Imperial County Agricultural Briefs

University of California
Agriculture and Natural Resources

Features from your Advisors

March 2016

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CONTROL WEEDS TO STOP FALSE CHINCH BUG

Eric T. Natwick, Entomology Advisor, UCCE Imperial County

With the current El Niño conditions, we may receive unusually heavy and frequent rainfall this spring. The heavy and frequent rainfall will support the widespread growth of London rocket, or Sahara mustard; both weeds in the mustard family. Mustards are a favorite host of the false chinch bug, *Nysius raphanus* Howard. False chinch bugs are small, light or dark gray insects about 0.12 inch long. The immature bugs are tan with some red markings. When mustard weeds begin to dry down with the onset of warmer weather, the false chinch bugs will begin to migrate in mass. These bugs migrate to vegetable crops. The bugs can kill vegetable crops in just a few hours. Massive numbers of false chinch bug nymphs and adults feed in huge numbers on single seedlings, sucking the plant sap out to the point where the plants go into a permanent wilt and die. These mass migrations can also destroy several rows of mature plants of peppers, melons or beets in a matter of hours as the bugs swarm over the plants along a field edge and suck them dry. During El Niño years there have been reports of these bugs swarming over houses and out buildings when mustard weeds dry down. The winged adults also fly to leafy vegetable crops and cole crops where they contaminate the heads rendering them unmarketable.

False chinch bugs feed mainly on seedlings, but will also move into mature crops such as peppers and cause severe damage to the fruit as they move into a field. Individual bugs do little damage, but large migrations can severely injure or kill young plants or destroy fruit in just a few hours. Migrating false chinch bugs can also contaminate heads of lettuce and cole crops. The bugs move as a group and usually do not move beyond several border rows if noticed and controlled with a pesticide early.

Controlling cruciferous weed hosts now within fallow fields, along fence rows and road ways will help to eliminate the probability of this pest occurring in vegetable or beet crops. Monitoring crops, fences, and weedy areas surrounding the field can serve as an early detection method for migrating bugs. Treat migrating populations before they enter into the crop, if possible. Treat field borders to stop further field migration and damage. If potential problems are detected early, complete crop treatment is usually not necessary. If damage from false chinch bugs reaches unacceptable levels, treatment with a pyrethroid insecticide to field edges is usually sufficient to control this pest.

LATE BLIGHT OF CELERY

Jose Luis Aguiar, Vegetable Crops Advisor, UCCE Riverside County

Celery acreage has been steadily increasing in the Coachella Valley. (See Table 1 for data) Celery is a crop that is well suited to well-drained sandy soils of the desert. It has a fibrous shallow root system that can be drip irrigated. Celery production requires close attention, as there are several diseases that can affect the crop at different growth stages. (Other celery diseases will be covered in future articles)

Table 1. Celery[1] acreage and gross crop values for the Coachella Valley[2]

YEAR	ACREAGE	GROSS CROP VALUE
2014	748	8,850,000
2013	574	8,965,000
2012	522	7,397,400
2011	478	5,306,900
2010	391	5,603,600
2009	412	5,863,000
2008	254	2,757,900
2007	331	4,569,900
2006	307	2,596,100
2005	365	2,292,700

[1]Riverside County Agricultural Commissioners Crop Reports
[2]Celery is packed in 50-pound boxes

Late Blight of Celery

A problem that shows up late in the growing season is Late Blight of Celery. It is also called Septoria Leaf Blight. This disease is caused by the fungus *Septoria apii cola*, other synonyms are *S. apii* and *S. apii-graveolentis. Septoria apii cola* is an imperfect fungus meaning that no sexual stage has been observed in its life cycle.

The fungus can be in celery seed or it can survive in debris of the previous celery crop. The fungus enters the plant through the epidermis or through the stomata. The stomata are the cells on the epidermis that allow gases such as carbon dioxide and water vapor and oxygen to move in and out of the plant. Stomata can change in size openings thus affecting the rate of photosynthesis and transpiration of the plant depending on the environmental conditions.

Late Blight disease symptoms include multiple leaf spots on older leaves and petioles that will eventually become necrotic as in Figure 1. The affected leaves are in the canopy or the outer leaves of the canopy closer to the ground. This disease can be field diagnosed when the presence of pycnidia is observed with a hands lens in the necrotic tissue. This sign of the fungus is what distinguishes Late Blight from Early Blight. On the pycnidia, multicellular spores (conidia) are produced in huge quantities. Rainfall, overhead irrigation, workers and machinery working in a wet field can all help spread the conidia.

Favorable conditions for Late Blight are heavy precipitation, a very dense plant canopy, poor air movement and the foliage staying wet a long period of time. (See Figure 2) Temperature at 70F also include a minimum of 24 hour of dew periods or interrupted with 12 hours of wet/12 hour dry/12 hour wet (dew) again.

