Imperial County Agricultural Briefs

Features From your Farm Advisors

February, 2011

Table of Contents

ALFALFA WEEVIL AND APHIDS INSECTICIDE EFFICACY IN ALFALFA, 2010.

Eric T. Natwick

A field study was conducted during the spring of 2010 at the UC Desert Research and Extension Center. A stand of alfalfa, VAR. CUF 101, was used for the experiment. Plots were arranged in a randomized complete block design with four replications. Six insecticide treatments were included along with an untreated control. Insecticide treatments and rates are listed in Table 1. Stallion is an in-the-can mixture of Zeta-cypermethrin and chlorpyrifos under development by FMC Corporation Agricultural Products Group. Stallion SC was not registered for use at the time of publication, so it can not be used on alfalfa. Plots measured 33.3 ft. by 50 ft. and insecticide treatments were applied on 24 February 2010, using a broadcast application with a tractor mounted boom. Egyptian alfalfa weevil larvae (EAW) and aphid populations {blue alfalfa aphid (BAA) and pea aphid (PA)} were measured in each plot with a standard 15-inch diameter insect net consisting of ten, 180^{o} sweeps. Plots were sampled on 24 February prior to treatment (PT) and on 1, 3, 10 and 17 March or 5- days after treatment (DAT), 7-DAT, 14-DAT, 21-DAT, respectively.

There were no differences (*P* = 0.05) among the treatment means for EAW larvae prior to insecticide applications (Table 1). All insecticide treatments had significantly fewer EAW larvae than the untreated check on 5-DAT, 7-DAT, 14-DAT and 21-DAT. All insecticide treatments had fewer EAW larvae than Lorsban 4E on 5-DAT, 7-DAT and 21-DAT

There were no significant differences among the insecticide treatments and the untreated check for BAA or PA in the pre-treatment sampled (*P* = 0.05), Tables 2 and 3. All of the insecticide had significantly fewer BAA compared to the untreated check 5-DAT, 7-DAT, 14-DAT and 21-DAT, with the exception of the Avaunt + Dimethoate 267 on 14-DAT.

There were few PA present during this study so no differences were detected among the treatment means for PA 5-DAT, 7-DAT, 14-DAT and 21-DAT, but all insecticide treatments had post treatment averages for PA that were significantly lower (*P* = 0.05) than the PA post treatment average for the untreated check (Table 3).

Table 1. Egyptian Alfalfa Weevil Larvae per Ten Sweeps, Holtville, CA, 2010.

Treatment	oz/acre	PT[w]	5 DAT[xv]	7 DAT[v]	14 DAT[v]	21 DAT[v]	PTA[vz]
Check	--------	152.00	93.75 a	33.00 a	12.25 a	19.25 a	39.56 a
Lorsban 4E	32.0	222.00	42.75 b	7.50 b	1.75 b	5.75 b	14.44 b
Mustang EW	4.3	205.50	0.50 d	0.50 cd	0.50 bc	0.50 c	0.50 d
Stallion SC	9.25	229.25	2.50 c	1.75 c	0.25 bc	1.50 c	1.50 c
Stallion SC	11.75	156.25	0.50 d	0.00 d	0.00 c	0.75 c	0.31 d
Avaunt + Dimethoate 267	10.0 + 16.0	121.00	1.25 cd	0.00 d	0.00 c	1.50 c	0.69 cd
Warrior II	1.5	198.25	0.75 d	1.25 cd	0.00 c	0.75 c	0.69 cd

Means within columns followed by the same letter are not significantly different, LSD; *P*= 0.05.
[v] Log transformed data used for analysis, ACTUAL MEANS REPORTED.
[w] Pre-treatment on 24 Feb.
[x] Days after treatment.
[z] Post treatment average.

Table 2. Blue Alfalfa Aphids per Ten Sweeps, Holtville, CA, 2010.

