



Insects Affecting Collected Versus Field Grown Seed

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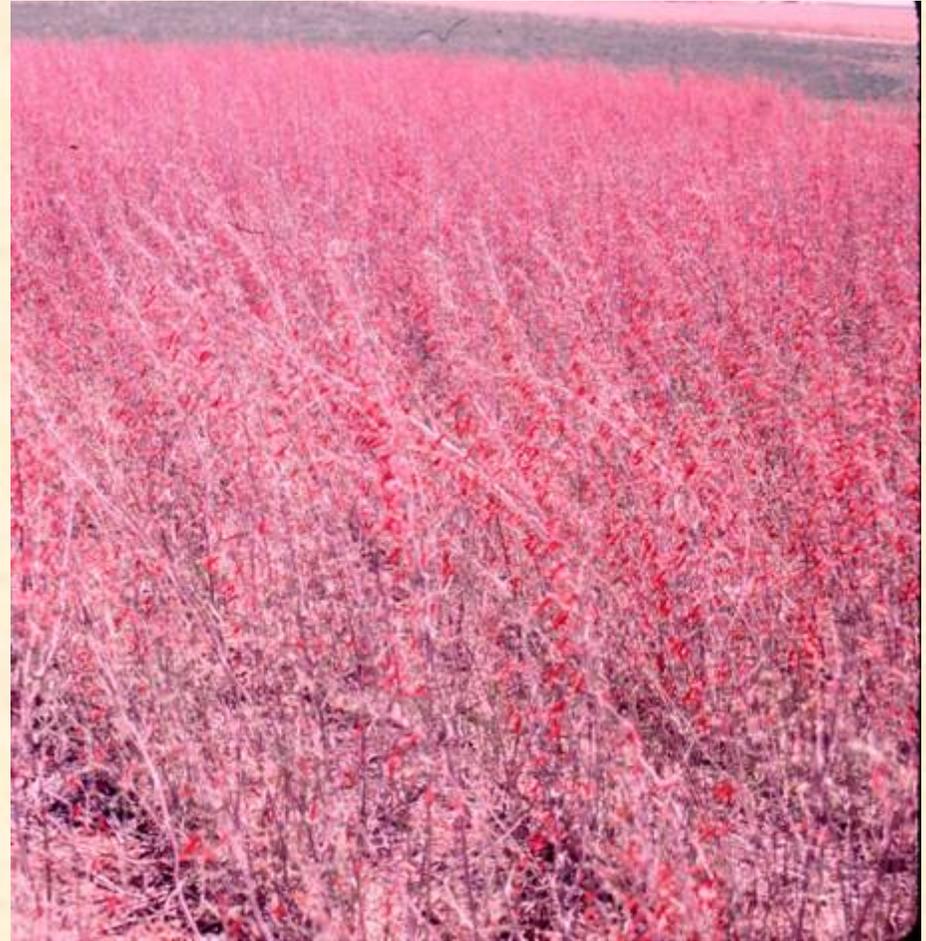
Field Collections

- Natural systems
- Lots of diversity
- Often lower plant density
- Many specialist seed predators, defoliators, other plant pests
- Often no good pre-collection monitoring of insect/disease pests
- Emphasis is documenting presence/ ID of natural enemies



Seed Increase

- Monocultures in agricultural setting
- Supplemental irrigation, often over irrigated
- Pest monitoring throughout growth cycle
- Generalist flower & plant feeders common
- Specialist seed predators may be locally important, but often limited in distribution
- Emphasis is on managing pests



Hedysarum boreale seed collection



Hedysarum boreale Seed Increase



Insects Found in Collection Site & Field Increase

- Bruchids (seed weevils)
- *Acanthoscelides* spp.
 - Larvae eat seeds within pods
- Undescribed species in HEBO at Logan UT
- Found in many seed collections
- Impact on seed increase at Meeker CO & NE Utah
 - ~ 75% seed loss at Meeker before control initiated



Acanthoscelides control

- Monitor fields with sweep net beginning pre-bloom
- If beetles are found:
 - Apply cleanup spray as close as possible to 1st bloom
- Monitor post bloom insects
- Bee-friendly pesticide if needed
- Imidacloprid??



