2017 Sprinkler Irrigated Corn Farm Management Competition Overview

Daran Rudnick, Chuck Burr, and Matt Stockton
West Central Research and Extension Center

In Partnership with

Nebraska Water Balance Alliance (NEWBA) - Aquamart

2018 TAPS Kick-Off Meeting
March 13th, 2018

Sponsors

Nebraska Growers

Non-Profit Organizations

Nebraska CornBoard

The Nature Conservancy

Platte River Recovery Implementation Program

Nebraska Water Balance Alliance

OgallalaWater.org
Optimizing Water Use to Sustain Food Systems

AQUA MART

UNL TAPS
TESTING AG PERFORMANCE SOLUTIONS

Improving Input Use Efficiency & Farm Profitability

Regulatory Agencies

Twin Platte Natural Resources District

Central Nebraska Public Power and Irrigation District

Lower Republican Natural Resources District

Upper Republican NRD

Tri Basin Natural Resources District

Middle Republican Natural Resource District

Industry

SureFire Ag Systems

servi tech

Farm Credit Services of America

PLAINS Equipment Group

AGRI-INJECT

Ag Valley

WARD Laboratories, Inc.
Ag Testing - Consulting

LI-COR

THE CLIMATE CORPORATION

AirScout
The Proactive Crop Management Tool

Martin
Planter Attachments

AquaSpy

FarmersEdge

divirod
Measure · Manage · Thrive

LINDSAY CORPORATION

Simplot

Iowa-Nebraska Equipment Dealers Association

Precision Planting

Participants

Roric Paulman
Sutherland, NE

Zach Paulman
Sutherland, NE

Bob Wiseman
Hershey, NE

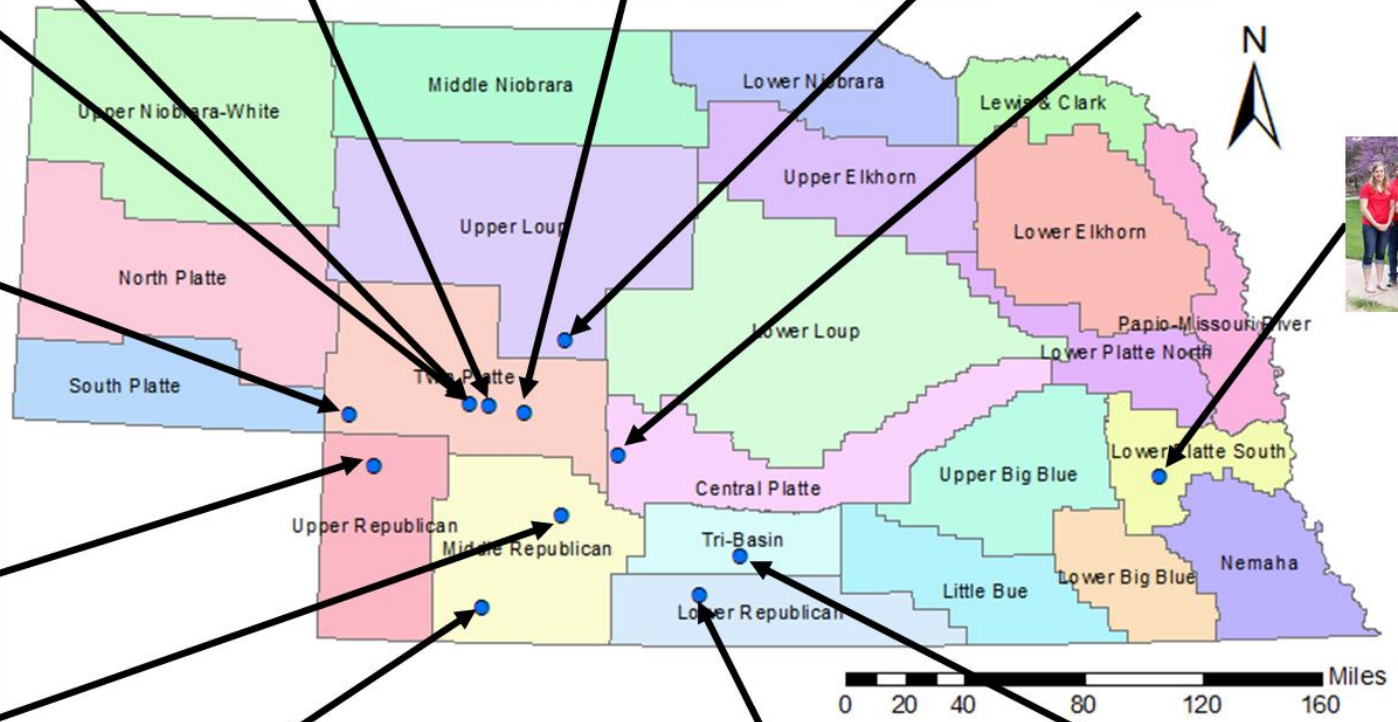
UNL Team
North Platte, NE

Jon Walz
Stapleton, NE

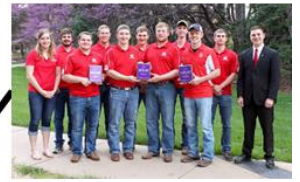
Tim Schmeeckle
Gothenburg, NE

Brian Armstrong
Brule, NE

Ted Tietjen, Shawn Turner,
Jim Kemling, Troy Kemling,
Bruce Young, & Ron Hagan
Grant, NE



UNL AG Club
Lincoln, NE



NCTA Students
Curtis, NE

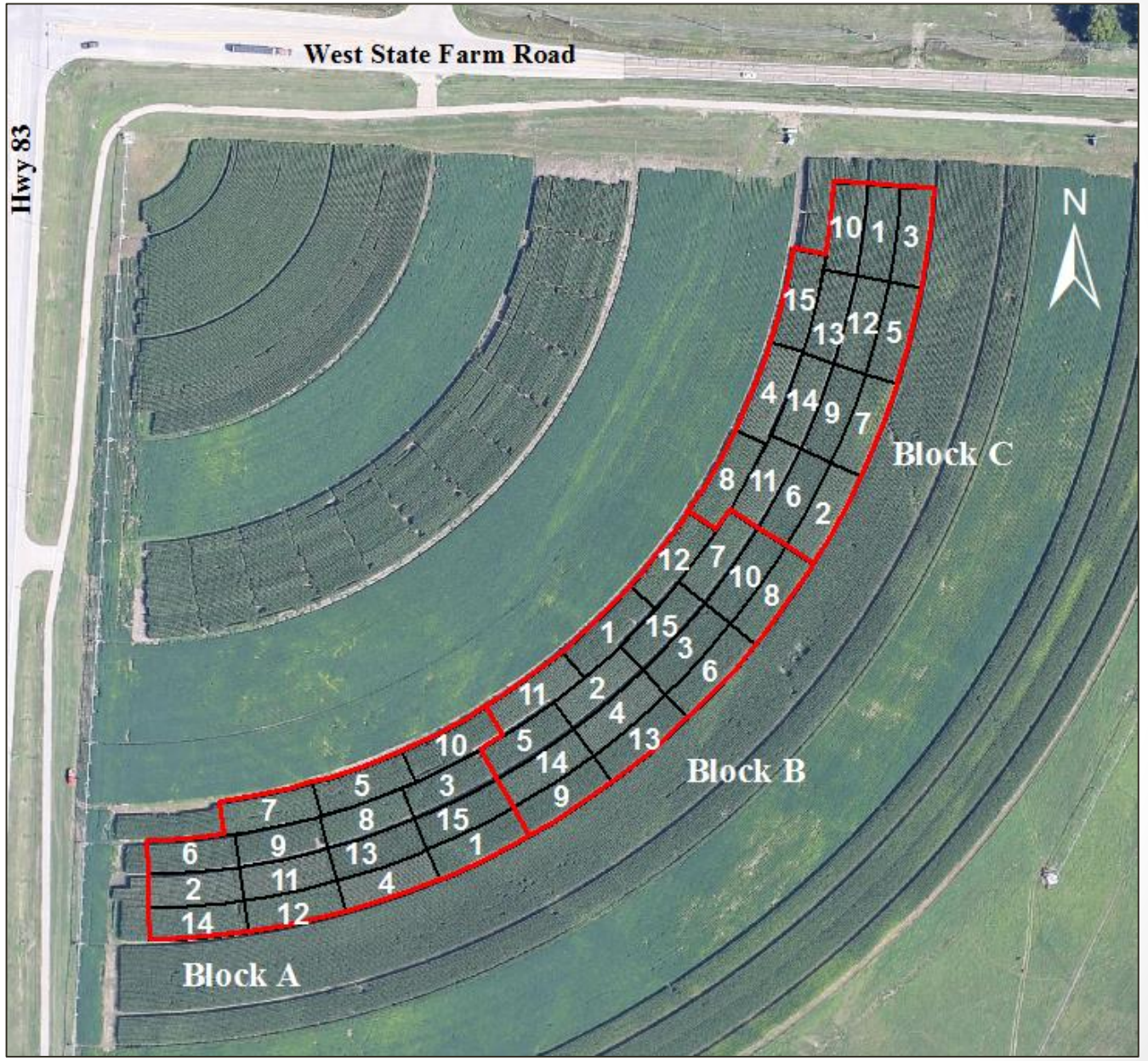
Mike Baker
Trenton, NE

Marlin Murdoch, Jordan Bergquist, & Clayton Geisinger
Oxford, NE

Chadd Jacobson
Holdrege, NE

Site Description

- West Central Research and Extension Center (WCREC) in North Platte, NE
- Competition Design
  - 15 “Farms”
- Soil Type
  - Cozad Silt Loam
- Climate
  - Semi-Arid
- Seasonal Rainfall
  - 13.8 inches

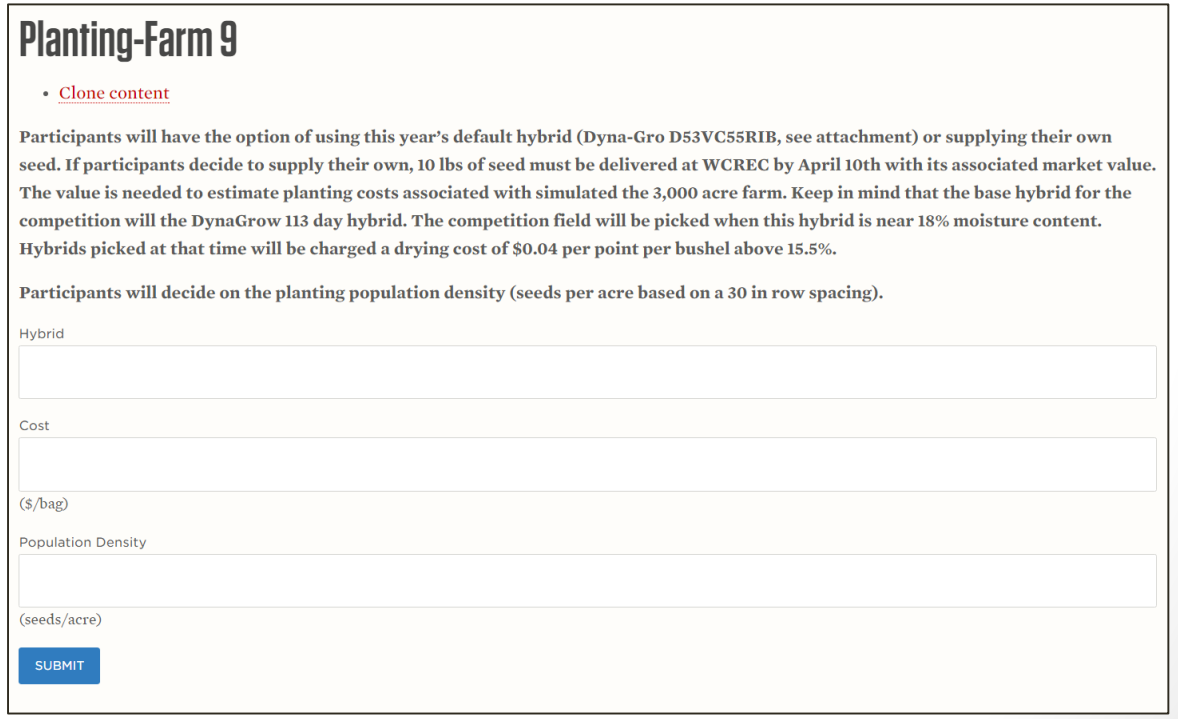


Project Description

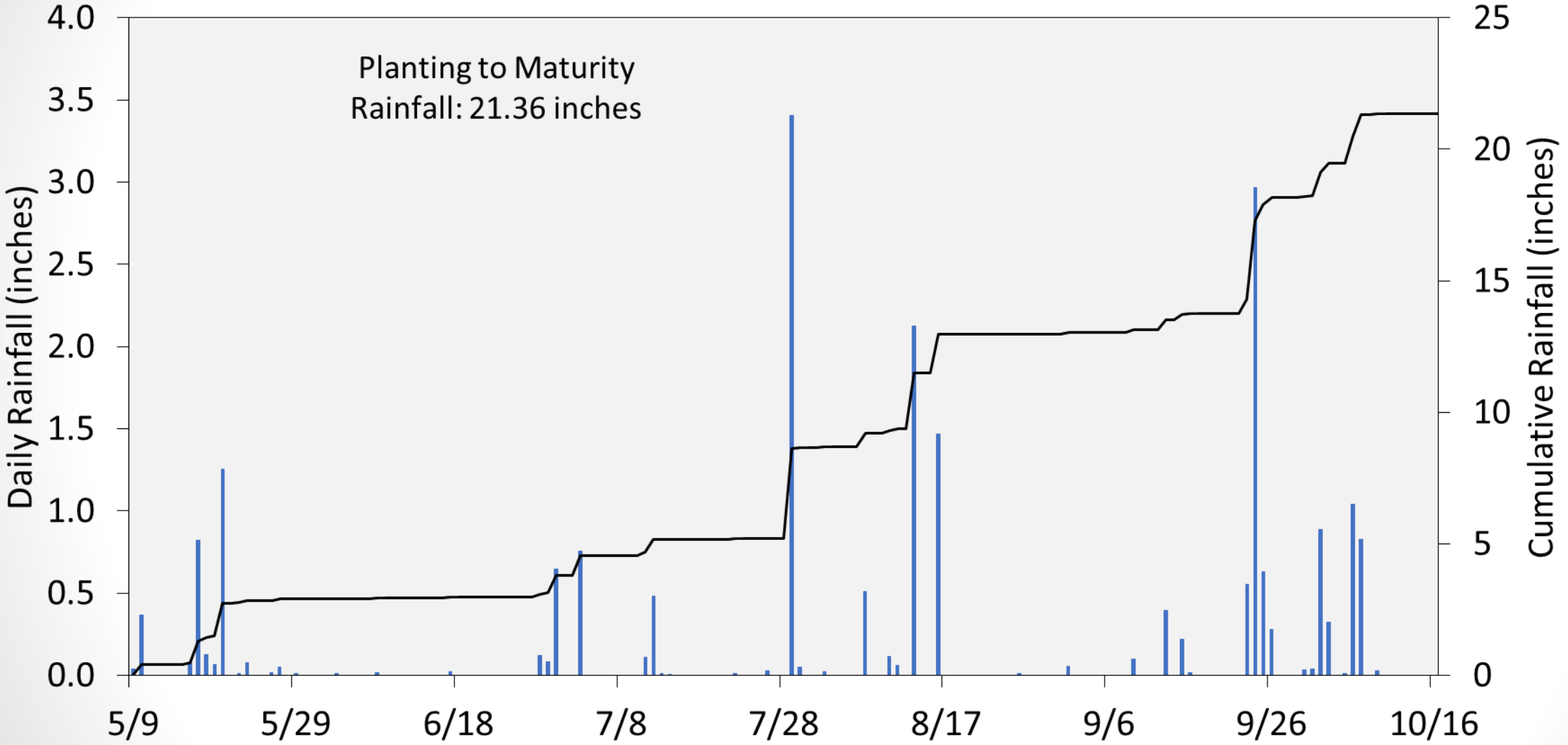
- Each “Farm” on paper included 3,000 harvested acres for the purposes of making decisions, but were imposed on 3 randomized plots (~0.4 acres) held under a variable rate irrigation (VRI) pivot at WCREC in North Platte, NE.

- Management decisions included:
  - Insurance Selection
  - Nitrogen Management
  - Hybrid Selection
  - Seeding Rate
  - Irrigation Management
  - Marketing Grain

Real-time decisions are logged on TAPS.unl.edu

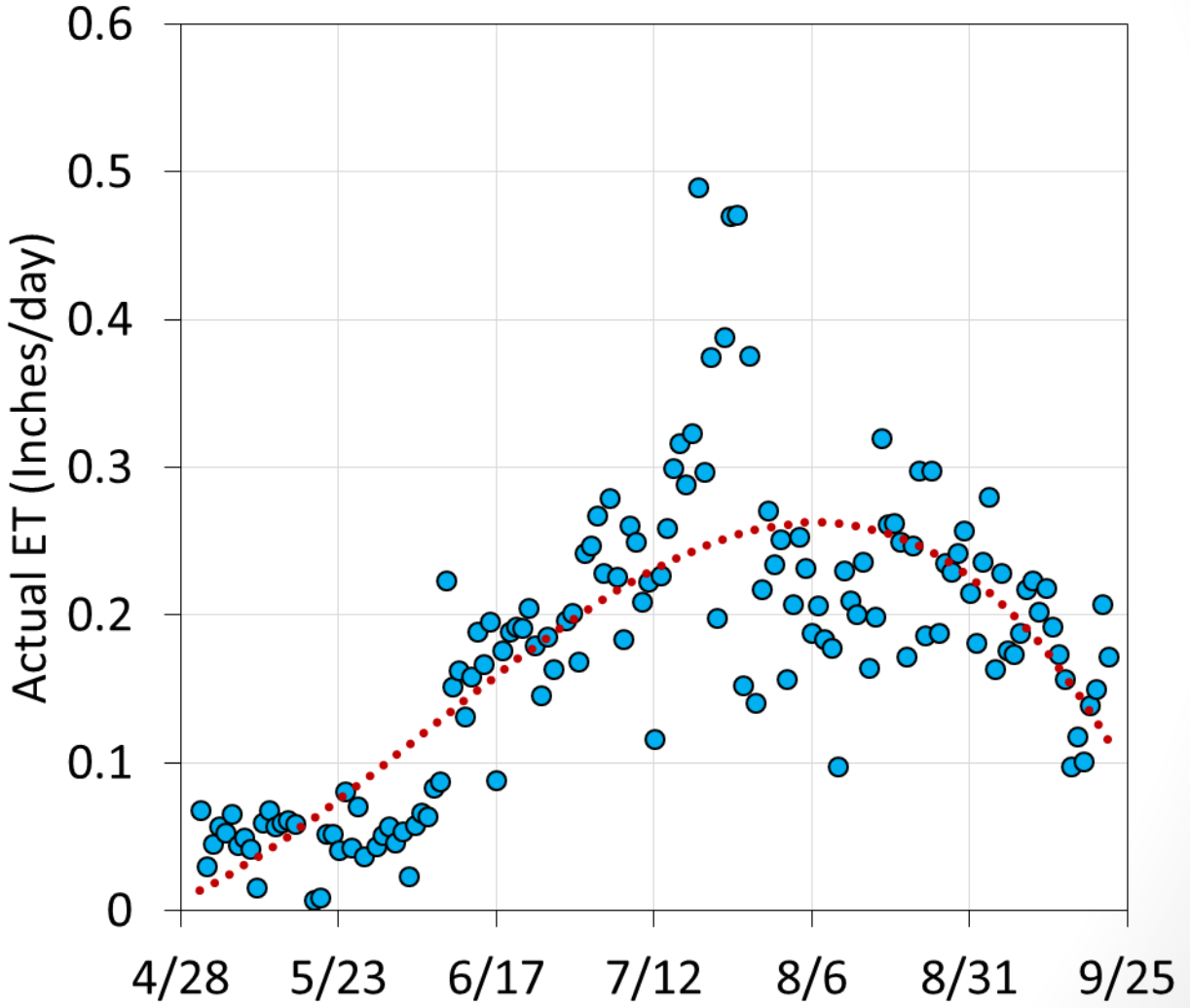


2017 Rainfall



Crop Water Use (Evapotranspiration)

