Imperial County Agricultural Briefs

University of California
Agriculture and Natural Resources

Features from your Advisors

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THRIPS AS PESTS OF LETTUCE

Eric T. Natwick, Entomology Advisor, UCCE Imperial County

Thrips are among the smallest insects that can cause considerable damage to lettuce crops in the low desert production areas in California. They can cause three types of injury to lettuce;

1. Thrips body parts and feces can contaminate lettuce heads,
2. their feeding can cause scarring, a cosmetic injury and
3. some thrips species are vectors of viruses that cause disease in lettuce crops.

In southeastern California, four thrips species that may cause injury or contamination to lettuce, including WFT; tobacco thrips, *F. fusca* (Hinds); onion thrips, *Thrips tabaci* Lindeman (OT); and less frequently, bean thrips, *Caliothrips fasciatus* (Pergande). Cryptic by nature, these minute, slender-bodied insects can easily go unnoticed until damage from their feeding becomes apparent. Thrips are best viewed in the field with a hand lens. Thrips pass through six developmental stages: an egg, two larval stages, a pre-pupal and pupal stage, and an adult. Adults for most thrips species range from 1.3 to 1.5 mm in length, possess two pairs of long, feather-like, narrow wings, the margins of which are fringed with long hairs. Eggs of most species are inserted into plant tissue. The larval stages resemble adults but are usually lighter in color and wingless. Most species pupate in or on the soil. Generation times generally take about a month, but can vary among species and with fluctuations in temperature within a geographic location or the season. Only the first instar larvae acquire the tospoviruses that adult thrips transmit to lettuce plants. Some species of thrips are very resistant to insecticides e.g. western flower thrips, *Frankliniella occidentalis* (Pergande) (WFT).

Not all thrips are pests and not all species that vector viruses cause disease in lettuce. Some species of thrips are predators of other pests including predation on plant feeding thrips. Therefore, before initiating a thrips management program for lettuce crops, it is important to identify the species present. Thrips identification is very difficult, mainly due to their small size and similarities in color among some species. Identification should be done by personnel in a laboratory with training on thrips slide preparation and identification.

There are several natural enemies of pest types of thrips species including:

- Predatory thrips
- Green lacewings Chrysopa and Chrysoperla spp. (Chrysopidae)
- Minute pirate bugs, Orius spp. and other (Anthocoridae)
- Predatory mite; many species
- Parasitic wasps; many species in several families
- Entomopathogenic fungi; *Beauveria* spp., *Lecanicillium* spp., *Metarhizium* spp., *Insaria* spp. and others

Of the greater than 5,000 known thrips species, only about 1% are crop pests. They rasp with their mandible, macerating epidermal leaf cells and then suck up plant sap. Scar tissue forms in the feeding sites and damaged areas of the plant will have a silvery appearance that turns to brown scarring resembling damage caused by wind-blown sand. This cosmetic injury of lettuce can reduce the market value and limit sales to domestic markets. Cosmetic damage also occurs due to the deposit of dark brown to black fecal specks on leaves and bodies of live and dead thrips further degrading the value of lettuce heads. Some species are important vectors of plant viruses. Of the aforementioned species, all but the bean thrips are vectors of *Tomato spotted wilt virus* (TSWV) and *Impatiens necrotic spot virus* (INSV). The WFT is the most important species because in addition to virus transmission, it causes direct feeding injury resulting in cosmetic damage that may downgrade product marketability and that it quickly develops resistance to insecticides.

Bean thrips can be a problem in low desert growing areas of California because they migrate into lettuce crops when high levels buildup in alfalfa fields contaminating lettuce heads with their bodies, degrading the quality of the lettuce crop. Even low numbers of bean thrips can be of concern for export to some trading partners.

The first important step in any pest management program is the accurate identification of crop pest thrips species, particularly for biological control. Natural enemies are often specific to just one pest or group of pests and some thrips are predators of pest thrips, other insects and spider mites that feed on lettuce. Identification is also important for insecticide resistance management (IRM) because some thrips species such as WFT are very resistant to insecticide.

Cultural control measures for preventing thrips damage to lettuce crops includes:

- Sprinkler irrigation can suppress thrips populations.

- Avoid planting upwind from small grain crops or alfalfa that harbor pest thrips.
- Use clean culture; quickly remove plant residues from harvested crops before thrips migrate to later lettuce plantings.