Treatment	oz/acre	PT[w]	5 DAT[xv]	7 DAT[v]	14 DAT[v]	21 DAT	PTA[vz]
Check	--------	67.00	125.25 a	36.00 a	6.00 a	106.50 a	68.44 a
Lorsban 4E	32.0	70.00	12.50 b	5.75 b	0.50 c	27.25 b	11.50 b
Mustang EW	4.3	80.25	8.00 b	3.25 b	0.75 c	27.25 b	9.81 bc
Stallion SC	9.25	97.75	10.75 b	6.25 b	0.50 c	19.25 b	9.19 bc
Stallion SC	11.75	81.50	5.25 b	4.25 b	0.00 c	26.75 b	9.06 bc
Avaunt + Dimethoate 267	10.0 + 16.0	115.00	9.75 b	4.00 b	4.00 ab	23.50 b	10.31 bc
Warrior II	1.5	67.00	5.75 b	2.75 b	1.25 bc	15.25 b	6.25 c

Means within columns followed by the same letter are not significantly different, LSD; *P*= 0.05.
[v] Log transformed data used for analysis, ACTUAL MEANS REPORTED.
[w] Pre-treatment on 24 Feb.
[x] Days after treatment.
[z] Post treatment average.

Table 3. Mean Numbers[v] of Pea Aphid per Ten Sweeps, Holtville, CA, 2010.

Treatment	oz/acre	PT[w]	5 DAT[x]	7 DAT	14 DAT	21 DAT	PTA[vz]
Check	--------	3.00	7.75	6.00	1.25	11.25	6.56 a
Lorsban 4E	32.0	8.00	1.00	0.75	0.75	7.50	2.50 bc
Mustang EW	4.3	1.75	0.00	0.00	0.75	0.50	0.31 d
Stallion SC	9.25	8.25	0.00	1.50	1.25	1.00	0.94 cd
Stallion SC	11.75	2.25	0.00	0.75	0.75	4.25	1.44 bcd
Avaunt + Dimethoate 267	10.0 + 16.0	6.75	1.50	2.25	1.25	5.50	2.63 ab
Warrior II	1.5	7.50	0.25	0.25	0.25	4.75	1.34 bcd

Means within columns followed by the same letter are not significantly different, LSD; *P*= 0.05.
[v] Log transformed data used for analysis, ACTUAL MEANS REPORTED.
[w] Pre-treatment on 24 Feb.
[x] Days after treatment.
[z] Post treatment average.

Brown Bud of Broccoli

Donna Henderson and
Vonny Barlow (Riverside County)

Recently farm advisors in Blythe (Riverside Co.) and Imperial County have been contacted with questions and comments about damage seen in broccoli heads. Broccoli heads have been found with brown areas at the center of the heads (eventually, the necrotic areas can be enveloped as the shoots around the sides grow and develop). This browning in the center of broccoli heads is attributed to temperature swings from warm to frost events back to warm weather that we have been recently experienced in our counties. The cause of the browning symptoms is attributed to a physiological response of the plant to the weather changes and is referred to as "Brown bud". The uniformity of the brown areas at the center of each of the heads suggests that this damage is environmental and not pathological. In samples collected from broccoli heads in Imperial County, there was a lack of evidence for pathogens from media isolations performed in the laboratory.

Brown bud damage looks different than the two types of head rot diseases that affect broccoli in California. For bacterial head rot (see below), initial symptoms on the immature broccoli heads consist of a water-soaked or greasy discoloration of the surfaces of small groups of the unopened flowers. Later, the affected portions of the head turn brown to black and the infection spreads and affects larger parts of the head. The tissue becomes soft and gives off a very bad odor. For bacterial head rot there will not be any fungal growth unless secondary molds colonize and cause further decay. The second type of head rot is Alternaria head rot (see below). For this fungal problem, early symptoms consist of a water-soaked discoloration that later turns dark brown to black. Tissues infected with *Alternaria* are usually not as soft and smelly as heads infected with the bacterial pathogens. *Alternaria* readily produces dark green spores on the diseased head tissue. Secondary molds and bacteria cause further decay. In comparing the photos below, make sure to notice the consistent central location of the initial Brown bud symptoms in every broccoli head sample. The broccoli heads with pathogen infections will show symptoms randomly on the broccoli head.

