Flickner Innovation Irrigation Farm

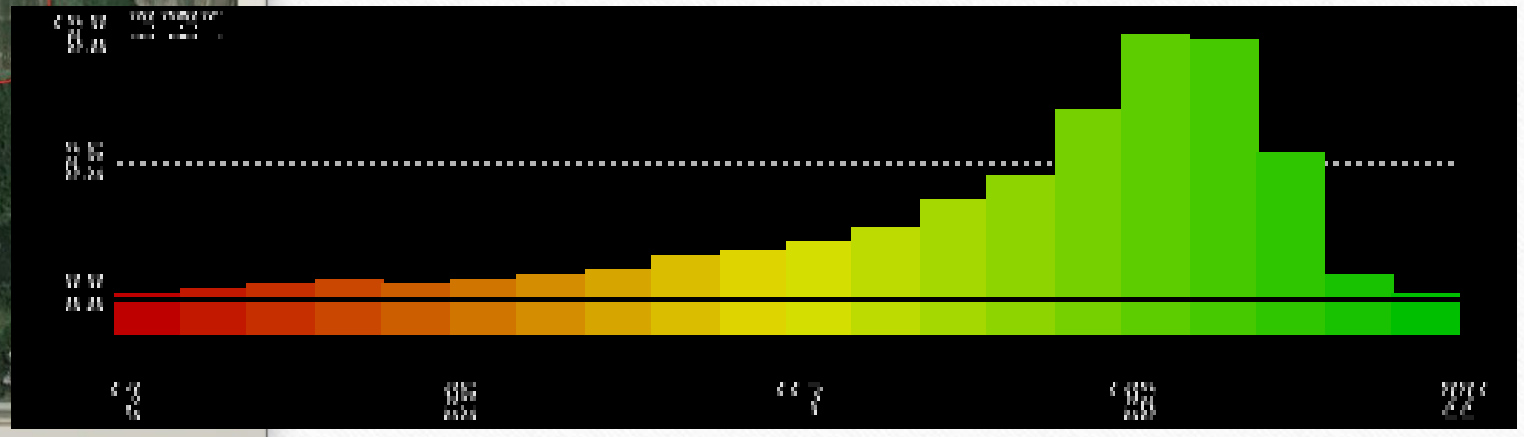
Year One In Review

Rick & Erica Schlender

Flickner PDMI Pivot

Yield Map PDMI Pivot

Minimum: 8.81 bu/ac **Maximum:** 274.02 bu/ac
Average: 159.75 bu/ac **Total:** 7669.6 bu



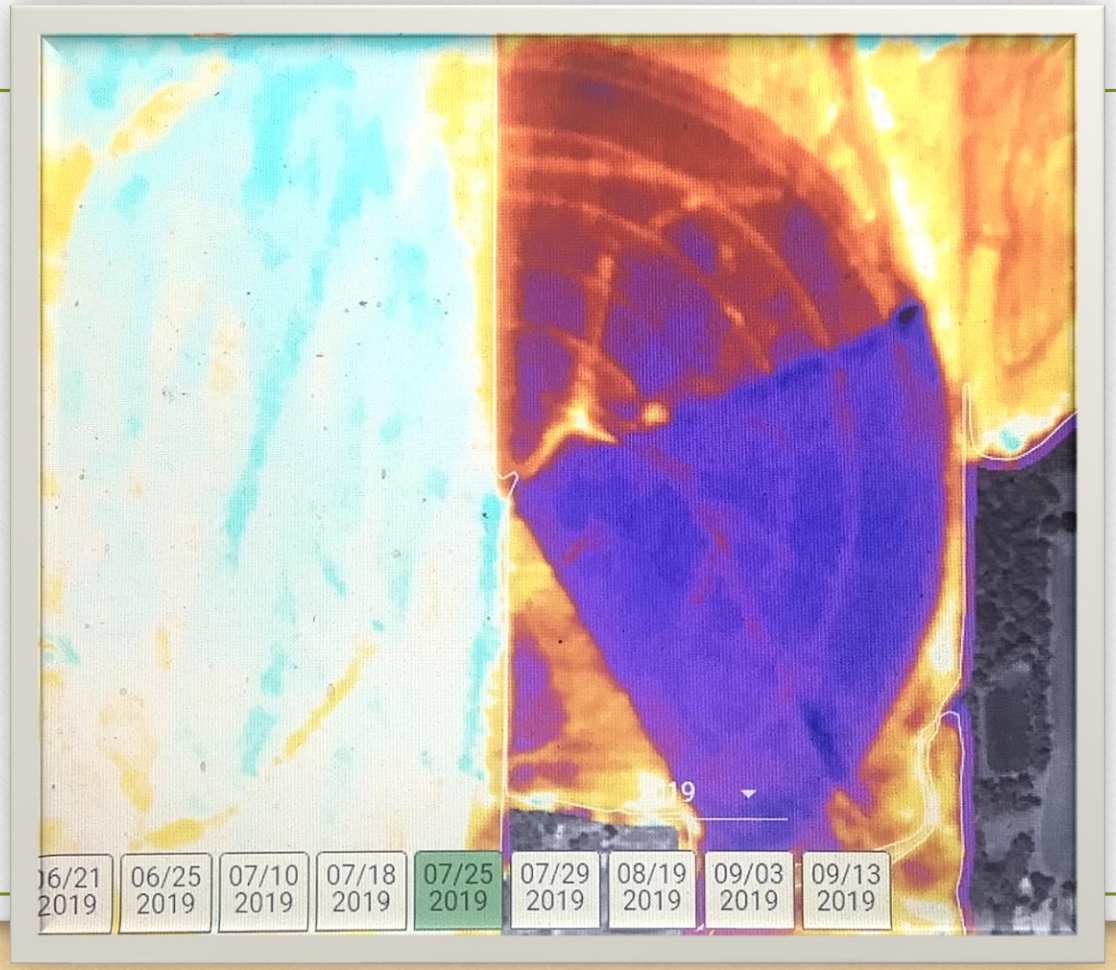
Yield by Pivot Span

	Type of nozzle	Yield
2nd to 3rd	20” center PDMI	173.31
3rd to 4th	20” center PDMI	161.31
4th to 5th	30” center PDMI	166.20
5th to 6th	20” center PDMI	161.15
6th to 7th	20” center PDMI	172.56

