ON FARM EVALUATIONS OF SOYBEAN APHID CONTROL IN DODGE AND DANE COUNTIES

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Dodge County Plot Info

- 2001
  - Planted May 15
  - Treated 6/28, 7/21, 8/3
  - Warrior @ 3.5 oz./acre
  - Scouted weekly, 25 leaves per plot, top trifoliate leaf
  - 100+ aphids/trifoliate was the threshold

2001 Dodge County

Scouting Information

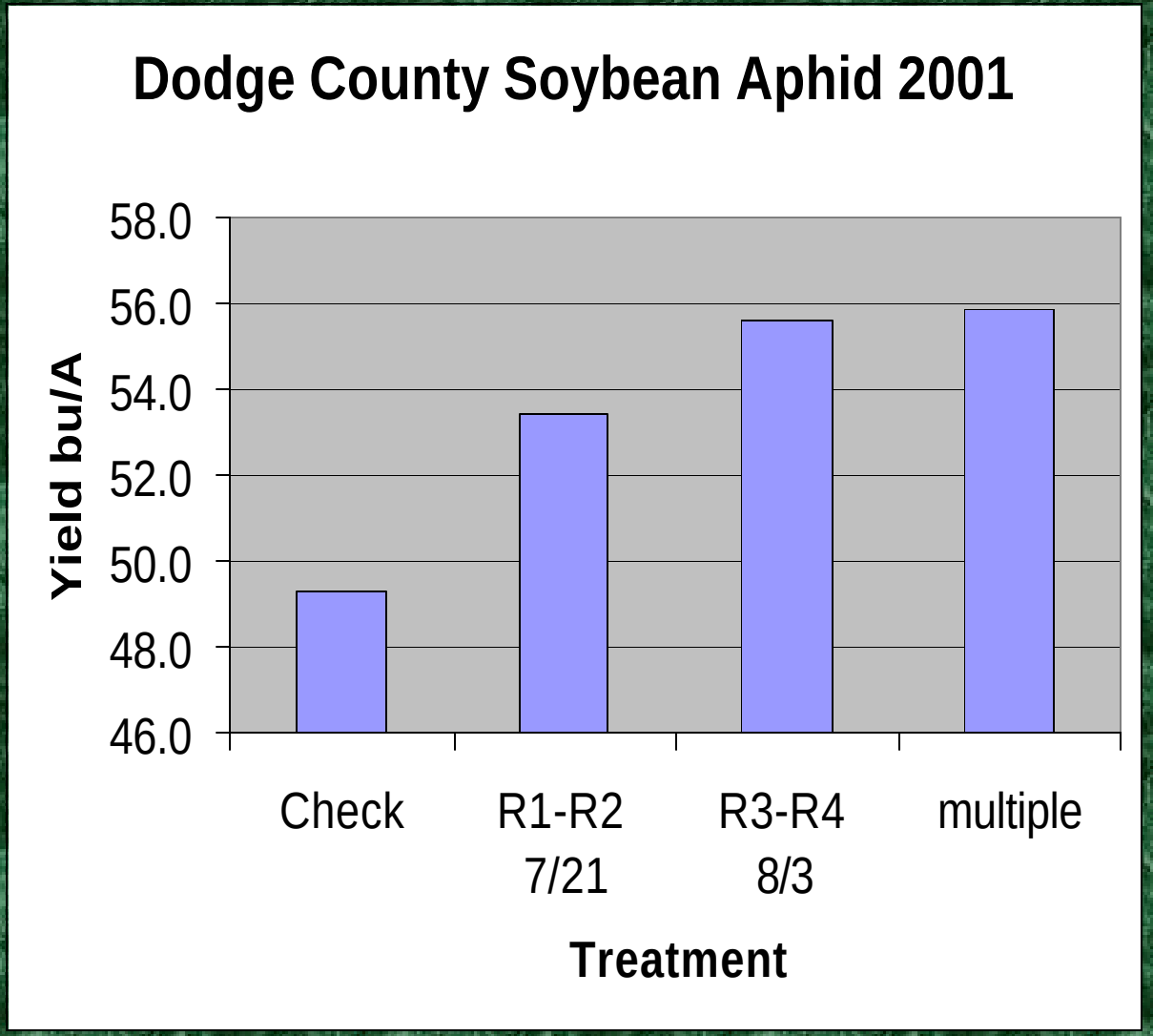
Treatment	Scouting Dates							
	7/11	7/18	7/26	8/2	8/11	8/17	8/24	8/30
Check	0.1	0.2	23.1	100	100	43.4	8.8	1.2
7/21			0.0	2.2	56.5	40.0	7.4	0.6
8/3					1.8	1.4	0.2	0.0
Multiple	0.0	0.2	0.0	32.4	1.0	1.0	0.1	0.2

