

2019 WATER TECH FINDINGS FLICKNER AND GOERING FARMS

- GOAL IS TO IMPROVE WATER DUTY : BUSHEL/ACRE PER INCH OF IRRIGATION
 - AND NOT REDUCE YIELDS, MAYBE EVEN INCREASE THEM
 - AND IMPROVE INPUT EFFICIENCY OF FERTILIZERS ETC.
-
- 29 INCHES OF RAIN CREATED COMPACTION AND LOTS OF RUNOFF
 - CROP NEEDS 25
 - IRRIGATION WAS 5-7 INCHES BOTH FIELDS

AN AERIAL VIEW OF WATER DUTY 2019

- PAWNEE ROCK AREA 20" RAIN

- 8.9" IRRIGATION 235 B/A 26.4 WATER DUTY

- 13.7" 205 B/A 14.9

- 9.1" 230 B/A 25.2

- NORTH OF GREENSBURG

- 13.2" 240 B/A 18.2

- MACKSVILLE AREA

- 12" 232 B/A 19.3

- 15" 230 B/A 15.3

- 15" 198 B/A 13.2

ZOOMING IN WATER DUTY

- RAINFALL BUHLER-MOUNDRIDGE 27-29"
- FLICKNER MDI PIVOT 6.3" IRRIGATION 190 B/A 30.1 WATER DUTY
- CORNER PIVOT 10" 226 B/A 22.6
- GOERING HOME 6.8/5.8/5.4" 245 PLOTS 36/42/45



HOW TO GROW MORE WITH LESS

- IMPROVE USE OF RAINFALL TO MEET CROP ET
 - ACCURATE REAL TIME RAIN SENSORS
 - MODIFY IRRIGATIONS WHEN RAIN OCCURS DURING IRRIGATION IE SPLITS TO RE-ESTABLISH LAG
 - IMPROVE SURFACE STORAGE AND INFILTRATION
 - MONITOR DEEP MOISTURE BEFORE PLANTING
- 

APPLY THE IRRIGATION EVENLY

- MAKE SURE DESIGN FLOW AND PRESSURES ARE PROVIDED
- LOW PRESSURE OPERATION OCCURS ON ABOUT 30% OF PIVOTS IN KANSAS
- MONITOR END TOWER PRESSURE WITH TECHNOLOGY LIKE AGSENSE, FIELDNET
- HAVE A COPY OF SPRINKLER PACKAGE CHART. DETAILS MAKE A DIFFERENCE

MAKE SYSTEM PERFORM BETTER

- FLICKNER HAD PUMP IMPELLER ADJUSTMENT AND VFD CONFIGURATION ADJUSTMENTS
- TO IMPROVE PRESSURES AT END TOWER AND INCREASE EFFICIENCY
- AND REDUCE ENERGY KWDEMAND TO KEEP BPU COSTS DOWN BILLING KW \leq 30

- GOERING HAD 2018 LOW PRESSURE PROBLEMS
- ADJUSTED IMPELLERS TO MAKE IT MORE EFFICIENT AND PRODUCE MORE PRESSURE
- REDUCED TOTAL PACKAGE FLOW RATE TO 675 FROM 750 BY 3 SPAN TREATMENTS



MONITOR SOIL MOISTURE

- INSTALLED SENSORS LIKE AQUASPY, SERVITECH, TRELIS..ETC
 - PLANT MONITOR SENSORS LIKE PYTECH
 - NON-INVASIVE SENSORS LIKE AUTONOMOUS PIVOT
- 