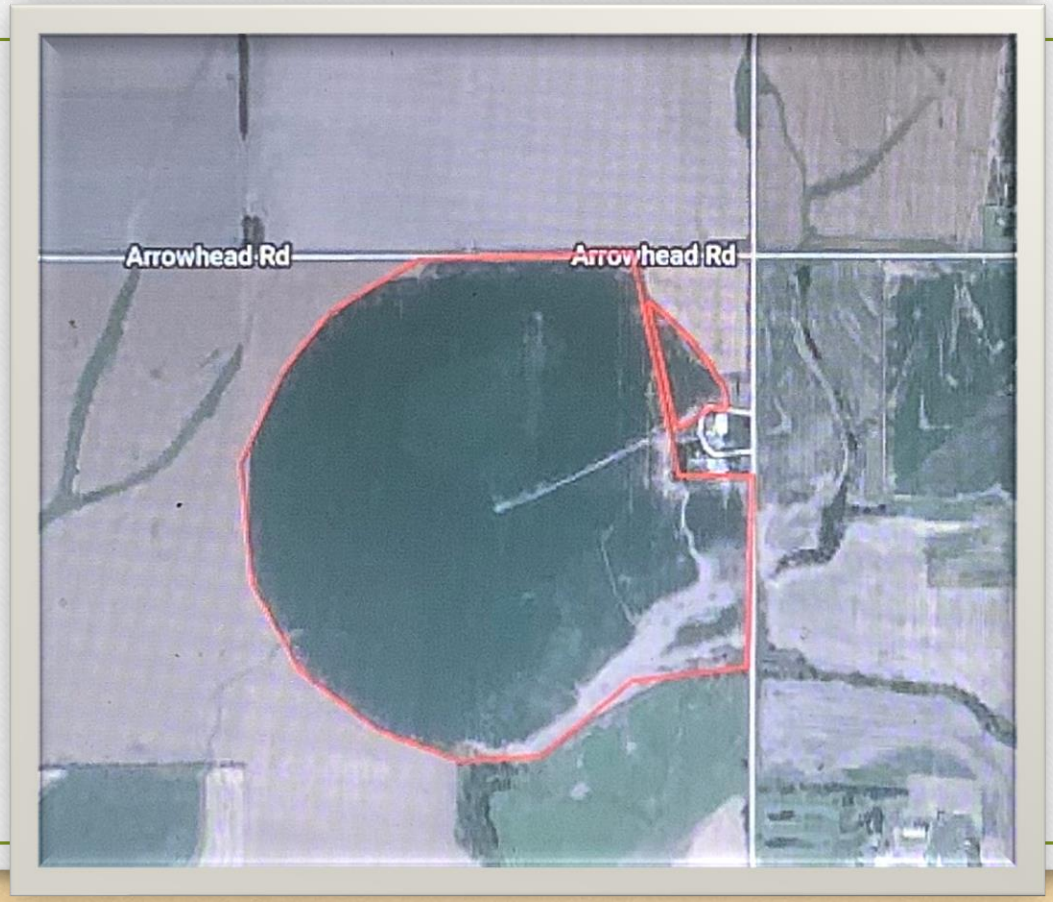
Zone No.	Mgmt Zone Name	Range	Zone Name	Data	Avg Moisture%	Avg Yield	HarvestAcres	Area
Zone 3rd span	2019 Field Trials	Min - Max	3rd span	None	17.70	173.31 bu/ac	0.63	0.72
Zone 7th span	2019 Field Trials	Min - Max	7th span	None	18.07	172.56 bu/ac	0.39	0.46
Zone 5th span	2019 Field Trials	Min - Max	5th span	None	16.89	166.20 bu/ac	0.66	0.76
Zone 4th span	2019 Field Trials	Min - Max	4th span	None	17.02	161.31 bu/ac	0.64	0.74
Zone 6th span	2019 Field Trials	Min - Max	6th span	None	18.09	161.15 bu/ac	0.65	0.76
Zone PMDI	2019 Field Trials	Min - Max	PMDI	None	16.83	136.27 bu/ac	39.62	45.57
Zone Flood	2019 Field Trials	Min - Max	Flood	None	16.25	79.65 bu/ac	5.59	6.43
Zone Dryland	2019 Field Trials	Min - Max	Dryland	None	16.83	34.23 bu/ac	22.92	26.36

