ALFALFA PEST MANAGEMENT

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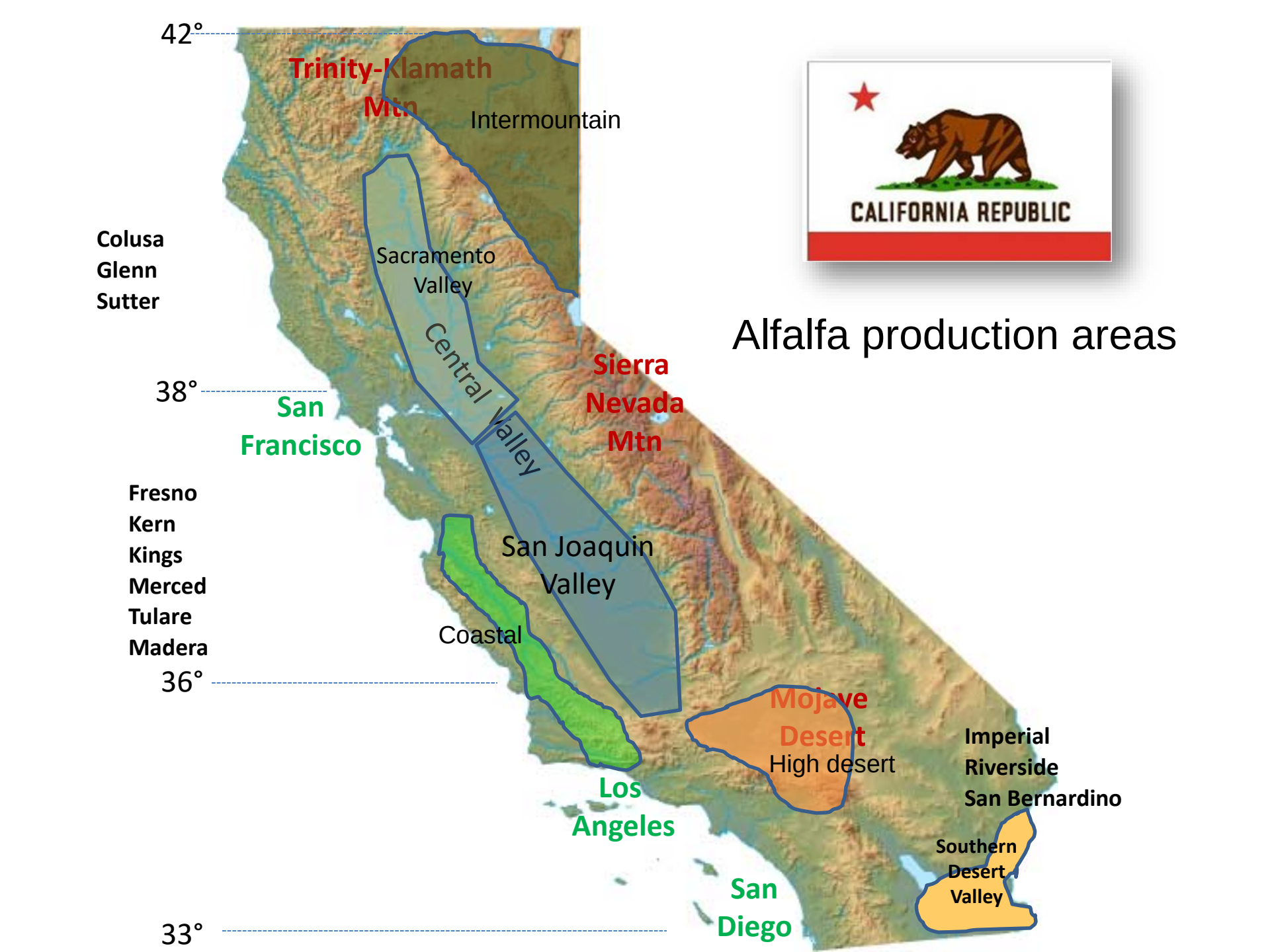
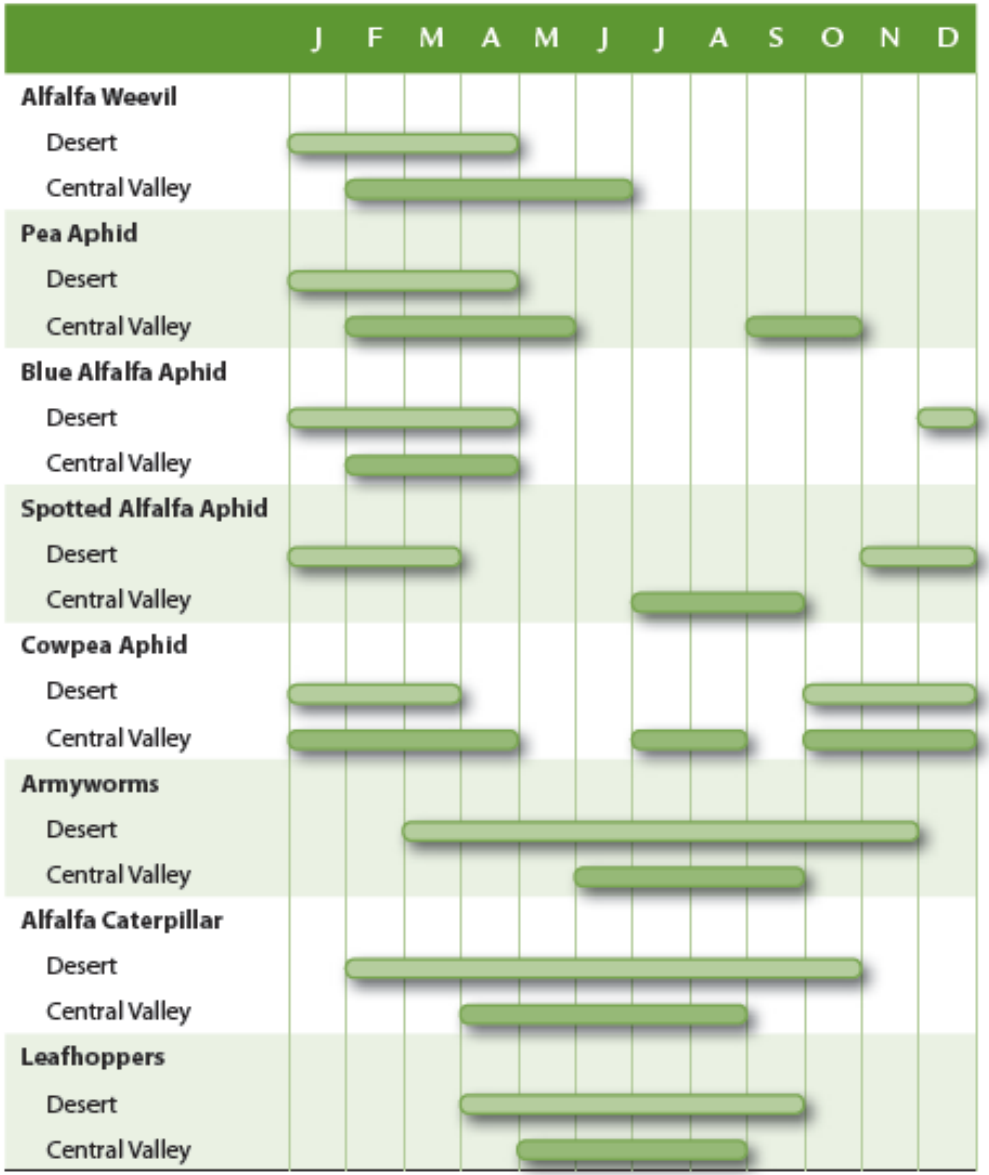
University of California
Agriculture and Natural Resources
Making a Difference for California