LI-COR

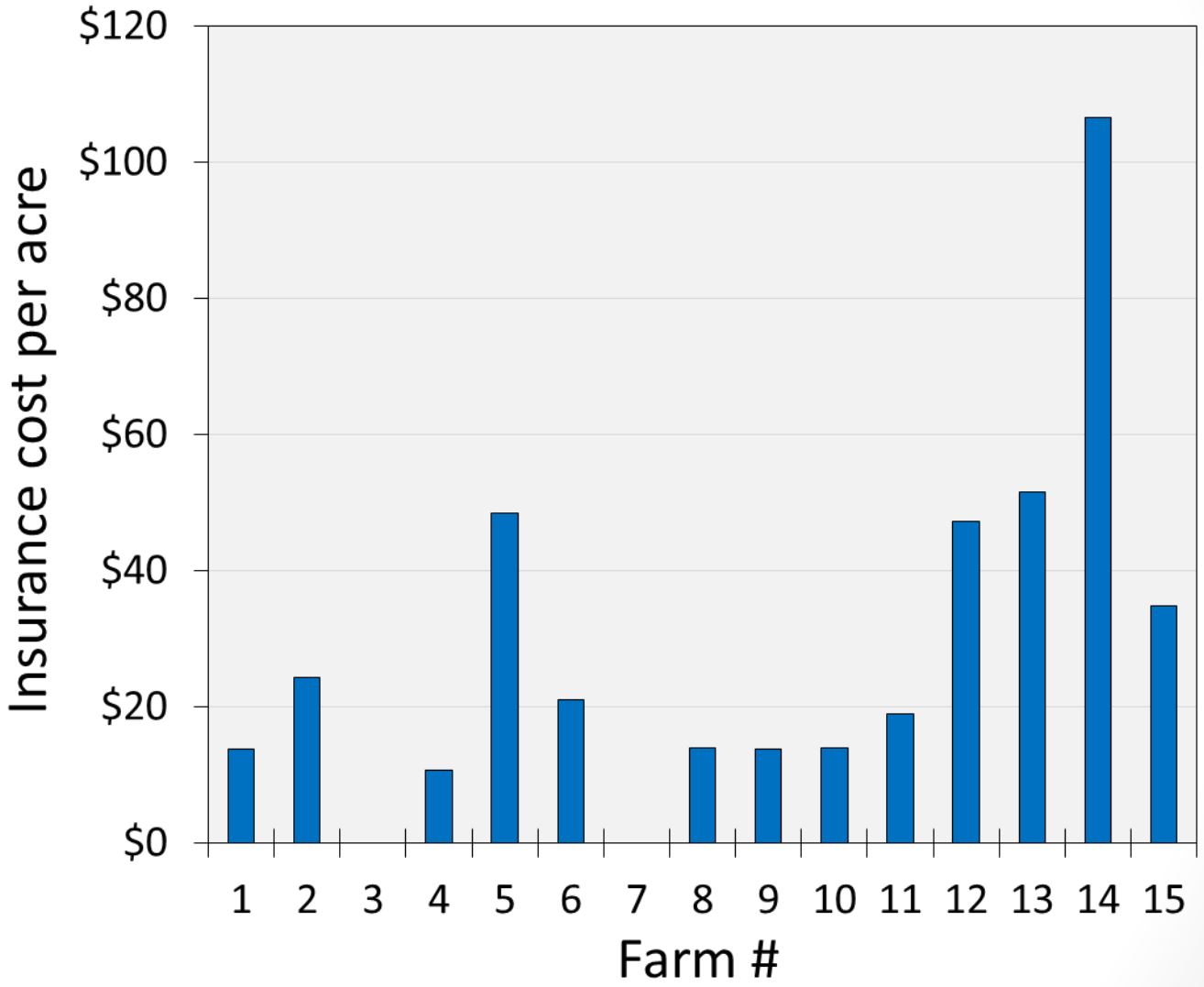


Decisions Made

Insurance Cost

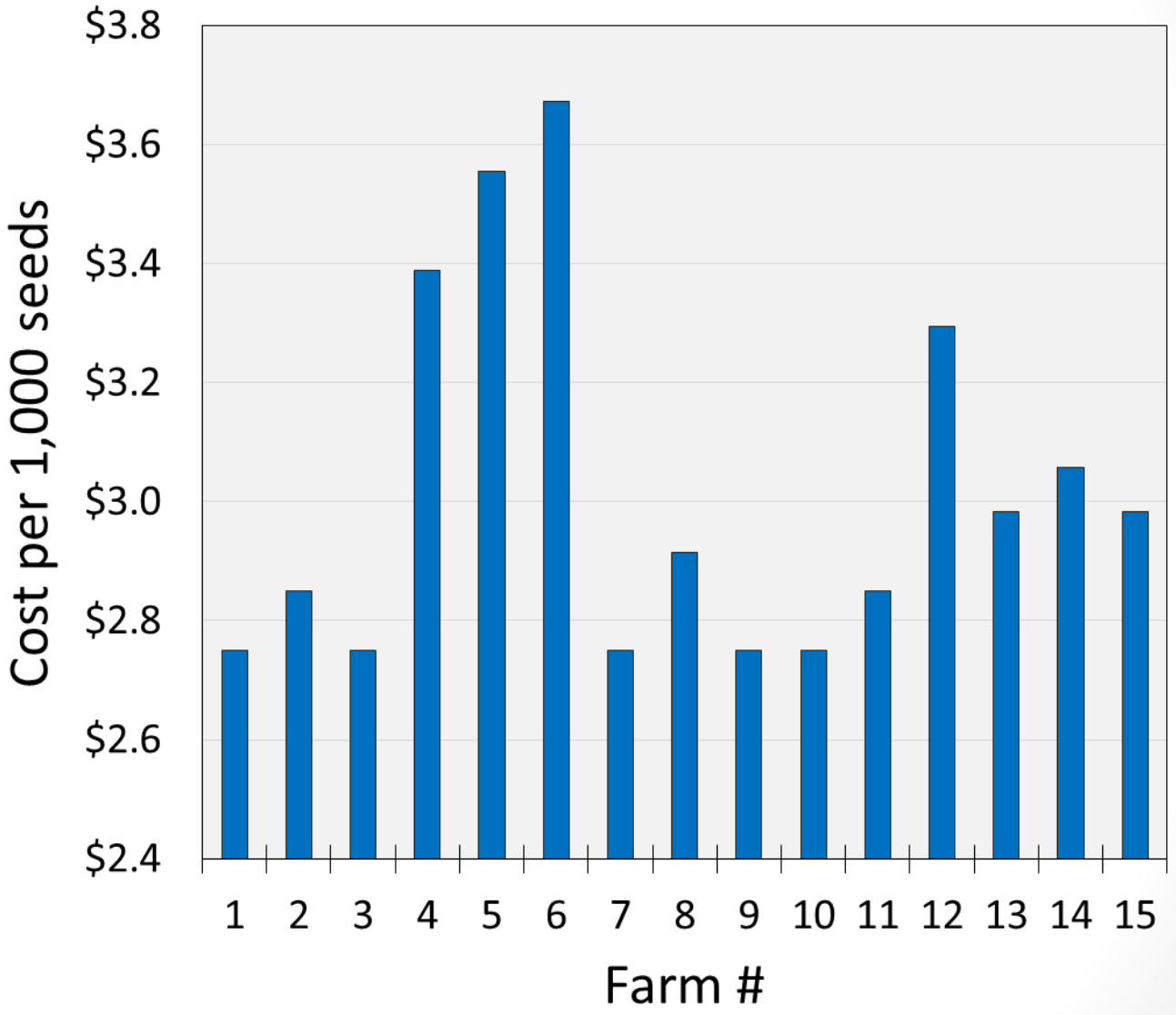
Farm #	Insurance Package	Hail Coverage	Wind Coverage
1	RP - EU - 80%	-	-
2	YP - OU - 75%	DDA: $100	-
3	-	-	-
4	RP - OU - 65%	-	-
5	RP - OU - 75%	2/10: $200	-
6	RP - OU - 65%	DDA: $100	-
7	-	-	-
8	RP - OU - 70%	-	-
9	RP - EU - 80%	-	-
10	YP - OU - 75%	-	-
11	RP - EU - 70%	2/10: $100	-
12	RP - EU - 80%	2+: $150	-
13	RP - OU - 70%	2/5: $200	-
14	RP - OU - 85%	2.5/15: $300	$300
15	RP - OU - 75%	DDB: $200	-

RP: Revenue Protection; YP: Yield Protection
EU: Enterprise Units; OU: Operational Units

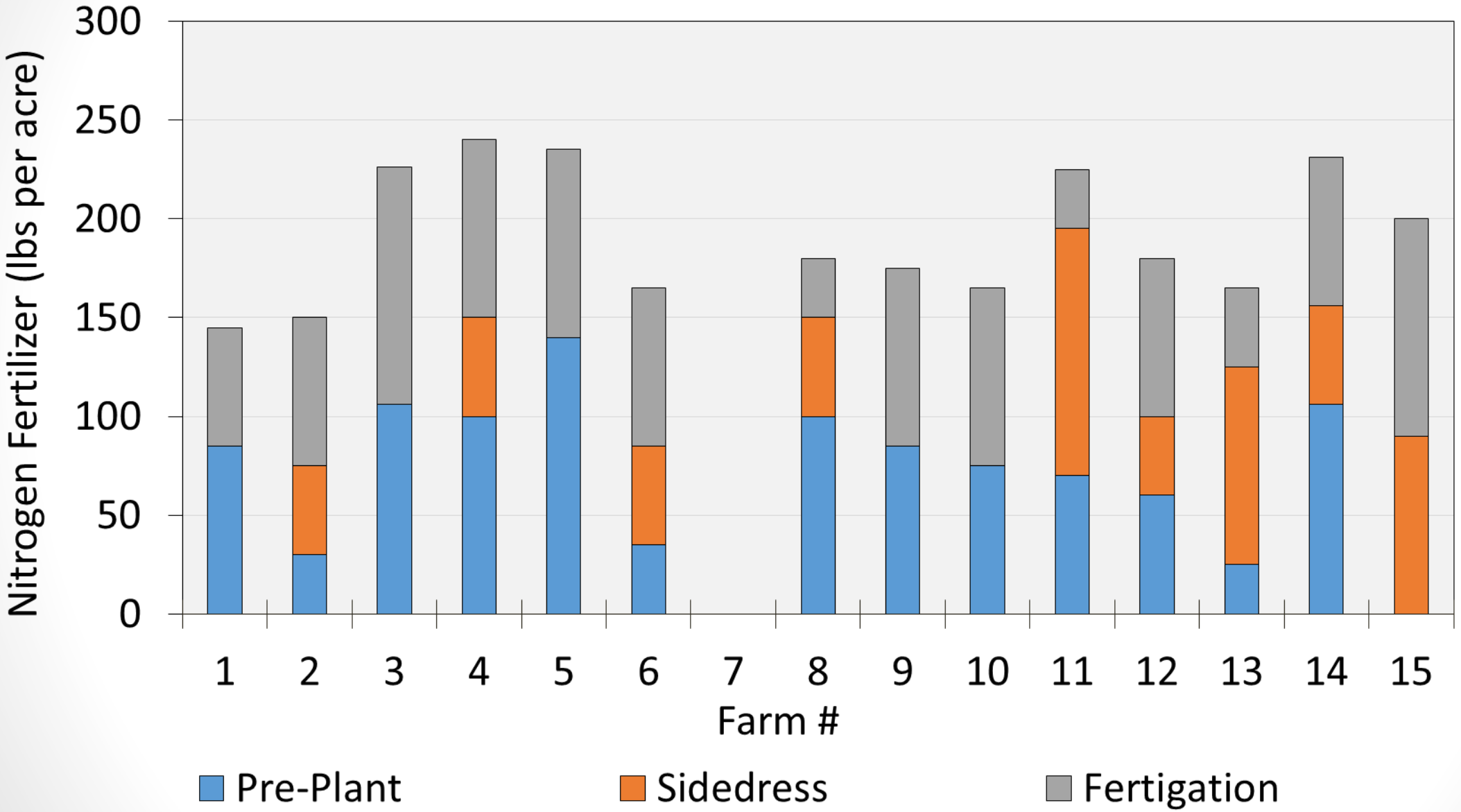


Hybrid Selection and Seeding Rate

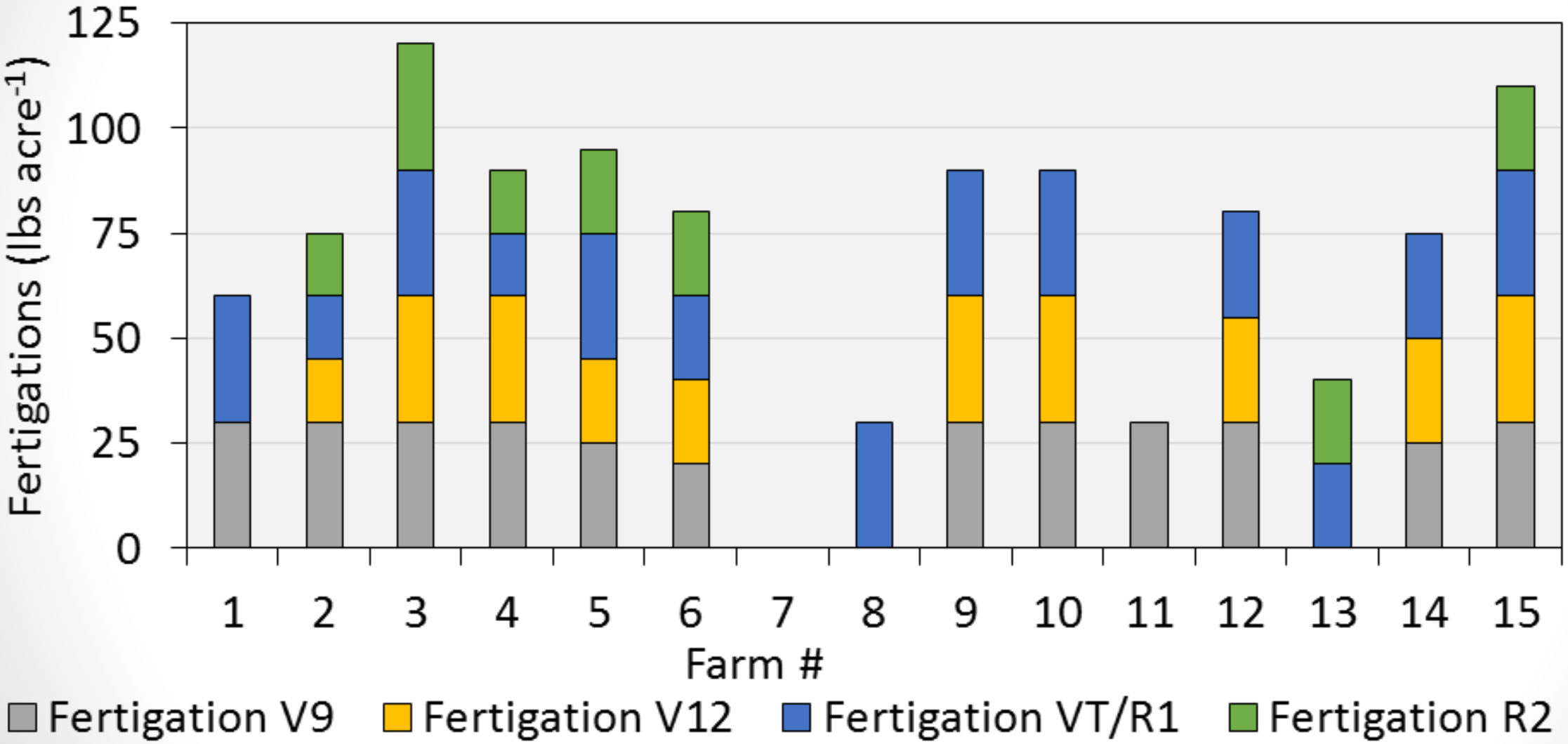
Farm #	Hybrid	Seeding (seeds/acre)
1	Dyna-Grow D53VC55RIB	34,000
2	Pioneer 801AM	30,000
3	Dyna-Grow D53VC55RIB	28,000
4	NuTech 5L-713	32,000
5	Dekalb 63-60RIB	33,500
6	Channel 210-26ST RIB	34,000
7	Dyna-Grow D53VC55RIB	34,000
8	Renk 877 Droughtgard	33,000
9	Dyna-Grow D53VC55RIB	34,000
10	Dyna-Grow D53VC55RIB	34,000
11	Pioneer 801AM	31,000
12	Fontanelle 11A224	34,500
13	Pioneer P1197AM	32,000
14	Golden Harvest G09Y24 3220a	30,000
15	Pioneer P1197AM	34,000



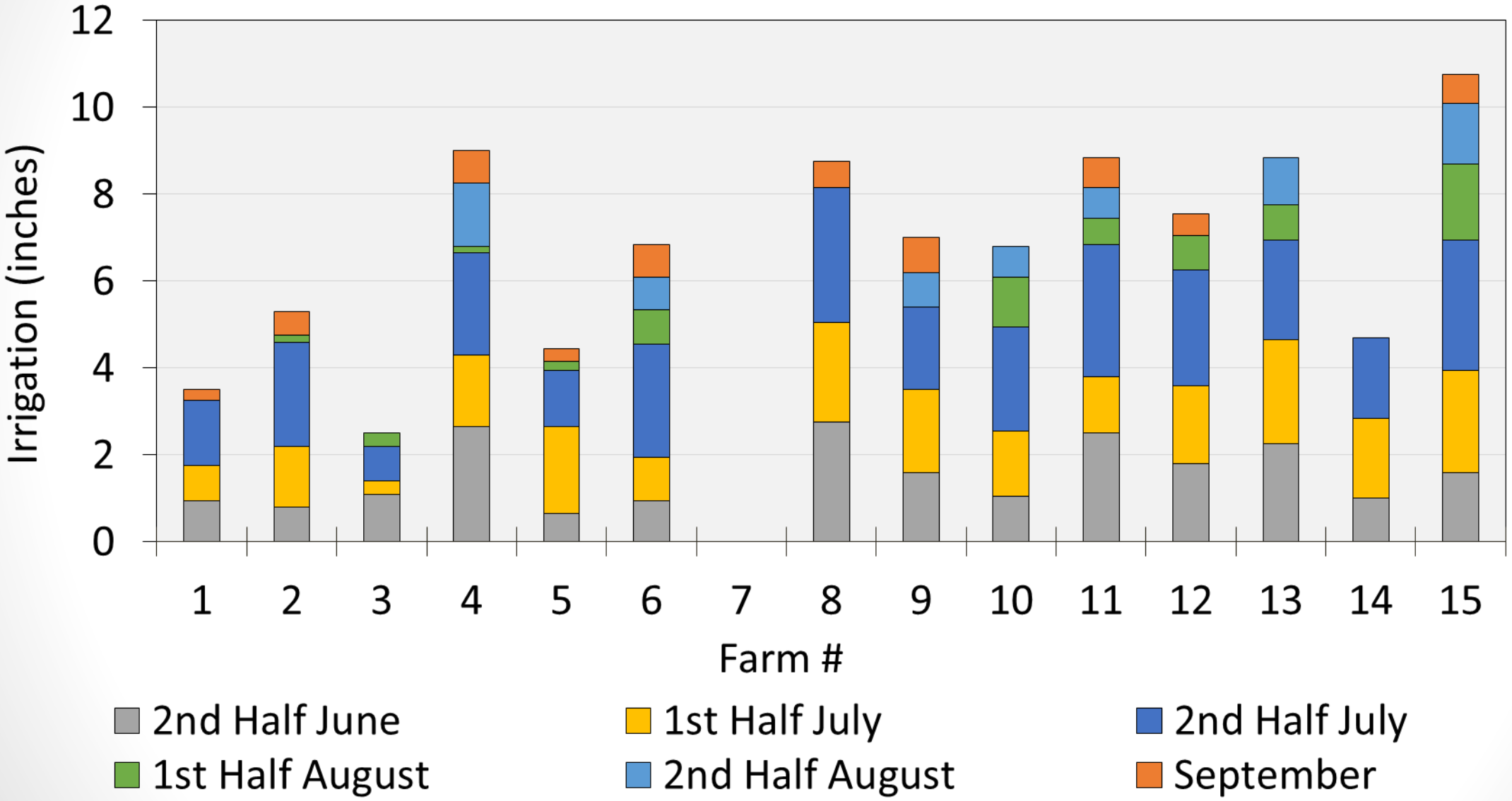
Nitrogen Management



Nitrogen Management (Fertigation)

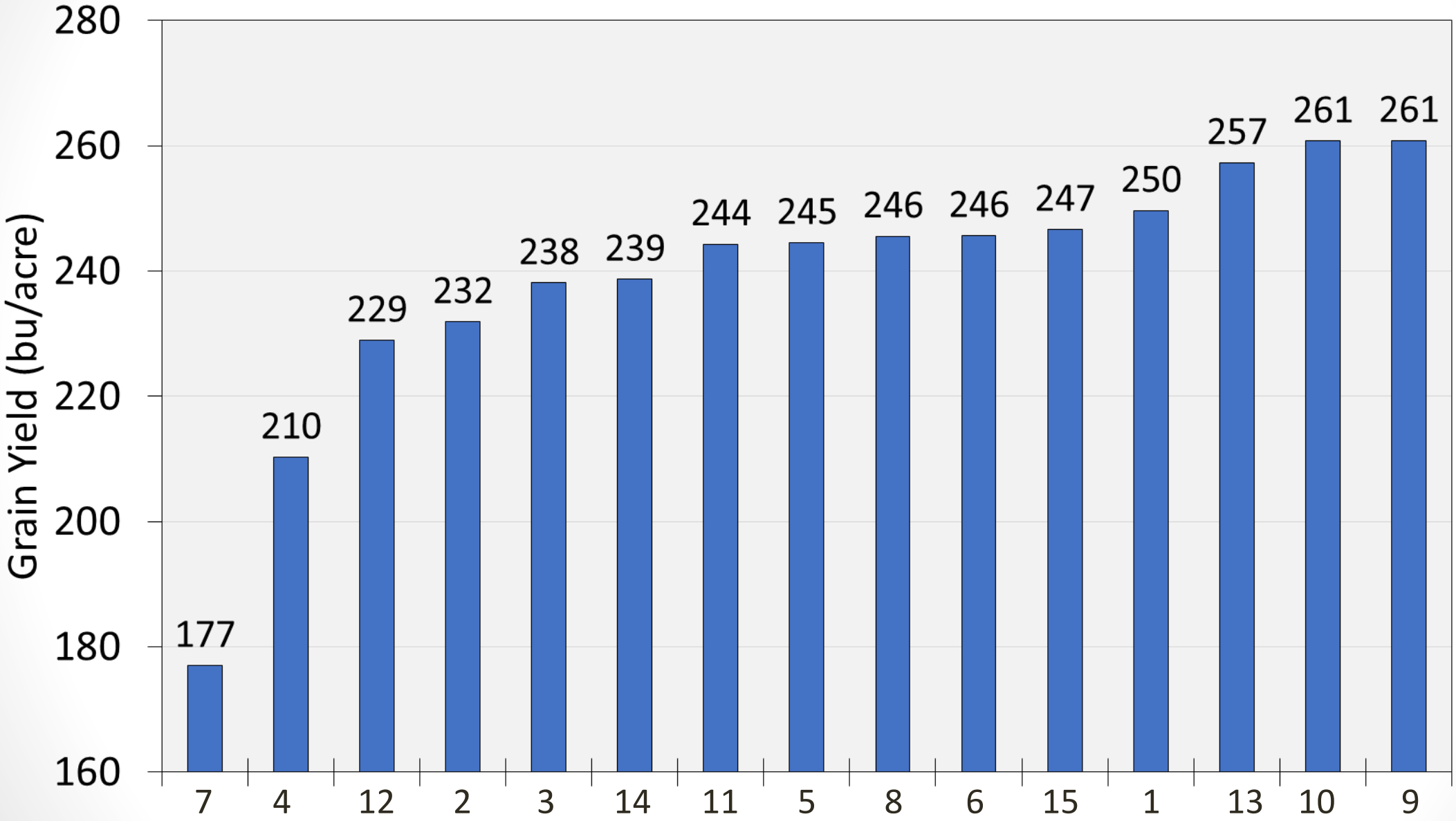


Irrigation Management



Farm Results

Grain Yield


Grain Yield (bu/acre)
280
260
240
220
200
180
160
177
210
229
232
238
239
244
245
246
246
247
250
257
261
261
7
4
12
2
3
14
11
5
8
6
15
1
13
10
9

