

Corn

Corn Production: A Systems Approach

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Corn

Systems Approach

There is NOT one magic trick...

No “Silver Bullet” to increasing yields

It is a multi factor process . . . A system

Management of many factors

Soil, Hybrid Selection, Planting, Crop Care, and
Harvest



Corn

Yield =

Number of Harvestable Ears per Acre

X

Number of Kernels per Ear



Corn

Hybrid Selection

Maturity

Disease Tolerance

Stalks

Roots

Traits

Environment

Seed Treatments



Corn

Key Growth Stages to Keep Plant Stress Free

- Germination – Emergence = Potential Ears/Ac
 - V6 – V7 = Number of Rows/Ear
 - V15 – VT = Number of Kernels/Row
 - R1 – R2 = Pollination and Kernel Count
-
- Yield = $\frac{\text{Number of Ears} \times \text{Number of Rows} \times \text{Number of Kernels/Row}}{90,000}$



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Soil Management

- **Compaction**
- Fertility
- Nutrient availability
- Drainage
- Seed bed preparation
- Residue management
- Etc...



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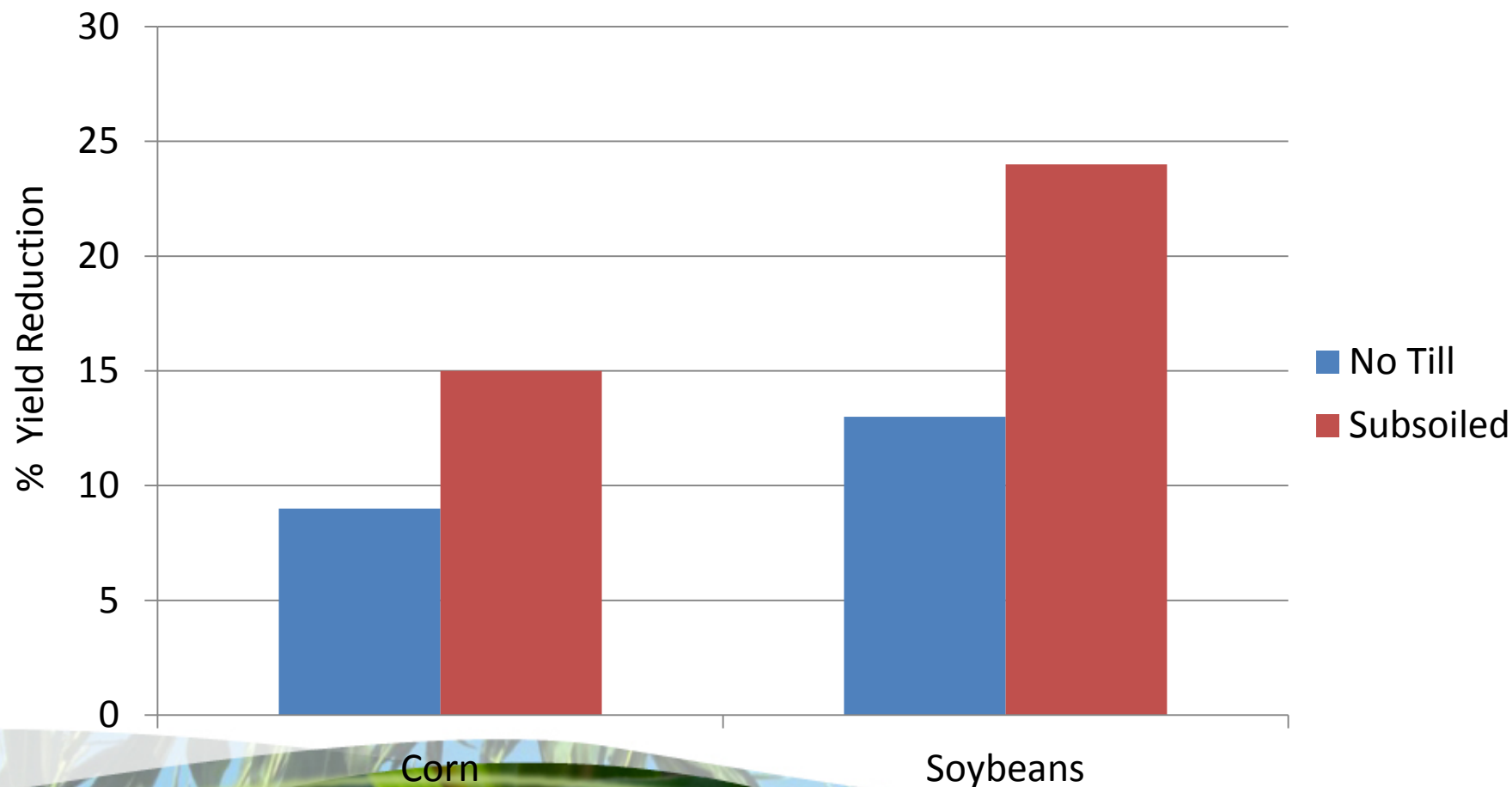


