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#### Cedar Valley Innovation LLC

What's in <u>Your</u> Field? e-mail: cedarvalleyinnovation@gmail.com cedarvalleyinnovation.com









## Agenda

- Why and how CVI does what it does
- Review CVI Plot Learning from 2015, 2016 & 2017 Plots
- Preliminary CVI Plans for 2018 Season
- Collaboration Opportunity
- Questions and Discussion

# **Cedar Valley Innovation LLC** Why...Does CVI exist?

- "Pay back" the Farmers of the World for giving me a wonderful 41 year career at John Deere
- Support and grow the Farmer's Triple Bottom Line
  - 1. Sustainable short and long term economic performance
  - 2. Care for and Grow the Soil and Water for future generations
  - 3. Feed, clothe, and fuel the World's population

## CVI Yield Measurement Protocols

- 1. Total Field, Elevator Weight Tickets
- 2. Total Field, Yield Monitor Summary
- 3. Individual Plot Areas within Field, as check strips, etc.
- 4. Single Row Machine harvest, field length
- 5. "Mini-Plot" Machine harvest (new for 2017)
- 6. "Bucket Check" Machine Harvest (new for 2018)
- 7. 17' 5.25" (1/1000 acre) Bag Check
- 8. 17' 5.25" (1/1000 acre) Single Plant Harvest
  9. Single ear kernel and plant counts early in the season
  10.Plant counts after emergence







The Focus of Today's Discussion

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### Current vs. New vs. Advanced Farming Practices

John Deere 4% of Sales to R & D

Continuous Improvement

New Product Programs

Advanced Engineering 10% of 4%= 0.4% of Sales <u>Cedar Valley Innovation LLC</u> Continuous Improvement: Every day, every field Support growers with imagery Support growers with high resolution data Identify opportunities for improvement

"Next Step" Processes [Minimal work in this area by CVI] Leverage knowledge networks Leverage ag supplier bases <u>Replicated trials for data confidence</u>

Advanced Agronomy practices [This is the Major Focus of CVI work] Unproven processes or treatments <u>Small Plot demonstrations of concepts</u> Failure is tolerated; seen as Learning Goal: Trial adoption in small plots by growers Innovative Grower 4% of acres to R & D 40 acres for every 1000 farmed

Continuous Improvement 960 Acres

"Next Step" Test Plots 36 Acres

Advanced Practices 4 acres 2017 Plot Update: An Unanticipated Result

### Different Seasons, Different Questions

2015 Population Plots: "What Population is Optimal?"

2016 Sunlight Harvest Plots: "How Much Sunlight is Enough?"

2017 Sunlight Harvest Plots: "How Many Rows in the Strips?"



#### 2015 Population Plots: "What Population is Optimal?"

Small Plot Yield vs Edge Row Population -Unlimited Sunlight-





#### 2016 Sunlight Harvest Plots: "How Much Sunlight is Enough?"





Important Distinction: Row vs Strip vs Field Yield

The Answer: Anything more than an additional 30" of row opening is wasting the sunlight resource

#### 2017 Sunlight Harvest Plots: "How Many Rows in the Strips?"



2017 Trials Overview

Total Trials Area: 13 Field Acres 306 Rows Baseline Field Yield 230 bu/a

Corn Strip Widths (5) Monocrop 1, 2, 4 Row Strips 20/40 Row Pattern

Sunlight Openings (5) 0, 1, 2, 3 Rows Open 20/40 Inch open

Yield Checks: 310 W. Wagon 8 Bag Checks 6 Single Plant Layouts Populations (7) 25K 30K 32K 34K 51K 68K 82K 102K Beck's 5883

Seed Varieties (8) Pioneer 1197 Beck's 5883 Beck's 5140 Beck's 5337 Beck's 5565 Beck's 5113 Beck's 5828 Beck's 6225



