UC CE UNIVERSITY OF CALIFORNIA Agriculture and Natural Resources | UC Cooperative Extension

Imperial County Agricultural Briefs

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Features from your Advisors

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UC CE UNIVERSITY OF CALIFORNIA Agriculture and Natural Resources Cooperative Extension

EFFICACY OF SENSTAR® ON GREEN PEACH APHID (*Myzus persicae*) ON LETTUCE IN COACHELLA VALLEY

Philip Waisen, Vegetable Crops Advisor, UCCE Riverside and Imperial Counties

Introduction

According to 2020 Agricultural Commissioners' Reports, Riverside and Imperial Counties produced romaine lettuce valued at approximately $7 M and $64 M, respectively. Green peach aphid (*Myzus persicae*) is an important insect pest of lettuce including romaine. In addition to direct damage inflicted by this insect pest, it vectors several viruses of importance to lettuce including *Alfalfa mosaic virus*, *Beet western yellows virus*, *Beet yellow stunt virus*, and *Turnip mosaic virus*. Green peach aphid is dark green to yellow and have no waxy covering. Infestations start on the lower leaves and move up and over the entire plant as aphid numbers expand. In southern desert valleys, activity of this aphid picks up with increase in temperature in mid-February when temperatures are ranged from 45-75 °F.

Although natural biological control agents like lacewings, ladybug, parasitoid wasps, and entomopathogenic fungi occur in natural settings, management of aphids on lettuce relies primarily on insecticides. Providing site-specific information on the performance of new products in the market to growers guide important pest management decisions. Senstar® (a.i pyriproxyfen and spirotetramat), registered in California early February 2022, is relatively a new product in the market that growers need to know.

Senstar renders systemic and translaminar activities against soft-bodied insect pests like aphids. Objective of this study was to evaluate the efficacy of Senstar on green peach aphid on romaine lettuce.

Figure 1. A) Field trial plots of 'Coastal Star' romaine lettuce and B) winged or wingless adults and nymphal stages of green peach aphid.

Materials and Method

A field trial was conducted at the Coachella Valley Agricultural Research Station (33°31'18.0"N 116°09'03.8" W) in Riverside, California (Fig. 1A), where the efficacy of Senstar was evaluated against green peach aphid on romaine lettuce (Fig. 1B). Senstar was compared to Versys® (a.i afidopyropen), a positive control, and untreated water control. The treatments were replicated 4 times and arranged in a randomized complete block design. A total of 12 treatment plots each measuring 24 ft × 12 ft were directly seeded with organic pelleted 'Coastal Star' romaine lettuce (Johnny's Seed, Fairfield, ME) at 12 inches apart on 36-inch beds. Senstar was foliar applied at 10 fl oz/ac and Versys at 1.5 fl oz/ac in application volume of 50 gallons/ac. Silwet™ L-77 adjuvant was tank-mixed and applied at 0.25 % (v/v). All the 3 treatments were foliar applied using a CO_2 Sprayer adjusted to 40 psi. Evaluations were made 7-and 14-days post-treatment. At each time of evaluation, 4 plants per treatment plot were destructively sampled and counts of live nymphs and adults of green peach aphid were determined. The number of leaves per plant was also documented.

Data analysis was done using Statistical Analytical Software version 9.4 (SAS Institute Inc., Cary, NC). Nymph, adult, and total aphid population data were checked for normality using Proc Univariate in SAS. Wherever necessary, data was normalized using log10 (x+1) and subjected to repeated measures ANOVA using Proc GLM in SAS. Since no significant interaction between the treatment and sampling date was detected, the

data across 2 sampling dates were combined and analyzed. Means were separated using Waller–Duncan *k*-ratio (*k*=100) *t*-test and only true means were presented.

Results and Discussion

Senstar reduced the nymphal population of green peach aphid compared to untreated water control ($P \leq 0.05$; Fig. 2A). Senstar even performed significantly better at suppressing the population of nymphs compared to Versys, the standard positive control ($P \leq 0.05$; Fig. 2A). In terms of adult green peach aphid population, Senstar reduced the population in the same way as Versys compared to untreated water control ($P \leq 0.05$; Fig. 2B).

