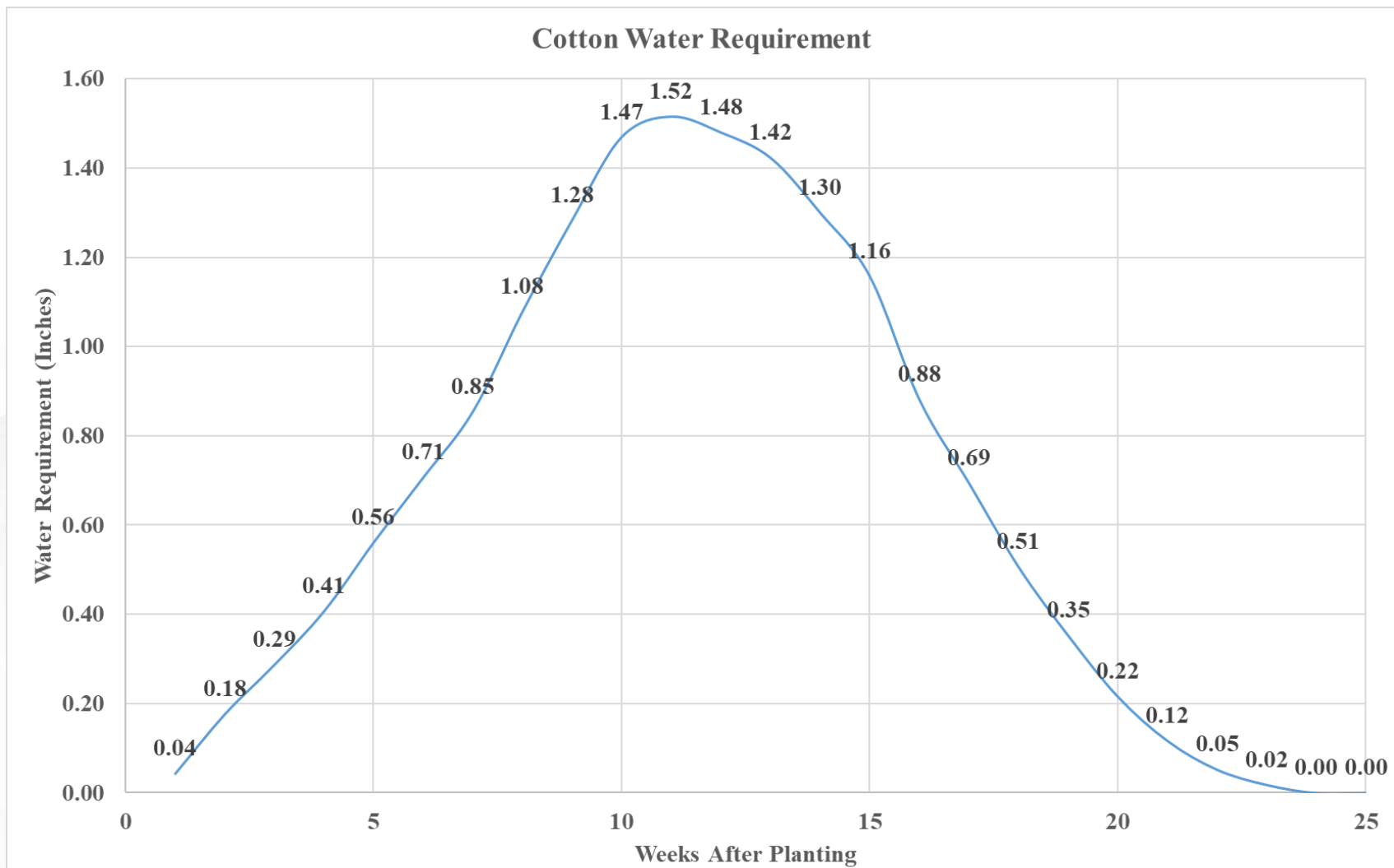
- Soil Moisture Sensors:
  - They are probably the most accurate way of scheduling irrigation currently available.
  - There are many types of soil moisture sensors on the market.
  - Range of costs from ~\$500 up to ~2,500 per site, requires user input and utilization of data, are very accurate.
  - Provide current (usually hourly) data which can be used to make hourly to daily irrigation decisions.
  - The data can be difficult to interpret or make accurate decisions from.

# Level IV: Valid Irrigation Scheduling Tools

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- Hybrid Systems:
  - Since soil moisture sensor data can be difficult to utilize there are some systems that incorporate plant physiological data and soil moisture information.
  - Crop X, IrrigatorPro, and Valley Scheduling are all examples of these systems, and can be used in multiple ways.
  - It can be used a soil water balance such as the computer models, it has an option where soil temperature and/or soil matric potential data can be manually entered, or it has an option where certain data from specific companies will automatically populate into the model.
  - The software then provides an irrigation recommendation for the end user.

# Water Requirements: Cotton



# Water Requirements: Cotton

Growth Stage	DAP	Weeks after Planting	Inches/Week	Inches/Day
Emergence	1 - 7	1	0.04	0.01
Emergence to First Square	8 - 14	2	0.18	0.03
	15 - 21	3	0.29	0.04
	22 - 28	4	0.41	0.06
	29 - 35	5	0.56	0.08
First Square to First Flower	36 - 42	6	0.71	0.10
	43 - 49	7	0.85	0.12
	50 - 56	8	1.08	0.15
First Flower to First Open Boll	57 - 63	9	1.28	0.18
	64 - 70	10	1.47	0.21
	71 - 77	11	1.52	0.22
	78 - 84	12	1.48	0.21
	85 - 91	13	1.42	0.20
	92 - 98	14	1.30	0.19
	106 - 112	16	0.88	0.13
First open boll to >60% Open Bolls	113 - 119	17	0.69	0.10
	120 - 126	18	0.51	0.07
	127 - 133	19	0.35	0.05
	141 - 147	21	0.12	0.02
Harvest	148 - 154	22	0.05	0.01
	155 - 161	23	0.02	0.00
	162 - 168	24	0.00	0.00
	169 - 175	25	0.00	0.00

Peak Water Use

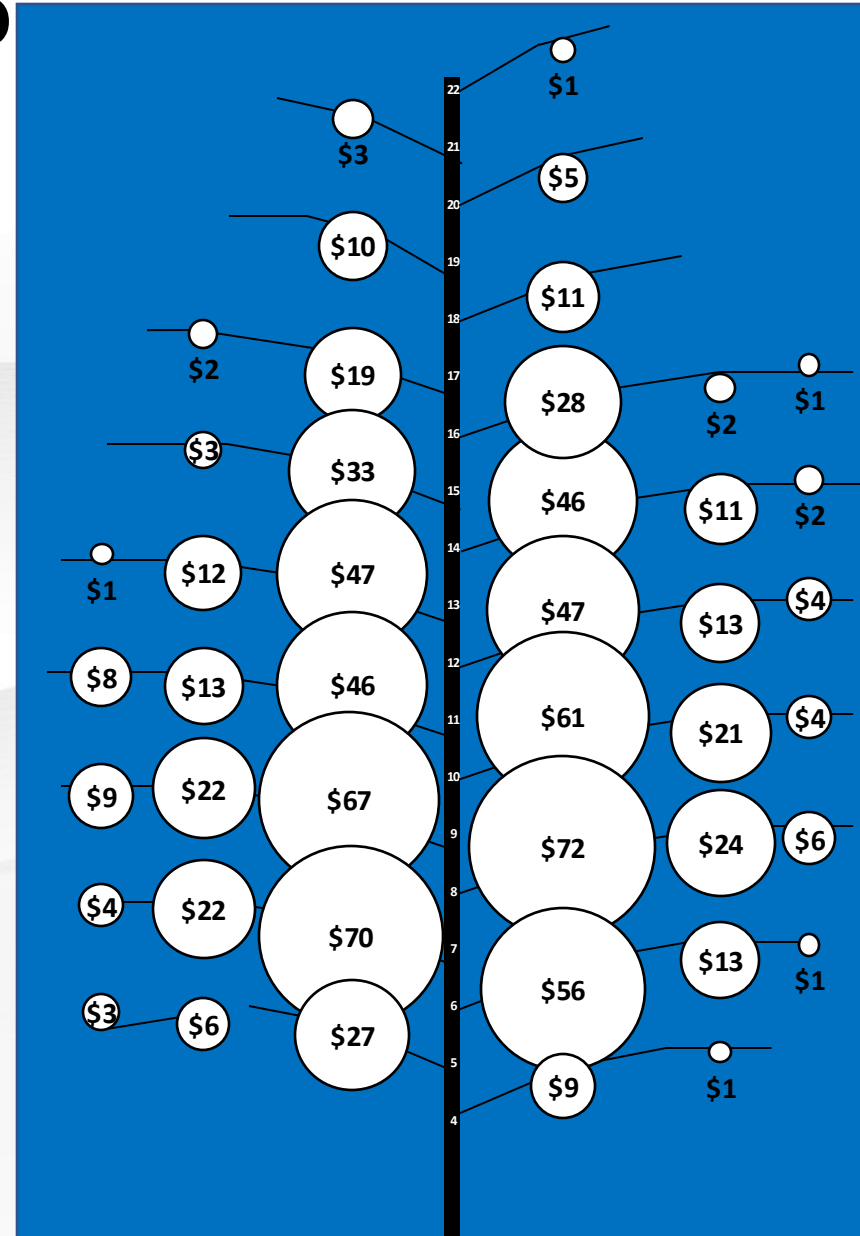
Water Use Declines

Irrigation Termination is Strongly Advised

# Fruiting Position Value

Georgia 2019 (3 location average)

Fruiting Location	Value
1 <sup>st</sup> Positions	72%
2 <sup>nd</sup> Positions	18%
3 <sup>rd</sup> Positions	5%
Vegetative	5%
Nodes $\leq 10$	60%
Nodes 11-15	31%
Nodes $\geq 16$	9%

