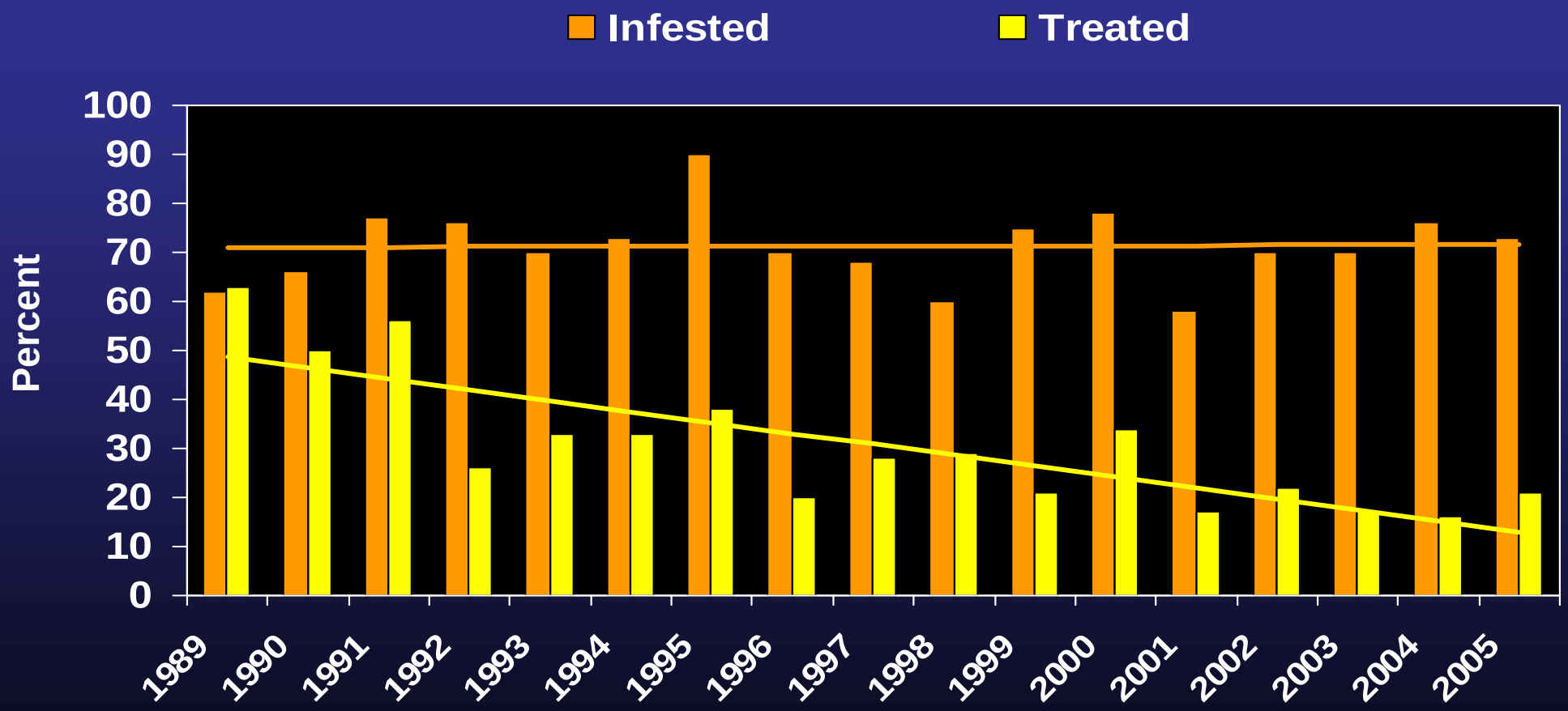
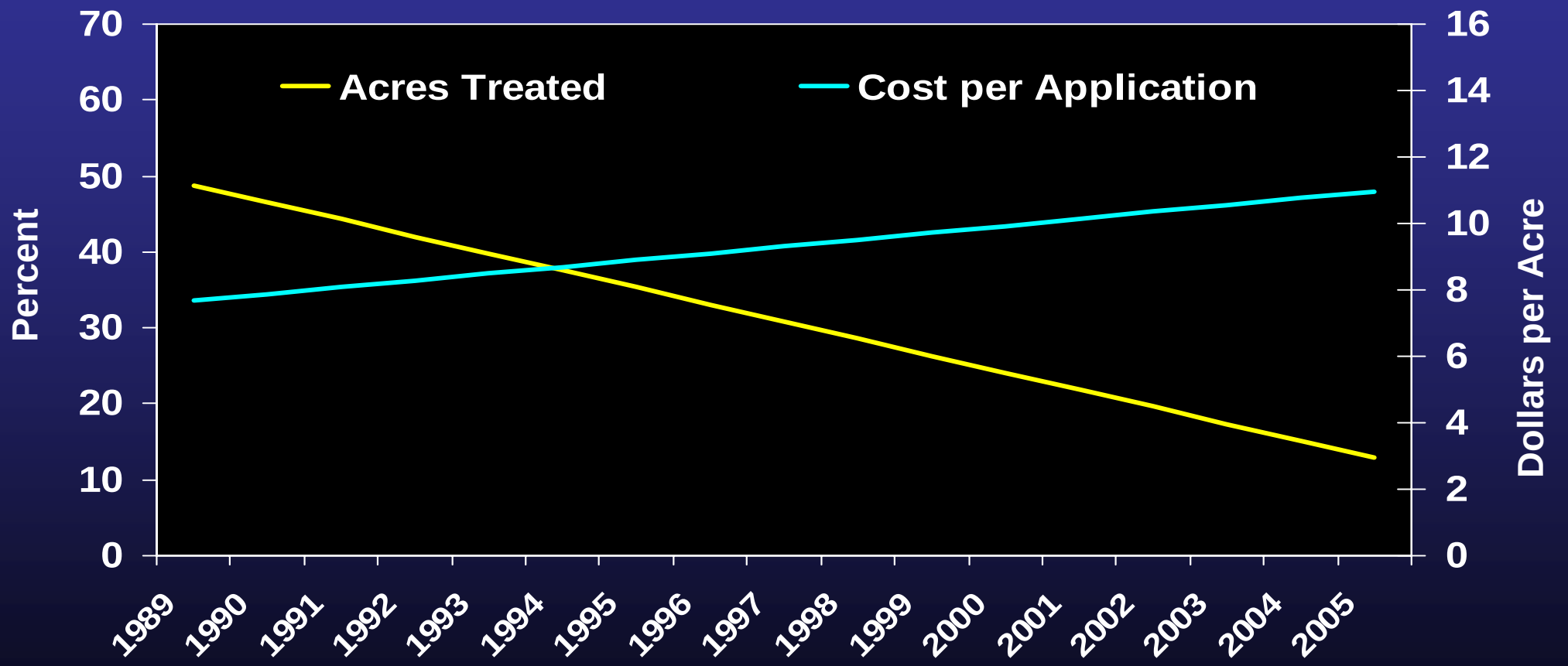
Management Strategies for the Cotton Aphid

Jeff Gore – USDA-ARS, Stoneville

Cotton Aphid Control
US Average



Cotton Aphid Control
US Average



Cotton Aphids in the Mid-South 2006 Overview

- Initial aphid populations showed up early (1-2 true leaf stage).
- Populations were higher than the past few years.
- Hot dry weather during May and June.
- Populations of beneficial insects were reduced by oversprays of broad spectrum insecticides.
- Tolerance to the neonicotinoids increasing.
- Epizootics of the fungus were delayed and sporadic.

