

# **Insect Management in Wheat (Insecticide Seed Treatments, etc.)**



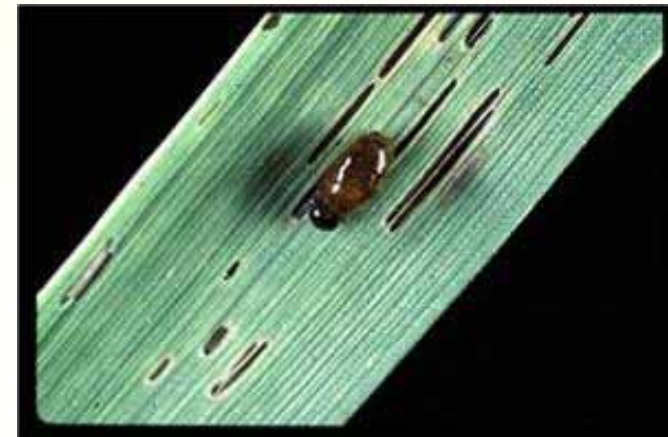
**Scott Stewart (IPM Specialist)**



# Cereal Leaf Beetle

**Threshold = 1 larvae or adult per stem (not per plant)**

**A Spring Pest - Treatment is rarely needed**



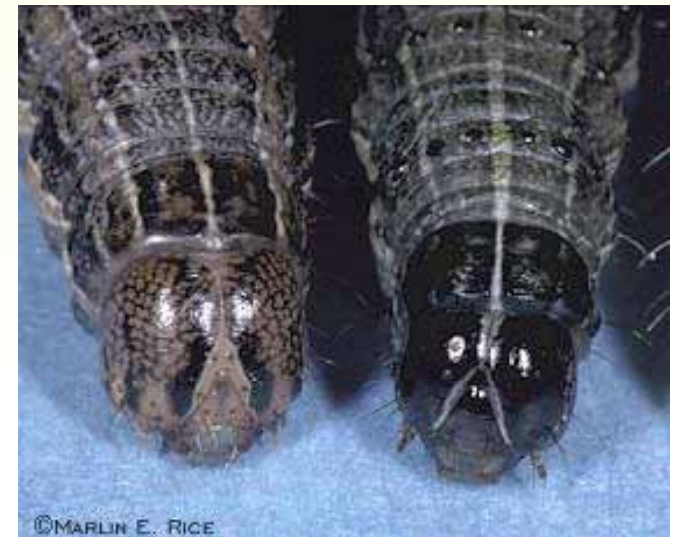
# Armyworms

**Threshold = 4+ larvae per square foot**

**Fall Armyworm = Fall (common in September wheat)**

**True Armyworm = Spring (late April - May)**

Recent data from Arkansas suggests treatment for true armyworm is rarely needed except during milk stage



# Hessian Fly

**Plant After October 15 (fly-free date)**

**Use resistant varieties (but little information is available and ...)**

**Scouting is difficult**

**Foliar Insecticides are generally ineffective because ...**



# Hessian Fly



**Flies begin emerging in late August and September**

**Do not plant before October 15**

**Destroy volunteer wheat before October**

**Seed treatments (Cruiser and Gaucho) offer some early protection**

# Aphids

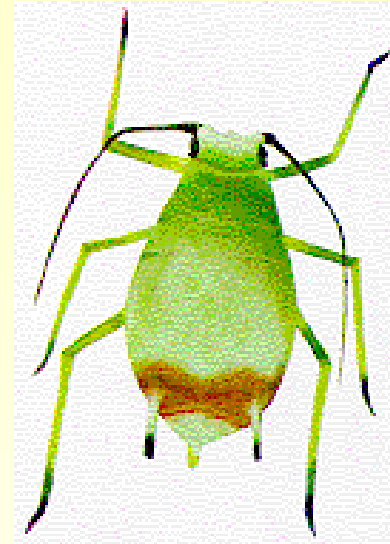
**Thresholds, if they exist, vary depending upon species and time of season:**

