



Texas High Plains Initiative for Innovative Irrigation Management and Conservation

CIG 11-184

(200-12 Reduced Irrigation on Corn)

2010-2014



United States Department of Agriculture
Natural Resources Conservation Service





Leon New,
Project Lead
Irrigation Engineer

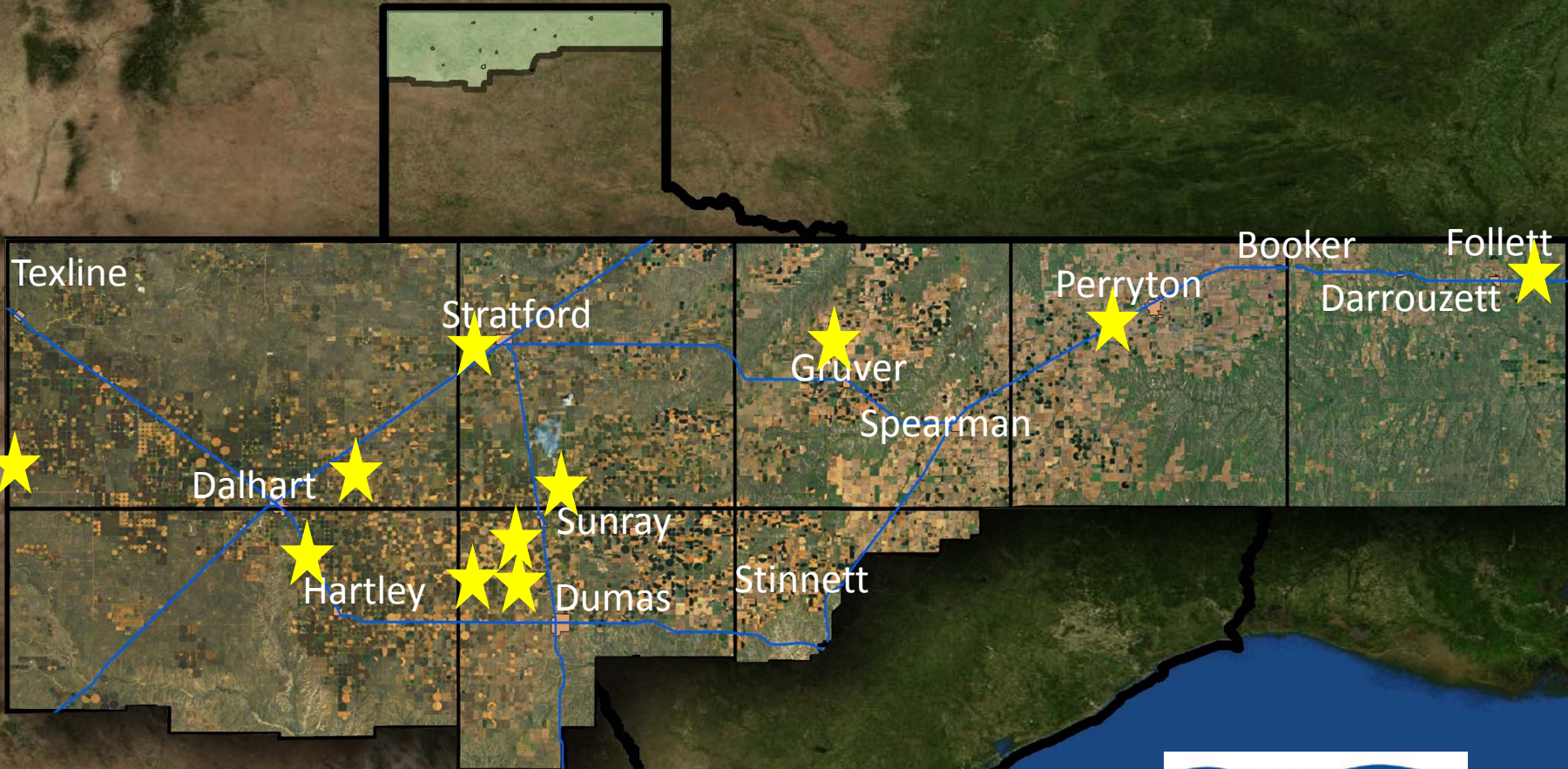


Harold Grall,
Cooperator
Dir. Moore County



Danny Krienke
Cooperator
Dir. Ochiltree County

New, Grall and Krienke have participated in the 200-12 Reduced Irrigation on Corn Demonstrations from the beginning in 2010



**“200-12 Reduced Irrigation on
Corn Demonstrations”**

Why and How?

