

# 2005

## Soybean Management Field Days

### *Growing Soybeans for High Yield And Quality*

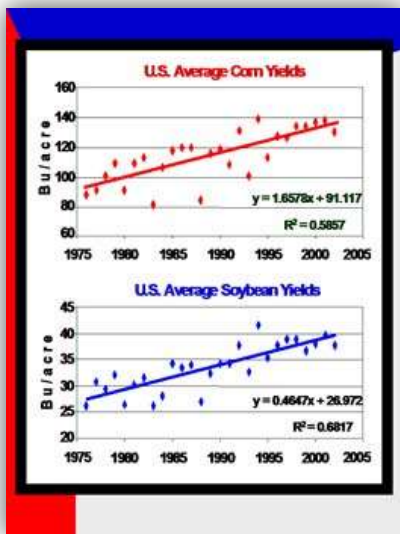
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## Growing Soybeans for High Yield and Quality

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Yield \_\_\_\_\_ Quality

?

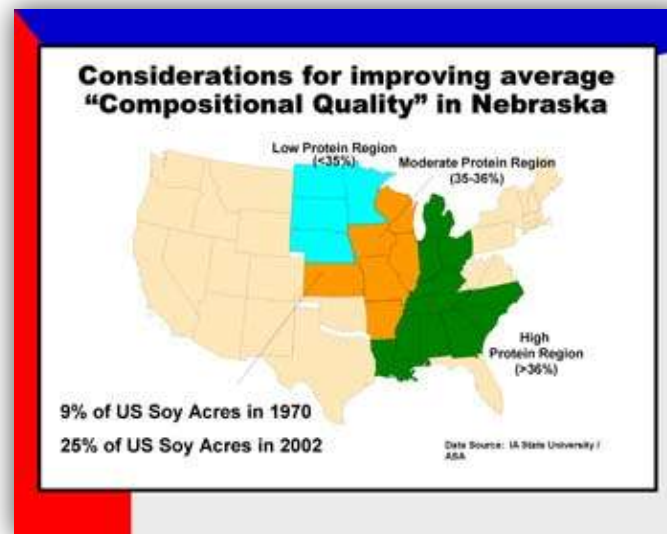
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### Percent Yield Increases of Corn and Soybeans in a Rotation

State	Yrs. of Study	% Yield Increase	
		Corn	Soybeans
<b>NE<sup>(1)</sup></b>	<b>8</b>	<b>6</b>	<b>---</b>
<b>IA</b>	<b>8</b>	<b>13</b>	<b>12</b>
<b>MN</b>	<b>20</b>	<b>12</b>	<b>13</b>
<b>IN</b>	<b>20</b>	<b>8</b>	<b>11</b>

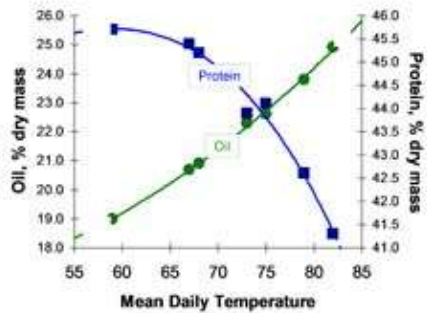
*(1) Irrigated Central Nebraska*

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### Effect of Growth Temperature on Protein and Oil Concentration in Mature Soybean Seed



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### Considerations for improving average "Compositional Quality" in Nebraska

- Protein & Oil tend to be inversely related
- Yield tends to be inversely related to protein & oil content
- Mother Nature is a big influence
  - Late stress increases protein
- Germplasm variance

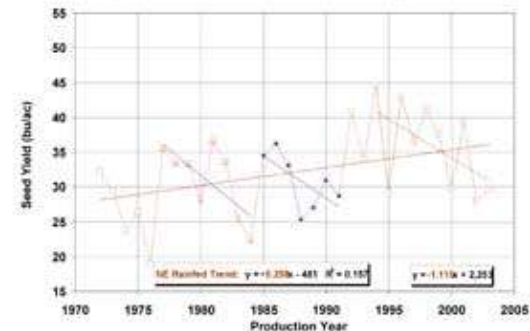
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### Genetic Improvement