Beneficial Insects

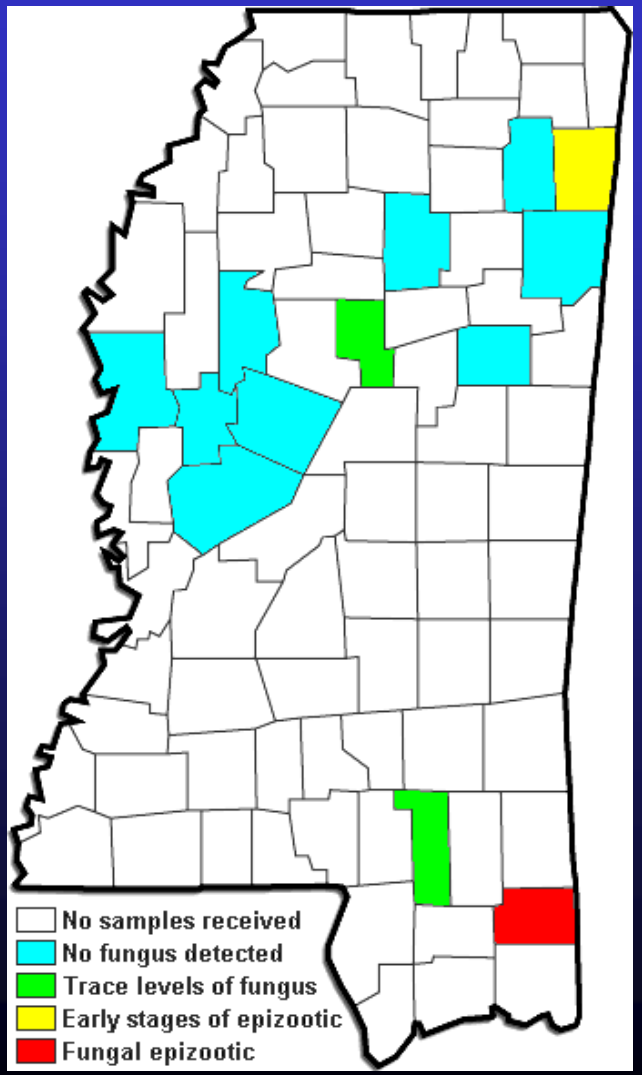
Symptoms of Cotton Aphids

Cotton Aphids

Aphid Fungus

Aphid Fungus Sampling Service

http://www.uark.edu/misc/aphid/



Cotton Incorporated

Dr. Don Steinkraus
Univ. of Arkansas

Neonicotinoid Bioassays

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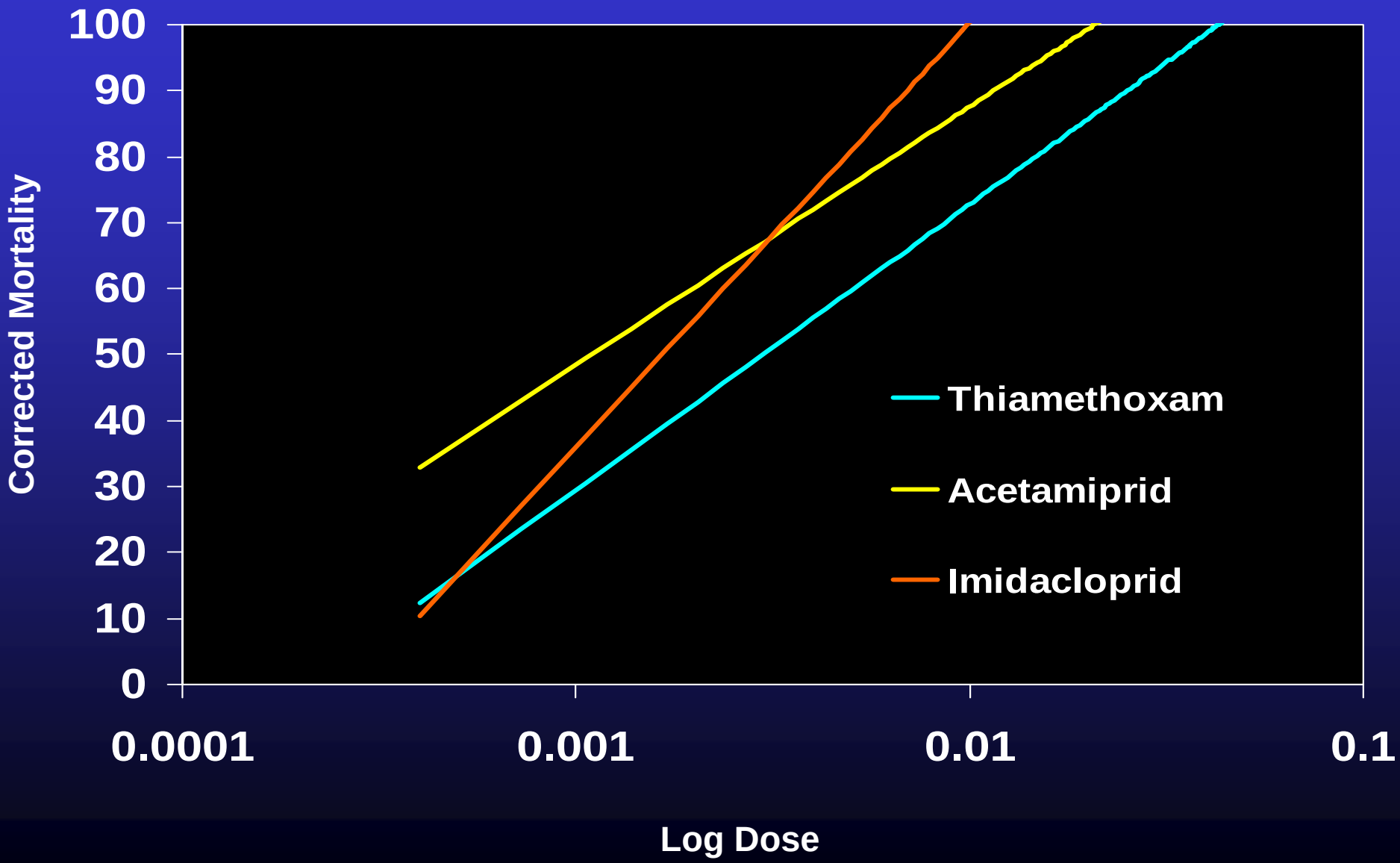
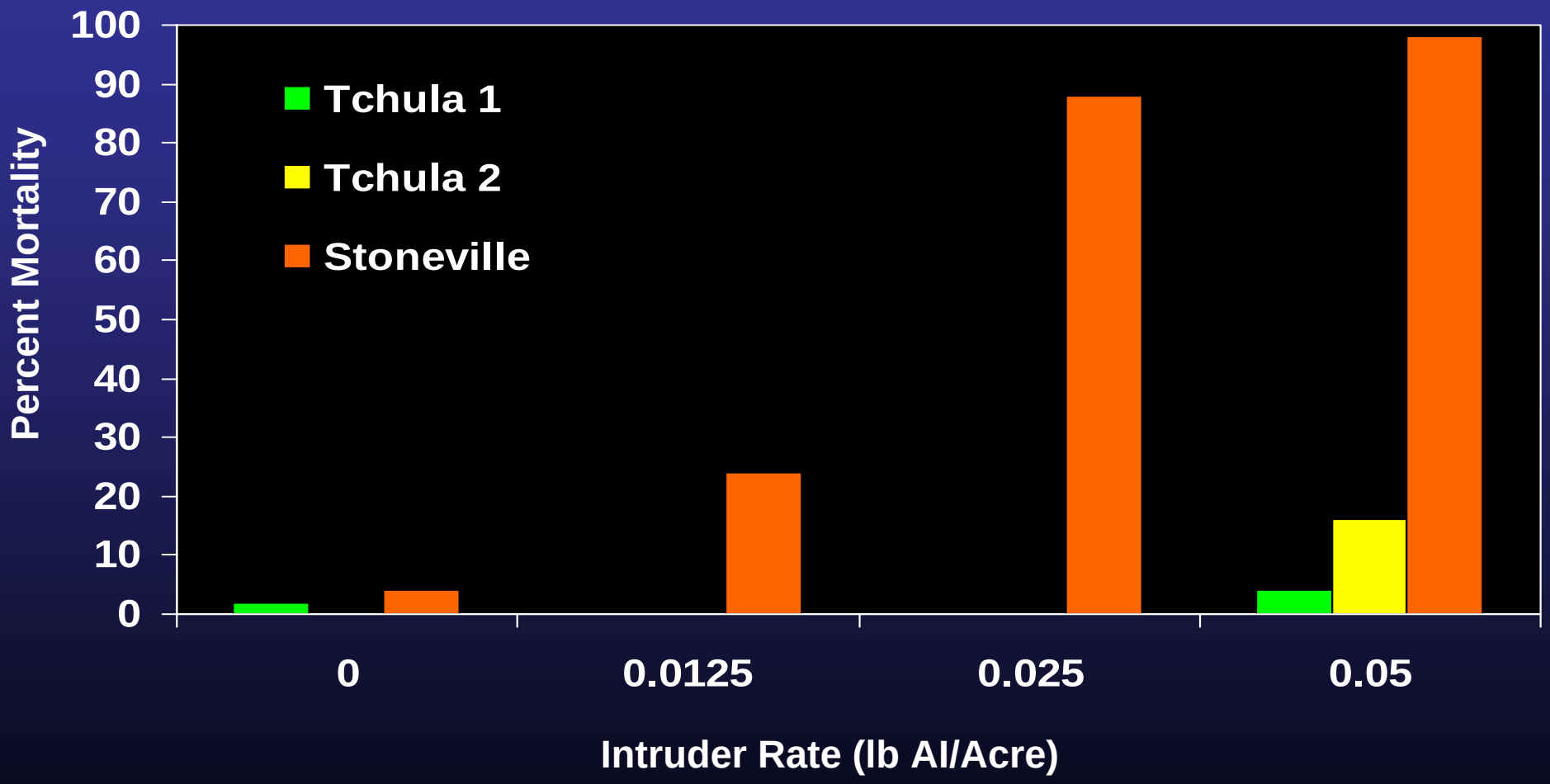
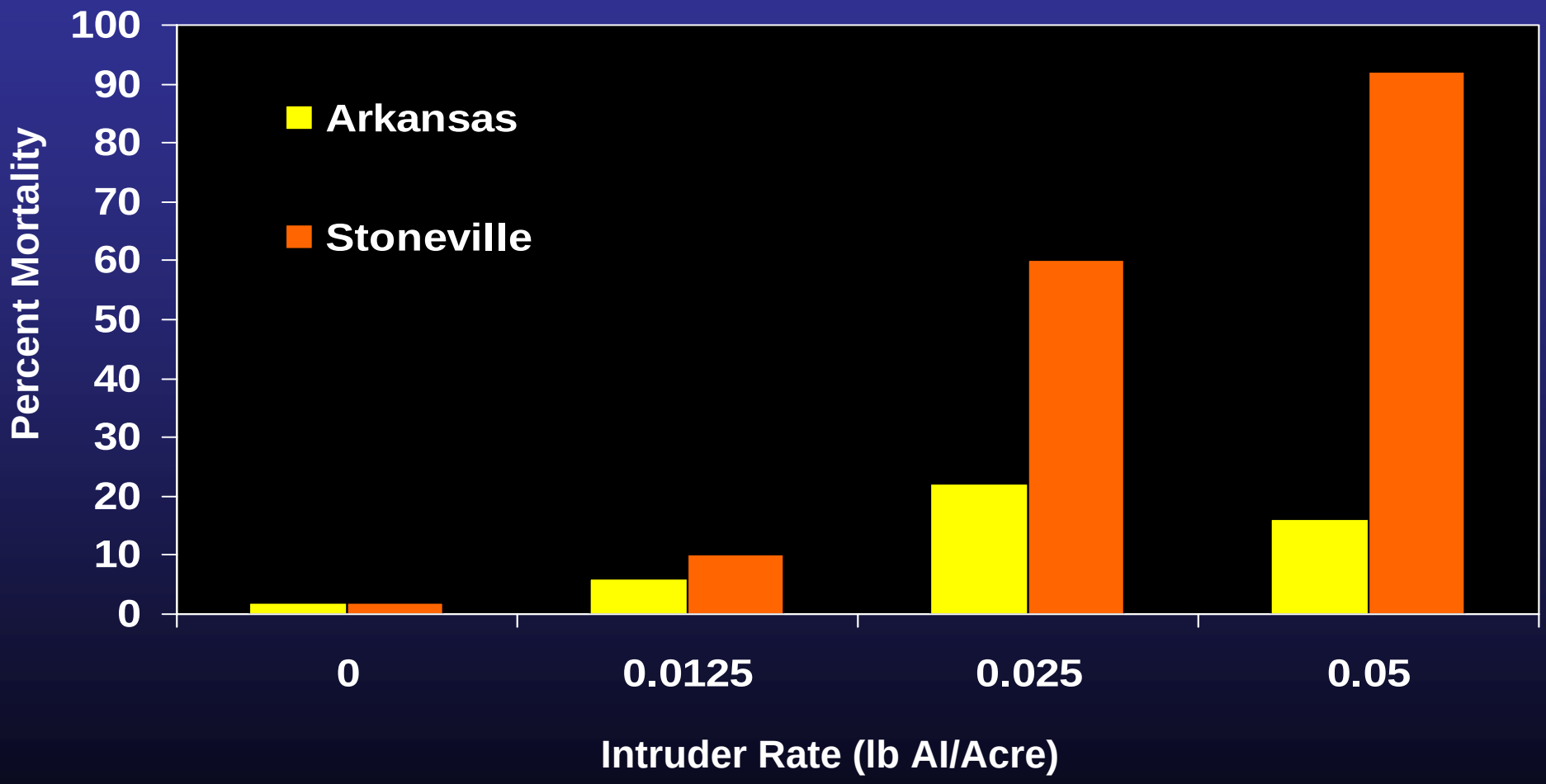
Cotton Aphid Bioassay - MS