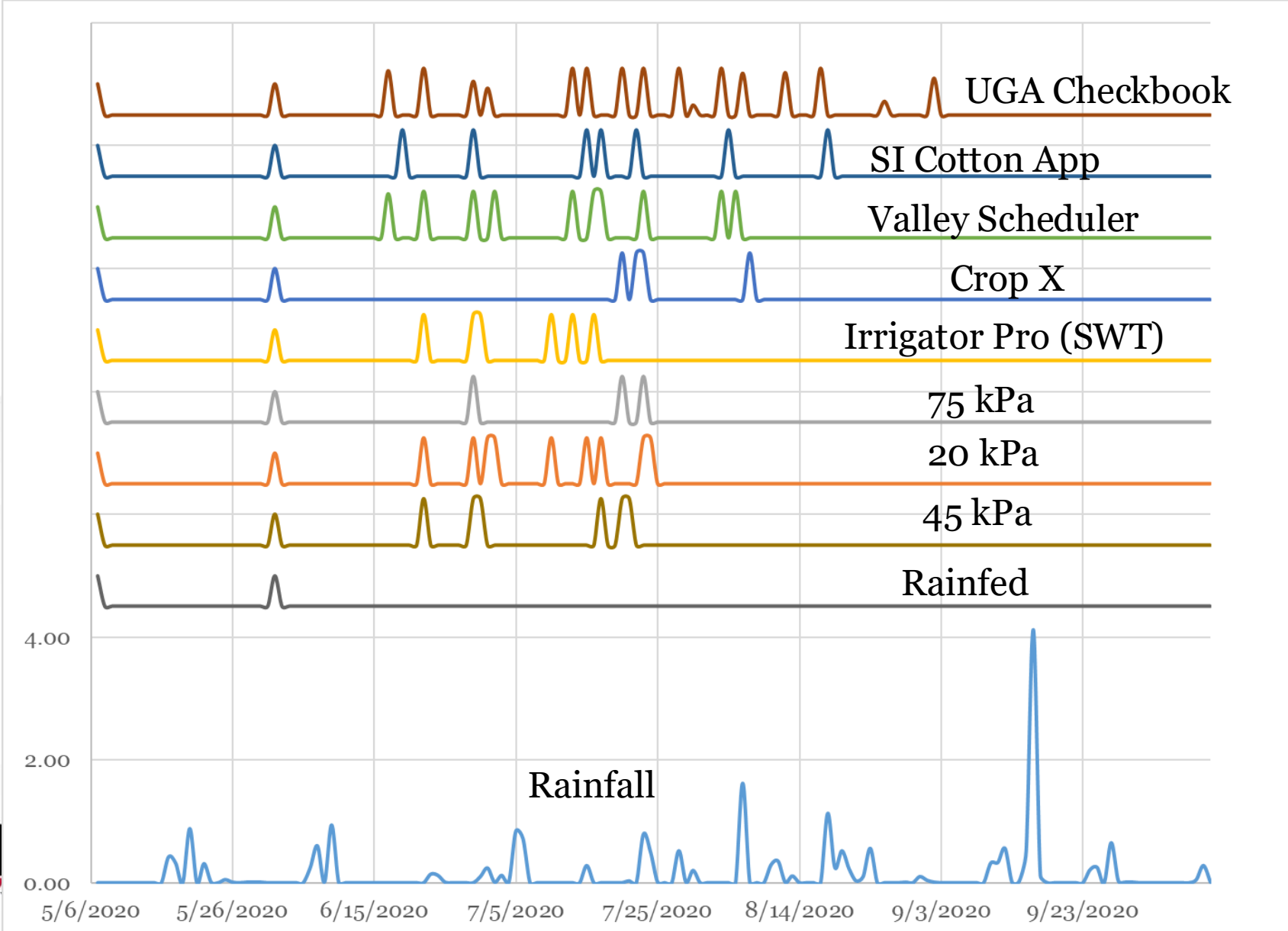


# 2020 Results

Treatment	Irrigation (in)	Total Water (in)	Lint Yield (lb/ac)	IWUE (lb/in)	Profit for \$7/ac-in @ \$0.79 Cotton	Profit for \$12/ac-in @ \$0.79 Cotton
Rainfed	1.0	22.4	795	N/A	621	616
45 kPa	5.5	26.9	1304	237	992	964
20 kPa	7.75	29.1	1293	167	967	928
75 kPa	3.25	24.6	1129	347	869	853
Irrigator Pro	5.5	26.9	1245	226	945	918
CropX	4.0	25.4	1113	278	851	831
Valley Scheduler	8.5	29.9	1240	147	920	878
SI Cotton App	6.25	27.6	1270	203	960	928
Checkbook	11.0	32.4	1196	109	868	813



# 2020 Results

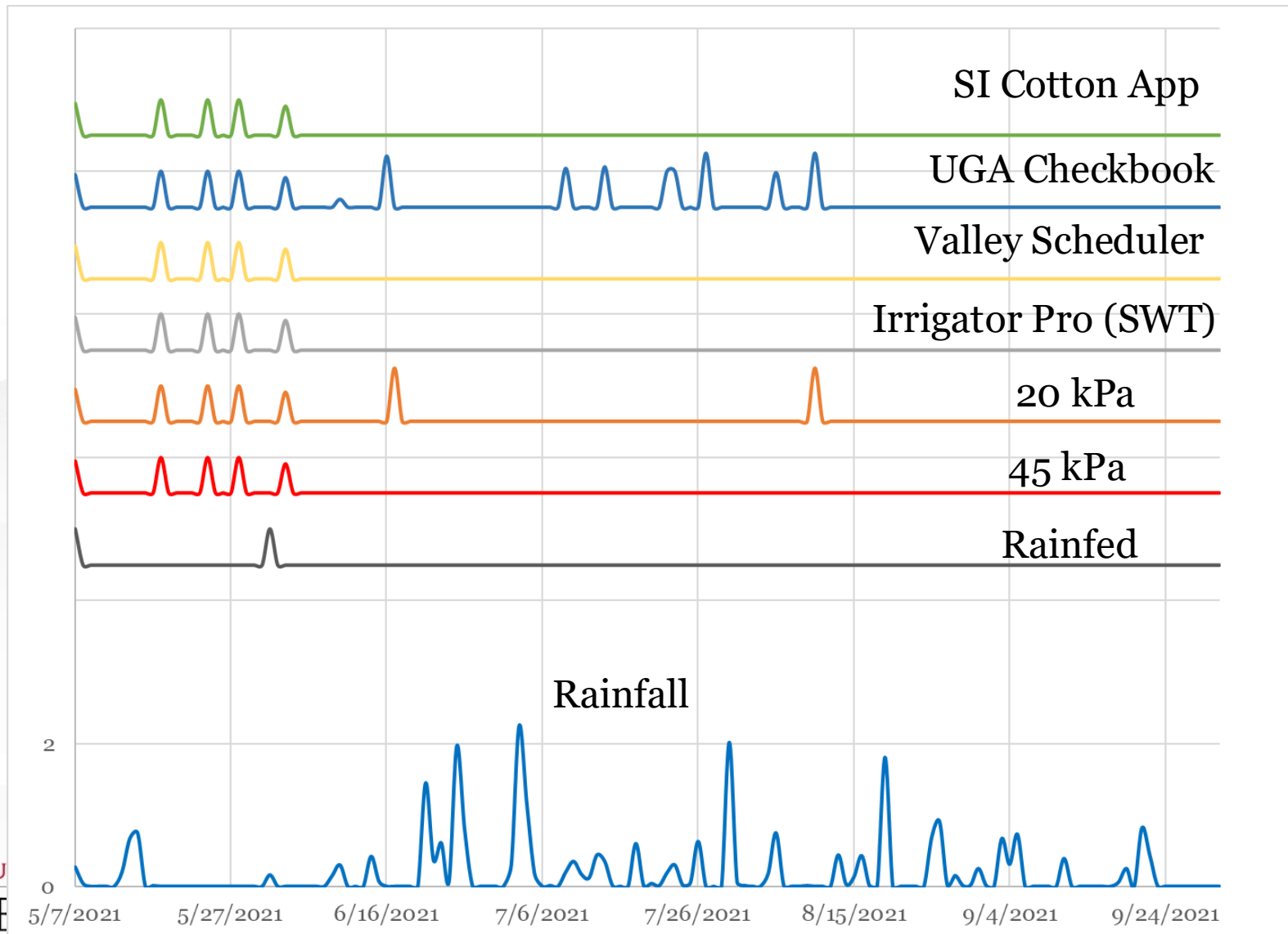


# 2021 Results

Treatment	Irrigation (in)	Total Water (in)	Lint Yield (lb/ac)	IWUE (lb/in)	Profit for \$7/ac-in @ \$1.00 Cotton	Profit for \$12/ac-in @ \$1.00 Cotton
Rainfed	1.0	30.66	1119	N/A	1112	1107
45 kPa	2.36	32.1	1191	505	1175	1162
20 kPa	3.86	33.6	1197	310	1170	1151
Irrigator Pro	2.36	32.1	1175	498	1159	1147
Valley Scheduler	2.36	32.1	1148	486	1131	1120
SI Cotton App	2.36	32.1	1164	493	1148	1136
Checkbook	7.26	37.0	1177	162	1126	1090