6/28,7/21,8/3

2001 Dodge County

Treatment	Yield
Check	49.3b
7/21	53.5a
8/3	55.6a
multiple	55.9a

multiple = 6/28, 7/21 and 8/3



Dodge County Plot

- 2002
  - Planted May 22
  - Scouted weekly - 10 whole plants
  - 200 aphids per plant threshold
  - Treated July 19, August 2, August 9
  - Warrior 2.6 oz./acre

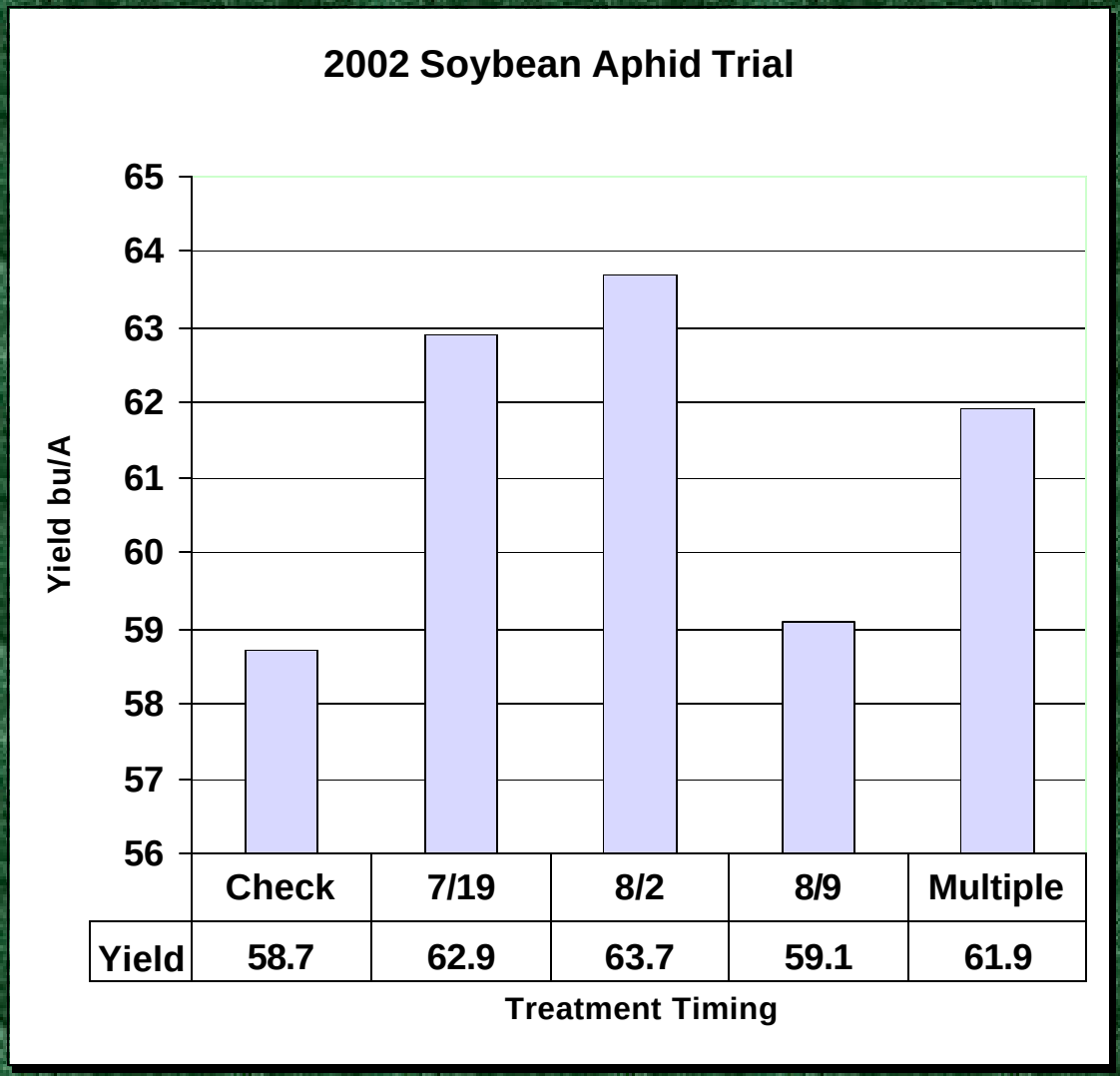
2002 Dodge County

Date	Check plot	# per plant
7/18	1	0-50
7/25	1.1	51-100
8/2	5.4	501-1000
8/10	5.8	501-1000
8/16	5	501-1000
8/23	3.9	101-200
8/30	2.2	51-100
9/5	1	0-50

Any spray treatment knocked them down and treatment threshold was not reached again

2002 Dodge County -Results

Treatment	Yield	Rating
Check	58.7	C
7/19	62.9	AB
8/2	63.7	A
8/9	59.1	BC
Multiple	61.9	ABC