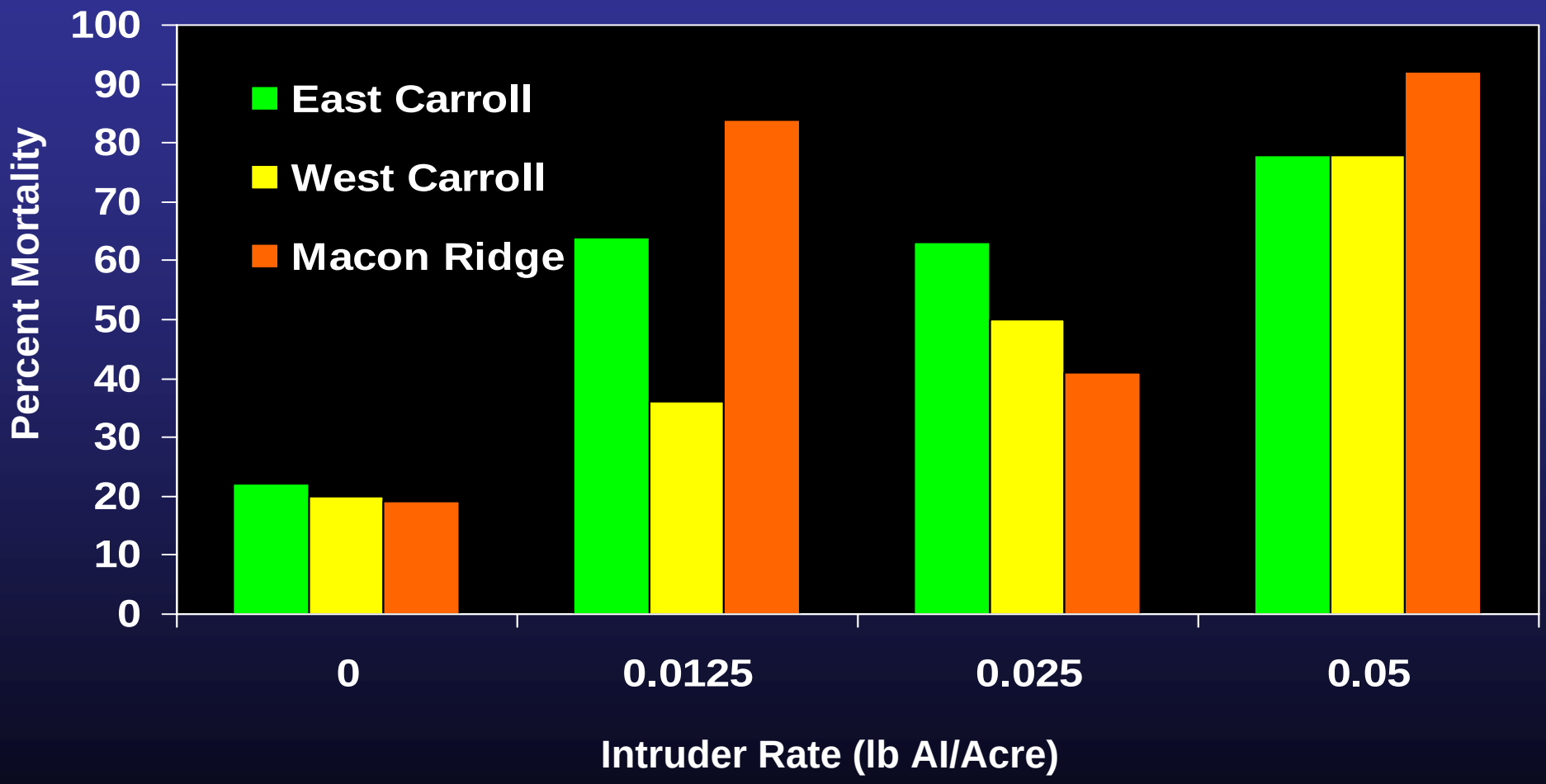
Cotton Aphid Bioassay - MS



Cotton Aphid Bioassay - AR

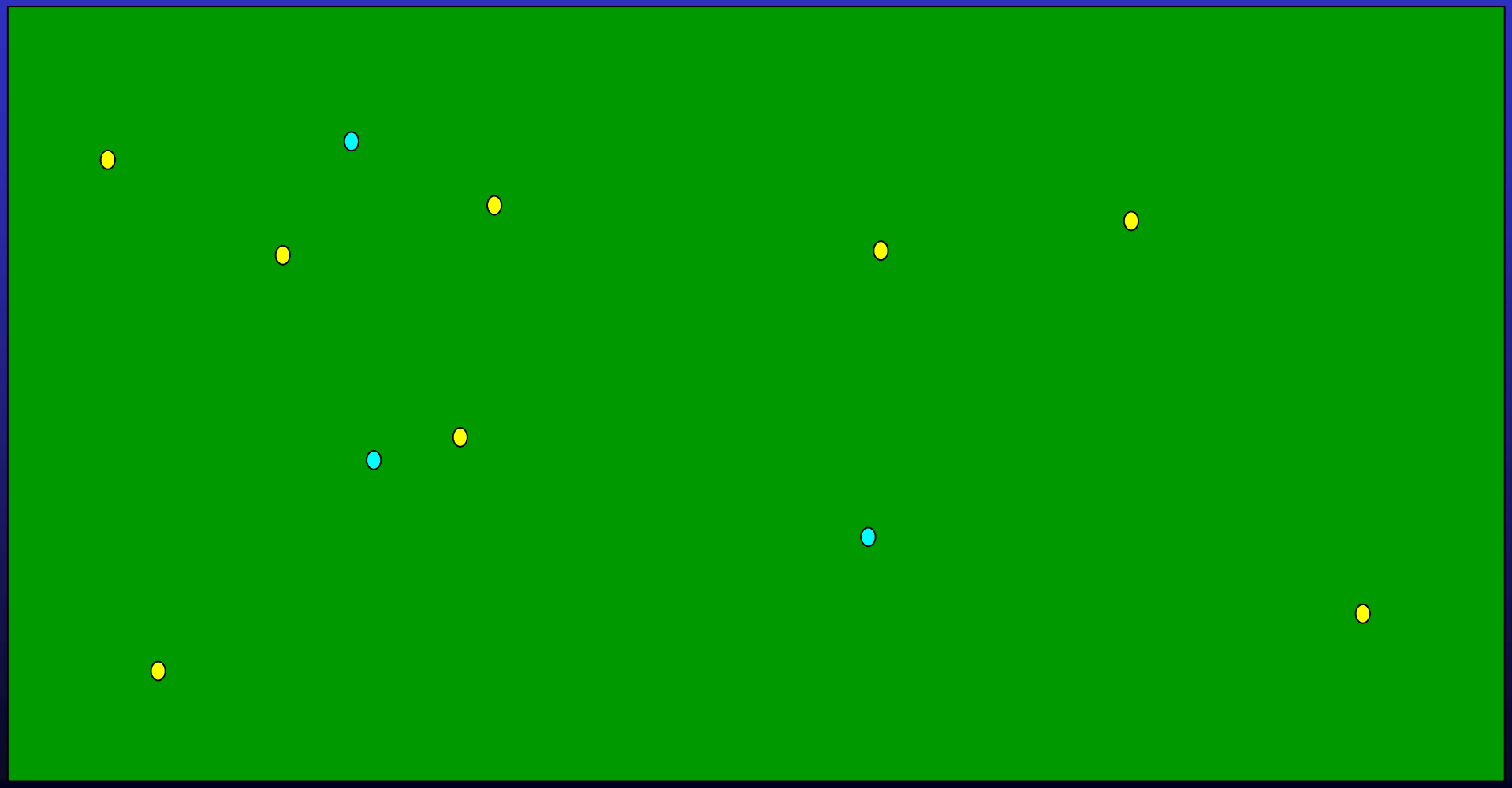


Cotton Aphid Bioassay - LA

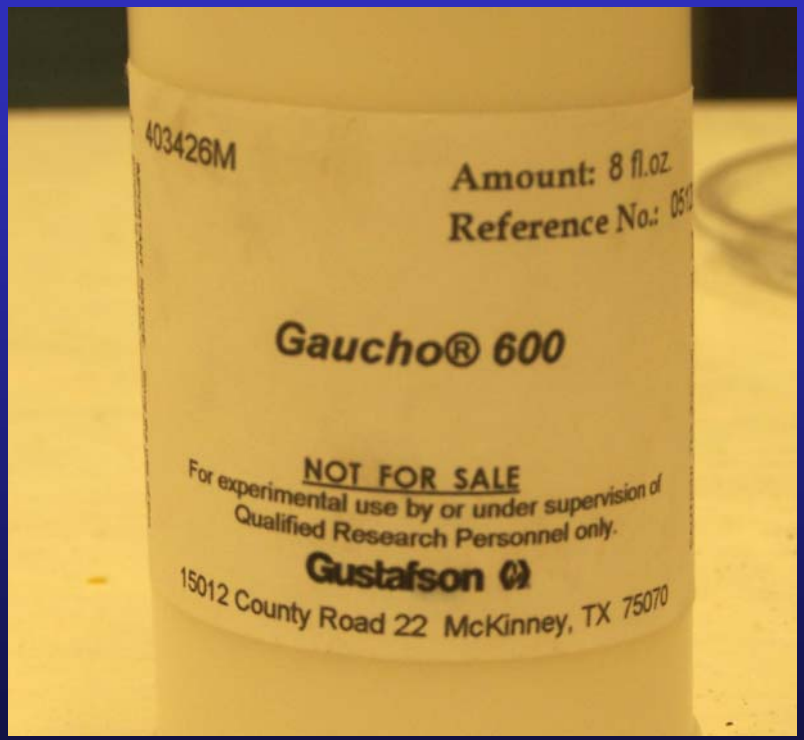


Selection Pressure

First to Second True Leaf Stage

