

# Insect Pest Management in Alfalfa Production

Rachael Long, UC Cooperative Extension Farm Advisor Yolo Co., CA



# Alfalfa IPM

## **Major pests**

- Weevils (Egyptian and alfalfa)
- Summer worms
- Aphids

## **Occasional pests**

- Cutworms
- Leafhoppers
- Threecornered alfalfa hopper
- Ground mealybugs
- Clover root curculio
- Spider mites

## Prevention: Keep pests out of field

- Crop rotation
- Prepare a good, level seed bed
- Plant early in the fall
- Maintain good plant health
- Clean equipment between fields (stem nematode control)



- Use certified seed
- Select pest and disease resistant varieties



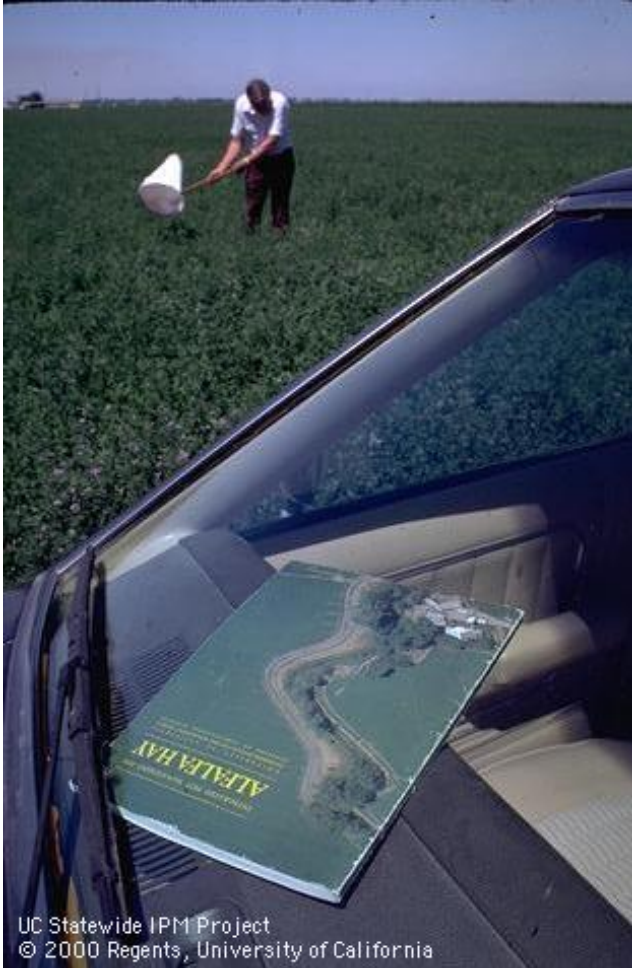
National Alfalfa and Forage Alliance, NAFA <http://www.alfalfa.org>


UC Davis alfalfa website: <http://alfalfa.ucdavis.edu>

Contact for Marketing Information	= Fall Dormancy	= Winter Survival	= Bacterial Wilt	= Verticillium Wilt	= Fusarium Wilt	= Anthracnose Race 1	= 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-Med., L-Low)	= Continuous Grazing Tolerance (Y-Yes)	= Standability Expression (R-Resistance)
Croplan	3	1	HR	HR	HR	HR	HR	HR		R	HR			MR			H		
Alforex Seeds	3	2	HR	HR	HR	HR	HR	HR	MR		HR			MR				Y	
W-L Research	3	1	HR	HR	HR	HR	HR	HR		R	HR			MR			H		
Pioneer	4	2	HR	HR	HR	HR	HR	HR		HR	R			R			H		
Farm Science	4	1	HR	HR	HR	HR	HR	HR			HR			MR			H		

# Monitor and record pest and beneficial insects for economic threshold levels

UC IPM Guidelines, Alfalfa Hay, 2017, <http://ipm.ucdavis.edu>





www.ipm.ucdavis.edu

## Weevil Monitoring

### Supplement to UC IPM Pest Management Guidelines: Alfalfa

Grower \_\_\_\_\_ Date of survey \_\_\_\_\_

Field location \_\_\_\_\_ Comments \_\_\_\_\_

Monitor fields with a sweep net weekly when weevil larvae begin to appear. As threshold populations are approached, monitor every 2 to 4 days to see if population crashes due to natural enemies, or until a treatment decision is made.