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Effect of Compaction

6 Year Study at The Ohio State University, Northwest Ag Research Station

Soils compacted with 20 ton/axle grain cart (compaction done in 2002 and 2005)



Source: Dr. Randall Reeder, Extension Ag Engineer, The Ohio State University

WORLD CLASS AGF

Corn

DUPONT



Corn

Planting

- **Planter Maintenance and Calibration**
- **Seed Spacing** (row spacing and interplant spacing)
- **Row Configuration and Population**
- **Seed Placement**
- **Germination Uniformity**



Corn

Planting – 10 Things to Check

1. Level the planter
2. Check bushings and parallel linkage
3. Drive system
4. Calibrate corn meters
5. Double disk openers
6. Seed tubes
7. Closing wheel system
8. Closing wheel alignment
9. Row cleaners
10. Seed firmers

Source: Precision Planting Website: www.precisionplanting.com

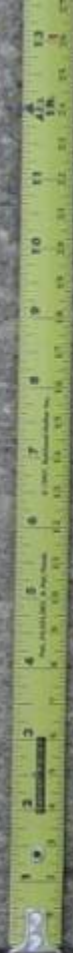
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Precision Planting & Planter Calibration



Corn





9000



27,000



36,000



45,000



54,000



72,000



90,000

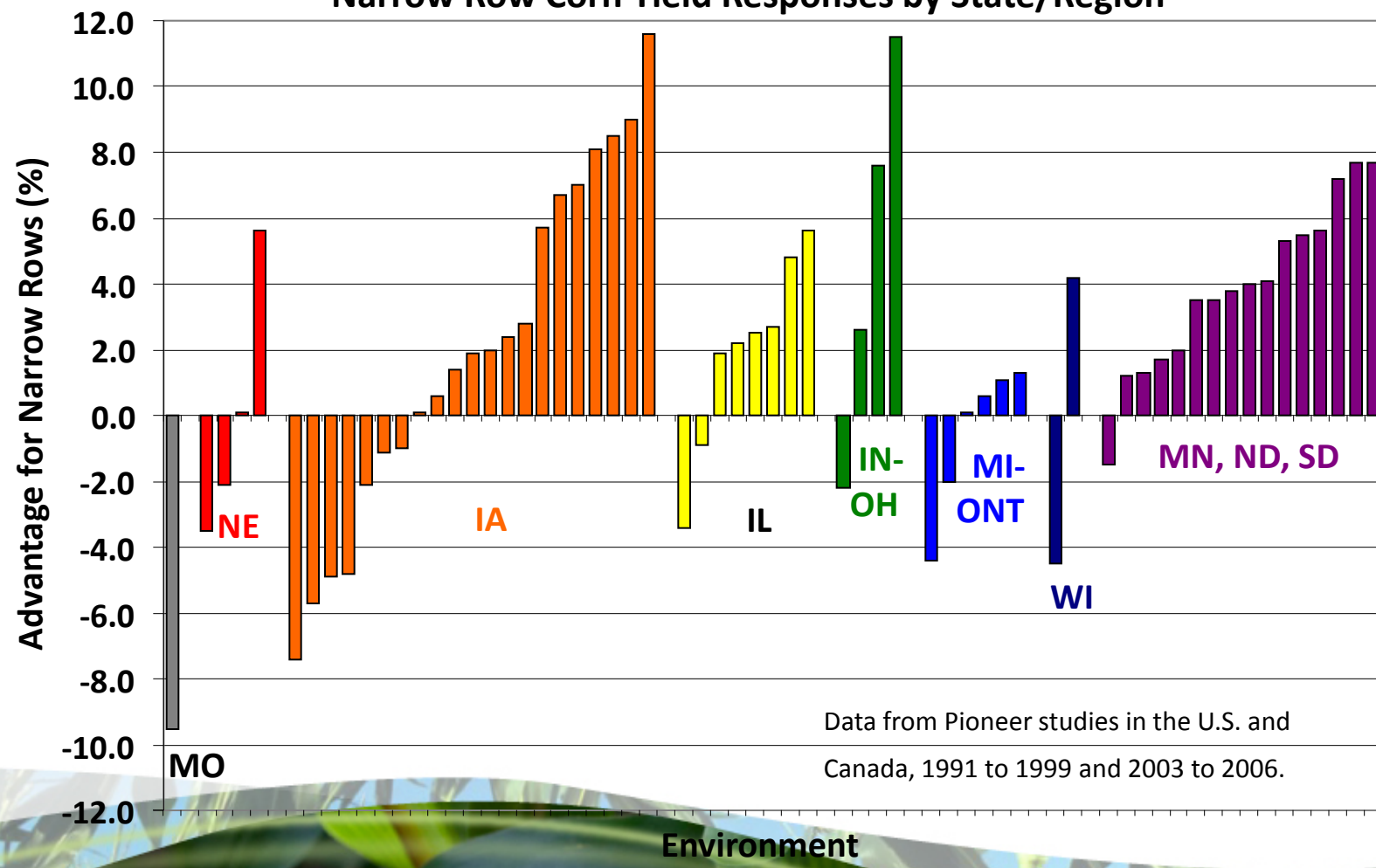


Canada Average Plant Population (32,200 plants/ac)

Corn

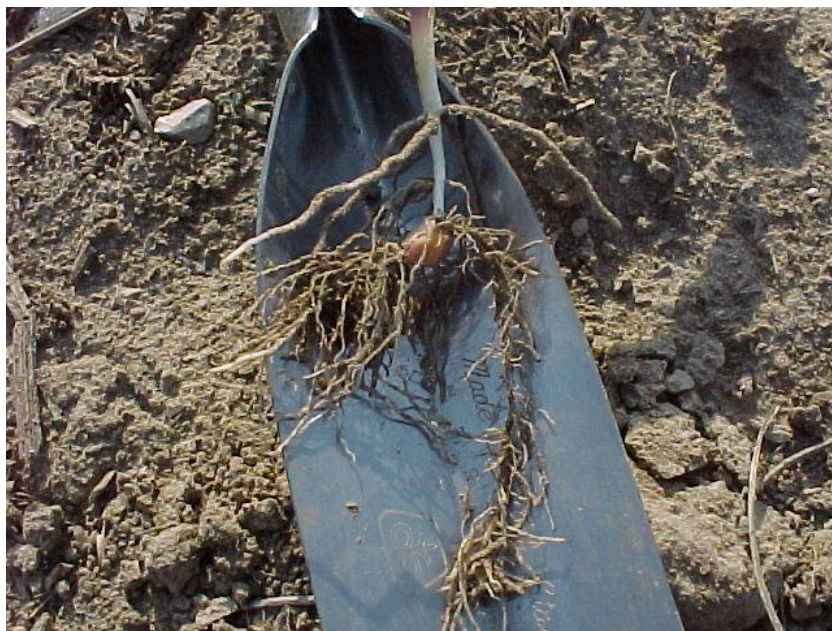
Corn Hybrid Response to Row Spacing Pioneer Data

Narrow Row Corn Yield Responses by State/Region



Corn

Seeding Depth **At least 1.5" deep**



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Uniform Germination



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Weed Control

- ③ Control weeds early!
 - ③ Weeds compete with the corn crop for water, light and nutrients
 - ③ “Critical period” for preventing weed interference is from the V2 to V3 corn growth stage until V12
 - ③ **Approximately 3 weeks through 8 weeks after planting**
 - ③ A pre-emergence followed by post-emergence herbicide program is most effective.