- These thresholds are based on direct damage and not the prevention of barley yellow dwarf virus (BYDV)
  - Some states recommend an early treatment threshold of one aphid per foot of row for disease prevention
- Corn leaf Aphid = populations are causing leaves to dry up and die in several parts of the field
- Greenbug = aphids are killing 3 or more leaves per plant (or based on aphid numbers per foot of row)
- Bird Cherry-Oat = no threshold established
- Rice Root Aphid (subterranean) = no threshold

# Corn Leaf Aphid



# Bird Cherry-Oat Aphid



The Most Common Aphid Found in TN



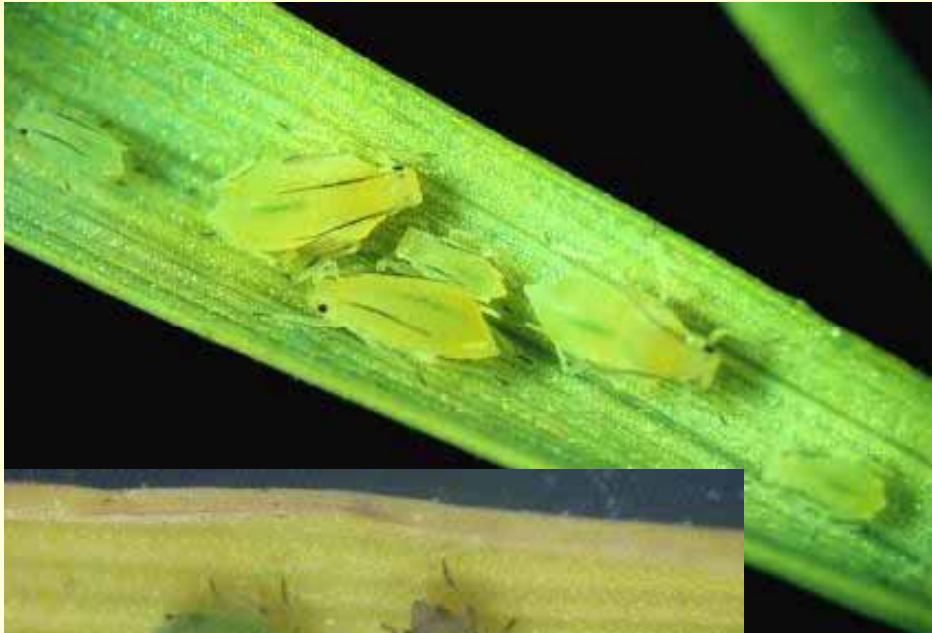
# Greenbug

Usually a Spring Pest

Injects a Toxin During Feeding

## Treatment Recommendations:

- 1) For wheat less than 6 inches tall, treat if greenbugs number 50 or more per linear foot.
- 2) For wheat 6 - 10 inches tall, treat if greenbugs number 200 or more per linear foot.
- 3) Or, consider treatment anytime symptoms of injury are occurring and greenbugs are present. Symptoms may include leaves that are yellowing and dying with no other obvious cause.



# Wheat Trials - 2005/2006 and 2006/2007

Lentz and Stewart, Lentz (UT, Jackson)

Treatments (planted October 5, 2005)	Fall Aphids (No. per 3 ft.) 12/5/05	Spring Aphids (No. per 3 ft.) 3/6/06
Untreated	4	163 a
Cruiser 1.3 oz	0.1	4 b
Warrior 3.0 oz (11/29)	0	1 b
Warrior 3.0 oz (11/29, 2/28)	0	3 b

Treatments (planted October 8, 2006)	Fall Aphids (No. per 3 ft.) 12/13/06	Spring Aphids (No. per 3 ft.) 2/22/07
Untreated	4.7 a	35.0 a
Gaucho 1.5 oz	2.0 b	10.8 b
Cruiser 1.5 oz	0.5 bc	10.5 b
Karate 1.5 oz (11/11)	0.0 c	0.5 c

**Note:** Fall treatments can have lasting effects on aphid populations

# Gaucha Seed Treatment on Wheat

1993-2001, Planted in October

Replicated within each year (A. Chambers, UT, Jackson)

**Yield in Bushels/Acre; Rate in oz/cwt**

Treatment	1993	1994	1995	1996	1997	1998	1999	2000	2001
Untreated	62	96	40	69	65	48	78	72	73
Gaucha 480 1.0 oz	66	99	44	68	59	60	78	75	80
Gaucha 480 1.5 oz	67	103	50	63	62	58	78	76	76

