



Imperial County

Agricultural Briefs



University of California
Agriculture and Natural Resources

Features from your Advisors

May 2016

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LYGUS BUG MANAGEMENT IN ALFALFA SEED PRODUCTION

Eric T. Natwick, Entomology Advisor, UCCE Imperial County

The western tarnished plant bug, *Lygus hesperus* Knight, locally referred to as ‘lygus bug’ is the most important insect pest affecting production of alfalfa seed in California. It is vitally important that proper timing of insecticides treatments are based on realistic treatment levels. Proper timing of insecticides is critically important for successful control of lygus bug and helps to minimize pest control costs. The timing of lygus bug control measures requires an understanding of the biology of this pest.

During the summer, it takes about 28 days for lygus bugs to complete their lifecycle. Accordingly, insecticide applications must be timed to coincide with egg hatch and the stage of development to achieve maximum levels of control. Lygus bugs are most easily controlled as nymphs up to the 3rd instar. Older nymphs, especially the 5th instar are more difficult to control. It is not uncommon to find 4th and 5th instar nymphs and adults in alfalfa seed production fields after an insecticide treatment. This is so, because adults are strong fliers and are often repelled from seed production fields following an insecticide application, but can quickly return when the repellency has subsided.

Withhold insecticide application when newly hatched 1st instar nymphs are observed in the field to allow all eggs to hatch. Percentages of control are improved when all lygus bug eggs have hatched and a small percentage of the nymphs have developed to the 3rd instar. Timing an insecticide treatment too early allows many lygus bug nymphs to hatch from the protected egg stage a few days after the insecticide application and the late hatching nymphs that survive may require additional insecticide treatment.

The first lygus bug insecticide treatment should be applied when a population of 4 to 6 bugs per sweep is reached during the period of early bloom, when many buds are vulnerable to attack. During full bloom and seed set, treatment is suggested to be at 8 to 10 bugs per sweep. Later in the season, when the crop begins to mature, the suggested treatment level is at 10 to 12 bugs per sweep. These guidelines are suggested action levels and are not necessarily fixed, but can vary with field condition.

Lygus bugs levels of 8 to 10 bugs per sweep during bloom and seed set usually do not adversely affect seed yield or quality and can be tolerated with out economic loss. Fewer insecticide applications and less frequent disturbance to pollinator activity can be achieved by extending treatment intervals following the suggested action thresholds.

BELL PEPPER STEM SCALD AND OTHER SIMILAR PROBLEMS

Jose Luis Aguiar, Vegetable Crops Advisor, UCCE Riverside County

Coachella Valley bell pepper growers at one time or another observe that recently transplanted plants randomly collapse (as shown in Figure 1) in the field. Seedling collapse and dieback occurs in late spring or early fall bell pepper plantings. Plant collapse can be extensive and requires growers to make replacement plantings, resulting in economic consequences.



Figure 1: collapsing late spring planted bell pepper plants

Some possible causes bell pepper plant collapse:

- Plants contacting the plastic mulch, especially the mulch flap;
- Transplants may have already been infected with disease;
- Darkling beetle feeding damage.

Careful observation of plants is needed to distinguish the specific causes of seedling collapse. In this specific situation, if you gently dig out plants from the affected field, you may see a plant that looks like the one in Figure 2. Affected plant roots may appear normal, however, the leaves may be wilting. In some cases, girdling of the stem well above the soil line may be observed. Here stem girdling is observed on all plants that have exhibited the collapse symptom.



Figure 2. Collapsed bell pepper plant with girdling obvious well above the soil line.

Is this disease related incidence?

In most cases, I collected samples of collapsed bell pepper plants and sent them to the Plant Pathology Laboratory. Prior to sending the plants for laboratory diagnosis, I inspected the plants and found no apparent evidence of a disease, although I suspected damping off fungus. Furthermore, laboratory results showed no fungus. Therefore, plant disease is ruled out as the causative agent of the plant collapse. *Pythium* spp. causing damping off problems in bell pepper can be a common problem in bell pepper fields in Coachella Valley. In all cases, it is wise to send plant samples to a Plant Pathology Laboratory whenever disease is suspected in crop fields.

Is this problem related to darkling beetle?