42°
Trinity-Klamath Mtn
Intermountain
Colusa
Glenn
Sutter
Sacramento Valley
Central Valley
Sierra Nevada Mtn
38°
San Francisco
Fresno
Kern
Kings
Merced
Tulare
Madera
San Joaquin Valley
Coastal
36°
Mojave Desert
High desert
Imperial
Riverside
San Bernardino
Los Angeles
Southern Desert Valley
San Diego
33°
CALIFORNIA REPUBLIC
Alfalfa production areas

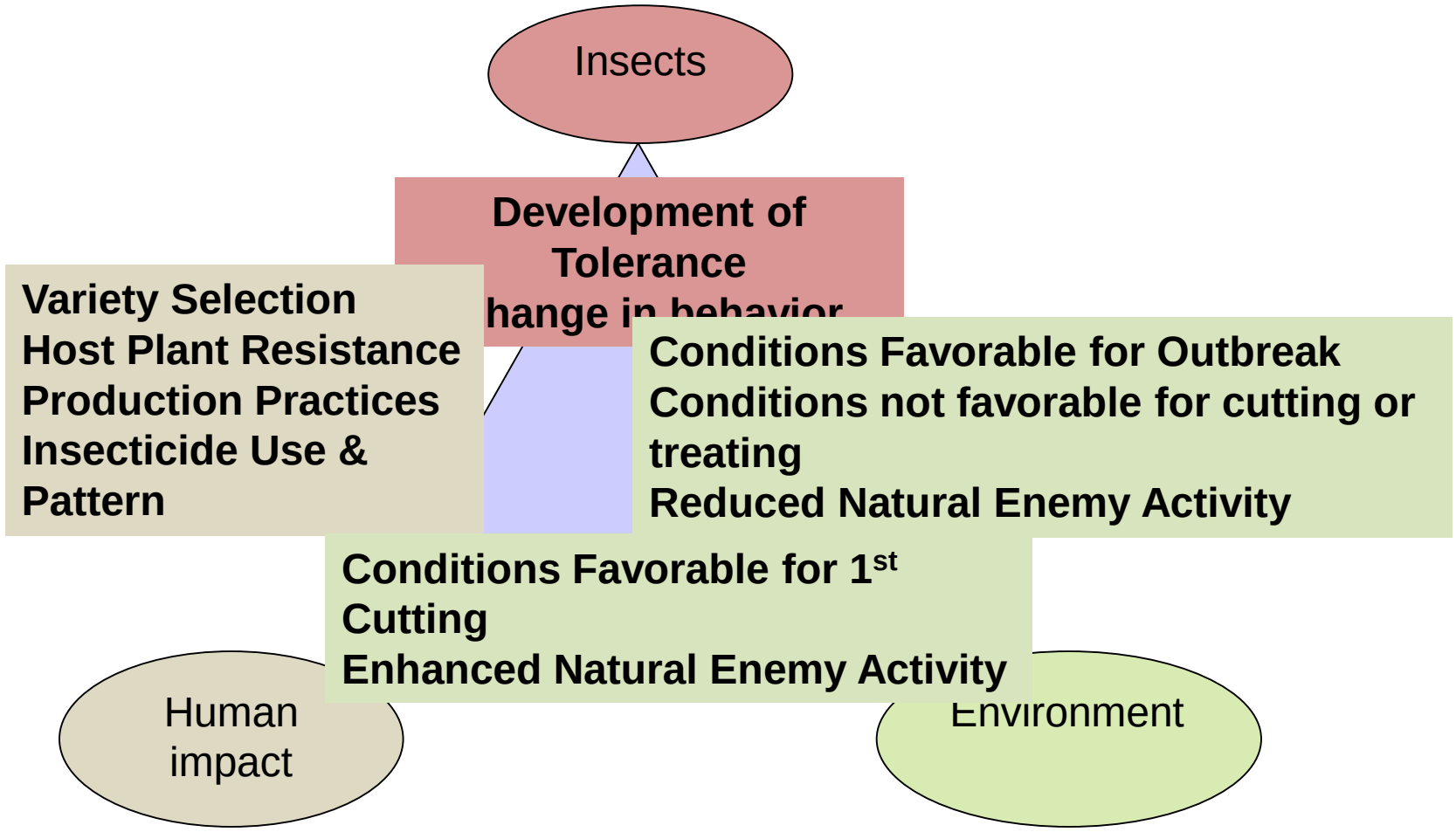
Seasonal occurrence of the major alfalfa pests in the Imperial Valley and the Central Valley of California.