**Yield Difference From Untreated (Average Difference = + 3.2 Bushels)**

Gaucha 480 1.0 oz	4	3	4	-1	-6	12	0	3	7
Gaucha 480 1.5 oz	6	7	10	-6	-3	10	0	4	3

Standard Rates: Gaucha 600 = 1.6 Oz/CWT, Cruiser = 1.3 Oz/CWT

# Insecticide Seed Treatment in Wheat

## Cruiser or Gaucho vs. Untreated

Planted from Oct. 28 - Nov. 10, 2004 (F. Allen, UT)

Yield in Bushels/Acre (data shown only for treated seed)

Treatment	Kville	SField	SHill	Jackson	Milan	Ave.	Diff. From Unt.
Pion26R22 + C	102	55	87	63	47	71	+4
USG3430 + G	90	52	82	76	42	68	+10
USG3350 + G	102	50	83	61	43	68	-2
DKing9577 + C	103	52	84	65	28	66	+2
USG3137 + G	97	46	77	65	42	65	+3
FFR8302 + G	99	49	89	48	41	65	+1
USG3992 + G	97	57	69	62	37	64	+3
USG3209 + G	103	52	72	53	37	64	-2
USG Exp. + G	100	50	67	55	33	61	-4
<b>Diff. From Unt.</b>	<b>+7</b>	<b>+1</b>	<b>+3</b>	<b>-2</b>	<b>+1</b>	<b>+2 (NS)</b>	

# Insecticide Seed Treatment in Wheat

## Cruiser or Gaucho vs. Untreated

Planted from Oct. 14 - Nov. 21, 2005 (F. Allen, UT)

Yield in Bushels/Acre (data shown only for treated seed)

Treatment	Kville	SHill	Jackson	Milan	Ave.	Diff. From Unt.
<b>DKing9577 + C</b>	88	56	104	69	79	+3
<b>USG3350 + G</b>	74	59	98	74	76	-2
<b>FFR8302 + G</b>	75	59	96	72	75	-4
<b>Diff. From Unt.</b>	<b>0</b>	<b>-5</b>	<b>-1</b>	<b>+2</b>	<b>-1 (NS)</b>	

# Insecticide Seed Treatment in Wheat

## Cruiser or Gaucho vs. Untreated

Planted from Oct. 25 - Nov. 14, 2006 (F. Allen, UT)

Yield in Bushels/Acre (data shown only for treated seed)\*

Treatment	Kville	Cville	SField	SHill	Jackson	Milan	Ave.	Diff. From Unt.
USG3350 + G	26	44	29	31	61	27	36	+2
FFR8302 + C	26	51	32	32	40	21	34	+4
USG3342 + G	5	49	21	33	19	28	26	-1
DKing9577 + C	8	38	31	25	28	22	25	+3
<b>Diff. From Unt.</b>	<b>+4</b>	<b>+1</b>	<b>+1</b>	<b>+2</b>	<b>+1</b>	<b>+1</b>	<b>+2 (NS)</b>	

\* The "Easter Freeze" dramatically reduced yields at all locations

# Insecticide Seed Treatment in Wheat

## Cruiser vs. Untreated

Planted from Oct. 29 - Nov. 9, 2007 (F. Allen, UT)

Yield in Bushels/Acre (data shown only for treated seed)

Treatment	Kville	Cville	SField	SHill	Jackson	Milan	Ave.	Diff. From Unt.
Pion26R22 + C	79	61	40	66	81	96	70	+5
DKing9577 + C	67	76	43	74	73	84	70	+3
FFR8302 + C	62	75	38	82	82	90	70	+4
USG3342 + C	70	95	52	68	68	72	70	+10
USG3350 + C	51	72	43	72	72	88	65	+5
<b>Diff. From Unt.</b>	<b>+6</b>	<b>+5</b>	<b>+4</b>	<b>+6</b>	<b>+1</b>	<b>+7</b>	<b>+5 *</b>	

\* Significant, positive treatment effect of Cruiser seed treatment (P=0.05, LSD)