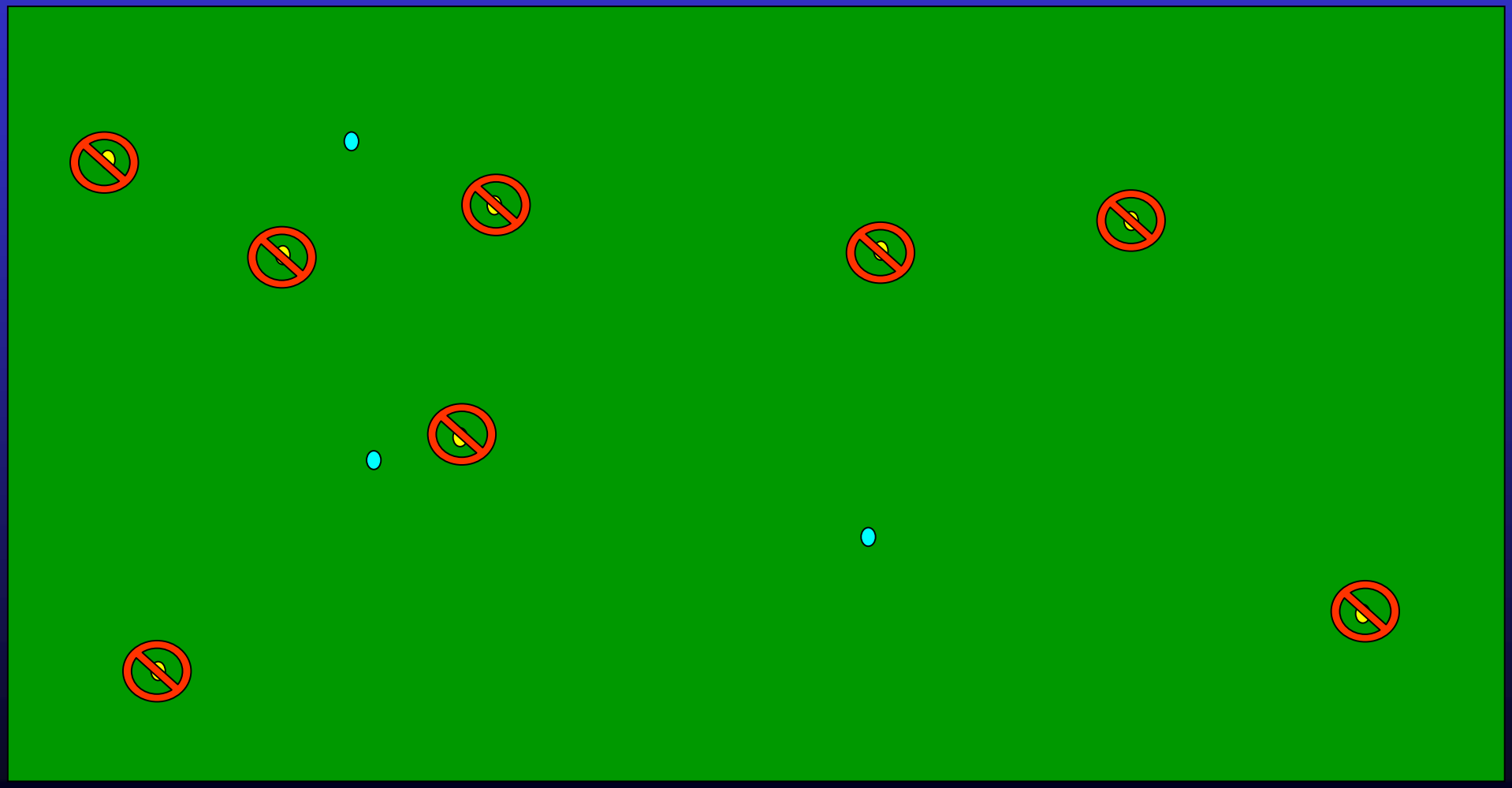


Seed Treatments



Selection Pressure

Neonicotinoid Seed Treatment



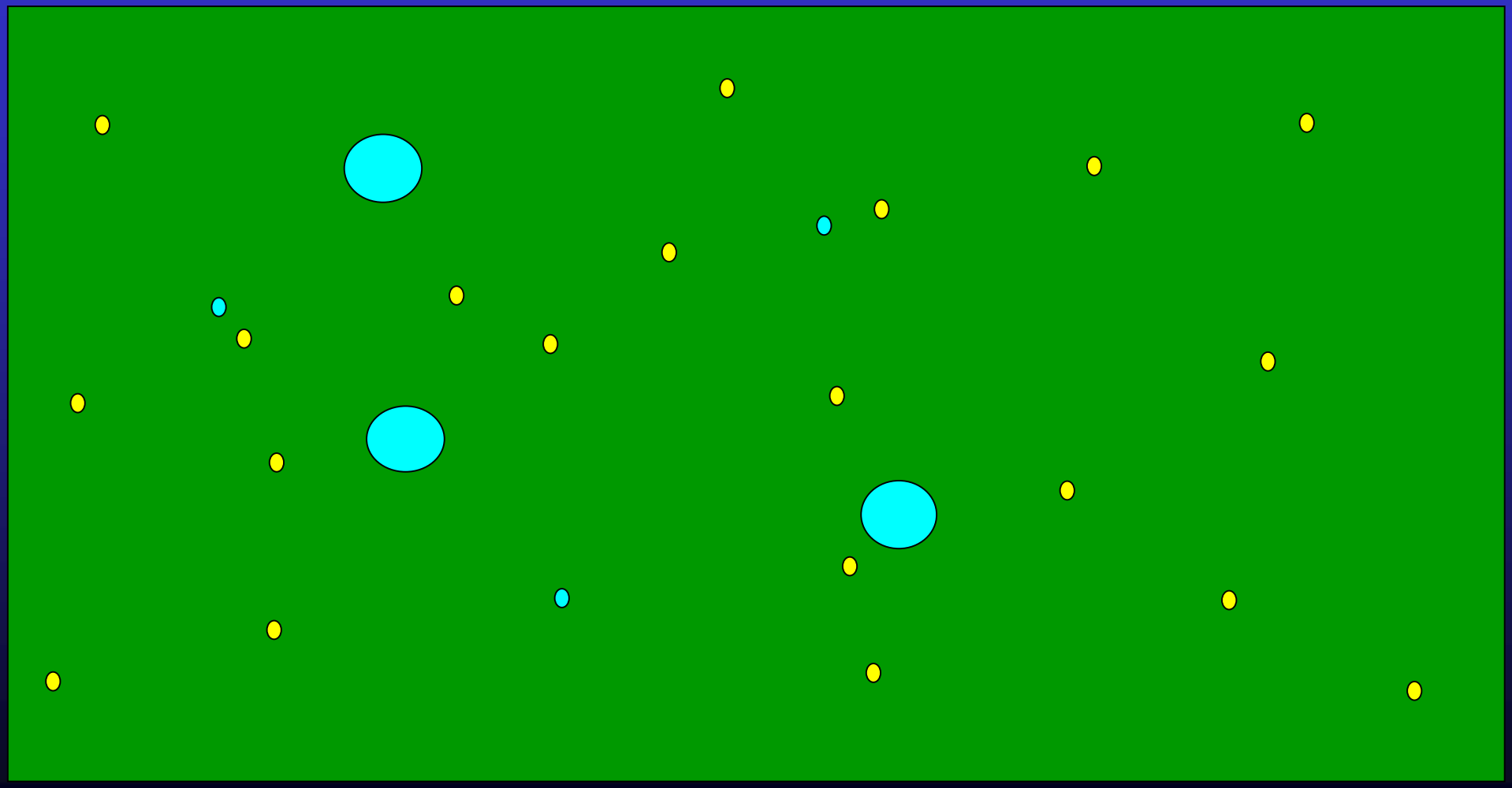
Roundup Ready Technology

Broad Spectrum Insecticides

Pyrethroids and Organophosphates

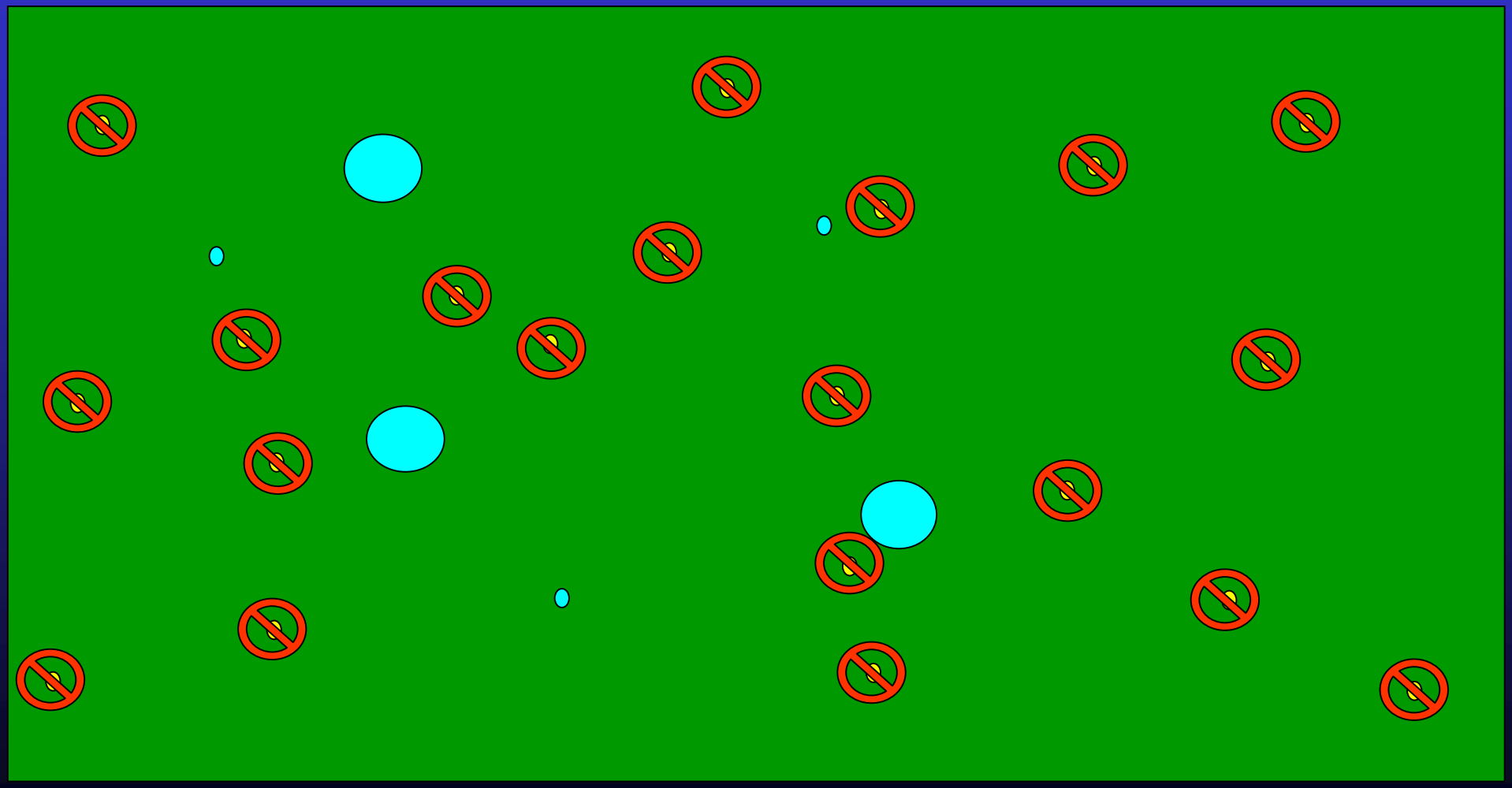