Planted: May 7, 2021  
 Picked: October 20, 2021  
 2021 Rainfall = 29.66 in

# 2021 Irrigation Timing Results

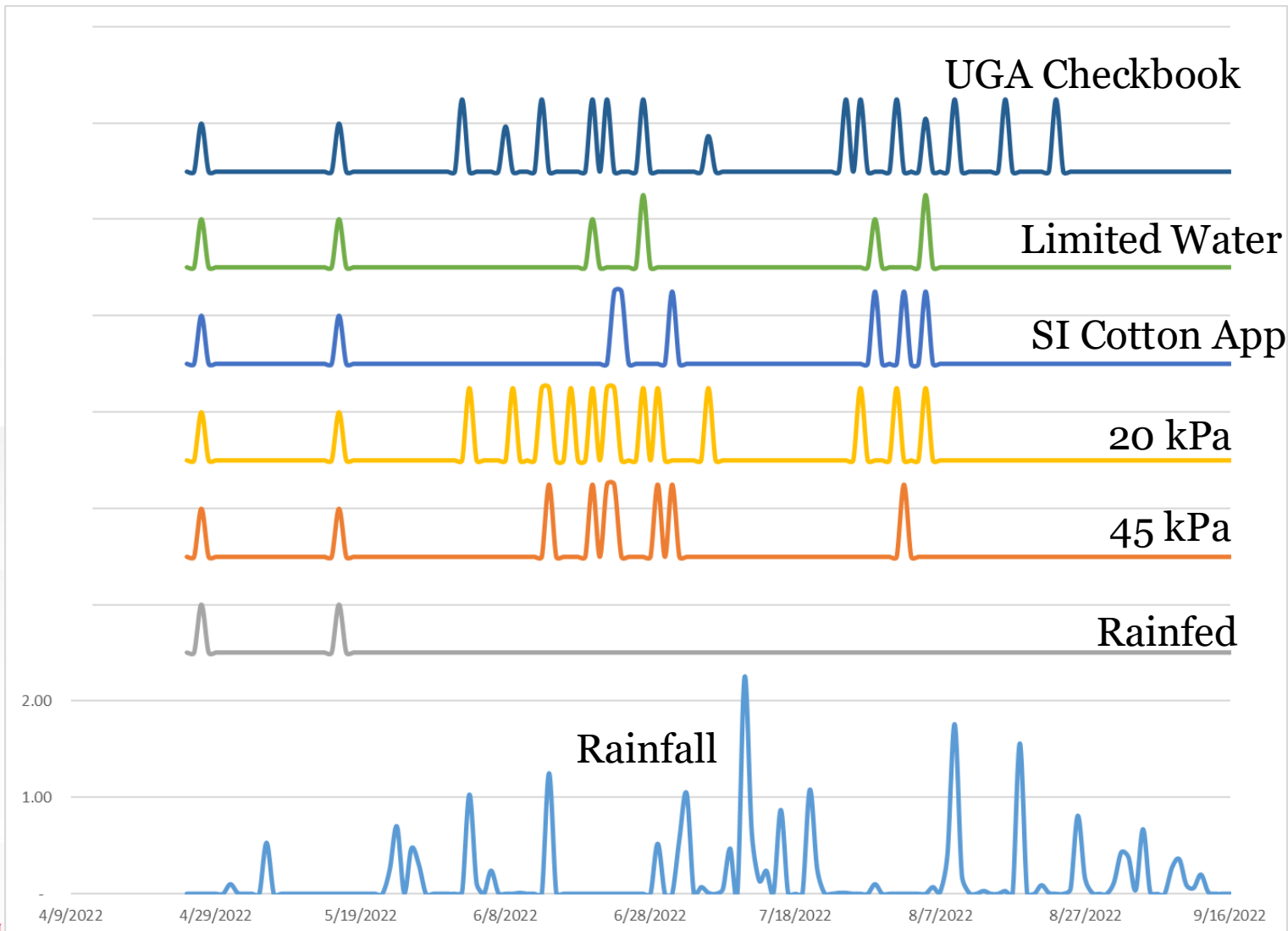


# 2022 Results

Treatment	Irrigation (in)	Total Water (in)	Lint Yield (lb/ac)	IWUE (lb/in)	Boll Rot Rating (% of rotted bolls)	Profit for \$7/ac-in @ \$0.90 Cotton	Profit for \$20/ac-in @ \$0.90 Cotton
Rainfed	1.0	22.3	1431	N/A	13	1281	1268
45 kPa	6.25	27.6	1256	201	18	1086	1005
20 kPa	11.5	32.8	1099	95	23	908	759
SI Cotton App	5.5	26.8	1200	218	24	1042	970
Limited Water	3.5	24.8	1265	361	19	1114	1069
Checkbook	10.6	31.9	1219	115	18	1022	884

**Planted: April 25, 2022**  
**Picked: October 24, 2022**  
**2022 Rainfall = 21.31 in**

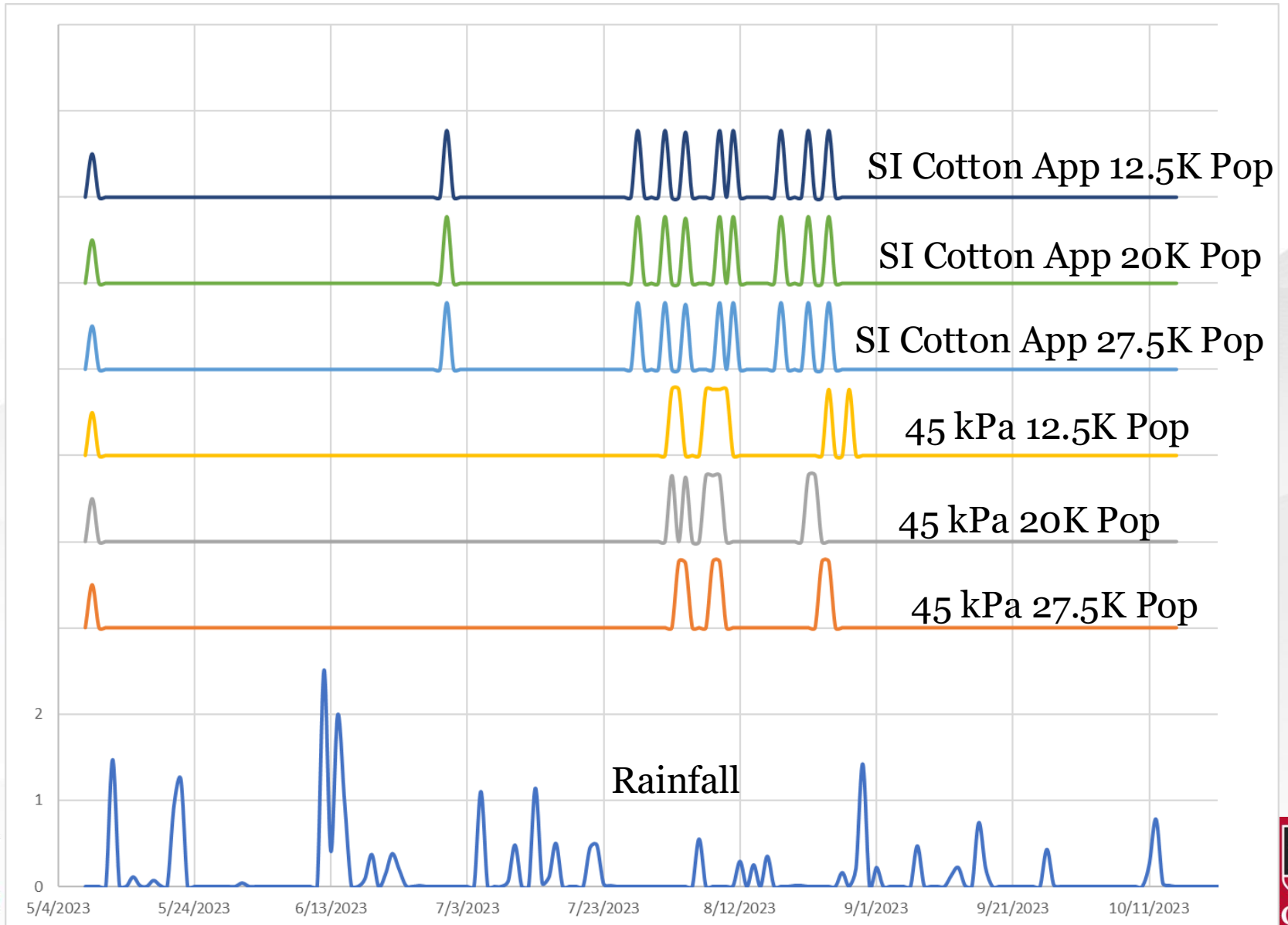
# 2022 Irrigation Timing Results



# 2023 Results

Treatment	Irrigation (in)	Total Water (in)	Lint Yield (lb/ac)	IWUE (lb/in)	Profit for \$7/ac-in @ \$0.84 Cotton	Profit for \$20/ac-in @ \$0.84 Cotton
<b>Rainfed 27,500</b>	0.5	22.7	1187.0	-	902.5	896.0
<b>Rainfed 20,000</b>	0.5	22.7	1256.1	-	985.4	978.9
<b>Rainfed 12,500</b>	0.5	22.7	1071.7	-	855.3	848.8
<b>45kPA 27,500</b>	5.0	27.2	1613.3	85.3	1229.1	1164.1
<b>45kPA 20,000</b>	5.8	28.0	1705.5	78.2	1326.2	1251.4
<b>45kPA 12,500</b>	6.5	28.7	1521.1	69.1	1190.9	1106.4
<b>SI App 27,500</b>	7.3	29.5	1688.2	66.0	1284.6	1190.3
<b>SI App 20,000</b>	7.3	29.5	1745.9	67.6	1349.5	1255.3
<b>SI App 12,500</b>	7.3	29.5	1711.3	88.2	1345.3	1251.1