Greatest Grain Yield Award

Farm # 10

Tim Schmeeckle of Gothenburg, NE

Cash Award: $320

Hybrid: Dyna-Grow D53VC55RIB

Seeding Rate: 34,000 plants/acre

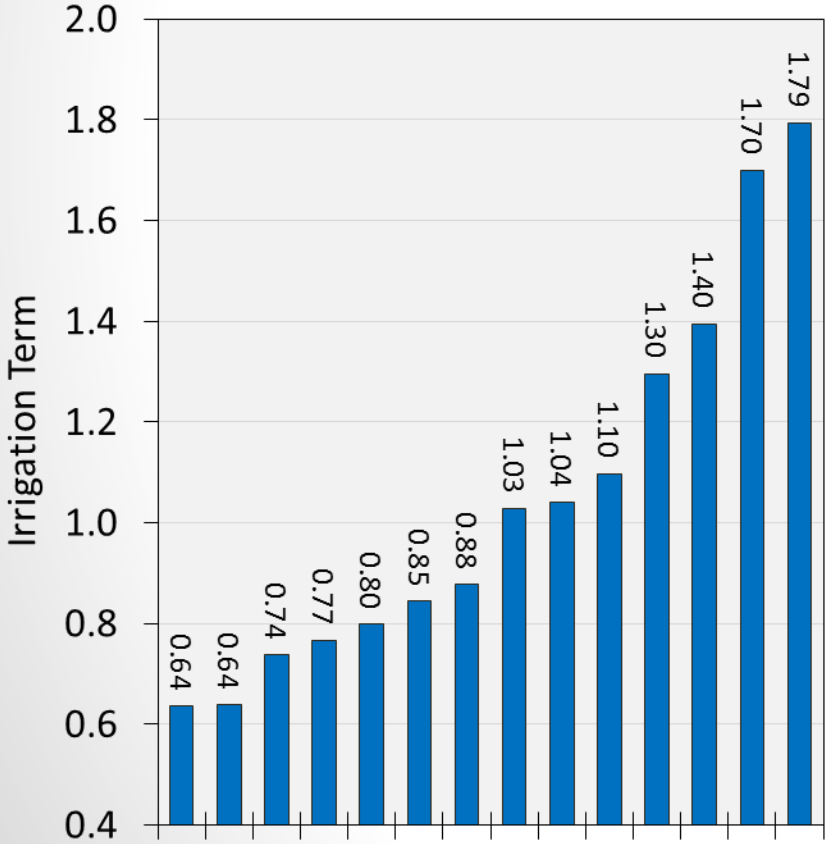
Irrigation: 6.80 inches

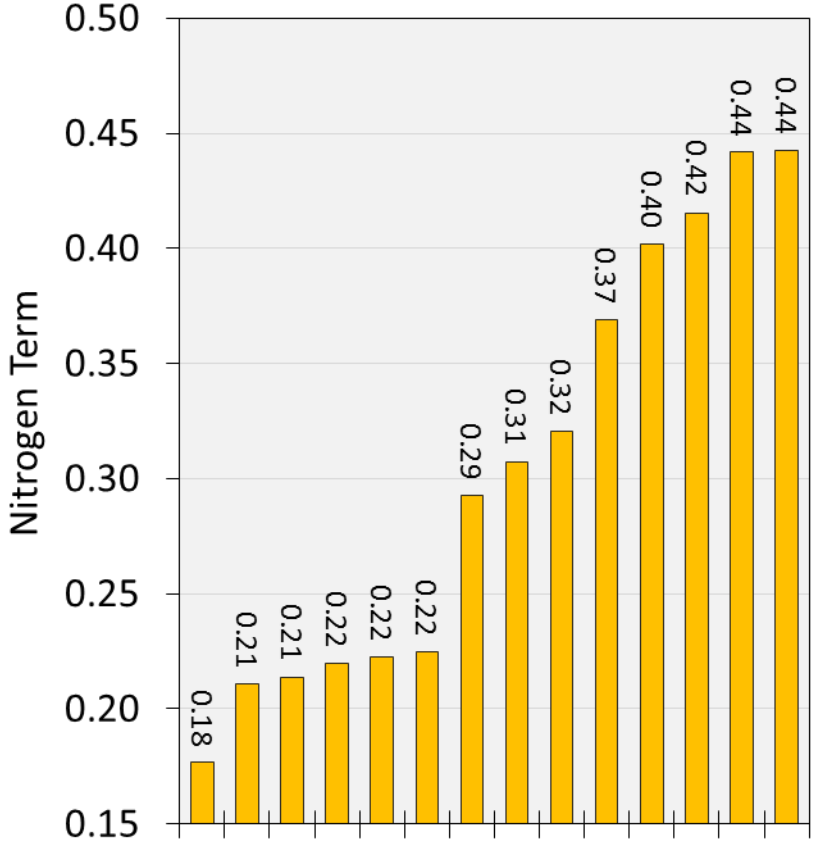
Nitrogen: 165 lbs/acre

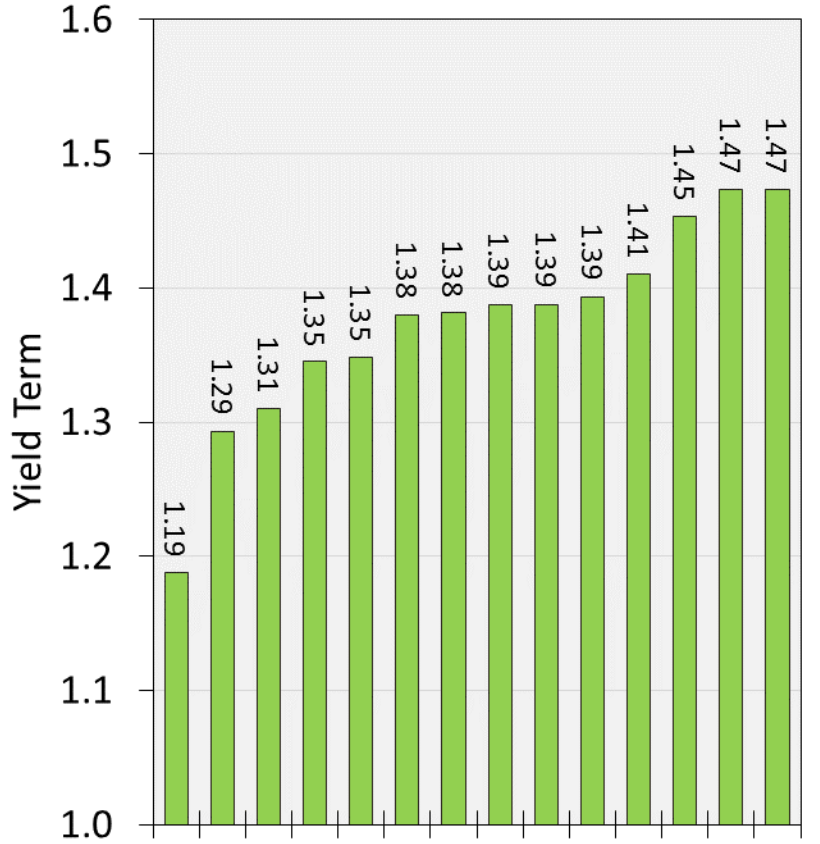
Yield: 260.7 bushels/acre

Input Use Efficiency

$$Input\ Use\ Efficiency = Rank\left[\frac{(ET_{Farm} - ET_C)}{Irrigation_{Farm}}\right] + Rank\left[\frac{(GNU_{Farm} - GNU_C)}{Nitrogen\ Applied_{Farm}}\right] + Rank\left[\frac{Yield_{Farm}}{Yield_C}\right]$$







Highest Input Use Efficiency Award

Farm # 10

Tim Schmeeckle of Gothenburg, NE

Cash Award: $1,000

Hybrid: Dyna-Grow D53VC55RIB

Seeding Rate: 34,000 plants/acre

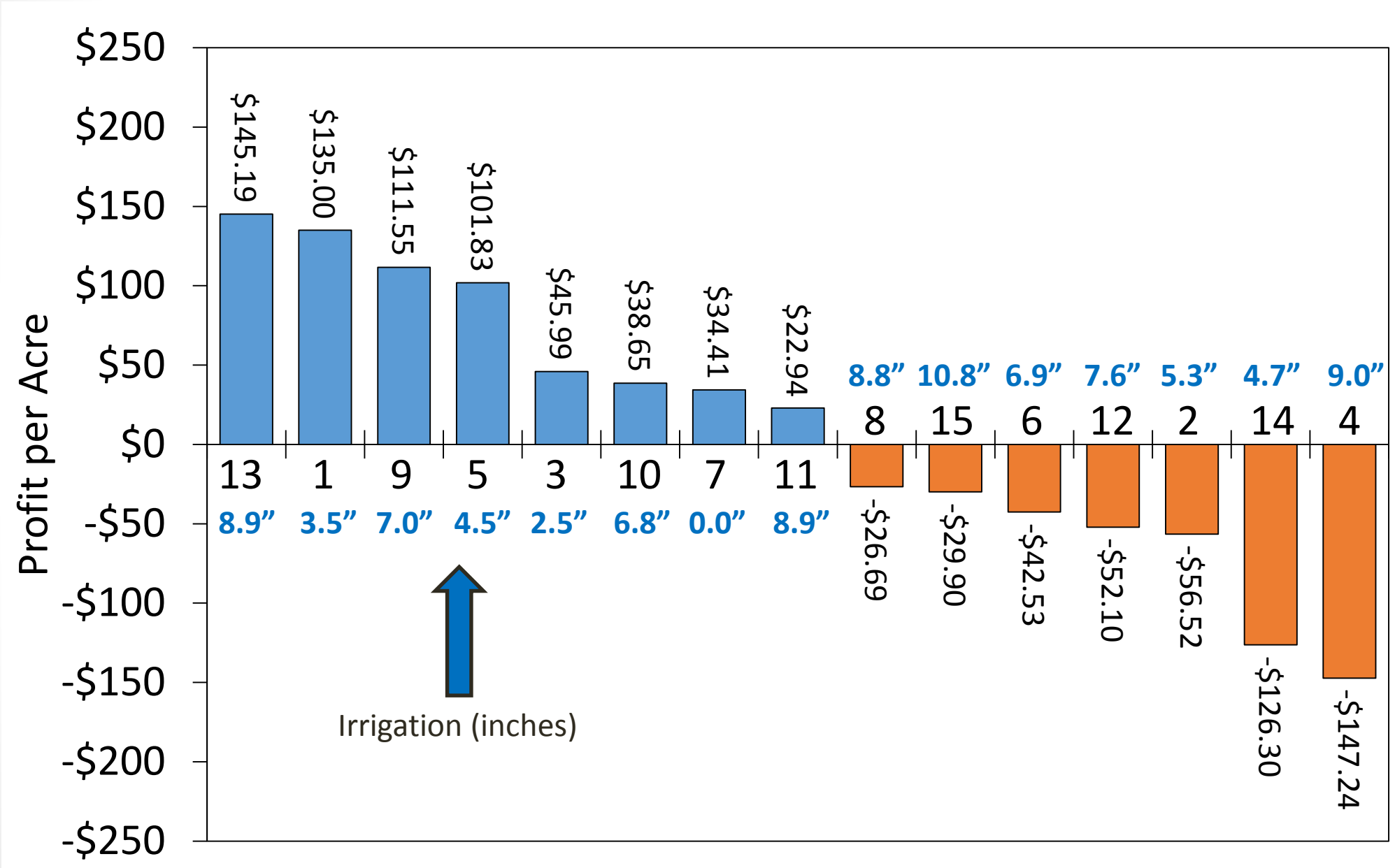
Irrigation: 6.80 inches

Nitrogen: 165 lbs/acre

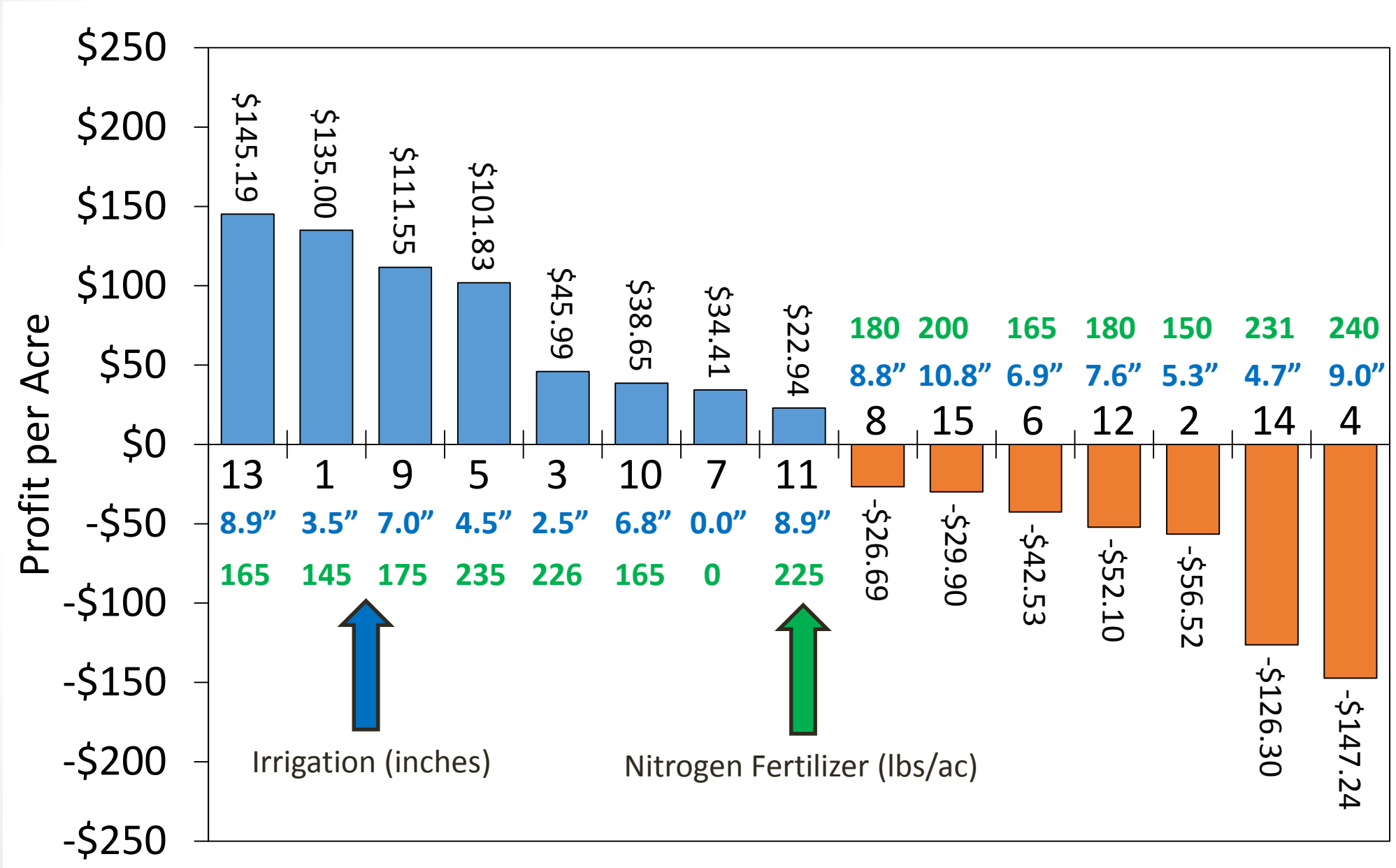
Yield: 260.7 bushels/acre

ETUE: 1.04; GNUE: 0.42; Y_{ratio}: 1.47

Farm Profitability



Farm Profitability



Most Profitable Farm

Farm # 13

Roric Paulman of Sutherland, NE

Cash Award: $2,000

Hybrid: Pioneer P1197AM

Seeding Rate: 32,000 plants/acre

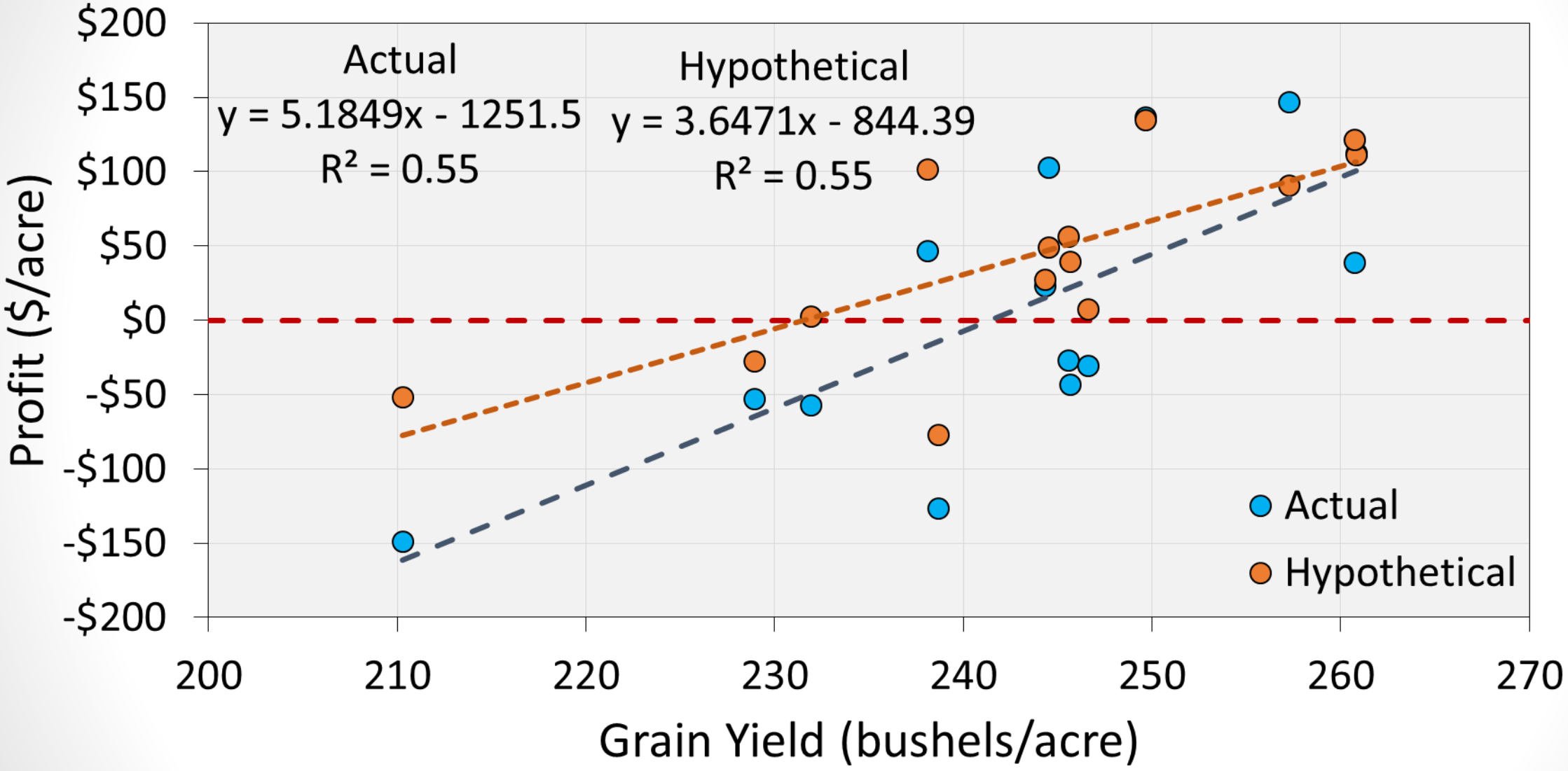
Irrigation: 8.85 inches

Nitrogen: 165 lbs/acre

Yield: 257.3 bushels/acre

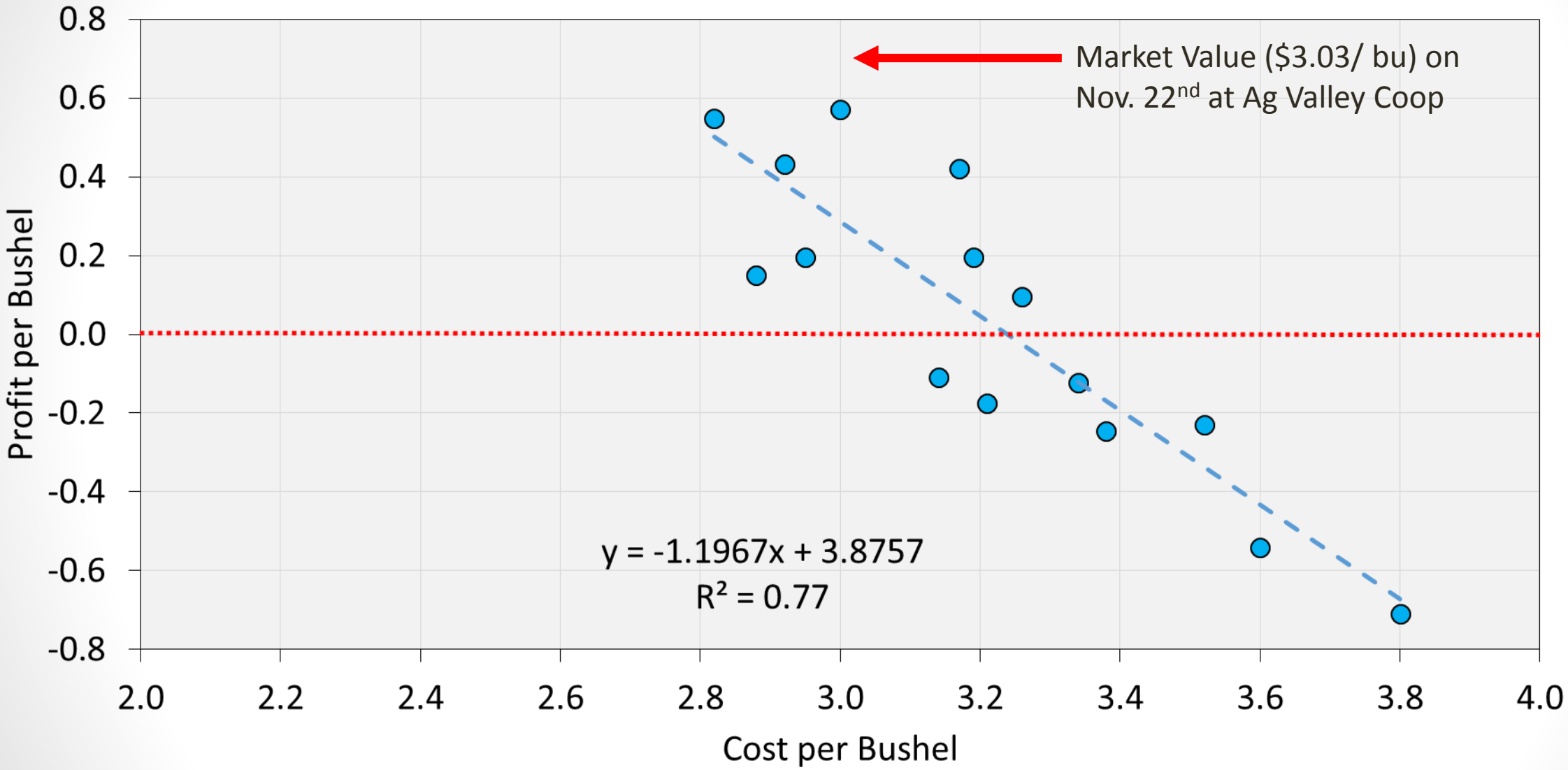
Profit: $146.89 per acre

What role did marketing have?



*Hypothetical: All farms marketed 80% of the APH (200 bu/acre) at $3.55 in June.

Cost versus Profit



Understanding the Results

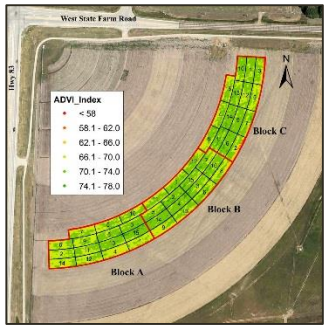
What information was collected?

