

MISC. – ASSORTED STORYBOARDS

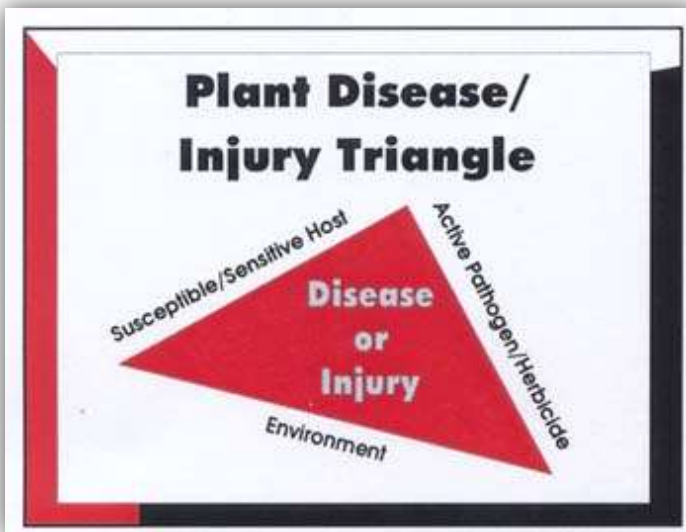
Use & Copyright

The materials in this document were developed by and for use by University of Nebraska–Lincoln Extension in the Institute of Agriculture and Natural Resources. The materials are copyrighted by the Board of Regents of the University of Nebraska–Lincoln on behalf of the University of Nebraska–Lincoln Extension. All rights are reserved.

Copies may be printed for individual personal use; however, these materials can not be republished in print, on another Web site or used commercially without prior written permission. To seek permission to print a publication for educational use, please email us at dpittman1@unl.edu.

Disclaimer

Reference to commercial products or trade names in these publications is made with the understanding that no discrimination is intended and no endorsement by University of Nebraska-Lincoln Extension is implied.



disease1

Know the Crop Specifics

- ✓ Crop variety or hybrid
- ✓ Maturity or growth stage
- ✓ Plant parts affected

disease2

Know the Site History

- ✓ Crop history
- ✓ Tillage methods used
- ✓ Disease history
- ✓ Herbicide history

disease3

Field Conditions

- ✓ Soil type and pH
- ✓ Compaction
- ✓ Weather Patterns

disease4

Distribution of Symptoms

- ✓ Field topography
- ✓ Soil type or compaction relationship
- ✓ Soil moisture relationship
- ✓ Field operations

disease5

Signs & Symptoms of Disease

- ✓ The visible presence of the pathogen
- ✓ The physical expression by the plant of disease

disease6

Herbicide Injury

Direct Treatment

- ✓ Pre
- ✓ Post

Indirect Treatment

- ✓ Drift
- ✓ Carryover

disease7

Direct Treatment


- ✓ Pre
Pattern often variable depending on soil variation, application variability, planting variability
- ✓ Post
Pattern uniform except for application based variability

disease8

Indirect Treatment

✓ Drift

- Gradient usually evident
- Symptoms uniform in local area

Source Treated Area	Susceptible Crop		
	Severe	Moderate	Slight
	Gradient 		

disease9

Indirect Treatment

✓ Carryover

- Pattern often patchy in response soil variation



disease10

Effect of Water pH on Roundup Activity on Oats

pH	Water Source	
	Distilled	Well
2	64%	51%
9	55%	42%

herb9

Spray Additives

- ◆ Surfactants
- ◆ Oils
- ◆ Ammonium Fertilizer
- ◆ Compatibility Agent
- ◆ Drift Retardant

herb10

Weak Acid Herbicide Behavior

<u>Herbicide</u>	<u>Herbicide</u>
COO^-H^+ Ammonium	$\rightarrow \text{COOH}$
(water soluble) (NH_4)	(oil soluble)
NE Water	NE Water
(High pH)	+ Ammonium
	(Low pH)

herb11

AMS Improves Herbicide Movement Into Leaf



herb12

Corn Pollination

✓ Male Tassel

Anthers contain pollen grains

✓ Female - Ear

Silks attach to ovules on cob

polli1

Corn Pollination

✓ Tassel & Ear Initiation

V-6 to V-8

✓ Tassel Emergence

V-T

✓ Silk Elongation

✓ Pollen Shed

} R-1

polli2

Corn Reproduction is Male Dominant

- ✓ V-6 to V-8 Initiation of Tassel - 1
Initiation of Ear Shoot - 2

With Stress - Tassel develops at expense of shoot

- ✓ V-T to R-1 Emergence of Tassel - 1
Silk Elongation - 2

With Stress - Tassel may emerge & shed pollen before silks emerge

polli3

Pollen Shed

- ✓ Begin 2 to 3 days before silk emerge
- ✓ **MAY** continue for 6 to 7 days
- ✓ Pollen is not shed under rainy conditions, heavy dew on irrigation
- ✓ Cool, cloudy weather delays pollen shed
- ✓ Pollen grains are 90 to 95% water
- ✓ Once dispersed into air, viability decreased rapidly

polli4

Pollination-Fertilization

- ✓ Transfer of pollen grains from anthers to silk
- ✓ Pollen grains and silks are 90 to 95% water
- ✓ Desiccation of both can occur rapidly
- ✓ Pollen grains falls on silks, germinates and grows down pollen tube to ovule
- ✓ Process requires 24 hours




polli5

Pollination (Fertilization) Failures

- ✓ Pollen shed complete before silks emerge
- ✓ Silks are desiccated and become non-receptive
- ✓ Insects clip silks
- ✓ Silk balling
- ✓ Chemicals - fertilizers, pesticides

