

ON-FARM RESEARCH EFFORTS AT UNL EXTENSION

Nebraska Soybean Field Grain Profitability Project – Saunders (1990), Dodge, Cass, Lancaster, Butler, Washington Counties (1994)

Quad County Project – York, Hamilton, Clay and Fillmore Counties – (1998)

Combined into one state-wide with support from the Nebraska Corn Board, Corn Growers and Soybean Board. (2012)

Sponsored by:

University of
Nebraska
Lincoln | EXTENSION

Nebraska
Corn Board

In partnership with:

NEBRASKA
CORN
GROWERS
ASSOCIATION

Soybeans
Nebraska Soybean Board

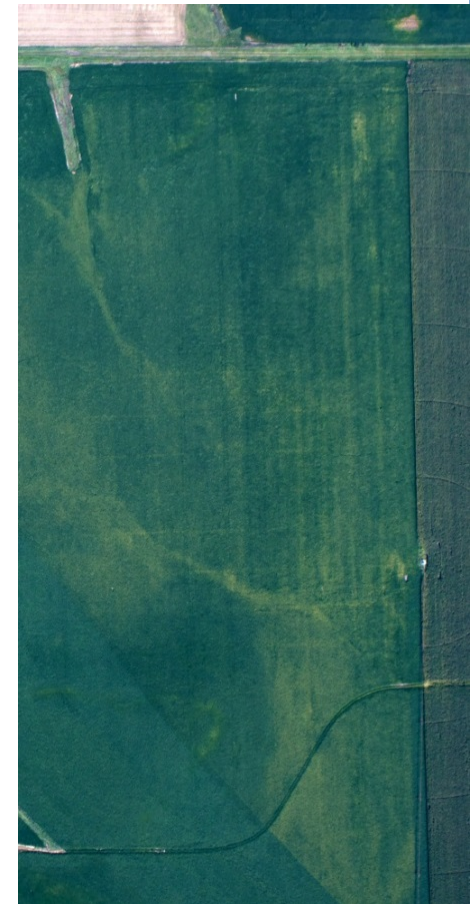
HOW IT WORKS...

1. Farmers or educators identify the research topics.
2. Research protocols for field length strips are developed.
(Protocols are posted on website and can be custom designed for your research questions. Pre-designed protocols are based on UNL research or are industry sponsored.)
3. Trials are implemented using the farmer's equipment
4. Trials are replicated.
5. Results are summarized.
6. Farmers, Extension Educators and Specialists discuss the findings.

2015 STUDIES

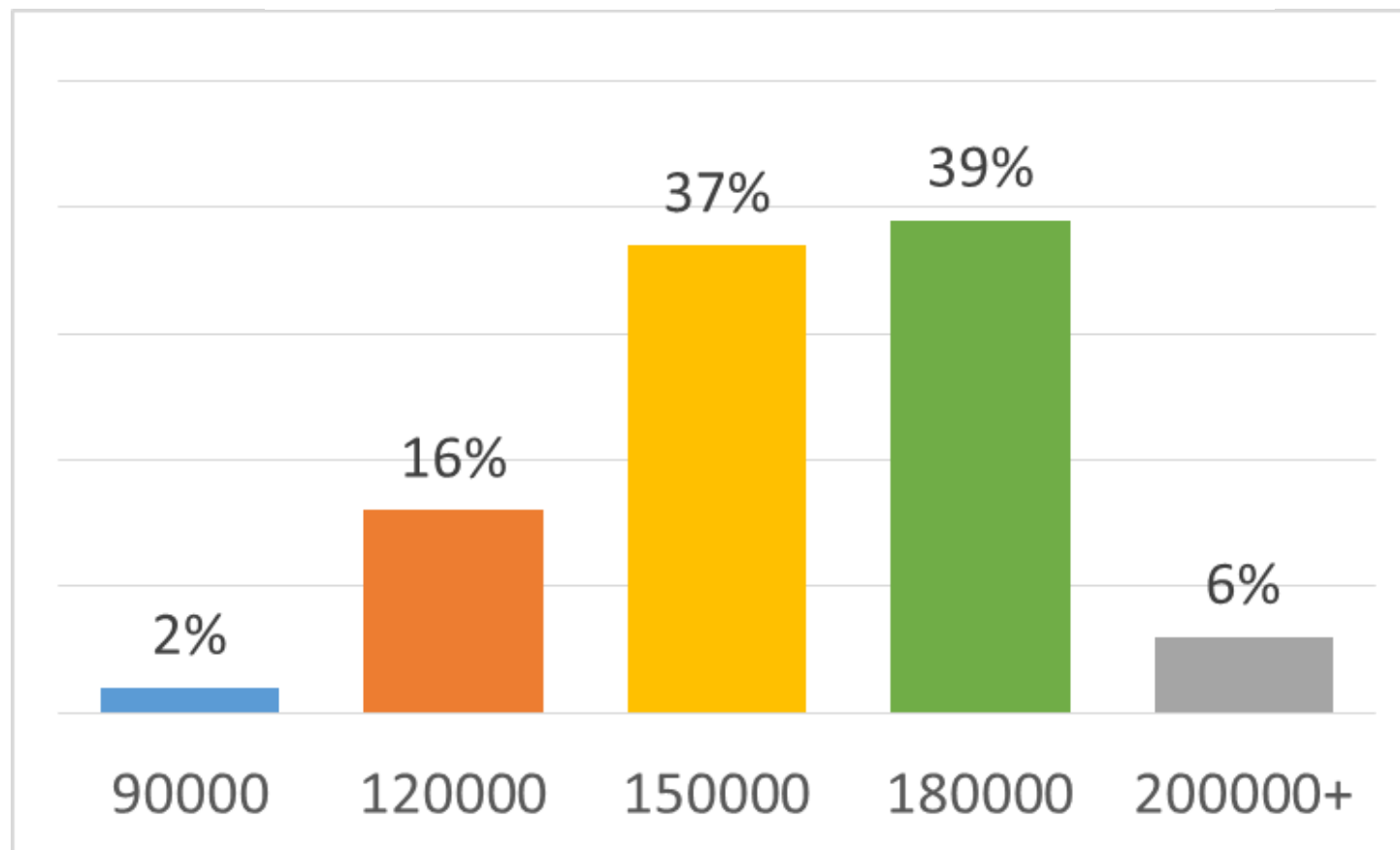


Cover Crops
VR Seeding
Nitrogen Sidedress (model and sensor recommendation tools)
Seed Treatment for SDS
Starter Fertilizer on Soy
Growth Promoters and Biologicals
Strip Till on Soy
Post Emerge Fungicide Application
Soy Row Spacing
Foliar Micronutrients
And others....



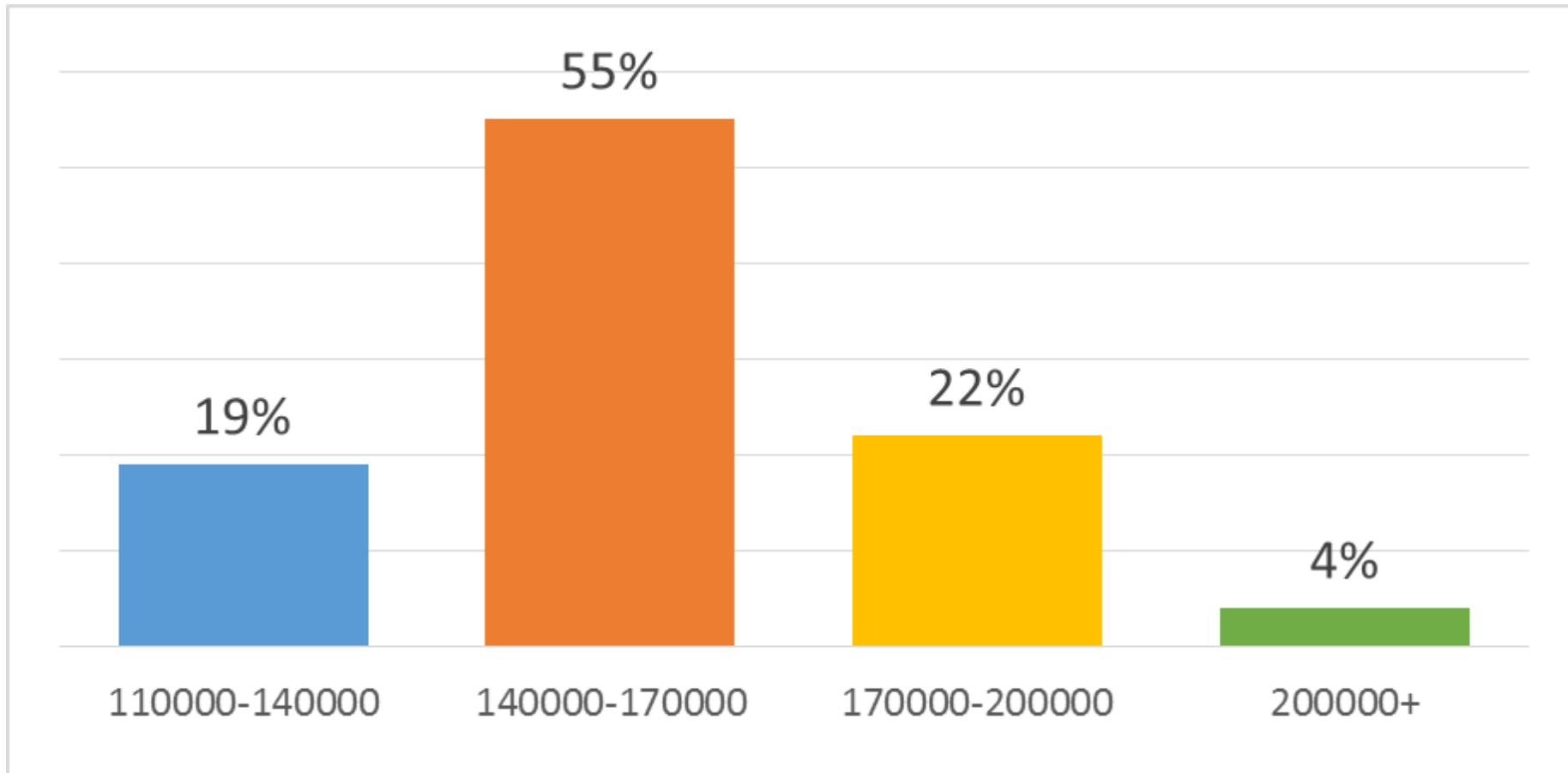
WHAT POPULATION DO YOU PLANT YOUR SOYBEANS?