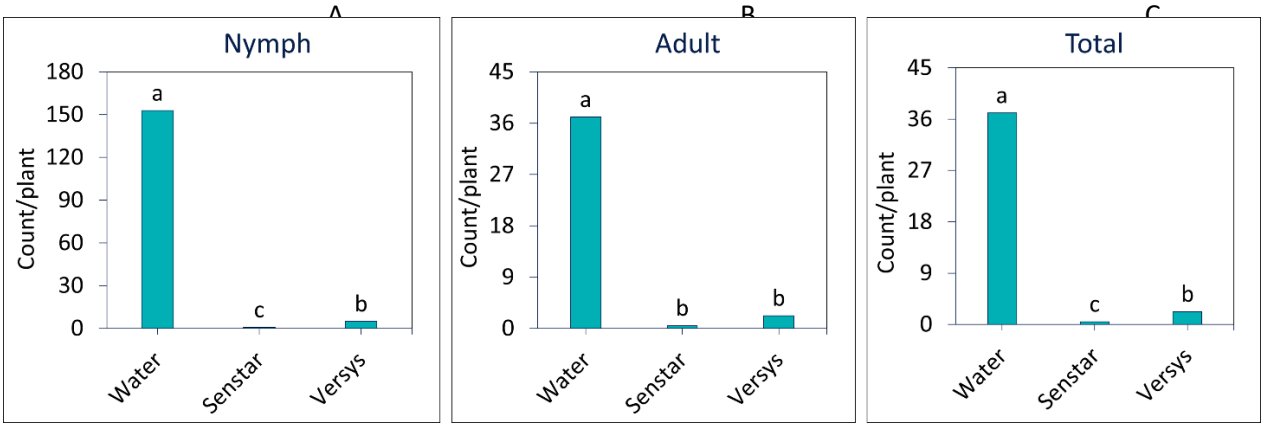

Figure 2. Number of A) nymphs, B) adults, and C) total aphid (nymph+adult) population per plant. Bars represent means (*n*=16) and those followed by the same letter(s) are not different, according to the Waller–Duncan *k*-ratio (*k*=100) *t*-test.

Overall, the total population of nymph and adult was suppressed by Senstar statistically similar to Versys compared to untreated control ($P \leq 0.05$; Fig. 2C).

Spirotetramat in Senstar, the same active ingredient in Movento®, is a lipid biosynthesis inhibitor and critical at inhibiting physiological processes such as molting and embryogenesis in insects and nematodes (Gong et al., 2016; Waisen et al., 2019). This means that spirotetramat primarily targets nymphal stages of aphids by interfering with molting. Similarly, *pyriproxyfen* in Senstar, an insect growth regulator, mimics natural insect hormones that stop young insects from maturing into adults. Pyriproxyfen is rarely toxic to adult insects and instead interferes with egg-laying and egg-hatch physiological roles, thus delaying the affected individuals, nymphs in this case, from advancing to subsequent stages. This prevents target insects from multiplying. Together, spirotetramat and pyriproxyfen both target nymphs by interfering with lipid biosynthesis and mimicking natural insect growth regulators, respectively. This was reflected in the significant reduction of nymphal population in this study (Fig. 2A), where Senstar suppressed nymphal population even better than the Versys, the standard positive control.

Conclusion

This study clearly demonstrated that Senstar is an effective and viable option for green peach aphid control on lettuce in southern desert valleys. In Coachella Valley, we observed that the activity of aphids picked up in mid-February when the temperatures ranged from 45-75 °F. Application of Senstar early to mid-February or upon its first detection can strategically protect lettuce crop from aphid establishment and infestation.

Reference

Gong, Y., Shi, X., Desneux, N., and Gao, X. 2016. Effects of spirotetramat treatments on fecundity and carboxylesterase expression of Aphis gossypii Glover. *Ecotoxicology*, *25*, 655-663. https://doi.org/10.1007/s10646-016-1624-z

Waisen, P., Wang, K.-H., and Sipes, B. S. 2019. Effect of spirotetramat (Movento®) on hatch, penetration, and reproduction of *Rotylenchulus reniformis*. Nematropica 49(2):194-199. https://journals.flvc.org/nematropica/article/view/119571

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PLANT PATHOLOGY AREA ADVISOR POSITION SERVING IMPERIAL, RIVERSIDE AND SAN DIEGO COUNTIES IS UNDERWAY FOR RECRUITMENT

Purpose: The Plant Pathology Area Advisor will work in the areas of local plant disease concerns of commercial vegetable crops, field crops, seed crops, horticultural and tree crops in Imperial, Riverside, and San Diego Counties. The area advisor will address critical and high priority issues including invasive species, pest management, and biosecurity. This advisor will have disciplinary perspective and geographical location to make major contributions to local plant disease management and provide critical linkages with the National Plant Diagnostic Network to contribute to efforts regarding invasive species and biosecurity. The advisor will contribute to early detection of intentionally or accidentally introduced infectious pathogens/agents and will serve as a valuable resource in the development of management strategies to mitigate economic and sociological impacts of introduced agent(s).