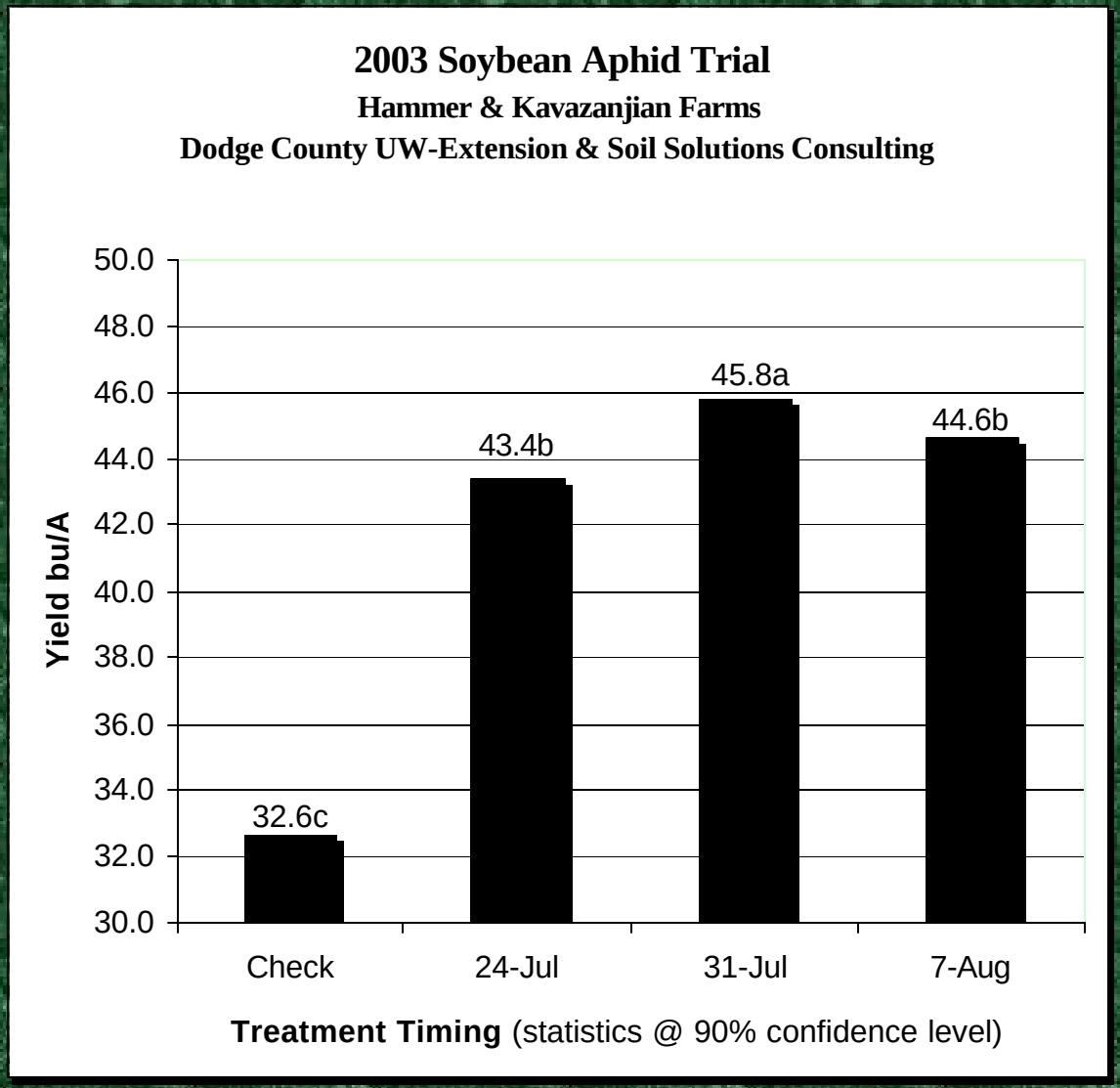
Dodge County

- 2003
  - Planted May 27
  - Scouted weekly – 10 whole plants
  - Treated July 24, July 31, and Aug 7
  - Mustang Max 3.2 oz/acre
  - Threshold 200 aphids per plant and 1000 per plant after R – 3

2003 Aphid Numbers

Treatment Date	Aphid Numbers				
Check	161	1000	1000	1000	1000
7/24	161	146	409	818	995
7/31	161	1000	296	479	232
8/7	161	1000	1000	592	494
Scout Date	7/23	7/30	8/6	8/15	8/22
Growth Stage	V8-9	R1-2	R3-4	R4	R5