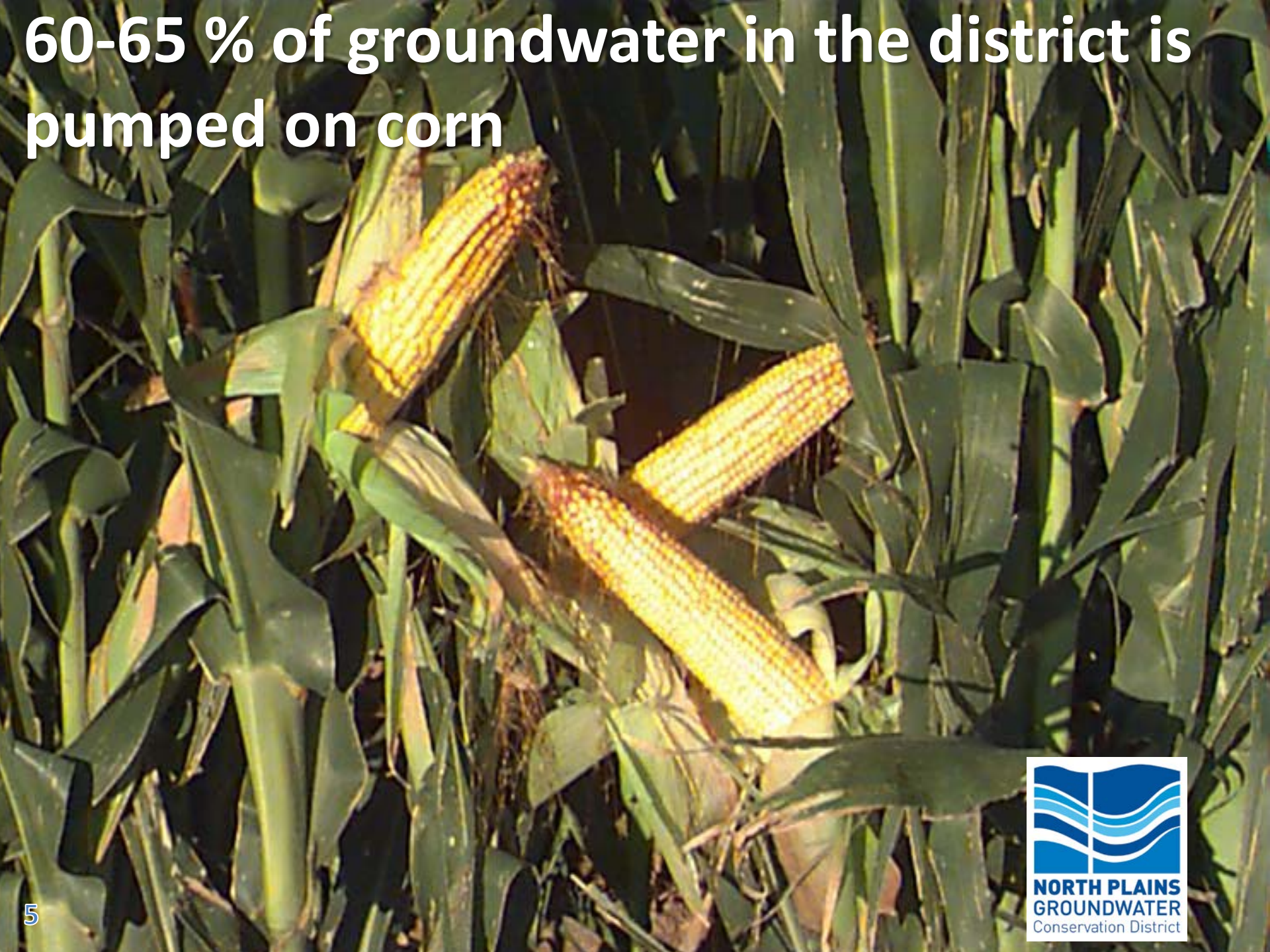


200-12 Project Acres & Cooperators

• <u>Year</u>	<u>No. Cooperators</u>	<u>Acres</u>	<u>Counties</u>
• 2010	3	270	3
• 2011	9	682	6
• 2012	11	2152	7
• 2013	11	1672	7
• 2014	<u>10</u>	1471	<u>7</u>
• Total	44	6247	8



**60-65 % of groundwater in the district is
pumped on corn**



200-12 Based on

12" Irrigation,
8" Rain,
6" Soil water,



Crop
Residue
&
Strip
Or
No Till
Are
Essential



Conservation Tillage



LEPA



Tracking Water

- PivoTrac Website
- Pivot Alert
- Soil Moisture Probe to 60"
- Soil Moisture Gypsum Blocks, @
1, 2, 3, 4 & 5'
- Water Meter
- Rain Gauge



Soil Probes



(4878) TX-NPGCD (3,4,5 GPM) - WCC East - 3 GPM-2015

Corn

Days to Empty
N/A

Last Irrigation
08/17/2015
Depth: 40"

Root Depth
36"



As Of: 8/17/15 2:47 PM



- 4"
- 8"
- 12"
- 16"
- 20"
- 24"
- 28"
- 32"
- 36"
- 40"
- 44"
- 48"
- 52"
- 56"
- 60"

(4878) TX-NPGCD (3,4,5 GPM) - WCC East - 3 GPM-2015 Corn

08/10/2015
Irrigation/rain auto-detected 08/10/2015 (60")

08/03/2015
Irrigation/rain auto-detected 08/03/2015 (60")

08/03/2015
Irrigation/rain auto-detected 08/03/2015 (56")

08/03/2015
Irrigation/rain auto-detected 08/03/2015 (16")