Control:

There are seed treatments that can be utilized. Field control may require fungicide treatments on a regular schedule once the fungus is observed. A two year field rotation out of celery is adequate as this fungus is short lived in the crop residue. Once control measures are taken, check the reentry intervals and check to see that the treatment has been effective; that is not producing conidia. See Figure 3.

Figure 1. Leaf symptoms of Late Blight: spotting and yellowing of the affected tissue. In the spots are the pycnidia that produce conidia.

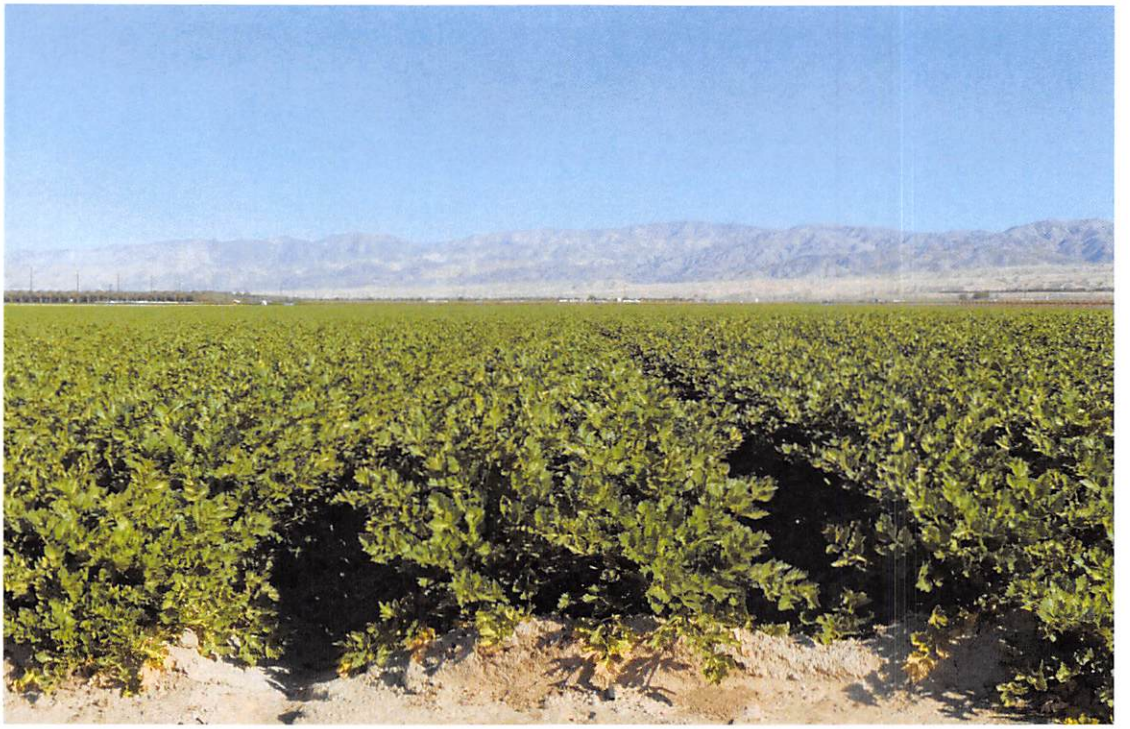

Figure 2. Celery has a very dense canopy. This field is about two weeks from harvest.

Figure 3. Search for Late Blight in the crown of the plants, check to make sure fungus has dried out and is not producing conidia.

ARMYWORM MANAGEMENT IN WHEAT AND SUDAN GRASS

Eric T. Natwick, Entomology Advisor, UCCE Imperial County

The armyworm, Mythimna unipuncta (Haworth), formerly Pseudaletia unipuncta (Haworth), is a widely distributed and injurious cutworm. It destroys grass and grain crops over wide areas. An attack by armyworms is often sudden and severe. Armyworm larvae may be found in bermudagrass, wheat and sudangrass. Plantings of wheat and sudangrass may now be at risk of being infested.

Control: It is essential for effective, profitable control that any armyworm infestation is discovered early. Inspect crops regularly for armyworm as well as other pests. Armyworms hide under ground litter, under lodged wheat, in soil cracks or in plant whorls during the day. Look for feeding injury to foliage. Damage to leaf blades is diagnostic, typically angular notches as opposed to round-shaped notches caused by feeding of grasshoppers and other species of worm pests. Insecticides labeled for wheat are various Bt (Bacillus thuringiensis var. Kurstaki) products and Lannate SP or LV.

Biological Control: Apanteles militaris is a common parasite of armyworm. The larvae of this wasp live within the armyworm and upon reaching full larval growth emerge to form white cocoons on leaves, under plant litter, or within the cracks in the soil where armyworms hide during the daylight period. Check fields for evidence of parasitism and take this into account when making a treatment decision.