2003 Dodge County Yields



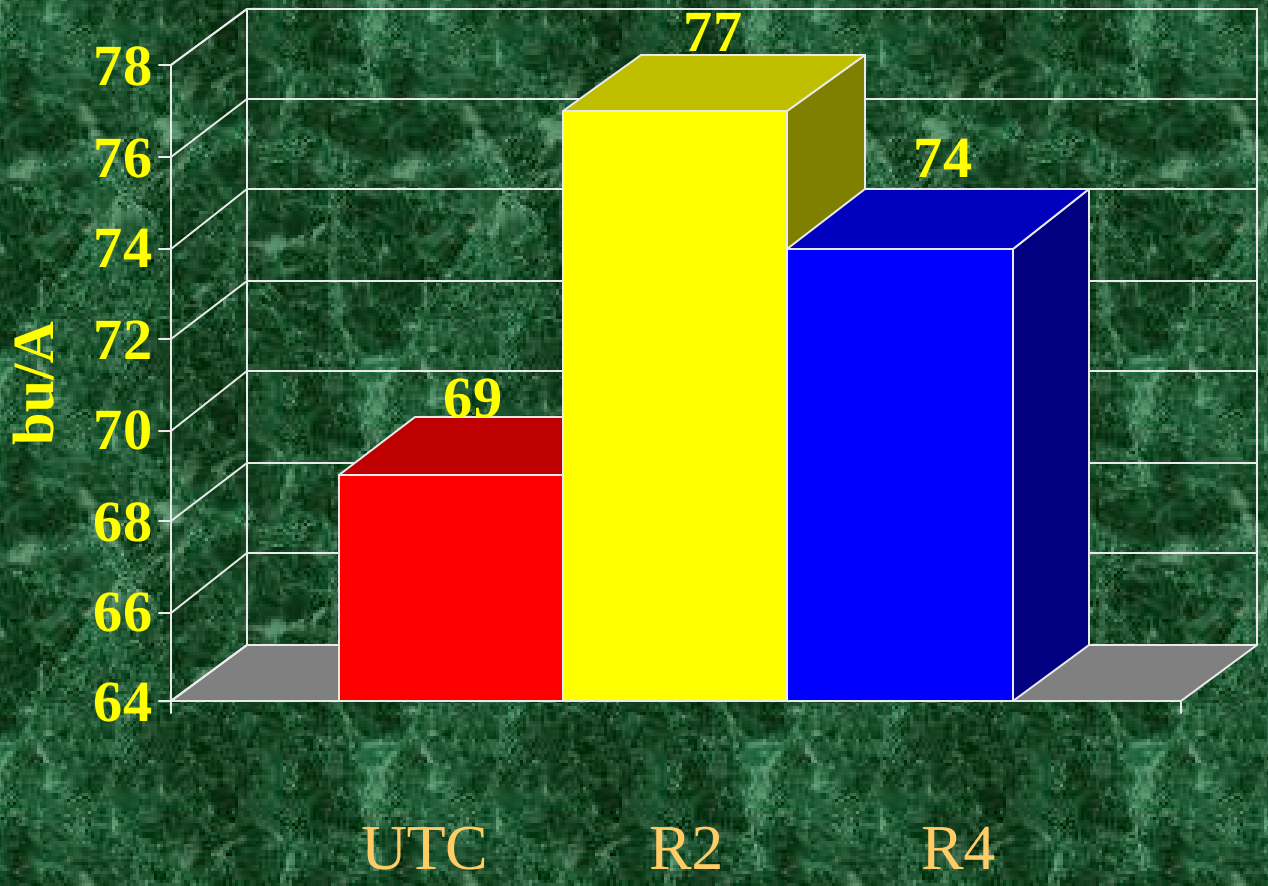
Dane County - 2002

- No-till planted May 18th
- Warrior at 3.2 oz/A in 20 GPA water
- Treated July 23rd and Aug 5th
- Aphid numbers remained lower than expected season long – failed to exceed 200 per plant
- Other insects
  - Bean leaf beetle, leafhopper
  - Present in extremely low numbers

Dane County – 2002

- After treatment no plots had any rebound
- Very low predator numbers all year
- Site was very dry mid June – August
- No yield response was expected
- BUT……

Dane County Yields



Dane County 2003

- Planted May 18th
- Scouted weekly July 20th to Aug 15th
- 200 aphid per plant threshold
- Treated July 27th and Aug 5th
- Asana at 9oz/A

