Imperial County Agricultural Briefs

Features From your Farm Advisors

UC Cooperative Extension | University *of* California
Agriculture and Natural Resources

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INSECTICIDE EFFICACY AGAINST APHIDS IN CAULIFLOWER, 2013

Eric T. Natwick, UCCE Imperial County
Martin I. Lopez, UCCE Imperial County

The objective of the study was to evaluate the efficacy of insecticides for control of aphids on cauliflower under desert growing conditions. Cauliflower (Symphony) plants were transplanted into double row beds on 40 inch centers 1 Nov 2012 at the University of California Desert Research and Extension Center, El Centro, CA. Stand establishment was achieved using overhead sprinkler irrigation; and furrow irrigation was utilized thereafter. Plots were four beds 13.3 ft wide by 40 ft long and bordered by one untreated bed. Included were four foliar insecticide spray treatments and an untreated check in a RCB design experiments with five replicates. A surfactant, Dyne-Amic (Helena Chemical Co., Collierville, TN) was added to each insecticide spray mixture at 0.25% vol/vol prior to each insecticide application. Insecticidal compounds, formulations and application rates are provided in the tables. Insecticide treatments were applied on 6 Feb 2013. Foliar sprays were applied using a Lee Spider Spray Trac tractor with a spray boom that included three TJ-60 11003VS nozzles per bed, covering four beds (twelve nozzles on the boom) applying 53 gpa at 30 psi. Alate aphids (winged adults) and apterous aphids (wingless adults and nymphs) were counted on ten random plants in each plot on each sampling date listed in the tables. There were two aphid species present; mostly green peach aphid *Myzus persicae* (GPA) and a few cabbage aphid *Brevicoryne brassicae* (CA) colonies. The aphid count data for the two aphid species were not separated, but pooled for statistical analysis. Data were analyzed using ANOVA. Differences among means on each sampling date were determined using Least Significant Difference Test ($P \leq 0.05$).

There were no differences among the treatments for alate aphids on any of the sampling dates, but the alate aphid post treatment averages for each of the insecticide treatments were significantly lower than the alate aphid post treatment average for the untreated check (Table 1). There were no differences among the treatment means for apterous aphids for the pre-treatment sample on 6 Feb or for the 5DAA (days after application) sample on 11 Feb (Table 2). All insecticides treatments except Sivanto had fewer apterous aphids compared to the untreated check 8DAA on 14 Feb. All insecticide treatments had significantly fewer apterous aphids than the untreated check 14DAA on 20 Feb and for the post treatment averages.

Table 1.

Treatment/formulation	Rate amt fl oz/acre	PT 6 Feb	5 DAA 11 Feb	8 DAA 14 Feb	14 DAA 20 Feb	PTA
		Alate aphids per plant				
Closer SC	1.5	46.80 a	13.00 a	6.60 a	5.40 a	8.33 b
Closer SC	2.0	12.60 a	10.20 a	14.80 a	2.80 a	9.27 b
Sivanto 200 SL	10.5	87.60 a	16.60 a	7.20 a	4.80 a	9.53 b
Movento 2SC	5.00	21.80 a	11.00 a	12.00 a	3.40 a	8.80 b
Untreated Check	-------	19.40 a	26.60 a	26.20 a	4.60 a	19.13 a

PT = pretreatment; DAA = Days after application; PTA is the post treatment average.

Means within columns followed by the same letter are not significantly different; LSD, P>0.05.

Table 2.

Treatment/formulation	Rate amt fl oz/acre	PT 6 Feb	5 DAA 11 Feb	8 DAA 14 Feb^z	14 DAA 20 Feb	PTA
		Apterous aphids per plant ^{z}				
Closer SC	1.5	7.60 a	20.40 a	17.20 bc	16.40 b	18.00 b
Closer SC	2.0	52.80 a	70.20 a	11.80 bc	10.00 b	30.67 b
Sivanto 200 SL	10.5	12.80 a	33.40 a	38.20 ab	16.80 b	29.47 b
Movento 2SC	5.00	10.80 a	14.40 a	5.60 c	9.00 b	9.67 b
Untreated Check	-------	23.40 a	68.60 a	76.60 a	59.80 a	68.33 a

PT = pretreatment; DAA = Days after application; PTA is the post treatment average.