Responses from 613 producers attending Pesticide Certification Training in York, Seward, Polk and Buffalo Counties.



What population do you plant your soybeans?

CropWatch Soybean Plant Populations Survey. 181 participants



Soybean Plant Populations - 2006 to 2013

With the rising input costs, producers were looking for ways to reduce production cost.

The objective of this on-farm research study was to evaluate the effect of various planting various planting populations on soybean yields and economics.

Most of the studies I'm going to share have been conducted on 30" rows in South Central Nebraska.

Soybean Plant Populations - 2006 to 2013

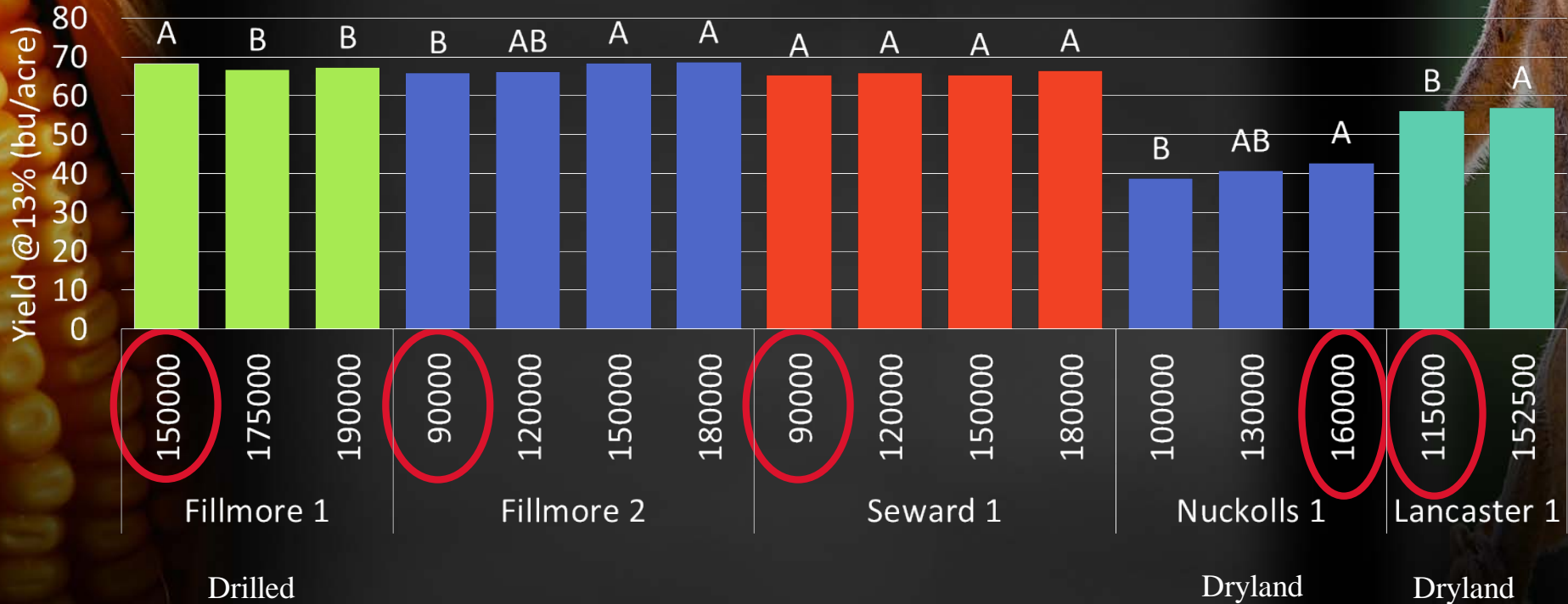


120,000 plants/acre



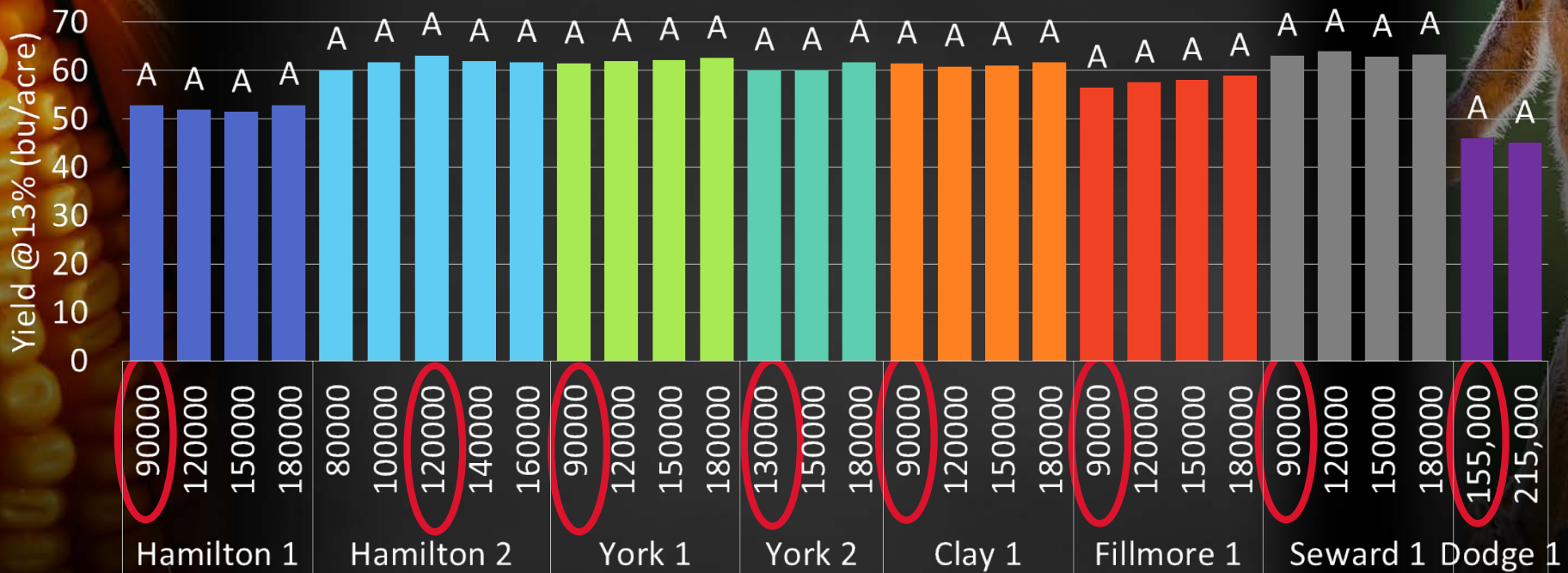
150,000 plants/acre

2006 Soybean Population Yields



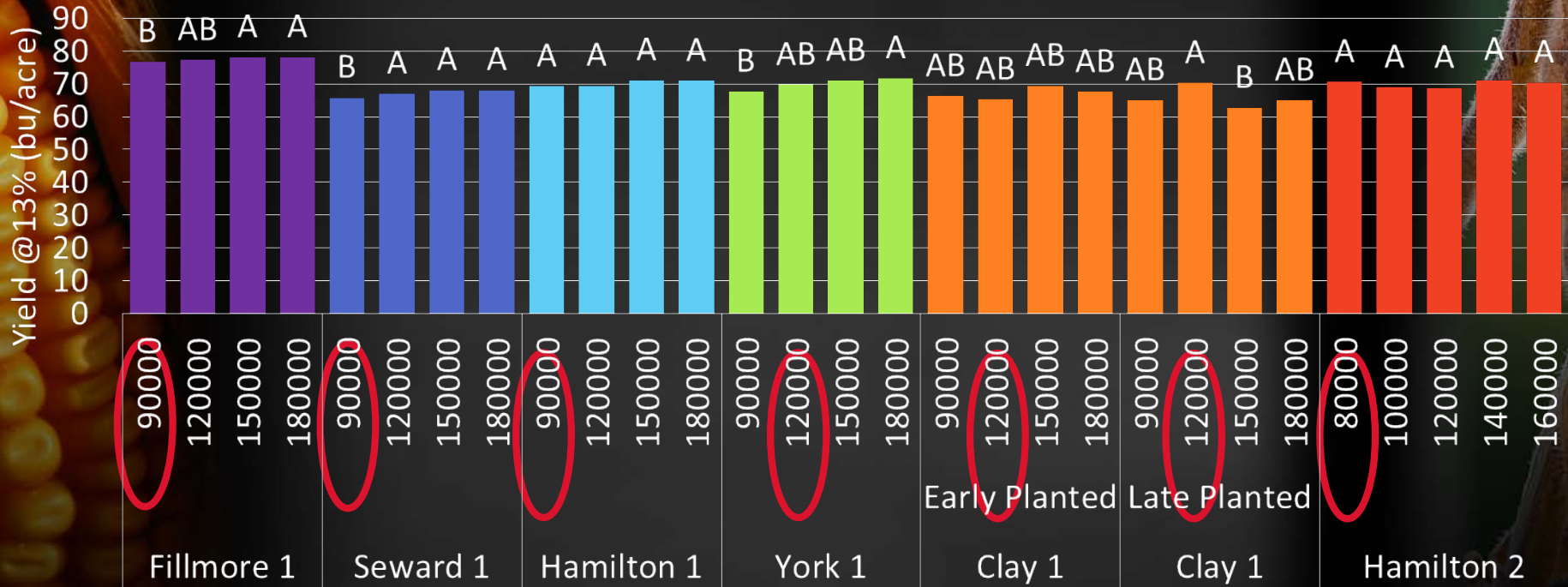
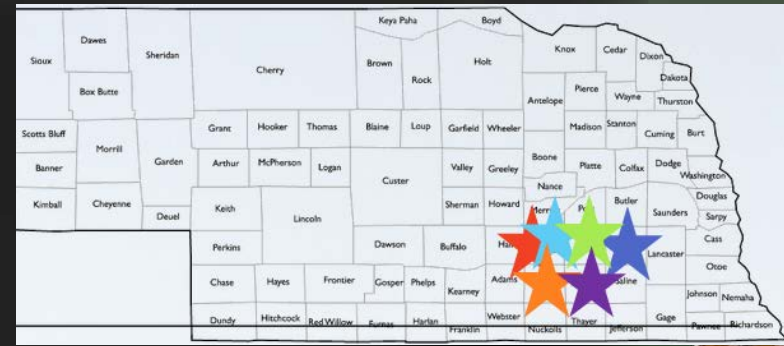
Bars with the same letters are not significantly different at $P \leq 0.10$. Significance letters apply within location.

2007 Soybean Population Yields



Bars with the same letters are not significantly different at $P \leq 0.10$. Significance letters apply within location.

2008 Soybean Population Yields



Bars with the same letters are not significantly different at $P \leq 0.10$. Significance letters apply within location.

2006-2013 Population vs. Yield

Highest yield was 79 bu/acre at a planting population of 140,000 spa in York County in 2013.



- 2006 Fillmore 1
- 2006 Fillmore 2
- 2006 Seward 1
- 2006 Nuckolls 1
- 2006 Jefferson 1
- 2007 Hamilton 1
- 2007 Hamilton 2
- 2007 York 1
- 2007 York 2
- 2007 Clay 1
- 2007 Fillmore 1
- 2007 Seward 1
- 2007 Dodge 1
- 2008 Fillmore 1
- 2008 Seward 1
- 2008 Hamilton 1
- 2008 York 1
- 2008 Clay 1 SCAL Early Planted
- 2008 Clay 1 SCAL Late Planted
- 2008 Hamilton 2

Most profitable populations ranged from 80,000 to 160,000. No sites saw increase in profit for populations higher than 160,000.