# 2023 Irrigation Timing Results

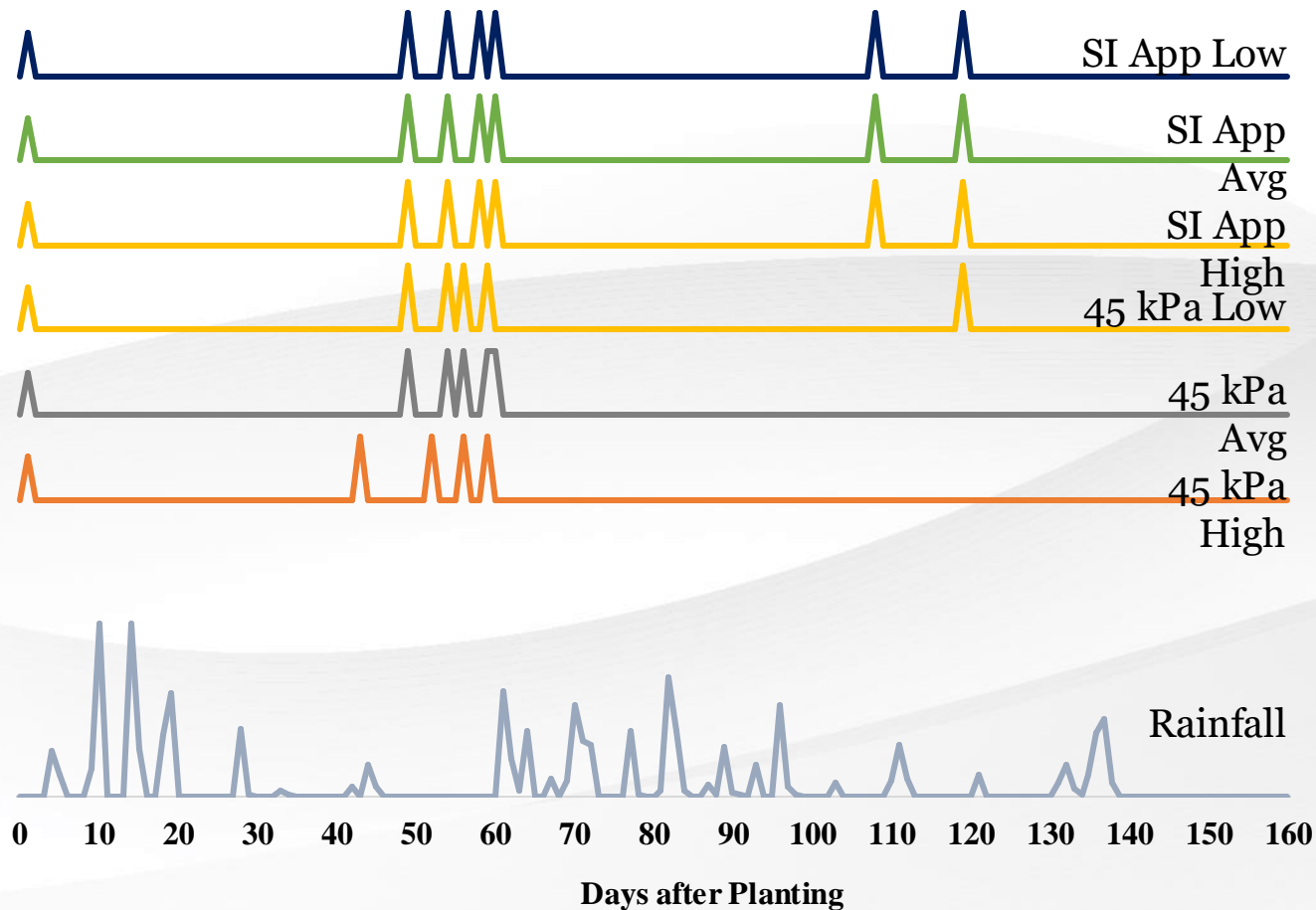


# 2024 Results

Treatment	Irrigation (in)	Total Water (in)	Lint Yield (lb/ac)	IWUE (lb/in)	Profit for \$8/ac-in @ \$0.69 Cotton	Profit for \$16/ac-in @ \$0.69 Cotton
<b>Rainfed 27,500</b>	0.5	30.75	1065	-	725.82	722.32
<b>Rainfed 20,000</b>	0.5	30.75	1187	-	840.18	836.68
<b>Rainfed 12,500</b>	0.5	30.75	1083	-	782.89	779.39
<b>45kPA 27,500</b>	3.5	33.75	1125	3.7	744.37	719.87
<b>45kPA 20,000</b>	4.25	34.5	1111	-0.2	748.63	718.88
<b>45kPA 12,500</b>	4.25	34.5	1035	-18.1	712.35	682.60
<b>SI App 27,500</b>	5.0	35.25	1166	10.9	762.39	727.39
<b>SI App 20,000</b>	5.0	35.25	1129	3.5	755.89	720.89
<b>SI App 12,500</b>	5.0	35.25	1026	-17.2	698.60	663.60