The candidate will implement an innovative applied research and extension education program in the area of crop production and plant disease concerns of farm owners, managers, pest control advisors and other agricultural industry personnel through personal contacts, office visits, and field visits. The advisor will prepare written information in the form of county newsletters, news releases, media articles, and journal articles. In addition, the advisor will hold field meetings, give educational presentations, co-coordinate and/or participate in workshops, field days, and other events. For the development of an applied research program, the Plant Pathology Area Advisor will conduct programmatic/research needs assessments in cooperation with producers, industry groups and University of California personnel, and devise experiments to rate the performance of new and existing disease control materials and techniques. One area of a crop pathology advisor expertise may include fungicide resistance, which has become a problem in Imperial, Riverside, and San Diego Counties and surrounding low desert agricultural production. Another area may address mounting restrictions and loss of availability of long-used fungicides, and new safer replacements need to be identified and evaluated for efficacy and crop safety in the low desert. Several whitefly, thrips, leafhopper and aphid transmitted virus diseases are appearing with increased frequency in vegetable crops seed crops and spice crops. They will require proactive attention and potential development of management practices for continued viability of the $2 billion vegetable production industry in the three counties. In cooperation with professional growers and academic colleagues,

the advisor may develop new cultivation practices that improve agricultural production, while reducing pesticide use, minimize pest infestations, and maintain crop tolerance to pathogens.

Counties of Responsibility. This position will be headquartered at UCCE Imperial County Office located in Holtville, CA and also serves Riverside and San Diego Counties.

Reporting Relationship: The Advisor serves under the administrative guidance of the University of California Cooperative Extension Imperial County Director with input on program direction, coordination, and evaluation from UCCE Riverside County Director.

Required Qualifications

Education: A minimum of a master's degree in plant pathology or closely related fields, such as microbiology, agricultural science, plant biology, botany, horticulture is required at time of appointment.

Additional Requirements

- The ability to identify plant diseases, ability to organize and perform work in field and laboratory, and ability to analyze plant disease control problems and determining appropriate course of action.
- Coursework or experience in diagnosis of plant disease, plant nematology and microbiology, and course work and experience in environment programs.
- Extension experience and/or demonstrated excellence in applied research in plant disease.
- Training and experience in interdisciplinary and multi-disciplinary research and collaboration.
- Ability and means to travel on a flexible schedule as needed, proof of liability and property damage insurance on vehicle used is required. Must possess valid California Driver's License to drive a County or University vehicle.
- The ability to work with clientele across a wide range of socio-economic classes and ethnicities is essential.
- This is not a remote position. The candidate must be available to work onsite.

Technical Competence and Impact

The candidate should have a deep understanding of plant pathology and be able to design and implement a program that leads to positive changes and impact within the community and beyond. There is an expectation that advisors evolve and grow across their career and respond to changes in the industry and by clientele.

Communication

Demonstrated excellence in written, oral, and interpersonal and information technology communication skills. Public speaking to stakeholders is a routine part of this position. Demonstrated ability to share complex information in a manner tailored to the audience.

Collaboration, Teamwork and Flexibility

Demonstrated ability to work collaboratively as a team member with colleagues, industry and other stakeholders. Able to adapt as circumstances warranted.

Aware and willing to actively promote diversity, equity, and inclusion.

Lifelong Learning

Demonstrated commitment to ongoing professional improvement. Ability to shift program focus as times and organizational needs change.

About UC ANR

The University of California, Division of Agriculture and Natural Resources (UC ANR) consists of a network of scientists and educators working in partnership across California. We are committed to developing and supporting practical, science-based solutions that contribute to healthy food systems, healthy environments, healthy communities, and healthy Californians. UC ANR administers UC Cooperative Extension (UCCE), which is responsible for program development and delivery in the counties throughout the state of California.