1. Divide each field into 4 or more areas.
2. Take 5 sweeps per section.
3. Stop and count the number of alfalfa larvae per sweep; divide this number by 5 to get the average.
4. Base population estimates on the average of all sweeps in the field.
5. Consider early harvest or treatment if the average sweep count is 20 larvae per sweep.

Sweeping does not provide reliable populations estimates on young plants or on stubble immediately following a cutting—so look for damage; if 20 to 25% of the terminals show damage, treatment should be considered.

	Date: _____	Date: _____	Date: _____	Date: _____
Area	Number of larvae	Number of larvae	Number of larvae	Number of larvae
1				
2				
3				
4				
<b>Total larvae:</b>				
<b>Average number of larvae=Total number of larvae / total sweeps</b>				
<b>Threshold: Harvest early or treat if average is greater than or equal to 20 larvae.</b>				

**Control:** Use least toxic pesticides that minimize impacts to beneficial insects

- Biopesticides  
Microbial insecticides for summer worms (less toxic, affect target pest, fast breakdown)  
Grandevo & Venerate (microbials, no efficacy on weevils)
- Plant Incorporated Protectants  
Increased tannins for weevil resistance and better feed value (less bloat).



# Major Pests:

## Weevils (Egyptian and Alfalfa)

- Yield and quality loss, 1<sup>st</sup> and sometimes 2<sup>nd</sup> cutting
- 1 generation/year (sometimes 2)
- Adults leave field for summer, re-infest in fall (lay eggs in old stems)
- Threshold: 20 larvae per sweep



## Biocontrol:

- No effective insect natural enemies for Egyptian alfalfa weevil (0 - 5% parasitism in fields in 2017)
- Soil dwelling fungus, *Zoophthora*, sp.





- Grazing or sheeping-off during winter can reduce weevils

- Overseed clovers or grasses (changes forage quality; know markets).



- Insecticides: 4 MOA's for weevils in alfalfa
  - OP's: chlorpyrifos- Lorsban, Malathion
  - Pyrethroids: Mustang, Warrior, Baythroid
  - Steward
  - Entrust (organic, suppression only, 70%)
- Pyrethroid resistance, intermountain area; no efficacy with Malathion
- Experimental products (unregistered): Endigo, Belay, Besiege



# Armyworm and alfalfa caterpillars

- Summer pests. Early harvest. Yield may be reduced.
- Biocontrol: Parasitic wasps (monitor to watch level of control\*)
- Threshold: 10 worms/sweep
- Insecticides: Coragen, Intrepid, Steward, Bt's (XenTari, Agree)



\*1 parasitized worm/10, may not need to spray

# Aphids

Pea and blue alfalfa aphid  
Spring, Fall



Spotted alfalfa aphid  
Summer



Cowpea aphid  
Anytime



# Aphids

- Resistant varieties: Blue, pea, and spotted (not cowpea).
- Monitor pests and beneficial insects for thresholds.
- Early harvest (may impact yield)
- Insecticides: Sivanto, Beleaf\* (\*62 day PHI)



chlorpyrifos, dimethoate, warrior

## Occasional pests:

### Cutworms

- Control weeds around farm where cutworms may build up.
- Monitor for pest under plant debris and loose soil, particularly in seedling stands.
- Insecticides: Steward, Bait (Stiletto-permethrin)



## Leafhoppers-*Empoasca*

- Damage: Yellow leaf tip. Inject toxin when feeding that will stunt plants.
- Summer pest
- Infest fields from edges (if detect early, possibly only spray field margin).
- Threshold 5/sweep
- Sivanto, OP's, pyrethroids



# Threecornered alfalfa hopper

- Adults girdle stems when feeding and laying eggs
- Yellowing of foliage
- Threshold: >3/sweep, no toxins
- Sivanto, OP's, pyrethroids



UC Statewide IPM Project  
© 2000 Regents, University of California





# Ground mealybug

- Insects feed on roots
- Primarily in the Sac Valley on heavier soils
- Management: Crop rotation (wheat, corn, and dry beans)



# Clover root curculio

- Weevil pests feed on alfalfa roots causing stand losses.
- Seldom of concern in California. Found in lighter soils.
- Crop rotation (specific to alfalfa).



## Spider mites

- Damage: yellowing of leaves, webbing.
- Control: Watch water, mites favored by water stress.

Miticide: Onager controls eggs and immature mites and sterilizes females



Rachael Long, UCCE Yolo County  
[rflong@ucanr.edu](mailto:rflong@ucanr.edu), 530-681-7661  
<http://ceyolo.ucanr.edu>