Since darkling beetles feed on young and tender bell pepper transplants, many people suspect this beetle may be the cause for the collapsing plants. Darkling beetle feeding can cause plants to girdle. Darkling beetles invading a bell pepper field and hiding under the lay flat irrigation line are shown in Figure 3. In the Coachella Valley, bell pepper fields are surrounded by permanent crops such as citrus, grapes and date fields producing large biomass that can harbor darkling beetles. Such crops need to be trimmed. In the field that showed collapsing symptoms, darkling beetles were just starting to migrate in. Therefore, they were not the cause for the collapse of the plants.



Figure 3. Darkling beetles migrating into a bell pepper field from a nearby field.

Darkling beetles feed on decomposing vegetation. If the darkling beetles have a food supply, the populations could buildup and eventually look for new food sources. To minimize darkling beetle problems in bell pepper fields therefore, the previous crop residues needs to be disked under and the organic material decomposed prior to transplanting bell pepper. Darkling beetles can be a problem on the very young and tender bell pepper plants. Once plants mature and the stem hardens and become woody, darkling beetle cannot be a problem.

Pepper Stem Scald

There are many synonyms to pepper stem scald, including heat stress, plastic damage, heat girdling, stem scalding. Such symptom is also known as efecto chimenea (chimney effect) in Sinaloa, Mexico where it has been observed in mulched bell pepper plantings.

When affected plants are carefully removed, one can observe pinching of the stem well above the soil line. In lettuce fields, similar effects can be caused by blowing winds. The pinched stem area may look tan in color while the leaf tissue begins to wilt from water stress (see figure 4). There was no insect feeding when observed under a dissecting microscope.



Figure 4. Bell pepper plants with stem scald symptom.

An article from the University of Florida titled “**Pepper Stem Scald: A Physiological Problem**” reports that stem scald can occur even in the absence of the plastic flap. The article also states that planting bell pepper before 9:00 a.m. or after 3:00 p.m., could adjust plant water usage and minimize stem girdling. Plants transplanted during the heat of the day were not able to adjust their water usage, resulting in “heat girdling”. The main point here is avoiding transplanting during hottest time of the day in order to minimize stem girdling problem. Stem girdling can also be affected by air and soil temperature, wind, and stem water potentials. The article was a report and they are repeating the experiment.

Reference:

Charles S. Vavrina. Pepper Stem Scald: A Physiological Problem. HS-813.
<http://ufdc.ufl.edu/IR00004228/00001>

THE 2016 AGRONOMIC CROPS & WATER CONSERVATION FIELD DAY

Oli G. Bachie – Agronomy Advisor – UCCE Imperial County

On the 13th of April 2016 University of California Cooperative Extension (UCCE) Imperial county hosted an on-farm Agronomic Crops and Water Conservation Field Day. The field day was well-attended by local growers, industry representatives, and researchers. Participants toured the Desert Research & Extension Center on hay wagons. The field day was organized at with seven (7) stop stations that included talks on crop nutrition, water conservation and crop production, variety trials and deficit irrigation, other forage crops such as Kura clover, agronomic grain crops, automated irrigation, nematode trials, drones for agriculture and finally a stop at the Rhodes grass (a new crop being tested as potential alternative crop). There were many speakers scattered at all stop stations. Speakers came from the University of California (UC) Davis, UC Merced, Toro Micro-irrigation, NETAFIM, Department of Water Resources, University of Arizona Cooperative Extension, UC Kearney Agricultural Research and Extension Center, Observant Inc., Community Safety Consultant Group and our local office (UCCE Imperial and DREC). Major Agronomic crops featured during the field day presentation were wheat, alfalfa, kura clover, sunflower, sugar beets and the Rhodes grass and demonstrations of specific management practices, largely on irrigation and irrigation practices. Participants had the chance to view practices at their own pace.

Field demonstration and presentations were concluded with lunch, sponsored by RDO at the Center where participants had the opportunity to network among each other, creating the best learning opportunity and a share of successes and failures. More coverage of the field day appeared in the Imperial Valley Press and enclosed below.

