

Landscape Management to Reduce Tarnished Plant Bugs in Cotton



Jeff Gore

MSU, DREC

**Gordon Snodgrass, Craig Abel, and O.P. Perera
USDA-ARS**

Seasonal Occurrence of Plant Bugs



Distribution of Tarnished Plant Bugs in the Landscape - May

Week 1

Week 2

Week 3

Week 4



High

Medium

Low

Distribution of Tarnished Plant Bugs in the Landscape - June

Week 1

Week 2

Week 3

Week 4



 High

 Medium

 Low

Distribution of Tarnished Plant Bugs in the Landscape - July

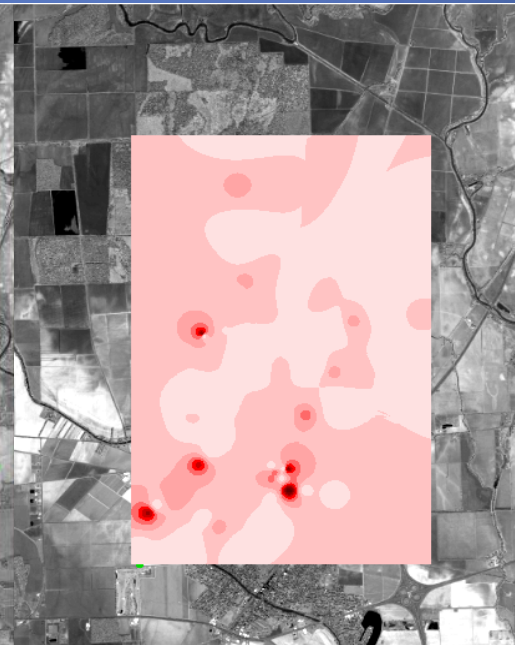
Week 1



Week 2



Week 3



Week 4



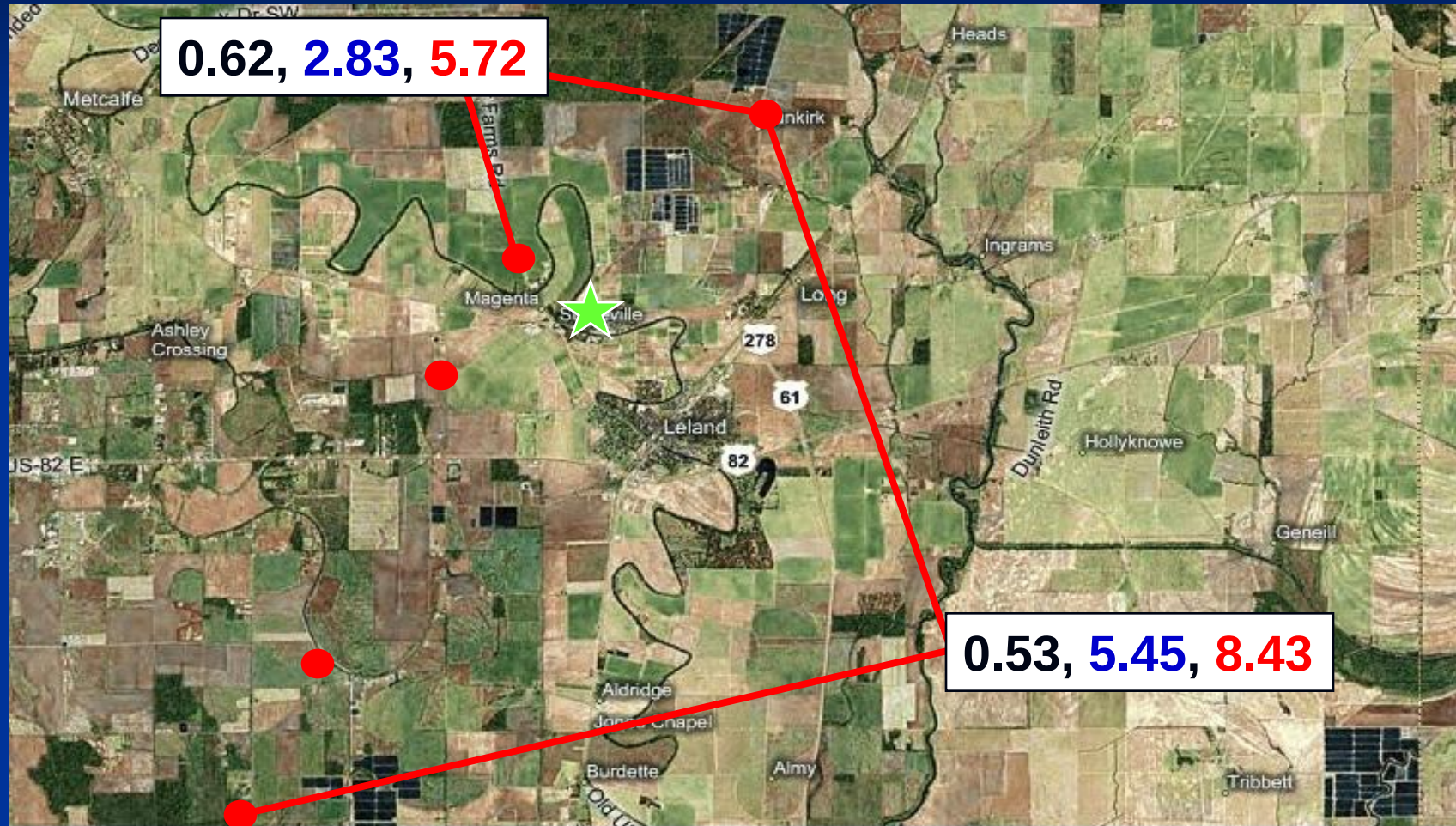
 High

 Medium

 Low

Gene Flow Between Populations 2006

O.P. Perera, USDA-ARS



Key: May, July, September

2007-2008

- Tunica/Robinsonville
- Clarksdale
- Leland/Stoneville
- Rolling Fork/Cary
- Vicksburg
- St. Joseph, LA



Late Winter and Early Spring

Reproductive Diapause

Break Diapause

Wild Hosts

Wild Hosts

Wild Hosts

Cultivated Hosts

Wild Hosts

Enter Diapause

Burndown

Planting

Squaring

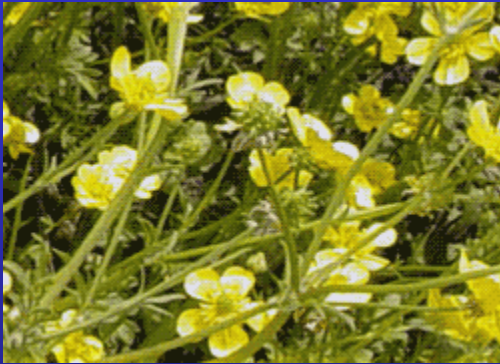
Flowering

Harvest

Winter
Dec.-Feb.