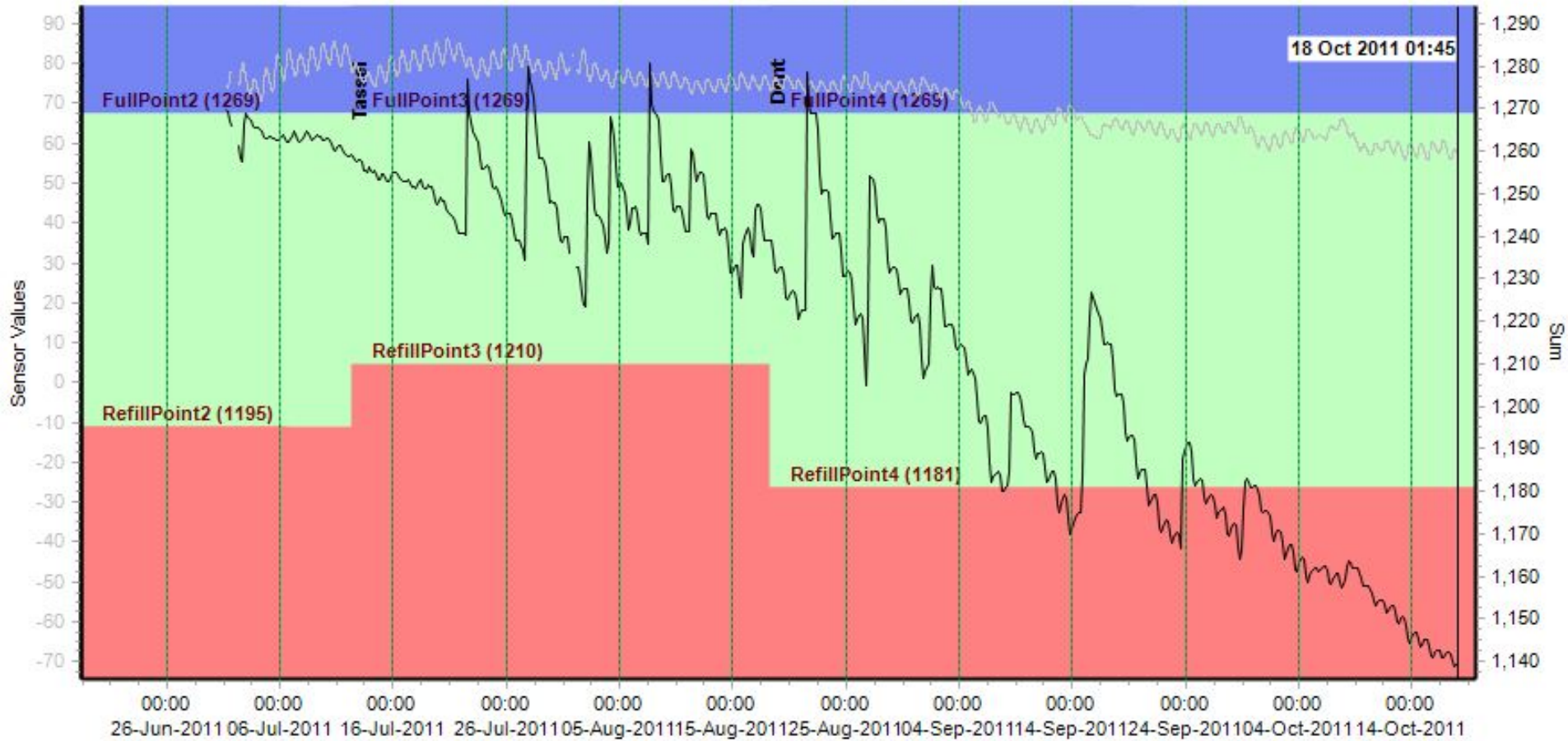
07/31/2015

Add New Event

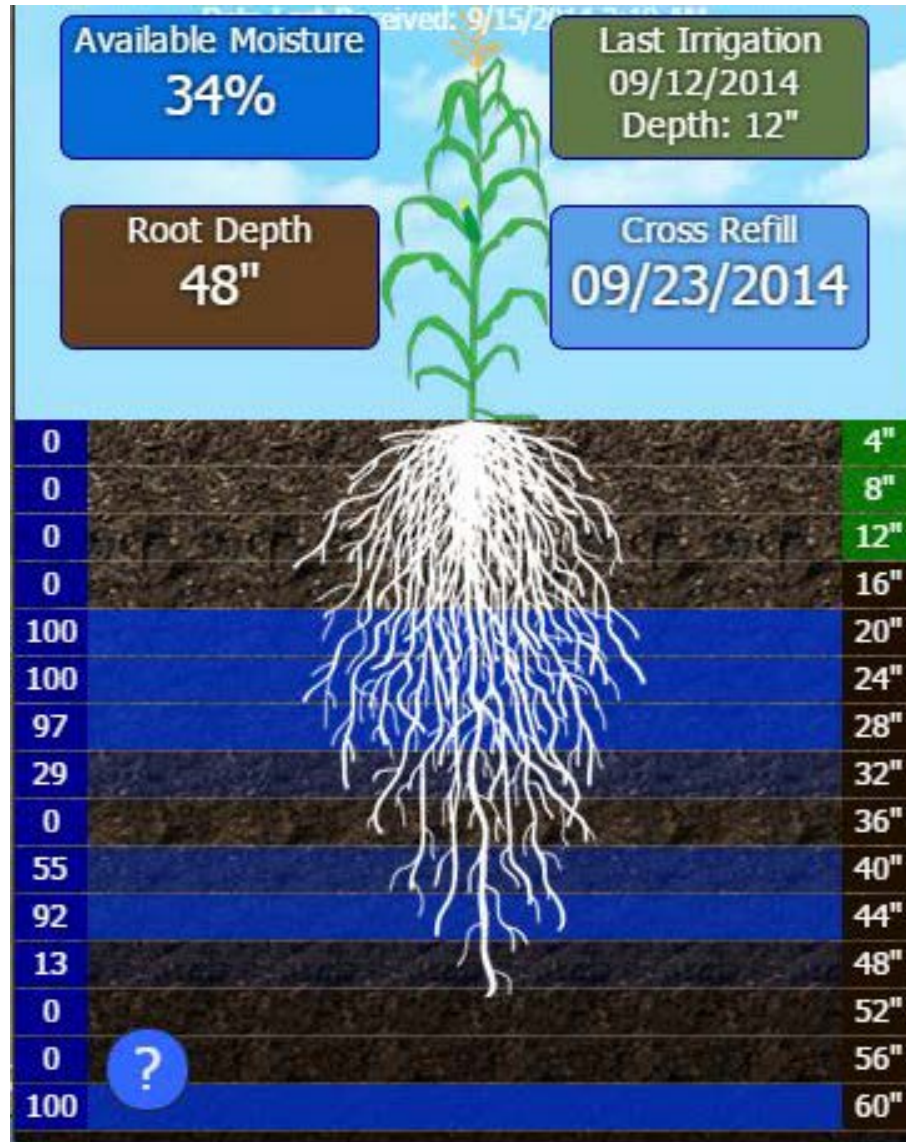


Harold Grall Soil Moisture Summary

TX-NPGCD-Grall 200/12-Com



Case Study #1

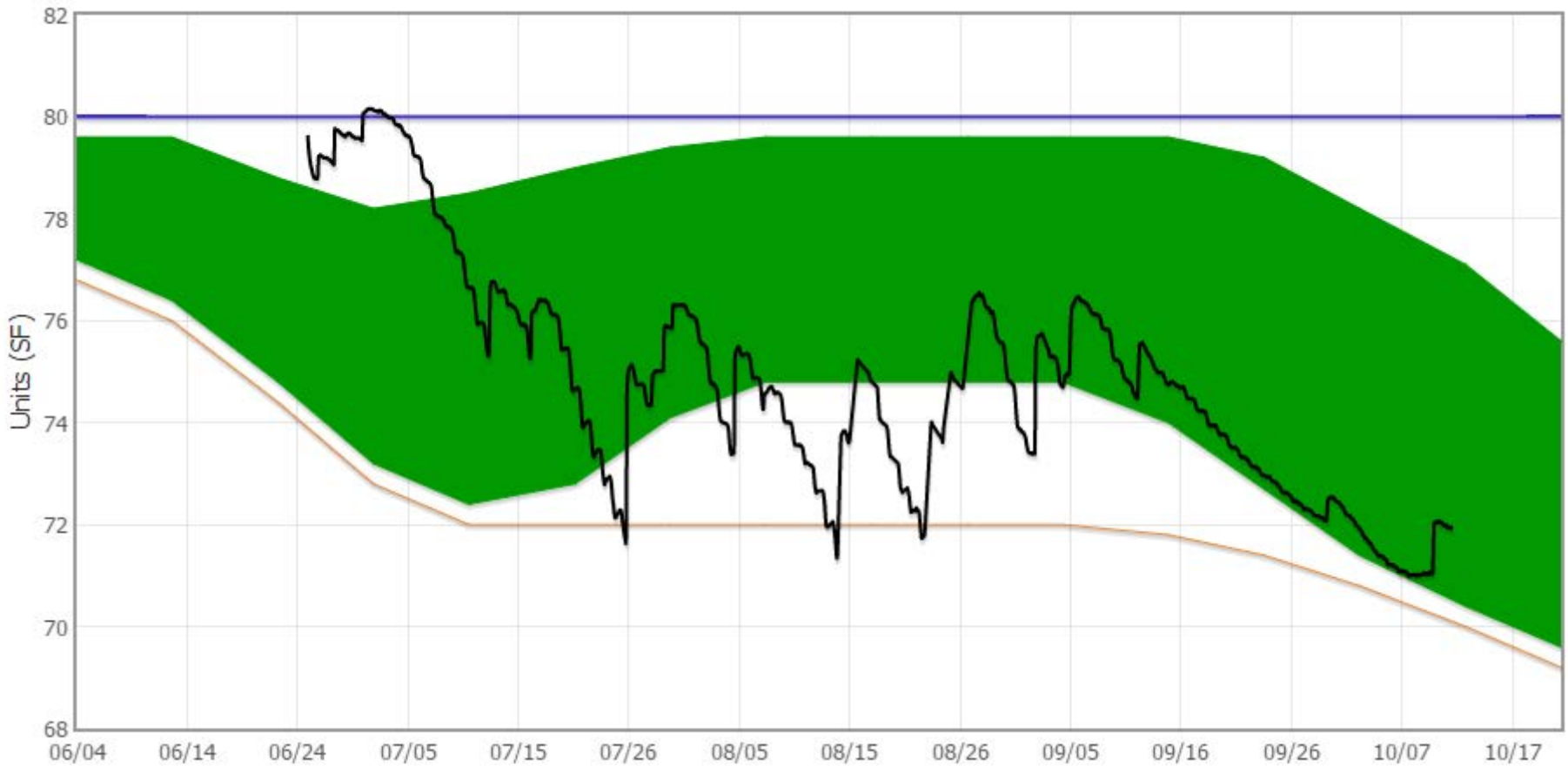


Case Study #1