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AGRICULTURE

UC farm researchers update growers on water conservation


BY WILLIAM ROLLER
Staff Writer

HOLTVILLE — The University of California Desert Research and Extension Center hosted 25 experts to share best practices in irrigation during a tour of their experimental farm here Wednesday morning. The Agronomic Crops and Water Conservation Field Day broadened growers' views on maximizing yields. The field day was vital because water drives

the economy in the Imperial Valley, noted Jairo Diaz, Desert Research and Extension Center director. "Today we want to show growers how to better use water resources," Diaz said. California is in one of its worst droughts since 2011, and even though this winter's rain was substantial, drought conditions remain. The Colorado River, the only source of water for the Valley, has progressively increased its content of salts,

so the field day apprised growers of water saving methods said Diaz. The best way to improve efficiency is through a combination of techniques he noted. When germinating seeds, a sprinkler system is most desirable. Throughout the "grow" season, a drip system works well, then flood irrigation is preferred to leach salts from the soil at the end of the season said Diaz.

SEE WATER | A5



Oli Bachie, UC Cooperative Extension-Imperial, agronomy advisor, extols the advantages of Rhodes grass, a drought-tolerant forage crop during the Agronomic Crops and Water Conservation Field Day Holtville on Wednesday. WILLIAM ROLLER PHOTO

WATER

Continued from A1

“But the thing with the Colorado River is, demand is increasing year-by-year, but the water content remains the same,” he said. “So all of us — growers, urban, industrial and environmental users — must be more efficient with water resources.”

Despite good rains in January and March, February was dry, remarked Daniel Zaccaria, UC Davis, agriculture water management specialist. The major supply of state water, the snow/water content of the Sierra snowpack, is only at 70 percent of normal. Surface water storage is at 120 percent in Northern California but just 30 percent south of the Sacramento Delta. And the most important storage of, for re-circulation from the north to south, the San Luis Reservoir is at 50 percent capacity, Zaccaria explained.

“Water supply doesn’t look promising for Imperial Valley,” said Zaccaria. “If El Niño is followed by La Niña then it will be a dry winter, so we can’t lose our momentum for efficient management.”

Part of the problem is the Colorado River is allocated for 16.5 million acre-feet among seven states after signing the 1922



Eric Natwick, UC Cooperative Extension-Imperial entomology advisor, explaining about the insect pests of the low desert sunflower during the Agromomic Crops and Water Conservation Field Day in Holtville on Wednesday. WILLIAM ROLLER PHOTO

Colorado River Compact, said Khalid Bali, UC Cooperative Extension-Imperial County, irrigation and water management director. The average flow is just 15 million acre-feet.

“We have to look at automated gates (for canals) that’ll reduced water usage and labor costs,” said Bali. “We can be more efficient using deficit irrigation ... reduce irrigation at different times of the year, but examine what’s the optimal time of the year so we have minimal impact on yields.”

Oli Bachi, UC Cooperative Extension-Imperial agronomy advisor advocates growers consider substituting water-thirsty crops such as Alfalfa for Sorghum. Rhodes grass, also drought-tolerant, is very leafy, every part is edible and is good for hay.

“What’s interesting is it

grows densely so it suppresses weeds and you can minimize herbicide and it is not as susceptible to nematodes as other crops,” he said of Rhodes grass.

Similar to other industry, drone technology has expanded to agriculture. Frank Taylor, a retired sheriff’s captain is now a consultant for Sentera, LLC.

They offer precision, aerial photography and inspection via remote piloted aircraft.

Data collected can provide growers basic ground truth to make critical decisions.

“These sensors are very robust and are able to acquire information of what your crops are doing at any point in time and tell you by cell phone app what is happening to your property,” Taylor said.

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_0) for the period of May 1 to July 31 for three locations in Imperial County are presented in Table 1. ET of a particular crop can be estimated by multiplying ET_0 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_0) in inches per day

Station	May		June		July	
	1-15	16-31	1-15	16-30	1-15	16-31
Calipatria	0.32	0.36	0.39	0.40	0.39	0.38
El Centro (Seeley)	0.31	0.34	0.36	0.38	0.38	0.37
Holtville (Meloland)	0.32	0.35	0.38	0.39	0.39	0.38

* 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.