PDMI Tape Running Across Crop R1 Stage

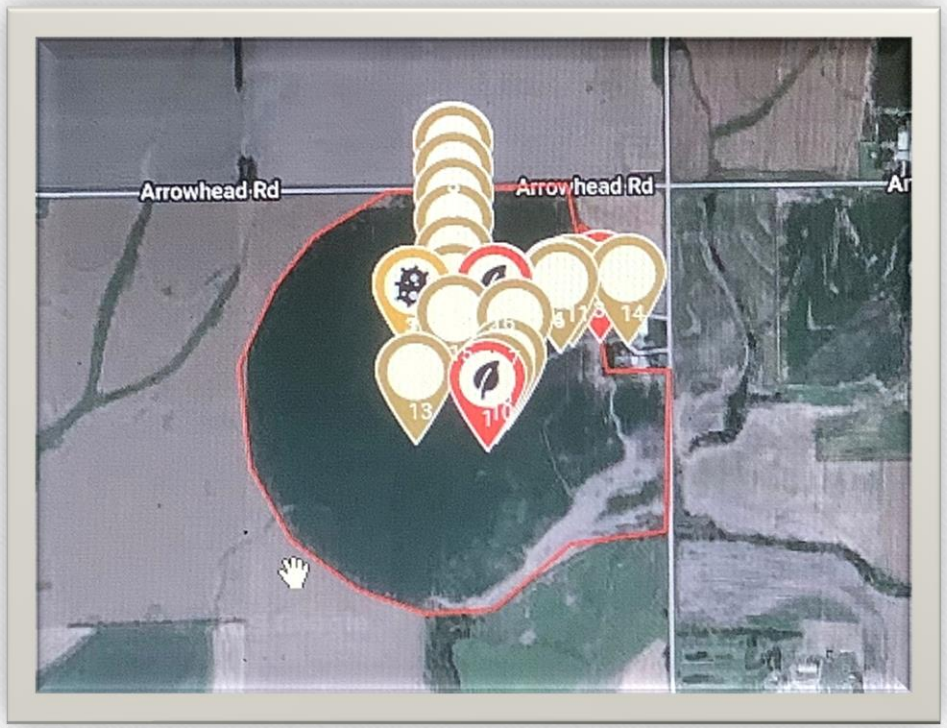
TerrAvion Thermal Imagery



R & E Goering
Water Tech Farm Pivot

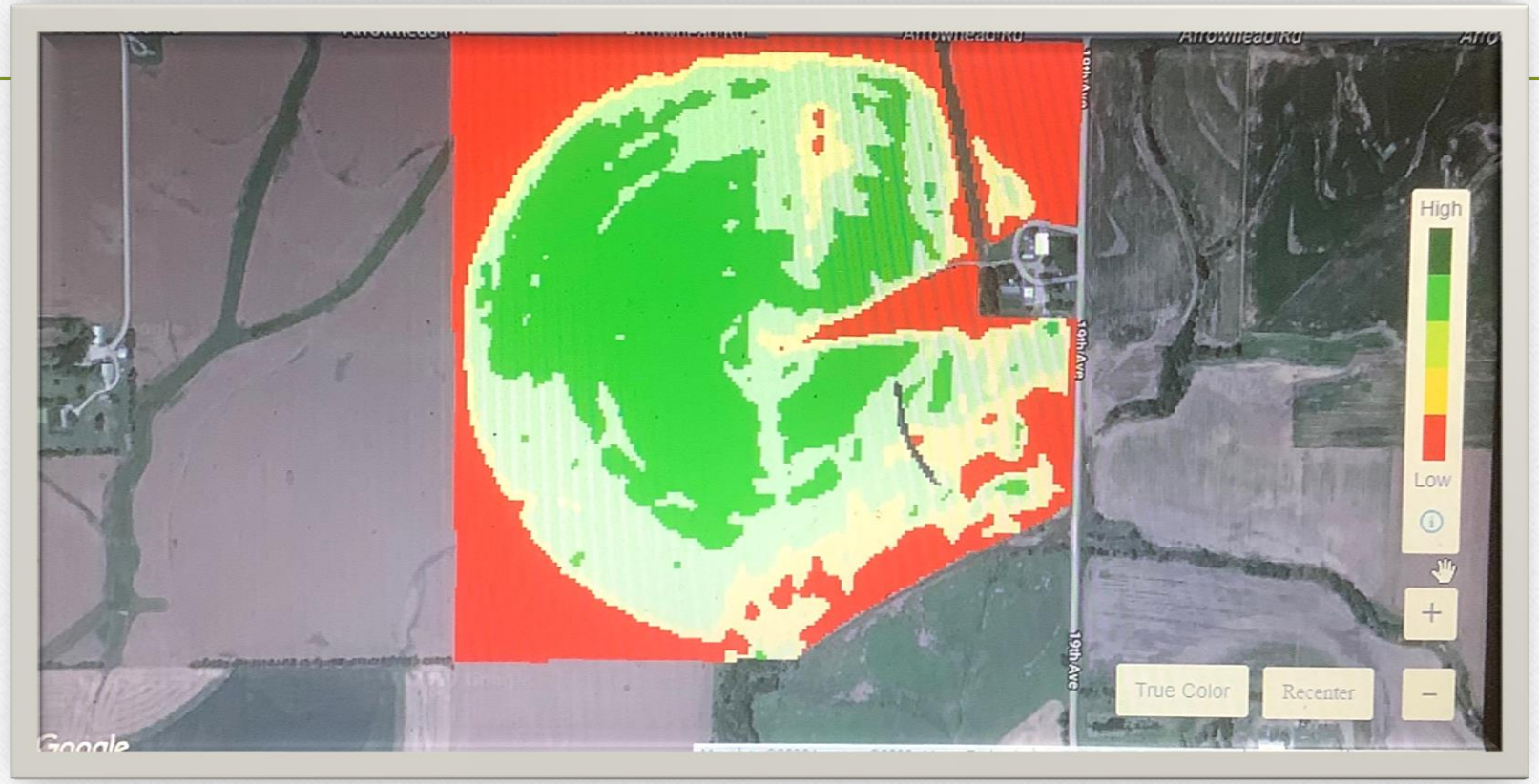


July 27th Moisture Readings by Segment

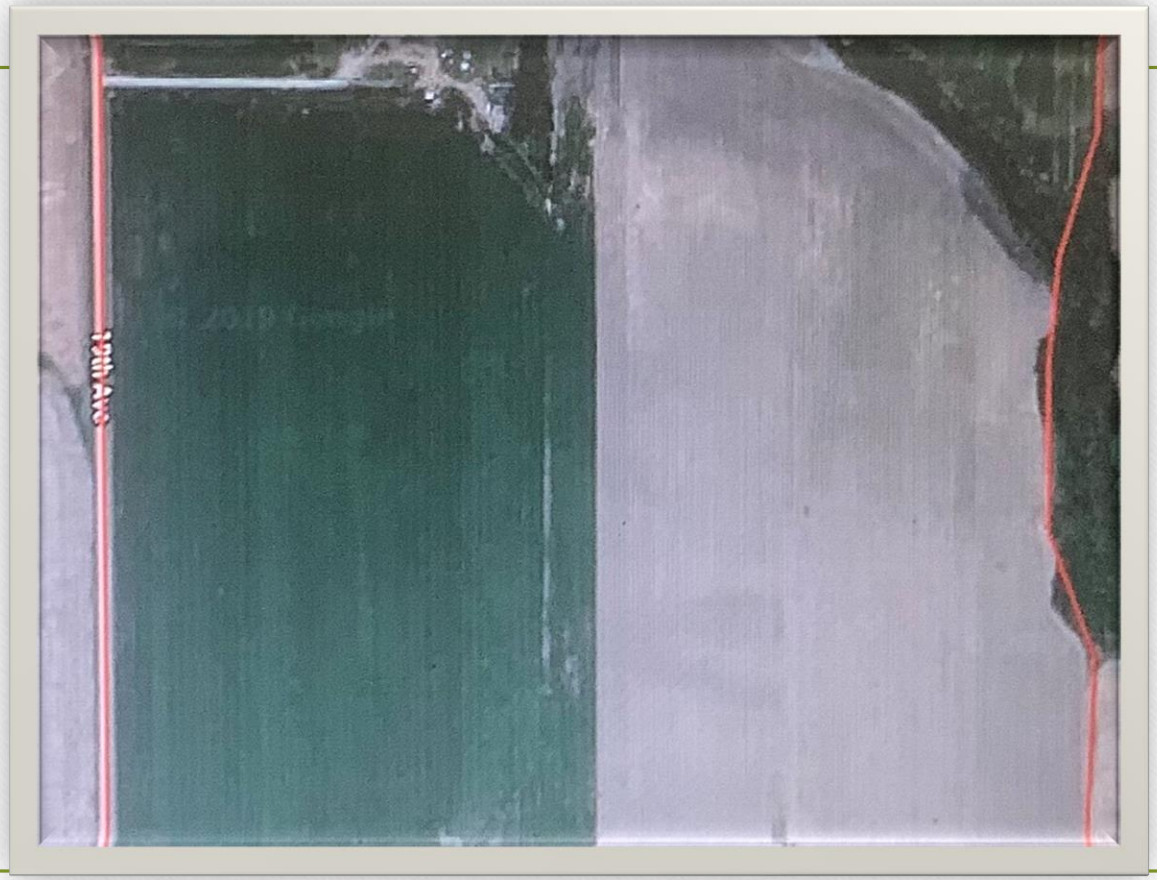


	Nozzle type	% soil moist.	Yield (Over all) 237
Pivot to 1st	PDMI @ 80%	80%	
1st to 2nd	Xiwobs @ 100%	80%	
2nd to 3rd	XIwobs @ 100%	77%	
3rd to 4th	Xiwobs @ 100%	83%	241
4th to 5th	Twisters@88 %	78%	240
5th to 6th	PDMI @ 87%	81%	238
6th to 7th	Bubblers @ 80%	78%	231

Aerial Imagery July 27th



Flickner Home Place
Sub-Surface Drip

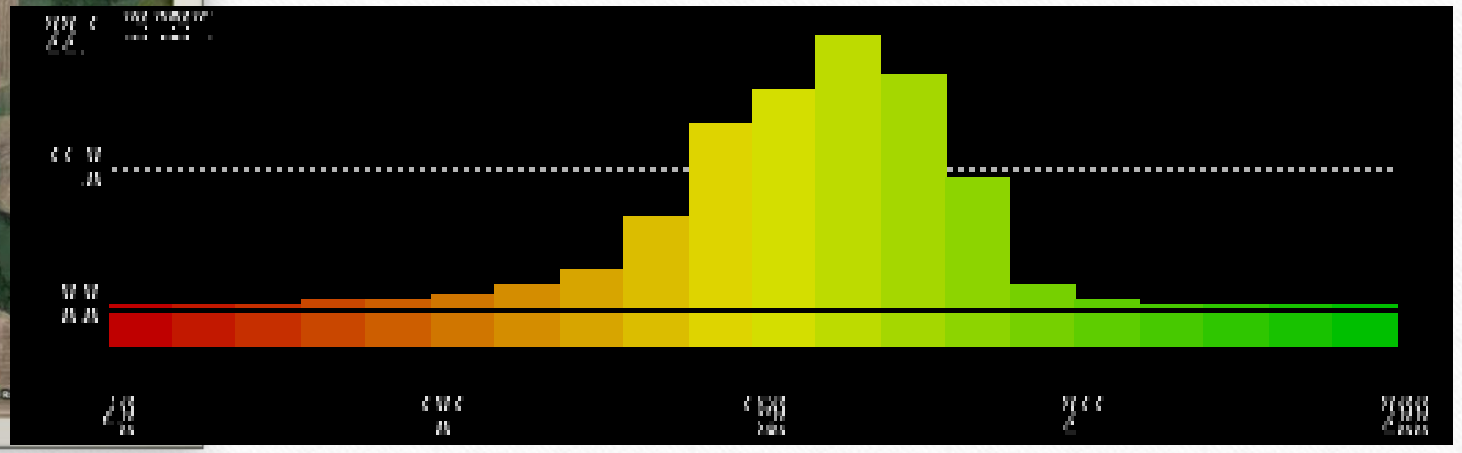