Selection Pressure

Pyrethroid or Orthene with Roundup

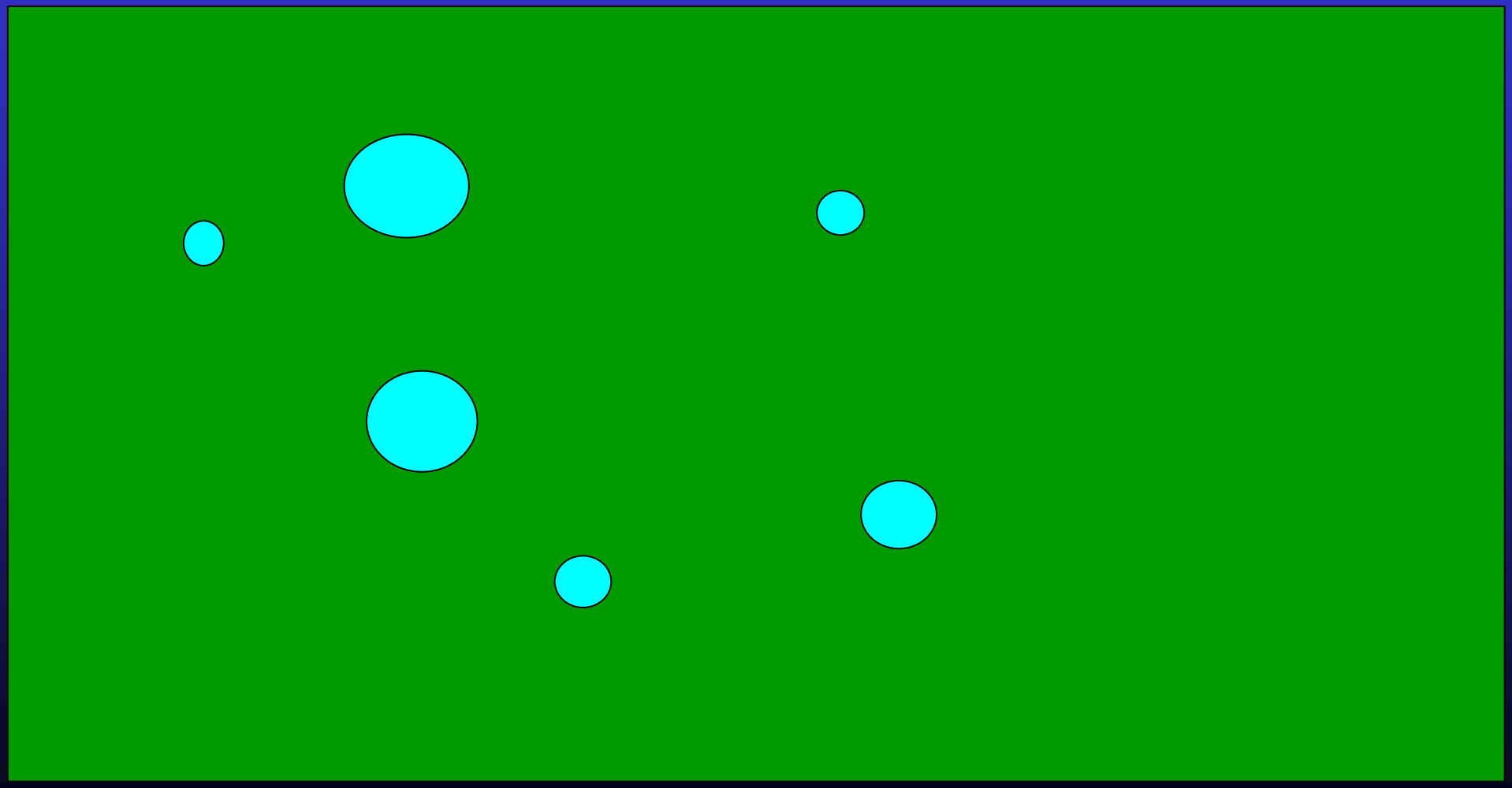


Selection Pressure

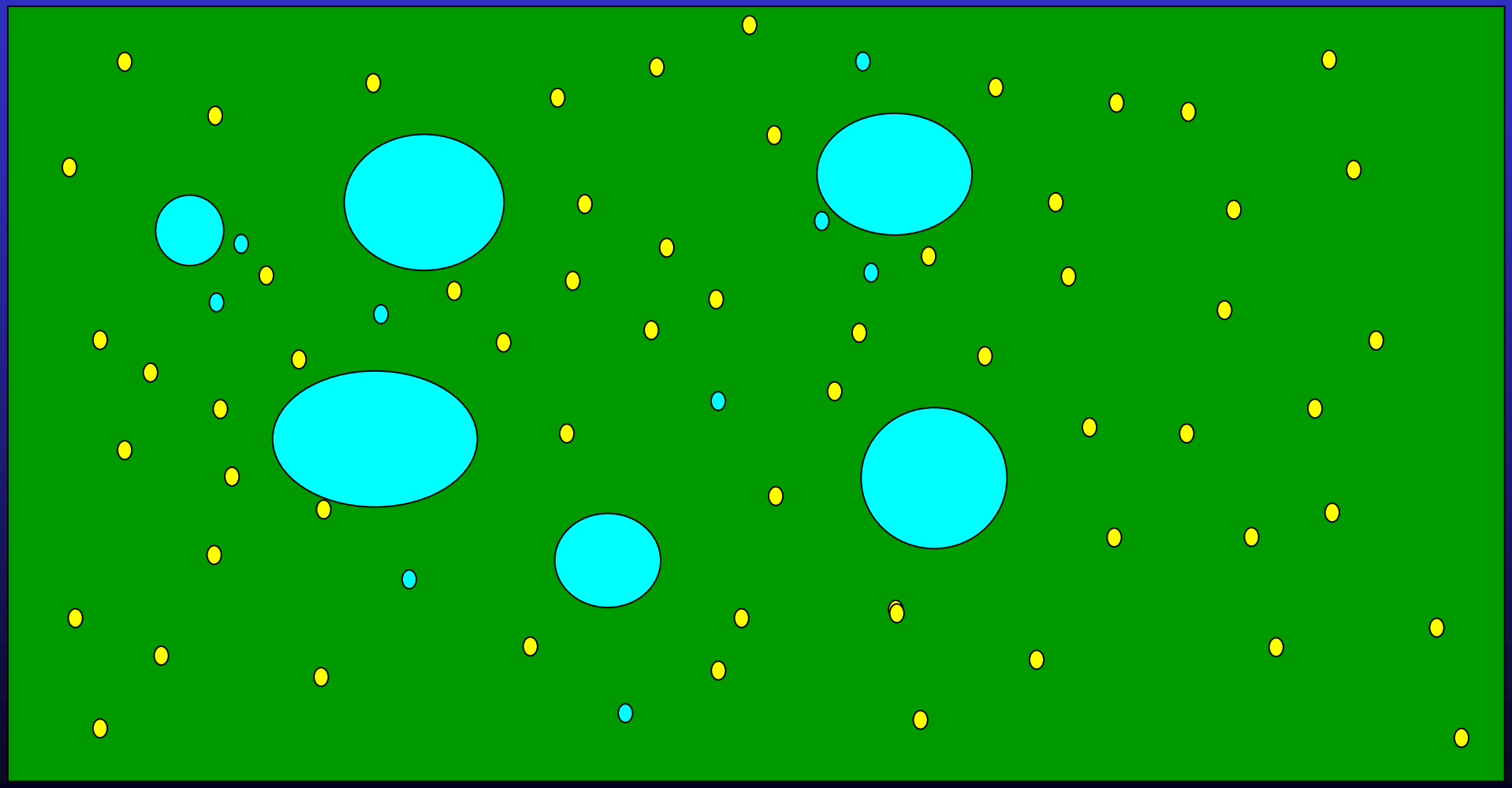
First Application of Foliar Neonicotinoid



Selection Pressure

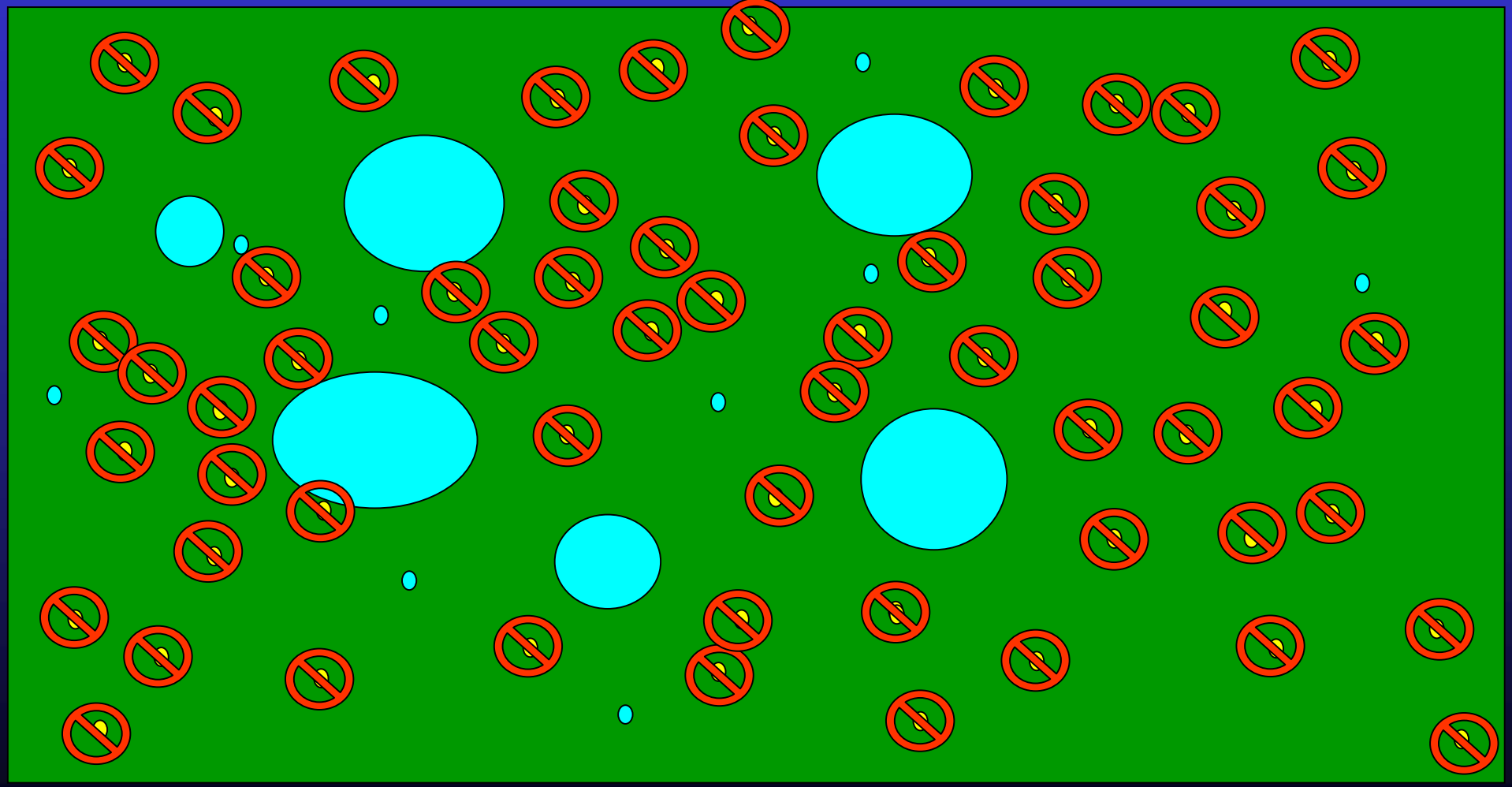