Brown bud of Broccoli (Imperial County)

Brown bud of Broccoli (Imperial County)

Bacterial head rot of broccoli

Alternaria head rot of broccoli

ESTIMATING SOIL MOISTURE LEVEL BY THE FEEL METHOD

Khaled M. Bali

Determining soil moisture content is the most important step in irrigation scheduling. There are several methods for estimating soil moisture content. These methods vary widely in their accuracy. The simplest and the oldest is the "feel method". The only equipment needed for this method is a soil auger or shovel. The accuracy of this method depends mainly on the experience of the person who is evaluating the soil moisture level.

Soil scientists have developed standard techniques to determine the percent of available water based on the feel method. The table below classifies soil water levels into six categories ranging from above field capacity to permanent wilting point. The field capacity is the upper limit of soil water holding capacity. The permanent wilting point is the lower limit of soil water content below which plants cannot extract water and become permanently damaged. The available water is the amount of water held between the two limits. As a rule of thumb, field capacity is the amount of water in the soil profile 3 to 5 days after an irrigation event. Both field capacity and permanent wilting point depend on several factors such as soil type, crop type, and growth stage. Therefore, the percent of available water varies widely during the season.

Guide for estimating soil moisture available for plant use

Dominant Texture	**Fine Sand and Loamy Fine Sand**	**Sandy Loam and Fine Sandy Loam**	**Sandy Clay Loam and Loam**	**Clay, Clay Loam, or Silty Clay Loam**
Available Water Capacity (inches/foot)	**0.6-1.2**	**1.3-1.7**	**1.5-2.1**	**1.6-2.4**
Available Soil Moisture (%field Capacity) 0-25	Appears dry, will hold together if not disturbed, loose sand grains on fingers	Appears dry, form a very weak ball, aggregated soil grains break away easily from ball	Appears dry, soil aggregations break away easily, no moist soil stains on fingers, clods crumble with applied pressure	Appears dry, soil aggregations separate easily, clods are hard to crumble with applied pressure
25-50	Slightly moist, forms a very weak ball with well-defined fingers marks, light coating of loose and aggregated sand grains remain on fingers	Slightly moist, forms a weak ball with defined finger marks, darkened color, no water staining on fingers	Slightly moist, forms a weak ball with rough surfaces, no water staining on fingers, few aggregated soil grains break away	Slightly moist, forms a weak ball, very few soil aggregations break away, no water stains, clods flatten with applied pressure
50-75	Moist, forms a weak ball with loose and aggregated sand grains on fingers, darkened color, light uneven water staining on fingers	Moist, forms a ball with defined finger marks, very light soil/water staining on fingers, darkened color, will not slick	Moist, forms a ball, very light water staining on fingers, darkened color, pliable, forms a weak ribbon	Moist, forms a smooth ball with defined finger marks, light soil/water staining on fingers, ribbons between thumb and forefinger
75-100	Wet, forms a weak ball, loose and aggregated sand grains remain on fingers, darkened color, heavy water staining on fingers, will not ribbon	Wet, forms a ball with wet outline left on hand, light to medium water staining on fingers, makes a weak ribbon	Wet, forms a ball with well-defined finger marks, light to heavy soil/water coating on fingers, ribbons between thumb and forefinger	Wet, forms a ball, uneven medium to heavy soil/water coating on finger, forms ribbons easily
100 (At field crop)	Wet, forms a weak ball, light to heavy soil/water coating on fingers, wet outline of soft ball remains on hand	Wet, forms a soft ball, free water appears briefly on soil surface after squeezing or shaking, medium to heavy soil/water coating on fingers	Wet, forms a soft ball, free water appears briefly on soil surface after squeezing or shaking, thick soil/water coating on finger	Wet, forms a soft ball, free water appears on soil after squeezing or shaking, thick soil/water coating on fingers, slick and sticky