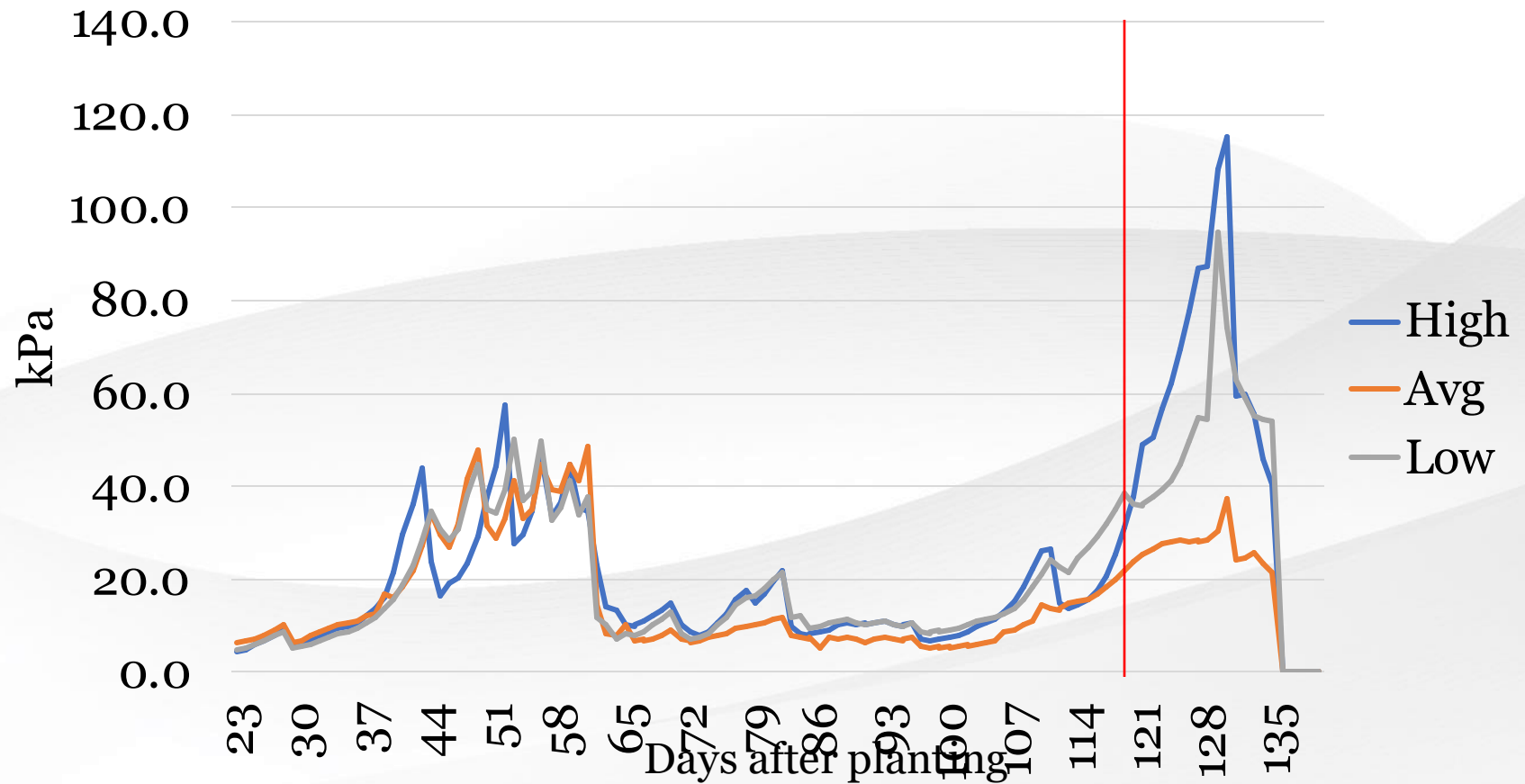


# 2024 Irrigation Timing Results

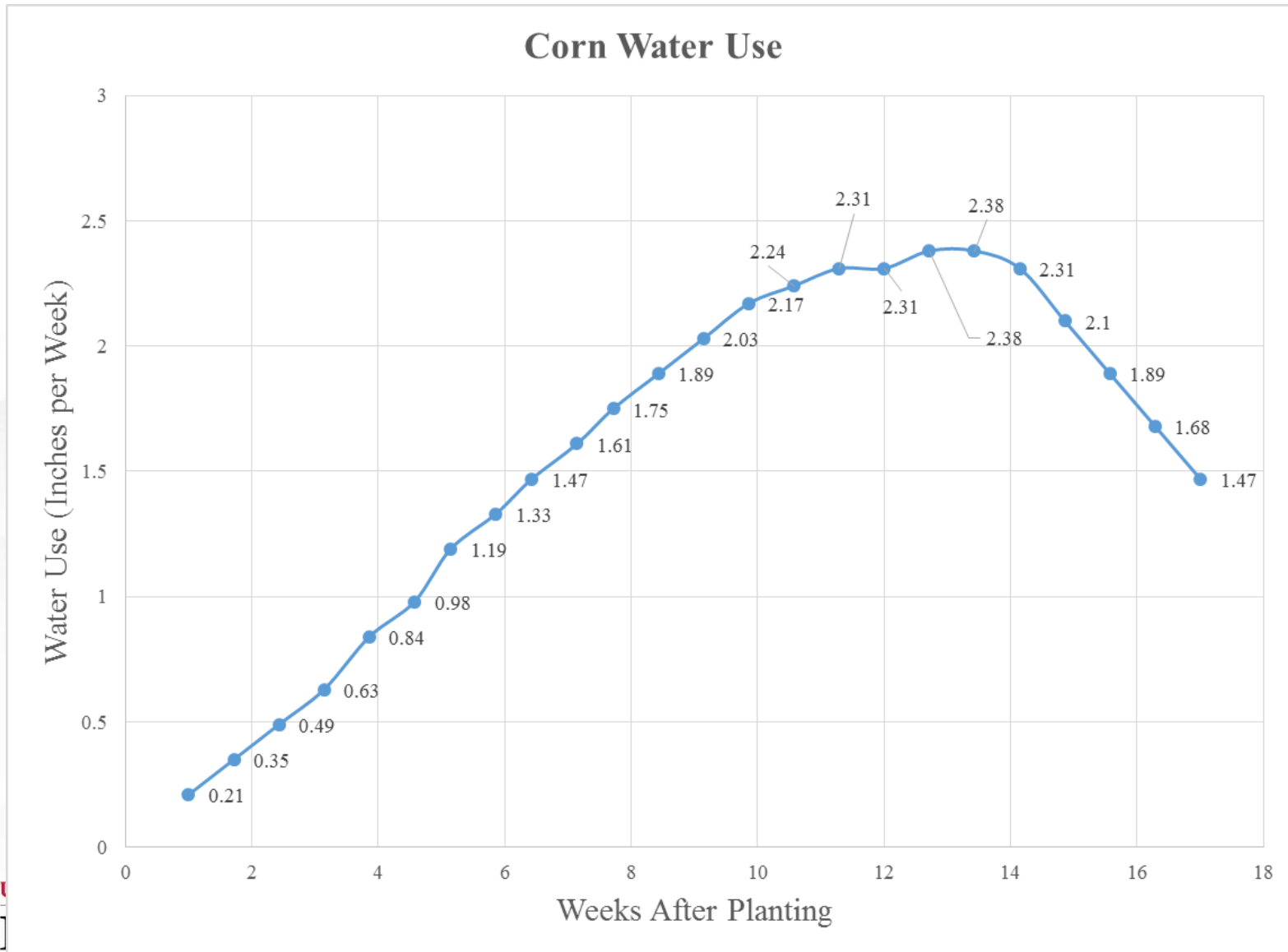


# 2024 Soil Water Tension Levels

SMS Readings



# Water Requirements: Corn



# Water Requirements: Corn

Growth Stage	Days After Planting	Inches Per Day
Emergence and primary root developing.	0-7	.03
	8-12	.05
Two leaves expanded and nodal roots forming.	13-17	.07
	18-22	.09
Four to six leaves expanding. Growing point near surface. Other leaves and roots developing.	23-27	.12
	28-32	.14
	33-36	.17
Six to eight leaves. Tassel developing. Growing point above ground.	37-41	.19
	42-45	.21
Ten to twelve leaves expanded. Bottom 2-3 leaves lost. Stalks growing rapidly. Ear shoots developing. Potential kernel row number determined.	46-50	.23
	51-54	.25
Twelve to sixteen leaves. Kernels per row and size of ear determined. Tassel not visible but about full size. Top two ear shoots developing rapidly.	55-59	.27
	60-64	.29
Tassel emerging, ear shoots elongating.	65-69	.31
Pollination and silks emerging.	70-74	.32
	75-79	.33
Blister stage.	80-84	.33
Milk stage, rapid starch accumulation.	85-89	.34
Early dough stage, kernels rapidly increasing in weight.	90-94	.34
Dough stage.	95-99	.33
Early dent.	100-104	.30
Dent.	105-109	.27
Beginning black layer.	110-114	.24
Black layer (physiological maturity)	115-119	.21

Peak Water Use

Water Use Declines

Irrigation Termination

# 2020 Results

Treatment	Irrigation Applied (in)	Yield (bu/ac) Hybrid 1	IWUE H1 (bu/in)	Yield (bu/ac) Hybrid 2	IWUE H2 (bu/in)	H1 Profit for \$7/ac-in @ \$4.00 Corn	H1 Profit for \$12/ac-in @ \$4.00 Corn
Dryland <sup>D</sup>	1.57	79	50.4	77	49.0	305.01	297.16
UGA Checkbook <sup>C</sup>	15.62	191	12.3	190	12.1	654.66	576.56
SI Corn App <sup>AB</sup>	9.84	203	20.6	214	21.7	743.12	693.92
Irrigator Pro <sup>A</sup>	11.35	210	18.5	218	19.2	760.55	703.80
Valley Scheduler <sup>ABC</sup>	12.08	195	16.1	206	17.1	695.44	635.04
30 kPa <sup>ABC</sup>	9.09	203	22.3	199	21.9	748.37	702.92
10 kPa <sup>ABC</sup>	14.87	198	13.3	207	13.9	687.91	613.56
50 kPa <sup>AB</sup>	10.59	211	19.9	204	19.3	769.87	716.92

Rainfall = 14.9 in

Planted: 3/19/20

Harvested: 8/3/20

Hybrid 1: Pioneer 1442

Hybrid 2: Pioneer 1662

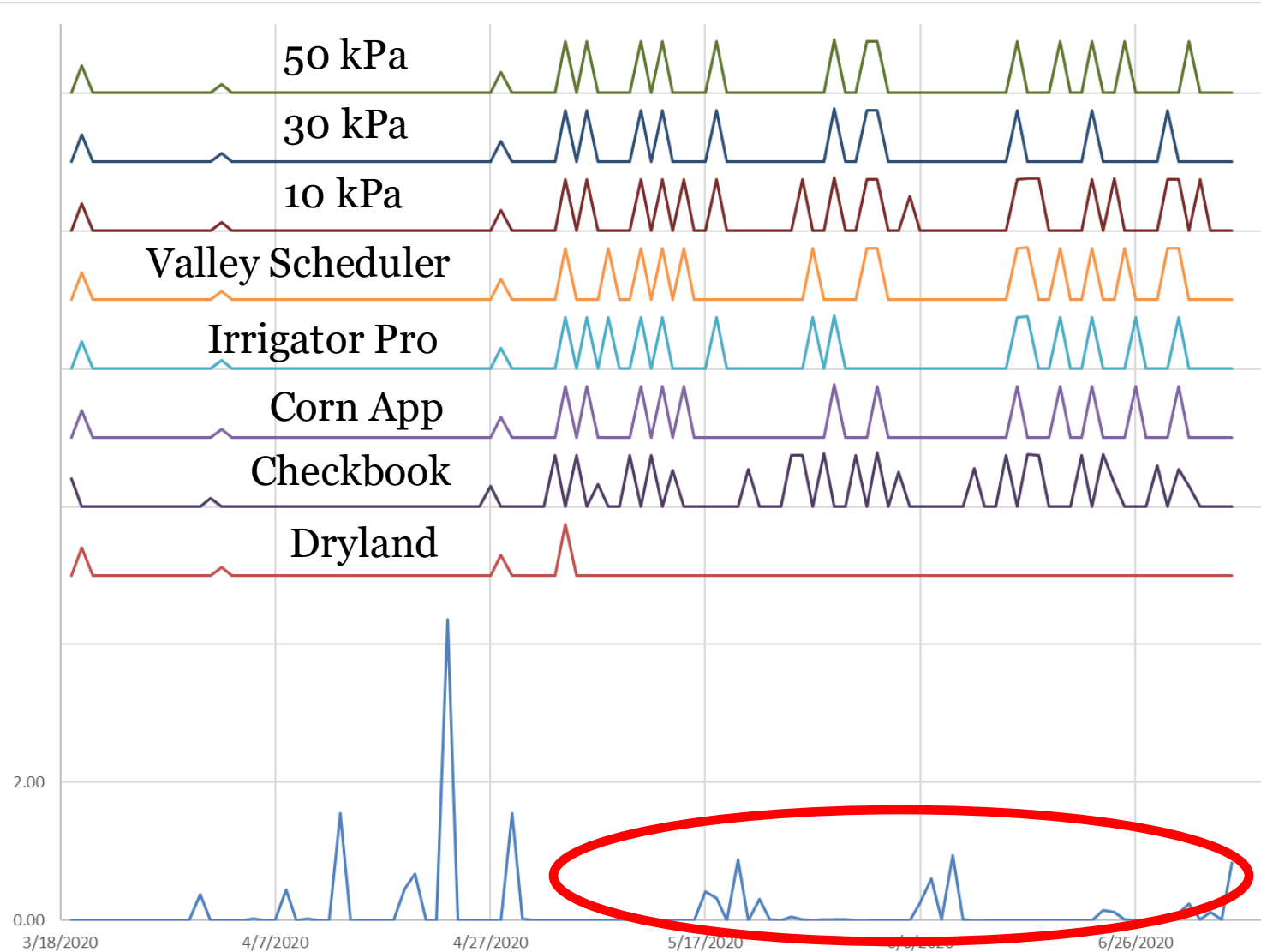


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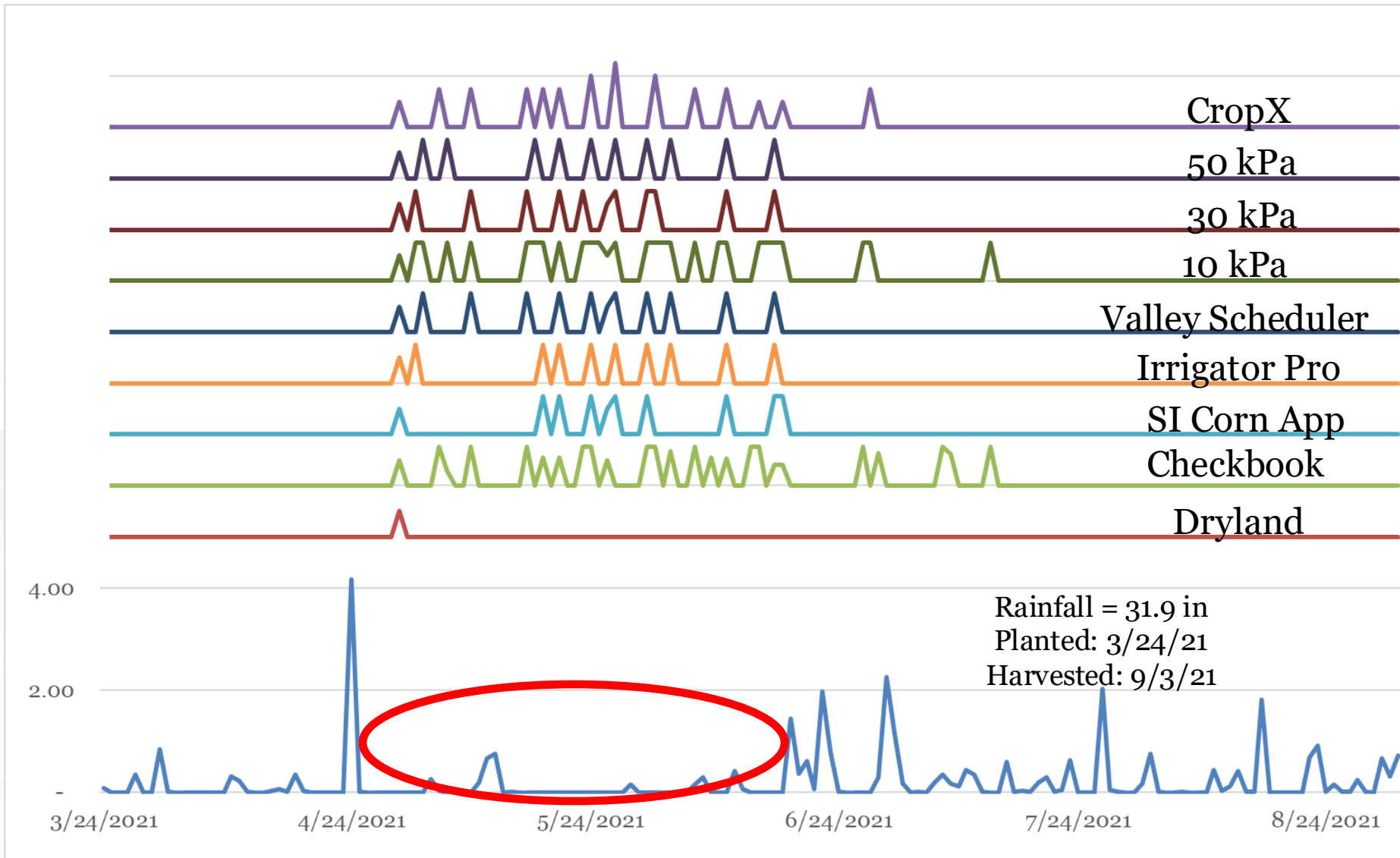
# 2020 Timing