2019 Water Use Study Intention

- Compare water use based on a plant based moisture sensor (Phytech) West zone
- With our standard water management (Consultant moisture readings and KanSched 2 with 75% based ET) East zone

Yield Map
Flickner Home Place Drip

Minimum: 4.91 bu/ac **Maximum:** 346.19 bu/ac
Average: 167.01 bu/ac **Total:** 9571.3 bu



What Happened In 2019

- Different varieties
- Different planting dates
- Population study
- Ponding of water in areas on the east zones
- East zones water an area east of the home site where elevation drops and no pressure compensated emitters

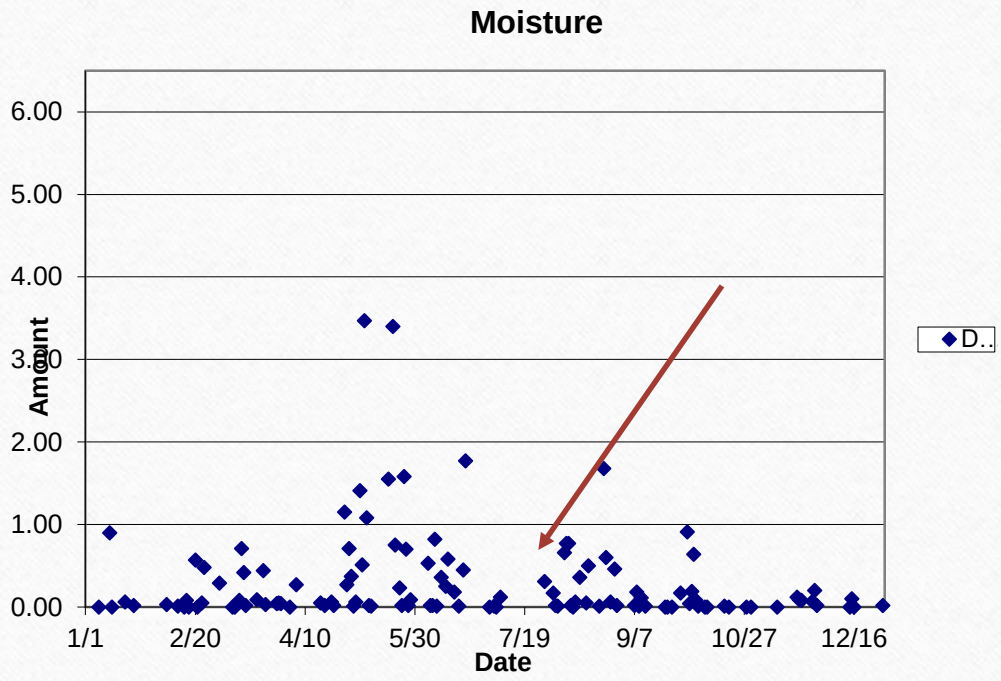
What Type of Moisture Sensor is Best?