Insecticide use is often necessary to prevent thrips damage to lettuce crops. Timing of spray applications is critical to success. During hot weather, apply in early morning or evening when it is cooler and thrips are more active. Use of a spreading surfactants help insecticides reach areas where larvae are hidden near the base of leaves. Use IRM practices such as rotating classes of chemistry to help present insecticide resistance development in WFT populations and by other pest thrips species.

UCCE PARTICIPATES IN THE IMPERIAL VALLEY COLLEGE CAREER FAIR

Samuel Zamora, UCCE Imperial County

On October 6, 2016, Imperial Valley College hosted a "Career Fair/College & University Day". The University of California Co-Operative Extension was one of the institutions invited to participate as an exhibitor. UCCE Imperial County attended the fair and presented information about research they are working on, the 4-H and Cal Fresh Programs.

Those in attendance ranged from elementary to high school and college students who are ready to take their education to the next level. Since there were many other exhibitors who participated in the fair, it helped attendees gather information on challenging local and state careers and colleges and universities that may be available to students planning for higher education. Other organizations included UC Berkley, UC Irvine, the United States military, Federal Bureau of Investigation and local law enforcement agencies. El Centro city council member and IVC's dean of economic and workforce development stated that "this career day was our biggest success to date." He further stated that there were over 2,500 attendees, including young people from our community who were exposed to opportunities for higher education, local industry groups and potential career opportunities that are available to them ((Renteria/Managing editor IVPressOnline).

Although UCCE Imperial county has been actively conducting research in the Valley for over 100 years, the IVC Career Fair was instrumental in introducing UC's research and extension activities to youth interested in majoring in agriculture, youth and families development and the general public who may not know of UCCE's research

and extension contribution in the Imperial Valley. Many of the youth who visited the UCCE booth were interested in the activities that go in the county office. Attendees also asked pertinent questions about global climate change, the California drought situation and the use of drones in agriculture.

Adrian Trevino, a freshman at Southwest High School in El Centro said, "I'm super interested in technology and would probably work on building and flying drones in agricultural fields that my grandpa and grandma work on". Of the many presentations given by the UCCE, educators in attendance appreciated the information presented by the Cal Fresh program of the UCCE. Many said they were aware of the program, but did not have enough information on CalFresh's school presentations, school lunch programs and student activities. Educators who visited the booth and had questions were referred to registered dietitian Mary Welch-Bezemek and Martha Lopez who are both UCCE Imperial County representatives for the Nutrition, Family and Consumer Sciences Division.

Dr. Oli Bachie, who is interim Director of UC Cooperative Extension Imperial County and an agronomy advisor stated that "the fair and our presentations were a huge success and helped to promote the presence and service information, extension work and that this event will help attract the youth to seek an internship or potential employment with us." He added that UCCE looks forward to participating in next year's Career day as well as similar events in the Valley".

Citation:

1. Trevino, A. Personal interview on October 09, 2016.
2. Renteria /Managing Editor, IV Press, ivpressonline.com | IVC hosts another successful career day. Retrieved October 09, 2016, from http://www.ivpressonline.com/featured/ivc-hosts-another-successful-career-day/article_7f5dee80-6e8b-11e5-bff5-b7cec64e08c2.html

CIMIS REPORT AND UC DROUGHT RESOURCES

Khaled M. Bali, Irrigation & Water Mgmt Advisor, Director 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 October 1 to December 31 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 (Google CIMIS for the current link to CIMIS site).

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

Station	October		November	December		
	1-15	16-31	1-15	1-15	16-31	1-15
Calipatria	0.23	0.19	0.14	0.23	0.19	0.14
El Centro (Seeley)	0.23	0.17	0.13	0.23	0.17	0.13
Holtville (Meloland)	0.23	0.18	0.13	0.23	0.18	0.13

*** 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. 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.

Location:

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

Time:

6:30 am - 12:05pm*
(Subject to Change)

Lunch:

Courtesy of Western Farm Press & Commercial Suppliers

No Cost To Attend!

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

- **Pesticide updates**
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  - **Plant Diseases**
  - **Weed Mgmt.**
- **Water issues**

Pending CEU's:

AZ Dept. of Ag, CA DPR & CCA