polli6


Insects Affecting Pollination

- ✓ Corn Rootworm Beetles 
- ✓ Woolly-Bear Caterpillars 
- ✓ Katydid 

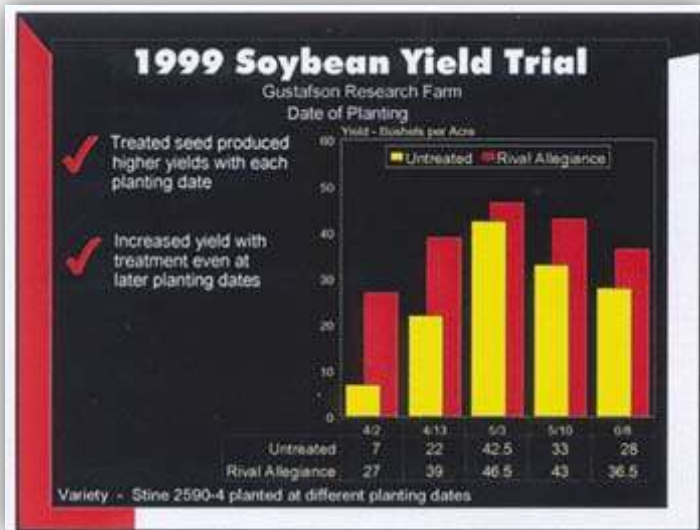
polli7

Kernel Abortion

- ✓ Drought
- ✓ Defoliation
 - Hail
 - Diseases
 - Insects
- ✓ Nutrient Deficiency



polli8



soyyield1

1999 Soybean Yield, bu/A

Rogers Memorial Farm

	<u>30" Rows</u> <u>(Soybean)</u>	<u>7.5" Drill</u> <u>(Corn)</u>
March 4	52.1	-----
March 28	56.0	56.3
April 19	-----	57.1
May 10	49.6	50.7
June 4	43.9	41.8

soyyield2

1999 Soybean Yield, bu/A
Rogers Memorial Farm

	<u>30" Rows</u> <u>(Soybean)</u>	<u>7.5" Drill</u> <u>(Corn)</u>
March 4	52.1	-----
March 28	56.0	56.3
April 19	-----	57.1
May 10	49.6	50.7
June 4	43.9	41.8

soyyield3

Tom Weiler, Cardington, Ohio
Quoted in *The Furrow Magazine*

<u>1998</u> <u>Planting</u>	<u>Yield,</u> <u>Bu/A</u>
March 30	52
April 13 & 24	-----
May 13	49

soyyield4

Larry Lotz, OSU Extension
Quoted in *The Furrow Magazine*

<u>1998</u> <u>Planting</u>	<u>Yield,</u> <u>Bu/A</u>
February 2	46
March 16	70
May 19	56

soyyield5

David Savage, Farley, Iowa
Quoted in *The Furrow Magazine*

Planted April 7, 1997

Cold front froze soil to depth of 3 inches.

Nevertheless, harvested 70 bu/A beans.

"They were the best beans on the farm."

soyyield6

Steve Ruhl, OSU Extension

Quoted in The Furrow Magazine

"Any extra yield from planting early is just a bonus. We're looking at early planting to see if a grower can spread his workload and avoid the yield penalty associated with planting late."

soyyield7

Keith Whigham, Extension Agronomist
Iowa State University

<u>Planting Date</u>	<u>% Max Yield</u>
April 19 - 28	100
May 12 - 17	96
May 22 - 25	99
May 31 - June 5	81

soyyield8

Effect of Soil Characteristics on Yield

<u>Factor</u>	<u>Potential Yield Increase</u>	<u>Potential Yield Decrease</u>
Drainage	Good	Poor
pH	6.5 to 7.5	<5 tp >7.8
Structure	Granular, crumb	Compacted
Texture	Loam, silt loam	Sandy, loamy sand, clay, silty clay
Fertility	Adequate	Deficient to marginal

yield1

Factors in Variety Selection

<u>Factor</u>	<u>Considerations</u>
Yield potential	Adaptability to your soils, climate, etc.
Herbicide resistance	STS, Roundup Ready
Disease resistance	Damping off, Phytophthora, SCN
Harvestability	Standability, green stems, shattering
Identity preserved	Contract market, yield drag and technology fee

yield2

Effect of Plant Density on Yield

Decreasing Row Row Spacing (in.)	Yield Increase (%)	Minimum Plant Count at Harvest
36 to 30	8 to 12	
30 to 20	5 to 7	
20 to 10	3 to 5	
10 to 7	0 to 2	

yield3

Note Effects of Tillage on Yield

Tillage	+%	-%
No-till into CRP		
No-Till into cornstalks		
No-till into sorghum stubble		
Ridge-till into corn		
Ridge-till into sorghum		
Conventional - disk, field cultivator		

yield4

Effect of Water Stress on Potential Vegetative and Seed Weight

Stage of Water Stress	Vegetative Weight (%)	Seed Weight (%)
Flower initiation	73	80
Flowering	85	85
Pod formation	89	62
Seed fill	94	56
No stress	100	100

yield5

Insect Injury

Probability of Yield Reducing Damage From..

- Bean Leaf beetle
- Bristle beetle
- Green clover worm
- Grasshopper
- Potato leaf hopper
- Spider mites
- Woolly bear caterpillar
- SCN

yield6

Harvest Losses		
4 beans per square foot = 1 bu/ac		
<u>Loss</u>	<u>Average</u>	<u>Excellent</u>
Shattering ahead of cutter bar		
Shattering at the cutter bar		
Missed pods at ground level		
Lodged plants		
Cylinder loss		
Separation loss		

yield7