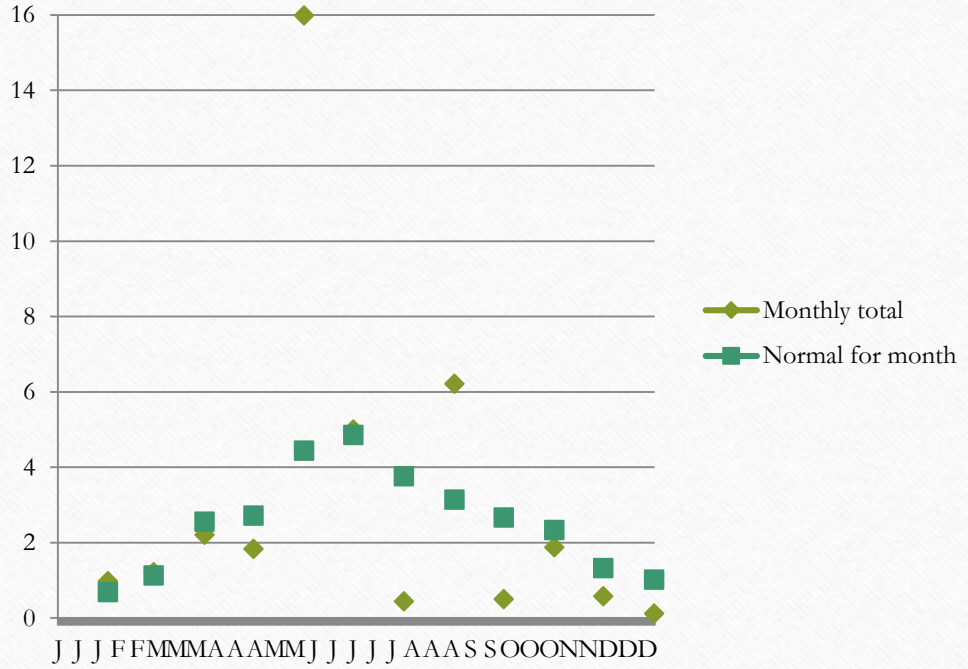
- Does it make a difference with pivot irrigation compared to sub-surface drip?
- Is a soil moisture probe better?
- Where do you place a soil moisture probe with subsurface drip?
- Is it important to have multiple depth readings with moisture probes with sub-surface drip?
- Is a plant based sensor better with sub-surface drip?