Means within columns followed by the same letter are not significantly different; LSD, P>0.05.

^{z} Log_{10} (X+1) transformed data used for analysis but actual means shown.

TOLERANCE OF VEGETABLE CROPS TO SALINITY

Khaled M. Bali, UCCE Imperial County

The word salinity refers to the presence of salts in waters and soils. It refers to more than just sodium or chloride, the two elements of table salt. Magnesium, calcium, carbonate, bicarbonate, nitrate, and sulfate can all contribute to salinity. The suitability of water for drinking, irrigation or wildlife depends on the type and concentration of dissolved salts in water.

The salinity of water is usually expressed in terms of a measured parameter that is affected by all the dissolved salts in water. Electrical conductivity (EC) is the parameter that is most currently used to express salinity. Total dissolved salts (TDS) expressed as the mass of dissolved salts per unit volume of water is also used to express the salinity of water.

The primary source of salts in waters and soils is chemical weathering of earth materials (rocks and soils). Natural secondary sources of salts along coastal areas include atmospheric deposits of oceanic salts and seawater intrusion into groundwater basins and into estuaries. Atmospheric salt deposition also occurs in the interior of continents. The deposition rate decreases with distance from the ocean. Other secondary sources of salts found in soils are saline water from rising ground waters, inland saline lakes and leaching of saline lands. Soil or water salinity is commonly expressed in dS/m (1 dS/m is equivalent to 1 mmhos/cm or approximately 640 ppm).

In the Imperial Valley, the salinity of irrigation water is relatively high at about 750-800 ppm (approximately 1.2 dS/m). While most field crops are moderately tolerant to salinity, vegetable crops are mostly sensitive to salinity. Salts present in the soil-water system can reduce crop yield and cause decline in quality. Salinity can affect crop growth through specific-ion toxicities and osmotic effects. Specific-ion toxicity occurs when the concentration of one ion is high enough to cause toxicity. Boron, chloride and sodium are a few of the ions that impede plant growth and development. Specific-ion toxicity causes leaf burn on the tips and margins of crop leaves. Specific ion toxicity on vegetable crops will not be discussed in this article.

Osmotic effects also result in decline in yield and quality due to the movement of water from the cells of the plant root to the soil-water system outside the roots. At normal salinity levels, water moves from the soil-water system to plant roots because of the higher concentration of constituents in the root cells. The effect of overall soil salinity on vegetable crop yield can be described by the following equation:

$$Y=100-B(EC_e-A)$$

Where Y is the relative yield, A is threshold value (dS/m) or the maximum root salinity at which no reduction in yield is observed, B is % reduction in yield due to 1 unit increase in salinity over the threshold value, and EC_e is the average root zone salinity. Soil salinity levels below the threshold values will not affect crop yield or quality. Values of A and B for various vegetable crops are presented in Table 1. The following example illustrates the use of the above equation:

Example:

Average root zone salinity = 3 dS/m

Crop: lettuce, and from Table 1, A=1.3 , B=13.0

Y= 100-13.0(3-1.3)= 77.9%

Table 1. Salt Tolerance of Vegetable Crops.

Crop	Threshold Salinity (A)	(B)	Tolerance level
Asparagus	4.1	2.0	T
Bean	1.0	19.0	S
Broccoli	2.8	9.2	MS
Carrot	1.0	14.0	S
Celery	1.8	6.2	MS
Lettuce	1.3	13.0	S
Onion	1.2	16.0	S
Pepper	1.5	14.0	MS
Potato	1.7	12.0	MS
Radish	1.2	13.0	MS
Spinach	2.0	7.6	MS
Tomato	2.5	9.9	MS

S: sensitive, MS: moderately sensitive, MT: moderately tolerant, T: tolerant.