Spring
Feb.-May

Examples of early-spring broadleaf hosts of tarnished plant bug



Buttercup



**Evening
Primrose**



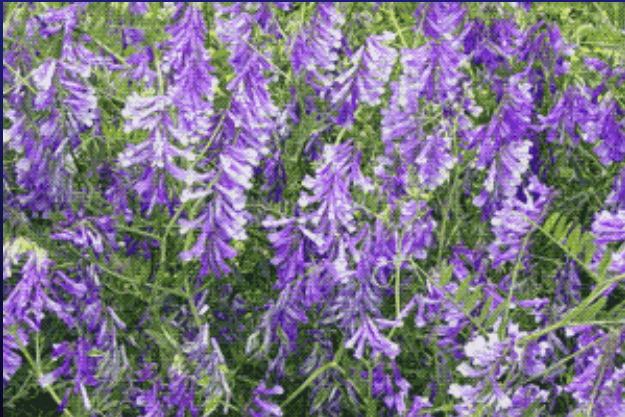
Butterweed



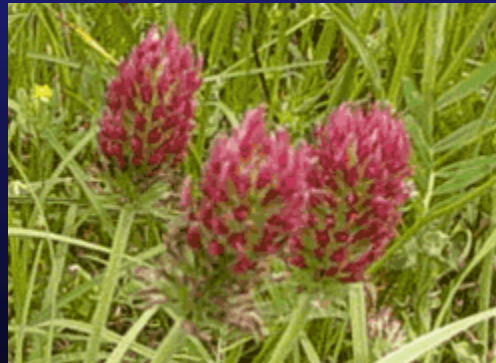
**Annual
Fleabane**



Sourdock



Vetch



Crimson Clover



Cutleaf Primrose

Area-wide Plant Bug Management

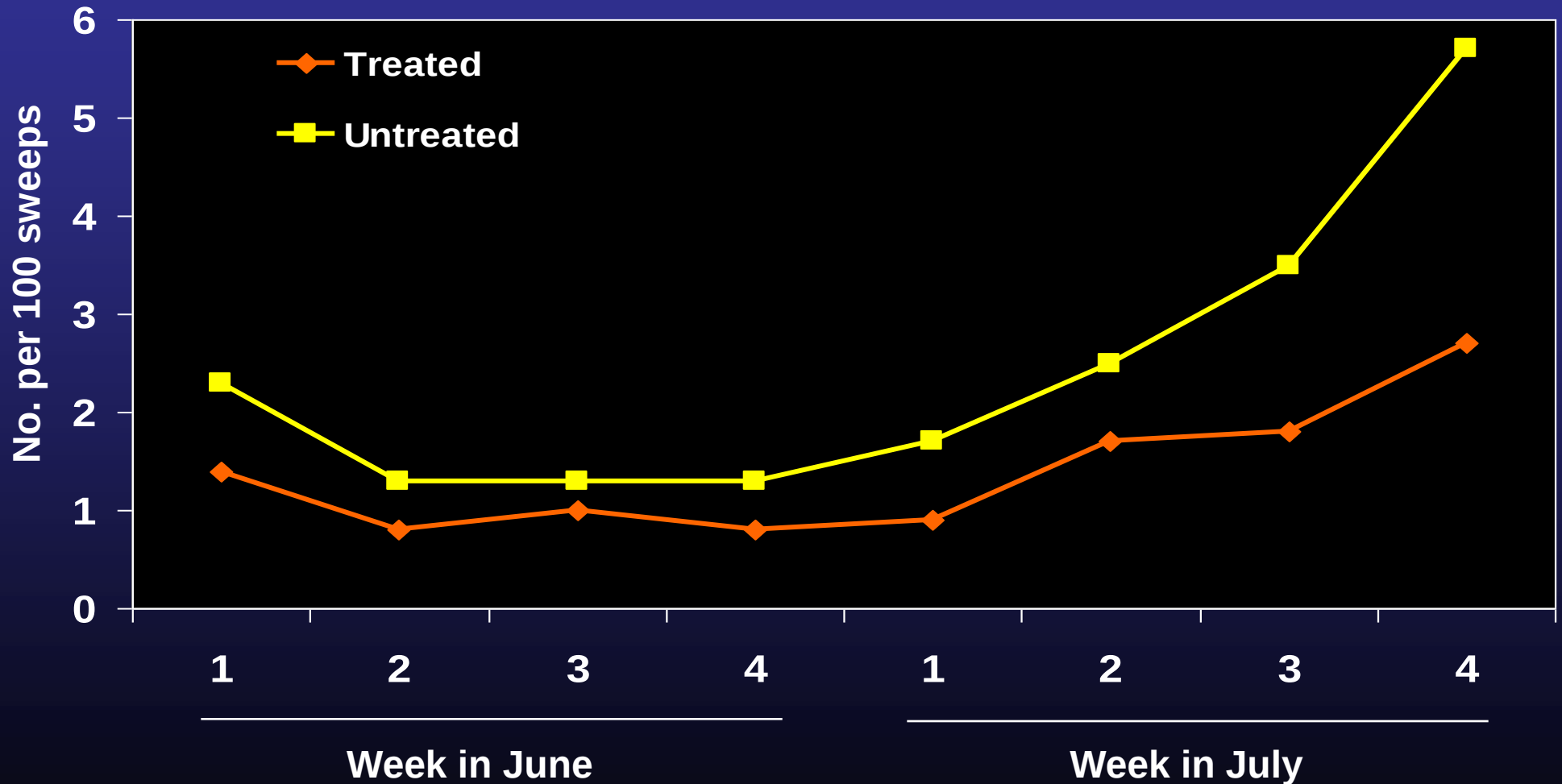
Gordon Snodgrass, William Scott, and Craig Abel – USDA-ARS