# Insecticide Seed Treatment in Wheat

## Replicated Small Plot

**Cruiser, Gaucho or Karate vs. Untreated**  
**Planted 10/5/2007 (Stewart, UT, Jackson)**

<b>Treatment</b>	<b>Yield (B/A)</b>
<b>Untreated</b>	<b>84.6 a</b>
<b>Gaucho 600 (1.6 oz)</b>	<b>83.9 a</b>
<b>Cruiser (1.3 oz)</b>	<b>86.3 a</b>
<b>Karate (11/29, 2/28)</b>	<b>85.1 a</b>

NS (P = 0.9835)

Very low aphid numbers (never exceeded 1/ft in samples)



# Foliar Treatment for Aphids in Wheat

## Replicated Strip Trial (25 ft wide, field length)

### Karate vs. Untreated

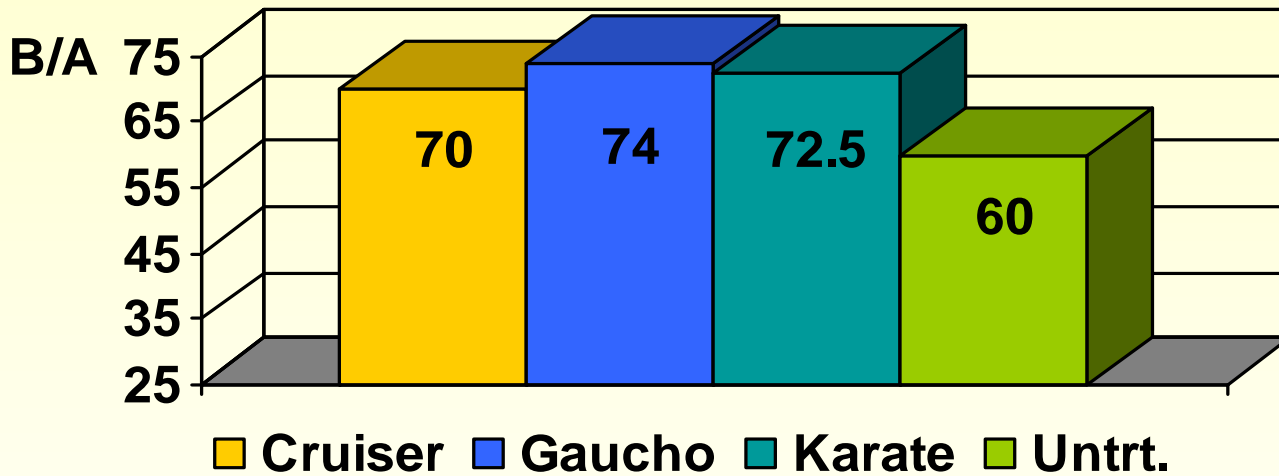
Planted 10/15/2007, Pion 25R78 w/o IST (Stewart, UT, Jackson)

Treatment	Aphids per 3 ft (3/13/08)	Aphids per 3 ft (4/16/08)	Yield (B/A)
Untreated	5.5 a	11.3 a	65.0 a
Karate 1.5 oz (2/28, 4/17)	0.3 b	2.5 b	77.5 b