Soil Probe Individual Sensors

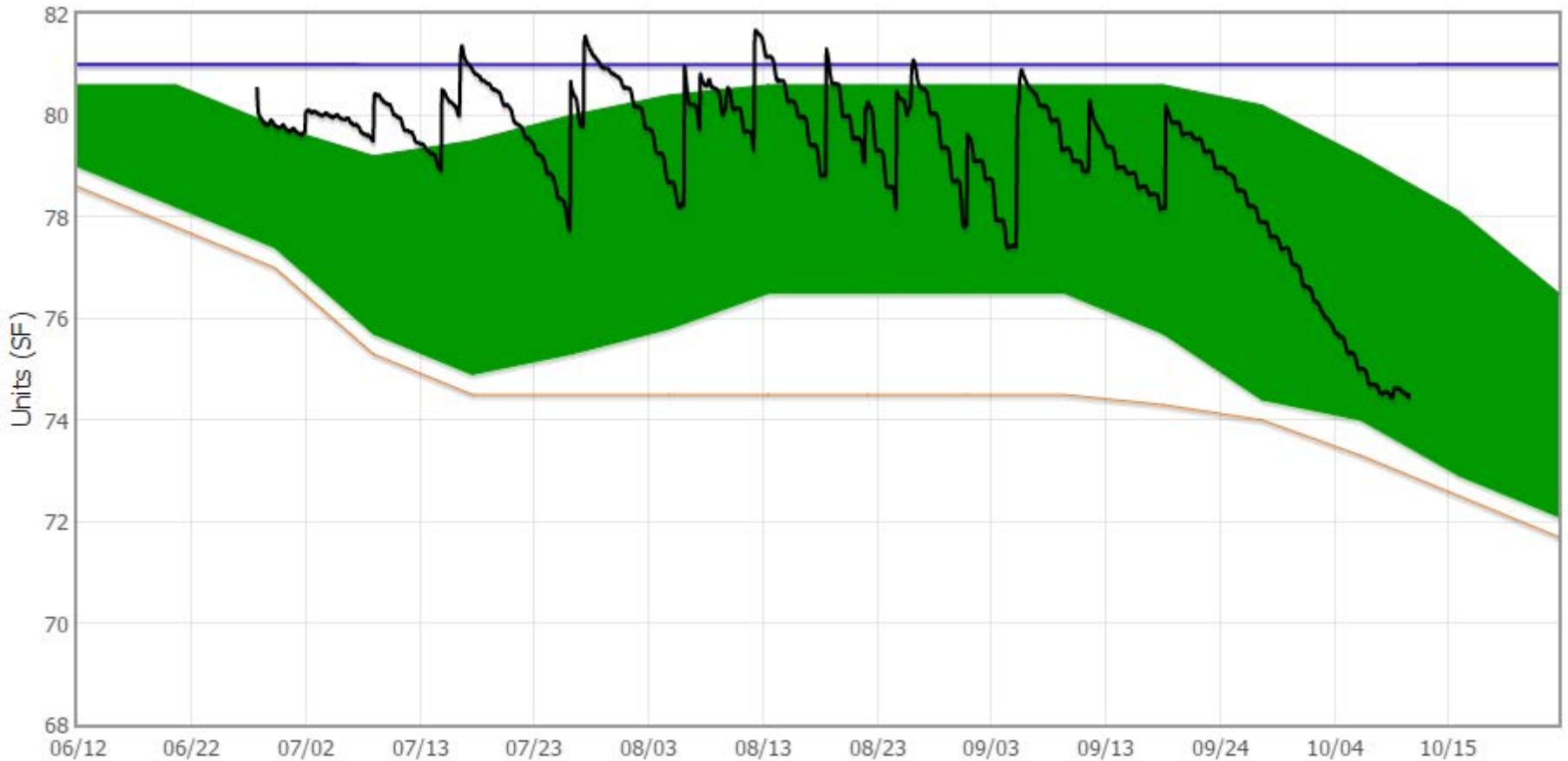
Case Study #1



Soil Probe Summary



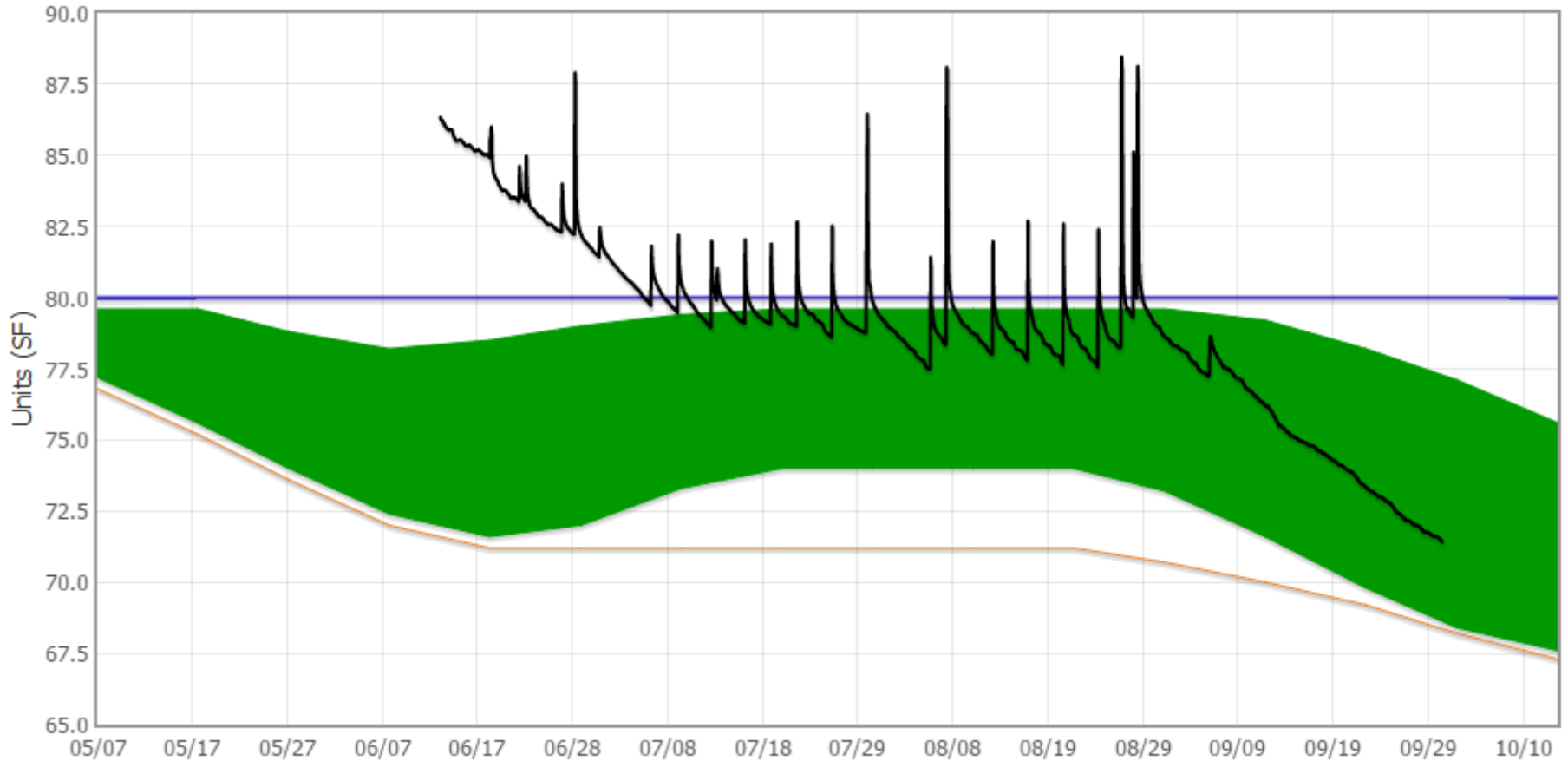
Case Study #2



Soil Probe Summary



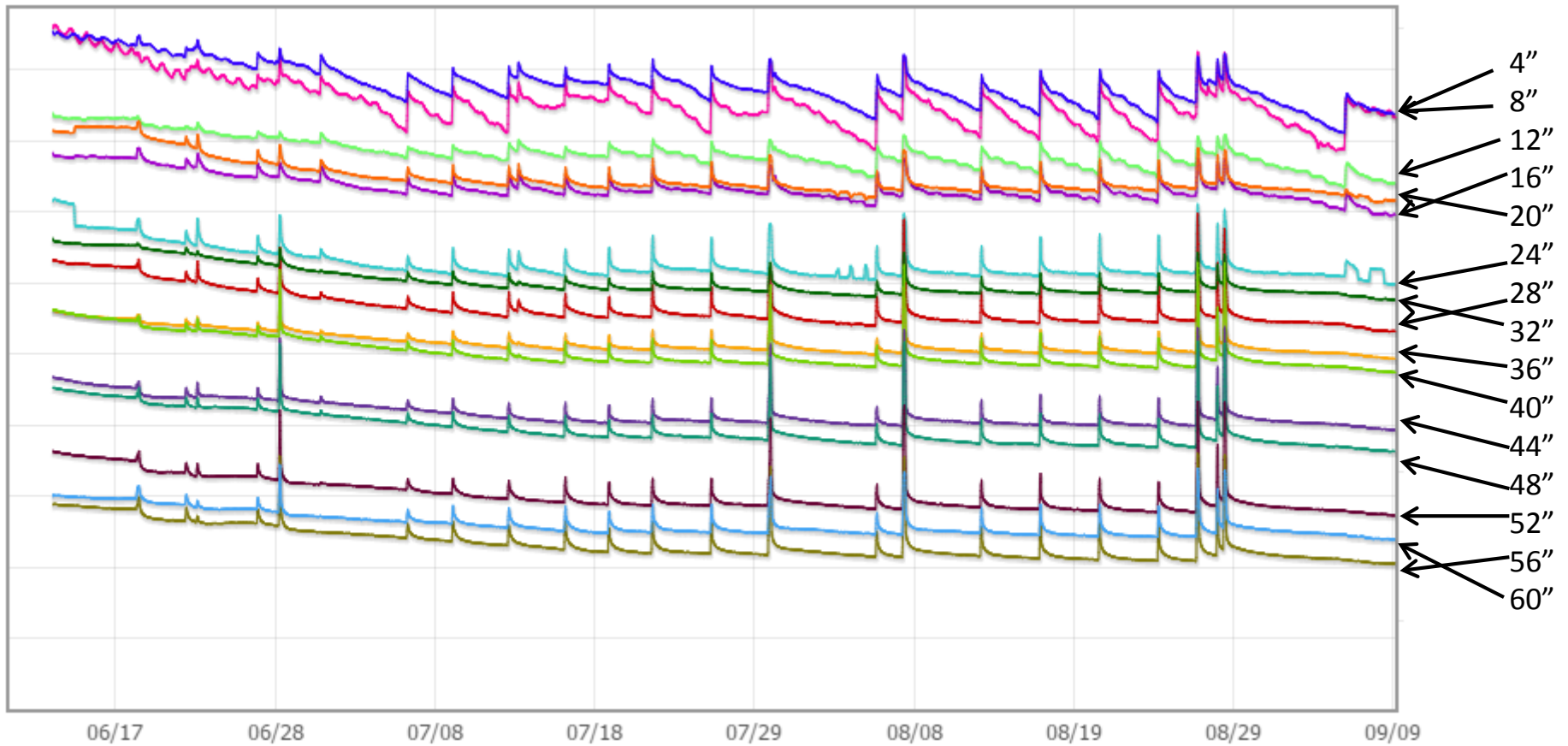
Case Study #3



Soil Probe Summary

