2005 Soybean Management Field Days

Growing Soybeans for High Yield And Quality
**Effect of Growth Temperature on Protein and Oil Concentration in Mature Soybean Seed**

- 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

**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

**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

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

Source: National Agricultural Statistics Service

- Improved Health, Flavor & Functionality for Soybeans
- Protein & oil modifications
- Biotech Approaches

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

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

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

Source: National Agricultural Statistics Service
**Optimum Seeding Rate**

2001-2004

- Yield vs. Seed Rate
- Economic Return vs. Seed Rate

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

**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.

**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 Tilth (tillage, compaction)
  - Irrigation
  - Rotation