



Imperial County

Agricultural Briefs



University of California
Agriculture and Natural Resources

Features from your Advisors

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Table of Contents

STAND ESTABLISHMENT PESTS OF SPRING SWEET CORN IN THE DESERT SOUTHWEST US.....	Eric T. Natwick	- 2 -
SOUTHWEST UNITED STATES HERBICIDE RESISTANCE LISTENING SESSION HOSTED BY WEED SCIENCE SOCIETY OF AMERICA (WSSA).....	Pratap Devkota	- 4 -
INTEGRATED PEST MANAGEMENT IN IRRIGATED DESERT ALFALFA	Oli Bachie	- 6 -
“SAVE THE DATE” FLYER – FIELD DAY & INDOOR WORKSHOP – 04/11/2017		- 7 -
CIMIS REPORT AND UC DROUGHT RESOURCES	Khaled M. Bali and Sharon Sparks	- 8 -

STAND ESTABLISHMENT PESTS OF SPRING SWEET CORN IN THE DESERT SOUTHWEST US

Eric T. Natwick, Entomology Advisor, UCCE Imperial County

Often, the first pest to attack emerging sweetcorn during the spring planting are seedcorn maggot or wireworms followed by trash pests such as, cutworms, earwigs, and crickets.

The adult seedcorn maggot is a light gray fly that resembles a small house fly but less robust, about 0.2 inch long. Following a wet season of spring rain or irrigation, gravid adult female flies deposit whitish, slightly curved eggs in cool soils with a high content of non-decomposed organic matter residue from a previous crop or where manure has been spread. Larvae hatch to feed on organic matter and on germinating seeds. The whitish to yellow, cylindrical, larvae tapering slightly anteriorly reaching lengths of 0.2 to 0.25 inch when mature. Mature larvae pupate forming small brown capsules from which the next generation of adult flies emerge.

The larvae or maggots damage or kill germinating seeds and seedlings as they burrow into the kernels, often inhibiting germination. An early sign of seedcorn maggot infestation is slow emergence and poor stand establishment. When a sweetcorn stand is slow to emerge or there is spotty emergence, dig in the seed-lines to the planting depth and look for damage to seeds and seedlings caused by feeding maggots. Seedcorn maggot eggs deposition, and larval survival are favored by cool soil temperature and excessive moisture that also favor slow seed germination and seedling emergence and can result in weakened seedlings and spotty stands.

The best management for seedcorn maggot infestation are preventative measures starting with cultural practices such as sanitation; incorporating crop residues and destroying weed growth by disking several weeks prior to planting sweet corn. The addition of water and nitrogen fertilizer will speed up the decomposition of plant residues that attract seedcorn maggot flies. To minimize the seedcorn maggot problems, assure rapid seed germination by planting under ideal soil and weather conditions. Applying a preventive insecticide treatment (seed or broadcast) is also a good control method.

Another soil dwelling pest of germinating and emerging sweetcorn are wireworms, the larvae of click beetles. Wireworms have a slender, elongate, yellowish to brown jointed, mostly cylindrical body covered with a smooth, tough exoskeleton. It has six short legs near its head and the abdomen tip is covered in a flattened plate with a

pair of short, dark colored hooks. The wireworms may remain in the soil for 1 to 3 or more years, depending upon the species of click beetle and food supply. When mature, wireworms pupate and later emerge as click beetles.

Wireworms have a broad host range feeding on seeds and below ground parts of plants; destroying the germinating seeds and emerging seedlings of sweetcorn. Wireworms can also bore into below ground stems of sweetcorn, resulting in weakened plants or reduced stand. Damage is most likely to occur where corn is planted into a field formerly in pasture or weedy alfalfa. Avoid planting sweetcorn into fields formerly used for pasture or into fields coming out of weedy alfalfa. Use a preventative insecticide treatment (seed coating or soil incorporated) for fields with a history of wireworm problems.