- More high yielding SCN-resistant varieties
- Increased iron-deficiency chlorosis tolerance
- More Phytophthora resistance and tolerance
- Improved resistance to BSR and SDS
- Research efforts on new pests and diseases
- Continued research on grain composition
  - Improved Health, Flavor & Functionality for Soybeans
    - Protein & oil modifications
- Biotech Approaches

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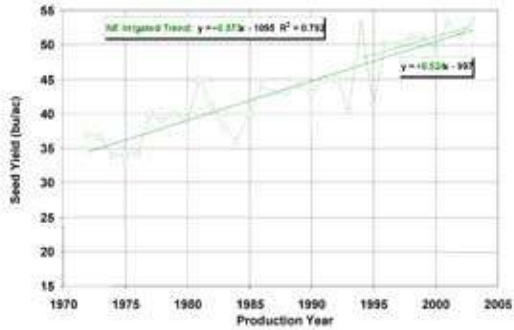
### NE Soybean Yield Trends (1972-2003)



Source: National Agricultural Statistics Service

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### NE Soybean Yield Trends (1972-2003)



Source: National Agricultural Statistics Service

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### Yield Factors

1. Weather
2. Fertility
3. Seeding { Rate  
Date
4. Row Width
5. Rotation

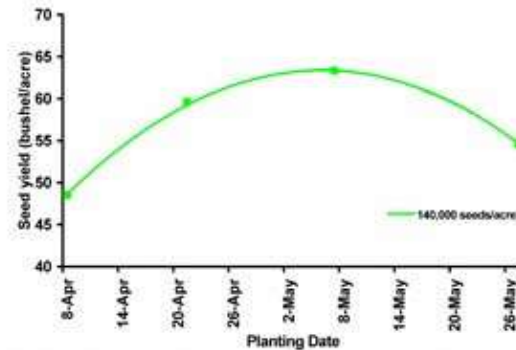
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### Yield Management Factors

- **Soil Fertility and Plant Nutrition**
  - pH = 6.0-7.0
  - Phosphorous >25 ppm
  - Inoculants and Nodulation
    - ~ 5 lbs N per bu of seed produced via nitrogen fixation
  - Foliar fertilization
  - Iron Chlorosis

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### Soybean Yield Response to Planting Date by Seeding Rate (6 varieties) York, NE

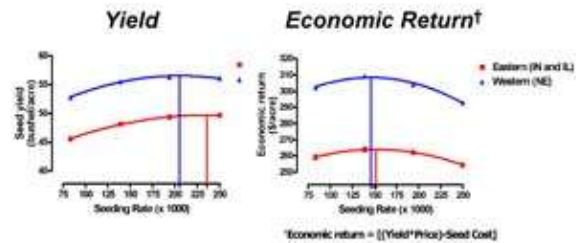


Source: Penn State Agronomy Services

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## Optimum Seeding Rate\*

2001-2004



\*Vertical lines denote optimum seeding rate for each geographical area.

Source: Penn State Agronomy Services

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## Row Spacing (which is best?)

### • Narrower is better

#### – Advantages:

- Higher yield potential
- Better equidistant spacing
- Less competition
- Quicker canopy closure = more efficient light interception, less heat stress & better weed control

#### – Disadvantages:

- May require additional equipment
  - Increased potential for White Mold infection?
  - May not allow for mechanical weed control
- Yields generally increase as rows narrow if light is the limiting factor.

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## Other Yield Management Factors

### • Variety Selection

- Yield performance
- Maturity
- Pest resistance
- Agronomic Traits
- Local premium market opportunities

### • Alleviating/Managing Stress

- Pest Control (weeds, insects, disease)
- Soil Tillth (tillage, compaction)
- Irrigation
- Rotation

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