Numerous occasional pests

Insects and Mites
Blister Beetles
Clover Root Curculio
Grasshoppers
Ground Mealybug
Mormon Cricket
Sharpshooters
Silverleaf Whitefly
Spider Mites
Threecornered Alfalfa Hopper
Thrips
Webworm

Outbreaks Are Complex Events



Integrated Pest Management

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UC IPM Online

STATEWIDE INTEGRATED PEST MANAGEMENT PROGRAM

Search

Announcing...

- Landscape pest ID cards now available.
- Kiosk schedule updated.
- Avocado, plum, and tomato guidelines updated.
- Grape guidelines updated.
- Demo grants funded projects for '08-09 published.

Solve your pest management problems with UC's best information, personalize it with interactive tools, or find out about pest management research and extension projects.

- About UC IPM
- 2008 Annual Report

What's new
In the news
Forms
Site index
Acknowledgments
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Related links
Western IPM Center
Western Plant Diagnostic Network
UC ANR: more topics

How to manage pests

Manage and identify insects, mites, diseases, nematodes, weeds, and vertebrates

- Homes, gardens, landscapes, and turf *(including Pest Notes)*
- Agriculture and floriculture *(Pest Management Guidelines)*
- Natural environments
- Exotic and invasive pests

Use tools to help make decisions

- Weather data and products
- Degree-days
- Interactive tools and models

Educational resources

- Publications and other materials
- Workshops and events
- Training programs
- Pesticide information

Research and IPM

- Grants programs
- Results of funded projects
- Research tools and databases: California pesticide use summaries

http://www.ipm.ucdavis.edu/

http://www.ipm.ucdavis.edu/PMG/selectnewpest.alfalfa-hay.html

UNIVERSITY OF CALIFORNIA AGRICULTURE & NATURAL RESOURCES

UC IPM Online

Statewide Integrated Pest Management Program

HOME

SEARCH

ON THIS SITE

- What is IPM?
- Home & landscape pests
- Agricultural pests
- Natural environment pests
- Exotic & invasive pests
- Weed gallery
- Natural enemies gallery
- Weather, models & degree-days
- Pesticide information
- Research
- Publications
- Events & workshops
- Online training
- Links

How to Manage Pests

All crops

Alfalfa

Year-Round IPM Program

Tells you what you should be doing throughout the year in an overall IPM program. Includes Year-Round IPM Program Annual Checklist. | **Forms and Photo ID Pages** |

Year-Round IPM Program for Alfalfa (11/06)

- Winter
- Spring
- Summer
- Fall

UC IPM Pest Management Guidelines

University of California's official guidelines for pest monitoring techniques, pesticides, and nonpesticide alternatives for managing pests in agriculture, floriculture, and commercial turf. More

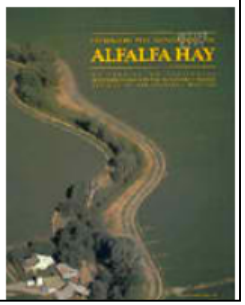
| **Authors & credits** | **All crops** | **Download PDF** | **Recent updates**