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Crop Care

- **Stress Reduction**
- **Seed Treatments**
- **Fertilization**
- **Weed Control**
- **Insect Management**
- **Disease Management**

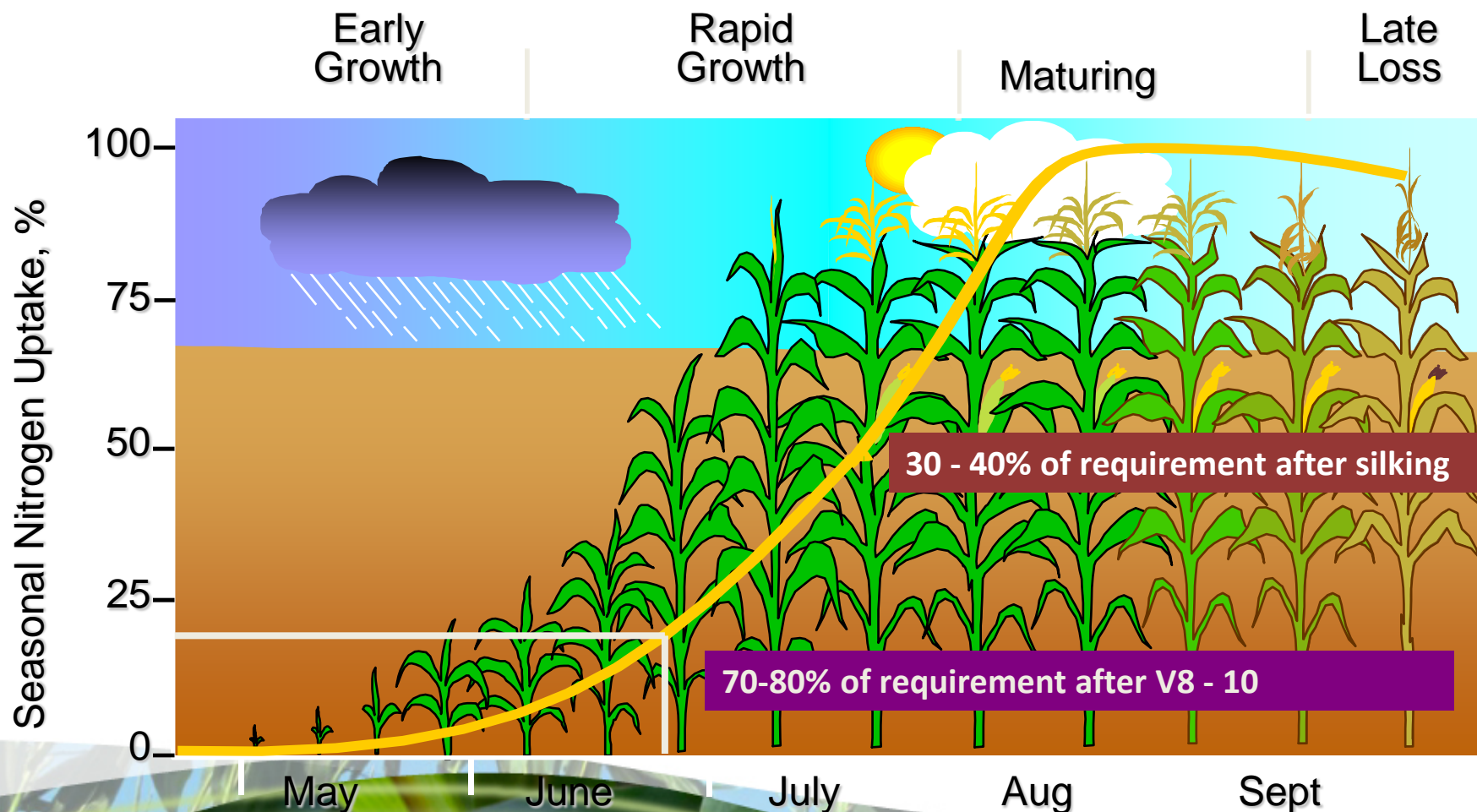


Nitrogen Management



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Most nitrogen should be applied before V10



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Corn Response to Foliar Fungicides Improved Plant Health

- Control of foliar diseases in corn
- Hybrids respond differently to foliar fungicides