2015 RESEARCH TOPIC: PROJECT SENSE

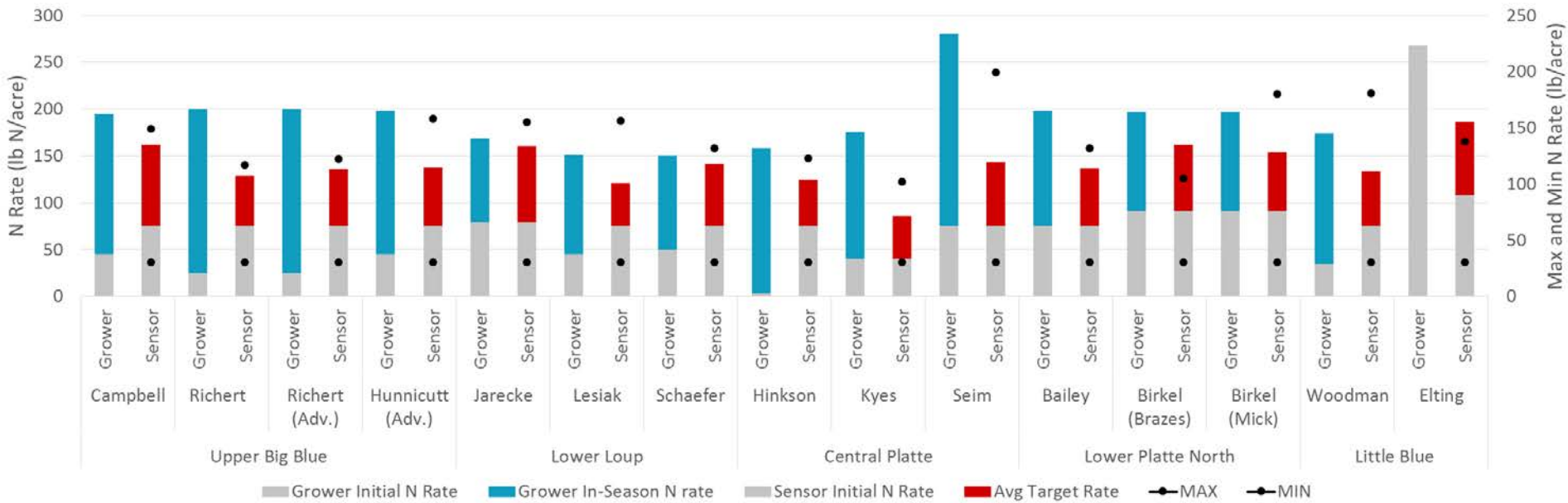


**Demonstrating in-season Crop Canopy
Sensor-Based N Application**

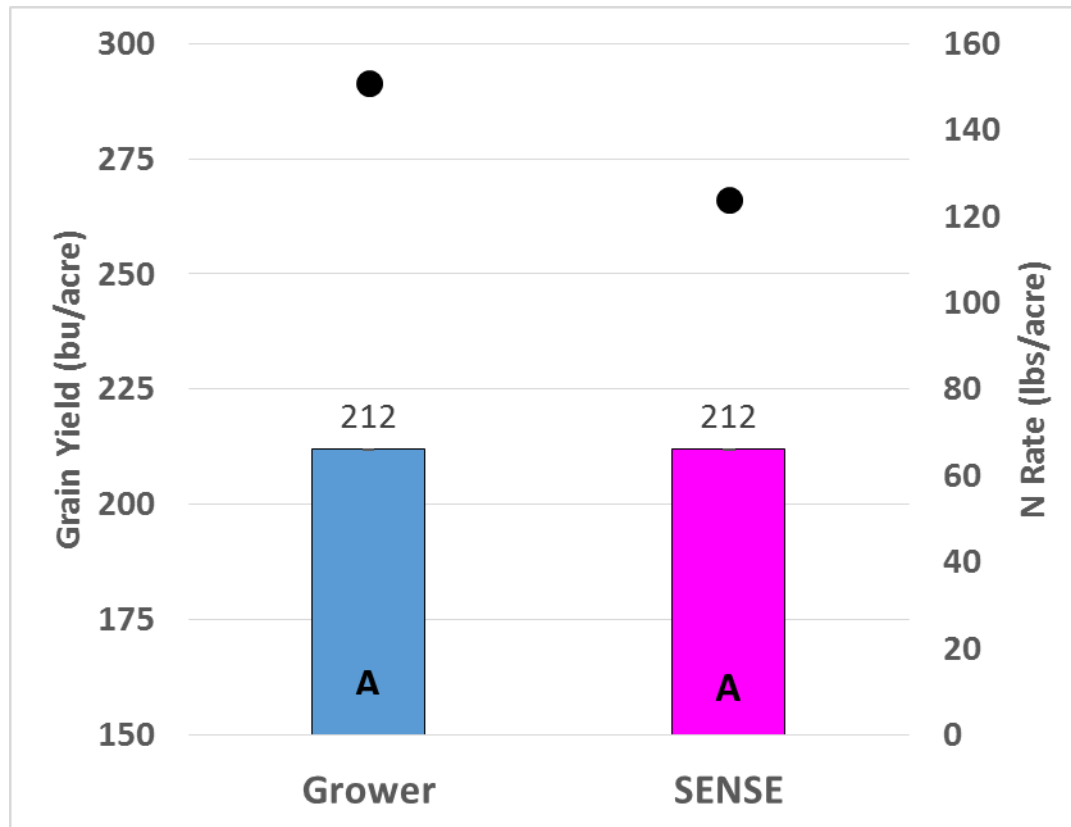
PRELIMINARY RESULTS

When comparing Grower Rate vs. Sensor Rate - average N savings: 27%

N Application Summary



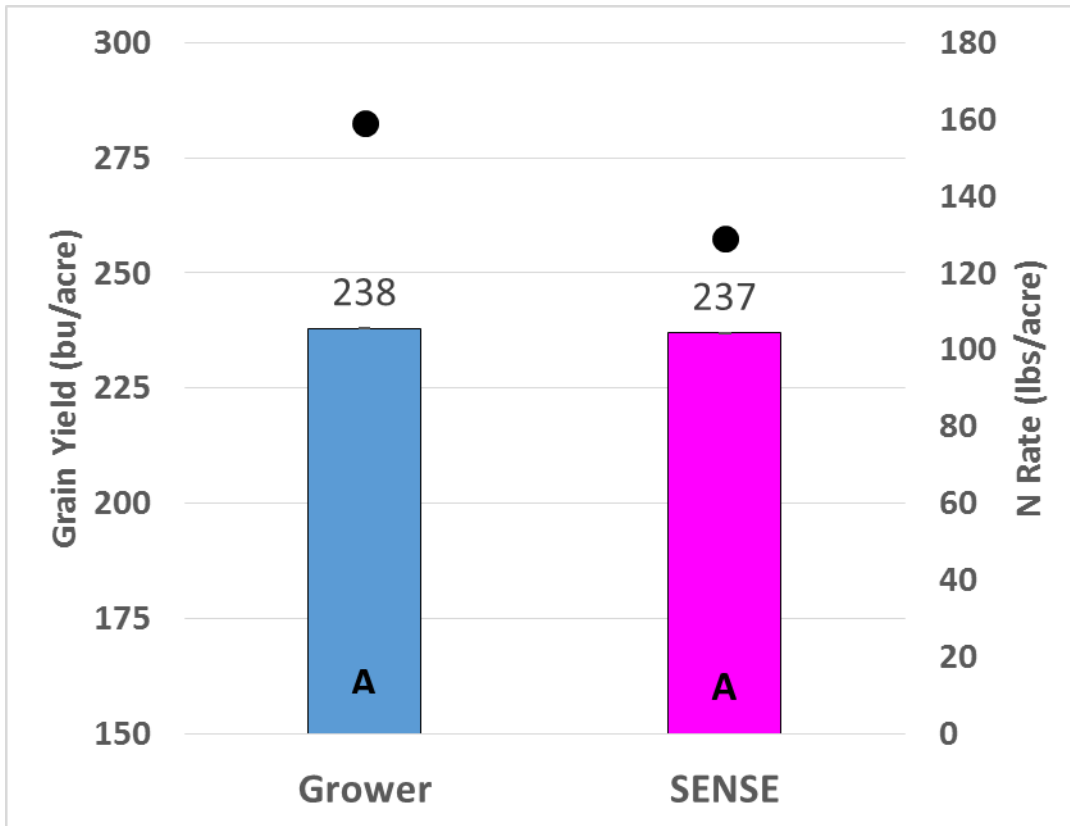
GROWER 1 – EAST OF FULLERTON, LOAMY SAND, SANDY LOAMS



With no statistical yield difference, N savings (at \$0.65/lb) would equal \$17.58/acre.

*Within a site, the bars with the same letters above are not statistically different. $P \leq 0.05$

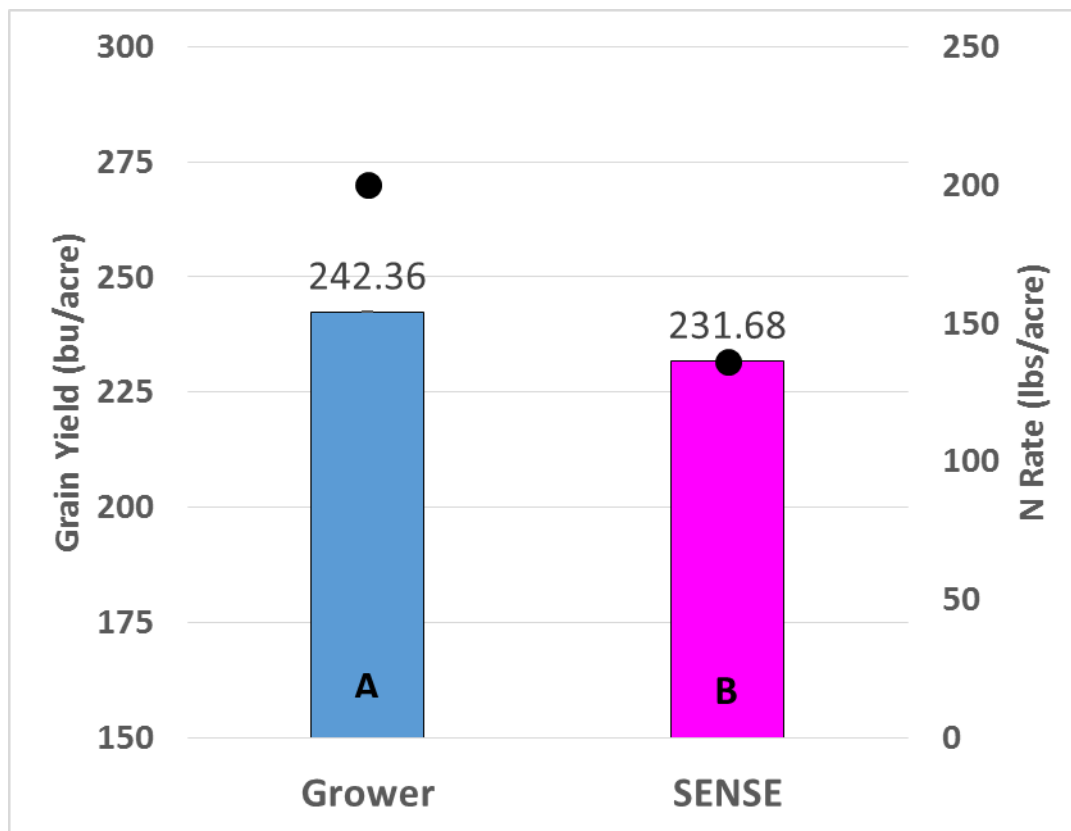
GROWER 2 – HALL COUNTY, SILT LOAM