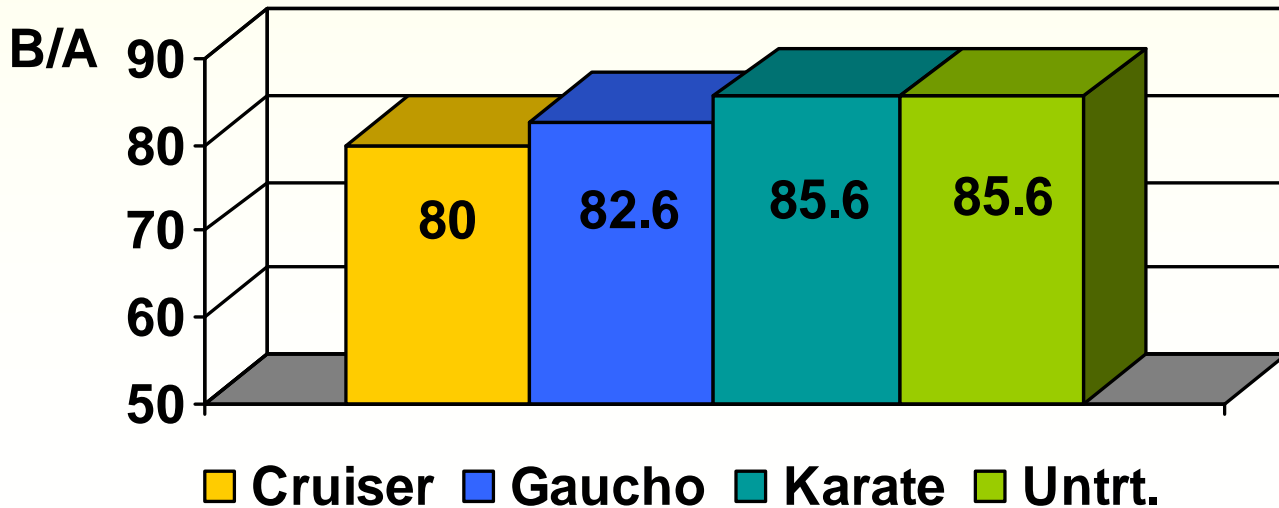
P < 0.05 (LSD)

# Aphid Treatments in Wheat

Cruiser, Gaucho, or Karate (mid Feb.) vs. Untreated  
2007-2008 (Angus Catchot, MSU, Starkville)



- Planted 10/15/07
- Pioneer 26R22
- P = 0.231 (LSD)



- Planted 11/15/07
- Pioneer 26R22
- P = 0.504 (LSD)

Variability due to  
herbicide carry over

# **Insecticide Seed Treatment in Wheat**

## **Cruiser and Gaucho vs. Untreated**

### **2007-2008 (Gore, MSU, Stoneville)**

<b>Planting Date</b>	<b>Treatment</b>	<b>Yield (B/A)</b>
<b>Mid October</b>	<b>Untreated</b>	<b>91.3 a</b>
	<b>Cruiser</b>	<b>92.5 a</b>
	<b>Guacho</b>	<b>93.9 a</b>
<b>Early November</b>	<b>Untreated</b>	<b>88.6 a</b>
	<b>Cruiser</b>	<b>89.4 a</b>
	<b>Guacho</b>	<b>86.6 a</b>

P = 0.840 (LSD)

# Insecticide Seed Treatment in Wheat

## Cruiser and Gaucho vs. Untreated

### 2007-2008 (D. Cook, MSU, Verona)

<b>Planting Date</b>	<b>Treatment</b>	<b>% Moisture</b>	<b>Yield (B/A)</b>
<b>November 8</b>	<b>Untreated</b>	<b>10.6 a</b>	<b>36.9 a</b>
	<b>Cruiser</b>	<b>11.1 a</b>	<b>42.4 a</b>
	<b>Guacho</b>	<b>10.7 a</b>	<b>40.9 a</b>
<b>December 6</b>	<b>Untreated</b>	<b>10.0 b</b>	<b>39.4 a</b>
	<b>Cruiser</b>	<b>10.8 a</b>	<b>37.9 a</b>
	<b>Guacho</b>	<b>10.7 a</b>	<b>37.0 a</b>