Source: Adapted from USDA-NRCS- Estimating soil moisture by feel and appearance

Southern California Organic Production Conference

Thursday - March 3, 2011
San Marcos Civic Center
San Marcos, CA

7:00- 7:50	***Registration (Coffee and Pastries)***
7:50-8:00	***Welcome/ Housekeeping***
8:00-8:30	***The Present and Future of California (Organic) Agriculture*** A.G. Kawamura, Farmer and Former California Secretary of Agriculture
8:30 - 9:15	***The California & National (USDA) Organic Programs - Rules and Regulations*** Steve Patton – California Department of Food and Agriculture
9:15 - 10:00	***Post Harvest Management & Food – The Law & Best Management Practices*** Dr. Marita Cantwell, Ph. D., Post Harvest Management Specialist – UC Davis
10:00 - 10:30	***Break – Vendor booth presentations***
10:30 - 11:00	***Exotic Pest & Quarantines: Issues & Challenges for Organic Growers*** Jim Wynn, San Diego County Agricultural Commissioner
11:00 - 11:30	***Soil and Tissue Testing –Understand the Results, Maximize the Benefits*** Michael Larkin, Precision Agri Lab
11:30 - 12:00	***Nitrogen and Fertilizer Management for Organic Production Systems*** Dr. Milt McGiffen, Ph.D., Vegetable Crops Specialist - UC Riverside
12:00 - 1:30	**Lunch- Vendor booth presentations (Lunch included with paid Registration)**
1:30 - 2:00	***What's Moving Down There? Understanding Soil Microbiology*** Dr. Robert Ames, Ph.D., Advanced Microbial Solutions
2:00 - 2:30	***Weed Management Strategies for Organic Production Systems*** Dr. Cheryl Wilen, Ph.D.; IPM/Weed Management Advisor, UCCE San Diego
2:30 - 3:00	***Insect Management Strategies for Organic Production Systems*** Jim Bethke, Farm Advisor – UCCE San Diego County
3:00 - 3:30	**Break – Vendor booth presentations**
3:30 - 4:00	***Disease Management Strategies for Organic Production Systems*** Dr. Donna Henderson, Ph.D., Vegetable Crops Farm Advisor – UUCE Imperial
4:00 - 4:30	***Insect and Disease Management Strategies for Organic Orchard Crops*** Dr. Gary Bender, Ph.D., Avocado & Citrus Farm Advisor – UCCE San Diego
4:30-5:00	***Vendor booth presentations/ADJOURN!***

CIMIS REPORT AND UC DROUGHT

MANAGEMENT PUBLICATIONS

Khaled Bali and Steve Burch*

California Irrigation Management Information System (CIMIS) is a statewide network operated by California Department of Water Resources. Estimates of the daily reference evapotranspiration (ET_o) for the period of February 1 to April 30 for three locations in the Imperial County are presented in Table 1. ET of a particular crop can be estimated by multiplying ET_o by crop coefficients. For more information about ET and crop coefficients, contact the UC Imperial County Cooperative Extension Office (352-9474) or the IID, Ag. Water Science Unit (339-9082). Please feel free to call us if you need additional weather information, or check the latest weather data on the worldwide web (visit http://tmdl.ucdavis.edu and click on the CIMIS link).

Table 1. Estimates of daily Evapotranspiration (ET_o) in inches per day

Station	February		March		April	
	1-15	16-29	1-15	15-31	1-15	16-30
Calipatria	0.12	0.14	0.18	0.22	0.26	0.29
El Centro (Seeley)	0.12	0.14	0.16	0.20	0.24	0.28
Holtville (Meloland)	0.12	0.14	0.17	0.21	0.25	0.28

* Ag. Water Science Unit, Imperial Irrigation District.

Link to UC Drought Management Publications

http://ucmanagedrought.ucdavis.edu/