With no statistical yield difference, N savings (at \$0.65/lb) would equal \$19.50/acre.

*Within a site, the bars with the same letters above are not statistically different. $P \leq 0.05$

GROWER 3 – SEWARD COUNTY, SILT LOAM

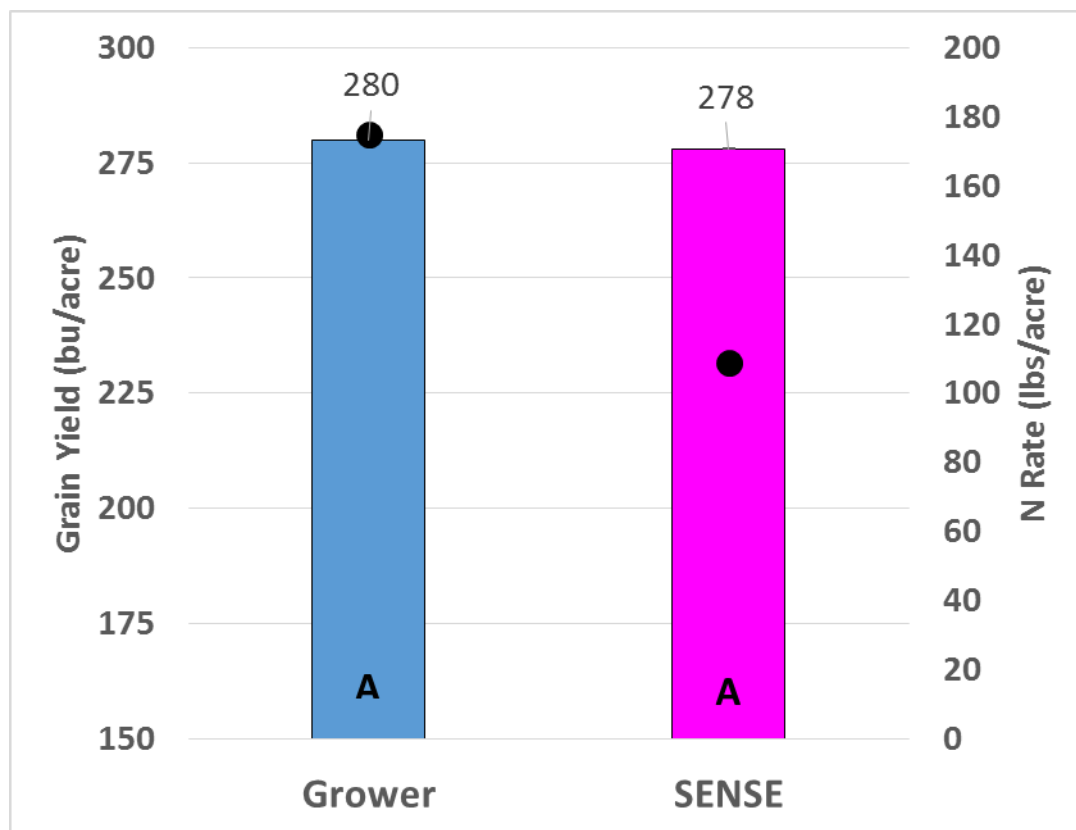


Yield loss results in loss of \$39/acre (at \$3.65/bu).

However, nitrogen savings results in savings of \$42/acre (at \$0.65/lb fertilizer).

*Within a site, the bars with the same letters above are not statistically different. $P \leq 0.05$

GROWER 4 – NORTH OF DAVID CITY, SANDY LOAM & LOAMS



With no statistical yield difference, N savings (at \$0.65/lb) would equal \$42.90/acre.

