

2007

Soybean Management Field Days

Soybean Row Spacing, Plant

Population, Planting Date and Water

Management

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Soybean Row Spacing, Plant Population, Planting Date and Water Management

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2007smfd-rowplant001

Three Factors Influence Your Ability to Optimize Your Soybean Yields:

- *Soil Type/Conditions
- *Seasonal Water Supply
- *Your Management

2006SMFDWater-012

2007smfd-rowplant002

PLANTING DATES

Picture Date: 6/26/2003



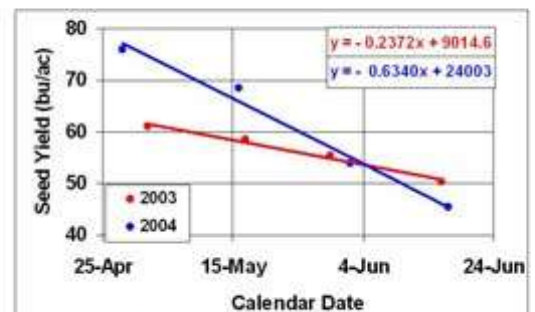
Picture Date: 6/24/2004



2006SMFDWater-017

2007smfd-rowplant003

Plant Early - Optimize Yield

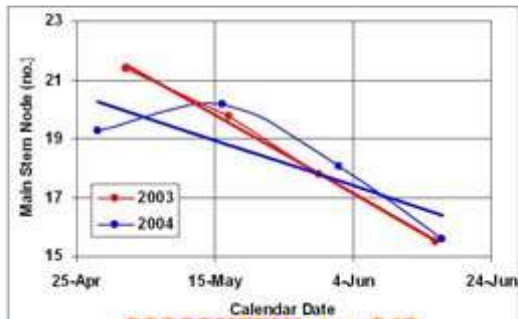


2006SMFDWater-018

2006SMDCSpecht-001

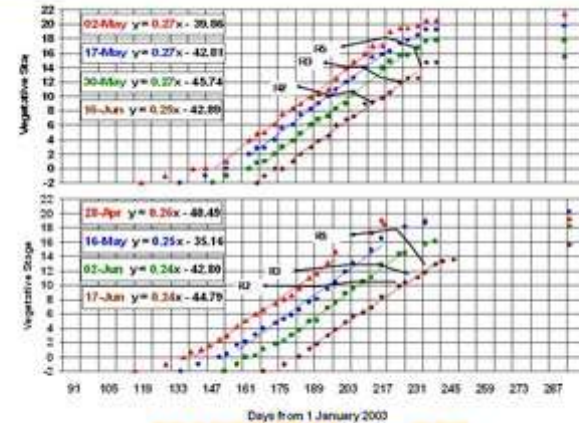
2007smfd-rowplant004

Plant Early – More Nodes



2006SMFDWater-019
2006GMDCSpecht-003

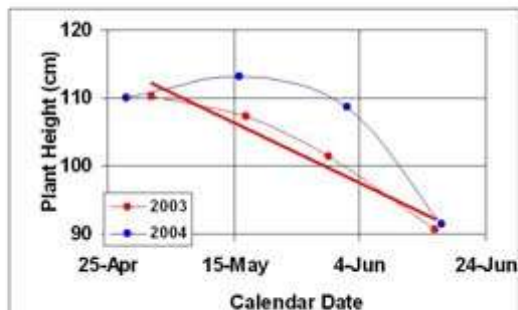
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2006SMFDWater-020

2007smfd-rowplant006

Plant Early – Crop Height Effect



2006SMFDWater-018
2006GMDCSpecht-004

2007smfd-rowplant007

Plant Early – But Do It Right!

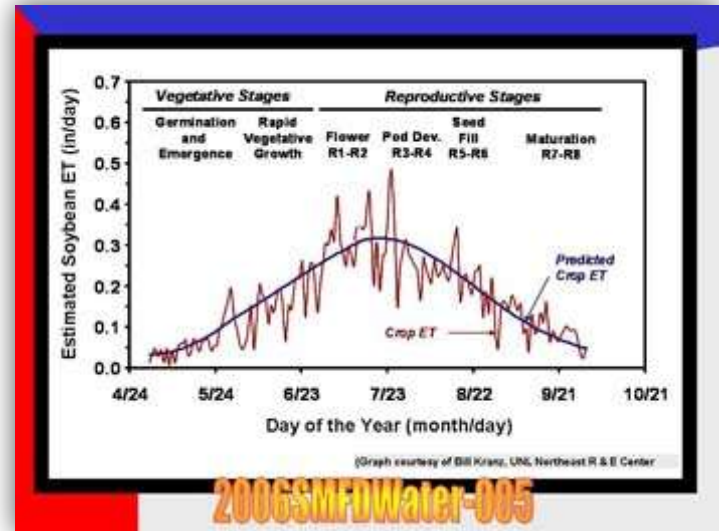
- Know the calendar date of last-ever spring frost for your area.
- Plant no earlier than 14 days prior to that calendar date.
- Use a variety with slightly later flowering (i.e., later maturing).
- Use high quality seed and consider treating with a fungicide & insecticide!