Source: B. R. Hanson and S. R. Grattan. 1992. Agricultural Salinity and Drainage: A User's Guide Handbook. University of California, Davis.

CIMIS REPORT AND UC DROUGHT RESOURCES

Khaled M. Bali, UCCE Imperial County
Sharon Sparks*, Imperial Irrigation District

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 November 1 to January 31 for three locations in 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 (Google CIMIS for the current link to CIMIS site).

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

Station	November		December		January	
	1-15	16-30	1-15	15-31	1-15	16-31
Calipatria	0.14	0.10	0.07	0.07	0.08	0.09
El Centro (Seeley)	0.13	0.09	0.06	0.06	0.08	0.09
Holtville (Meloland)	0.13	0.10	0.06	0.06	0.08	0.09

* Ag Water Science Unit, Imperial Irrigation District.

Water and Drought Online Seminar Series

The latest research-based advice on weathering a drought is now available free online. The UC Division of Agriculture and Natural Resources is working to help farmers cope with the unwelcome outcome of historically low rainfall the last three years. UC scientists, with support from the California Department of Water Resources, have recorded video presentations on high-priority drought webpages.

Each presentation is about one half hour in length and is available at the link below:

http://ciwr.ucanr.edu/

Then click on the drought resources link.

FENNEL: KEEP AN EYE OUT FOR THRIPS!

Jose Luis Aguiar, UCCE Riverside County

Fennel is a specialty crop grown in the fall in the Coachella Valley. The acreage planted to fennel is very limited and is not listed in Riverside County Agricultural Commissioners' Crop Reports. Fennel is transplanted in October when the weather can be variable. The temperature can rise above 100°F one day or it can drop to 94°F the next day.

Thrip Damage

The tissue on a young fennel plant is very tender. Thrips feed on plant sap by puncturing the tissue and these affected areas take on a silvering appearance. The tissue turns brown and the leaves can also wilt. As the population of thrips builds up, drops of fecal matter accumulates on the tissue giving the appearance of speckling. Thrip damage can also be confused with other problems common in the area such as wind and sandstorm damage.

Figure 1: A Fennel field

The area has many crops such as grapes and citrus that can harbor thrips, but thrips can also build up on weeds and other crops grown in the area. One of these crops include lettuce. Thrips are known to vector virus diseases to many crops such as Tomato Spotted Wilt Virus on peppers. So far no viruses have been observed on fennel fields in the Coachella Valley.

Figure 2: Thrip feeding damage leads to silvering and speckling

Figure 3: Adult thrips can be found in the leaf bracts, The nymphs are easier to find feeding on the outer leaf surface

Sampling for Thrips

Sampling for thrips can be done at the same time as sampling for aphids and worms. Yellow sticky traps around a field can be used. These traps will help in detecting when the adult thrips start migrating into to the crop from adjacent fields. Another method used is selecting several plants randomly from the field and beating them over a sticky surface, this way all the insects collected can be identified. This should be done in the morning when the adults thrips are not very active. Beneficial insects may also be in the traps because they are feeding on the thrips, these include predacious mites, minute pirate bugs and lacewings.

Treatments

Treatments can include biological, cultural and chemical control. Biological control involves releasing beneficial insects in the field. Planting a flower mix around the field to especially to keep beneficial insects around. Cultural control involves keeping the fields weed free. Chemical control requires knowing what is registered and all the information needed to use the product in accordance with the label.

Always look over the transplants to make sure they are disease and insect free.

Figure 4: A healthy Fennel Field

Figure 5: Fennel ready for harvest.

Pesticide Updates

Education & Management of Insects, Plant Diseases, & Weed Management

Water Issues

CEU's:

AZ—4.0 hrs.

CA—3.5 hrs.

CCA—5.0 hrs.