Selection Pressure

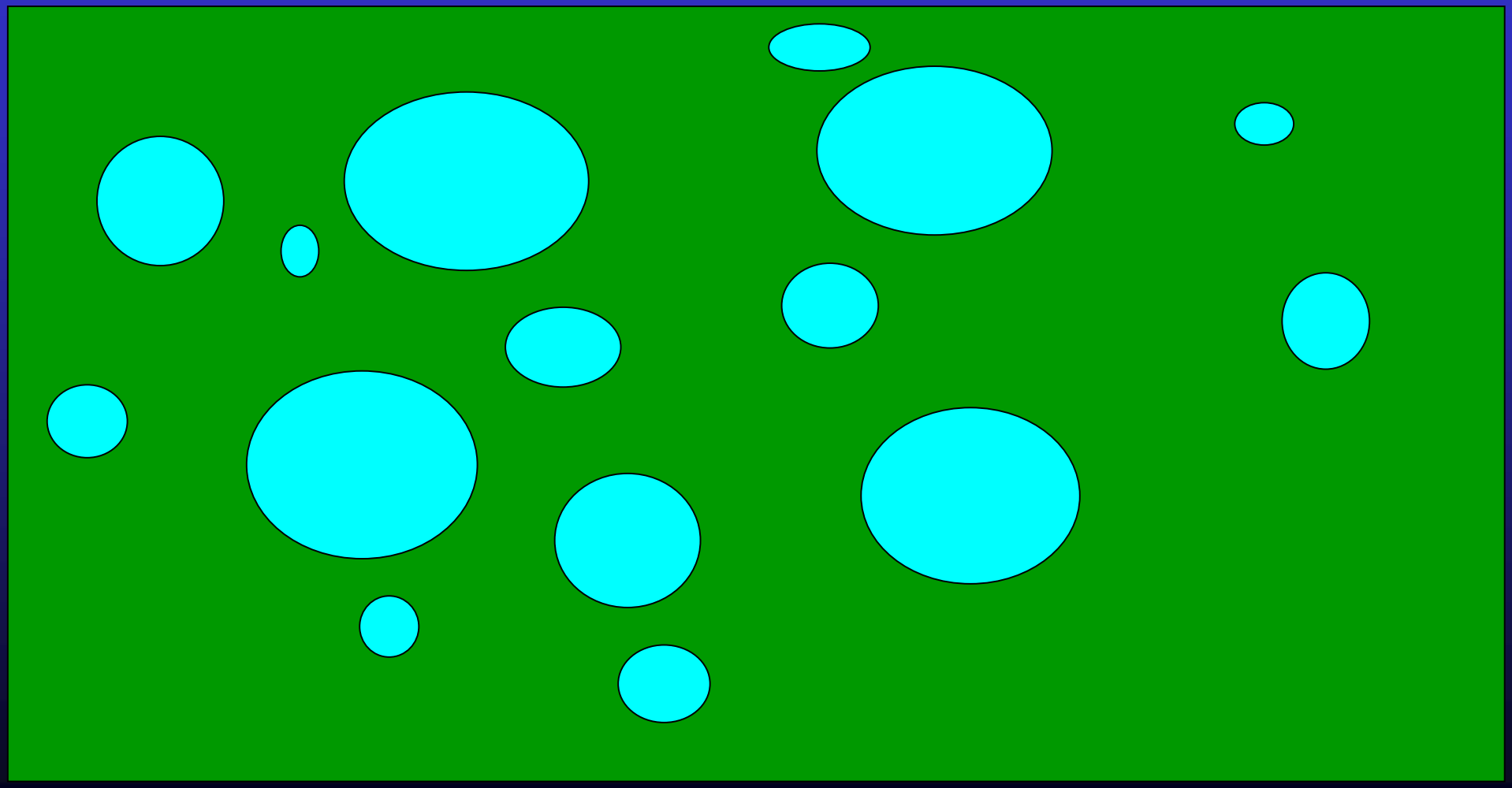


Selection Pressure

Second Neonicotinoid Application



Selection Pressure



Thresholds

NC – Rating Scale – 0-5, Treatment recommended with a rating of 5. Many heavily infested plants and honeydew throughout the field.