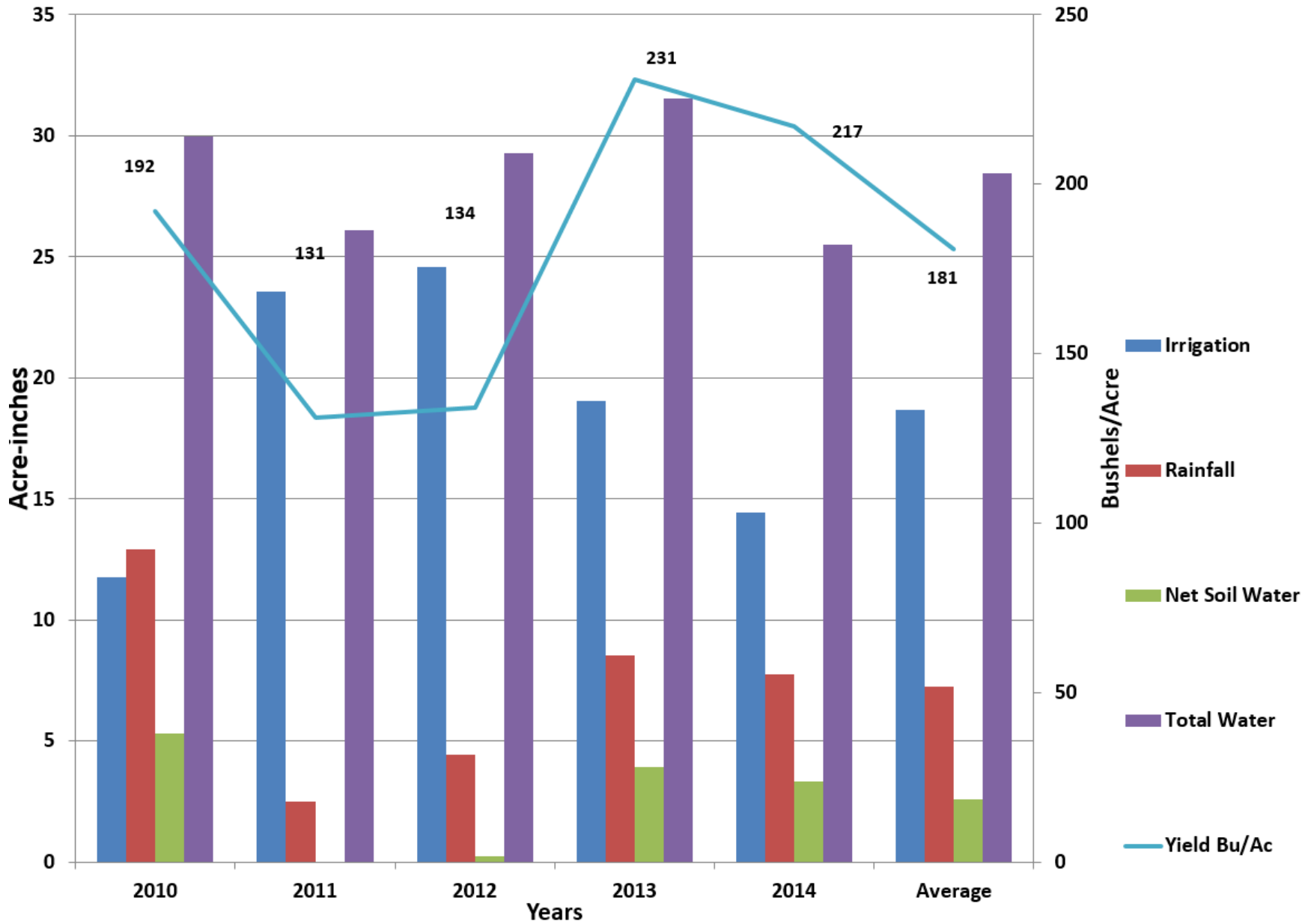


Case Study #3

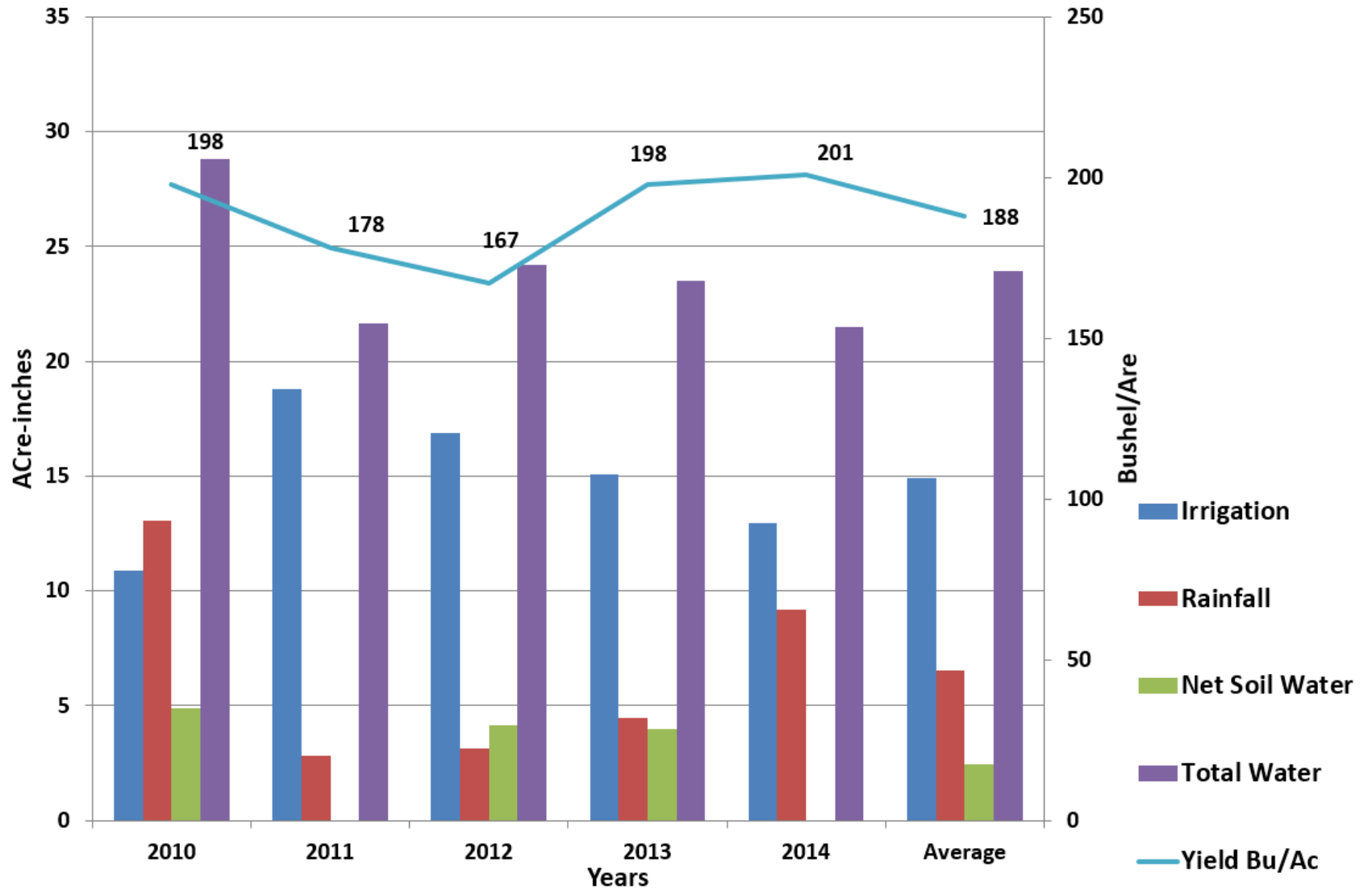


Soil Probe Individual Sensors

200-12 Project, 5 Year Summary, Krienke Location

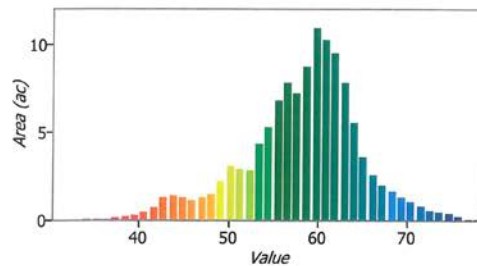
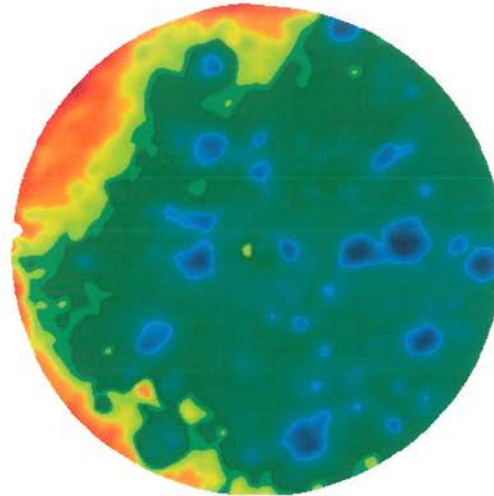