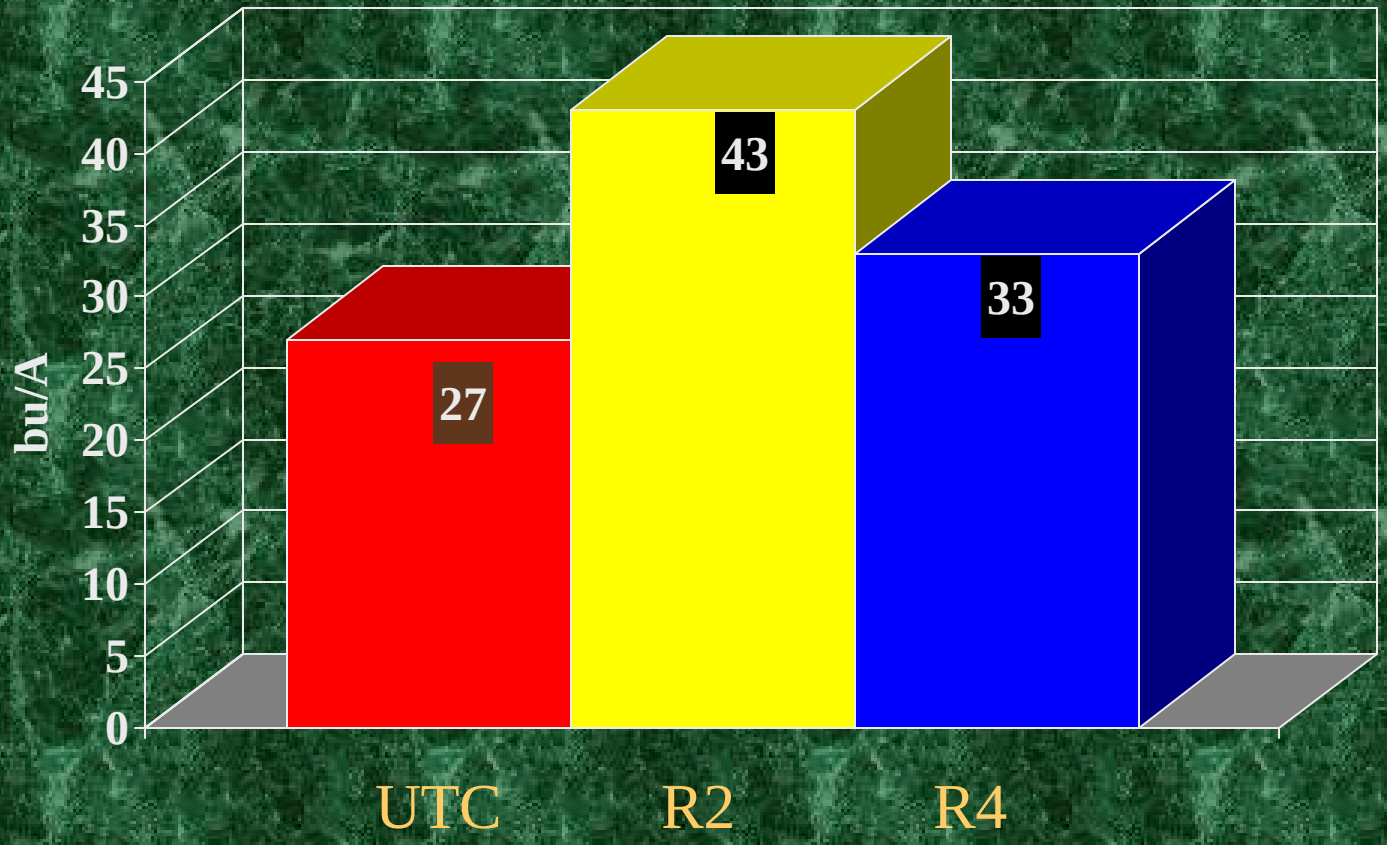
Dane County - 2003

Aphids Per Plant

Date	UTC	R2	R4
7/20	<100	<100	<100
7/25	808	808*	808
7/31	1000	550	1000*
8/8	1700	200	1100
8/15	3200	600	1600

* Indicates spray application made following count

Dane County - 2003



All treatments differed at the 90% confidence level.

Dodge & Dane Economic Impact

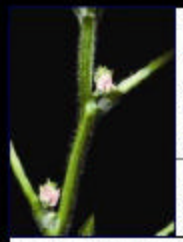
- 5 trial years have an average increase of 10 bushels per acre per year
- Cost of treatment $10-$14 per acre
- 3 year average price of Soybeans - $5.17
- Net return to producers - $37 to $41 per acre per year
- Return if all producers treated in both counties – over 5.8 million dollars to the Ag. economy

So what have we learned????