# 2021 Results

Treatment	Irrigation Applied (in)	Yield (bu/ac) Hybrid 1	IWUE H1 (bu/in)	Yield (bu/ac) Hybrid 2	IWUE H2 (bu/in)	H1 Profit for \$7/ac-in @ \$5.50 Corn	H1 Profit for \$12/ac-in @ \$5.50 Corn
Dryland <sup>C</sup>	0.50	71	N/A	81	N/A	387.00	384.50
UGA Checkbook <sup>A</sup>	15.90	218	13.7	236	14.9	1087.70	1008.20
Crop Metrics <sup>AB</sup>	10.75	193	18.0	226	21.0	986.25	932.50
SI Corn App <sup>AB</sup>	7.00	199	28.4	214	30.6	1045.50	1010.50
Irrigator Pro <sup>A</sup>	7.25	227	31.3	232	32.1	1197.75	1161.50
Valley Scheduler <sup>AB</sup>	8.50	214	25.2	223	26.3	1117.50	1075.00
30 kPa <sup>A</sup>	8.50	229	27.0	238	28.0	1200.00	1157.50
10 kPa <sup>B</sup>	20.50	221	10.8	226	10.9	1072.00	969.50
50 kPa <sup>AB</sup>	8.00	231	28.8	227	28.4	1214.50	1174.50

# 2021 Timing

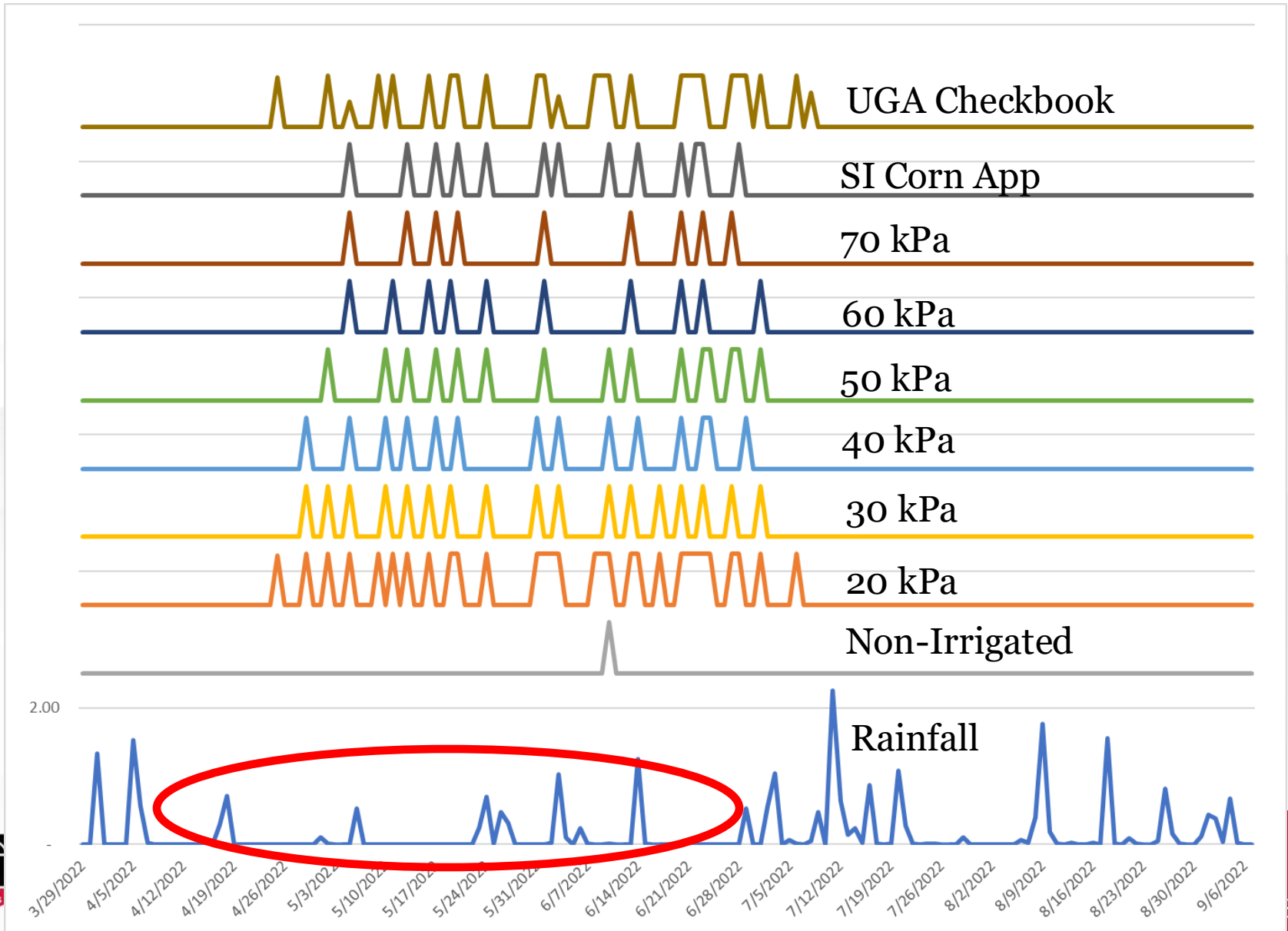




# 2022 Results: Avg Corn Price \$6.94

Treatment	Irrigation Applied (in)	Yield (bu/ac) Hybrid 1	IWUE H1 (bu/in)	Yield (bu/ac) Hybrid 2	IWUE H2 (bu/in)	H1 Net Profit @ \$7 per ac-in	H1 Net Profit @ \$20 per ac-in
Non-Irrigated	0.50	91.1	N/A	84.6	N/A	628.73	622.23
20 kPa	22.48	254.5	11.3	241.4	10.7	1608.87	1316.63
30 kPa	12.75	250.4	19.6	235.6	18.5	1648.53	1482.78
40 kPa	10.50	232.7	22.2	219.4	20.9	1541.44	1404.94
50 kPa	11.25	255.8	22.7	237.6	21.1	1696.50	1550.25
60 kPa	7.50	215.1	28.7	197.7	26.3	1440.29	1342.79
70 kPa	6.75	229.5	34.0	215.6	31.9	1545.48	1457.73
SI Corn App	9.75	237.3	24.3	222.2	22.8	1578.61	1451.86
UGA Checkbook	18.56	247.6	13.3	254.3	13.7	1588.42	1347.14