This program has been effective at Meeker CO for the past 12 years.

Primary Pest in this Field:

Lygus!

7 – 10 *Lygus* nymphs per sweep!

1 *Acanthoscelides* per 50 sweeps

Treatment:

Honey bees in field

Dibrom, 1 pt/A

Nighttime application

Monitor dew

Results:

Sweep samples 2 DAT

clean

No bee mortality



Astragalus filipes
Basalt Milkvetch

**5 species of weevils
damaging collected
seed in 2003/04**

**Seed predators
found at every field
collection site (50+)
in Great Basin**

**Several root boring
weevils reported
from *Astragalus***

Astragalus filipes

Seed increase planted at
Millville UT in 2005

(Doug Johnson)

- 1/2 replications treated with imidacloprid
- 2005 - weevil pressure too low to evaluate imidacloprid
- 2006 - untreated with much more weevil damage than treated



Imidacloprid applied as a soil drench can control seed weevils

Astragalus filipes Seed Weevils

Beware:

The seed **looks** good when harvested, but weevils emerge in storage.

You must examine seed by cutting or other methods to determine infestation at harvest

Oxytropis lambertii at Meeker CO

No pest problems after 2 years



A photograph showing several black blister beetles (Lytta nigrocyanea) feeding on the flowers of Astragalus and Oxytropis plants. The beetles are clustered on the stems and flowers, which are small and white. The background is a blurred green field of similar plants.

Watch for blister beetles in
Astragalus & *Oxytropis*

Blister beetles
Lytta nigrocyanea

Lupinus sericeus

Planted spring 2006 at Rogers Mesa CO
Seedling transplant from UP seed source
Small August seed crop

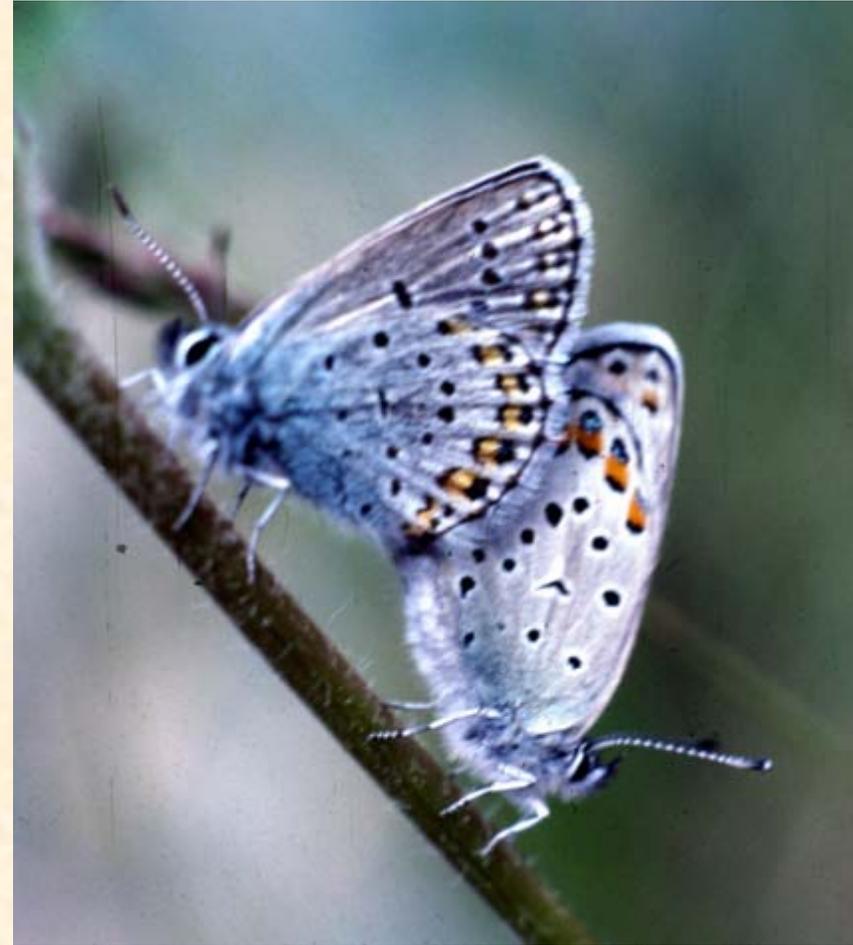
Very little native *Lupinus* within 5 mi



Lupine Insects

What we expected:

- Aphids
- *Plebejus melissa*,
Melissa's Blue
- *Apion* spp (Brentidae)
- *Tychius* spp.
(Curculionidae)
- Head flies (Tephritidae)
- *Lygus*



What we got:

Pima sp.