*Within a site, the bars with the same letters above are not statistically different. $P \leq 0.05$

2015 RESEARCH TOPIC: ILEVO

- Seed Treatment for Sudden Death Syndrome
- 3 locations

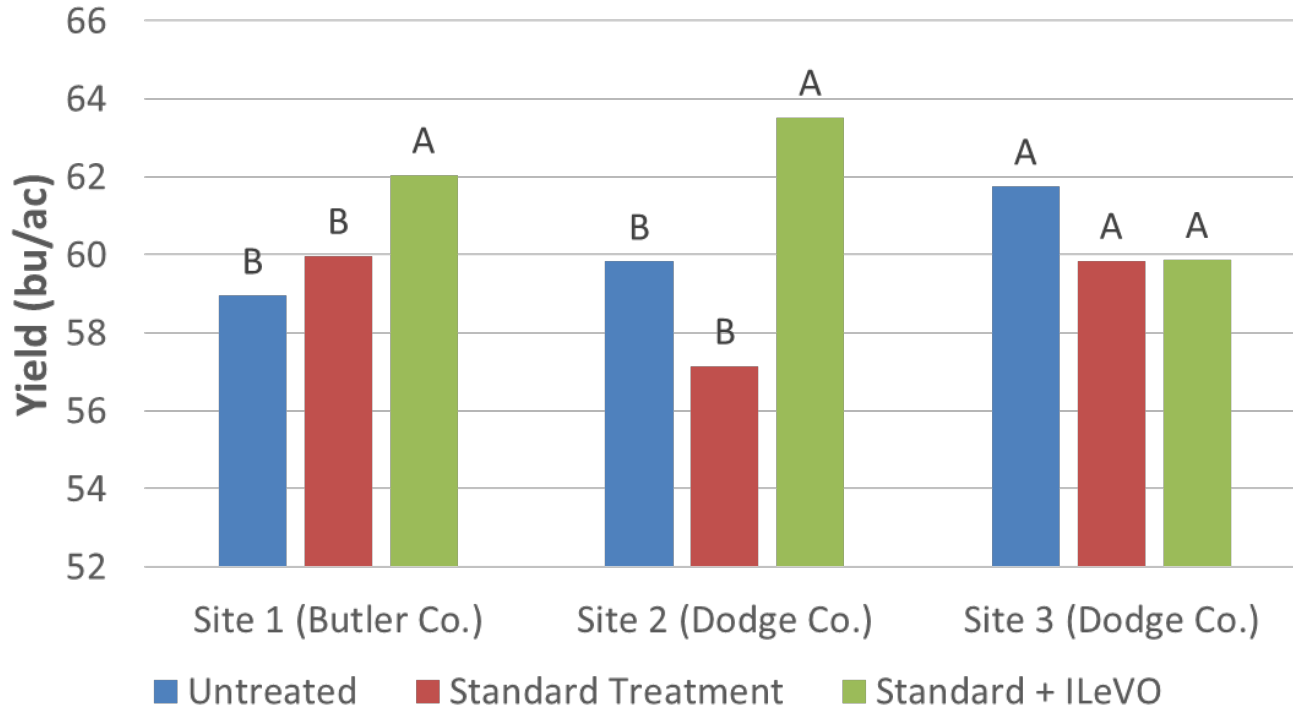


IleVO trials are funded in part by support from Bayer CropScience.



2015 ILEVO[®] TRIALS

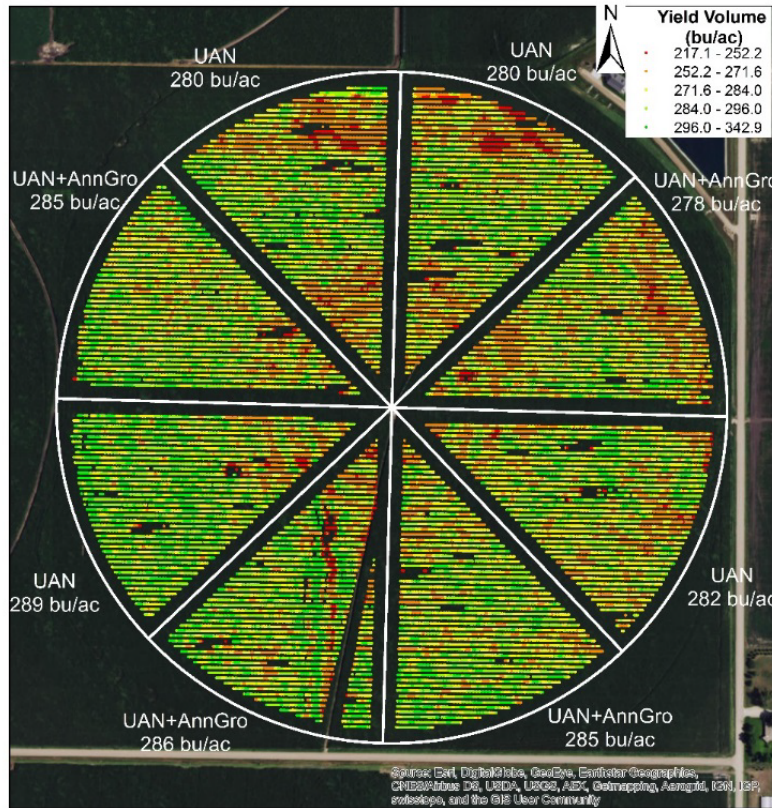
Yield Results



More details (specifics on treatments and additional data measurements including SCN samples, SDS ratings, stand counts, and aerial images) will be presented at the Feb. 2016 On-Farm Research Annual Results Updates.

*Within a site, the bars with the same letters above are not statistically different. $P \leq 0.10$

YIELD MAPPING



Adjust for Moisture? Expand Dry?

Manual Moisture Setting

Sensor Based?

Yield Statistics

	Mean	STD	CV	N	Range
Clean	281.80	16.27	5.8	48592	219-341
Raw	274.70	36.57	13.3	54975	0-705

Filtering, Mapping and Editing Save/Export File

Map and Manual Editor

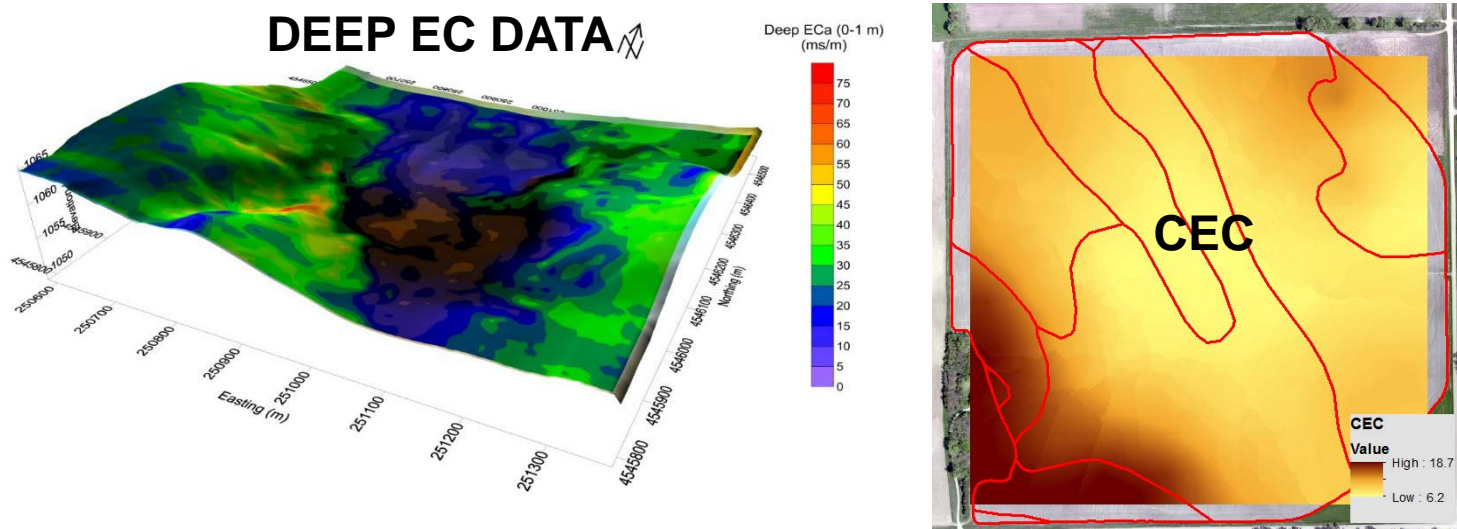
Deleted	Easting (m)	Northing (m)	Yield	Flow	Speed	Moist	Swath	Up/Dn	Nsecs	RmCode	Pass	Point
0	503209	4508752	235.97	25.28	2.84	20.1	240	1	1.0	0	13	255

Display Legend?