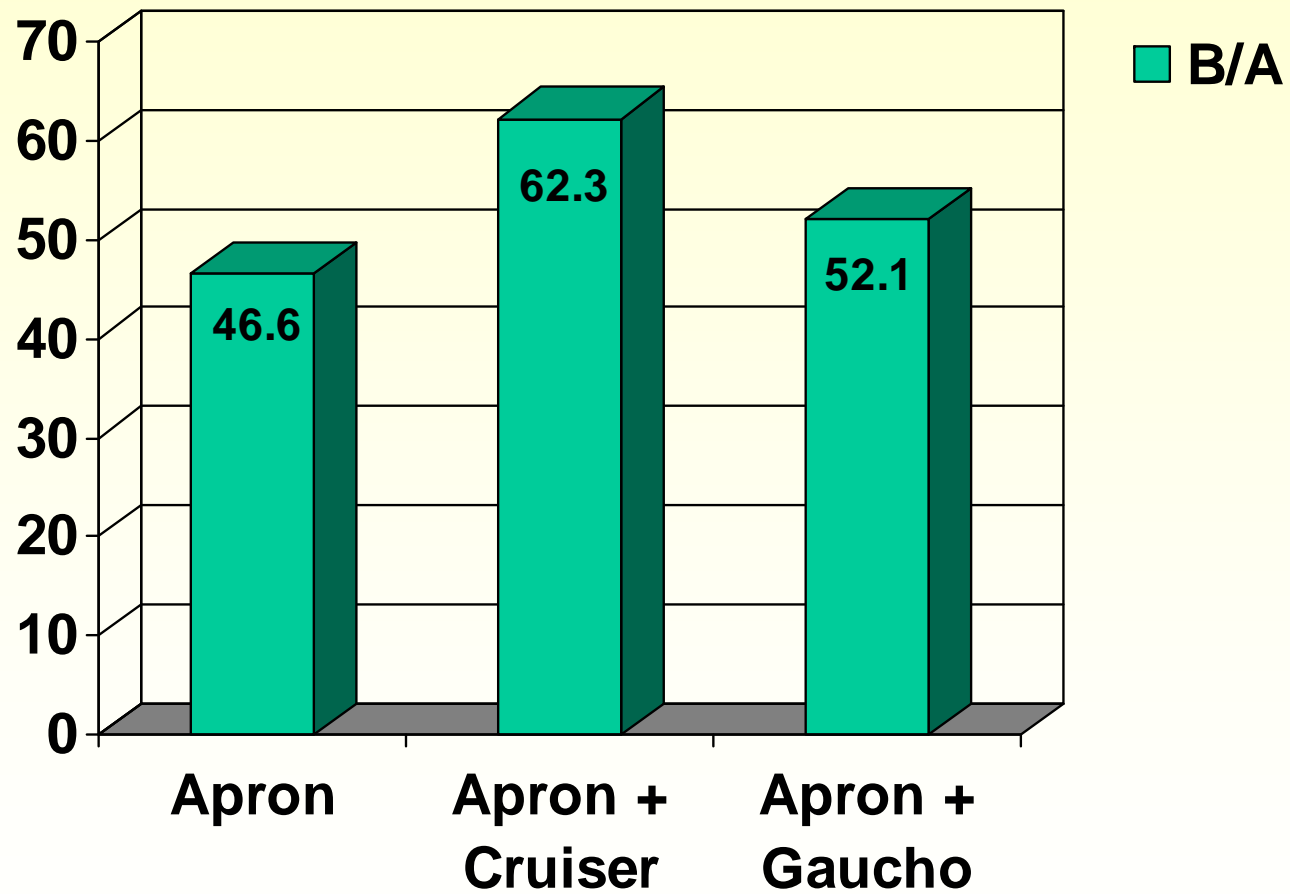
P (Moisture) = 0.034 (LSD)

P (Yield) = 0.278 (LSD)

# Insecticide Seed Treatment in Wheat

## Cruiser and Gaucho vs. Untreated

Planted 12/6/2007 (C. Daves, MSU, Raymond)