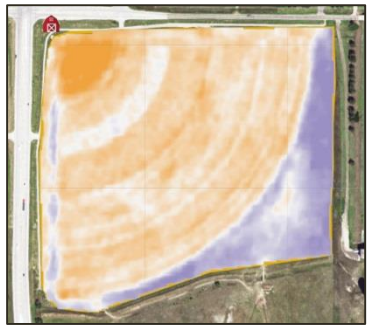
Data has been generated on:

- Soil, plant, and atmospheric conditions

--- Plant Sensing ---

---------- Imagery ----------





--- Residue ---

--- Field Scouting ---

---------- Evaporative Demand ----------

--- Soil Water ---

---------- Soil Properties ----------

Growth Stages & Visual Differences

August 9th – Milk (R3)

Farm 1

Farm 2

Farm 3

Farm 4

Farm 5

Farm 6

Farm 7

Farm 8

Farm 9

Farm 10

Farm 11

Farm 12

Farm 13

Farm 14

Farm 15

August 9th, 2017

Comparison of Ears

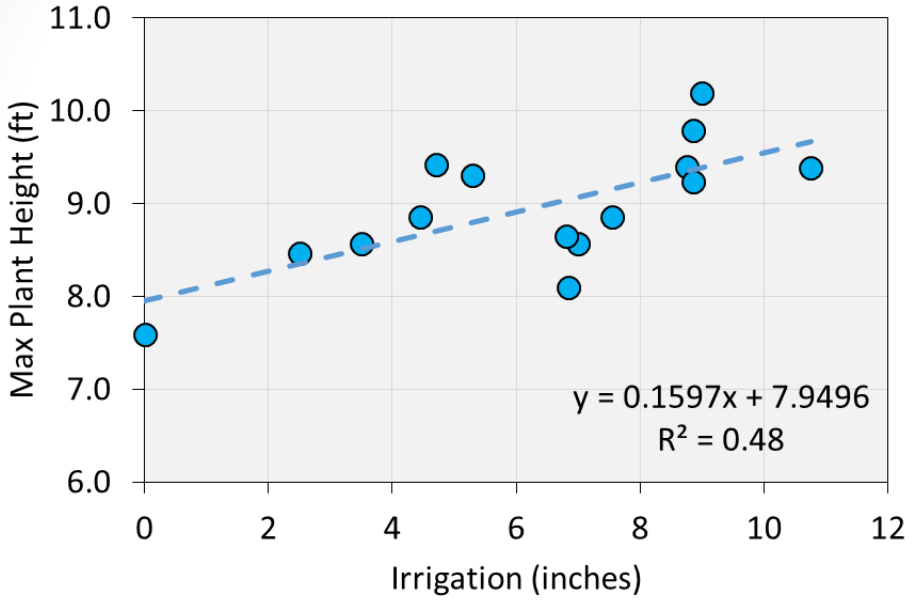
Comparison of Ears and Plants

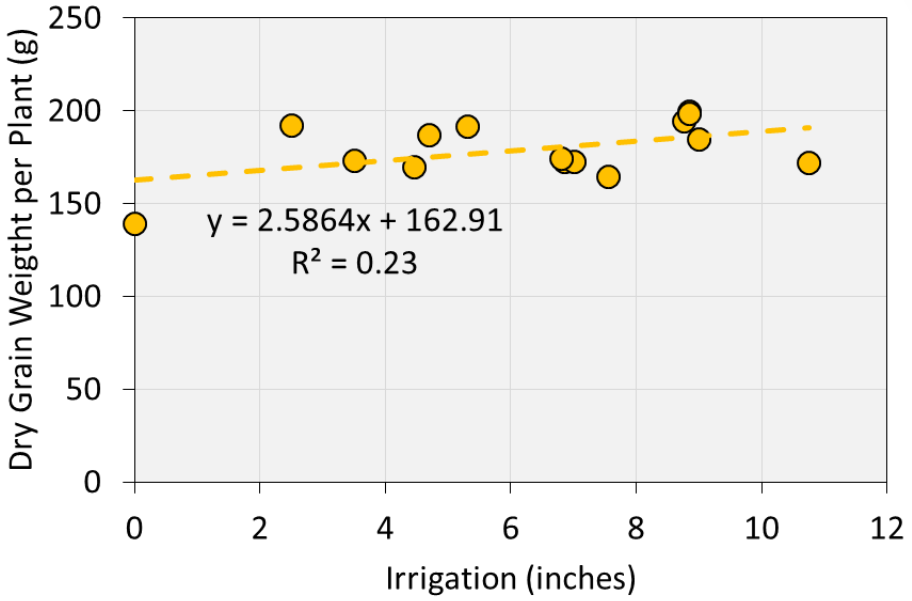
Farm #	Kernels per Ear (g)	Above Ground Biomass (g/plant)	Plant Height (in)	V12 N% Leaf (%)	Stalk Nitrate (ppm N)
1	538	127	103	2.88+	2988
2	**712**	135	**112**	3.09	3564
3	597	**152**	102	3.02	4497
4	615	146	**122**	3.09	**7543**
5	603	123	106	3.05	**7189**
6	556	115	97	2.88+	5841
7	538	107	**91**	**2.58+**	**208+**
8	579	**148**	**113**	3.05	6316
9	563	126	103	2.93+	4177
10	568	129	104	2.75+	3133
11	**734**	133	**117**	**3.28**	**7018**
12	613	118	106	2.88+	5507
13	**653**	134	**111**	**3.32**	4229
14	**656**	136	**113**	2.91+	**9971**
15	541	129	**113**	**3.24**	3878

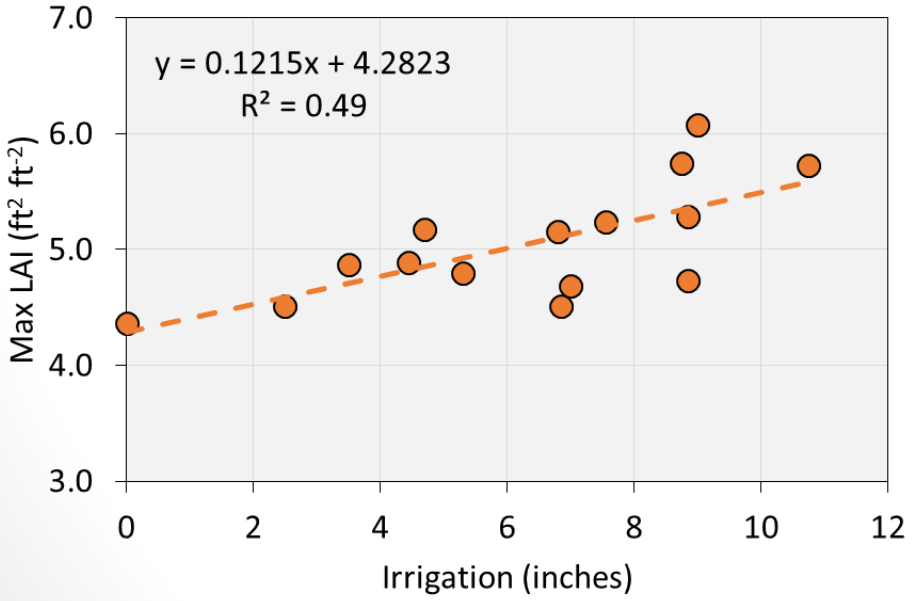
Bold: Statistically Different than UNL's Full Treatment (Farm #9)

