

2006

Solution Days

Understanding Plant to Plant Variability in Corn

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2006 University of Nebraska-Lincoln Extension
Solution Days

Understanding Plant-to-Plant Variability in Corn

Bruce Burger
Development Scientist
NK Brand

Paul Jasa
Extension Engineer
University of Nebraska

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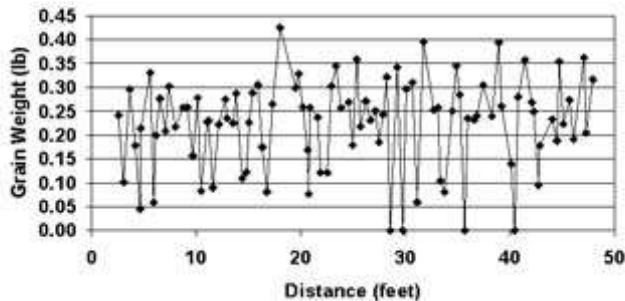
Overview

- Measuring plant-to-plant variability in your fields
- Field diagnostics – understanding the cause of variability
- Five ways to minimize plant-to-plant yield variation
- Planting tips to improve stand uniformity

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Plant Yield Variation

Grain Weight per Plant - Shelton, NE



Source: NRE Veb, OSU

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Uneven Emergence

Emergence pattern, % of maximum yield		% delayed plants
Uneven emergence within rows		
EEEM	94	25
EM	91	50
EEEMM	93	50
EMMM	93	75



Source: NRCM

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Uneven Spacing

- Yield loss is primarily a result of missing the target population
- Most research show a standard deviation between 2 to 4 is acceptable
- 10% skips can result in a 5% yield loss
- In most studies, doubles increased yields



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Plant-Soil Relations



Source: NRE Web, OSU

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Measuring Variability

- Plant Spacing
 - Standard Deviations, Doubles and Skips
- Plant Uniformity
 - Leaf stage (early)
 - Plant size, stalk diameter, ear size and placement
 - Nutrient deficiencies on the lower leaves
 - Pollination and Kernel Set

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Basic Functions of Planting Equipment

1. Meter the seed
2. Cut/handle the residue
3. Penetrate the soil to desired seeding depth
4. Establish seed-soil contact
5. Close the seed-vee
- 6-? Apply fertilizer, insecticide, herbicide, fungicide, etc.



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Yield loss because of spacing variability

4 bu/A per inch of SD over 2 inches StdDev

Doerge & Hall, 2000

Yield loss because of nonuniform emergence

1-2 leaves behind 50%

3 or more leaves behind 10%



Cross listed as

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