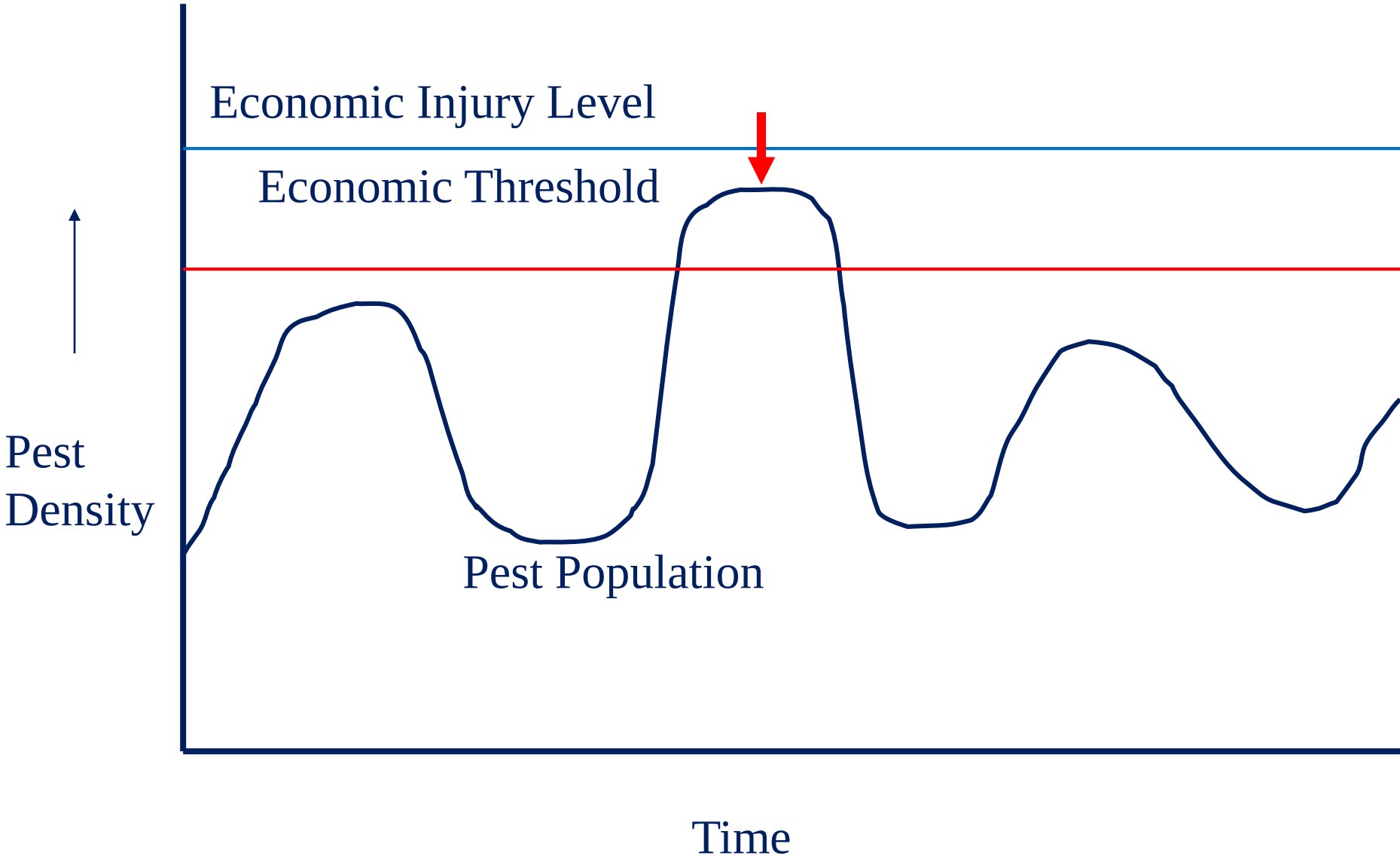
General Information

- Integrated Pest Management (11/06)
- Selecting the Field (11/06)
- Transgenic Herbicide-Tolerant Alfalfa (11/06)
- Biological Control (11/06)
- Sampling with a Sweep Net (11/06)
- Crop Rotation (11/06)
- Aphid Monitoring (9/07)

Insects and Mites

- Alfalfa Caterpillar (9/10)
- Beet Armyworm (9/10)
- Blister Beetles (11/06)
- Blue Alfalfa Aphid and Pea Aphid (4/08)
- Clover Root Curculio (11/06)
- Cowpea Aphid (4/08)




Economic Injury Level
Economic Threshold
Pest
Density
Pest Population
Time

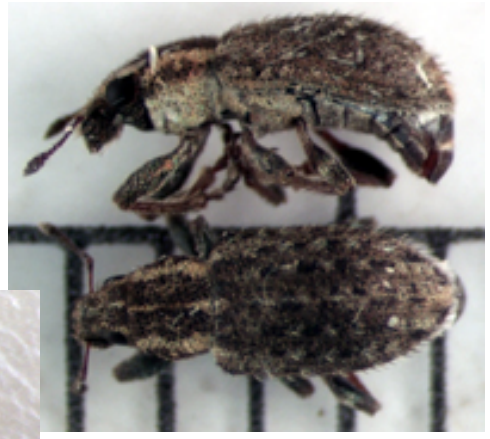
Ground Mealybug

- Below ground pest
  - Small - about 1/16" long
  - White powdery secretions
  - Difficult to assess
  - Difficult to treat