25th Annual Fall Desert Crops Workshop

Location: Farm Credit Services Southwest
485 Business Park Way
Imperial, CA 92251

Time: 6:30 am - 12:25 pm

To register or for more information contact...

University of California Cooperative Extension Imperial County

1050 E. Holton Road
Holtville, CA 92250
(760) 352-9474

aiestrada@ucanr.edu

25th ANNUAL FALL DESERT CROPS WORKSHOP

November 13, 2014

Farm Credit Services Southwest, Ag Center Room
485 Business Park Way, Imperial, CA 92251

6:30 **Registration**

7:00 **Welcome from Western Farm Press** – Cary Blake, Editor, Western Farm Press, Gilbert, AZ;

7:05 **Potential new control measure to prevent aflatoxin in silage corn**- Oli Bachie, Agronomy Farm Advisor, UC ANR Cooperative Extension Imperial, Riverside, and San Diego Counties, Holtville, CA; and Casey Butler, Syngenta Crop Protection, Gilbert, AZ;

7:25 **Next-generation nematicides**- Ole Becker, UC ANR Cooperative Extension Specialist & Nematologist, Dept. Nematology, UC Riverside, Riverside, CA;

7:45 **Insect vectored diseases in bell peppers and lettuce**– Jose Aguiar, Vegetable Crops Farm Advisor, UC ANR Cooperative Extension Riverside County, Indio, CA;

8:05 **New pest problems for the low desert: brown marmorated stink bug and blue alfalfa aphid** - Vonny Barlow, Entomology/IPM/Crop Production Advisor, UC ANR Cooperative Extension Riverside County, Blythe, CA;

8:25 **Curly top virus and its insect vector beet leafhopper surveys for development of an IPM program in California**– Ozugar Batuman, Project Scientist UC Davis, Davis, CA;

8:45 **Update on management of invasive pest species in Imperial County**- Laura Arellano, Imperial County Plant Pathologist/Entomologist, Imperial County Agricultural Commissioner's Office, El Centro, CA;

9:05 **Break**

9:20 **Pesticide label updates:** - Craig Pauly of BASF, Andy Hudson of Westbridge Agricultural Products, Chris Denning of Gowan USA, Andy Hampton of Adama, and Greg Hallquist Oro Agri;

9:50 **Insect management in low desert vegetable crops**; Eric Natwick, Entomology Farm Advisor, UC ANR Cooperative Extension Imperial County, Holtville, CA;

10:10 **Improved chemical control of buffelgrass in the Sonoran Desert** – Travis Bean, Weed Science Specialist, UC Riverside, Riverside, CA;

10:30 **Field trials with new nematicides in fruiting vegetables show promising results** - Antoon Ploeg, Associate Nematologist & Associate CE Nematology Specialist, UC Riverside, Riverside, CA;

10:50 **Adaptability, yield and potential pests of giant king grass** – Oli Bachie, Agronomy Farm Advisor, UC ANR Cooperative Extension Imperial, Riverside and San Diego Counties, Holtville, CA and Carl Kokunnon and CEO of VIASPACE;

11:10 **Reuse of drainage water for irrigation; issues and opportunities** - Khaled Bali, Irrigation Management Farm Advisor and County Director, UC ANR Cooperative Extension Imperial County, Holtville, CA;

11:25 **Crop coefficients and crop water use**, Rick Snyder, Biometeorology Specialist, Department of Land, Air and Water Resources, UC Davis, Davis, CA;

11:45 **Update on California drought and UC resources on drought management**, Daniele Zaccaria, Agricultural Water Management Extension Specialist, Department of Land, Air and Water Resources, UC Davis, Davis, CA;

12:05 **Obtaining weather data through the California Irrigation Management Information System** - Cayle Little, Associate Land and Water Use Scientist, California Department of Water Resources, Sacramento CA;

12:25 **Lunch** – **Please stay for lunch** – Courtesy of Western Farm Press and commercial suppliers.

Organizers: Eric Natwick, Oli Bachie, Khaled Bali & Cary Blake (Western Farm Press)
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