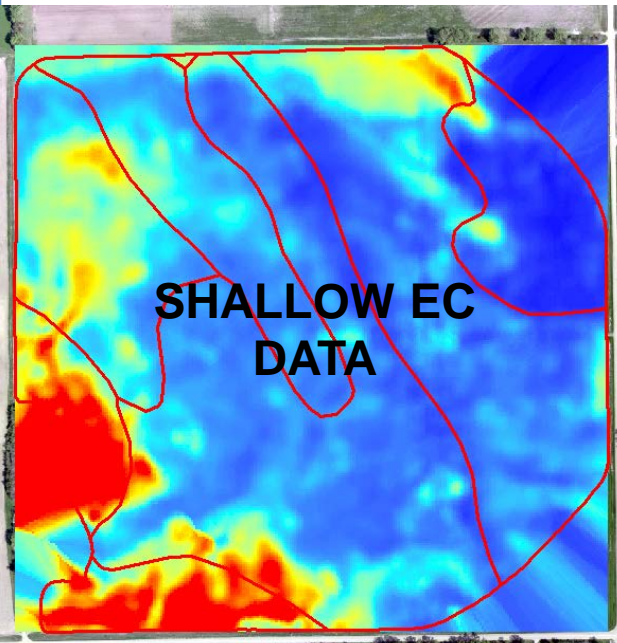
Symbol Size (m)

INCREASING AVAILABILITY OF DENSE SPATIAL DATA

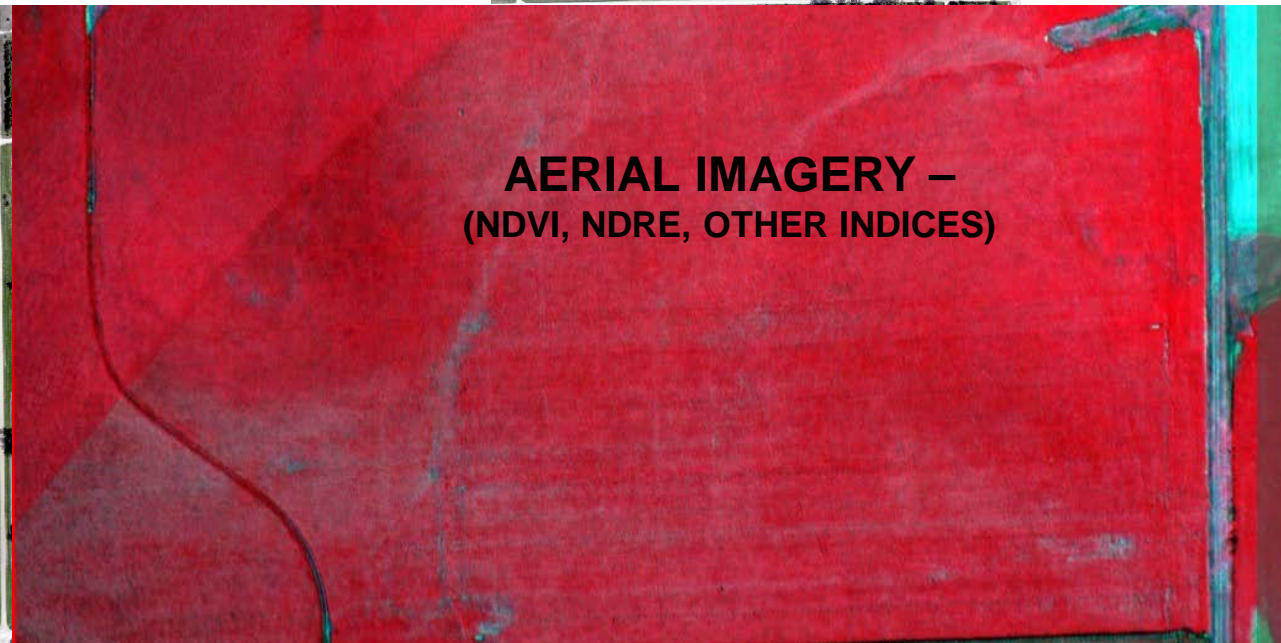
DEEP EC DATA



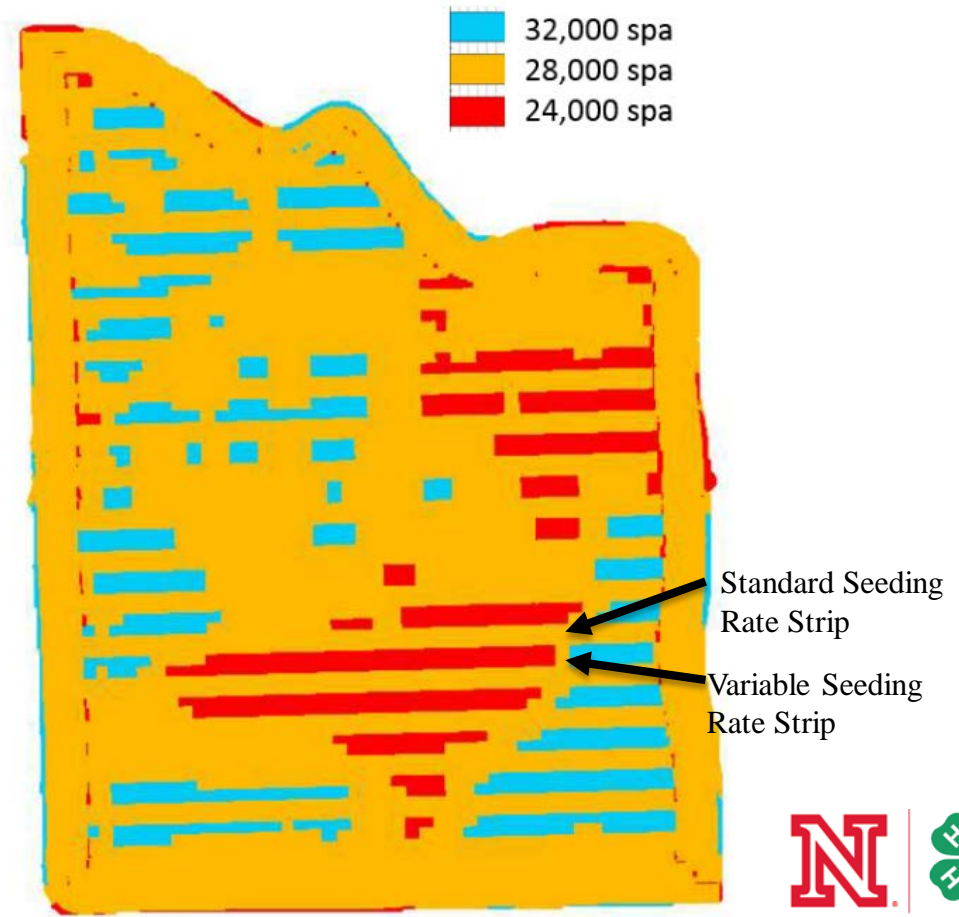
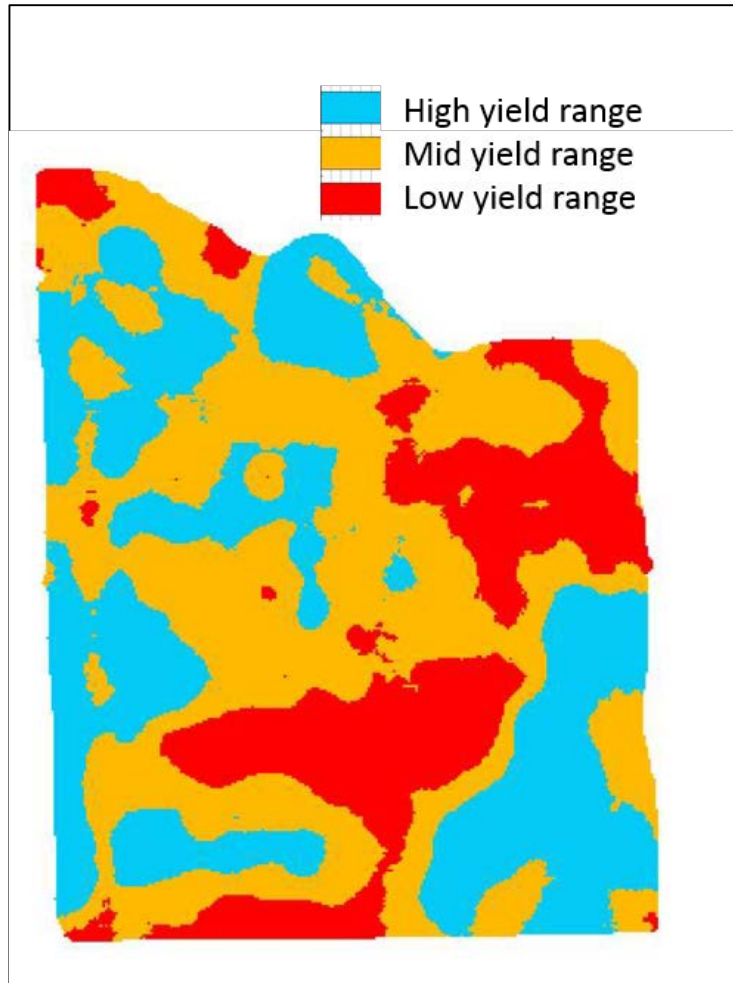
SHALLOW EC DATA



AERIAL IMAGERY – (NDVI, NDRE, OTHER INDICES)



VARIABLE RATE SEEDING RESEARCH



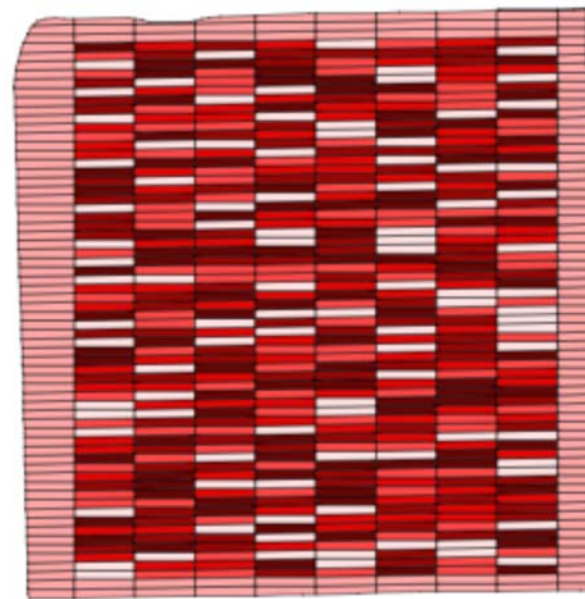
UPCOMING STUDY OPPORTUNITY

Using Precision Technology in On-farm Field Trials to Enable Data-Intensive Fertilizer Management

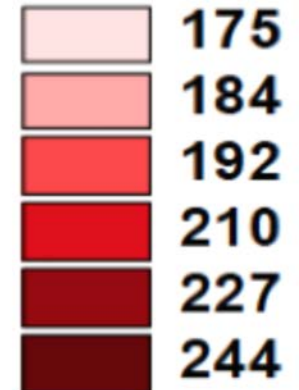
Seeking 2 participants for 2016 growing season.