$^{+}$ Insufficient nitrogen status

Plant Response to Irrigation

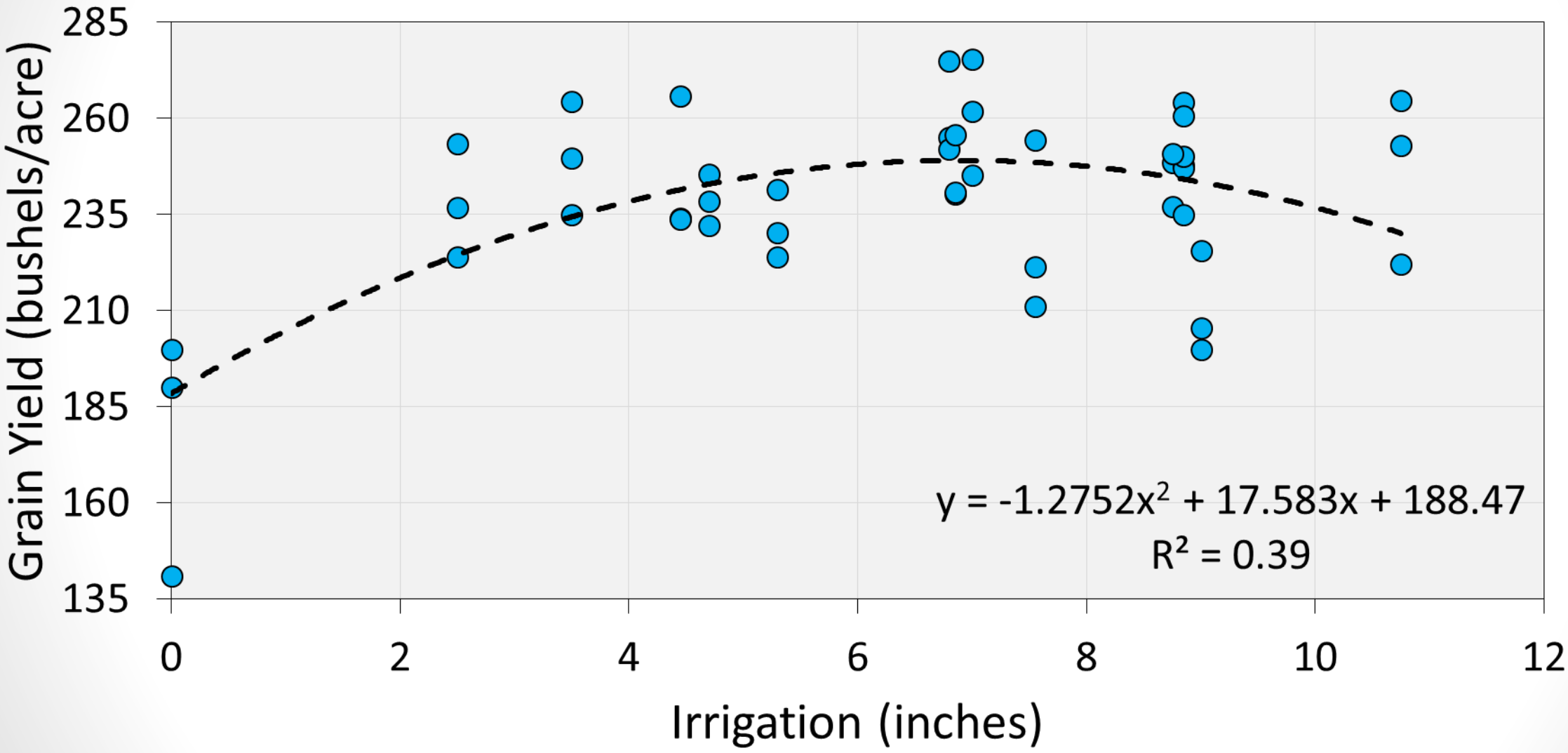




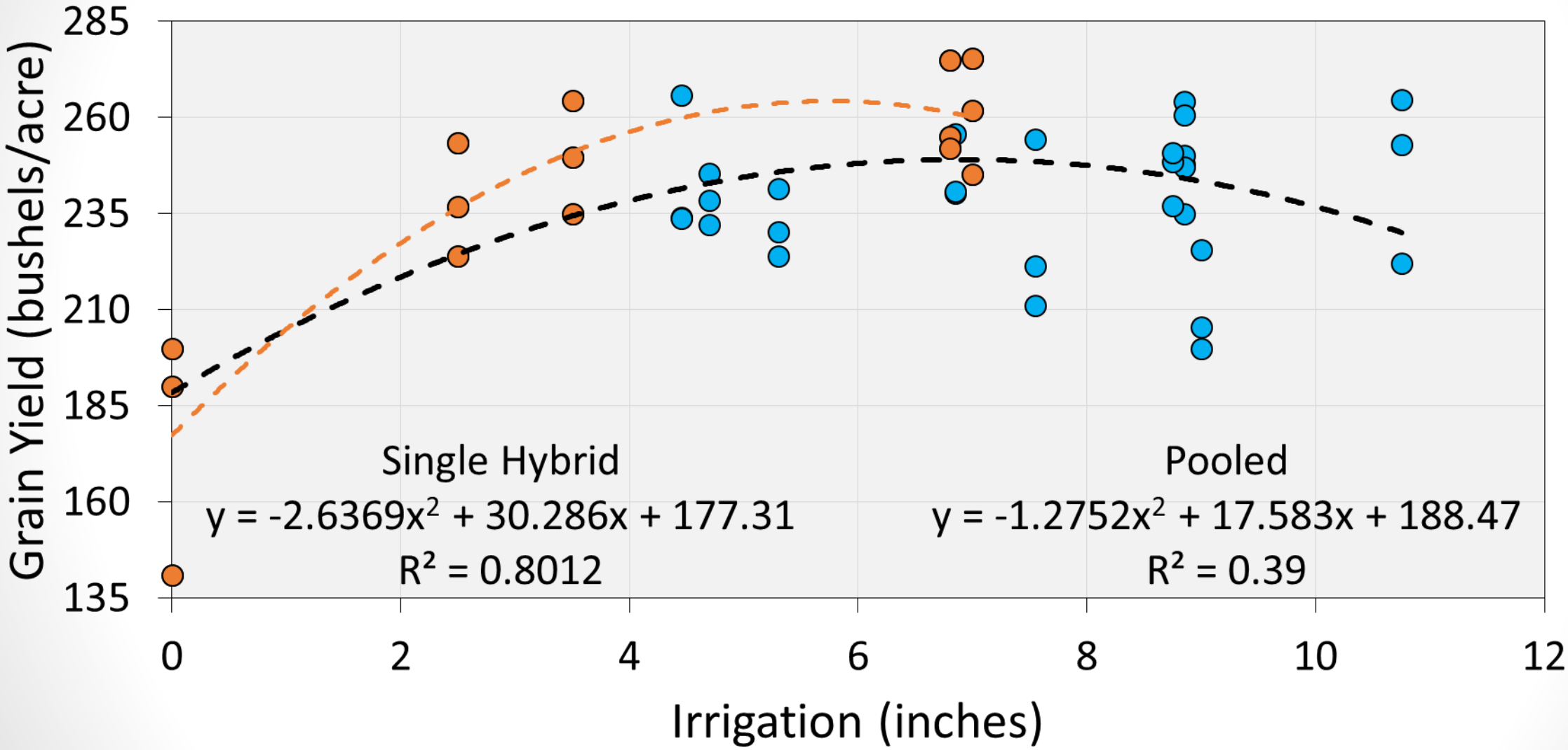


Jasreman Singh

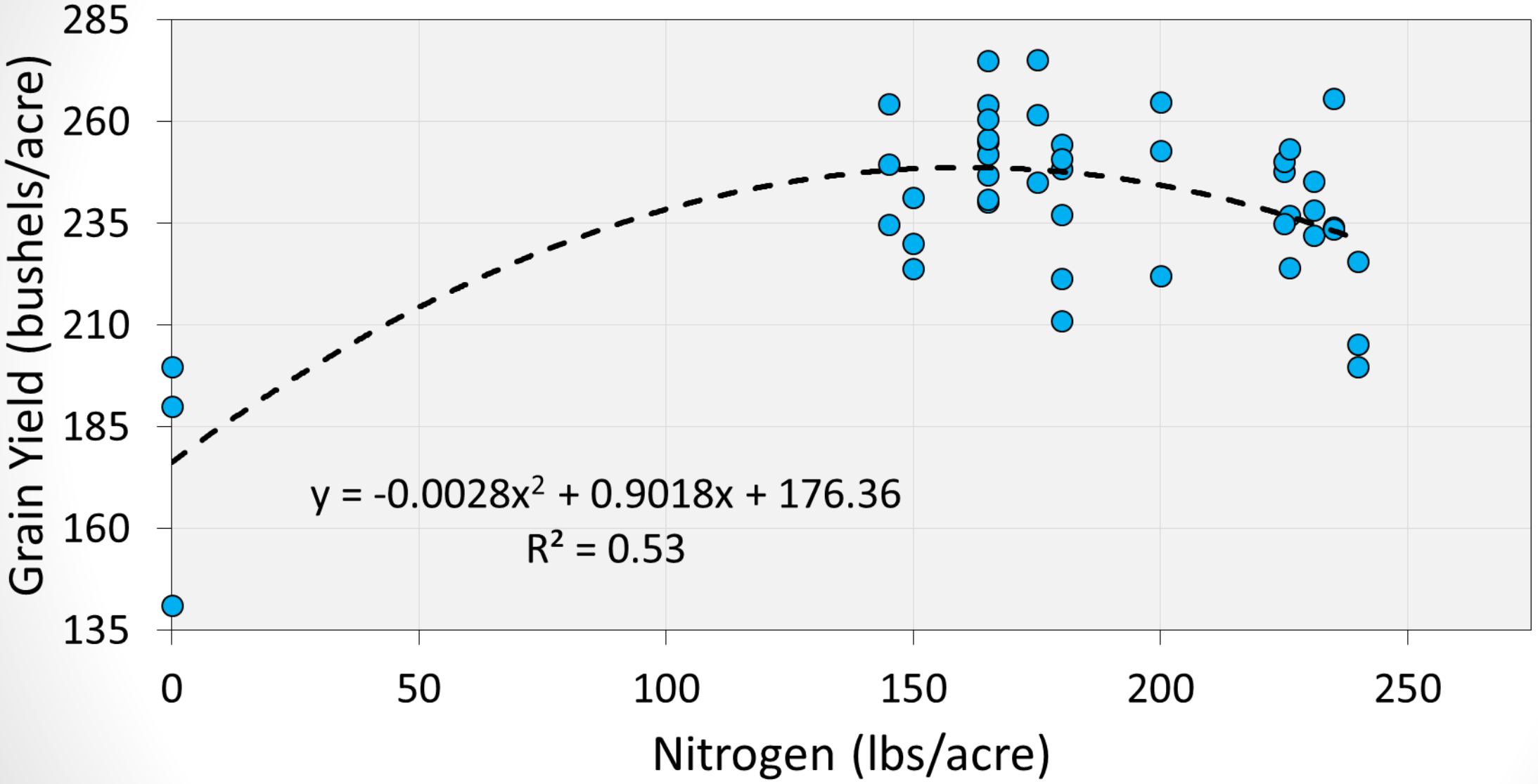
Yield Response to Irrigation



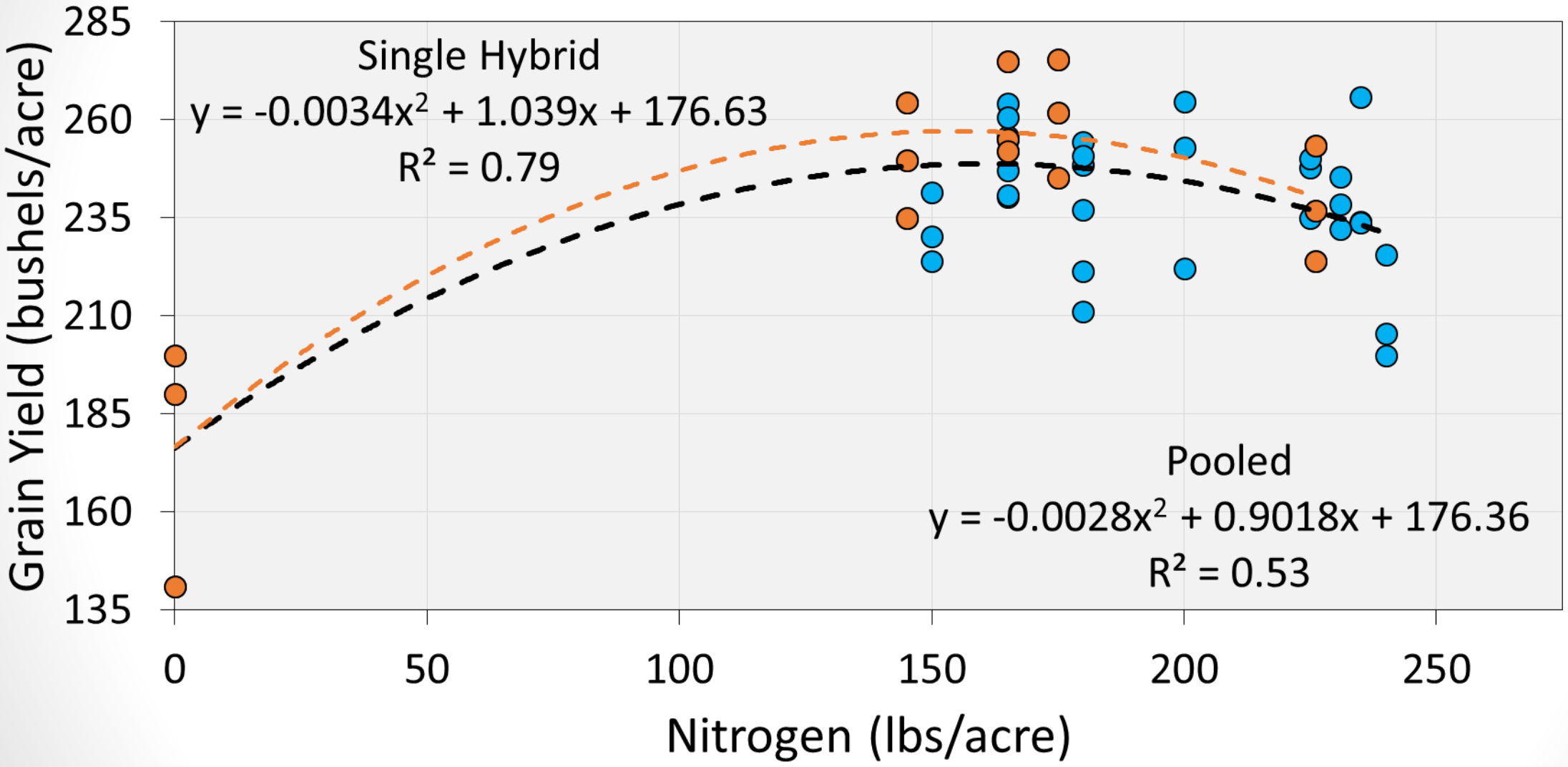
Yield Response to Irrigation



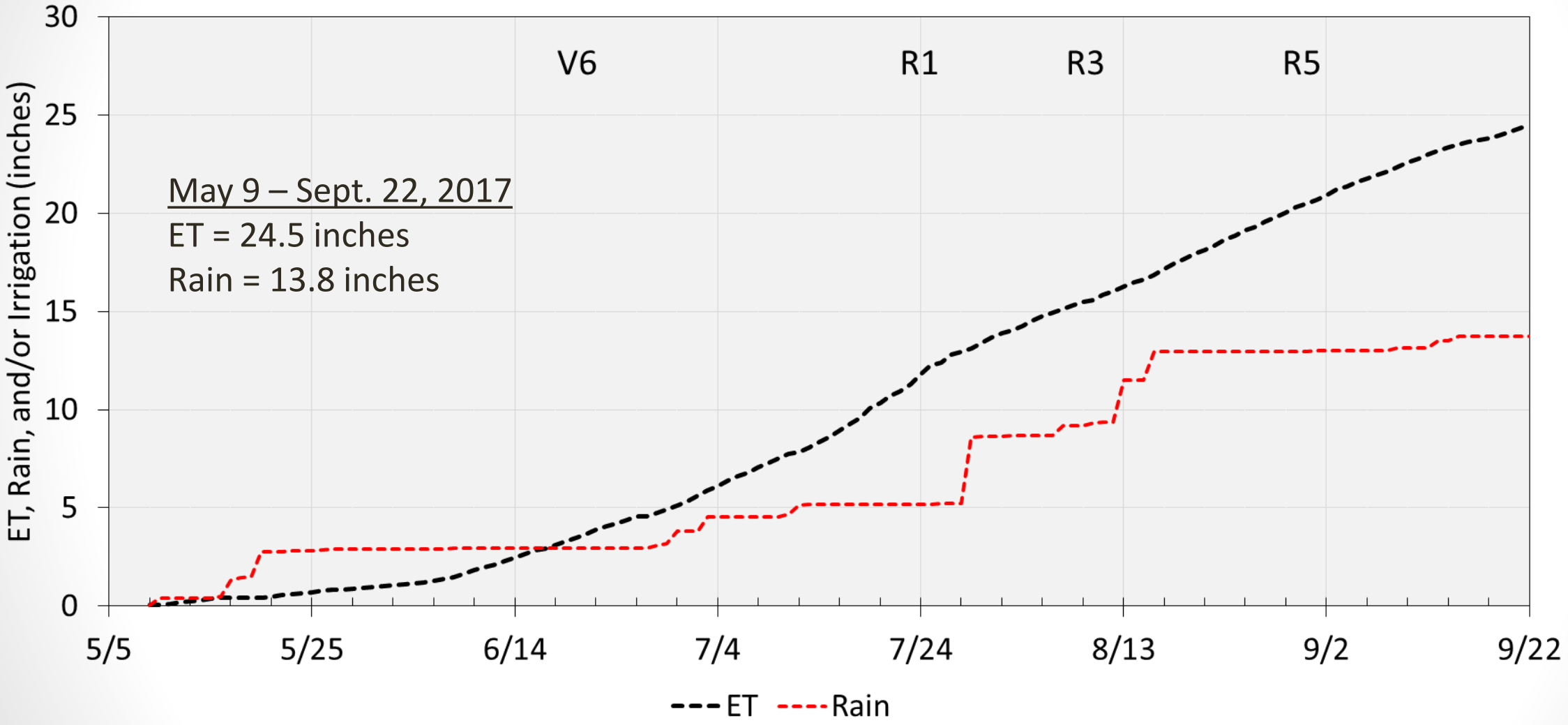
Yield Response to Nitrogen



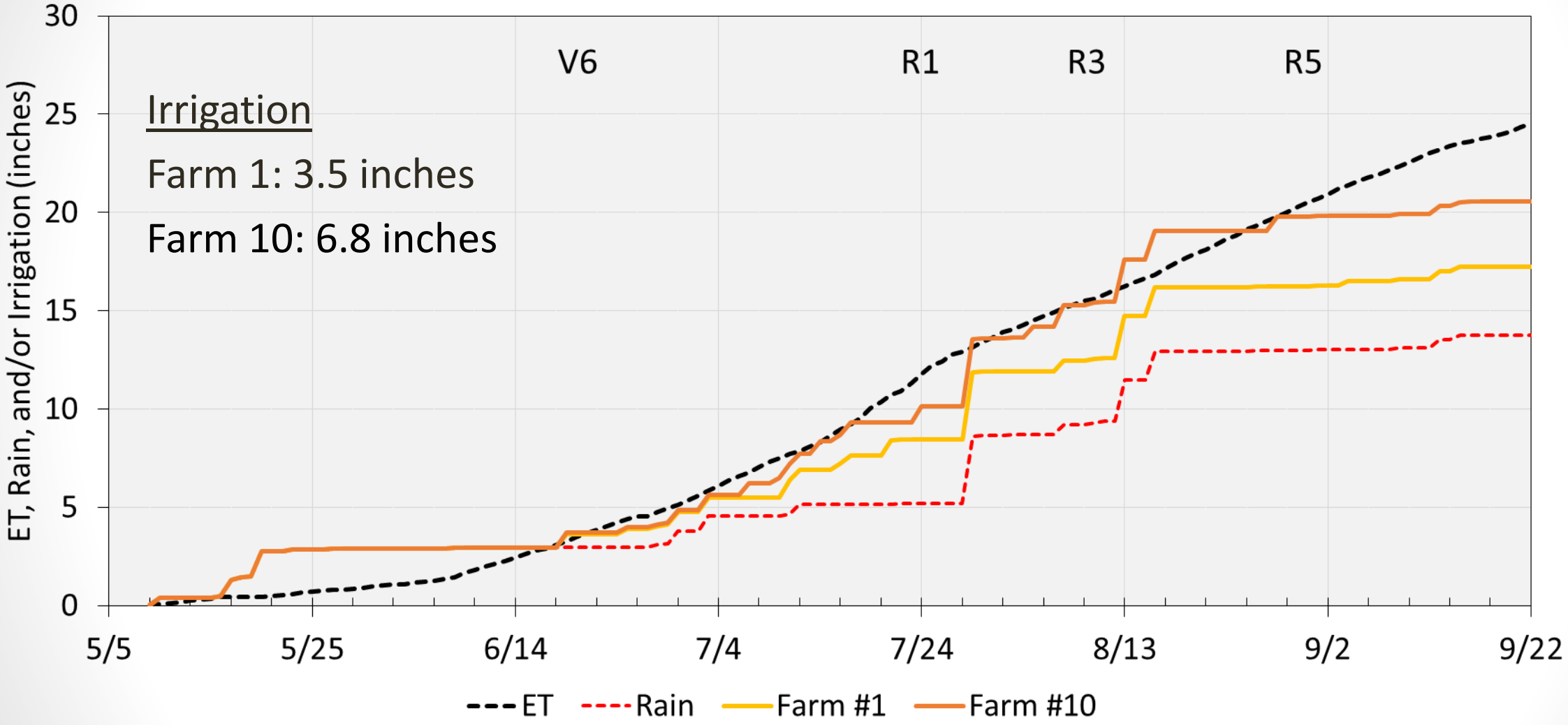
Yield Response to Nitrogen



ET vs. Water Supply



ET vs. Water Supply

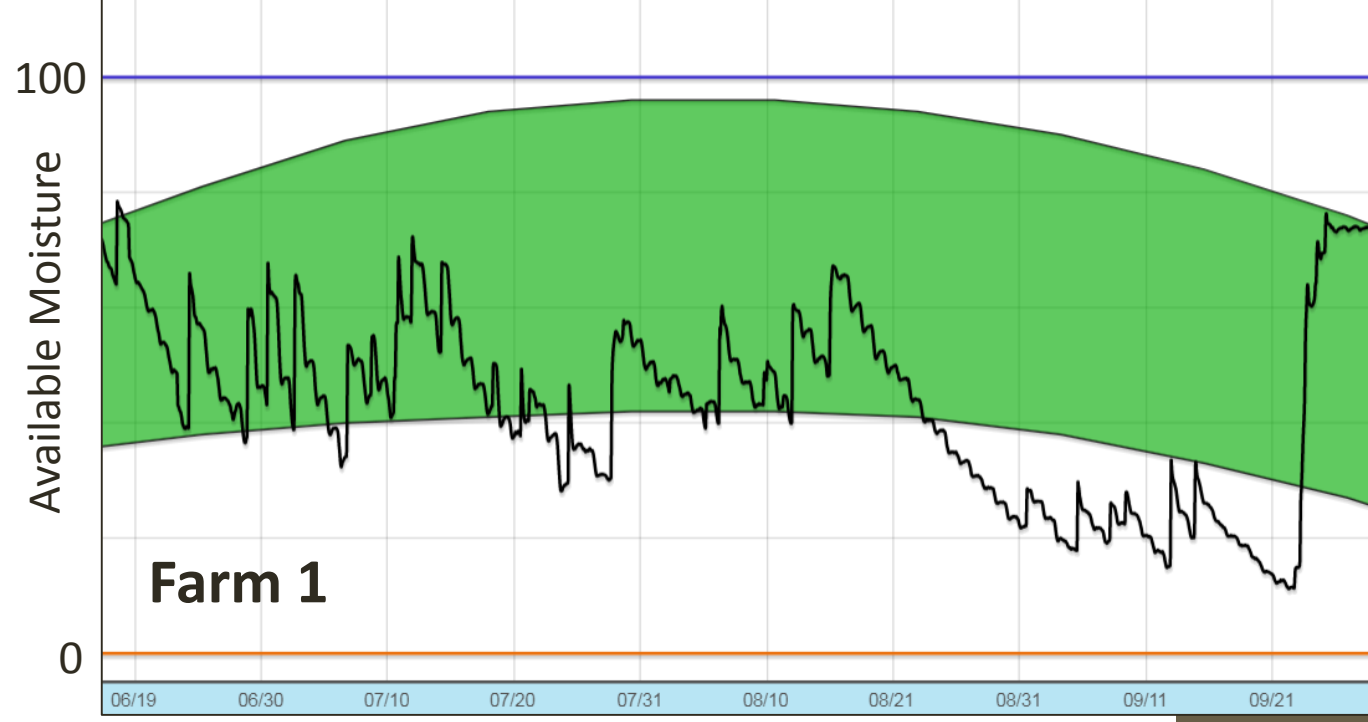


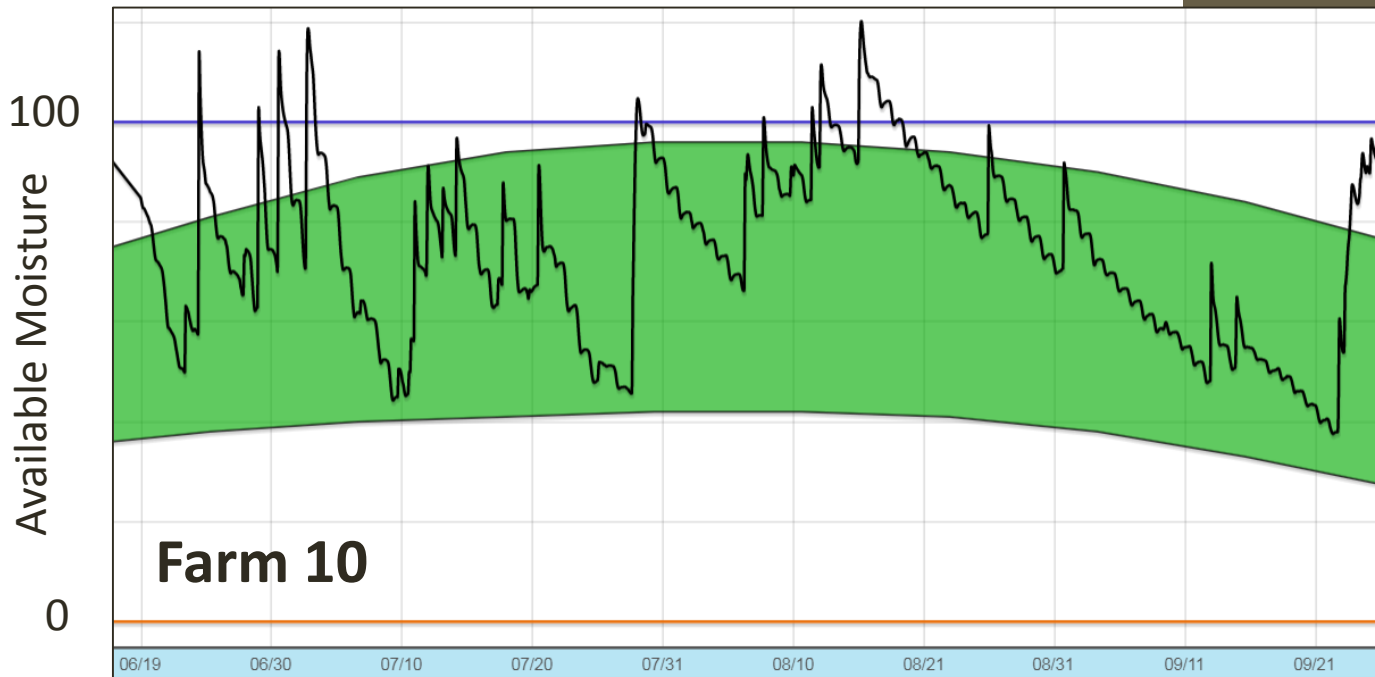
AquaSpy Soil Water

Farm 1: 3.5 inches

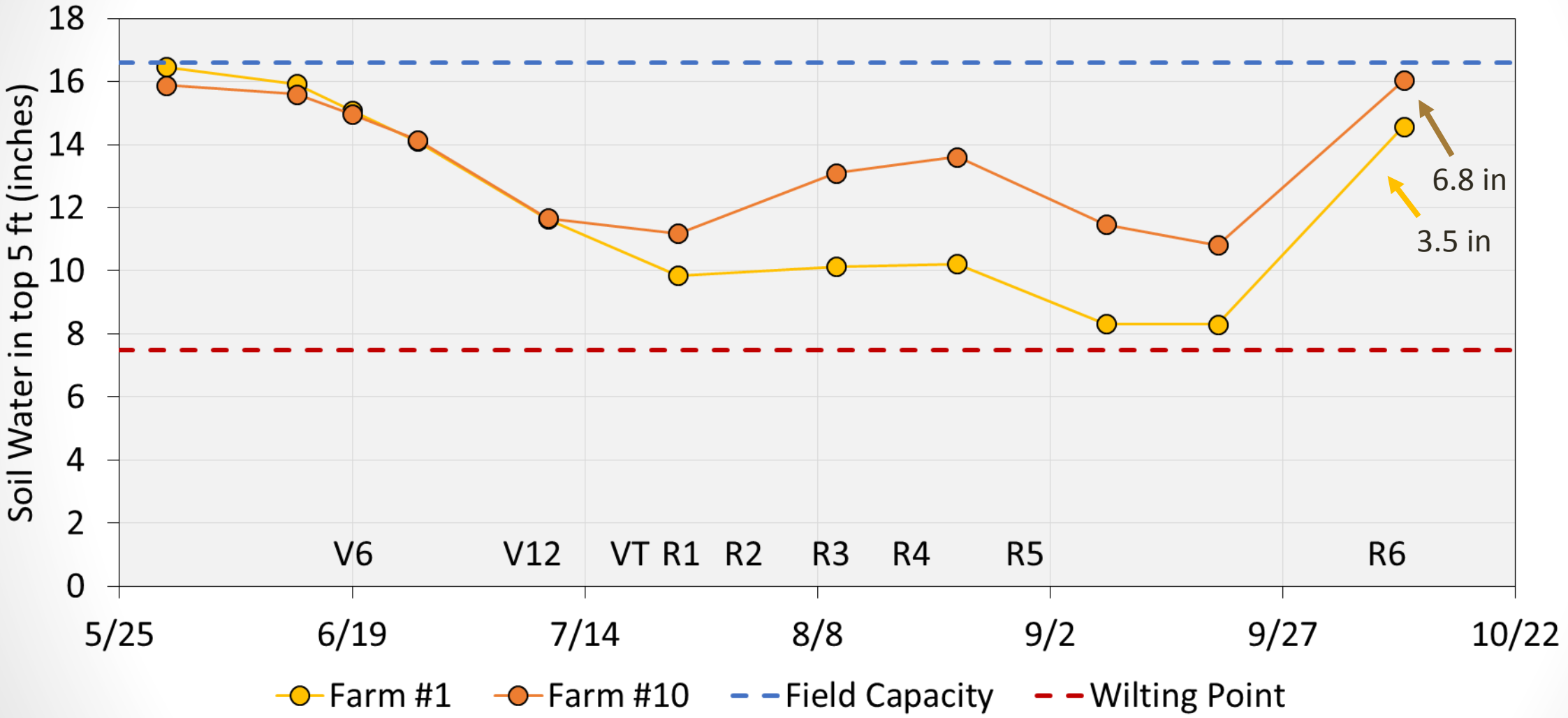
Farm 10: 6.8 inches

AquaSpy®

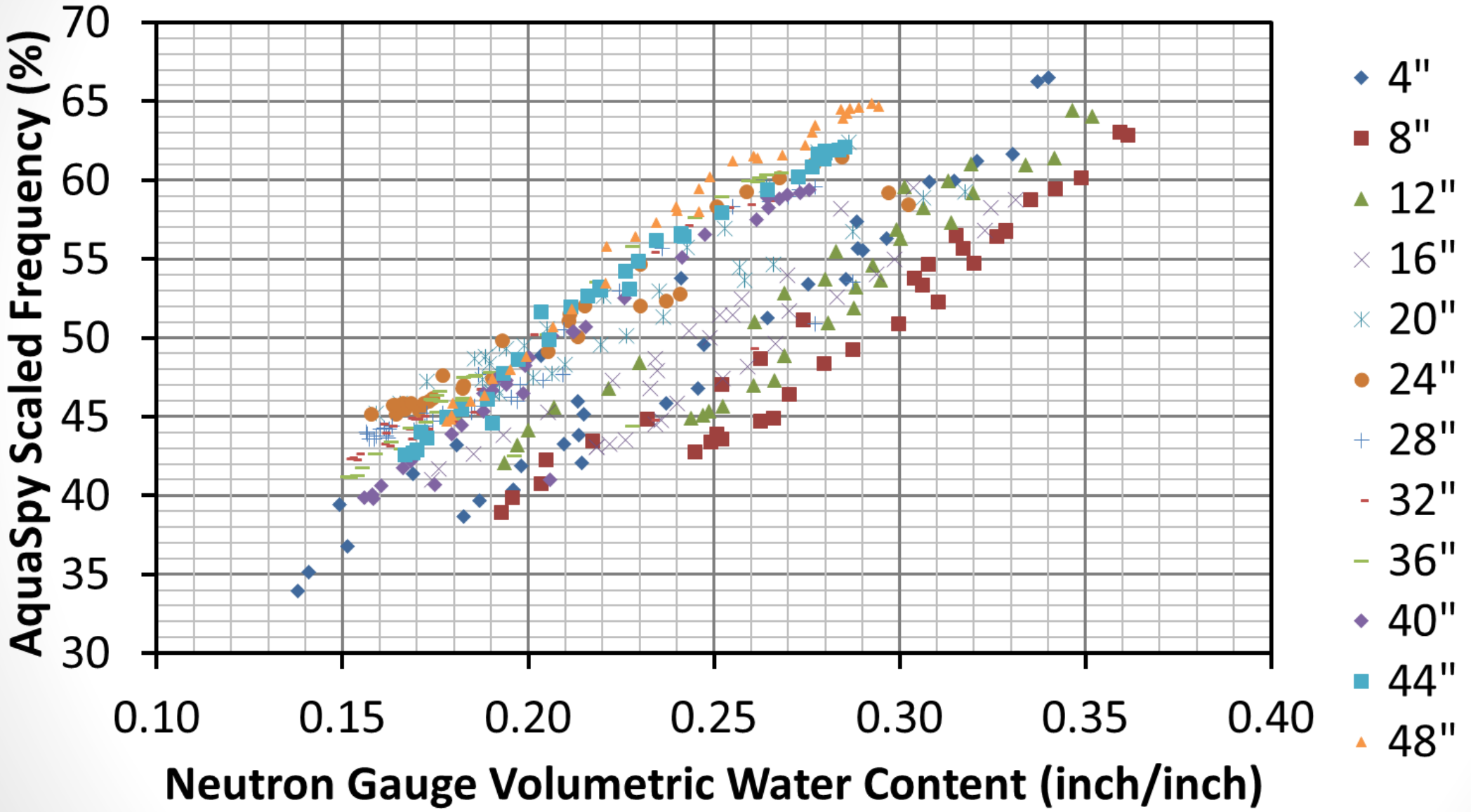




Volumetric Water Content



AquaSpy Sensor Response



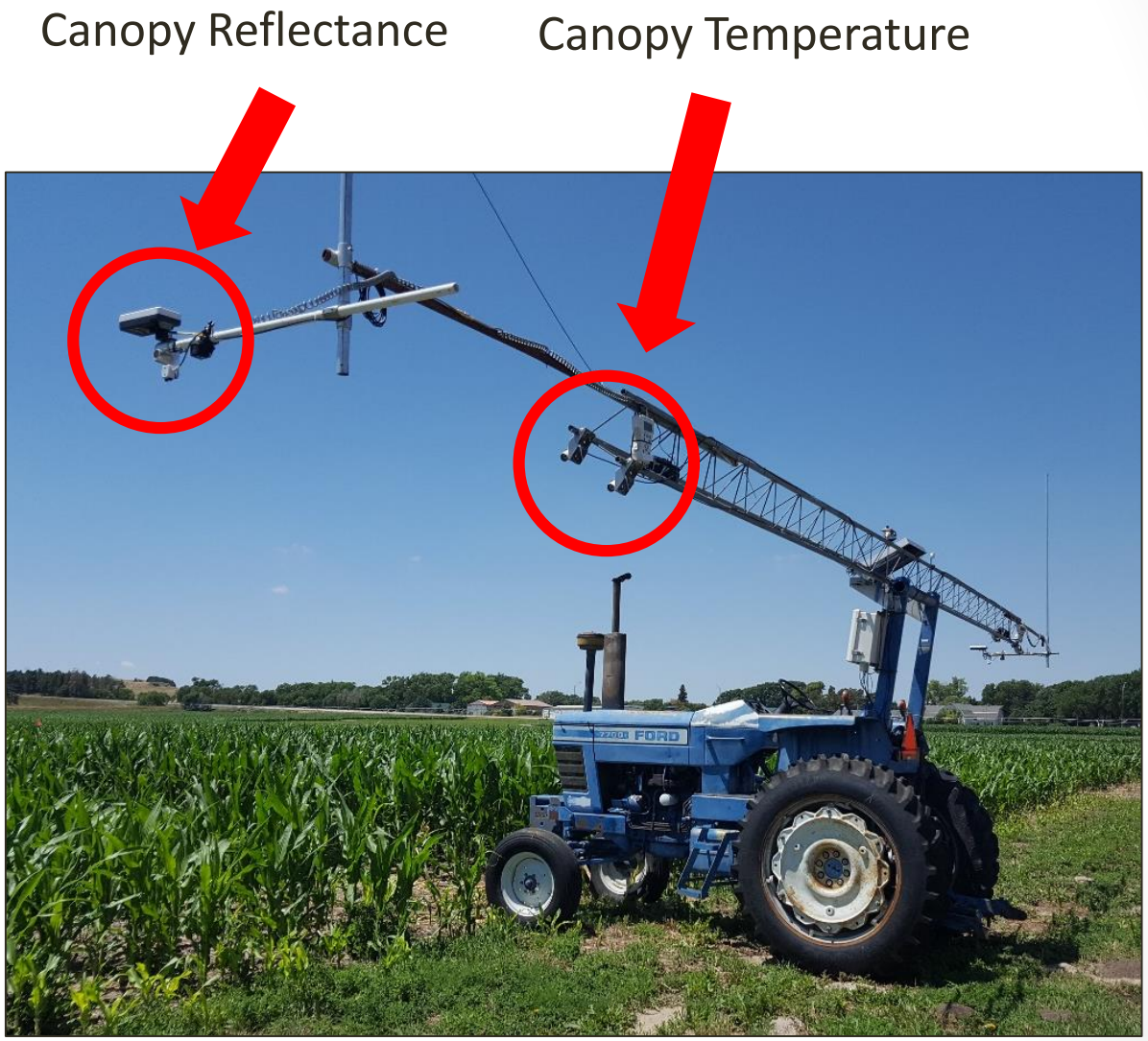
Canopy Temperature Sensors

Infrared Thermometry

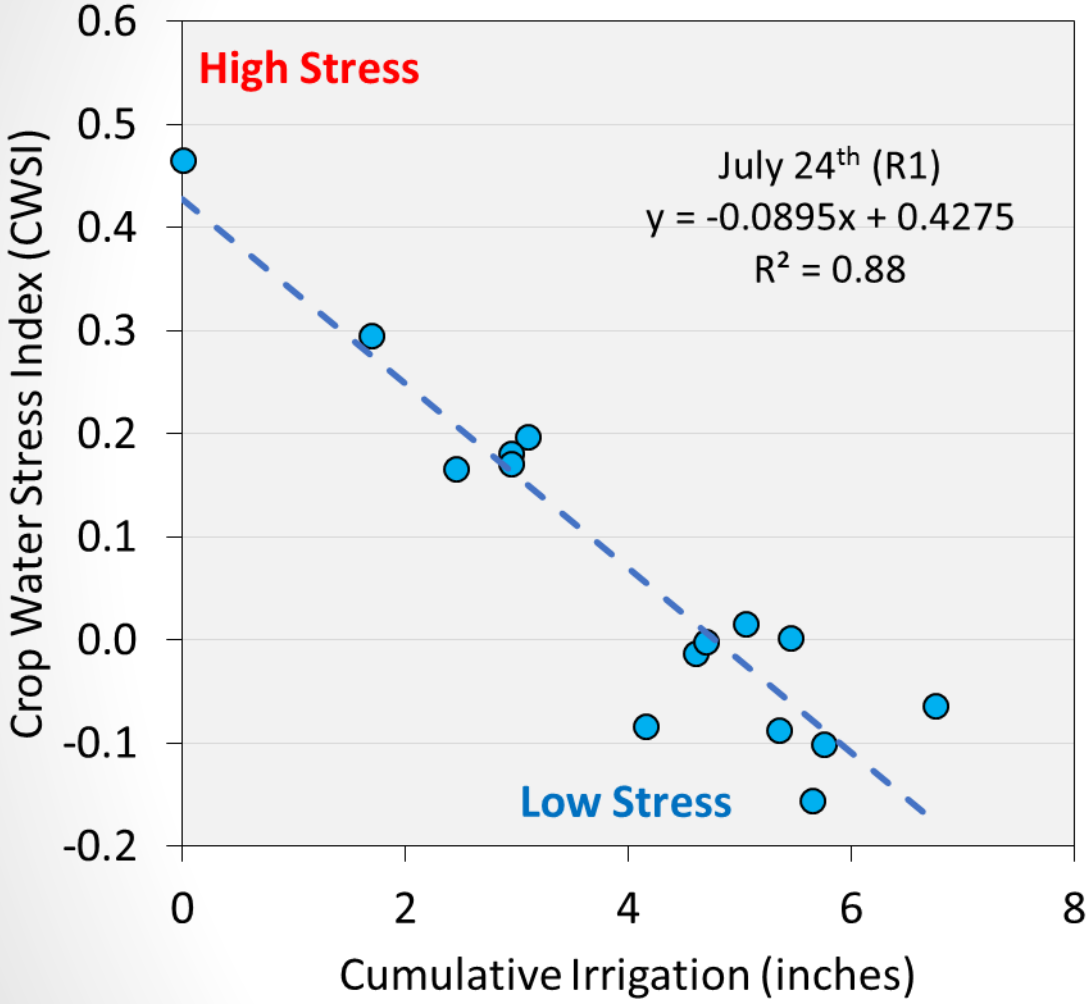
- Ideal method to monitor crop stress since it is non-destructive, scalable, continuous, and less expensive than alternative methods (DeJonge et al., 2015)