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2016 USCID PRE-CONFERENCE WORKSHOP

Subsurface Drip Irrigation for Thirsty Crops

When: Monday, May 16, 2016 (1:00 PM to 5:00 PM)
Where: Bahia Resort Hotel, San Diego, CA

12.30 PM Registration – **FREE of charge**

Agenda: Talks are scheduled for 20 minutes and include 5 minutes for questions and answers

Session 1 – Considerations for Design, Installation, Operation and Maintenance of SDI systems

Moderator: Khaled Bali, UC Cooperative Extension, Imperial County, CA

- 1:00-1:20 PM Suitability of SDI Systems in California – James Ayars, USDA-ARS Parlier, CA
- 1:20-1:40 PM Accounting for Soil Properties in SDI System Design and Operation – Robert Hutmacher, UC Cooperative Extension, West Side Research and Extension Center, Five Points, CA
- 1:40-2:00 PM Design Considerations for Efficient Irrigation with SDI Systems – Daniele Zaccaria, UC Cooperative Extension, LAWR Department, University of California, Davis
- 2:00-2:20 PM Main Components, Hydraulics and Economics of SDI Systems – Inge Bisconer, TORO Irrigation
- 2:20-2:40 PM Proper Installation and Maintenance of SDI Systems – Kevin Stewart, JAIN Irrigation
- 2:40-3:00 PM Trouble-shooting on SDI Systems: the Growers’ Experience – Thom Curry (Temecula Olive)

3:00-3:20 PM **COFFEE BREAK**

Session 2 – Performance of SDI Systems on Different Crops

Moderator: Daniele Zaccaria, UC Cooperative Extension, LAWR Department, University of California, Davis

- 3:20-3:40 PM Suitability and Performance of SDI Systems for Fruit and Nut Crops – Blake Sanden, UC Cooperative Extension Kern County
- 3:40-4:00 PM Historical Perspective and Current Status of SDI Technology for Vegetable Crops – Daniel Munk, UC Cooperative Extension, Fresno County
- 4:00-4:20 PM Suitability and Performance of SDI Systems for Forage Crops – Daniel Putnam, Department of Plant Science, University of California, Davis
- 4:20-4:40 PM Salinity Management with SDI Systems – Khaled Bali, UC Cooperative Extension, Imperial County
- 4:40-5:00 PM Sources and Mitigation Potential For Nitrous Oxide from Agricultural Activities in California – Xia Zhu-Barker, LAWR Department, University of California, Davis

5:00 PM **Adjourn**

To Register, email your name and contact information to Khaled Bali, kmbali@ucanr.edu

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Imperial Valley Vegetable Growers Association
and
Desert Research and Extension Center
Present:
***An Introduction to the Food Safety
Modernization Act Produce Safety Rule:
What Do You Need To Know?***

Presented by:
Donna Pahl, Produce Safety Alliance



Date and Time:

Wednesday, May 25, 2016
10:00 – 11:00am

Location:

Agricultural Center
485 Business Parkway, Imperial, CA 92251

Please RSVP to Donna Pahl by May 20.
Email: dmp274@cornell.edu, Phone: 909-552-4355

This one-hour seminar will cover key components of the Food Safety Modernization Act (FSMA) Produce Safety Rule. Topics include compliance dates, water quality regulations, recordkeeping requirements, the Produce Safety Alliance's role in food safety outreach, and resources to help growers comply with the rule.

For more information on the Produce Safety Alliance, please visit:
producesafetyalliance.cornell.edu

Drone Technology and Regulations Workshop

Desert Research and Extension Center

1004 Holton Rd, Holtville, CA 92250

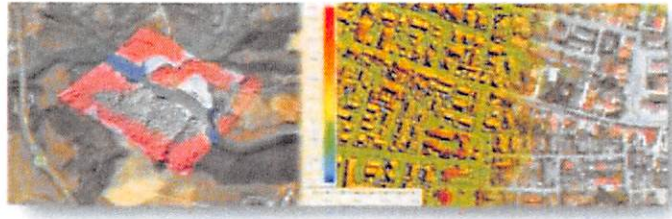
Thursday, May 26th, 2016, from 11:00am to 4:00pm

Goal: To provide an overview of unmanned aerial systems (UAS) technology and regulations to UC Cooperative Extension Advisors, Specialists and other UC affiliates, as well as public and private resource professionals.



Workshop Content: This workshop is designed for participants with little to no experience in UAS technology and who are interested exploring practical applications of UAS for a variety of interests. Following a brief lecture on drone technology, protocols and regulations, a hands-on exercise will have you planning your own flight(s), practicing pre-flight launch preparations, and observing a UAS deployment. To conclude the workshop, we will discuss a wide range of potential scientific applications for UAS that may unfold in the near future.