Host Plants: Armyworm prefer grasses for food and are particularly destructive to small grains, corn and forage grasses, such as Sudan grass. Armyworm problems often start and are most severe in weedy fields infested with grassy weeds such as jungle rice, barnyard grass, or bermudagrass. They may occasionally migrate as larvae to other crops such as alfalfa or sugar beets. Armyworms eat the succulent leaves of forage grasses and grain crops first. These plants may be stripped of foliage. Larvae chew angular notches in the leaves.

Biology: Armyworm moths aggregate and fly long distances carried by the wind. As moths alight in green fields, females deposit hundreds of eggs. Larvae emerging from eggs usually go undetected until serious damage to the crop calls attention to their presence. They may be numerous, more than 30 per square foot, feeding at night and

hiding under plant litter, under lodged wheat, or in cracks in the soil during daylight hours. Numerous armyworms may completely devour a crop before growers can apply control measures. If their food supply becomes exhausted, the larvae aggregate and crawl to fresh fields.

Eggs are laid by female moths in narrow bands on leaf blades or under the leaf sheaths. The eggs are minute, greenish white and globular. Small larvae are pale green, while full-grown armyworms vary in color but are usually brown with varying degrees of blackish mottling and white flecks. The armyworm is frequently mistaken for the fall armyworm, but the armyworm has a dark dorsal half and pale ventral half; the opposite is true for the fall armyworm.

Armyworms overwinter as partially grown larvae in the soil or underground litter. With arrival of warmer spring weather, larvae resume feeding and development. Upon reaching full growth they cease feeding for 4 days then pupate. The pupal period may last 15 to 20 days. Adults emerging in May and June mate with peak sexual activity 5 hours after sunset. One mating is sufficient, but multiple matings may occur. Prior to egg laying, females feed for 7 to 10 days on sweet substances like honeydew, nectar or decaying fruit. Eggs are laid at night in clusters of 25 to 130 on grass or grain in folded blades or under leaf sheaths. Females live for about 17 days and can produce up to 2000 eggs.

The incubation period for eggs is 6 to 10 days. First instar larvae feed on the upper leaf surface down to the parenchyma leaving the lower surface intact, creating a membrane window. Larger larvae feed from the leaf edge devouring all leaf tissue. Armyworm larvae feed at night and hide during the day.

There are 6 larval instars requiring 4 to 6 weeks to complete larval development. The last instar lasts about 7 days and these large worms consume more than 80 percent of all foliage eaten during the entire larval period. Full-grown larvae pupate in flimsy cocoons under litter or in earthen cells 2 to 3 inches in the soil. In warm climates such as ours there may be 5 or more generations per year.

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 March 1 to May 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	March		April		May	
	1-15	15-31	1-15	16-30	1-15	16-31
Calipatria	0.18	0.22	0.26	0.29	0.32	0.36
El Centro (Seeley)	0.16	0.20	0.24	0.28	0.31	0.34
Holtville (Meloland)	0.17	0.21	0.25	0.28	0.32	0.35

*** 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.

UNIVERSITY OF CALIFORNIA
COOPERATIVE EXTENSION
IMPERIAL COUNTY
1050 E. HOLTON ROAD
HOLTVILLE, CALIFORNIA 92250-9615

Telephone: (760) 352-9474 FAX Number: (760) 352-0846
http://ceimperial.ucanr.edu

Agronomic Crops and Water Conservation Field Day

When: Thursday April 13, 2016 (7:00 AM to 12 PM)
Where: University of California Desert Research & Extension Center
1004 E. Holton Rd., Holtville, CA 92250

7:00 AM: Registration
7:30 AM: Welcome to UC Desert Research & Extension Center – Jairo Diaz, Director

Agenda: *Talks are scheduled for 10 minutes*

Stop 1 (Area 60) – Crop Nutrition

- Tools for assessing in-season N needs in wheat – Mark Lundy, UC Davis
- Information resources for sustainable nutrient management - Sonja Brodt, UC Sustainable Agriculture Research and Education Program, UC Davis

Stop 1b (Area 92) – Potential Alternative Crop

- Rhodes grass adaptability test – Oli Bachie, UC Cooperative Extension, Imperial, Riverside, & San Diego Counties

Stop 2 (Area 80) - Water Conservation and Crop Production

- Alfalfa production progress under subsurface drip irrigation (SDI) - Dan Putnam, UC Cooperative Extension, UC Davis
- California drought update – Daniele Zaccaria, UC Davis
- UC Coordinated efforts to address the drought - Faith Kearns, California Institute for Water Resources, University of California, Oakland
- Climate change and its impact on crop production - Tapan Pathak, UC Merced - Sierra Nevada Research Institute, Merced
- Salinity management under subsurface drip irrigation (SDI) – Khaled Bali, UC Cooperative Extension, Imperial County
- Drip irrigation maintenance issues (FAQ's - Use of Chlorine, Acid & Triflorine for root intrusion) - Bryan Foley, Toro Micro-Irrigation
- System Components and Typical Layouts of Subsurface Drip Irrigation systems - Patrick Fernandes, NETAFIM