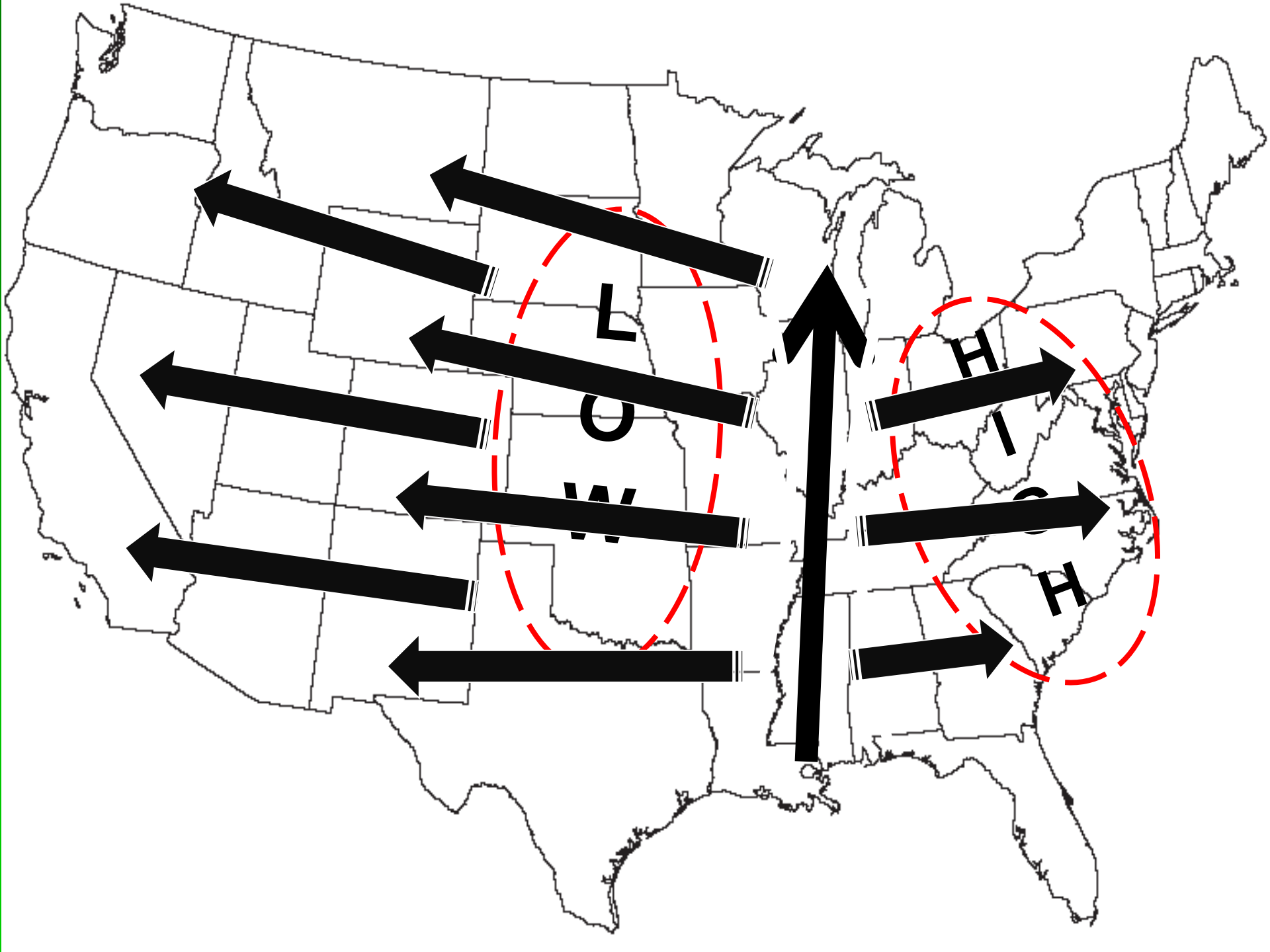
- Typically found in heavy clay soils
- Feeding interacts with stressful environmental conditions resulting in devitalization of plant growth
- Crop rotation appears to be only management option – wheat, beans, corn, sugarbeets

Clover Root Curculio

- Below ground pest
  - Small - about 1/32" long
  - White “grublike” larvae
  - Difficult to assess
  - Difficult to treat