GA – Apply when aphids are abundant and seedling leaves are severely curled, or when honeydew is present in older cotton.

LA – Treat when honeydew, leaf crinckling, and stunting begin to occur before open boll. Treat when sooty mold appears on open bolls and aphids present.

AR – Treat when populations are building and aphids present on approximately 50% of the plants.

TN – Early: Treat if aphids are present on numerous plants and some leaves are curled along the edges, particularly if the crop is already suffering from drought stress.
Mid-Late: Treat when aphids are very numerous, honeydew is present, plants are showing signs of stress and natural control agents are not affecting aphid populations.

Thresholds (cont.)

MS – Consider treatment when spots of high aphid populations are causing heavy localized honeydew accumulation, aphid numbers are increasing over the remainder of the field, and no signs of diseased aphids are present.

Important factors to consider before treatment:

1) **Possibility of a fungal epizootic that will likely occur under high aphid infestation.**
2) **Possibility of control failure with recommended insecticides.**
3) **Predator and parasite populations that may suppress aphids.**
4) **Presence of additional stress factors, such as drought or low plant vigor**
5) **Need to apply insecticide for control of other pests.**

New Arkansas Threshold

Kring and others

http://entomology.uark.edu/faculty/kringAphidNaturalEnemyThreshold.pdf

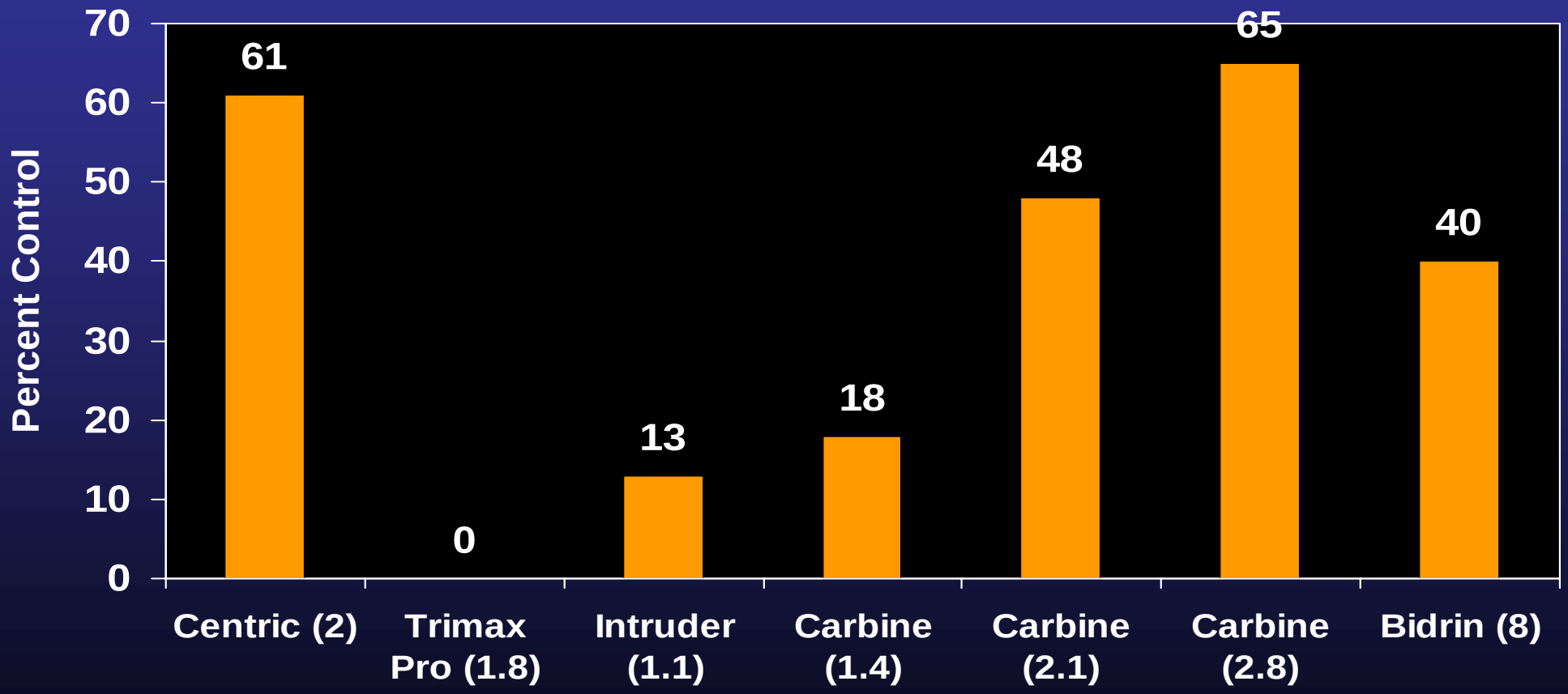
IF 50% of plants are infested with an aphid colony and the population is building

Are there at least 0.3 lady beetle adults or 0.2 lady beetle larvae per row ft. (1 adult per 3 ft. or 1 larva per 5 ft.)?

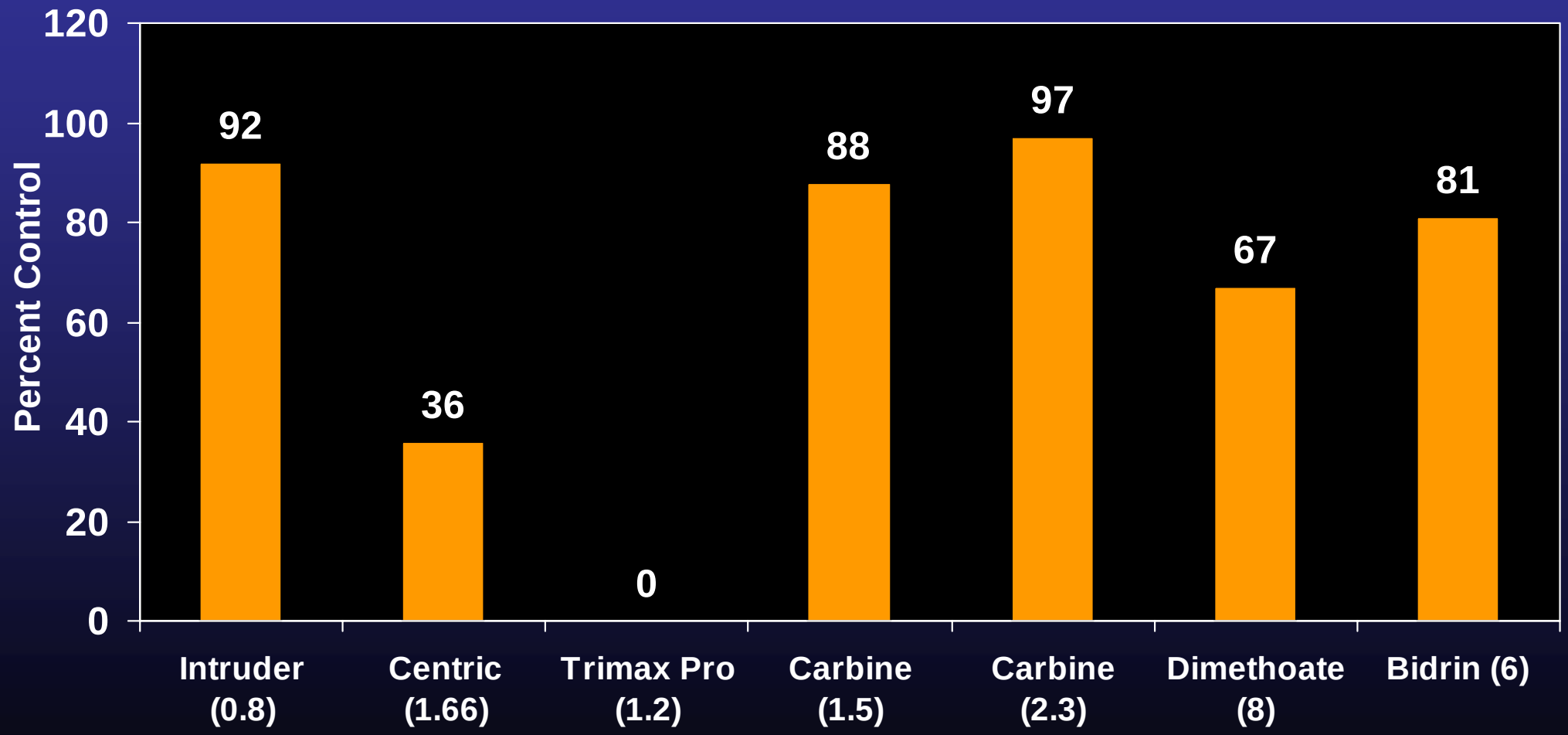
If NO – Treat

If YES – Wait 7-10 days and sample again. At this time, if the aphid population has increased (growing), treat with insecticide.