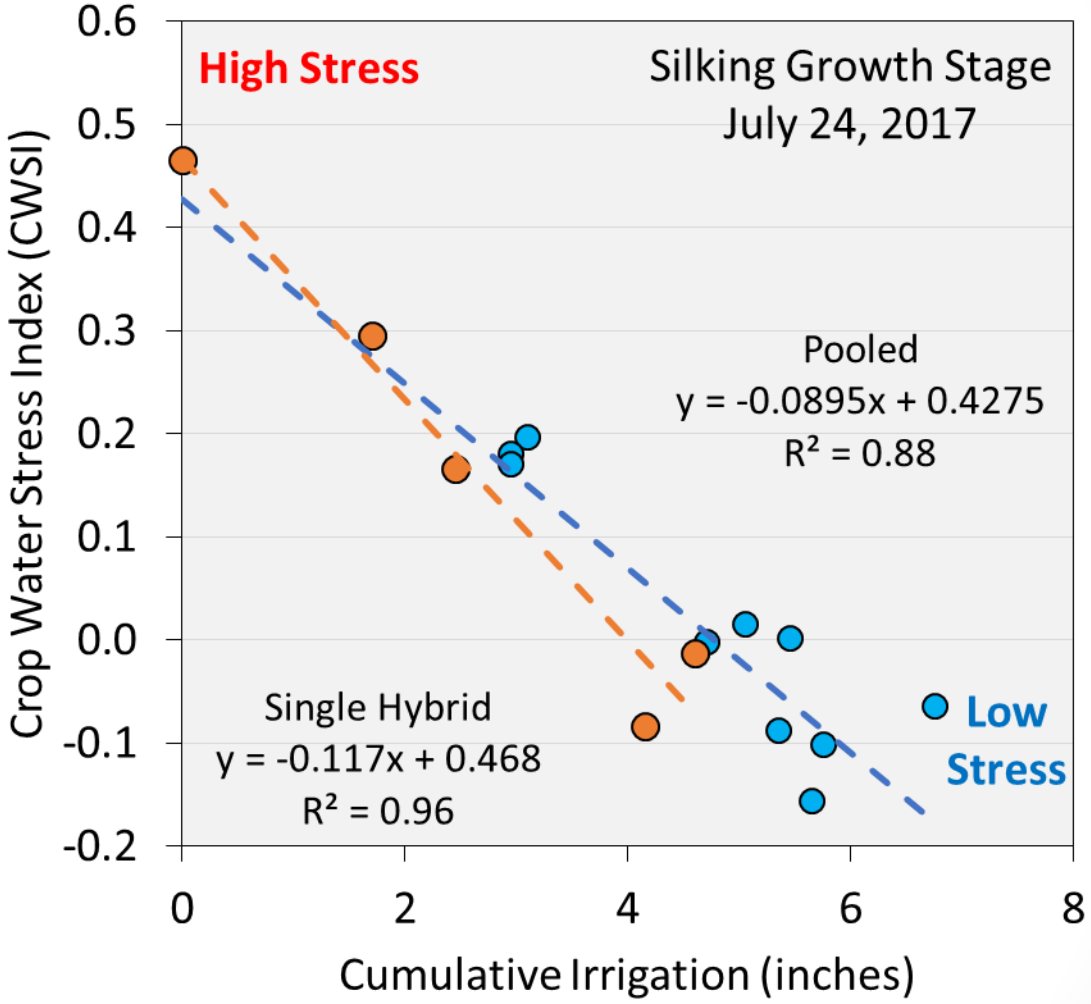
Crop Circle (Canopy Reflectance)

- Active canopy sensor that provides canopy reflectance data. Often used to assess differences in nitrogen status.



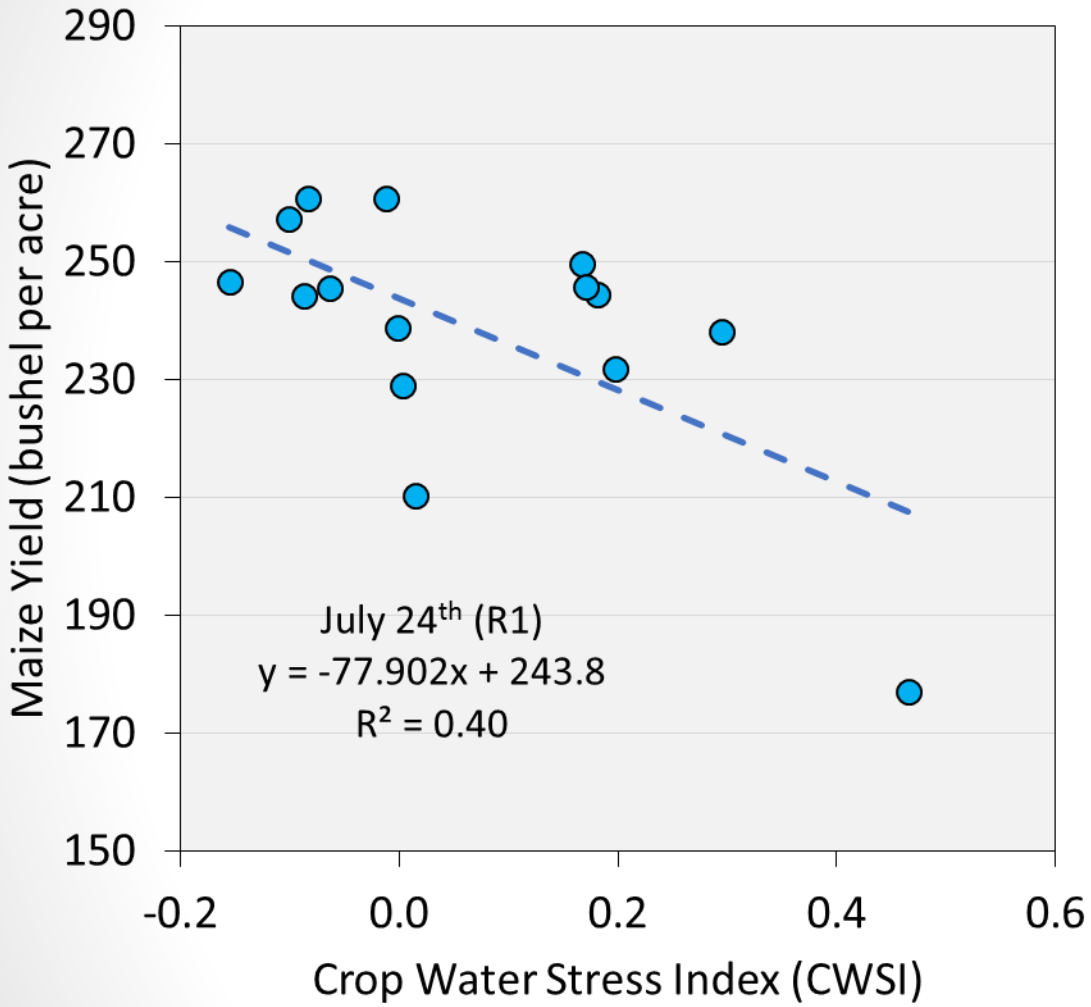
Canopy Temperature

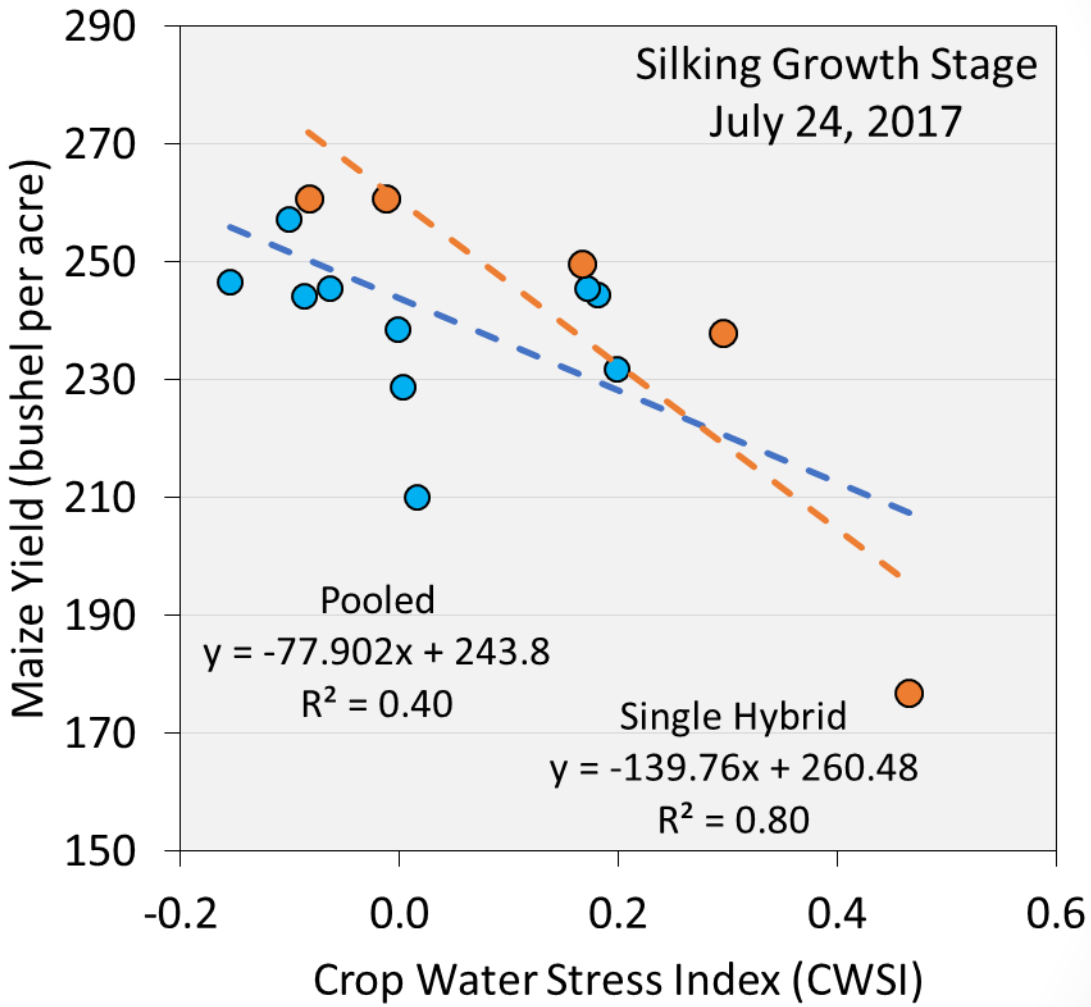




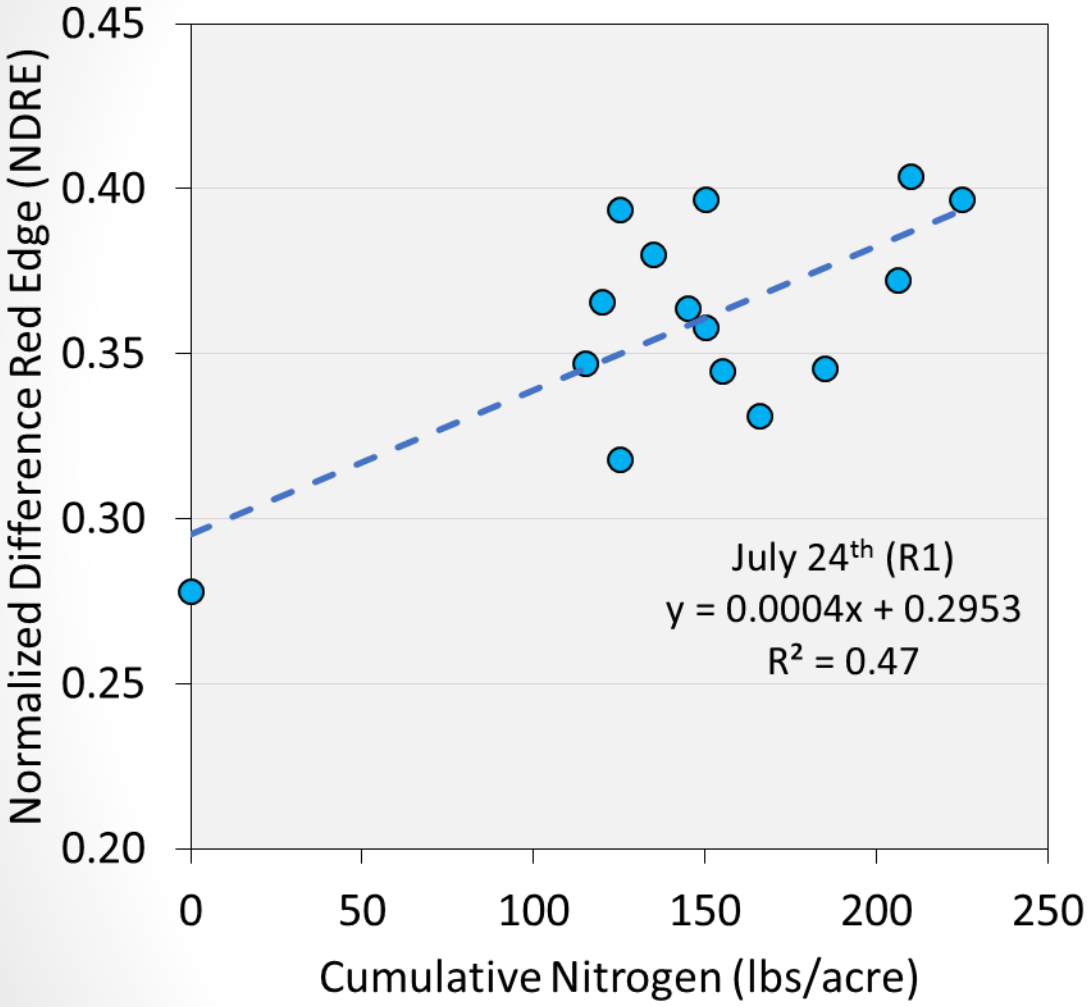
Baselines taken from Payero and Irmak (2006)