200-12 Project, 5 Year Summary, Grall Location



DualEM Subsoil

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Layer name	DualEM Subsoil
Field name	417 44
Season	All seasons
Min	31
Mean	58.73
Mode	59.76
Max	78.93
Std deviation	6.57
CV	11.19%
Total	7157.76
Area	121.88 ac

Comments:

Grower Harold Grall

Farm Grall Farms

Field 417 44

Pivot VRI by Sector Report

Base Application Depth: 1.00 in

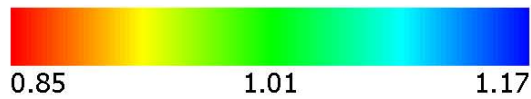
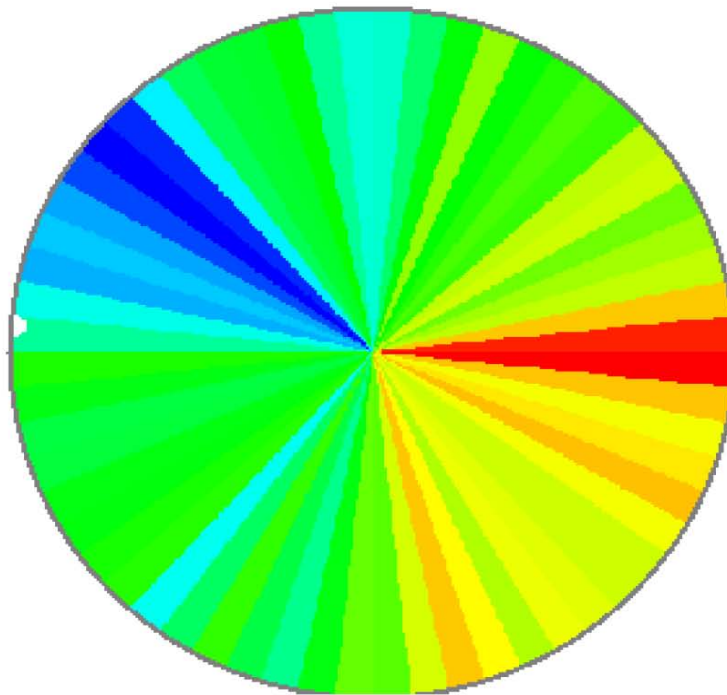
Base Walk Rate: 10.00 (%)