MONITOR LOCAL WEATHER USE CROP WATER USE MODEL KANSCHED

- GMD WEATHER STATIONS
 - ON FIELD WEATHER STATION LIKE FARMERS EDGE

 - CALCULATE CROP ET FROM ET GRASS OR ET ALFALFA
 - NEED STAGE OF GROWTH, SOIL TYPE, INPUT IRRIGATIONS AND RAINFALL
- 



TAKE AERIAL PICTURES

- TO LOOK FOR PATTERNS IN GROWTH AND LEARN FROM DIFFERENCES
- CERES AND TERRAVION ARE GOOD EXAMPLES



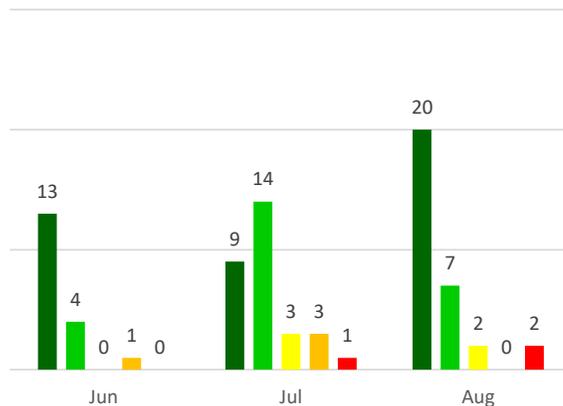
WHAT IS SUFFICIENT SYSTEM CAPACITY, GPM/ACRE

- 3, 4, 5, 6, 7 OR MORE?
- FIELDS WITH MINIMAL GPM/ACRE = BETTER WATER DUTY ???
- 4-5 MIGHT BE ENOUGH IF DECENT SOIL TYPE
- FLICKNER MDI 450 GPM/113 ACRES = 4.0 AND A WINDSHIELD WIPER 18 HR FC
- GOERING HOME 750/675/600 ON 3 TREATMENT SPANS
 - WELL IS SHARED BY 80 ACRE SDI ACROSS THE ROAD
 - JULY IRRIGATION CYCLE WAS 57 HOURS CORN (118 ACRE) 45 HOURS SDI
 - EVERY 102 HOURS JUST OVER 4 DAYS CYCLE REPEATED ALWAYS ON
 - 0.79" ON CORN THEN 0.62" ON SDI
 - EFFECTIVE PIVOT FULL CIRCLE = 445 GPM ALWAYS ON

FlicknerFarms DAVE'S BIG PIVOT Corn
Season 2019



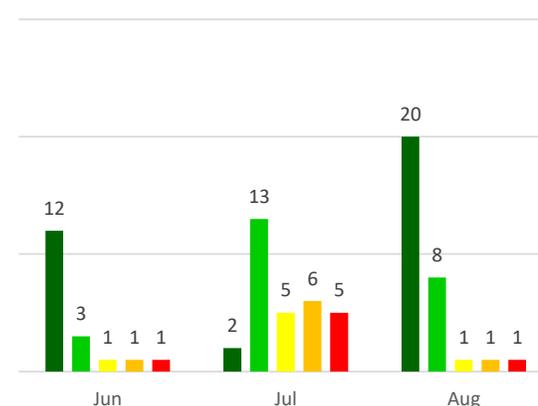
MONTHLY PLANT STATUS



NE(R)

DAVE'S BIG PIVOT Corn(R)

MONTHLY PLANT STATUS



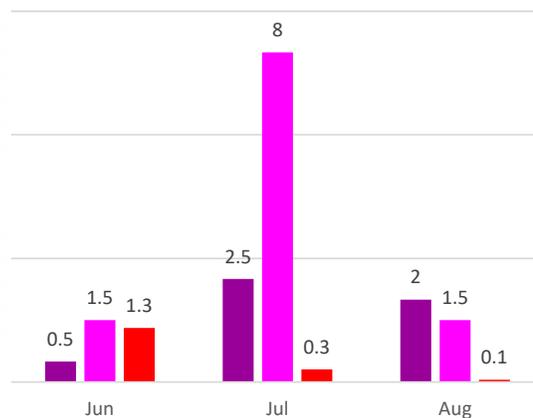
SE(R)

DAVE'S BIG PIVOT Corn(R)

PRE-VT DATE: 07/07/2019

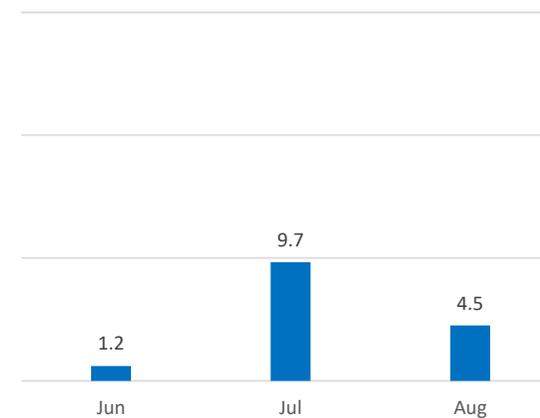
MAP DATE: 07/24/2019, YIELD POTENTIAL: 185 bu/ac