- Typically found in sandy soils
- Feeding creates gouges in the tap root.
- Feeding interacts with stressful environmental conditions resulting in devitalization of plant growth
- Root damage is a pathway for fungal infections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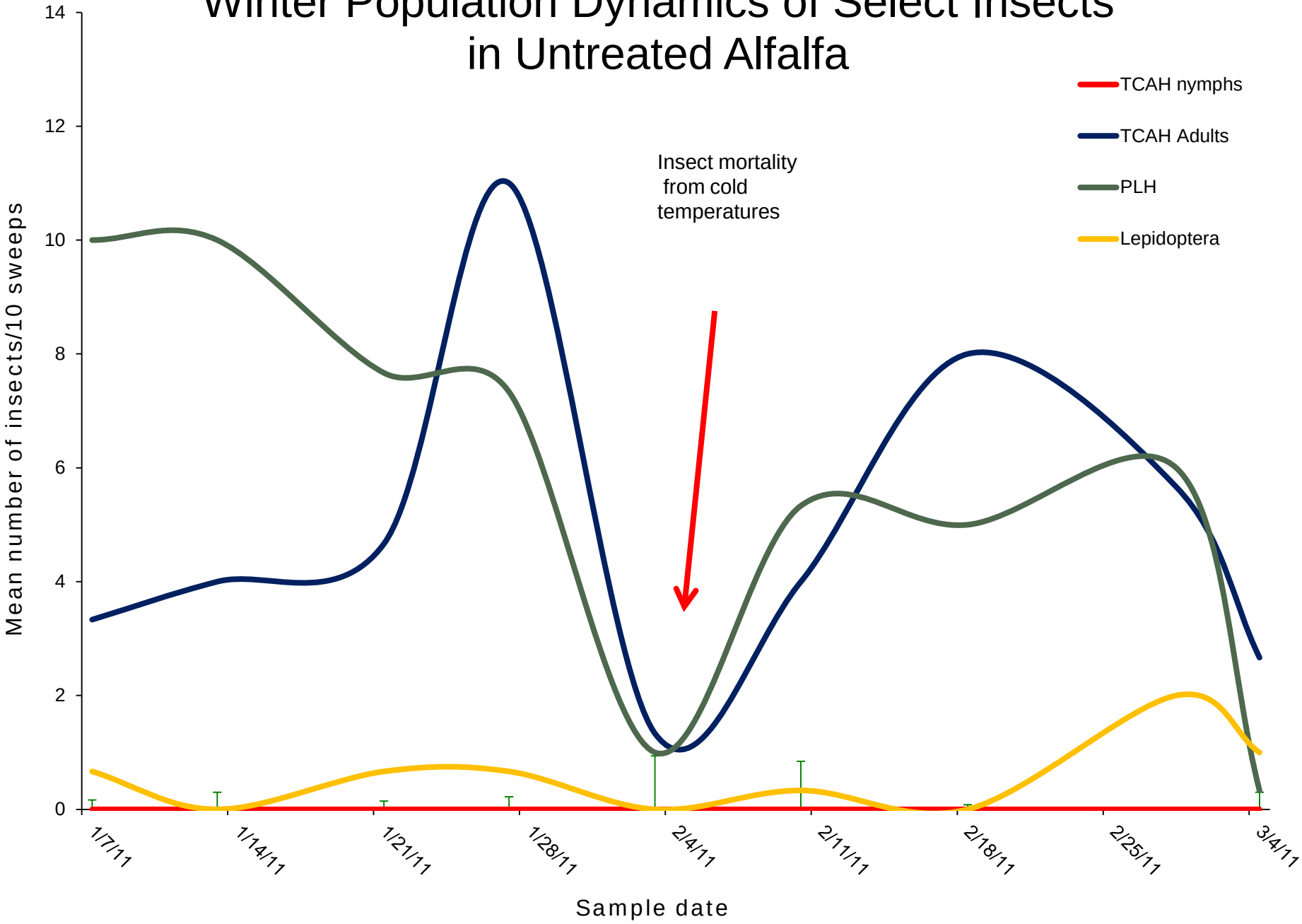
Winter Population Dynamics of Select Insects in Untreated Alfalfa



Potato Leafhopper Thresholds

	Alfalfa Height (inches)		
Provider	**3**	**6**	**>12**
Oklahoma	0.2	0.5	1
Iowa			
Wisconsin			
Missouri			
Kentucky			
Illinois			

	Hoppers/inch of plant height		
Provider	**3**	**6**	**12**
Ohio	3	6	12

Population Dynamics of the Potato Leafhopper in Spring Cyfluthrin Treated Alfalfa Stubble vs. Untreated Alfalfa

Mean number of insects/10 sweeps ± SEM

Control

Spring stubble treatment

45
40
35
30
25
20
15
10
5
0

5/17/10
5/24/10
5/31/10
6/7/10
6/14/10
6/21/10
6/28/10
7/5/10
7/12/10
7/19/10
7/26/10
8/2/10
8/9/10
8/16/10
8/23/10
8/30/10
9/6/10
9/13/10
9/20/10
9/27/10
10/4/10

Sample date

Threecornored alfalfa hopper

- Threecornered alfalfa hoppers can be found year-round.
- Wide host range that includes alfalfa, clovers, cowpeas, grasses, small grains (barley, oats, wheat), soybeans, sunflowers, tomatoes, vetch and weeds.
- There are two population peaks for adults: one in late July/early August and a larger second peak in September/early October.

Population Dynamics of the Three Cornered Alfalfa Hopper in Spring Cyfluthrin Treated Alfalfa Stubble vs. Untreated Alfalfa

Lepidoptera Population Dynamics in Spring Cyfluthrin Treated Alfalfa Stubble vs. Untreated Alfalfa