Growers must have ability to variable rate N and seed.

Sasse 2014 - N Rate (lbs/acre)



NRate



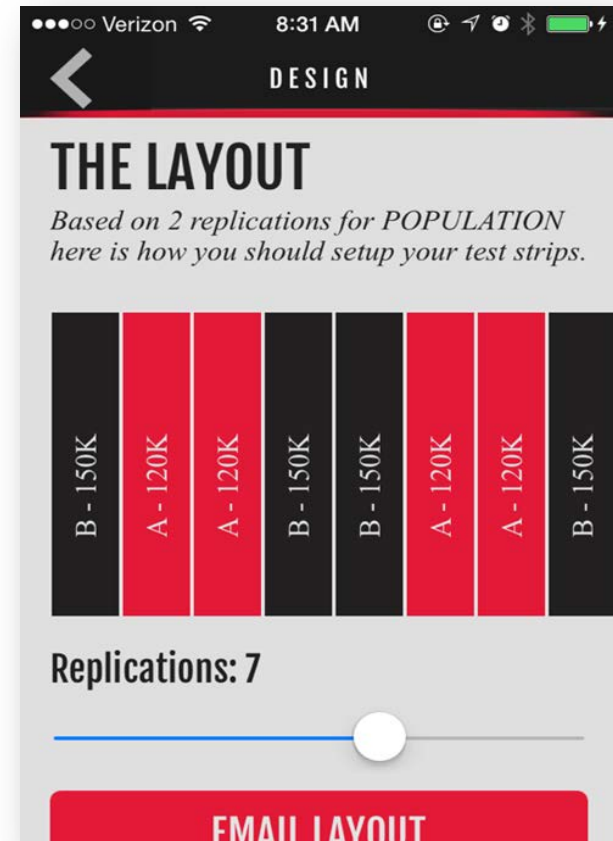
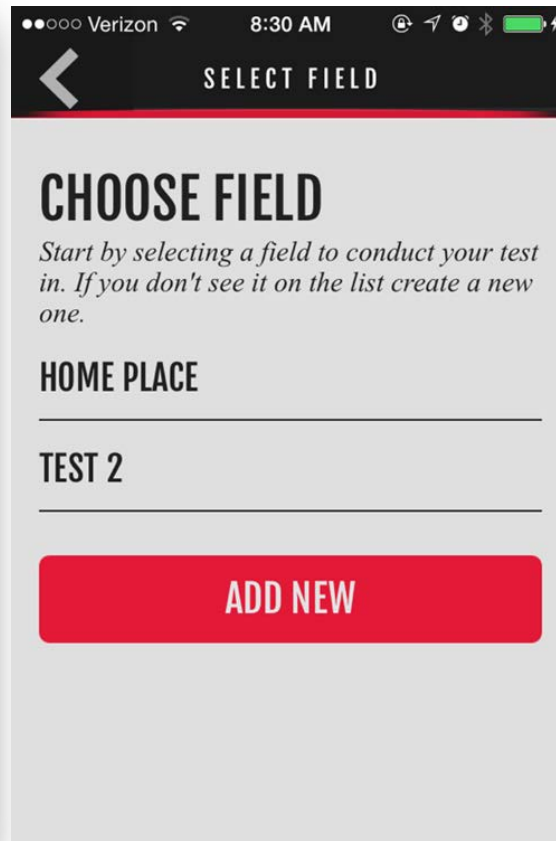
GO.UNL.EDU/2014ONFARMZMAG

Interactive Grower's Guide answers your questions and walks you through the steps of designing your own on-farm research project

The screenshot shows the homepage of the Nebraska On-Farm Research Network's Grower's Guide to On-Farm Research. At the top left, there are navigation icons for home, search, Facebook, and a menu. Below these is the IANR logo (a red 'N' with 'IANR' underneath) on a red background. To the right is a photograph of a ripe ear of yellow corn in a field. Below the photo, the text reads "Nebraska On-Farm Research Network" in yellow and "Grower's Guide to On-Farm Research" in white on a black background. Below this, a grey box contains the text "Discover how new products and practices will work on your farm with on-farm research" followed by a small icon of a document. To the right of this is a "Contents" section listing: "Why Conduct On-Farm Research?", "Will On-Farm Research Meet Your Information Need?", "Site Selection", "Design Your Experiment Layout", "Two Treatment Design", "Three or More Treatment Design", "Collecting Data", "Using Precision Agriculture Tools with On-Farm Research", "Analyzing Results", and "Drawing Conclusions". At the bottom, it says "Compiled by the UNL Extension On-Farm Research Team Cropwatch.unl.edu/web/farmresearch". Logos for the University of Nebraska Lincoln Extension, Nebraska Corn Growers Association, and Nebraska Corn Board are also present.

NEW ON-FARM RESEARCH APP!

Launched April 2015



THE ON-FARM RESEARCH CONNECTION: BI-MONTHLY NEWSLETTER DELIVERED TO YOUR INBOX

- Share latest research results
- Let you know about upcoming on-farm research and precision ag meetings
- Invite you to participate in special research projects

Sign up for our Newsletter!



Like Tweet Pin +1 in

Nebraska On-Farm Research Connection



Welcome to the On-Farm Research Connection, brought to you by the University of Nebraska-Lincoln Extension and the Nebraska On-Farm Research Network.

WEB HISTORICAL STUDY ARCHIVE – IN PROGRESS

Browse Nebraska On-Farm Research Studies

Topic and Sub-Topic	Year	Crop	Irrigation	
All Trial Types Cover Crop Planting Population Planting Depth Seed Treatments Growth Promoters Nutrient – Nitrogen Nutrient – Starter	All Trial Details Cover Crop Mix Cereal Rye Grazed Cover Crop	All Years 2014 2013 2011 2008	All Crops Corn Soybeans	All Irrigation Types Irrigated Non-Irrigated

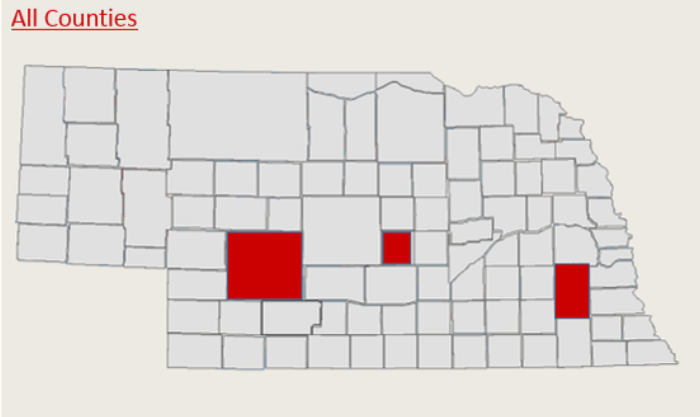
Location

Select the counties you are interested in using the list OR the map below.

Hold Ctrl to select multiple counties from the list.

County
All Counties
Adams
Antelope
Arthur
Banner
Blaine
Boone
Box Butte
Boyd
Brown
Buffalo
Burt
Butler
Cass

Click a county to select. Click again to deselect. Multiple counties can be selected



Display Results
Clear Results

As you make selections in the year, crop, irrigation, topic, and sub-topic, the map adjusts to show you in red which counties have studies that meet your criteria.

X

Bro

Year Crop

- All Years
 - 2014
 - 2013
 - 2011
 - 2008
- All Crops
 - Corn
 - Soybeans

Select the c

Hold Ctrl to select multiple counties from the list.

- County
- All Counties
 - Adams
 - Antelope
 - Arthur
 - Banner
 - Blaine
 - Boone
 - Box Butte
 - Boyd
 - Brown
 - Buffalo
 - Burt
 - Butler
 - Cass

Corn Planted into Rye Cover Crop

Study ID: 006159201401

County: Seward

Soil Type: Hastings silty clay loam, Crete, Muir, Butler, and Coly-Hobbs silt loams

Planting Date: 4/22/2014

Harvest Date: 11/5/2014

Population: 34,000

Row Spacing: 30"

Hybrid: BigCob B14-84GT

Reps: 6

Previous Crop: Soybeans

Tillage: No-till

Herbicides: Pre: Balance Flex Soz + Atrazine

1qt + Roundup PowerMAX 22oz -4/4/14

Post: Durango 32oz + Impact 1/2oz + Outlook

10oz 6/12/14

Insecticides/Fungicides: standard seed treatment

Fertilizer: 136 lbs 46-0-0, 3 lb Zn, 10 lb Sulfur, 6 gal 10-34-0

Note: May 11 tornado, May 26 hail.