- Collected from new seeding of *Lupinus sericeus* at WCRC@RM
- Larvae feed within pod on developing seed
- Undescribed species of Pyralidae
- Monitor the situation in 2007
- Evaluate insecticides?



Lygus bugs



- Species complex
- Wide host range
 - alfalfa is preferred
- Prolific reproduction
- Very mobile
- Move when alfalfa is harvested, weeds are mowed or sprayed, vegetation is disturbed

Lygus feeding



- Piercing/ sucking mouthparts
- Feed on developing ovaries
- Feeding causes abortion of developing seed
 - barren inflorescences
- Damage appears long after the bug is gone!

Lygus Management



Be aware of changes in surrounding vegetation – especially alfalfa

Monitor flowering crops

Watch for nymphs

Bee friendly sprays/ application
Dibrom at night, no dew
Rimon – growth regulator

Lygus feeding in *Penstemon*

Penstemon tears

- Species specific reaction to lygus feeding
- Black “tears” weep from feeding site, turn to “tar” after drying
- Has been blamed for significant yield reduction in several instances
- CO, UT, ID, WY



Insecticide Trial in *Erigeron speciosus*

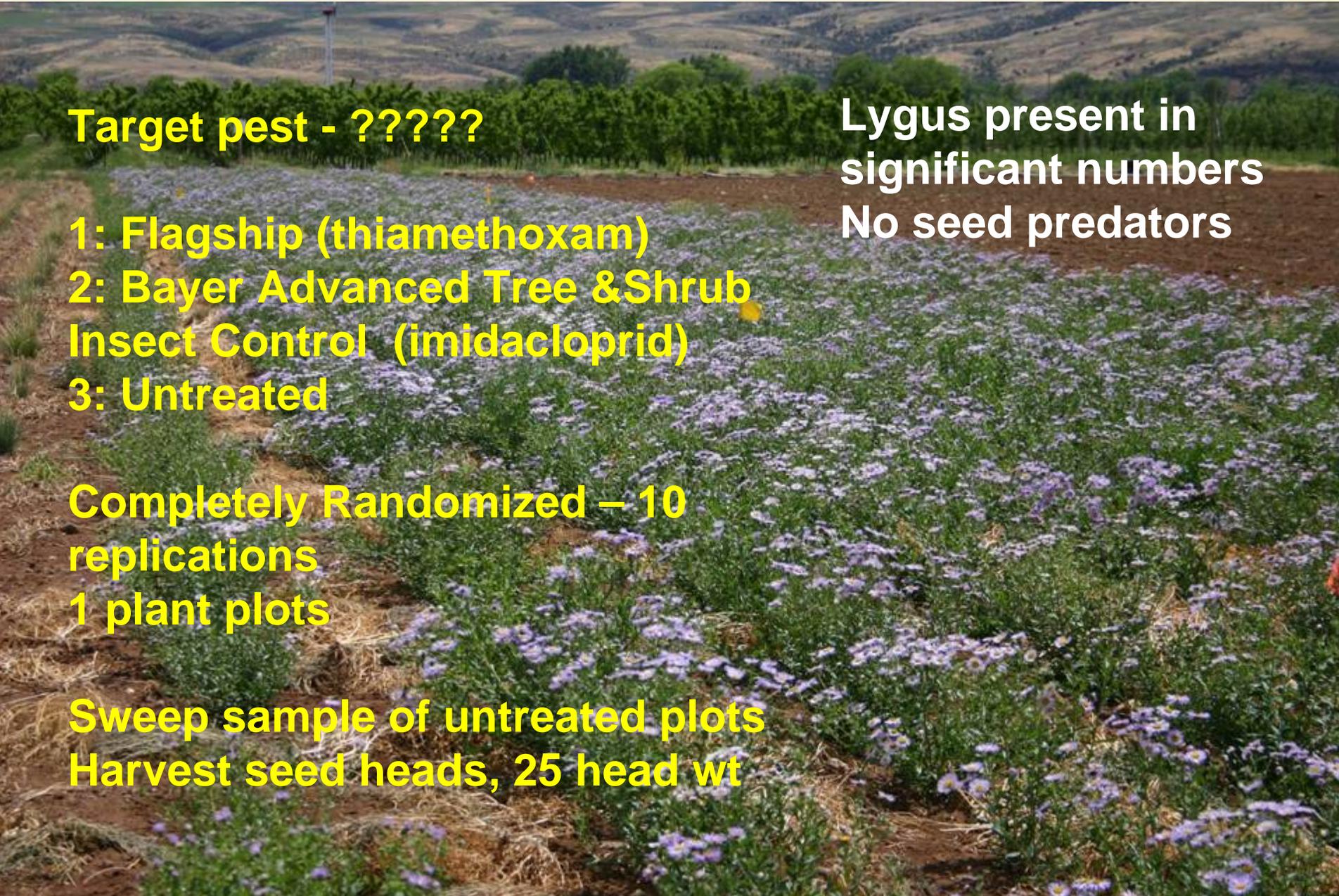
Target pest - ??????