2006SMFDWater-022

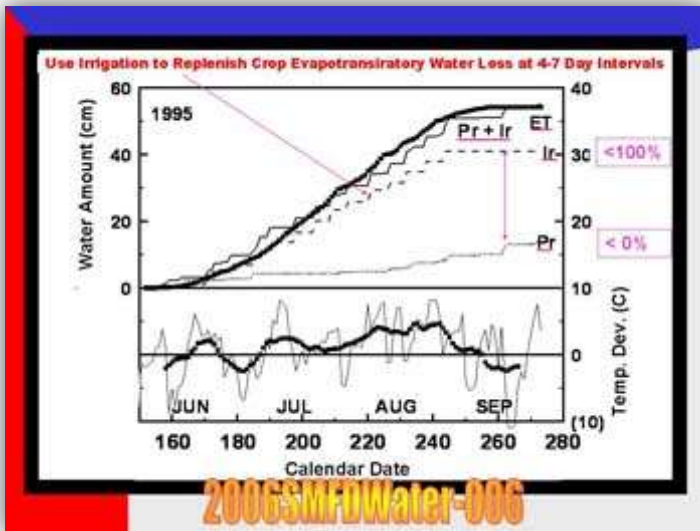
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2007smfd-rowplant009



2007smfd-rowplant010



2007smfd-rowplant011

Learn how to increase available soil water by reducing runoff and evaporation

Observe row spacing, population and planting date influences on plant development

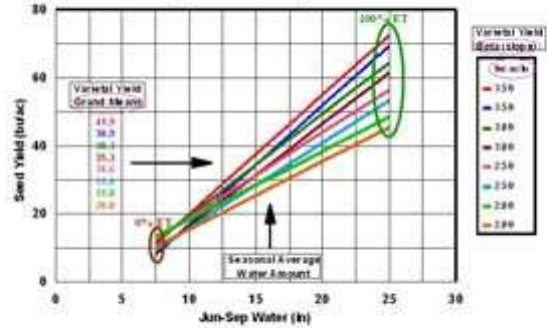
Understand the yield components of number of plants, seeds per plant, and seed size

Learn about water needs for the various plant growth stages and seed development stages

2007smfd-rowplant012

Soybean Yield versus Water

Some Typical Varietal Responses in Nebraska



1.5 bu/in = 1000 kg/ha, 3.0 bu/in = 2000 kg/ha, etc. 3.5 bu/in = 2250 kg/ha, 3.5 bu/in = 2250 kg/ha

2006SMFDWater-008

2007smfd-rowplant013

Soybean Irrigation Recommendations:

5. Skip irrigation during flowering (R1-R2) to minimize disease risks of rust & white mold, and to lessen lodging potential.
6. Always irrigate at pod elongation (R3-R4), the most yield-sensitive R-stage. Delivers max “yield bang” for the “irrigation buck”.
7. Continue irrigation during seed-filling (R5-R6) as August water is more critical for soybean than corn. Don't stop too soon!

2006SMFDWater-009

2007smfd-rowplant014

Soybean Irrigation Recommendations:

1. Capture off-season snow and rainfall, to store and conserve it as soil water.
2. Minimize in-season evaporative loss of soil water (early planting >> early canopy).
3. Plant a variety with a high yield-to-water response (3 bu/ac per inch).
4. Avoid irrigating during vegetative growth to ensure a deep and wide root system.

2006SMFDWater-007

2007smfd-rowplant015

Soybean Irrigation Pointers:

1. If your crop rotation is corn/soybean and you are not achieving a long-term Corn/Soy yield ratio of **3.25** (examples: **175/53.8**, **200/61.5**, **225/69.2**, **250/76.9**, then you are likely mismanaging one of the two crops.
2. Soybean yield response to water is linear and a high-yield variety delivers 3.5 bu/ac per inch of irrigation. With 8 inches of water, you could apply all 8 inches to a 100-acre field or apply 1 inch over a 800-acre field. How many here would take the first

option? 2006SMFDWater-013

2007smfd-rowplant016

Soybean Irrigation Pointers:

- Some irrigation scheduling models treat the top 3-ft of soil zone as fully loaded with roots. Actually only the root hairs absorb water, and they mine soil water from a given layer before moving to the next soil layer.
- Some irrigated producers think that they can plant late and use irrigation during vegetative growth to bring the crop back to a plant height similar to an earlier planted non-irrigated field. How many of you do this?