Total Area: 121.85 ac **Total Time:** 8d 0hr 56min

Total Flat Rate Water Amount: 3,308,820.5 gal

Total VRI Water Amount: 3,324,634.9gal (1.00in/ac)

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Application Depth (in)

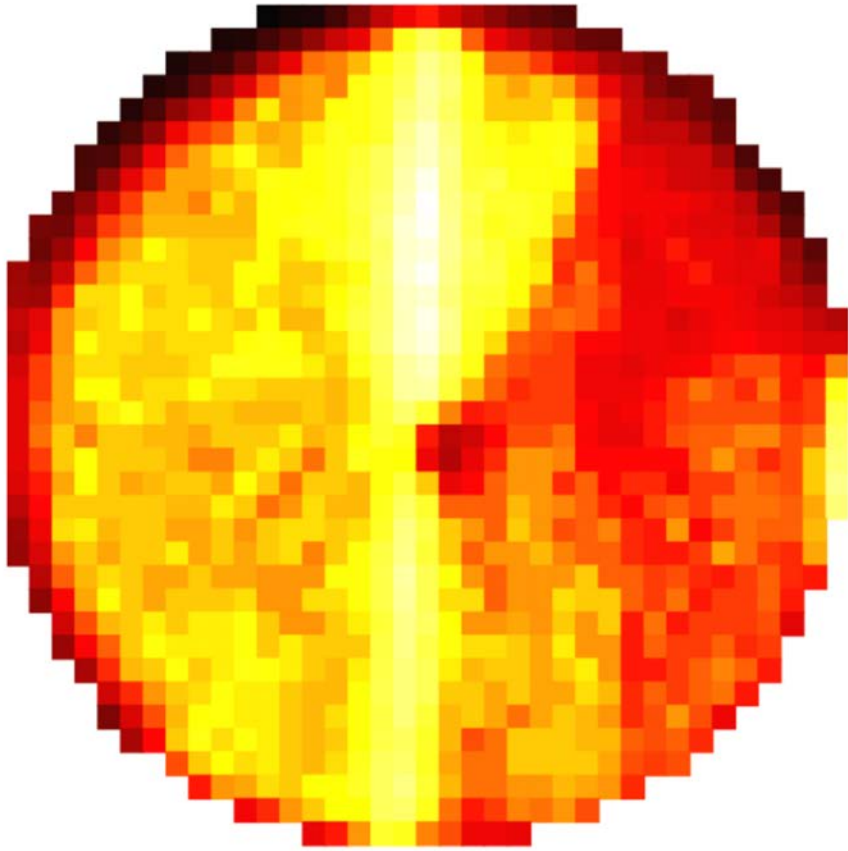


Map-Harvest Monitor Yield Map for Grall Control Field

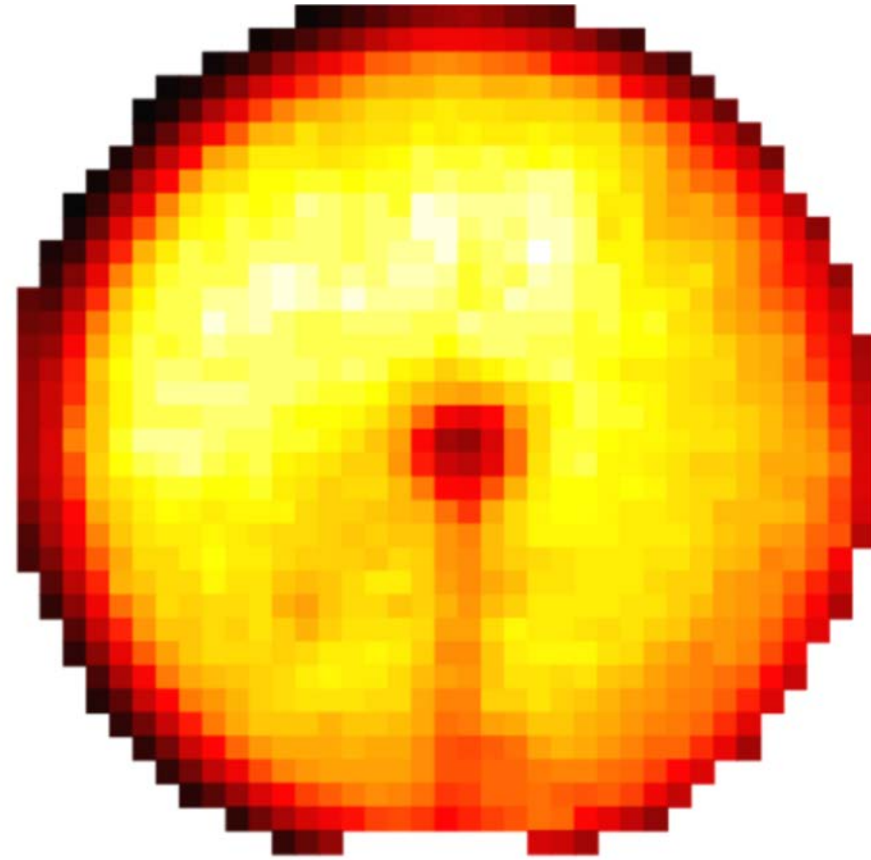


Daily Water Use for Harold Grall's "200-12" Demonstration Field

Imagery Date: July 6, 2014



Imagery Date: August 6, 2014



0.105 in 0.212 in

0.134 in 0.347 in

Note: Each Square Represents 1/8 of an Acre

200-12 Field Demonstrations

- **What We Learned -**
- Yields were boosted by LEPA equipped center pivots
- Planting tended to be later, mostly in May
- Mostly Drought tolerant hybrids were planted
- Strip or No Till & Crop Residue are essential
- Good Yields with 3 & 4 Gpm per Acre Irrigation
- Over Watering with 4 gpm, Especially 5 Gpm
- Pre Water can be Reduced w/out reducing Yield
- Manage for production per inch of water
- Manage for Net Return per inch of total water



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Feel free to email any of the presenters
regarding the 200-12 Reduced Irrigation
on Corn Demonstrations

2011 “The Blue Legacy Award”



Texas Water Conservation
Advisory Council of the Texas
Water Development Board

2012

“Texas Environmental Excellence Award”



Texas Commission on Environmental Quality



Governor Rick Perry