Control

Spring stubble treatment

Natural enemy suppression

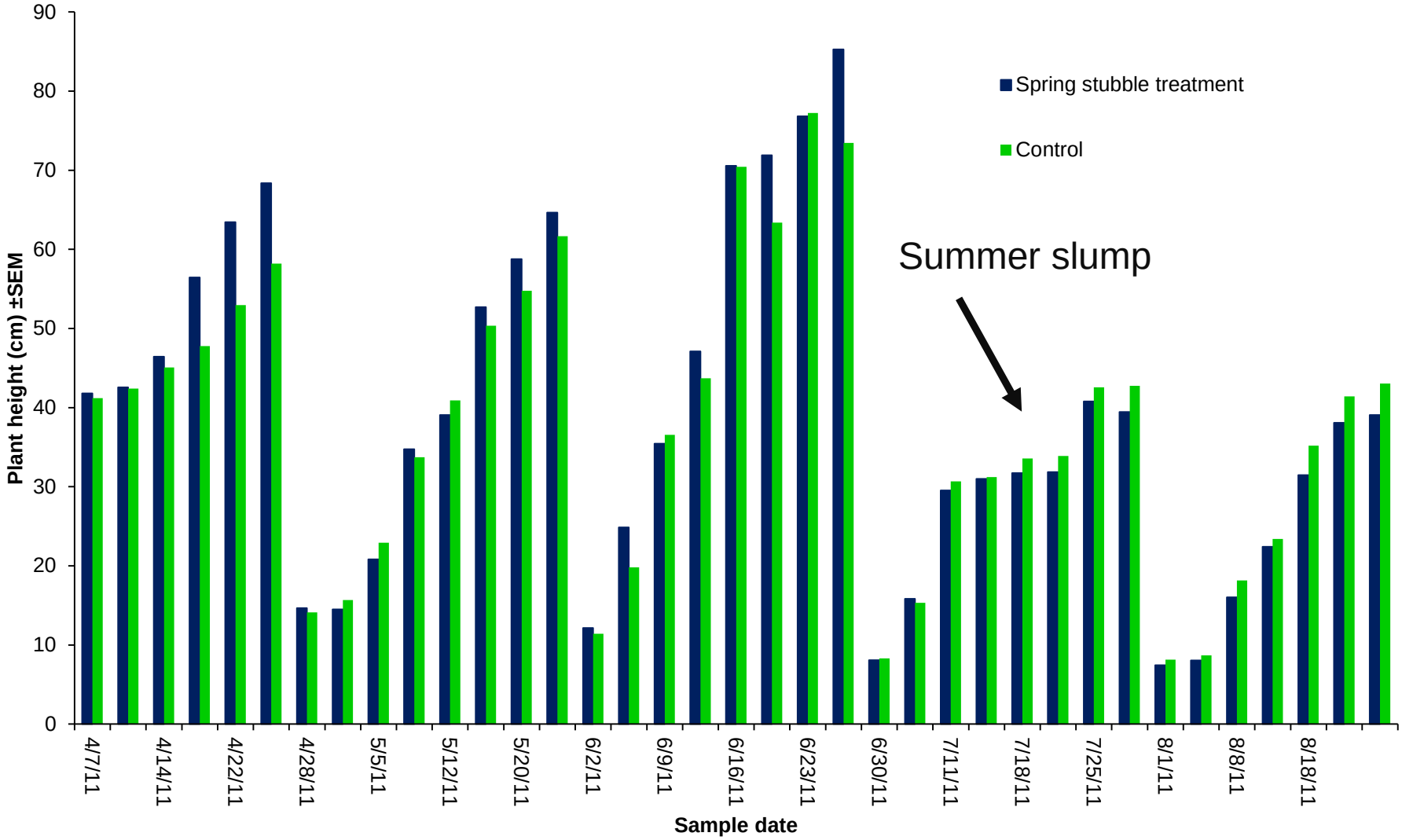
Mean number of insects/10 sweeps ±SEM

0 2 4 6 8 10 12

5/17/10 5/24/10 5/31/10 6/7/10 6/14/10 6/21/10 6/28/10 7/5/10 7/12/10 7/19/10 7/26/10 8/2/10 8/9/10 8/16/10 8/23/10 8/30/10 9/6/10 9/13/10 9/20/10 9/27/10 10/4/10

Sample date

Season Long Comparison of Alfalfa Plant Height in Spring Stubble Treated Alfalfa vs. Untreated Alfalfa