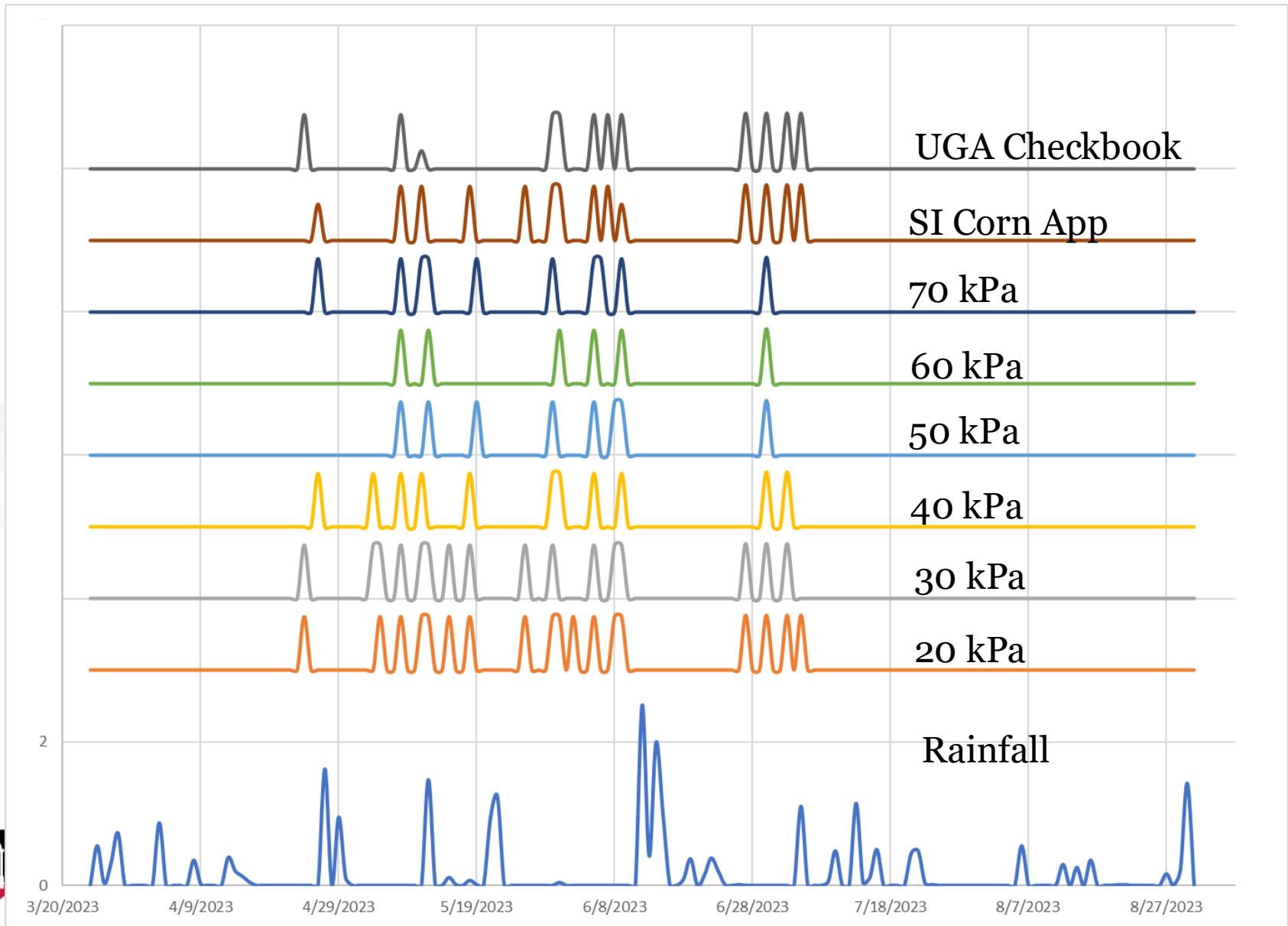
# Irrigation Timing



# 2023 Results: Avg Corn Price: \$5.65

Treatment	Irrigation Applied (in)	Yield (bu/ac)	IWUE (bu/in)	Net Profit @ \$7 per ac-in	Net Profit @ \$20 per ac-in
Non-Irrigated	0.50	183.3	N/A	1032.15	1025.65
20 kPa	13.6	222.3	16.4	1074.25	984.00
30 kPa	12.0	205.0	17	1062.30	918.25
40 kPa	8.3	198.3	24	1195.92	954.40
50 kPa	6.0	219.1	36.4	1030.70	1117.92
60 kPa	4.5	188.0	41.6	1173.55	972.20
70 kPa	7.5	217.0	28.9	1031.62	1076.05
SI Corn App	10.1	195.1	19.4	1127.43	900.32
UGA Checkbook	8.6	210.2	24.5	1160.80	1015.63

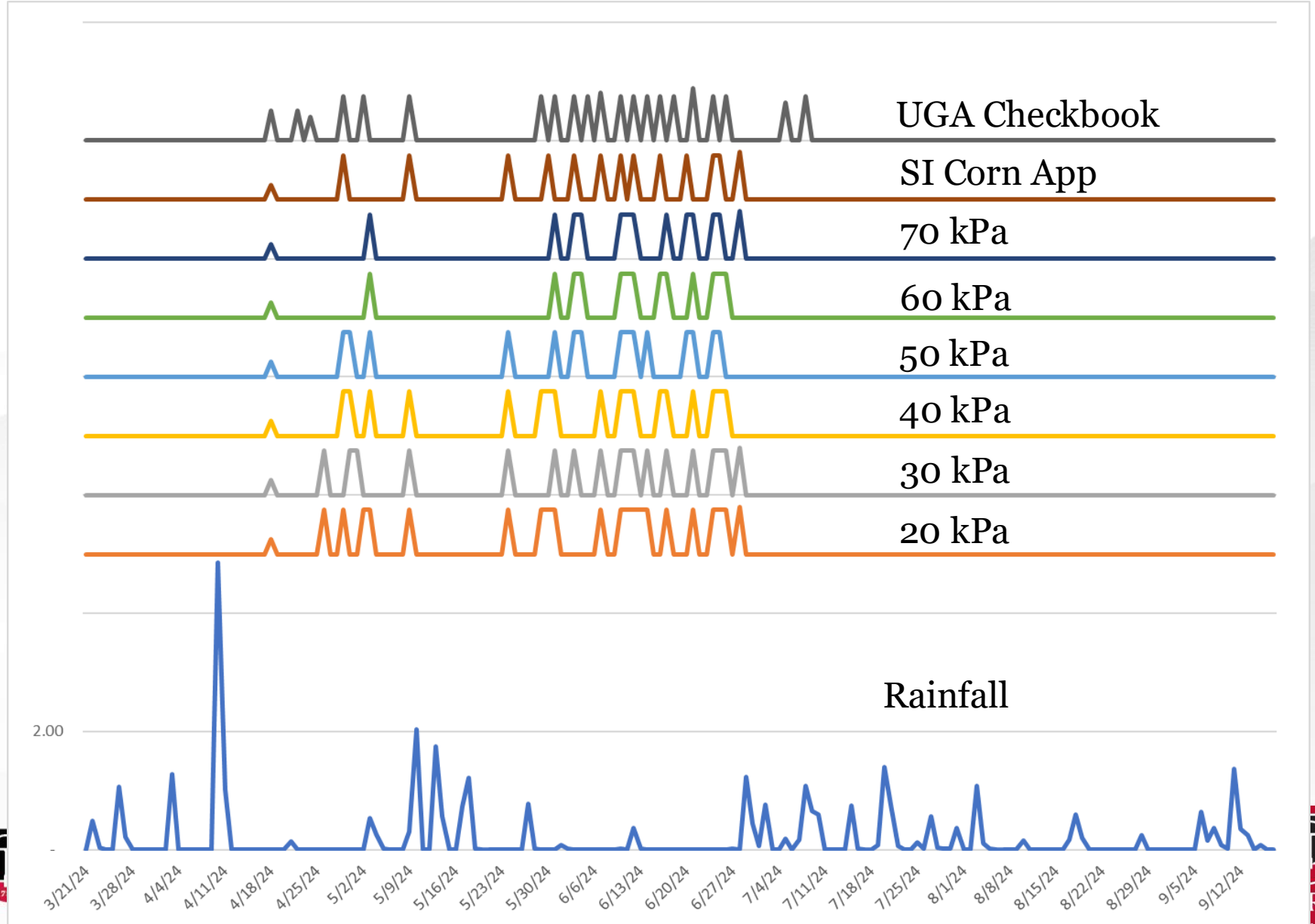
# Irrigation Timing



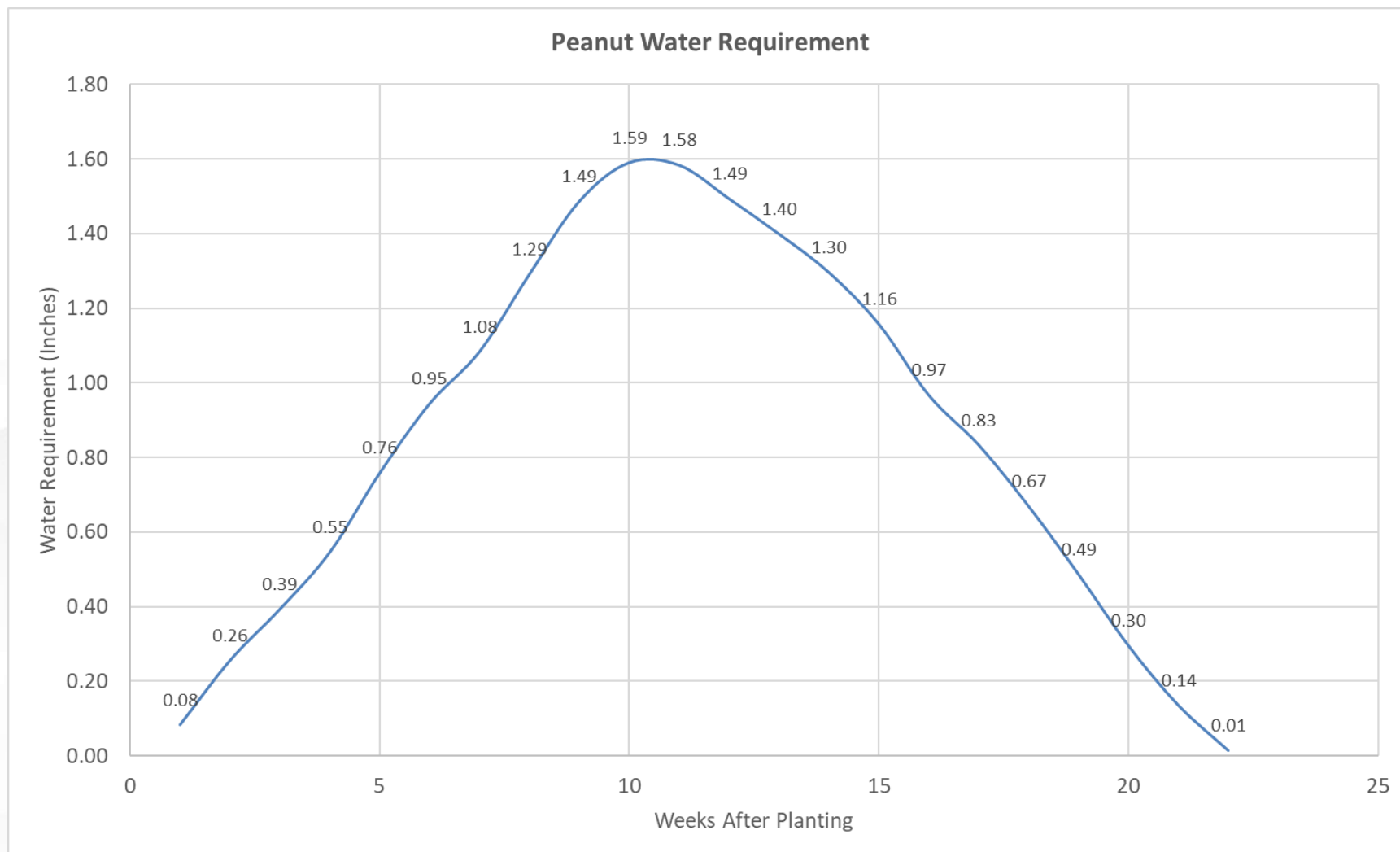
# 2024 Results: Avg Corn Price: \$4.20

Treatment	Irrigation Applied (in)	Yield (bu/ac)	IWUE (bu/in)	Net Profit @ \$7 per ac-in	Net Profit @ \$20 per ac-in
Non-Irrigated	0.25	61.8 <sup>c</sup>	N/A	257.76	254.51
20 kPa	16.05	204.3 <sup>a</sup>	12.7	745.74	537.09
30 kPa	13.80	202.1 <sup>a</sup>	14.6	752.17	572.77
40 kPa	13.75	199.3 <sup>a</sup>	14.5	740.84	562.09
50 kPa	11.50	199.6 <sup>a</sup>	17.4	757.79	608.29
60 kPa	10.00	193.2 <sup>a</sup>	19.3	741.23	611.29
70 kPa	10.05	191.8 <sup>a</sup>	19.1	735.21	604.56
SI Corn App	10.05	150.4 <sup>b</sup>	15.0	561.19	430.54
UGA Checkbook	14.99	195.2 <sup>a</sup>	13.0	714.98	520.11