Irrigation: Pivot

Rainfall:



Introduction: This study is looking at the effects of a cereal rye cover crop on the subsequent corn grain yield. The cereal rye was drilled at 40 lb/acre into soybean stubble on October 10, 2013 and was terminated with Balance Flex (5 oz/ac), Atrazine (1 qt/ac), and Roundup PowerMAX (22 oz/acre) on April 4, 2014. This herbicide program is the same that the grower used on all fields, so there was no additional cost for cover crop termination. Rye was 6-12" at termination. Corn was planted into the soybean stubble and cereal rye residue on April 22, 2014. The cover crop treatment is compared to planting into soybean stubble with no cover crop.



Results:

	Yield* (bu/acre)	Net Return†
Check	248 A	\$866.74
Rye	247 A	\$841.07
P-Value	0.2919	—

*Bushels per acre corrected to 15.5% moisture.

†Values with the same letter are not significantly different at a 90% confidence level.

‡Net return based on \$3.50/bu. corn, \$10.80/acre rye cover crop, and \$13.37/acre drill application cost (no additional cost for Rye termination since herbicide program was the same as what the grower normally used for a pre-emerge burndown).

Summary: There was no grain yield difference between the corn planted into the cereal rye residue and corn planted into soybean stubble. However, calculated net return was approximately \$26/acre less for the cereal rye cover crop.

13

Display Results



Clicking View Report brings up image of report as shown here.

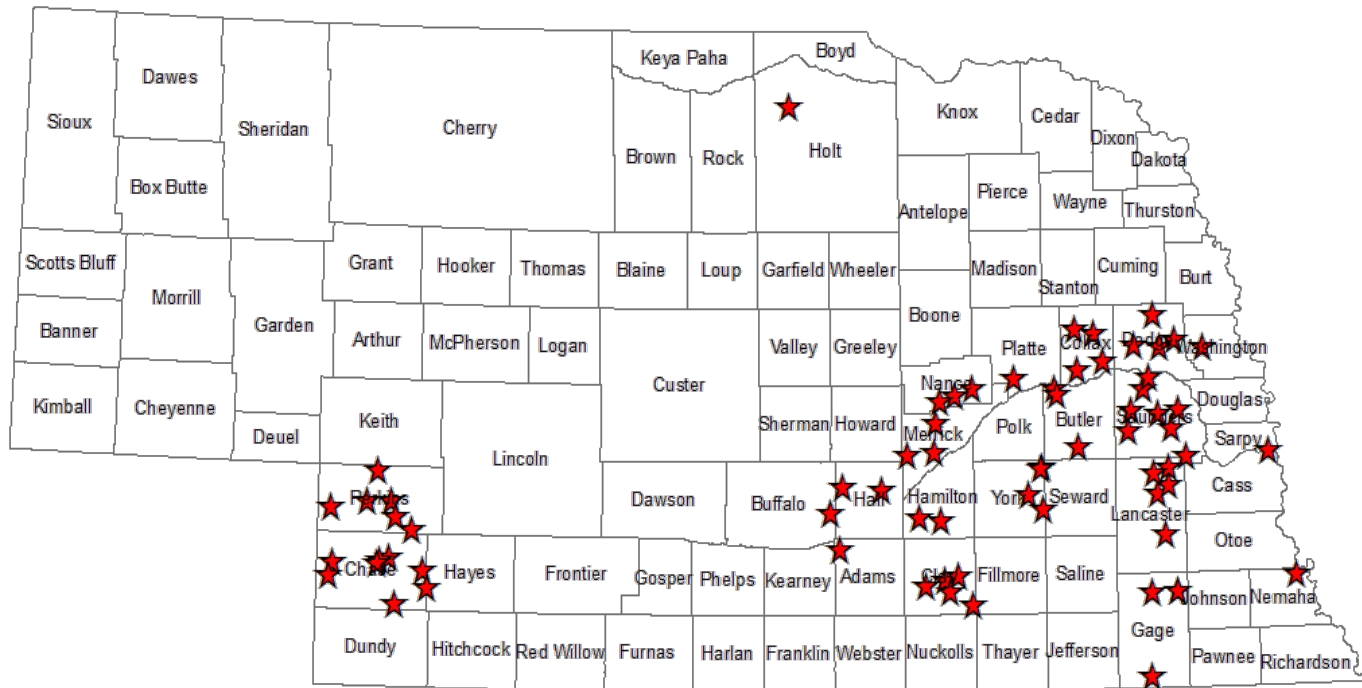
Click on black outside of report or X in top left to return to map selection to select next report to view.

←Print and Save features.

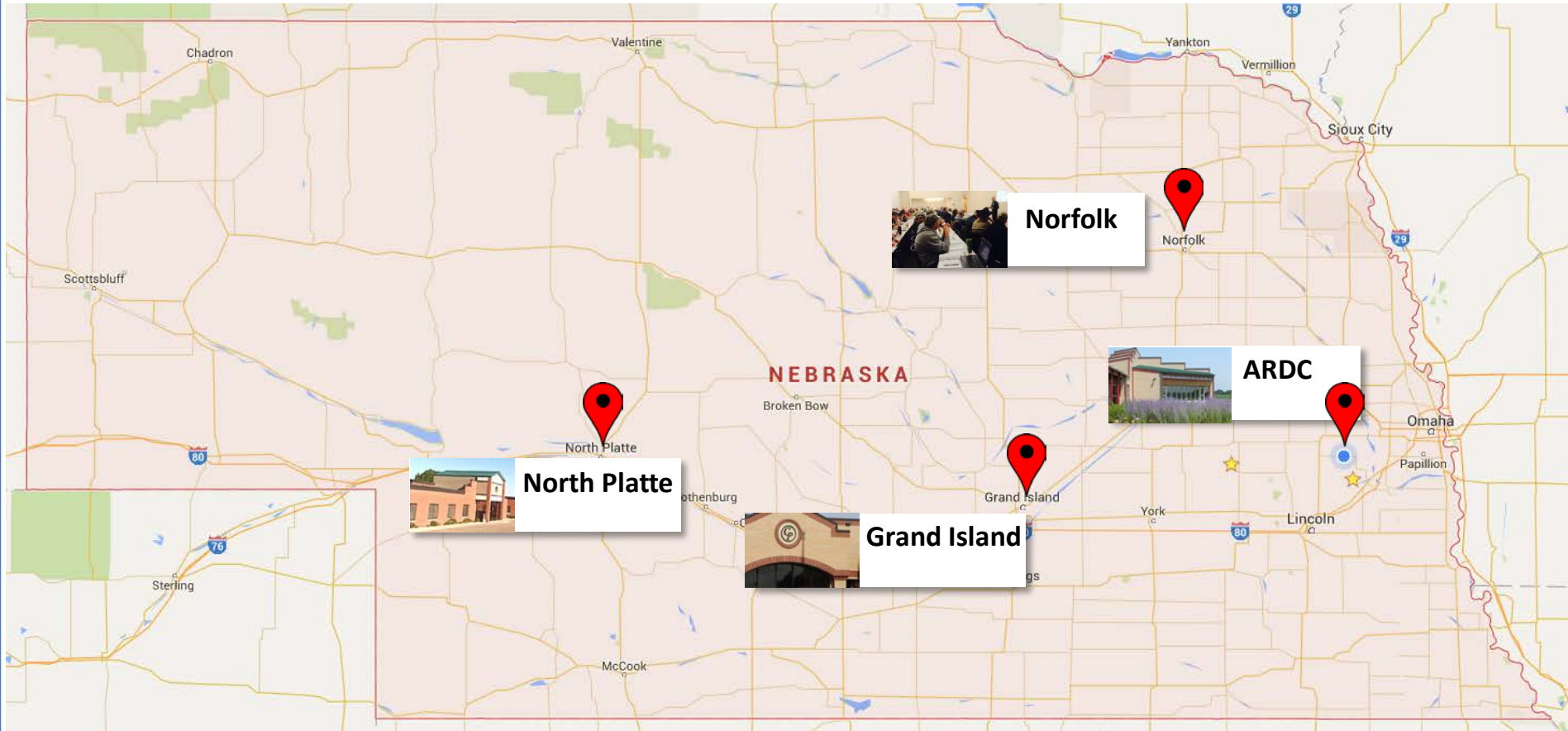
2015 STUDIES

90 Studies+

CROPS: Soybean, Corn, Field Pea, Forage Kochia, Popcorn, Sorghum, Smooth Brome, Big Bluestem



RESULTS UPDATES FOR 2015 STUDIES



PUBLISHED RESULTS BOOK



“With this group of producers, I trust the data. It’s unbiased data collected from some very good producers.”

Attendees at meetings receive a complementary copy!



Nebraska On-Farm Research Network

2016 Annual Results Update

- Feb. 8 | West Central Research and Extension Center, North Platte | 12 noon-4:30
- Feb. 9 | Hall County Ext. Office, College Park Campus, Grand Island | 9-4:30
- Feb. 11 | Lifelong Learning Center, Northeast Community College, Norfolk | 9-4:30
- Feb. 12 | Agricultural Research and Development Center, near Mead | 9-4:30



EXTENSION

No cost to attend, meal included. Pre-register at OnFarm.unl.edu or 402-624-8000.



NEBRASKA ON-FARM RESEARCH NETWORK

Connect with us!

<http://www.cropwatch.unl.edu/farmresearch>



Follow on Twitter @OnFarmResearch



Like on Facebook Nebraska On-Farm Research Network

Nebraska On-Farm Research Network

Sponsored by:

UNIVERSITY OF
Nebraska
Lincoln | EXTENSION

Nebraska
CornBoard

In partnership with:

NEBRASKA
CORN
GROWERS
ASSOCIATION

Soybeans
Nebraska Soybean Board