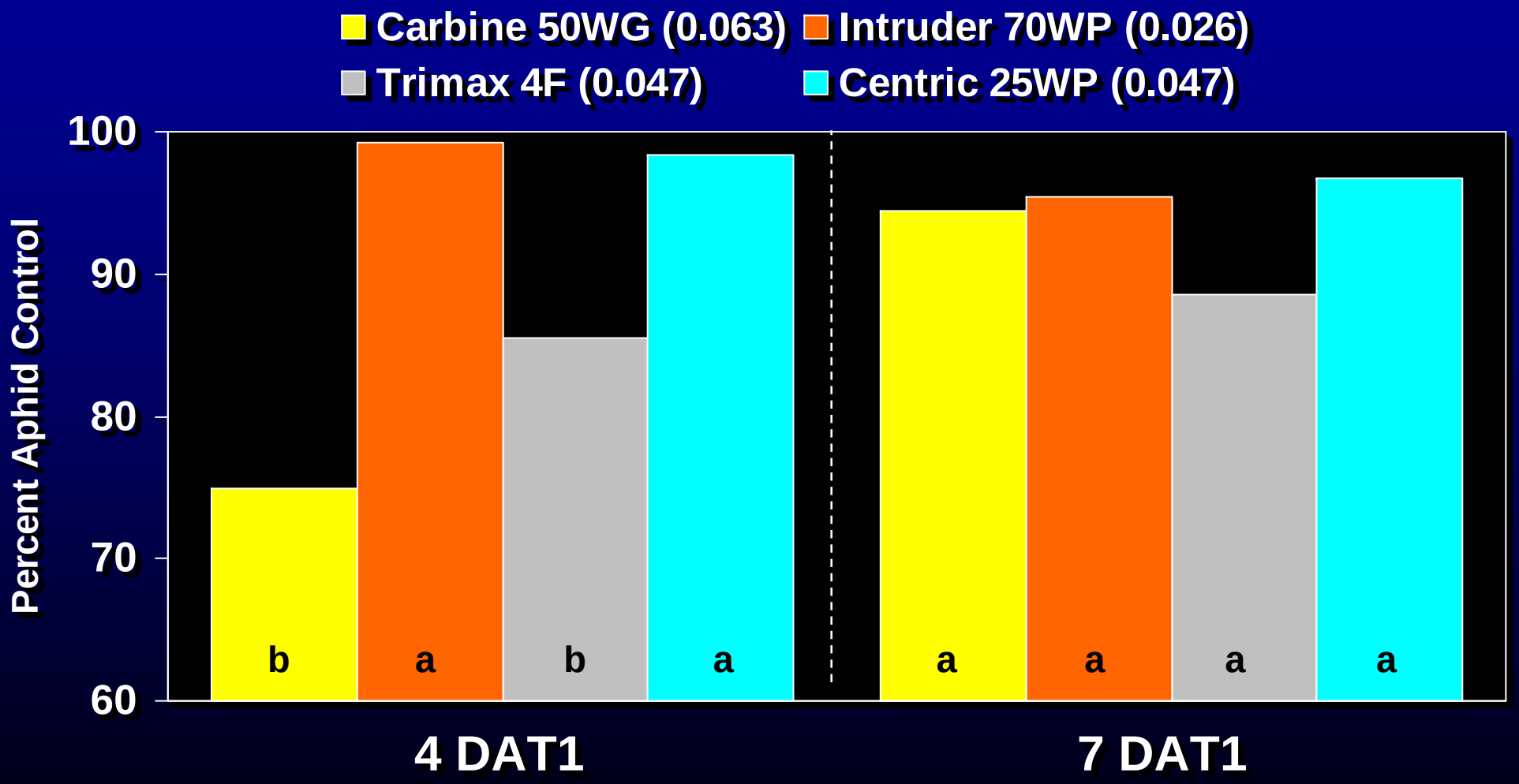
Cotton Aphid Control – 2006
Stoneville, MS



Cotton Aphid Control - 2006
Scott Stewart, Henderson Co., TN



Insecticide Efficacy Against Aphids
Roger Leonard, LA, 2004



MRCT0412

Insecticide Efficacy Against Aphids, 2006

B. R. Leonard, LSU AgCenter

Treatment/form.	Rate/acre lb AI	Percent Aphid Control	
		2 DAT	7 DAT
Intruder 70WP*	0.05	64.5ab	76.7a
Centric 40WG*	0.05	52.9b	70.2a
Carbine 50PC*	0.088	46.3b	72.9a
Furadan 4F*	0.25	88.2a	84.1a
(P>F)		<0.01	<0.01

Means in columns followed by a common letter are not significantly different (P=0.05;DMRT).

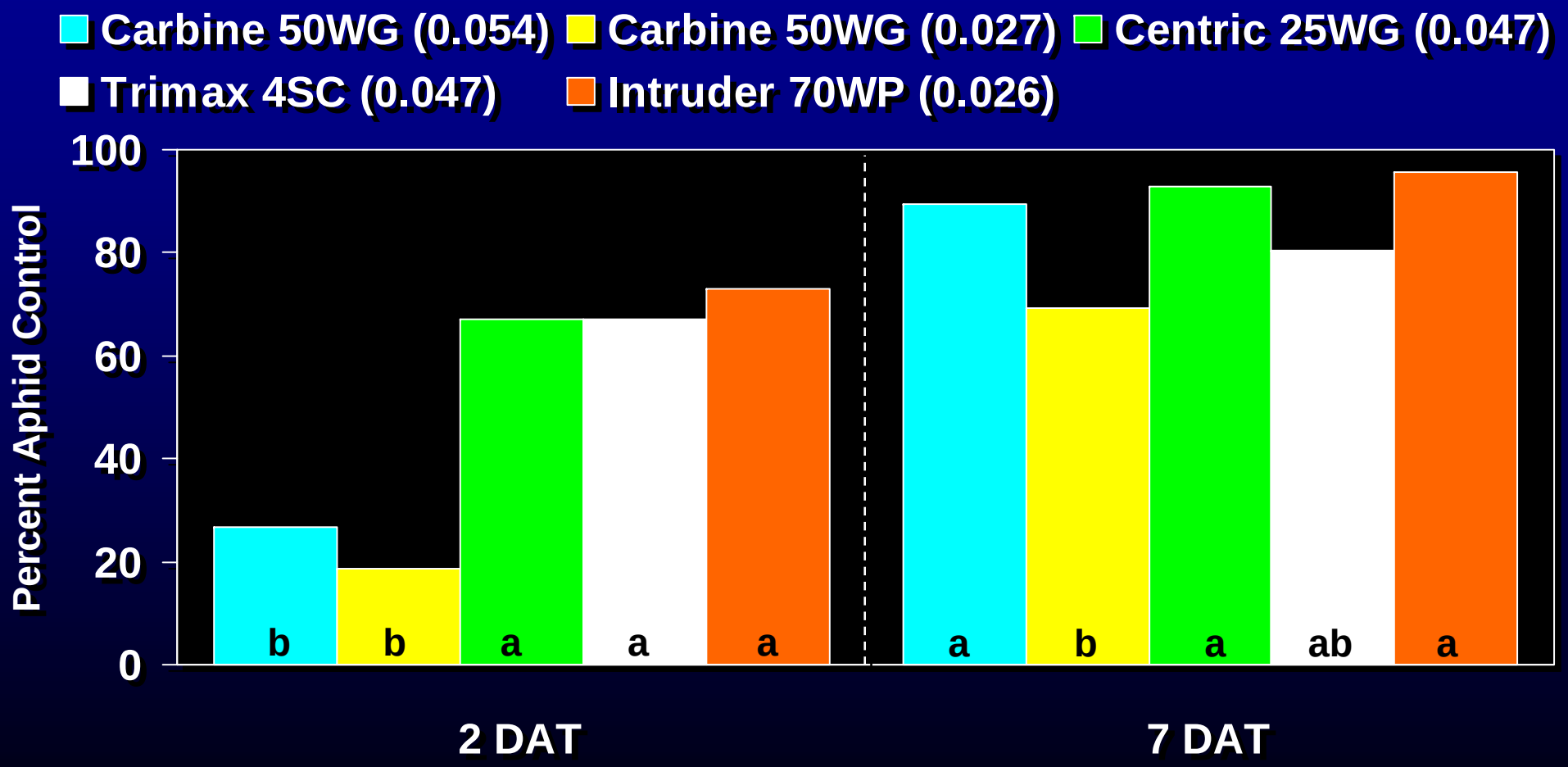
* + COC 99PC 1% V/V.

Infestation Level/10 plts = 2 DAT, 253.5; 7 DAT, 99.5.

MRCT0611B

Insecticide Efficacy Against Aphids, 2005

B. R. Leonard, LSU AgCenter



MRCT0512A

Insecticide Efficacy Against Aphids, 2000

B. R. Leonard, LSU AgCenter

Treatment/form	Rate lb AI/acre	Percent Control	
		3 DAT	6 DAT
Provado 1.6F	0.047	81.1ab	73.4c
Leverage 2.7SC	0.08	73.5b	76.8bc
Centric 40WP	0.023	85.5ab	82.7ab
Actara 25WP	0.023	85.6ab	86.1a
Actara 25WP	0.047	88.8a	90.7a
Capture 2EC	0.05	10.6c	35.5d
Fulfill 50WP	0.086	79.2ab	86.1a
Furadan 4F	0.25	93.1a	89.4a
Non-treated	-----	0.0	0.0
(P>F)		<0.01	<0.01

(MRCT0009)

Summary and Conclusions

- Limit insecticide applications early that will flare aphids. (Pyrethroids and Organophosphates)
- Rotate chemistries when appropriate.
- Don’t apply foliar neonicotinoids following neonicotinoid seed treatments.
- Use accurate thresholds and spray only when necessary.
- Eliminate unnecessary applications.
- Use full labeled rates.