MONTHLY STRESS DAYS
LOCATION VS. REGIONAL



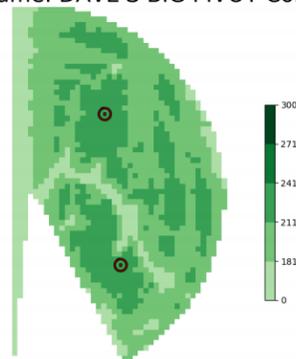
■ NE(R) ■ SE(R) ■ Region

MONTHLY IRRIGATION
DAYS OF OPERATION

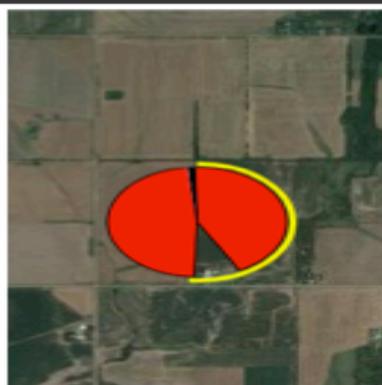


DAVE'S BIG PIVOT Corn(R)

Plot name: DAVE'S BIG PIVOT Corn



Ray Flickner (105677) Version: 48, FieldCommander (AC, Enhanced, Verizon)



Imagery ©2019, Landsat / Copernicus, Maxar Technologies, USDA Farm Service Agency

Pivot Info

Last Reading: 11/20/2019 08:38:08
 Current Cycle: 15 d, 8 h, 2 m
 Full Revolution:
 Remaining Revolution:
 Est. Gallons Used YTD: 12090773
 Yearly Allotment: 0
 Est. Acre Inches YTD: 4.55

Status: OFF / IDLE / 356.3°
 Auto Restart: OFF
 Estimated Rate: 0 in
 End Gun 1: OFF
 End Gun 2: OFF
 Speed Override: ON

Notes

Last 2 Commands

Command	Time	Ack
Stop	09/27/19 10:18:03	Yes
Stop	09/25/19 13:21:24	Yes

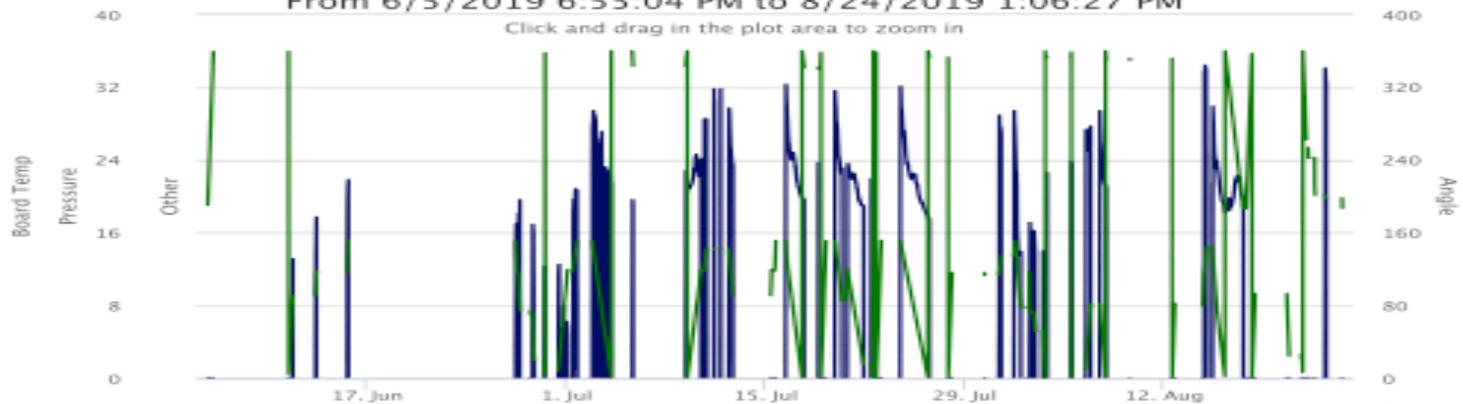
Timed Commands - Clear All

Command	Trigger Time
---------	--------------

356.3° 100% Opsi
 WAAS T₁₈ 4.03

- CMD
- Chart
- Config
- Field Info
- Forms
- Readings
- CMD History
- Reports
- Unit History