Stop 3 (Area 90 East) - Variety Trials and Deficit Irrigation

- Alfalfa variety trial, water use and deficit irrigation - Dan Putnam, UC Cooperative Extension, UC Davis
- Alfalfa evapotranspiration and crop coefficients under flood and subsurface drip irrigation (SDI) - Ali Montazar, UC Davis
- Deficit irrigation practices on alfalfa – Steve Orloff, UC Cooperative Extension Siskiyou County
- Alfalfa insect pest management – Eric Natwick, UC Cooperative Extension, Imperial County
- Pest management of the southwest desert grown alfalfa - Ayman Mostafa, University of Arizona, Cooperative Extension

Agenda continued on next page…

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1004 E. Holton Rd., Holtville, CA 92250.

7:00 AM: Registration
7:30 AM: Welcoming remarks & Commencement of Field Day

Agenda: *continued*

Stop 4 (Area 90 North) – Other Forage Crops

- Kura clover for forage and seed production – Dan Putnam, UC Cooperative Extension, UC Davis and Oli Bachie, UC Cooperative Extension, Imperial, Riverside & San Diego Counties

Stop 5 (Area 90 West) – Agronomic Grain Crops

- Evaluation of stress resistance in wild and cultivated sunflowers - Khaled Bali, UC Cooperative Extension, Imperial County
- Insect pest of low desert sunflower - Eric Natwick, UC Cooperative Extension, Imperial County
- Renewed interest in sorghum in California - Jeff Dahlberg, UC Kearney Agricultural Research & Extension Center

Stop 6 (Area 70) – Irrigation, Nematodes & Drones

- Update on automated irrigation systems - Alan Jackson, Rubicon Water & Khaled Bali, UC Cooperative Extension, Imperial County
- The cyst nematode and coded variety and nematicide trials - Oli Bachie, UC Cooperative Extension, Imperial, Riverside, & San Diego Counties
- How to assess the cost and benefits of pest control or other agricultural inputs - Eta Takele, UC Cooperative Extension, Riverside County
- Drones (demo) to spot agricultural crop troubles - Frank Taylor, Community Safety Consulting Group

Lunch will be served at noon (Sponsored by RDO). For additional information on the field day, please contact Khaled Bali, kmbali@ucanr.edu or Oli Bachie, obachie@ucanr.edu

To pre-register for field day please send an email in advance to aiestrada@ucanr.edu with full name of attendee(s).

Pending CEU Approval from: Certified Crop Adviser, CA DPR & AZ Dept. of Ag

Please feel free to contact us if you need special accommodations.

Drought Preparedness and Leak Detection & Water Loss Accountability

Holtville (Imperial County)

April 19, 2016

This workshop is presented by the DWR and CRWA

This no-cost workshop is targeted to small communities and rural, disadvantaged systems. It is beneficial for Water Operators and System Managers of Private, Public and Tribal Systems. It will cover the following topics:

Topics:

Drought Preparedness –

- Different types of drought and their impacts, and a review of statewide and regional water conditions.
- Emergency plans required for SDWA compliance, technical, managerial, and financial capacity, and the drought planning process.
- Challenges that small water systems and tribes face, and the resources and solutions available.

Leak Detection and Water Loss Accountability –

- Review of preliminary survey, zones and zone measurements, pinpointing leaks, and estimating leaks.
- Hands-on demonstration of leak detection, modern methods of leak detection, sonic leak detection, and correlation equipment.
- Water loss identification and prevention.

Contact Hours: 6 SWRCB Water Contact Hours

Registration: 8:15 am – 8:30 am **Classroom Session: 8:30 am – 3:30 pm** **Lunch: 12:00 pm – 1:00 pm (on your own)**	Holtville (Imperial County) Desert Research and Extension Center 1004 E Holton Road Holtville, CA 92250

Attendee(s) Name(s): _____

System or Company Name: _____

System or Company Address: _____

City: _____ State: _____ Zip: _____

Phone: _____ FAX: _____ Email: _____

These are free classes. We will contact you if the class is full and put you on a waiting list. If you register and cannot attend, please call (800) 833-0322 to cancel. Please let us know if any registrant requires accommodations for disabilities. For more information on CRWA classes, please visit our website: www.calruralwater.org. Questions? (800) 833-0322

TO REGISTER: Please fax this form to (916) 553-4904
or email to rviramontes@calruralwater.org
or mail to California Rural Water Association, 4131 Northgate Blvd., Sacramento, CA 95834.

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