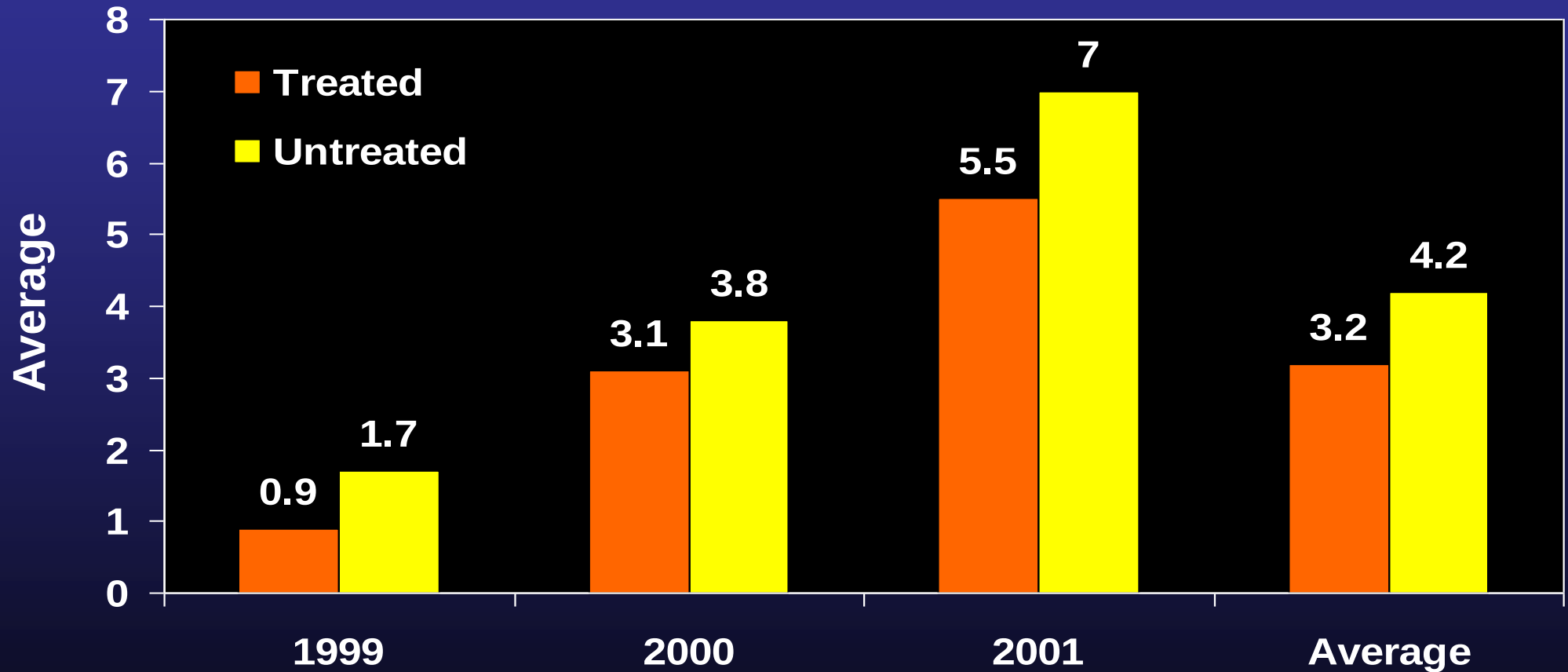
One herbicide application from late-Feb. through March.