- 1: Flagship (thiamethoxam)**
- 2: Bayer Advanced Tree & Shrub Insect Control (imidacloprid)**
- 3: Untreated**

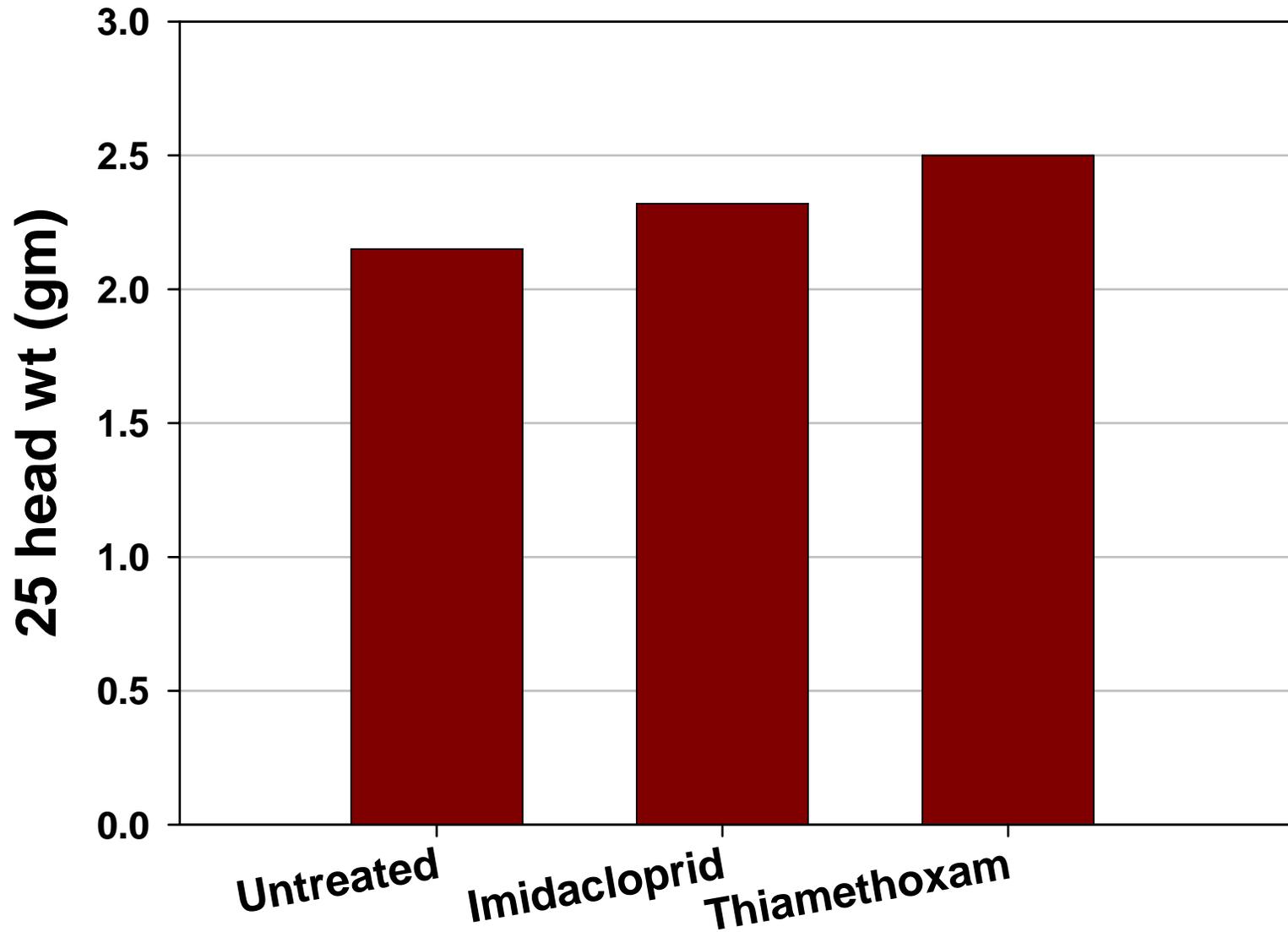
**Completely Randomized – 10
replications
1 plant plots**

