Flickner Innovation Farm

2.75 miles west of Moundridge, Kansas on Arrowhead Avenue

https://www.kcare.k-state.edu/irrigation-and-ogallala/Flickner_Farm.html

32,552 – 1979
40,699 – 1992

4,537 – 1955
29,958 – 1977
4,894 – 1955

37,213 – 1984
30,413 (1977); 35,695 (1981)

37,213 – 1984

47,591 – 2010
SDI installed 2004; 154 acres; 500gpm & 200gpm

SDI installed 2005; 71 acres

SDI installed 2001; 220 acres; 800gpm & 600gpm

SDI installed 2006; 80 acres; 650gpm

SDI installed 2010; 40 acres

PMDI installed 2019 on a 1996 Valley (3 span) & 2005 Reinke (4 span); 123 acres; 450gpm

Rotor 4 span pivot; 33 acres

SDI installed 2015; 78 acres; 650gpm

SDI on 40” installed 2015; 40 acres
What are we dealing with?

- Topography (>25’ change)
- Sand pits
- Creek & slough
- 3 muni wells (quality concerns)
- Declining aquifer
Types of Irrigation
- Poly-pipe flood
- PMDI
- Rotor pivot
- Natural flood
- SDI on 60” and 40”
Mobile drip

- GMD 3 study
- Mobile drip on inside 3 spans with bubblers on the rest of the system
- Above average rainfall
- Expected difference in yields was not seen
- Water efficiency of inner spans improved by 38%
NutriSolutions

By WinField United

Tissue Sampling = 6/10/2019 @ V5

Ray Flickner

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nitrogen</td>
<td>4.47% / Adequate</td>
</tr>
<tr>
<td>Manganese</td>
<td>61ppm / Mn-Deficient</td>
</tr>
<tr>
<td>Phosphorus</td>
<td>0.32% / P-Responsive</td>
</tr>
<tr>
<td>Copper</td>
<td>6ppm / Cu-Responsive</td>
</tr>
<tr>
<td>Potassium</td>
<td>4.4% / K Adequate</td>
</tr>
<tr>
<td>Sulfur</td>
<td>0.28% / S-Adequate</td>
</tr>
<tr>
<td>Boron</td>
<td>6ppm / B-Deficient</td>
</tr>
<tr>
<td>Zinc</td>
<td>22ppm / Zn-Deficient</td>
</tr>
<tr>
<td>Magnesium</td>
<td>0.13% / Mg-Deficient</td>
</tr>
<tr>
<td>Calcium</td>
<td>0.47% / Ca-Adequate</td>
</tr>
</tbody>
</table>

Crop: CORN
Stage: V5
Sample ID: NS999049353
Lab: Servi-Tech

Farm Name: SW4.20 21 2W
Field Name: E2 SW4 20 21 2W
Sample Name: Sample 1
Submitter Name: Ashleigh Baker
Report Date: 06/12/2019
Sample Date: 06/10/2019

GPS Latitude: 38.205292
GPS Longitude: -97.568374
MID KANSAS COOP ASSN-MOUNDRIDGE
307 W COLE ST, PO BOX D, MOUNDRIDGE, KS 67107-7533 US,
Kansas,

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Cu - 6ppm
Mn - 61ppm
B - 6ppm
Zn - 22ppm
Ca - 0.47%
K - 4.4%
P - 0.32%
Mg - 0.13%
S - 0.28%
Tissue Sampling = 6/25/2019 @ V10

NutriSolutions
By Winfield
UNITED

Ray Flicke

Crop: CORN
Stage: V10
Sample ID: NS999049376
Lab: Servi-Tech

GPS Latitude: 38.205292
GPS Longitude: -97.568374
MID KANSAS COOP ASSN-MOUNDRIDGE
307 W COLE ST, PO BOX D, MOUNDRIDGE, KS
67107-7533 US, Kansas,

Nitrogen
3.66% / N-Deficient

Manganese
50ppm / Mn-Deficient

Phosphorus
0.32% / P-Responsive

Copper
8ppm / Cu-Adequate

Potassium
2.64% / K-Responsive

Sulfur
0.21% / S-Deficient

Boron
8ppm / B-Adequate

Zinc
20ppm / Zn-Deficient

Magnesium
0.1% / Mg-Deficient

Calcium
0.39% / Ca-Adequate

Ca - 0.39%
Zn - 20ppm
Mn - 50ppm
B - 8ppm
Cu - 8ppm
S - 0.21%
Mg - 0.1%
P - 0.32%
K - 2.64%
N - 3.66%

Note: The closer results are to the center of the graph, the more deficient the nutrient.
Ways We Monitored Crop Stress

Plant Based

Ground Moisture

Imagery
Phytech – irrigation events; plant health
AquaSpy/AgSpy – moisture probe
AquaSpy – moisture levels at 4”, 20”, 48”; growth stages
American Robotics

—

UAS/drone in a box
Ability to take stand count...
Drone Flights

- E/2 of SW/4 SECTION 20 - CORN
TerrAvion – fixed wing flyovers
Imagery comparison = R7, ClimateView, Terravion, American Robotics