Locations of Phytech

AquaSpy moisture probe installed near the west Phytech

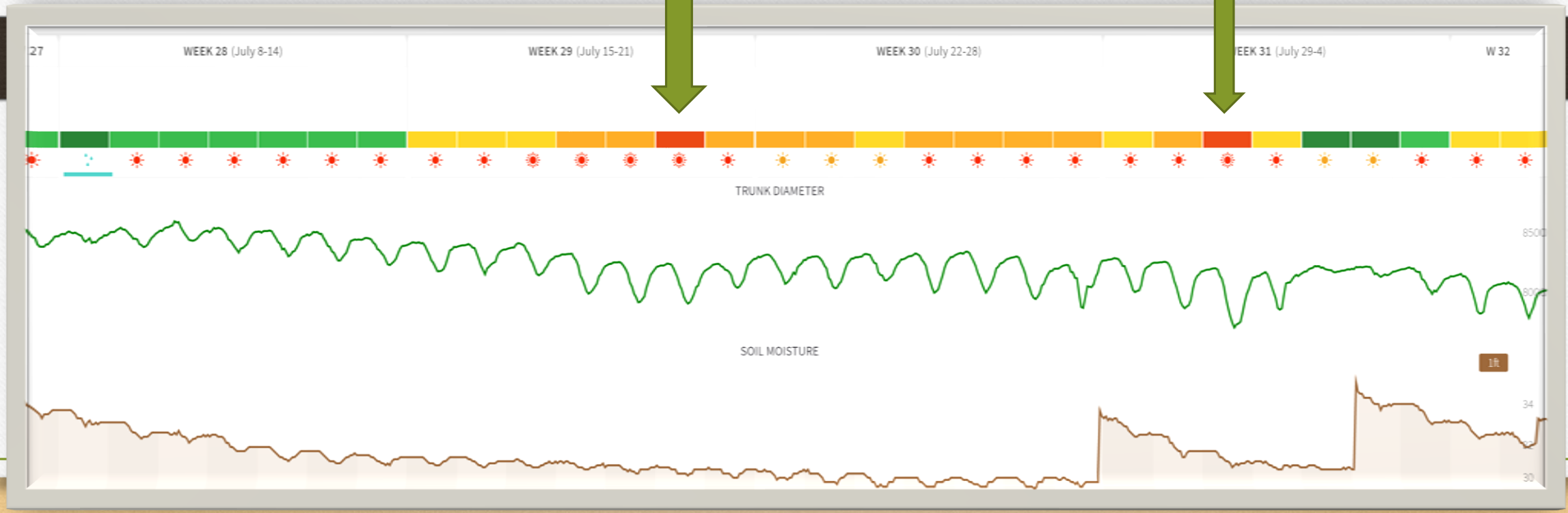
Rainfall in Hutch for the year





Phytech – Home Place SDI

July 20th ***July 31st***



AquaSpy/AgSpy – Moisture Probe

River Pivot

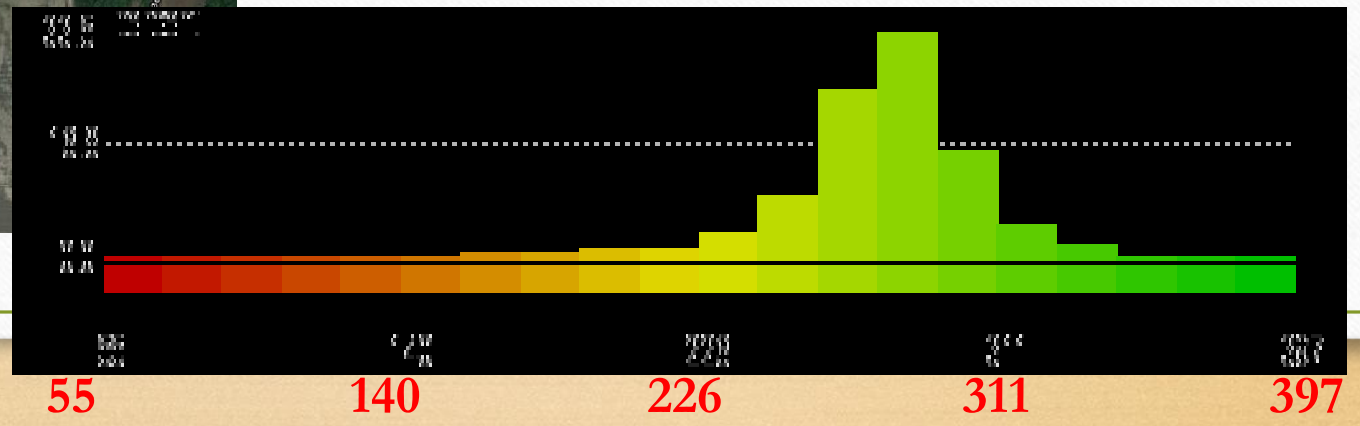
River 37
Sub-Surface Drip

Systems

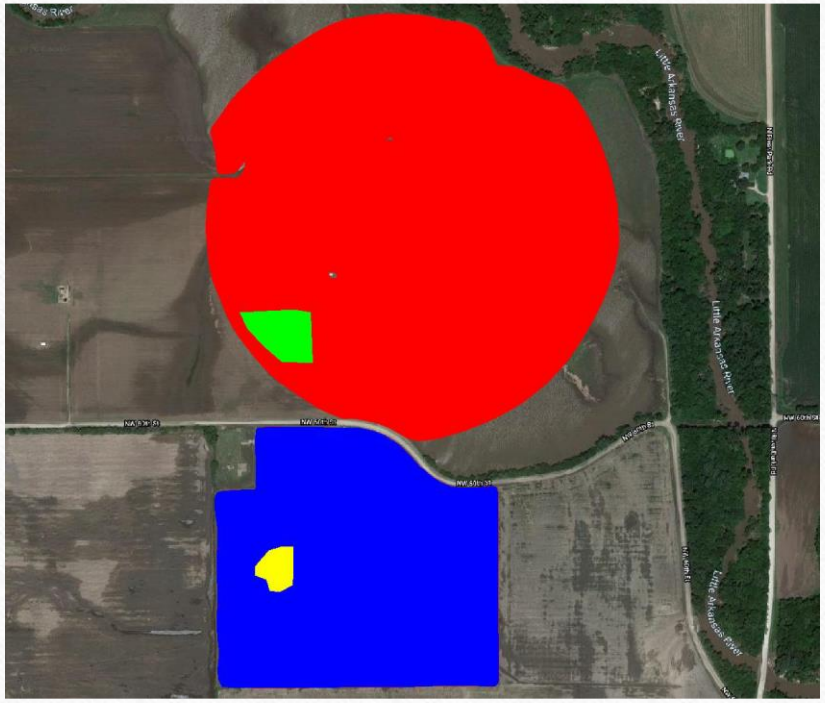
- Zimmatic 6 tower pivot has Senninger Xi wob black nozzles at 90” centers with 10# regulators and 6 1/2’ nozzle height. Nozzles alternating side to side across pivot frame. Inside 1st tower 180” spacing.
- Sub-surface drip at 40” centers Netafim tape with pressure compensated emitters.
- Well is based at a performance of 550 gal./minute for both systems.
- Pivot water use based on total water pumped minus water used through flow meter with data logger on Netafim control system.
- Sub-surface drip water use from water data logger on Netafim control system.
- Soil type Sandy Loam

2018 Corn

Minimum: 8.75 bu/ac **Maximum:** 422.92 bu/ac
Average: 279.54 bu/ac **Total:** 30665.5 bu



2018 Corn Polygon Area Of Each Field



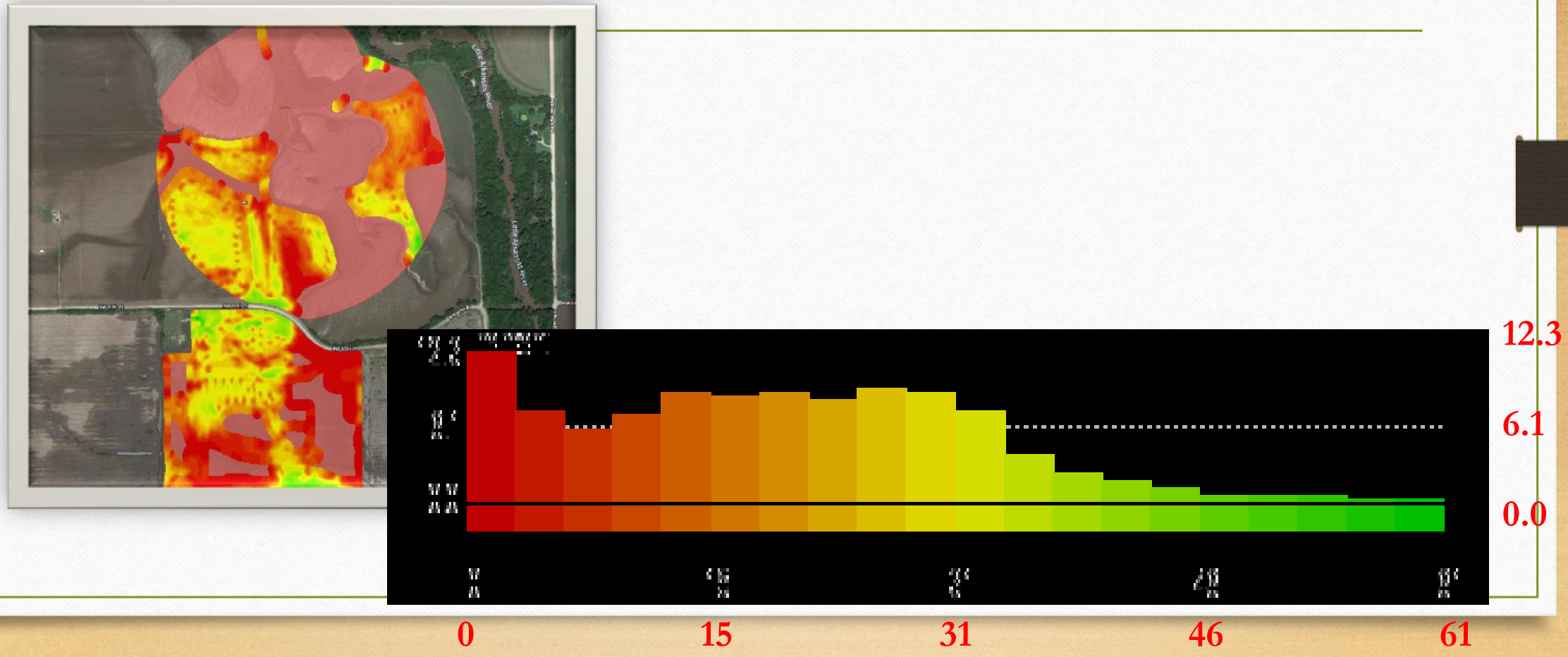
Zone	Avg yield	Area
Pivot YD zone	266.92 bu / acre	1.59 acres
Tape YD Zone	292.47 bu / acre	.73 acres
Pivot	276.59 bu / acre	74.35 acres
Tape	285.96 bu / acre	35.97 acres