**Sweep sample of untreated plots
Harvest seed heads, 25 head wt**

**Lygus present in
significant numbers
No seed predators**



Erigeron speciosus Insecticide Trial

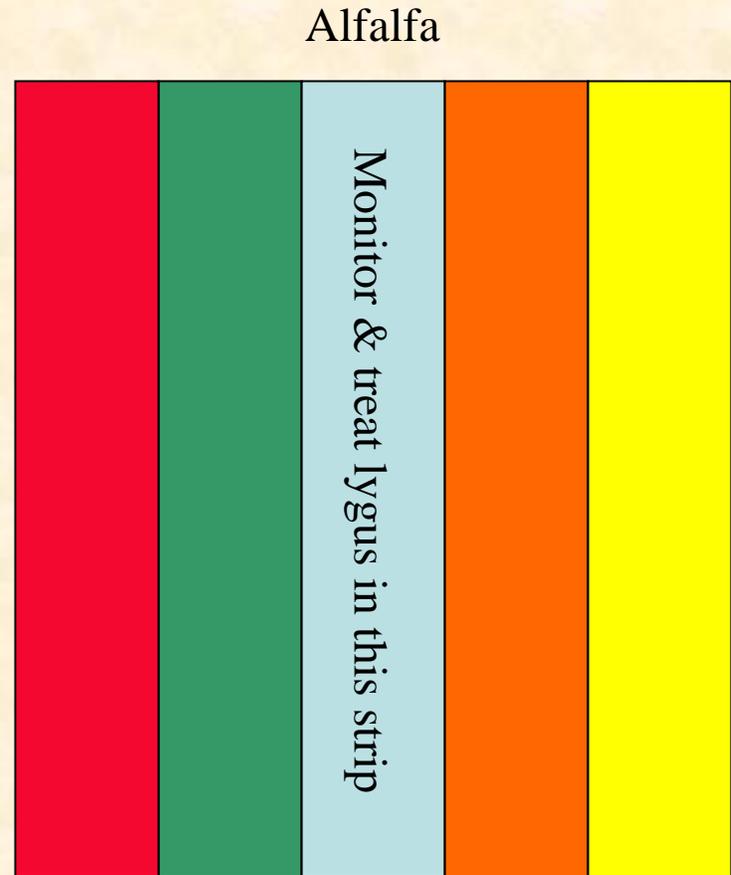


Differences not significant ($P=0.16$). Yield impact possibly from Lygus.

Controlling Lygus in a small planting

Will a trap crop work?

- Evaluate the Lygus threat before planting
- Trap crops?
 - alfalfa
- Alfalfa may be more attractive to Lygus than other crop plants
- Monitor & spray lygus in alfalfa



Stink bugs

- Many species in 2 families
- Diversity of life histories
- Very mobile
- Pheromone mediated swarming
- Broad host range
- Can be very destructive
- In field only during milk stage
- Damage appears long after insects are gone

If you see them, then have disappointing yield/quality, at least you know what happened!





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