This course content is the result of a collaborative effort between the UC ANR IGIS Statewide Program, <http://igis.ucanr.edu>, the UC Berkeley, Geospatial Innovation Facility (GIF), <http://gif.berkeley.edu/>, the UC Davis, Center for Spatial Technology and Remote Sensing (CSTARS), <http://cstars.metro.ucdavis.edu/>, and the UC Merced, Mechatronics, Embedded Systems and Automation (MESA) Lab, <http://mechatronics.ucmerced.edu/>.



Source: <http://www.menci.com>

Audience: Public and private resource professionals as well as UC Cooperative Extension Advisors, Specialists and other UC ANR affiliates.

Requirement: Participants must bring a laptop computer with Google Earth Pro installed on it. This application can be downloaded for free of charge by [Clicking Here](#).

Suggestion: Participants may wish to set up a Google account with access to Google Drive, as this can be a useful tool for storing and sharing data between your mobile devices, your computer and a UAS controller. If you do not already have a Google account, you can sign up for one by [Clicking Here](#), and can then access Google Drive by [Clicking Here](#).

You can then install Google Drive's app on your smartphone from your respective app store, if it has not already been installed on your phone automatically.

When & Where: May 26th, 2016, from 11am to 4pm, with a one hour catered lunch break from 12pm to 1pm.

UC Agriculture and Natural Resources
Desert Research and Extension Center
1004 East Holton Road, Holtville CA. 92250

Google Map link: [Click Here](#)

Cost: \$30 (account # and contact information required for members of UC ANR)

UC ANR members' travel costs will be partially supported by the IGIS Statewide Program.

Register: <http://ucanr.edu/survey/survey.cfm?surveynumber=17372>. Registration is limited to 25 participants, so please register early.

Contact: Sean Hogan, 530-750-1322, sdhogan@ucanr.edu

Further Info: <http://igis.ucanr.edu/IGISTraining/DroneTechDREC/#>

Remote Sensing for Unmanned Aerial Systems Workshop

Desert Research and Extension Center

1004 Holton Rd, Holtville, CA 92250

Friday, May 27th, 2016, from 10:00am to 3:00pm

Goal: To provide an overview of remote sensing applications for unmanned aerial systems (UAS) to UC Cooperative Extension Advisors, Specialists and other UC affiliates, as well as public and private resource professionals.



Workshop Content: This workshop is designed for participants with little to no experience in remote sensing or UAS technology and who are interested exploring practical applications of mapping land cover. Following a brief lecture on UAS technology and sensor payloads, a hands-on exercise will introduce you to UAS imagery processing and creating your own maps. To conclude the workshop, we will discuss a wide range of further applications of UAS for agriculture and natural resource management.

This course content is the result of a collaborative effort between the UC ANR IGIS Statewide Program, <http://igis.ucanr.edu>, the UC Berkeley, Geospatial Innovation Facility (GIF), <http://gif.berkeley.edu/>, the UC Davis, Center for Spatial Technology and Remote Sensing (CSTARS), <http://cstars.metro.ucdavis.edu/>, and the UC Merced, Mechatronics, Embedded Systems and Automation (MESA) Lab, <http://mechatronics.ucmerced.edu/>.



Audience: Public and private resource professionals as well as UC Cooperative Extension Advisors, Specialists and other UC ANR affiliates.

Requirement: Participants must bring a laptop computer with a recent version of ENVI (recommended) or Erdas remote sensing software, and ArcGIS installed on it.

ENVI and Erdas Imagine can be temporarily obtained for this workshop through IGIS. For more information on downloading and acquiring the program licenses please contact Shane Feirer, at stfeirer@ucanr.edu

ArcGIS can be obtained for UC ANR work computers free of charge at [Click Here](#)

Please download the ENVI or Erdas Image, and ArcGIS software and request a user license several days in advance of the workshop to ensure that they are properly functioning before the workshop date.

When & Where: May 27th, 2016, from 10am to 3pm, with a one hour catered lunch break from 12pm to 1pm.

UC Agriculture and Natural Resources
Desert Research and Extension Center
1004 East Holton Road, Holtville CA. 92250

Google Map link: [Click Here](#)

Cost: \$30 (account # and contact information required for members of UC ANR)

UC ANR members' travel costs will be partially supported by the IGIS Statewide Program.

Register: <http://ucanr.edu/survey/survey.cfm?surveynumber=17373>. Registration is limited to 25 participants, so please register early.

Contact: Sean Hogan, 530-750-1322, sdhogan@ucanr.edu

Further info: <http://igis.ucanr.edu/IGISTraining/UASRemoteSensingDREC/>

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