2006SMFDWater-014

2007smfd-rowplant017

Take Home Messages

- Don't destroy soil structure with tillage and lose soil moisture
- Use residue cover to reduce erosion, crusting, and evaporation
- Select the proper maturity and plant early
- Irrigate primarily during pod fill, sparingly before that
- Don't shut off too early, fill those pods

2006SMFDWater-016

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Yield	97	98	99	00
30" P	43	55	56	48
15" P	49	57	62	--
15" D	46	56	56	--
7.5" D	49	58	56	48

2000	2.4	3.2	2.4	3.2
3-6	42	38	57	75
3-29	43	35	34	59
4-19	38	37	42	47
5-10	39	37	42	59
5-31	36	37	35	43
6-21	28	27	24	26



2007smfd-rowplant019





2001	2.4	3U	3T	3.4
3-9	26	41	--	46
4-10	28	42	41	44
4-30	31	41	44	45
5-23	33	49	46	49
6-12	38	45	44	45

2002	MG2.7		MG3.4	
Drop	100	177	100	177
3-14	26	23	32	28
4-9	26	16	34	35
5-2	29	22	36	35
5-31	32	32	31	35
6-20	14	36	--	16



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Population? (Tech Fees?)
 Drilled vs Rows
 Tilled vs No-till
 Irrigated vs Rainfed
Desire 100K to 120K Plants

Seeding rate depends on stand establishment and planting date.

Pop	2005	2006
25K	47	28
50K	49	45
75K	49	50
100K	50	51
125K	51	51
150K	49	52
175K	50	52
200K	50	51


Marion Calmer, IL

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Compare Plow Treatments

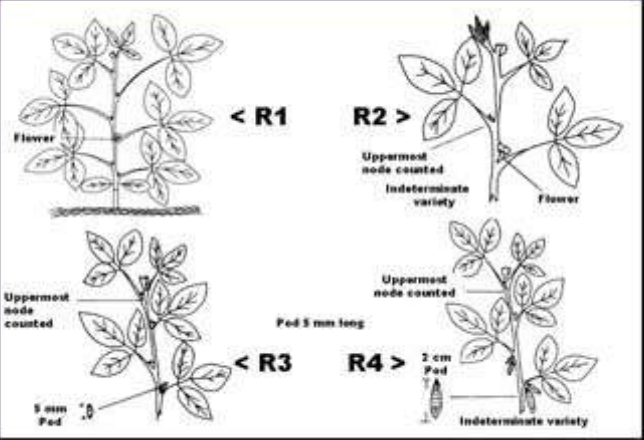
Specht's '06 Drip Research
 45.3 bu/A 8.3" rainfall

Rogers Memorial Farm
 43.2 bu/A 8.9" rainfall



2000	Yield	Water	2006	Yield	Water
Plow	23	0	Plow	43	0
Chisel	36	13	Chisel	56	13
D-Disk	36	13	D-Disk	56	13
Disk	42	19	Disk	59	16
NT/C	44	21	NT/C	61	18
No-till	48	25	No-till	62	19

2007smfd-rowplant022



< R1 Flower

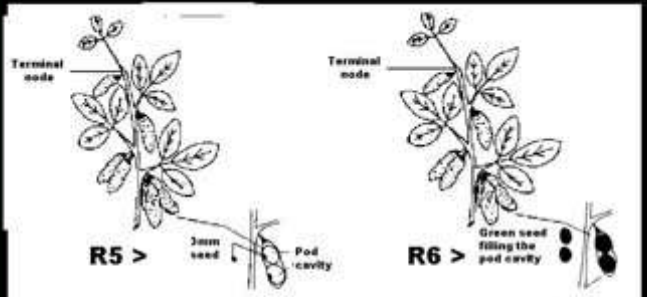
R2 > Uppermost node counted
 Indeterminate variety

< R3 Uppermost node counted
 Ped 5 mm long

R4 > Uppermost node counted
 2 cm Pod
 Indeterminate variety

5 mm Ped

2007smfd-rowplant023



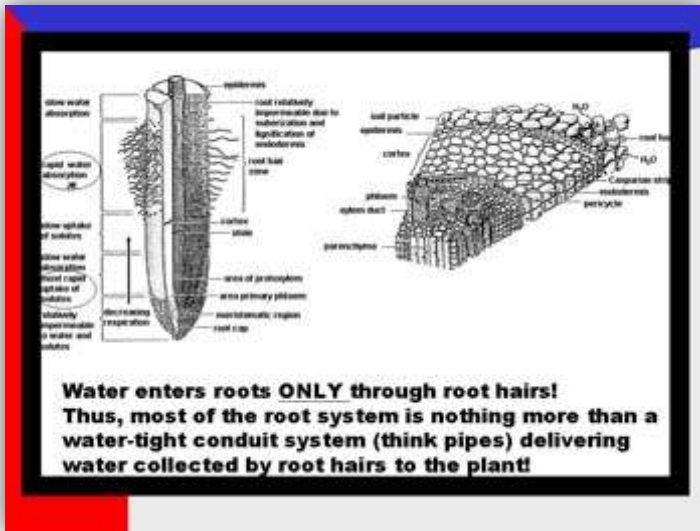
Terminal node

R5 > 3mm seed Pod cavity

R6 > Green seed filling the pod cavity

R7 is reached when there is one mature brown pod on the plant.
R8 is reached when 95% of all pods on the plant are mature.

2007smfd-rowplant024



2007smfd-rowplant025