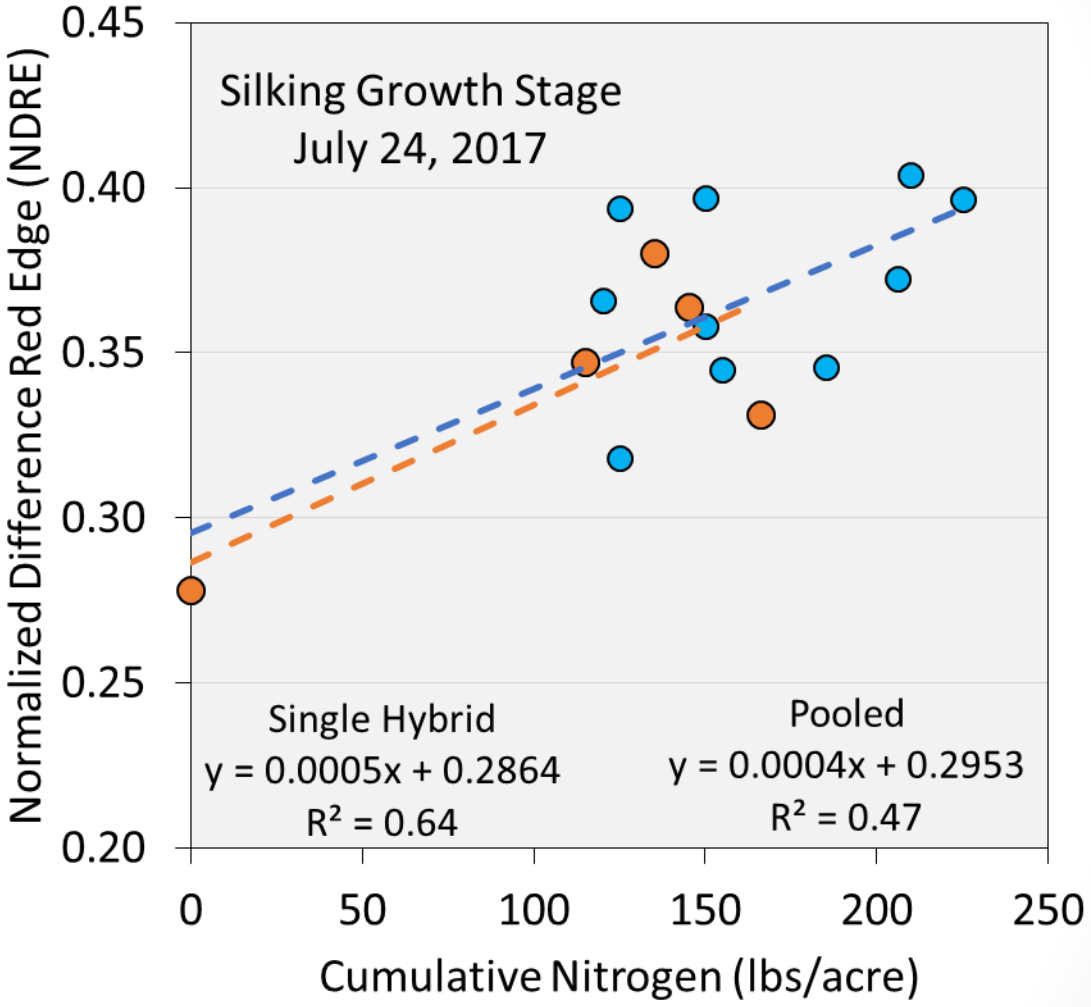
CWSI vs Yield



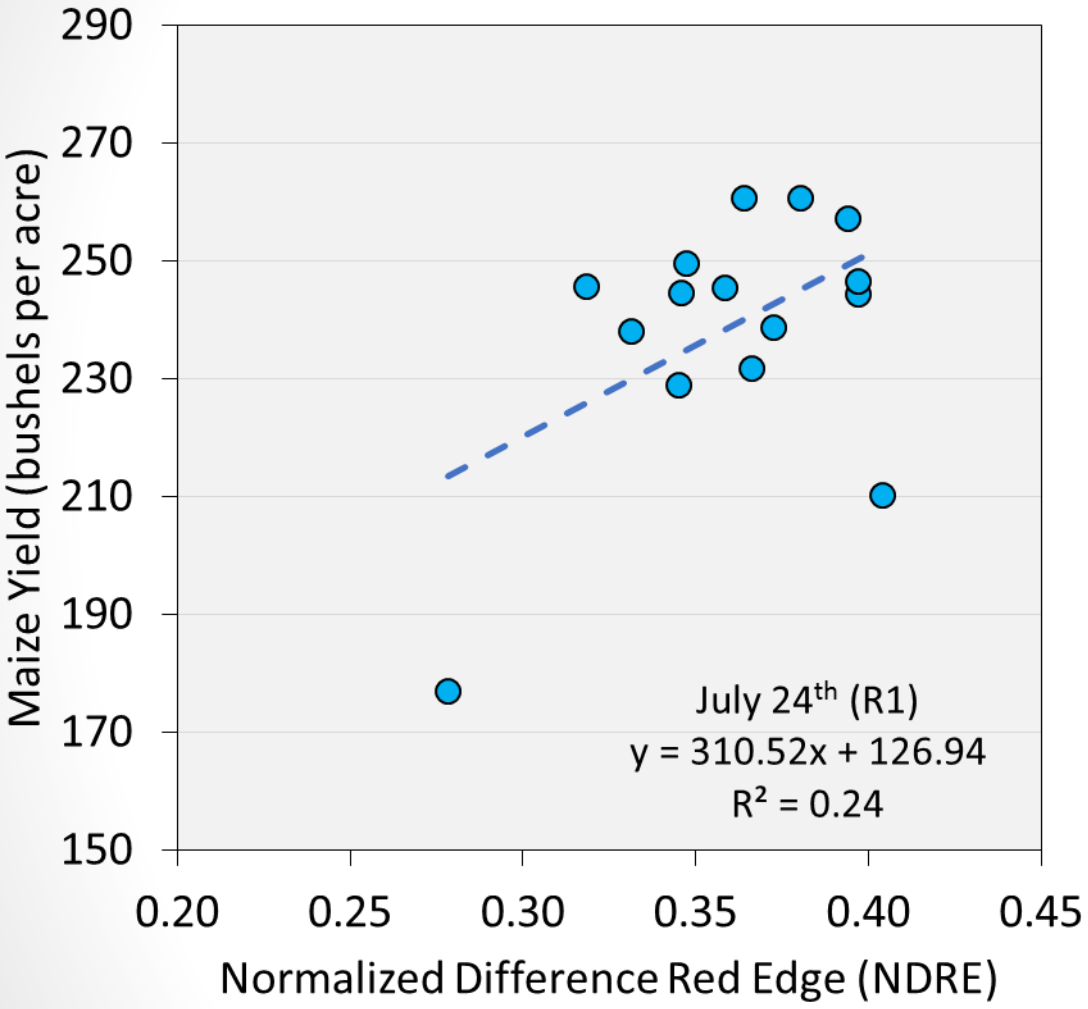


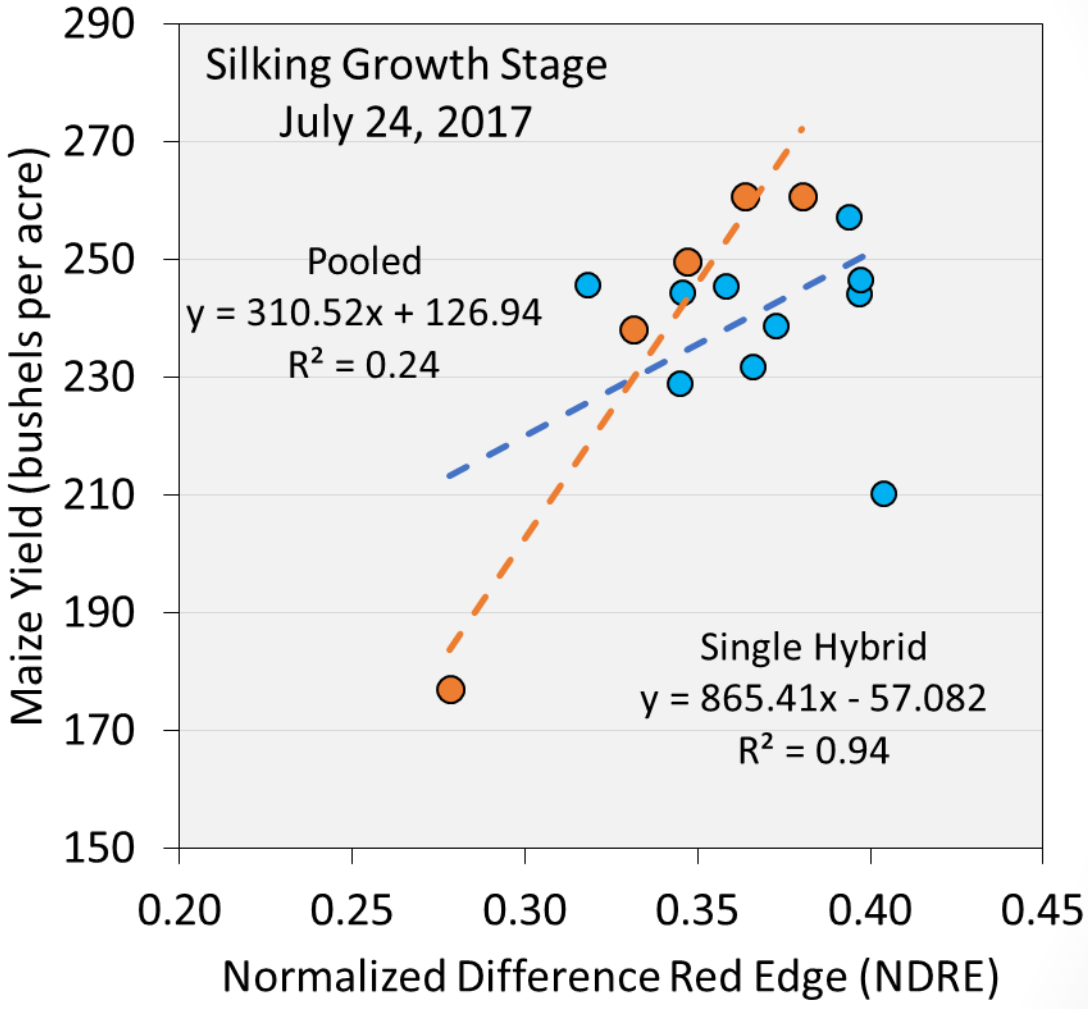
Canopy Reflectance



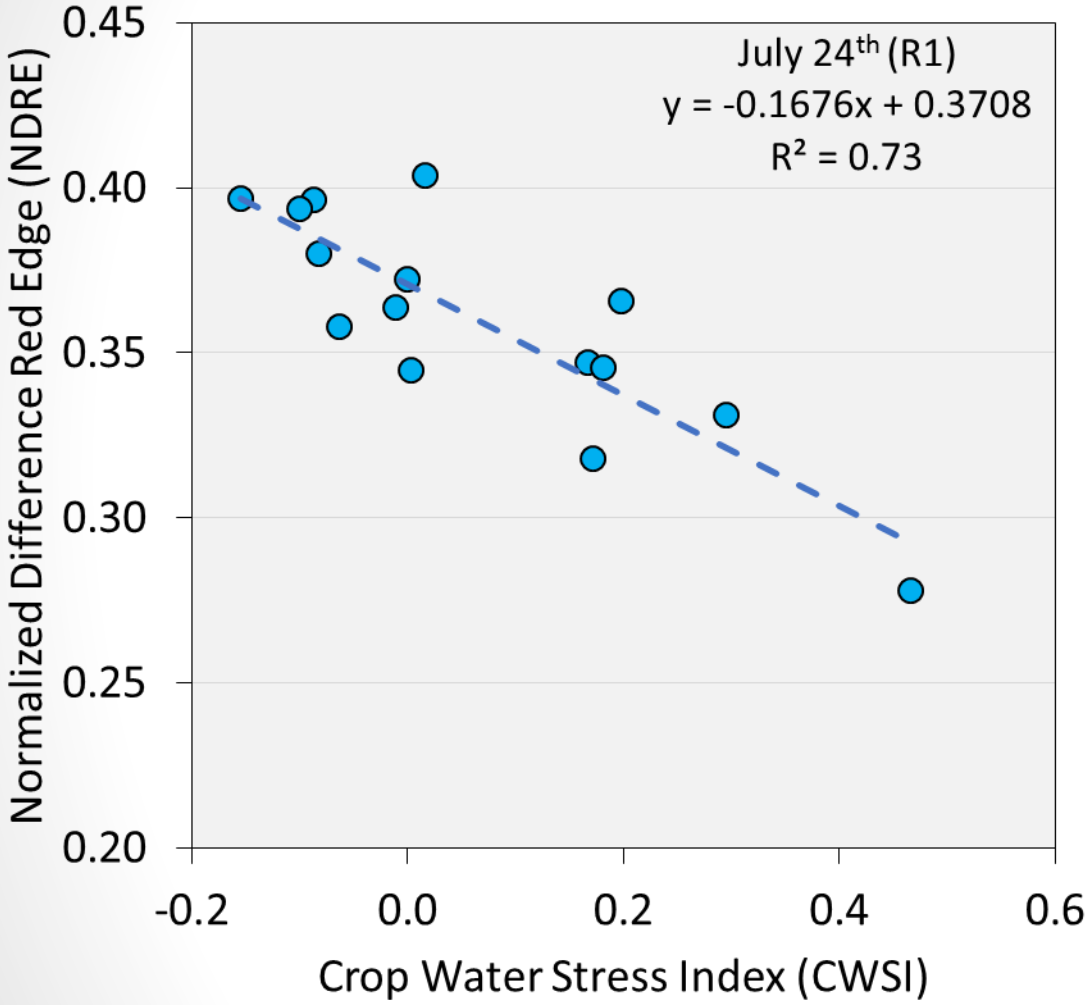


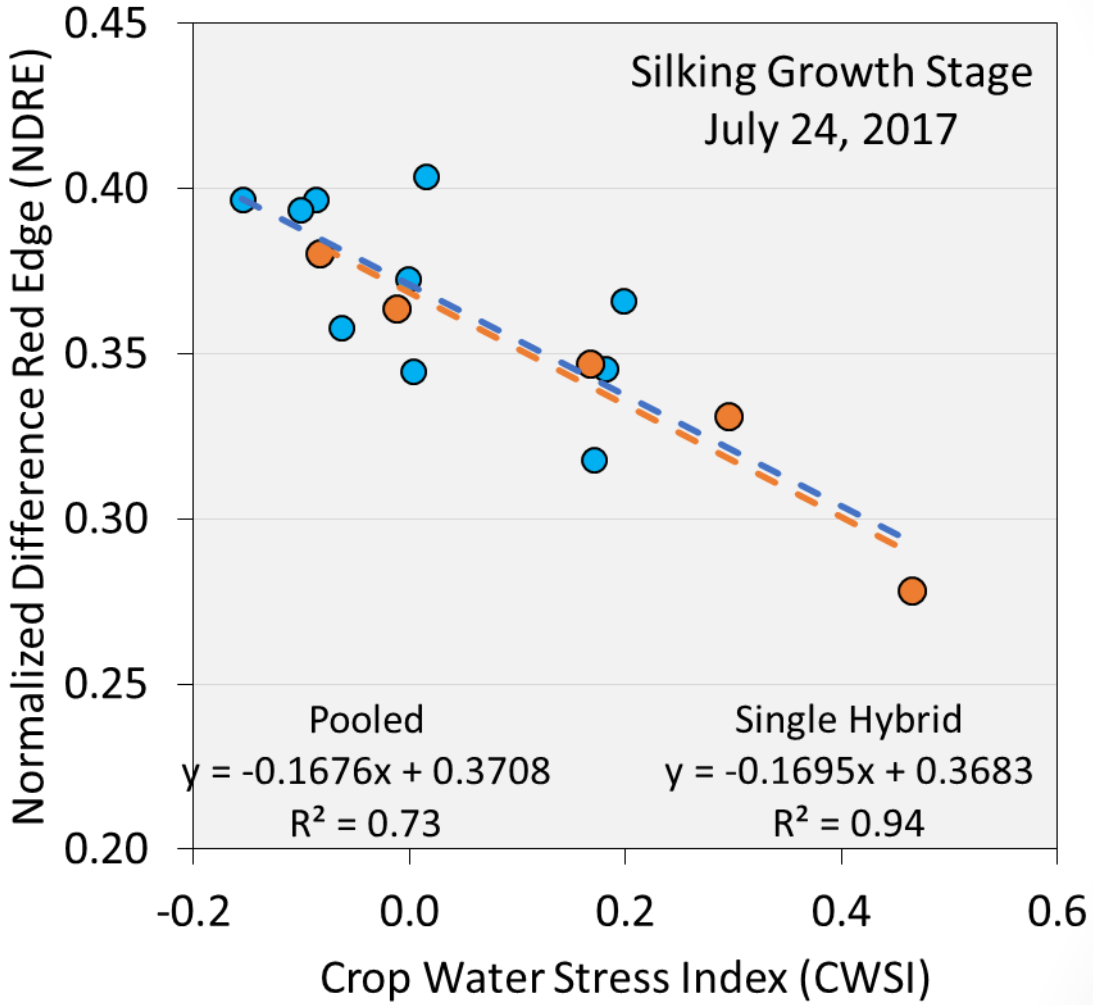
NDRE vs Yield





CWSI vs NDRE


July 24th (R1)
y = -0.1676x + 0.3708
R² = 0.73
Normalized Difference Red Edge (NDRE)
0.45
0.40
0.35
0.30
0.25
0.20
-0.2
0.0
0.2
0.4
0.6
Crop Water Stress Index (CWSI)


Silking Growth Stage
July 24, 2017
Pooled
y = -0.1676x + 0.3708
R² = 0.73
Single Hybrid
y = -0.1695x + 0.3683
R² = 0.94
Normalized Difference Red Edge (NDRE)
0.45
0.40
0.35
0.30
0.25
0.20
-0.2
0.0
0.2
0.4
0.6
Crop Water Stress Index (CWSI)

2018 Management Competitions Overview

Daran Rudnick, Chuck Burr, and Matt Stockton
West Central Research and Extension Center

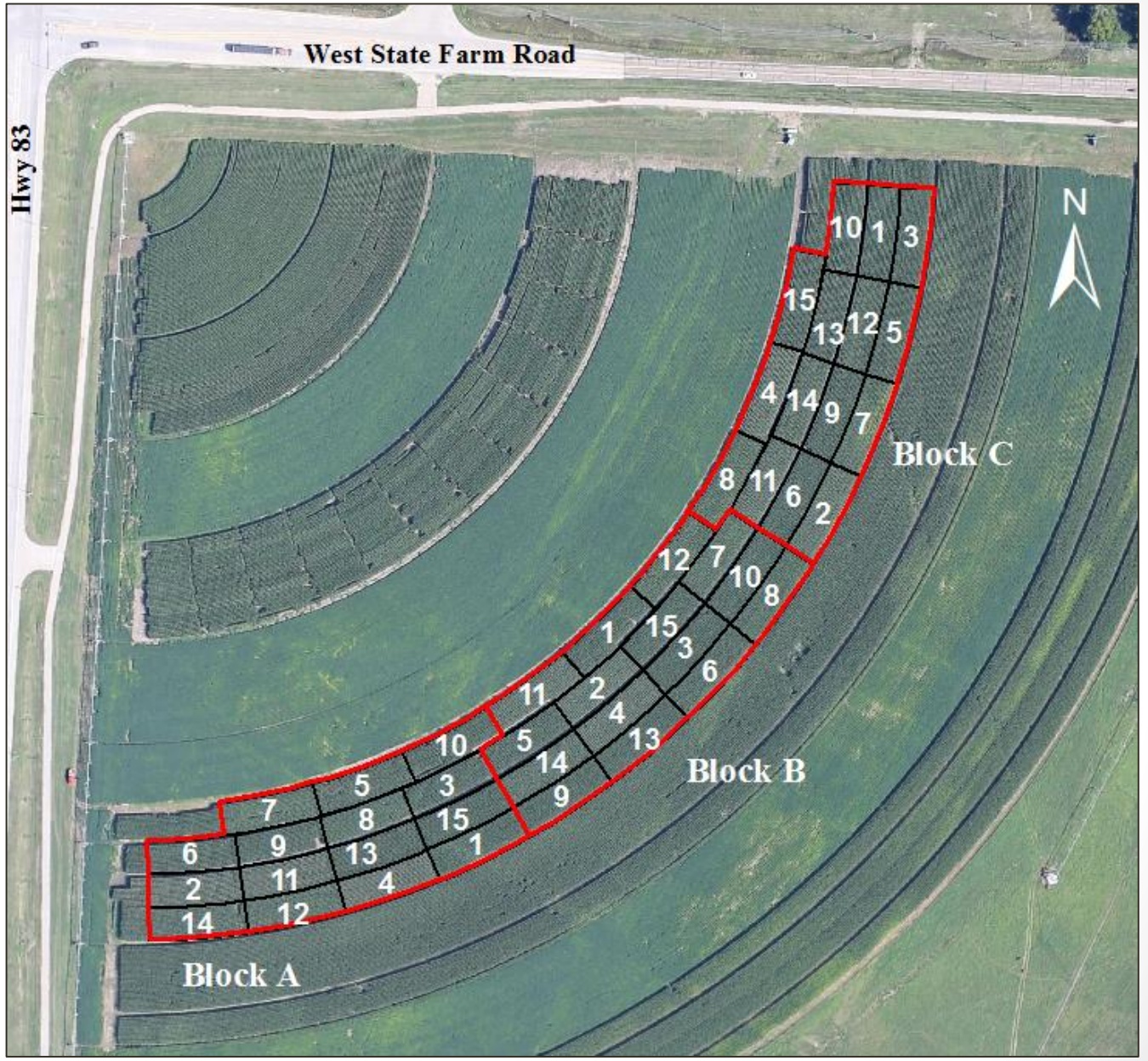
In Partnership with

Nebraska Water Balance Alliance (NEWBA) - Aquamart

2018 TAPS Kick-Off Meeting
March 13th, 2018

Site Description

- West Central Research and Extension Center (WCREC) in North Platte, NE
- Competition Design
  - 15 “Farms”
- Soil Type
  - Cozad Silt Loam
- Climate
  - Semi-Arid
- Seasonal Rainfall
  - 13.8 inches



Rules and Regulations

- Operators are encouraged to visit and observe their “Farm”.
- Operators may install equipment and/or collect additional data from their plots at their own expense (with approval), but the data must be made available to the organizing hosts.
  - Sensors, soil samples, plant samples, etc.
- No additives, secret ingredients or soil, water or additional fertilizers or manures may be added to the plots
  - Individuals must confine their management to the set of listed parameters
- Tampering or modifying any plot at the WCREC are grounds for disqualification.

Awards (Subject to Increase)

1. Most Economically Profitable
   - Amount = $2,000
2. Highest Input Use Efficiency:
   - Water-Nitrogen Intensification Performance Index (WNIPI)
   - Amount = $1,000

$$WNIPI = \frac{\left(\frac{Y_{Farm}}{Y_{Control}} - 1\right)}{\left(1 + \frac{I_{Farm}}{ET_{Control}}\right) \times \left(1 + \frac{N_{Farm}}{ANU_{Control}}\right)}$$

3. Greatest Grain Yield
   - Amount = $500 × (Percent of Most Profitable Farm)
     - Example: Farm 1 has highest yield, but only profited 78% of the most profitable farm.
       - $500 × 0.78 = $390

UNL-TAPS Contestant Agreement

I, _____ agree to **actively participate** in the University of Nebraska-Lincoln Testing Ag Performance Solutions (UNL-TAPS) event. I agree to participant in the various educational/promotional activities to further the stated goals of this project for the year of my entry and the following season to the best of my ability. Educational/promotional activities may include, but are not limited to the following:

- News releases (e.g., UNL, CropWatch, Aquamart, etc.) Interviews (e.g., Nebraska Farmer, Market Journal, etc.)
- Social media posts (e.g., Facebook, Twitter, Podcasts, etc.)
- Practitioner panel discussions at educational programs
- Walking Plot tours
- The Awards Banquet
- Other programs designed for consumer, producer and/or related business education

I agree to provide data, information and comments on my farm management strategies used while competing in the UNL-TAPS program. This information will ***NOT*** be used to identify any single producer but rather as a composite part of the whole data set of all producers.

As a participant, I agree to provide information to be used in news releases/stories/interviews/research papers. In some cases names will not be used to protect the individual's identity.

As a participant, I agree to share what I have learned at various events (University, industry and governmental) workshops and field days, as time permits, to further the goals of the UNL-TAPS program. The UNL-TAPS executive team has the right to terminate my participation in the event at any time during the event year. The executive team is solely responsible for selecting participants and assigning plot areas to individuals.

Printed Name: _____

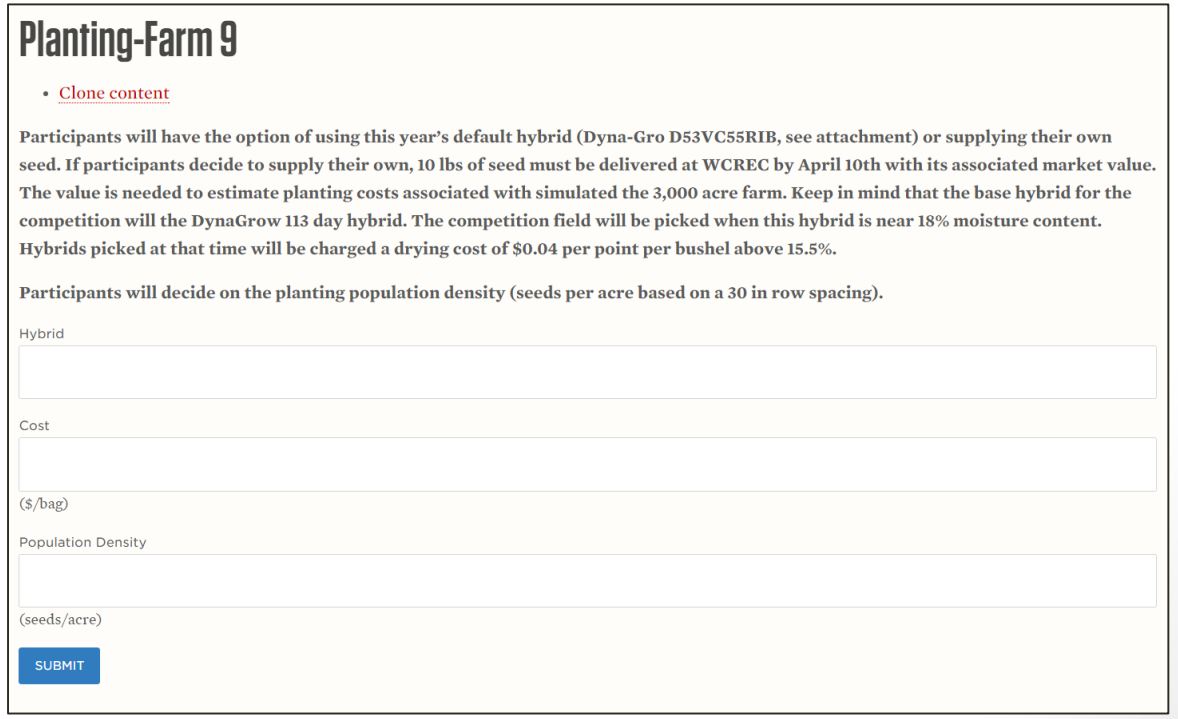
Signature: _____ Date:_____

Project Description

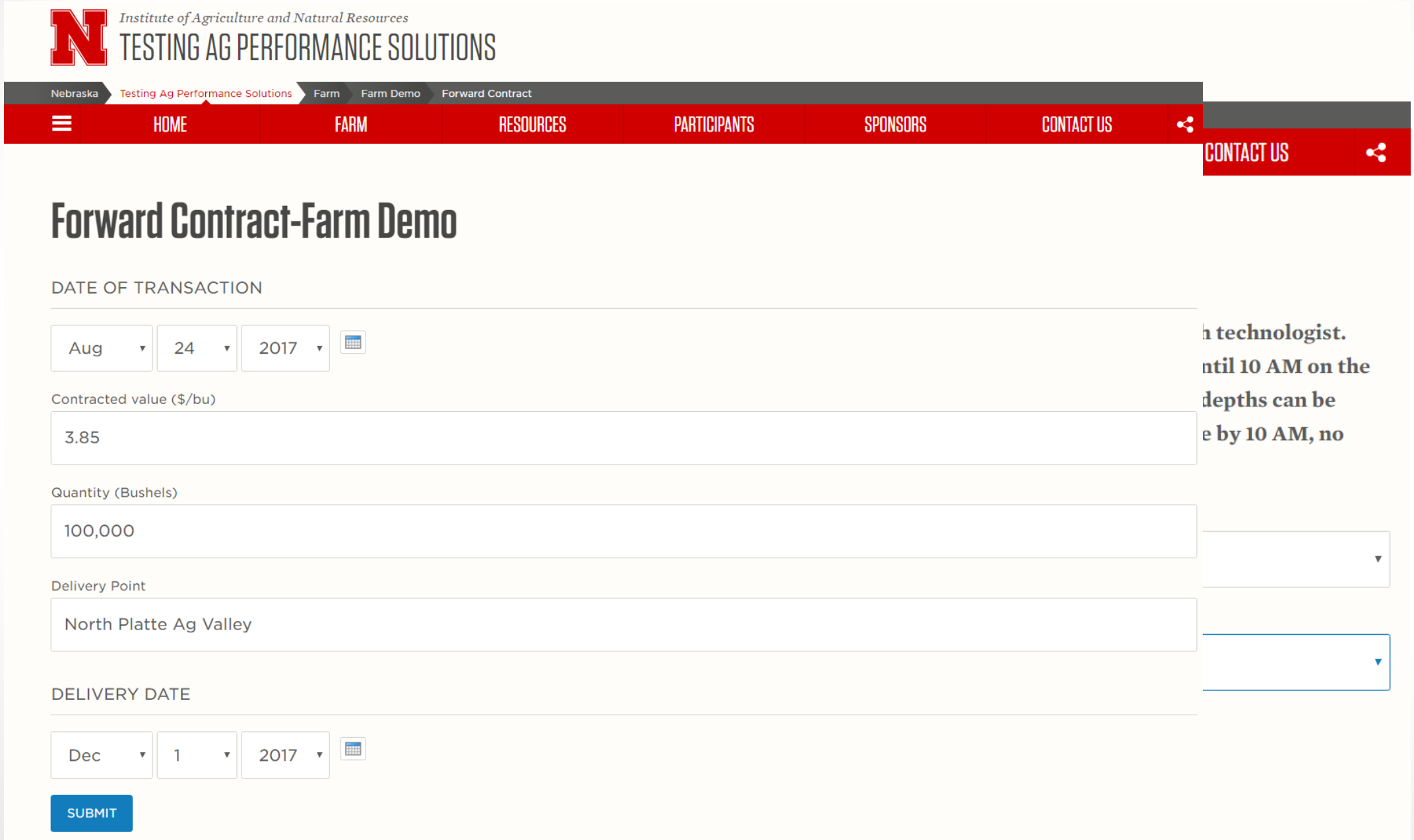
- Each “Farm” on paper included 3,000 harvested acres for the purposes of making decisions, but were imposed on 3 randomized plots (~0.4 acres) held under a variable rate irrigation (VRI) pivot at WCREC in North Platte, NE.