Learn more about Skills and Areas of Programmatic Review (including Professional Competence, University and Public Service and Affirmative Action and DEI) and how to apply at: https://ucanr.edu/sites/anrstaff/files/319460.pdf

Learn more about

- UC ANR at https://UCANR.edu

Note: Please, spread words of this position vacancy announcement & encourage qualified personnel to apply.

If you have any immediate question on this, call the UCCE Imperial County office at **(442)265-7700**

UC CE UNIVERSITY OF CALIFORNIA Agriculture and Natural Resources Cooperative Extension

Vegetable & Organic Production Workshop

April 13, 2023

Location:
Imperial County Farm Bureau (Boardroom)
1000 Broadway, El Centro, CA 92243

Registration link:
https://surveys.ucanr.edu/survey.cfm?surveynumber=39939

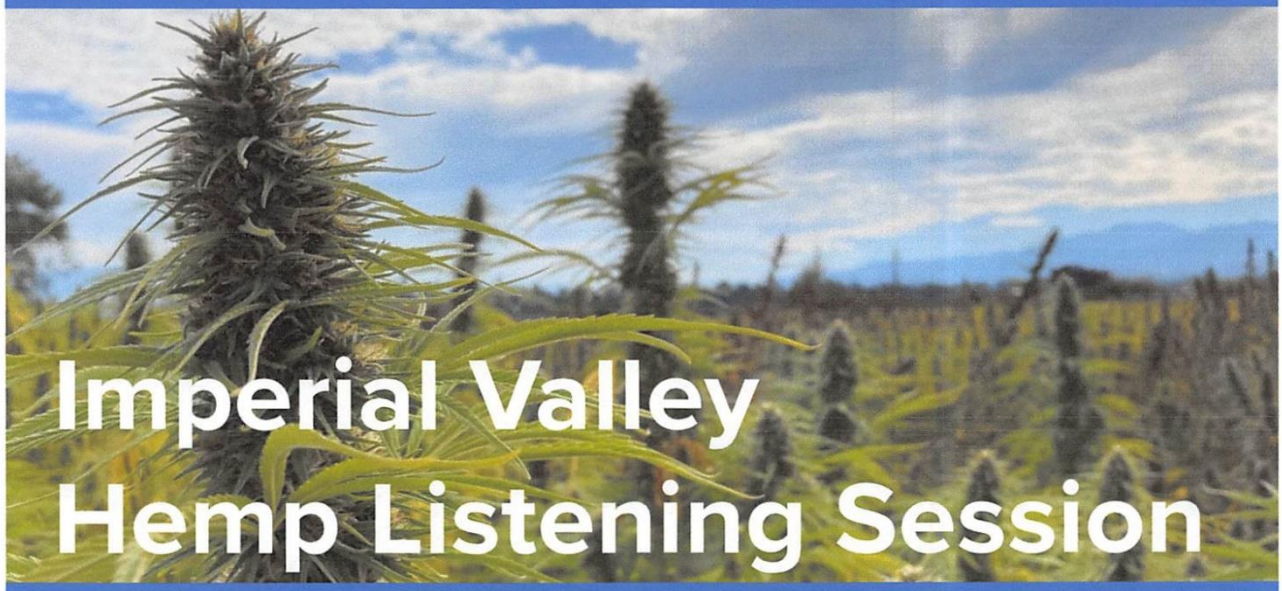
	8:00 a.m. – 12:35 p.m.
8:00	Registration
8:30	**Welcome & Introductions** – *Board of Director & Oli Bachie, UCCE Imperial and San Diego County Director*
8:35	**Benefit of drip irrigation for vegetable and organic production** - *Ali Montazar, Irrigation and Water Management Advisor, UCCE Imperial, Riverside & San Diego counties*
8:55	**Weed management for vegetable and organic production** - *Oli Bachie, Agronomy & Weed Management Advisor, UCCE Imperial, Riverside & San Diego Counties*
9:15	**Considerations for organic livestock production** - Brooke Latack, *Livestock Advisor, UCCE Imperial, Riverside & San Bernardino counties*
9:35	**Perspective on cole crop residue as biofumigants for soilborne disease management in vegetable cropping systems** - *Philip Waisen, Vegetable Crops Advisor, UCCE Riverside and Imperial Counties*
9:55	**Organic pest control for crops in Imperial County** - *Michael Rethwisch, Crop Production and Entomology Advisor, UCCE Riverside County*
	Break at 10:15 a.m. (10 minutes)
10:25	**Nutrient management in organic vegetables** - *Milt McGiffen, CE Specialist and Plant Physiologist, UC ANR/UC Riverside*
10:45	**Overview of organic production in California and nitrogen management in organic production** - *Joji Muramoto, Organic Production Specialist, UC ANR/UC Santa Cruz*
11:05	**Updates on the UC organic agriculture institute activities and grower survey** - *Houston Wilson, Director - Organic Agriculture Institute, Asst. Cooperative Extension Specialist, UC Riverside*
11:35	**Organic vegetable field trials to assess food safety and biological soil amendments of animal origin** - *Michele T Jay-Russell, Researcher, Western Center for Food Safety, UC Davis*
11:55	**Insect pest management options for organic production system** – *Eric Middleton, UCCE Area IPM Advisor, UCCE San Diego*
12:15	**Food surface and liquid decontamination technologies for organic production** – *Jimmy Nguyen, Food Safety and Organic Production Advisor, UCCE Imperial & Riverside Counties*