#### 13 Sep 2017 Field Day Plots





#### **\*** The Focus of Today's Discussion

#### 2017 Sunlight Harvest Plots: "How Many Rows in the Strips?"



### 4 Row-Skip 1 Single Plant Harvest Plot



Single Plant Yield Row 4 (West Side) of 4 Row-Skip 1 Plot



Distance Along Row, From the South

Single Plant Ear Weight Row 4 (West Side) of 4 Row-Skip 1 Plot



Distance Along Row, From South,

# Row vs. Strip vs. Field Yield



Field Length Weigh Wagon Yield of Various Configurations





Field Yield of Various Plot Trials 250 238 238 234 230 230 230 225 223 223 221 213 213 Conclusion: 209 208 204 202 200 4 Row-Skip 1 190 has potential to yield 150 same as 30" Monocrop 100 50 Replications 16 16 6 2 5 3 2 2 4 4 2 2 2 0 Grower Planted 30' P1197, 344 AR-51, 8140, 551321551 85113151A0,5113A151K CUIPanted 30<sup>1</sup> P1191,344 30" Monocrop, 55883, 34t 24, 85337, 85565, 55133, 554 60' Wide Rom<sup>5</sup>, P1297, 684 28-51-92191-514 28-51-15-90-9-514 28-52, 22, 92, 91, 344 60" Wide Rows, 85140, 824 60" Wide Rows, B5140, 68t 60" Wide Rows, 8513,824 60" Wide Rom<sup>5</sup>, 862,5,68t 60' Wide Row5, 851.3' 68t 60" WIGE ROWS, P1297, 824 60" Wide Row5 8625, 824 48-51-P2191-511 ARIS

![](_page_20_Figure_1.jpeg)

![](_page_21_Figure_1.jpeg)

Field Yield of Various Plot Trials

![](_page_22_Figure_1.jpeg)

![](_page_23_Figure_1.jpeg)

### Continuous Improvement Opportunity: Ears from 60" Row, Field Day Layout

![](_page_24_Picture_1.jpeg)

Planted Population:	82K
End of Season Ears:	72
Row Yield, per 30" Row	381 bu/a
Field Yield, 60" Row	191 bu/a

Fix These!!!, Plus prevent the 10 Missing or Barren Plants

![](_page_25_Figure_1.jpeg)

# High Yield 60" Rows: How can this be?

- It doesn't make sense to "waste" half the land space
- The plants in the high pop row are too close together
- Nobody does it
- What gives?

# Seems like a lot of wasted sunlight...

4:25 pm 04 Jul 2017

![](_page_27_Picture_2.jpeg)

#### A day in the life...01 July 2017 Time Lapse Video Analysis

## "Breakthrough" Learning for 2017: 60" Rows

#### Much Simpler system to develop

- Use existing planting equipment
- Conventional Meters
- Single Population across planter
- Single variety across planter
- Single Nutrient Application rates
- Excellent field access for high clearance equipment-all season

![](_page_29_Picture_8.jpeg)

## The "Rest of the Story"....

## What to do with all that extra field space?

### Sunlight Utilization Opportunity

![](_page_31_Picture_1.jpeg)

Grower: Loran Steinlage, West Union, IA

flolofarms@gmail.com

Companion Crop Species:

- Annual Ryegrass
- Buckwheat
- Radish
- Dwarf Essex Rape

Row Configuration: 2 Row-Skip 1 (2RS1) Photo Date: 23 Sep 2017

#### Companion Crops Benefit from Additional Sunlight

![](_page_32_Picture_1.jpeg)

#### Companion Crops Species Selection and Management is Critical!

![](_page_33_Picture_1.jpeg)

# Evolving CVI Plans for 2018

Sunlight Harvest Sustainability Strips

- 1. CVI Trials at La Porte City, Tentative Plot 52051 (same location as 2016 Season)
  - 60" Rows: Major Focus
  - Tramlines: Minor Focus
  - 4 Row-Skip 1

Cover

Crop

Plot

Seeder

- Variety Screening Plots (Potential)
- Cover/Companion Crop Screening (Potential...)
- 2. Grower Plots-Advanced Farming Model
  - 60" Rows w/cover crops
  - "One Several Rounds for Bob"

![](_page_34_Picture_11.jpeg)

![](_page_34_Picture_12.jpeg)

60" Open

![](_page_34_Picture_14.jpeg)

60" Open

![](_page_34_Picture_16.jpeg)

60" Rows

![](_page_34_Picture_18.jpeg)

30" Rows

# "Elevator Speech" Summary

Based on 60" Row Data from 2017 Plots

#### Mr. Grower,

You can leave half of your cornfield space open for traffic lanes and cover or companion crops by turning off every other row on your planter and doubling the per row population with no significant loss in yield. The resulting 60 inch rows make 50% of the area available for growing soil health, managing runoff, and providing a 60" traffic lane for each wheel of your high clearance applicator.

![](_page_35_Picture_4.jpeg)

## Contact Info

![](_page_36_Picture_1.jpeg)

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