Five Factors To Improve The Odds For High Yield Corn

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Five Factors To Improve The Odds For High Yield Corn

- Fertility Program
- Nitrogen Management
- Stand Establishment & Ear Count
- Root Growth & Soil Density
- Pest Management

Soil Fertility Program

- Soil Sampling is the foundation of a good fertility program
- Soil pH & Lime
- Phosphorus
- Potassium
- Micronutrients
- VRA



Management Zones

Zones Created by:

- Soil Type
- Elevation
- Aerial Photos
- Yield Maps
- Getting the right soil in the right bag





Variable Rate Population

- Maximizing the profit potential of each management zone
- Based on
 - Water Holding
 Capacity
 - CEC
 - Organic Matter
 - Yield Potential
- Proper plant spacing is critical to the success





Variable Rate Application Nitrogen



Establishing Nitrogen Rate Studies to help Evaluate Proper VRA Nitrogen Rates.

2009 Nitrogen Rate High, Medium, & Low Yield Zones Bach Farms - Elmore, OH



2009 Nitrogen Rate MfA & RfA Soil Type Zones

Fostoria, OH



Green Springs VRA Nitrogen Plot

<u>Zone</u>	<u>Responsive</u>	Best Rate	<u>Bu Gain</u>
1	Yes	51	47.0
2	Yes	51	59.6
6	Yes	51	11.5
7 W	No	25	
7 E	Yes	51	28.6
8 W	Yes	36	9.2
8 E	Yes	36	3.3
9 W	Yes	51	35.4
9 E	Yes	36	33.8
	Average	43.1	

Responsiveness Based on \$4.50 Corn and

Yield Maps Can Help Create or Fine Tune Management Zones



Yield Map + Soil Type/Elevation Zones

Yield Monitor Calibration Good vs. Poor

- Good Calibration = high accuracy
 - Within 3% of the scale
 - Maps are clear and well defined
 - Handle wide yield swings
- Poor Calibration = fuzzy data
 - Exaggerate high yields
 - Underestimate low yields
 - Maps are a blur of random colors



NDVI Imagery

- NDVI Normalized Difference Vegetation Index
 - Measurement of vegetative health
- Remotely Sensed Imagery
 - Airplane
 - Satellite
 - Ground
- Timing
 - Just prior to tasseling
 - Just prior to dry down
 - Anytime trouble shooting is required

NDVI Imagery





Nitrogen

- Losses
 - Volatilization
 - Denitrification
 - Leaching
- Immobilization
- Mineralization









Corn Stand Establishment & Ear Count

Picket Fence Stands & Photo Copied Plants & Ears

Stand Establishment

- Seeds/acre planted
- Plants/acre @ harvest



Ear Count

• Ears/acre @ harvest

Farmer Seeds/acre Plants/acre Ears/acre Joe 32,000 31,000 27,000 Bob 36,000 35,000 34,000 John 31,000 30,000 30,000

- Measure off 1/1000th acre
 - Ex. 30" Rows = 17' 5" = 1/1000th acre
- Count the number of harvestable ears

Ex. 30 ears counted in 1/1000th acre, 30 * 1000 = 30,000 ears/acre



Economics of Ear Count Loss:

- Potential grain yield losses:
 - Loss of 1000 ears/acre = 5 to 7 Bu/ac
 - Loss of 2000 ears/acre = 10 to 14 Bu/ac
 - Average Loss
 - 6 * \$5.00/Bu = \$30.00/ac
 - 12 * \$5.00/Bu = \$60.00/ac
 - 500 ac * \$30.00/ac = \$15,000 Loss
 - 500 ac * \$60.00/ac = <u>\$30,000 Loss</u>

Picket Fence Stand

- Plants are spaced an even distance from one another within the row
- Uniform
- Little Variability
- Low Standard Deviation







Photo Copied Plants & Ears

- Uniform Plants
 - Stalk Diameter
 - Height
- Uniform Ears
 - Length
 - Rows Around
 - Placement (node)







Uneven Emergence:

- Delayed plants:
 - Cannot compete with older, more established plants
 - Don't contribute much to yield
 - Still compete for water, light, and nutrients





The Bottom Line:

- Uneven stand establishment in corn can reduce a field's yield potential from the first day you place the seed in the ground
- Yield loss can easily be as much as 7 to 15 bu/acre due to poor plant spacing and uneven emergence
- 10 bu/ac loss * \$5.00/bu =

\$50.00/ac Loss





Roots Turning on a Density Layer



Create an Optimum Environment for Roots

- Roots are the Road to Top Yields
- Healthy Roots
 - White
 - Round
 - Grow Downward 35° Angle
- Unrestricted Root Growth
- First Three Sets of Crown Roots are Key



Source: Precision Planting, Tremont, IL

Crown Roots



Soil density layer, turning roots

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TRUCK





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Thank You

Missy Bauer

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OOP