- Aphids don’t like it hot - 2002
- Lack of moisture is not a factor - 2003
- Numbers increase rapidly about Mid July and stay high until late August
- Predators cannot control a high population
- Last week of July & first days of Aug have been the most effective treatments
- They are here to stay – learn to spray
- Fine tuning of threshold numbers in the future

Reproductive Soybean Development Stages and Soybean Aphid Thresholds

University of Wisconsin - Extension

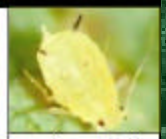


R1 Stage soybean plant (beginning bloom)

One open flower at any node on the main stem.

A node is the part of the stem where a leaf is (or has been) attached.

Stage length 0 to 7 days: average 3



soybean aphid

Aphid thresholds depend on actively increasing populations. Examine 20-30 plants once or twice weekly to determine population dynamics.
Action Threshold - 250 aphids/plant when population actively increasing.

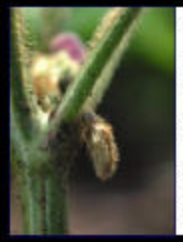
Photo © Iowa State University

R2 Stage soybean plant (full bloom)

Open flower at one of the two uppermost nodes on the main stem with a fully developed leaf.

Stage length 5 to 15 days: average 10

Action Threshold - 250 aphids/plant when population actively increasing. This guideline incorporates an approximate 7-day lead time between scouting and treatment to make spray arrangements.



R3 Stage soybean plant (beginning pod)

Pod is 3/16 inch long at one of the four uppermost nodes on the main stem with a fully developed leaf.

Stage length 5 to 15 days: average 9

Action Threshold - 250 aphids/plant when population actively increasing. In replicated trials conducted throughout the Midwest in 2003, the 250 aphids/plant action level worked best from late vegetative through R3 stages.

R4 Stage soybean plant (full pod)

Pod is ¾ inch long at one of the four uppermost nodes on the main stem with a fully developed leaf.

The most critical time for soybean yield. Stress at this time can not be recovered and results in more yield loss than at any other time.

Stage length 4 to 26 days: average 9

Thresholds not currently determined, but populations exceeding 250/plant and actively increasing need monitoring and treatment at grower discretion.*

David W. Fischer - Dane County UWEX Crops and Soils Agent
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R5 Stage soybean plant (beginning seed)

Seed is 1/8 inch long in the pod of one of the four uppermost nodes on the main stem with a fully developed leaf.

Stress continues to be a major concern in soybean yield.

Stage length 11 to 20 days: average 15

Thresholds not currently determined, however actively increasing populations exceeding 250 aphids/plant need monitoring and treatment at grower discretion.*

R6 Stage soybean plant (full seed)

Pod containing a green seed that fills the pod cavity at one of the four uppermost nodes on the main stem with a fully developed leaf.

At the end of this stage full yield potential has been realized, future yield losses are the result of harvest difficulty and not yield potential.

Stage length 9 to 30 days: average 18

Spraying after R6 has not been documented to protect yield.

R7 Stage soybean plant (beginning maturity)

One normal pod at any node on the main stem has reached its mature (brown or tan) pod color.

Plants will continue to lose leaves and dry down as the season progresses.

Stage length 7 to 18 days: average 9

Spraying at this time has not been documented to protect yield.

Photo © Iowa State University

R8 Stage soybean plant (Full maturity)

95% of the pods have reached their mature (brown or tan) color.

5 to 10 days of drying weather will result in 15% moisture soybeans.

*Thresholds for R4-R5 beans continue to evolve. Spraying at R4-R5 has been documented to protect yield. Growers and consultants are strongly advised to keep current with UWEX treatment recommendation updates.

Acknowledgements: Eileen Cullen and Bryan Jensen - UW Department of Entomology, Roger Berger - UW Department of Agronomy. Soybean aphid photograph by John Wedberg, remaining photographs not attributed to Iowa State University taken by Wolfgang Hoffman.

What do we need to know yet???

- What is the effect of the honey dew?
- Is there an effect on bean quality?
- Aerial vs Ground spraying?
- Can disease control them?
- Variety Differences?
- Will seed treatments work?