Area-Wide Plant Bug Control

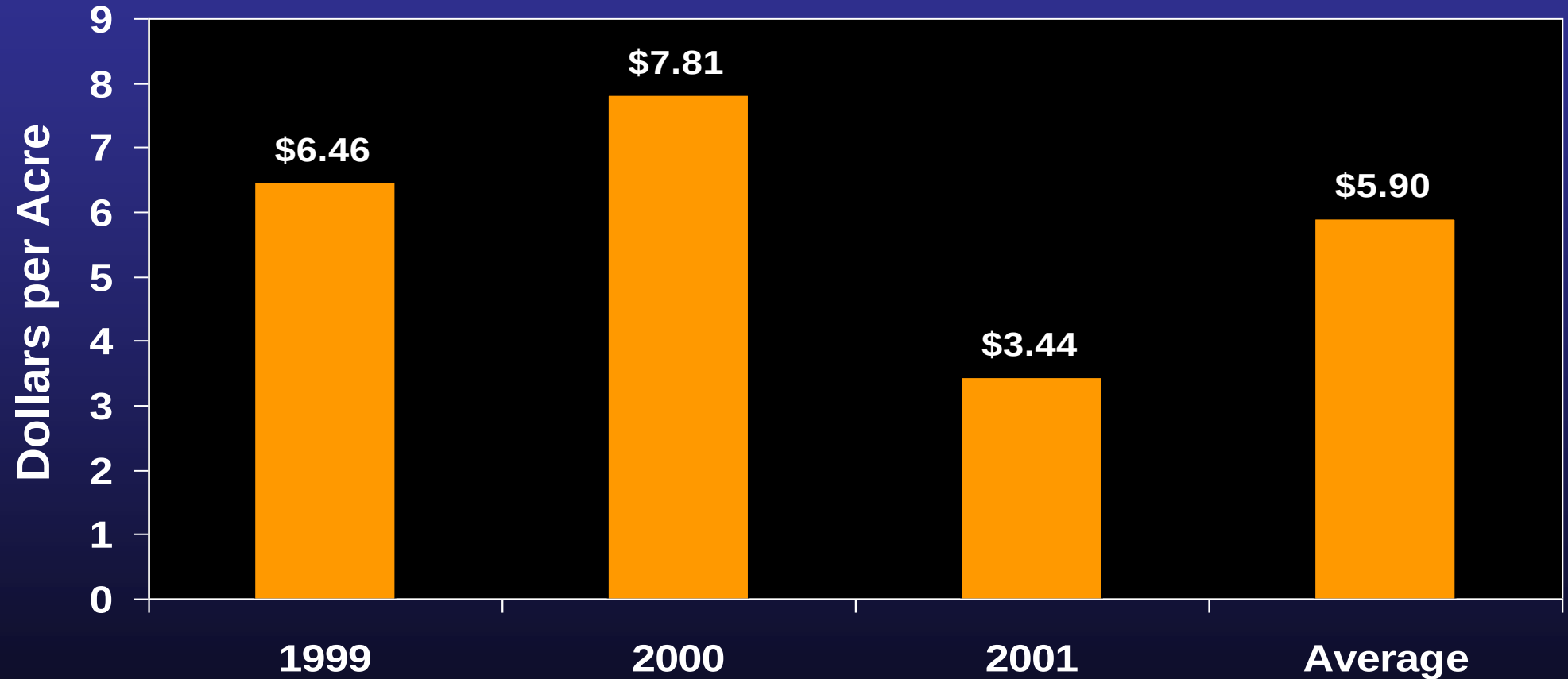
MS Delta



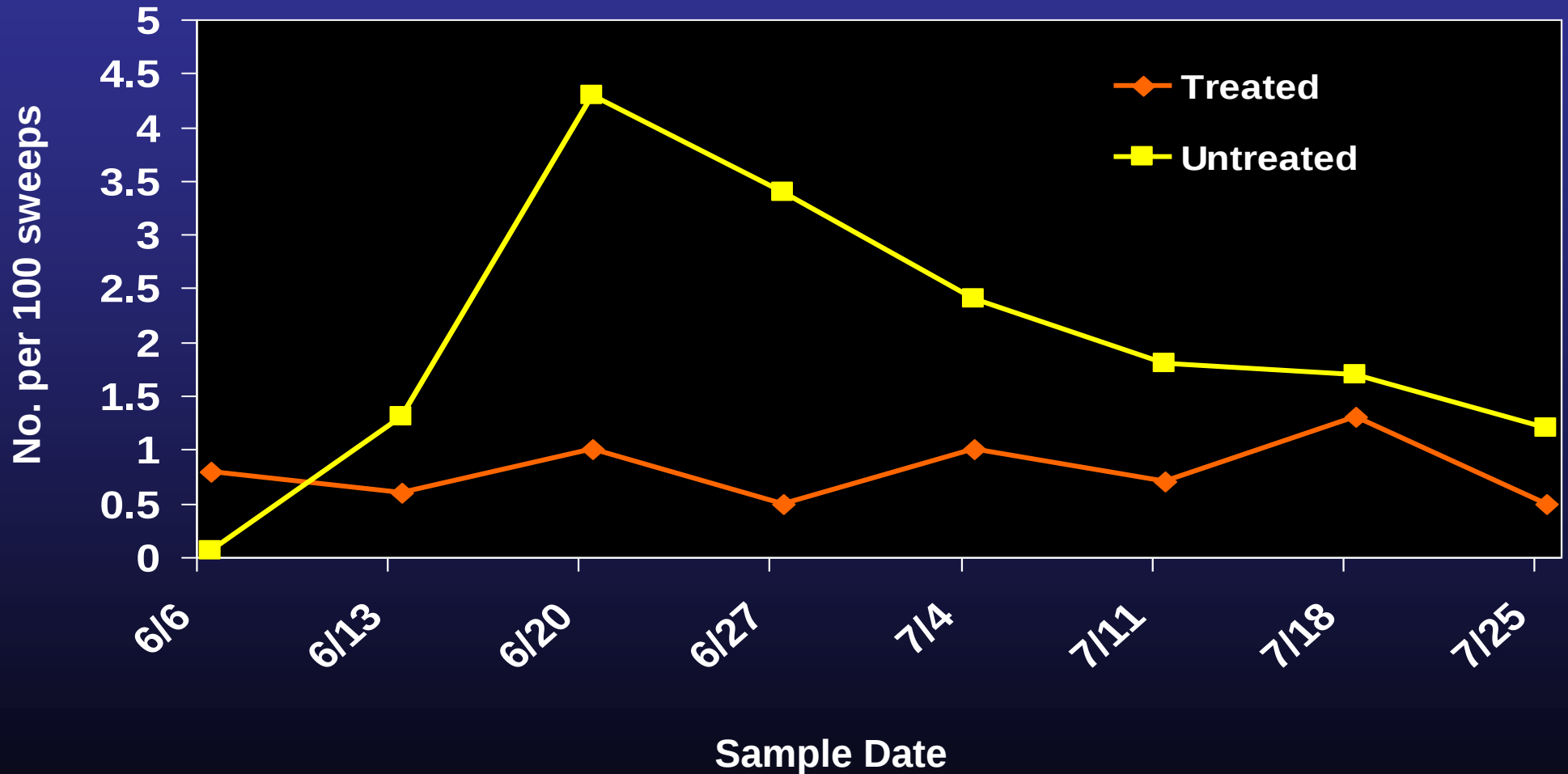
No. Plant Bug Applications



Economic Benefit



Area-Wide Plant Bug Control MS Hills





Untreated



Treated



Treated with Roundup at Burndown

Summer (Crop Season)

Reproductive Diapause

Break Diapause

Wild Hosts

Wild Hosts

Wild Hosts

Cultivated Hosts

Wild Hosts

Enter Diapause

Burndown

Planting

Squaring

Flowering

Harvest

Summer
June-Sept.