2018 Corn Results

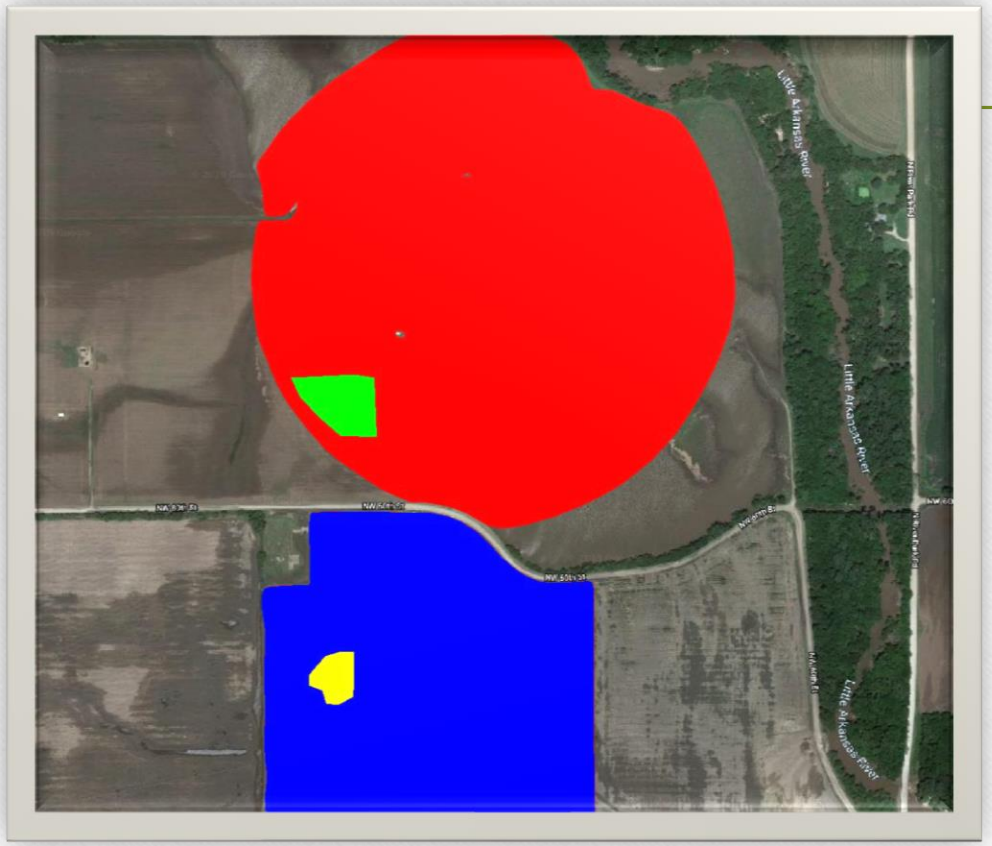
Field	Acres	Yield	Yield / acre	Total gal water	Gal water/ bu	Water Duty bu/acre inch	Increase in water use	Water use decrease
River 37	.73	213.5	292.47	170,119.71	796.81	34.08		82.91%
River Pivot	1.59	424.4	266.92	446,938.77	1053.1	25.78	120.62%	
River 37	35.8	10,237	285.96	8,342,857.2	814.93	33.32		82.91%
River Pivot	74.2	20,523	276.59	20,857,143	1016.28	26.72	120.62%	