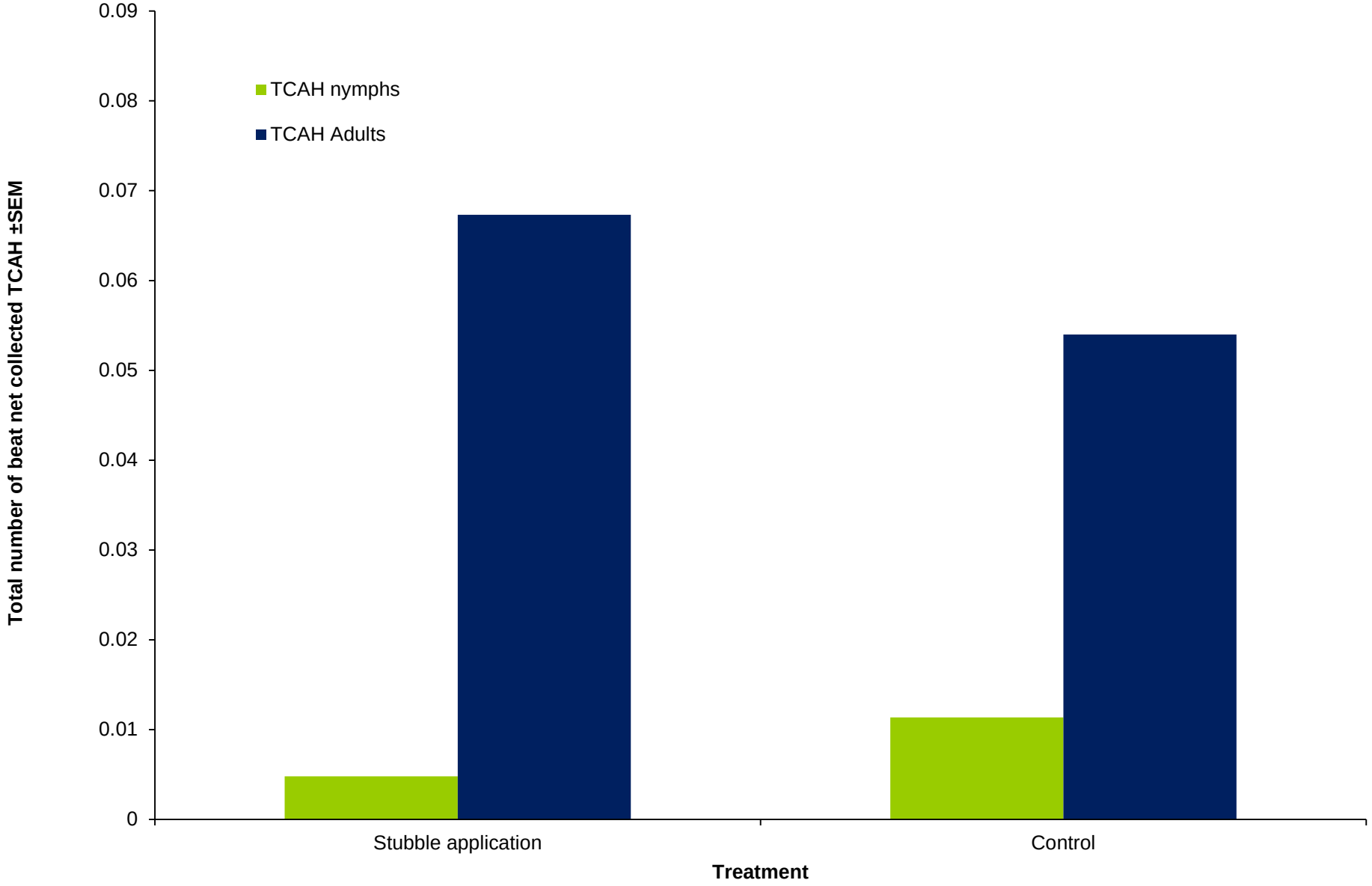
Source: NAFA 2016

SALTANA	Imperial Valley		HR	
Sun Quest	Croplan		MR	
SW 9215	S & W		R	
SW 9628	S & W		LR	
SW 9720	S & W		MR	
WL 656HQ	W-L Research		MR	
WL 662HQ.RR	W-L Research		MR	R
5015R	Nexgrow Alfalfa		R	MR
A-1086	Alforex Seeds		MR	R
AFX 1060	Alforex Seeds		LR	R
SW 10	S & W		MR	
WL 712	W-L Research		LR	MR

Phytophthora Root Rot	Aphanomyces Race 1 Root Rot	Aphanomyces Race 2 Root Rot	Spotted Alfalfa Aphid	Pea Aphid	Blue Alfalfa Aphid	Potato Leafhopper	Stem Nematode	Southern Root Knot Nematode	Northern Root Knot Nematode	Multifoliolate Expression (H-High/M-Mod/L-Low)	Continuous Grazing Tolerance (Y-Yes)	Standability Expression (R-Resistance)	Salt Tolerance (G-Germination/F-Forage)	R-RRA; H-75-95% Hybrid
HR			HR	HR	R		R	R	HR					
HR			HR	R			HR	R	HR					
R			HR	HR	HR		R							

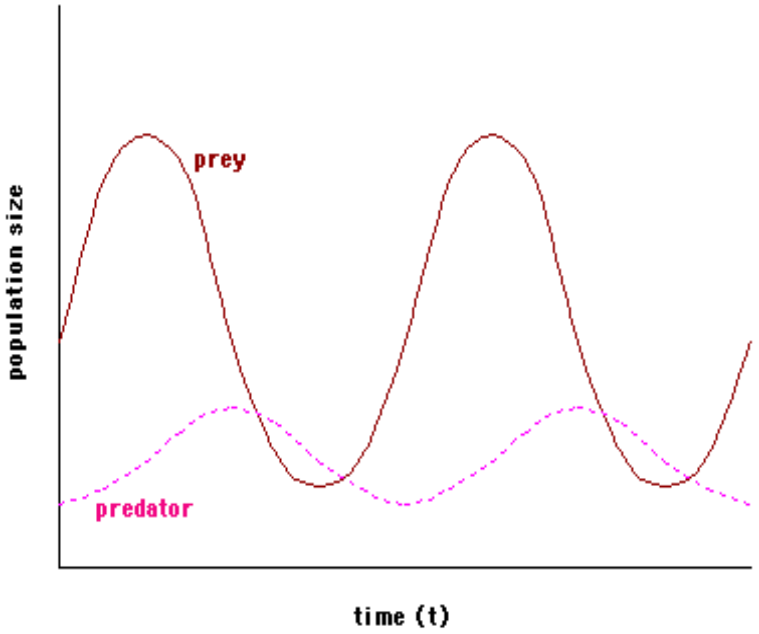
versus

Beat Net Collections of Three Cornered Alfalfa Hopper Collected from Cyfluthrin Treated Alfalfa Stubble vs. Untreated Alfalfa



Natural Enemies

- Use of insecticides
  - Destruction of natural enemies
  - Treatment costs
  - Environmental consequences
  - Insecticide resistance



- Early harvest of the field
- Treat at economic threshold
- Early in the season natural enemy populations are at their lowest

Epizootic Outbreak

- Natural enemy
  - Pathogen
  - Egyptian alfalfa weevil
  - Needs to be included in pest assessment
- Unpredictable
- When conditions are favorable
- Can impact populations significantly to the point of creating local “extinction”

Thanks for your attention