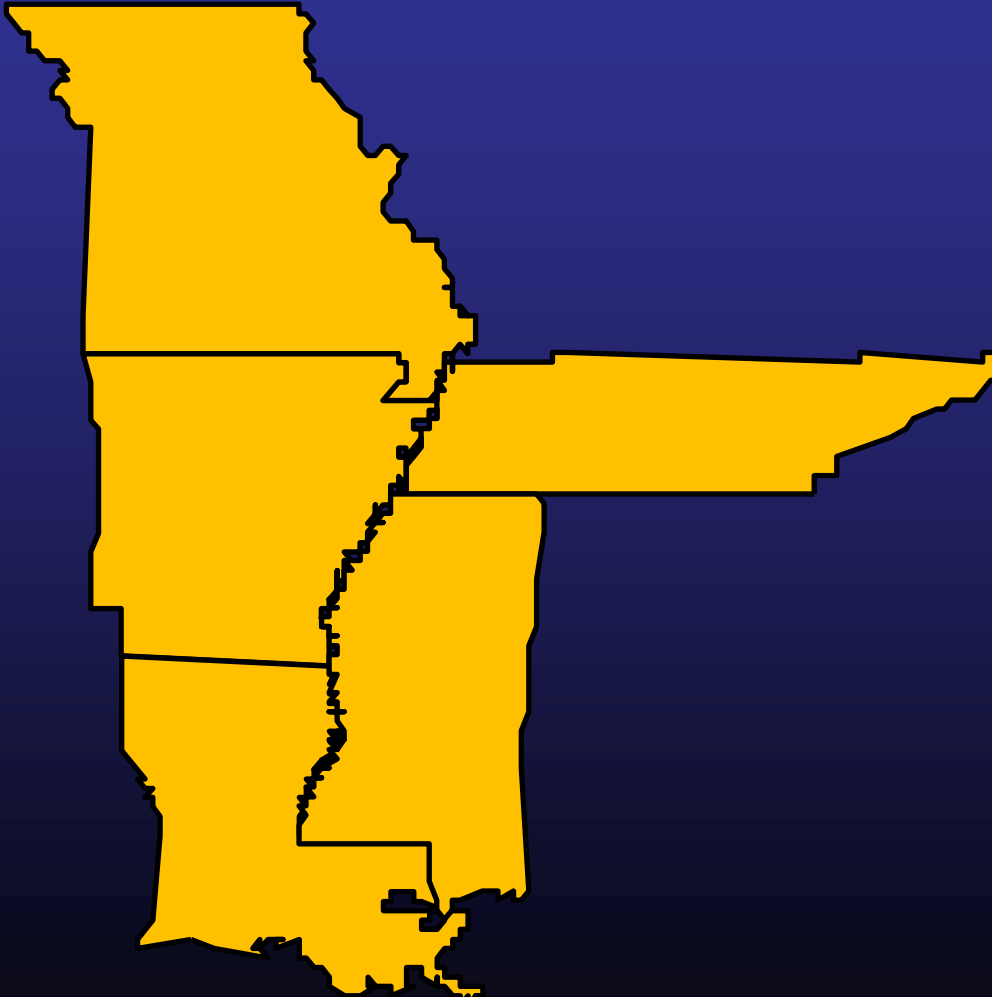








Regional Temik Side-Dress Study



Missouri – Kelly Tindall

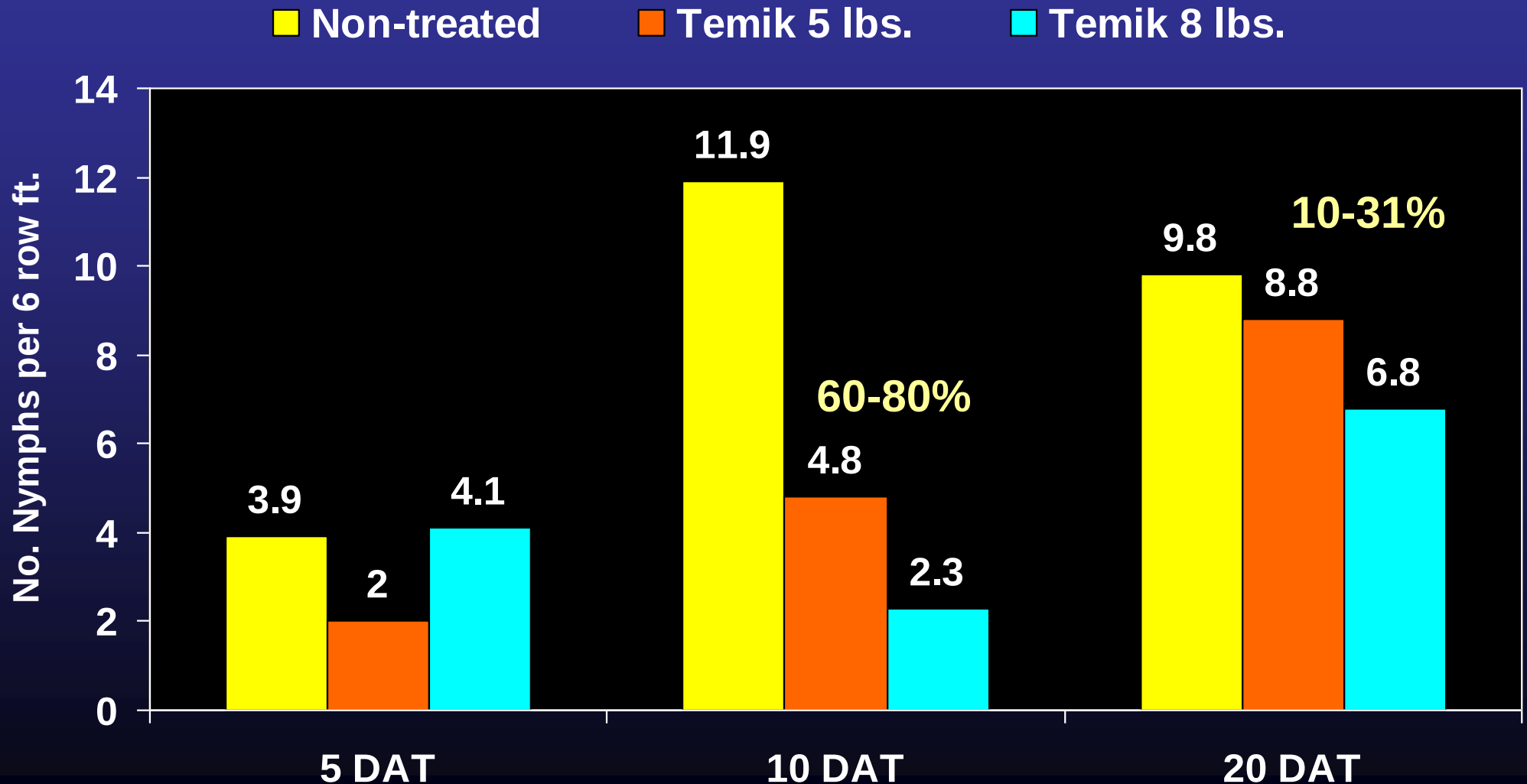
Arkansas – Gus Lorenz,
Glen Studebaker, and Scott
Akin

Tennessee – Scott Stewart

Mississippi – Jeff Gore,
Angus Catchot, Don Cook,
and Fred Musser

Louisiana – Ralph Bagwell
and Roger Leonard

Temik Side Band Applications



Fall - Winter (Reproductive Diapause)

Reproductive Diapause

Break Diapause

Wild Hosts

Wild Hosts

Wild Hosts

Cultivated Hosts

Wild Hosts

Enter Diapause

Burndown

Planting

Squaring

Flowering

Harvest

Winter

Dec.-Feb.

Fall

Sept.-Dec.