Spring of 2019 Flooding

2019 Wheat



2019 Wheat Polygon Area of Each Field

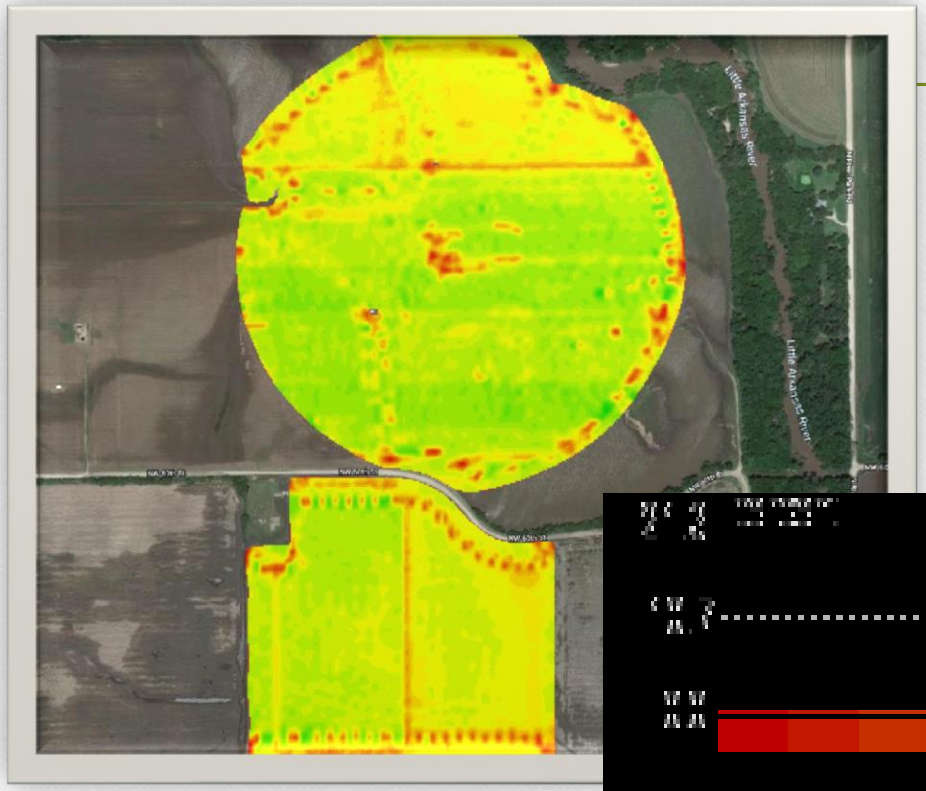


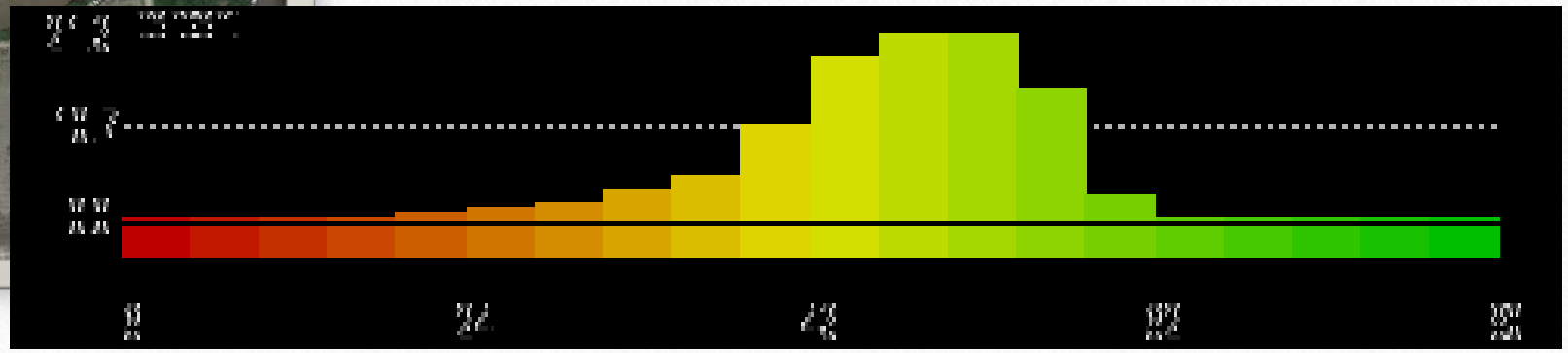
Zone	Avg yield	Area
Pivot YD Zone	32.67 bu / acre	1.59 acres
Tape YD Zone	32.13 bu / acre	.73 acres
Pivot	19.61 bu / acre	74.35 acres
Tape	18.89 bu / acre	35.97 acres

2019 Wheat Results

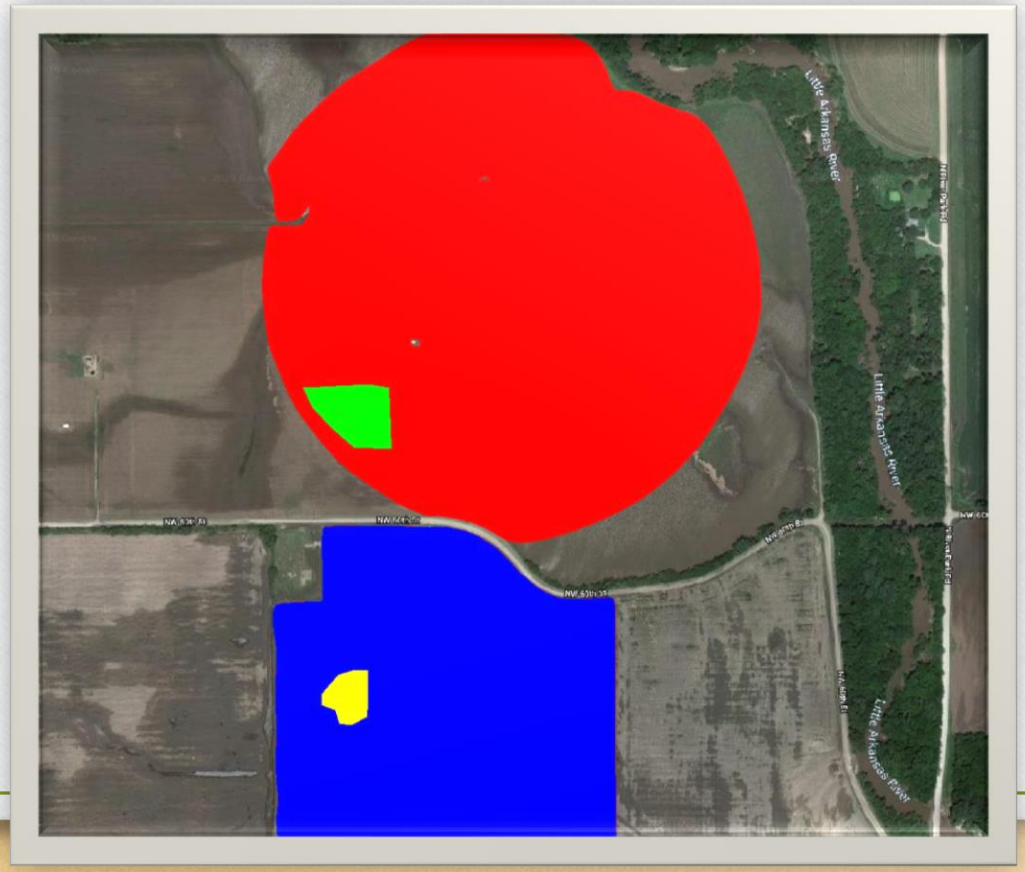
Field	Acres	Yield	Yield / acre	Total gal water	Gal water/ bu	Water Duty bu/acre inch
River 37	.73	23.45	32.13	0.00		
River Pivot	1.59	51.95	32.67	0.00		

2019 DC Soybeans





2019 DC Soybean Polygon Area of Each Field



Zone	Avg yield	Area
Pivot YD Zone	55.81 bu / acre	1.59 acres
Tape YD Zone	50.00 bu / acre	.73 acres
Pivot	48.02 bu / acre	74.35 acres
Tape	44.84 bu / acre	35.97 acres

2019 DC Soybeans Results

Field	Acres	Yield	Yield / acre	Total gal water	Gal water/ bu	Water Duty bu/acre inch	Increase in water use	Water use decrease
River 37	.73	36.5	50.00	125,195	3,430.00	7.92		69.29%
River Pivot	1.59	88.74	55.81	393,525	4,434.58	6.12	144.31%	
River 37 total	35.97	1612.9	44.84	6,168,855	3,824.70	7.10		69.29%
River Pvt total	74.35	3570.3	48.02	18,401,625	5,154.08	5.27	144.31%	

Questions?

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