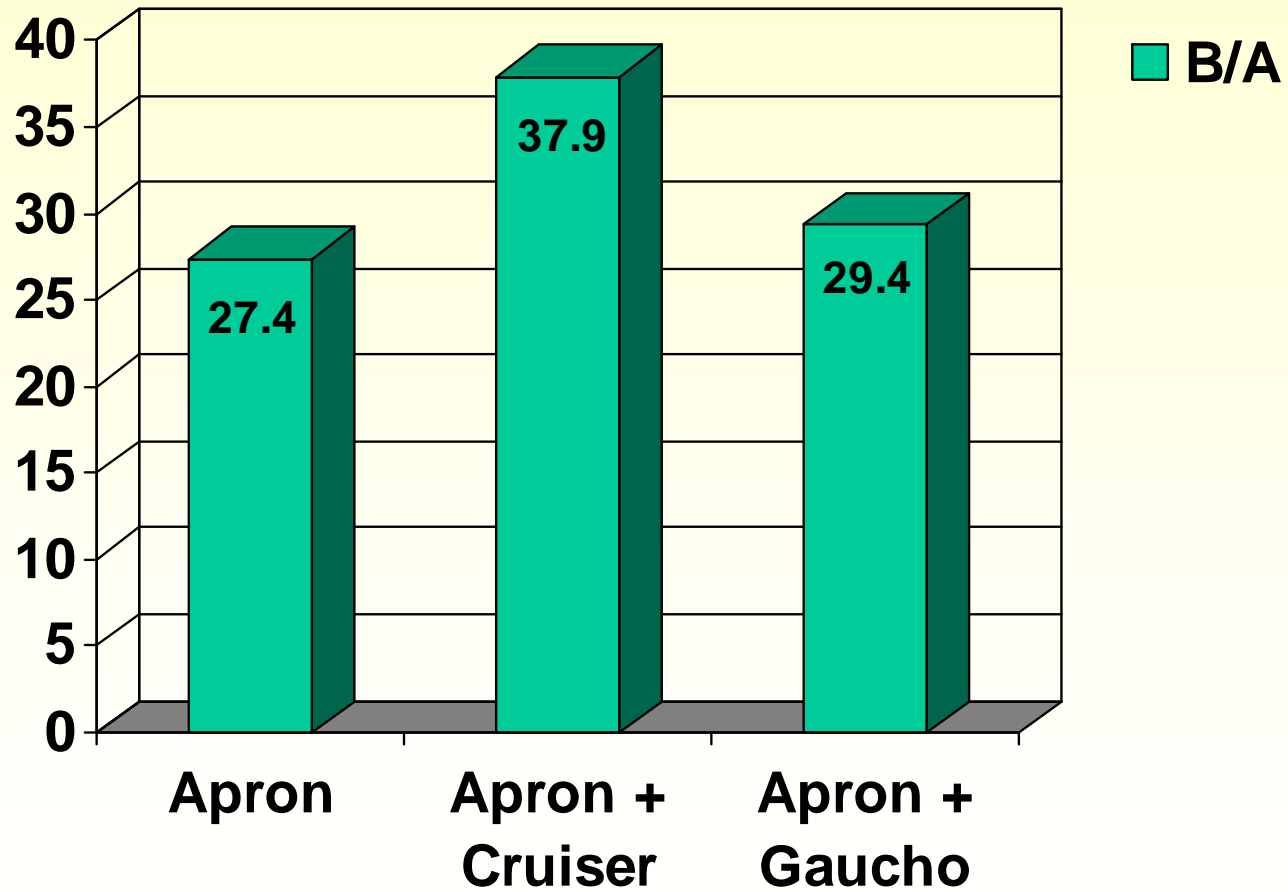


P = 0.110 (LSD)

# Insecticide Seed Treatment in Wheat

## Cruiser and Gaucho vs. Untreated

Planted 10/31/2007 (C. Daves, MSU, Raymond)



P = 0.312 (LSD)

# Summary of Wheat Yield Response to Insecticide Seed or Foliar Treatment

Untreated vs. Average Response of Treatment  
Location \* Planting Date (Averaged Across Varieties)

**40 Experiments**

**Mean Yield Response = 2.95 B/A**

**t-Test Value = 4.21, df = 39, P < 0.01**

**Frequency of Positive Responses = 30/40 (75%)**

**Frequency of Responses > 1 B/A = 22/40 (55%)**

# Aphid/BYDV Management

## (My Thoughts)

- **Make decision early about management intentions for prevention of BYDV**
  - Early plantings at greater risk (do not plant before October 15)
  - Consider yield potential and wheat prices
- **Use Cruiser (0.75 - 1.33 oz/cwt) or Gaucho 600 (0.8 - 2.4 oz/cwt), OR**
  - Foliar application approximately 30 days after planting (or threshold of 1 aphid per foot of row)
  - Second spray may be justified in early spring (Feb.); Threshold of 1 aphid per foot of row



# Insecticides

- **Baythroid XL, Prolex, Karate, Mustang Max, Lannate**
  - All pests - aphids, armyworms, cereal leaf beetle
  - Aphids - can also use dimethoate, methyl parathion or seed treatments (Gaucho or Cruiser)
  - Armyworms - can also use Sevin, Tracer and methyl parathion
  - Cereal leaf beetle - can also use Sevin and Tracer