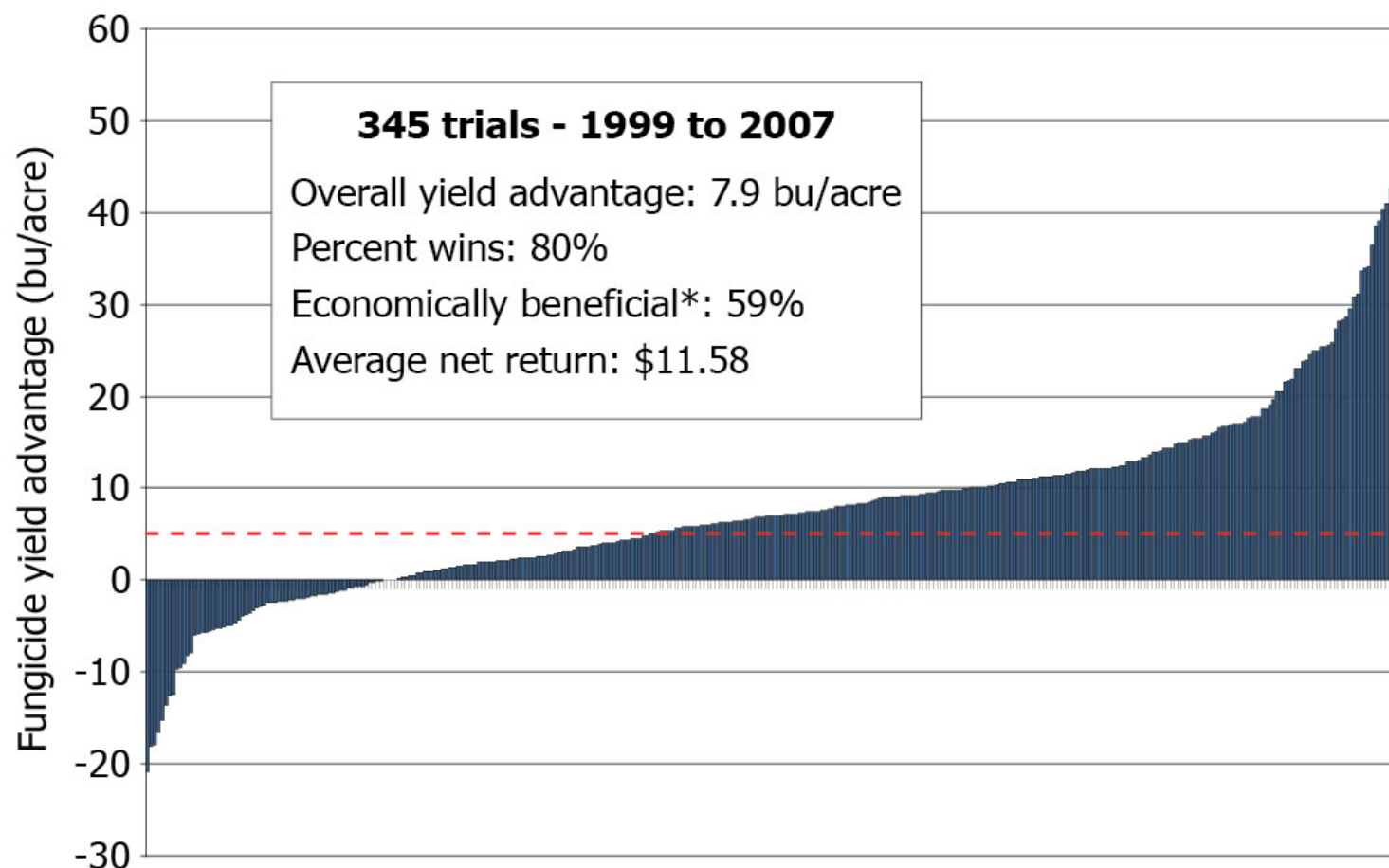


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Overall Yield Response

University (74) and On-Farm (271) Trials



*Assumes \$4.25/bu corn and \$22/ac for fungicide.

Break-even response = 5.2 bu/ac

Data from Pioneer Agronomy Sciences

Corn

Systems Approach

Remember:

You only plant and care for your crop on average, 40 times....

Everything we do is a “Trade Off”....



Corn



Thank You