Overwintering Habitats

- Winter Annuals
 - Mostly henbit,
Lamium amplexicaule



- Plant Debris

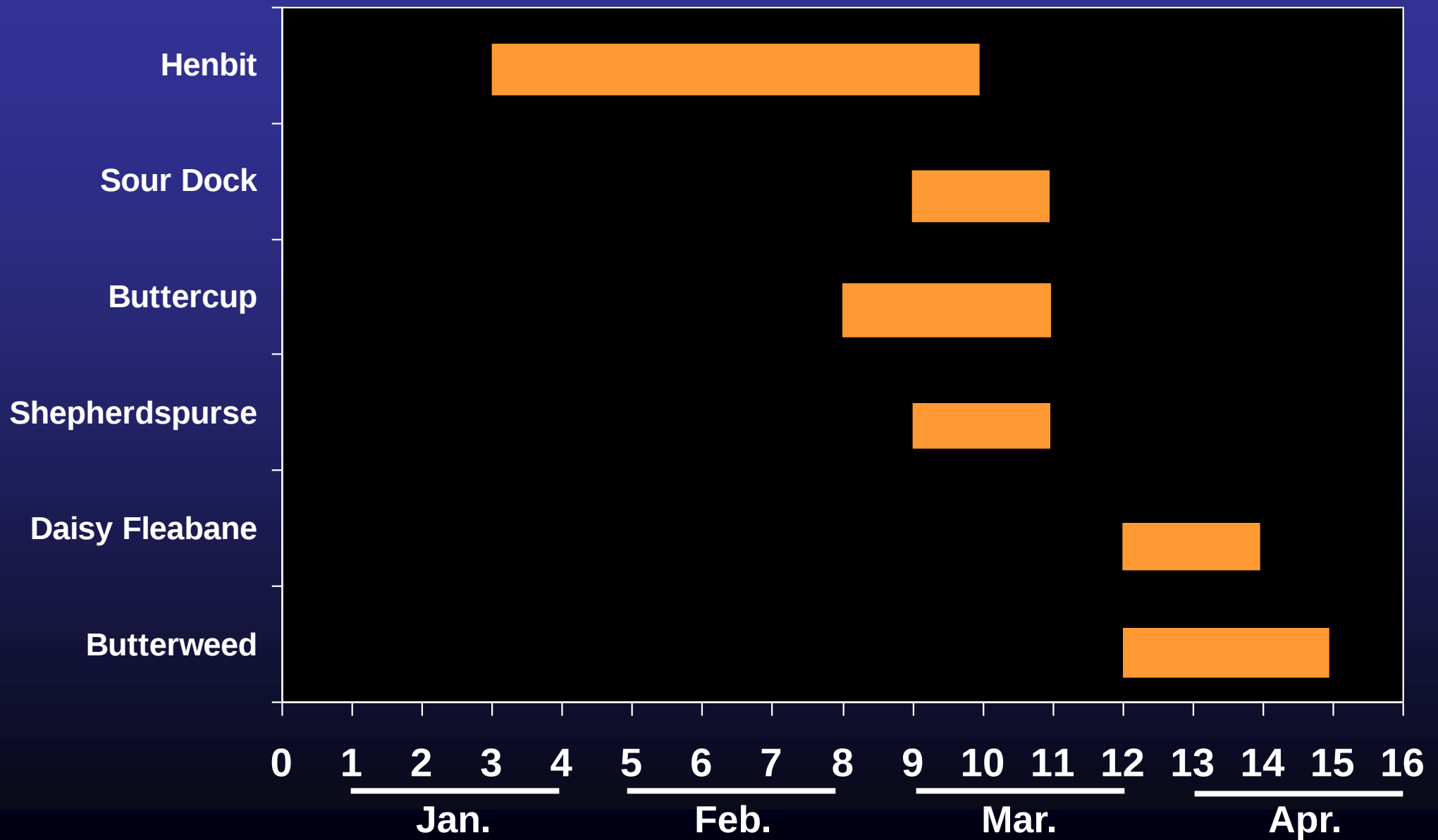


Percentages of Reproductive Females with Mature Eggs (2002-04) – G. Snodgrass

<u>% with Mature Eggs</u>				
<u>Month</u>	<u>Wk</u>	<u>Henbit</u>	<u>Plant Debris</u>	<u>Mustard</u>
December	1	30	0	-
	2	59	0	0
	3	75	0	0
	4	62	6	0
January	1	75	35	27
	2	95	85	93
	3	100	87	83
	4	96	95	92

Occurrence of Nymphs on Winter and Spring Hosts

G. Snodgrass, 1999-2001



Summary and Conclusions

- Host management during the early spring can provide an economic benefit.
- Crop arrangement and border management from planting through summer.
- Fall and winter management has not been investigated, and may provide some good opportunities.

Summary and Conclusions

- Tarnished plant bugs feed and reproduce on over 350 plant species which makes it a difficult challenge.
- Because of that, management from a landscape perspective using an integrated approach will yield the greatest success.