Ray Flickner
 From 6/5/2019 6:55:04 PM to 8/24/2019 1:06:27 PM



Battery Pressure Angle Signal Strength

1 day 2 days 1 week 1 month
 From 06/01/2019 To mm/dd/yyyy



Imagery ©2019, Landsat / Copernicus, Maxar Technologies, USDA Farm Service Agency

Pivot Info

Last Reading: 12/05/2019 16:42:38
 Current Cycle: 39 d, 23 h, 34 m
 Full Revolution:
 Remaining Revolution:
 Est. Gallons Used YTD: 24250597
 Yearly Allotment: 0
 Est. Acre Inches YTD: 7.41

Status: IDLE / IDLE / 226.9°
 Auto Restart: OFF
 Estimated Rate: 0 in
 End Gun 1: ON | 2: OFF

Notes

Active Commands
 End Gun 1 Table 2

Last Note
 04/19/19 12:39:03
 NE park out of headlands - 23 deg

Last 2 Commands

Command	Time	Ack
Stop	10/25/19 12:29:23	Yes
FWD	10/25/19 12:26:56	Yes

Timed Commands - Clear All

Command	Trigger Time
---------	--------------

226.9° 100% Opsi
 WAAS T_{all} 26 4.14

- CMD
- Chart**
- Config
- Field Info
- Forms
- Readings
- CMD History
- Reports
- Unit History

Home system
 From 6/1/2019 12:15:36 AM to 8/31/2019 11:56:50 PM



Battery Pressure Angle Signal Strength

1 day 2 days 1 week 1 month

From: 06/01/2019 To: mm/dd/yyyy



ServiTech Bridge



Ryan Goering - Home Qtr. - Corn

Komet Twisters 4.5' spacing and 4' height @ 90%



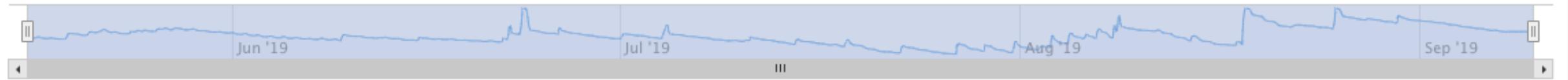
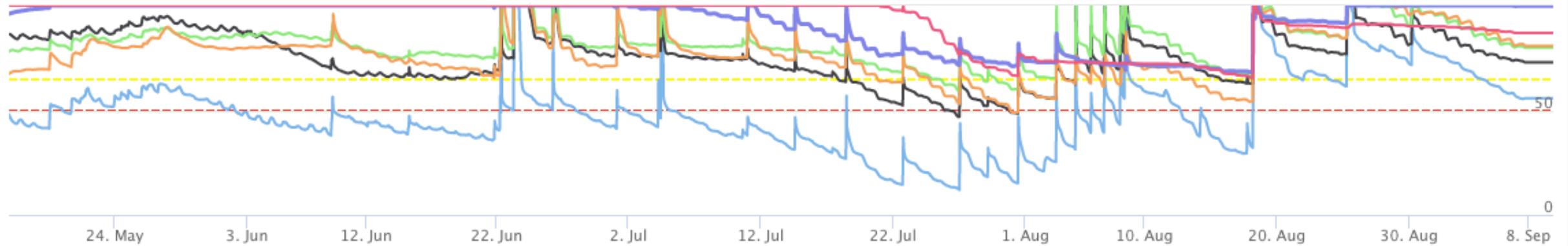
Soil Moisture Graph

Ryan Goering - Home Qtr. - Corn -- Komet Twisters 4.5' spacing and 4' height @ 90%



Zoom YTD 3 m 1 m 2 w 1 w 1 d

From May 16, 2019 To Sep 9, 2019



— 4" — 8" — 12" — 16" — 24" — 32" - - Stress Point - - Action Point — Rain Events — Pivot Events