For additional information on the workshop, please contact organizers Jimmy Nguyen, cgnguyen@ucanr.edu & Ali Montazar, amontazar@ucanr.edu and Oli Bachie, obachie@ucanr.edu or call us at (442) 265-7700

Approved Continuing Education Units:

CALIFORNIA DPR (Course ID #M-0624-23 - 1.5 hrs.), Arizona Dept. of Agriculture (Course ID #23920 - 1.5 hrs.) & Certified Crop Advisor (Tracking No. CA60351 - 2.0 hrs.)

UC Davis | IV Conservation Research Center | Oregon State University



Imperial Valley Hemp Listening Session

Is there a future for hemp in the Imperial Valley?

Could fiber or grain hemp have a place in your crop rotation?

Join us for a frank look at the post-bubble realities of hemp production across the West, and explore how hemp might fit into low desert farming systems.

Coffee and lunch will be provided.

Supported by USDA ARFI Sustainable Agriculture Systems Grant# 13333755

USDA National Institute of Food and Agriculture
U.S. DEPARTMENT OF AGRICULTURE

Wednesday, May 3

10:00 A.M. to 12:30 P.M.

Imperial Valley Conservation Research Center

4151 Highway 86
Brawley, CA 92227

No registration required

UC DAVIS
UNIVERSITY OF CALIFORNIA

IMPERIAL VALLEY CONSERVATION RESEARCH CENTER

Oregon State University

IMPERIAL VALLEY CIMIS REPORT AND UC WATER MANAGEMENT RESOURCES

Ali Montazar, Irrigation and Water Management Advisor, UCCE Imperial and Riverside Counties

The reference evapotranspiration (ET_o) is derived from a well-watered grass field and may be obtained from the nearest CIMIS (California Irrigation Management Information System) station. CIMIS is a program unit in the Water Use and Efficiency Branch, California Department of Water Resources that manages a network of over 145 automated weather stations in California. The network was designed to assist irrigators in managing their water resources more efficiently. CIMIS ET data are a good guideline for planning irrigations as bottom line, while crop ET may be estimated by multiplying ET_o by a crop coefficient (K_c) which is specific for each crop.

There are three CIMIS stations in Imperial County include Calipatria (CIMIS #41), Seeley (CIMIS #68), and Meloland (CIMIS #87). Data from the CIMIS network are available at: http://www.cimis.water.ca.gov/. Estimates of the average daily ET_o for the period of April 1st to June 30th for the Imperial Valley stations are presented in Table 1. These values were calculated using the long-term data of each station.

Table 1. Estimates of average daily potential evapotranspiration (ET_o) in inch per day

Station	April		May		June	
	1-15	16-30	1-15	16-31	1-15	16-30
Calipatria	0.22	0.25	0.27	0.29	0.31	0.32
El Centro (Seeley)	0.24	0.28	0.29	0.31	0.34	0.36
Holtville (Meloland)	0.23	0.27	0.29	0.31	0.33	0.34

For more information about ET and crop coefficients, feel free to contact the UC Imperial County Cooperative Extension office (442-265-7700). You can also find the latest research-based advice and California water & drought management information/resources through link below:

http://ciwr.ucanr.edu/.