- Management decisions included:
  - Insurance Selection
  - Nitrogen Management
  - Hybrid Selection
  - Seeding Rate
  - Irrigation Management
  - Marketing Grain

Real-time decisions are logged on TAPS.unl.edu

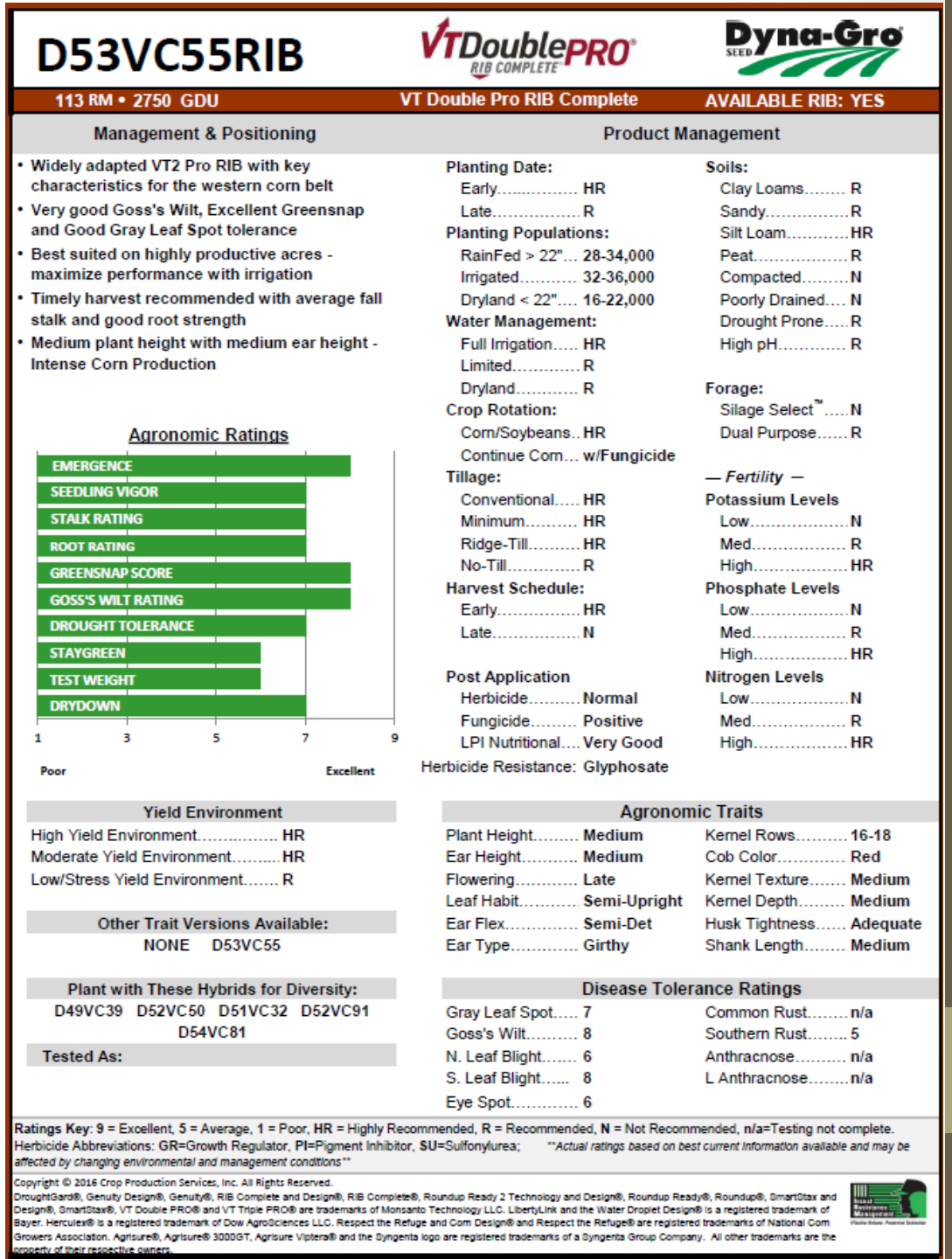


Submitting Management Decisions



Hybrid Selection & Population Density

- Select from Recommended Hybrid List
  - Seed will be provided by company
- Supplying Your Own Hybrid?
  - Provide 10 lbs of seed by April 10th
- Planting Population Density
  - Deadline: April 10th
- WCREC personnel will gather the cost of seed from DSM's in the area to reflect a 3,000 acre farm.



D53VC55RIB — VT Double PRO RIB COMPLETE — Dyna-Gro SEED

113 RM • 2750 GDU | VT Double Pro RIB Complete | AVAILABLE RIB: YES

Management & Positioning

- Widely adapted VT2 Pro RIB with key characteristics for the western corn belt
- Very good Goss's Wilt, Excellent Greensnap and Good Gray Leaf Spot tolerance
- Best suited on highly productive acres - maximize performance with irrigation
- Timely harvest recommended with average fall stalk and good root strength
- Medium plant height with medium ear height - Intense Corn Production

Agronomic Ratings

Product Management

Planting Date:		**Soils:**	
Early	HR	Clay Loams	R
Late	R	Sandy	R
Planting Populations:		Silt Loam	HR
RainFed > 22"	28-34,000	Peat	R
Irrigated	32-36,000	Compacted	N
Dryland < 22"	16-22,000	Poorly Drained	N
Water Management:		Drought Prone	R
Full Irrigation	HR	High pH	R
Limited	R		
Dryland	R	**Forage:**	
Crop Rotation:		Silage Select™	N
Corn/Soybeans	HR	Dual Purpose	R
Continue Corn	w/Fungicide		
Tillage:		*— Fertility —*	
Conventional	HR	**Potassium Levels**	
Minimum	HR	Low	N
Ridge-Till	HR	Med	R
No-Till	R	High	HR
Harvest Schedule:		**Phosphate Levels**	
Early	HR	Low	N
Late	N	Med	R
		High	HR
Post Application		**Nitrogen Levels**	
Herbicide	Normal	Low	N
Fungicide	Positive	Med	R
LPI Nutritional	Very Good	High	HR
Herbicide Resistance:	Glyphosate		

Yield Environment

High Yield Environment	HR
Moderate Yield Environment	HR
Low/Stress Yield Environment	R

Other Trait Versions Available:

NONE D53VC55

Plant with These Hybrids for Diversity:

D49VC39 D52VC50 D51VC32 D52VC91 D54VC81

Tested As:

Agronomic Traits

Plant Height	Medium	Kernel Rows	16-18
Ear Height	Medium	Cob Color	Red
Flowering	Late	Kernel Texture	Medium
Leaf Habit	Semi-Upright	Kernel Depth	Medium
Ear Flex	Semi-Det	Husk Tightness	Adequate
Ear Type	Girthy	Shank Length	Medium

Disease Tolerance Ratings

Gray Leaf Spot	7	Common Rust	n/a
Goss's Wilt	8	Southern Rust	5
N. Leaf Blight	6	Anthracnose	n/a
S. Leaf Blight	8	L Anthracnose	n/a
Eye Spot	6		

Ratings Key: 9 = Excellent, 5 = Average, 1 = Poor, **HR** = Highly Recommended, **R** = Recommended, **N** = Not Recommended, **n/a**=Testing not complete.
Herbicide Abbreviations: **GR**=Growth Regulator, **PI**=Pigment Inhibitor, **SU**=Sulfonylurea; *"Actual ratings based on best current information available and may be affected by changing environmental and management conditions"*

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Pioneer Brand Recommendations

P0801AM	108 CRM	Flex Ear	30K Max population	$269.28
P1138AM	111 CRM	Fixed Ear	35-37K population	$282.48
P1197AM	111 CRM	Semi-Flex Ear	32-34K population	$282.48
P1379AM	113 CRM	Fixed Ear	34-37K population	$286.88
P1366AMXT	113 CRM	Flex Ear	31-33K population	$333.52
Sorghum				
84G62	118-122 CRM			$172.48
87P06	102 CRM			$179.52

Dekalb Brand Recommendations

DKC54-40RIB	104CRM	VT2PRIB	M-H Population	$225.31
DKC60-69RIB	110CRM	DGVT2PRIB	MH-H Population	$230.17
DKC64-35RIB	114CRM	VT2PRIB	M-H Population	$252.03
DKC63-60RIB	113CRM	SSRIB	MH-H Population	$290.08
DKC61-55RIB	111CRM	DGVT2PRIB	MH-H Population	$208.31

Sorghum		
84G62	118-122 CRM	$172.48
87P06	102 CRM	$179.52

Channel Brand Recommendations

208-71VT2RIB	108 CRM	Flex Ear	Low input, limited water	$179
209-51VT2PRIB	109 CRM	Flex Ear	Top End Yield Ave. Drought	$231
209-53STXRIB	109 CRM	Flex Ear	Top End Yield Ave. Drought	$259
210-26VT2PRIB	110 CRM	Flex Ear	Top End Yield with good Fertility	$233
210-26STXRIB	110 CRM	Flex Ear	Top End Yield with good Fertility	$267
213-19VT2PRIB	113 CRM	Flex	Plant Health, green snap, ear ret.	$252
213-19STXRIB	113 CRM	Flex	Plant Health, green snap, ear ret.	$289
216-36VT2PRIB	116 CRM	Flex	Top End Yield, Drought Tolerance	$264
216-36STXRIB	116 CRM	Flex	Top End Yield, Drought Tolerance	$298

Hefty Brand Recommendations

H6212	112CRM	VT Double Pro, VT2 Pro version of H6214	$239.09
H6214	112CRM	Smart Stax, Proven Yielder	$307.75
H6223	114CRM	Drought Guard, VT Double Pro, Great Drydown	$242.13
H6424	114CRM	Smart Stax, Ultimate irrigation corn	$303.60
H6502	115CRM	VT Double Pro, Responds to mngmnt & irrigation	$234.94

Corn: Nitrogen Fertilizer (UAN 32%)

- Pre-plant
  - Deadline: April 10th
  - Method: Coulter
  - Amount: 0 to 180 lbs/acre
  - Timing: Earliest convenient date
- Side-dress
  - Deadline: May 1st
  - Method: Coulter
  - Amount: 0 to 180 lbs acre
  - Timing: V4 – V6
- Fertigation
  - Amount: 0 to 30 lbs/acre/event
  - Timing: V9, V12, VT/R1, & R2
  - Irrigation Depth: ~0.30 in/event

Recommendations

In Actual Pounds of Plant Nutrients per Acre

N Credit : Soybeans - 40 — 38325

Sub-Soils : 38326: 8 - 36

Crop	**(Ward) Corn, BU**
Yield	**240**
Nitrogen N	175
Phosphorus P_2O_5	35
Potassium K_2O	0
Sulfur S	29
Zinc Zn	0
Magnesium Mg	0
Iron Fe	Potential Iron Chlorosis
Manganese Mn	6
Copper Cu	0

Lab No. : 38325 — **Depth :** 0 - 8

ID : SURFACE

1:1 Soil pH	7.7
Soluble Salts 1:1, mmho/cm	0.27
Excess Lime Rating	LOW
Organic Matter LOI, %	1.9
Nitrate-N 2N KCl, ppm N	8.18
Nitrate-N, lbs N / Acre	20
Phosphorus M3, ppm P	41
Potassium NH_4OAc, ppm K	584
Sulfate Ca-P, ppm S	8
Zinc DTPA, ppm Zn	2.05
Iron DTPA, ppm Fe	3.1
Manganese DTPA, ppm Mn	1.1
Copper DTPA, ppm Cu	0.24
Calcium NH_4OAc, ppm Ca	3024
Magnesium NH_4OAc, ppm Mg	305
Sodium NH_4OAc, ppm Na	63

Sum of Cations, me/100g	% Saturation				
	H	K	Ca	Mg	Na
19.4	0	8	78	13	1

Saturated Soil Paste Analysis (SAR)

Saturation, %	39
Sat Paste pH	7.6
Sat Paste ECe, mmho/cm	0.57
HCO_3, ppm	150
Cl, ppm	11
Ca, ppm	66
Mg, ppm	13
Na, ppm	13
S, ppm	11.8
Sodium Adsorption Ratio	0.4

Sorghum: Nitrogen Fertilizer (UAN 32%)

- Pre-plant
  - Deadline: April 10th
  - Method: Coulter
  - Amount: 0 to 180 lbs/acre
  - Timing: Earliest convenient date
- Side-dress
  - Deadline: May 1st
  - Method: Coulter
  - Amount: 0 to 180 lbs acre
  - Timing: Stage 2
- Fertigation
  - Amount: 0 to 30 lbs/acre/event
  - Timing: Stages 3, 4, & 5
  - Irrigation Depth: ~0.30 in/event

Recommendations

In Actual Pounds of Plant Nutrients per Acre

N Credit : Soybeans - 40 — 38325

Sub-Soils : 38326: 8 - 36

Crop	**(Ward) Corn, BU**
Yield	**240**
Nitrogen N	175
Phosphorus P_2O_5	35
Potassium K_2O	0
Sulfur S	29
Zinc Zn	0
Magnesium Mg	0
Iron Fe	Potential Iron Chlorosis
Manganese Mn	6
Copper Cu	0

Lab No. : 38325 — **Depth :** 0 - 8

ID : SURFACE

1:1 Soil pH	7.7
Soluble Salts 1:1, mmho/cm	0.27
Excess Lime Rating	LOW
Organic Matter LOI, %	1.9
Nitrate-N 2N KCl, ppm N	8.18
Nitrate-N, lbs N / Acre	20
Phosphorus M3, ppm P	41
Potassium NH_4OAc, ppm K	584
Sulfate Ca-P, ppm S	8
Zinc DTPA, ppm Zn	2.05
Iron DTPA, ppm Fe	3.1
Manganese DTPA, ppm Mn	1.1
Copper DTPA, ppm Cu	0.24
Calcium NH_4OAc, ppm Ca	3024
Magnesium NH_4OAc, ppm Mg	305
Sodium NH_4OAc, ppm Na	63

Sum of Cations, me/100g	% Saturation				
	H	K	Ca	Mg	Na
19.4	0	8	78	13	1

Saturated Soil Paste Analysis (SAR)

Saturation, %	39
Sat Paste pH	7.6
Sat Paste ECe, mmho/cm	0.57
HCO_3, ppm	150
Cl, ppm	11
Ca, ppm	66
Mg, ppm	13
Na, ppm	13
S, ppm	11.8
Sodium Adsorption Ratio	0.4

Irrigation Scheduling

- Irrigation System will Operate on:
  - Monday
  - Thursday
- Irrigation Depths:
  - 0 to 1.0 inches per event
- Decisions:
  - The participants will have until 10 AM on the irrigation days to note whether they would like to irrigate using the competition website (*www.TAPS.unl.edu*).
  - If participants fail to indicate their intent to irrigate by 10 AM, no irrigation water will be applied on that irrigation day.
  - Irrigation scheduling can be made one month in advance using the competition website.

Insurance Selection

- Revenue Protection
  - Enterprise or Optional Units
- Revenue Protection Harvest Price Exclusion
  - Enterprise or Optional Units
- Yield Protection
  - Enterprise or Optional Units

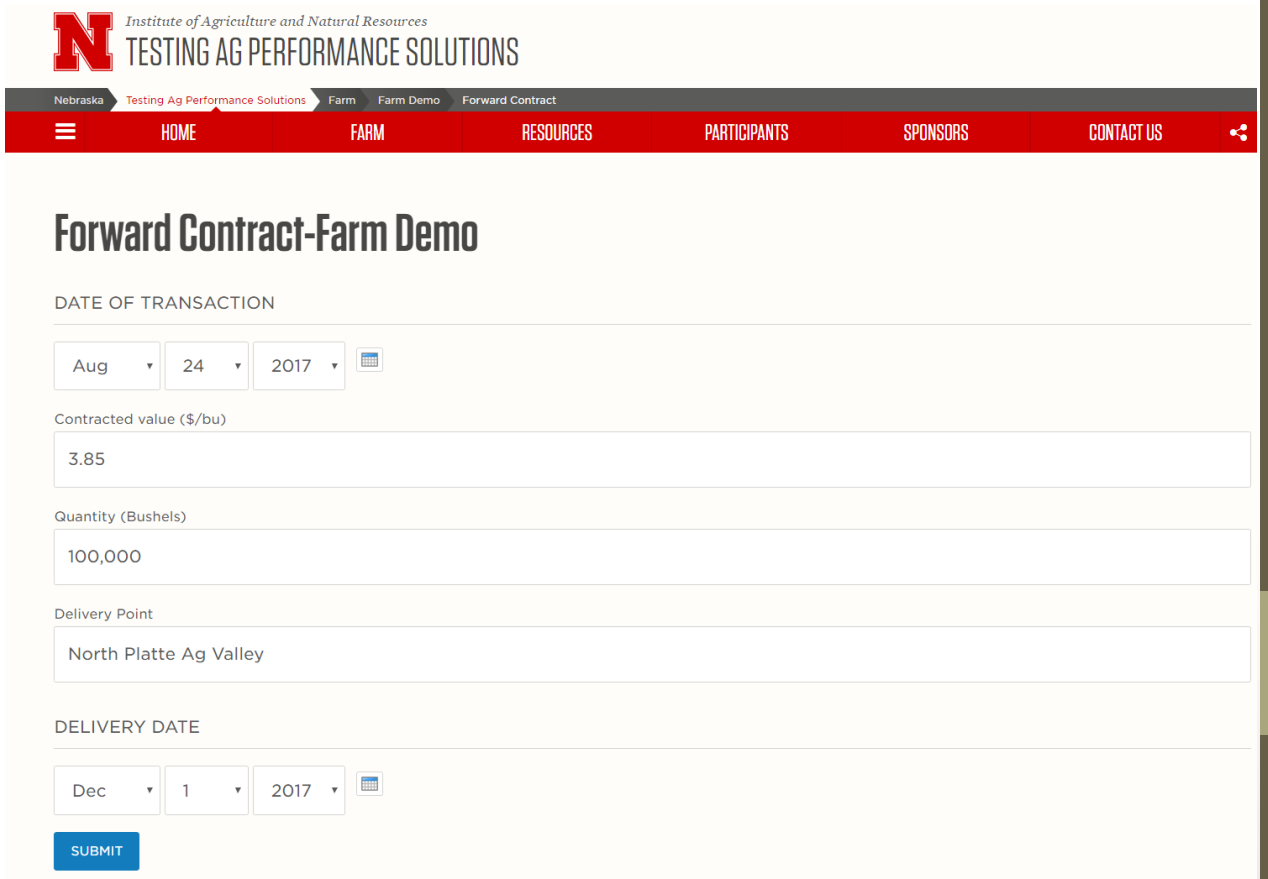
- Level of Coverage: 65%, 70%, 75%, 80%, or 85%
- Hail Insurance
- Wind Insurance

Marketing Grain

Marketing Methods:

- Spot (Cash) Sales
- Forward Contract
- Basis Contract with Deliver at Harvest
- Simple Hedge to Arrive
- Futures Contract

Real-time decisions are logged on TAPS.unl.edu

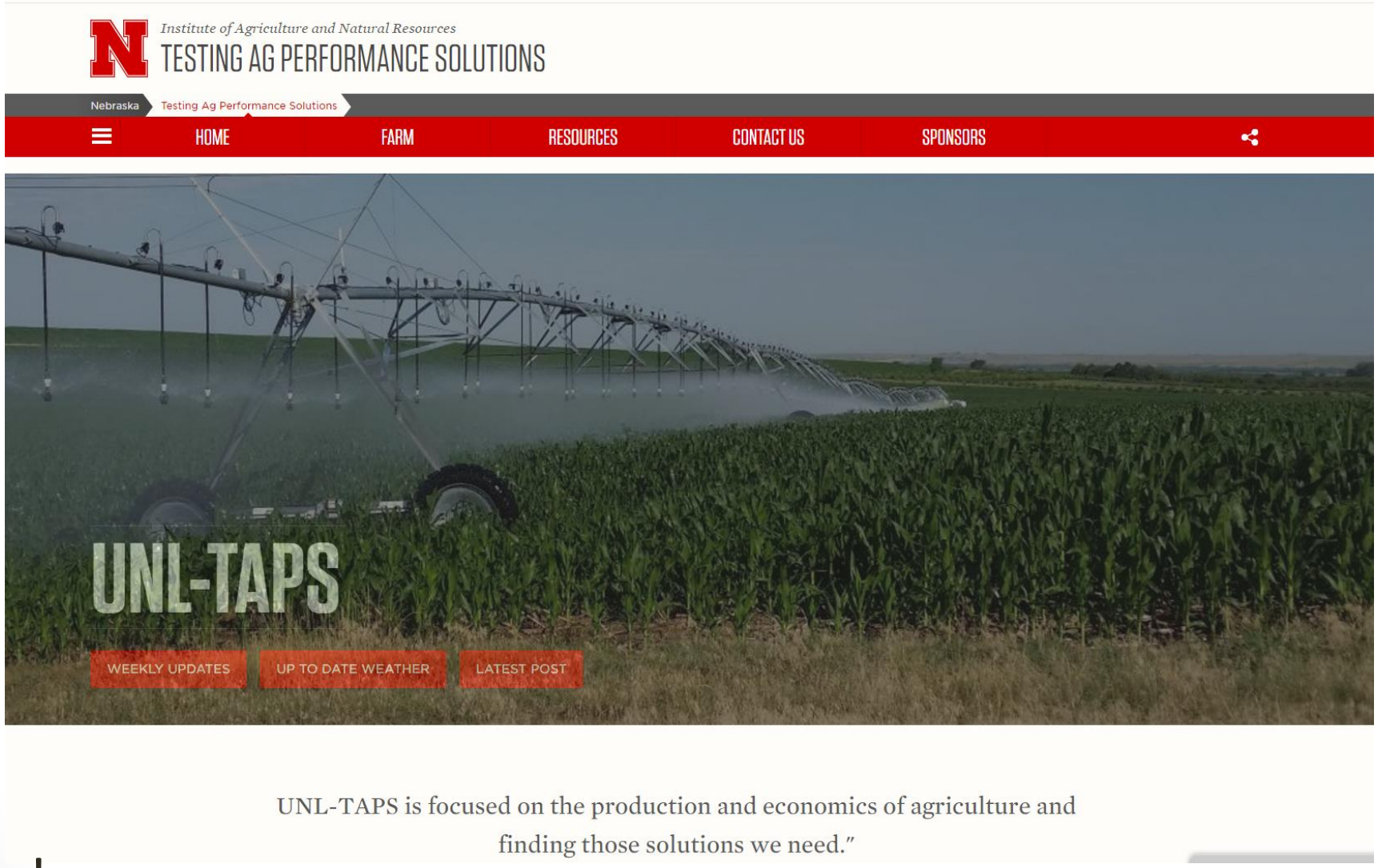


Check Out!
UNL's Grain Marketing App

Timeline: Management Decisions

• Management Decisions	
• Insurance selection:	March 31st
• Pre-plant nitrogen amount (lbs/acre):	April 10th
• Hybrid selection and seed delivery:	April 10th
• Seeding rate:	April 10th
• Side-dress nitrogen amount (lbs/acre):	According to crop progress
• Intent to fertigate (yes or no)	June 1st
• Fertigation options available	
• Corn: V9, V12, VT/R1, & R2	According to crop progress
• Sorghum: Stage 3, 4, and 5	
• Irrigation Management	Planting to Harvest
• Marketing of Grain	March 20th to Nov. 15th

Website (*www.TAPS.unl.edu*)



Thank You!

Thank You!

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