# Irrigation Timing

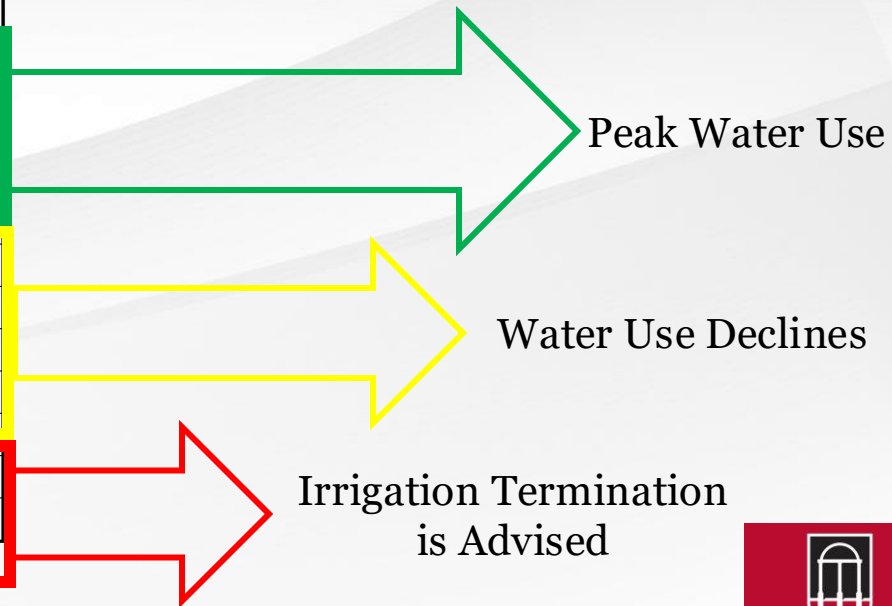


# Water Requirements: Peanuts



# Water Requirements: Peanuts

Peanut Irrigation Schedule			
Days after Planting	Weeks after Planting	Inches per Week	Inches per Day
1 - 7	1	0.08	0.01
8 - 14	2	0.26	0.04
15 - 21	3	0.39	0.06
22 - 28	4	0.55	0.08
29 - 35	5	0.76	0.11
36 - 42	6	0.95	0.14
43 - 49	7	1.08	0.15
50 - 56	8	1.29	0.18
57 - 63	9	1.49	0.21
64 - 70	10	1.59	0.23
71 - 77	11	1.58	0.23
78 - 84	12	1.49	0.21
85 - 91	13	1.40	0.20
92 - 98	14	1.30	0.19
99 - 105			
106 - 112	16	0.97	0.14
113 - 119	17	0.83	0.12
120 - 126	18	0.67	0.10
127 - 133	19	0.49	0.07
134 - 140			
141 - 147	21	0.14	0.02
148 - 150	22	0.01	0.00





# Peanut Irrigation Scheduling 2014-2015

Irrigation Scheduling Method	Irrigation Amount (in)	Total Water (in)	Yield (lb/ac)	Net Profit @ \$6 per ac-in \$400/ton	Net Profit @ \$12 per ac-in \$400/ton
2014 Rainfall: 12.33					
Dryland	0.40	12.73	<b>465</b>	82.60	80.20
WaterMark (45 kPa)	9.40	21.73	<b>6052</b>	1154.00	1097.60
EasyPan	11.65	23.98	<b>5725</b>	1075.10	1005.20
UGA ET Checkbook	15.02	27.35	<b>5025</b>	914.88	824.76
UF Peanut Farm	7.90	20.23	<b>4802</b>	913.00	865.60
2015 Rainfall: 22.65					
Dryland	0.50	23.30	<b>5193</b>	1025.60	1032.60
WaterMark (45 kPa)	4.45	27.25	<b>5478</b>	1068.90	1042.20
UGA ET Checkbook	12.50	35.30	<b>5313</b>	987.60	912.60
UGA EasyPan	5.20	28.00	<b>5404</b>	1049.60	1018.40
UF PeanutFarm	5.20	28.00	<b>5327</b>	1034.20	1003.00
IrrigatorPro	2.80	25.60	<b>5542</b>	1091.60	1074.80
50% Checkbook	6.76	29.56	<b>5176</b>	994.64	954.08



# Peanut Irrigation Scheduling 2016-2017

Irrigation Scheduling Method	Irrigation Amount (in)	Total Water (in)	Yield (lb/ac)	Net Profit @ \$7 per ac-in \$400/ton	Net Profit @ \$12.50 per ac-in \$400/ton
2016 Rainfall: 25.80					
Dryland	1.00	26.80	<b>5249</b>	1042.80	1037.30
WaterMark (45 kPa)	9.25	35.05	<b>6292</b>	1214.65	1180.28
PeanutFARM	7.75	33.55	<b>6371</b>	1219.95	1177.33
IrrigatorPro	10.00	35.80	<b>6540</b>	1238.00	1183.00
50% Checkbook	8.43	34.23	<b>6367</b>	1214.39	1168.03
2017 Rainfall: 24.30					
Dryland	1.00	25.30	<b>5875</b>	1168.00	1162.50
WaterMark (45 kPa)	2.85	27.15	<b>6396</b>	1259.25	1243.56
PeanutFARM	5.50	29.80	<b>5936</b>	1148.70	1118.45
Irrigator Pro	4.00	28.30	<b>6260</b>	1224.00	1202.00
50% Checkbook	6.75	31.05	<b>6262</b>	1205.15	1168.03
Checkbook	10.50	34.80	<b>5749</b>	1076.30	1018.55
EasyPan	4.75	29.05	<b>5979</b>	1162.55	1136.43



# Peanut Irrigation Scheduling 2017-2018

Irrigation Scheduling Method	Irrigation Amount (in)	Total Water (in)	Yield (lb/ac)	Net Profit @ \$7 per ac-in \$400/ton	Net Profit @ \$12.50 per ac-in \$400/ton
2017 Rainfall: 24.30					
Dryland	1.00	25.30	<b>5875</b>	1168.00	1162.50
WaterMark (45 kPa)	2.85	27.15	<b>6396</b>	1259.25	1243.58
PeanutFARM	5.50	29.80	<b>5936</b>	1148.70	1118.45
Irrigator Pro	4.00	28.30	<b>6260</b>	1224.00	1202.00
50% Checkbook	6.75	31.05	<b>6262</b>	1205.15	1168.03
Checkbook	10.50	34.80	<b>5749</b>	1076.30	1018.55
EasyPan	4.75	29.05	<b>5979</b>	1162.55	1136.43
2018 Rainfall: 32.43					
Dryland	2.50	34.93	<b>5591</b>	1100.70	1086.95
WaterMark (45 kPa)	2.50	34.93	<b>5849</b>	1152.30	1138.55
Old Checkbook	7.80	40.18	<b>6204</b>	1186.20	1143.30
New Checkbook	6.70	39.13	<b>6147</b>	1182.50	1145.65
50% New Checkbook	4.00	36.45	<b>6231</b>	1218.20	1196.20
Irrigator Pro (Soil Temp)	6.30	38.68	<b>5996</b>	1155.10	1120.45
Irrigator Pro (Sensor)	3.30	35.68	<b>6433</b>	1263.50	1245.35
PeanutFARM	4.80	37.18	<b>5984</b>	1163.20	1136.80

# Peanut Irrigation Triggers 2018-2019

Irrigation Scheduling Method	Irrigation Amount (in)	Total Water (in)	Yield (lb/ac)	Difference in Yield (lb/ac)	Net Profit @ \$7 per ac-in \$400/ton	Net Profit @ \$12.50 per ac-in \$400/ton
2018 Rainfall: 32.43						
Dryland	2.50	35.16	<b>5591</b>		1100.70	1086.95
WaterMark (20 kPa)	6.25	38.91	<b>5847</b>		1125.65	1091.28
WaterMark (30 kPa)	5.50	38.16	<b>5729</b>	-118	1107.30	1077.05
WaterMark (40 kPa)	4.00	36.66	<b>5900</b>	+171	1152.00	1130.00
WaterMark (50 kPa)	4.75	37.41	<b>6047</b>	+147	1176.15	1150.03
WaterMark (60 kPa)	4.75	37.41	<b>5862</b>	-185	1139.15	1113.03
2019 Rainfall: 19.74						
Dryland	2.50	22.2	<b>5874</b>		1157.30	1143.55
WaterMark (20 kPa)	15.18	34.9	<b>6572</b>		1208.14	1124.65
WaterMark (30 kPa)	11.41	31.2	<b>6779</b>	+207	1277.82	1216.55
WaterMark (40 kPa)	6.93	26.7	<b>6834</b>	+55	1318.29	1280.18
WaterMark (50 kPa)	9.18	28.9	<b>7076</b>	+242	1350.94	1300.45
WaterMark (60 kPa)	5.41	25.2	<b>6798</b>	-278	1321.73	1291.98

# Conclusions

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- There is a significant financial return on the investment in soil moisture sensors, where on average the investment will pay for itself in a single year.
- More research is underway to illustrate results during years of drought and years of excess rainfall as compared to currently modeled averages.

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# THANK YOU!



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