Trash pests (cutworms, earwigs, and crickets) usually feed near the soil air interface when sweetcorn seedlings emerge. Good sanitation practices in and around the field prior to planting sweetcorn helps to keep trash pest populations down. The granulate cutworm, black cutworm, variegated cutworm, and others are most active during spring and early summer months. Adults are gray or grayish brown moths approximately 1-inch-long with a wing span of 1.25 to 2 inches. Female moths, after mating, lay their flat top, ribbed, white to dull or off-white eggs in massed rows on crop foliage or on nearby weeds. When fully grown, cutworm larvae are to 1.75 inches long. They curl into a C-shape when disturbed. Cutworms cause damage by cutting seedling plants off at or just below the soil surface. Cutworm larvae hide during the day in weedy areas around the field or under debris on the soil surface. They are active at night and are voracious feeders. When cutworms are in a sweetcorn field, clipped off seedlings are found in the seed-lines, but it may be necessary to dig in the soil to find cutworm larvae to determine the extent of the infestation and the size of the cutworms involved. Large cutworms are more difficult to control. Treat with a foliar insecticide or insecticide bait during the seedling stage if the cutworm population is reducing crop stand. Often the damage is concentrated along field edges; especially if the larvae are moving in from a weedy area of an adjacent cutworm infested crop. However, stand loss can occur in spotty patterns throughout the field if the moths lay eggs within the field. Sometimes, only spot or edge insecticide treatments are needed. An insecticide bait may help to keep migrating larvae from reaching the sweetcorn field. Treatment of hot spots may be possible. Seedlings will regrow if damage is above the growing point.

Crickets are usually hiding under dead or live weeds or debris along field edges during daylight hours. They enter sweetcorn fields at night and clip-off seedlings. Eliminate weeds and debris piles prior to planting the crop. Crickets moving into fields can be stopped with an insecticide bait or with edge treatment with a broad spectrum insecticide such as a pyrethroid.

SOUTHWEST UNITED STATES HERBICIDE RESISTANCE LISTENING SESSION

HOSTED BY WEED SCIENCE SOCIETY OF AMERICA (WSSA)

Pratap Devkota, Weed Science Advisor, UCCE Imperial County

The Southwest US Herbicide Resistance Listening Session was hosted by Weed Science Society of America (WSSA) on February 15, 2017 in UCCE office at Tulare, California. This is one of seven regional sessions hosted by WSSA. It covered diverse audiences from California, New Mexico, and Arizona. The listening session was held for a half-day with participants representing various agricultural sectors with primary focus on weed pest management. Growers, PCA's, representatives from Industry, government agencies, land managers, right-of-way managers, and farm advisors and UC extension specialists were the primary attendees. The session provided an opportunity for the attendees to contribute inputs by discussing their issues, challenges, and suggestions which will help to establish research, extension, regulatory, and government priorities in moving forward for tackling the threat posed by herbicide resistance (HR) in the southwest region.

The listening session was fruitful in providing the attendees a platform with a diverse group to discuss their primary issues, challenges and barriers, experiences and successes, and wants and needs to address HR in weed management. In general, attendees from Arizona and New Mexico mentioned that HR weeds are major problem in their cotton cropping system where they rely on glyphosate based weed management programs. Some of the participants from these states also mentioned that HR weed is not an issue at present, but they are concerned about the spread of HR weed on their field in the upcoming



Littleseed canarygrass, one of the herbicide-resistant weed species in Imperial valley

years. Attendees from California mentioned that there are some HR cases in rice and perennial crops but HR weeds are not a significant threat in vegetable and specialty crop production because of crop rotation and other cultural weed management practices.

Some of the common issues highlighted by the attendees also included economic barriers due to higher cost of input versus low return from crop commodities. The lack of development of new herbicide chemistry and heavy reliance on some of the existing chemistry was noted as another challenge. Shortage of farm labor and switching to herbicidal weed control have exacerbated the HR issue. Limited research, extension, education outreach, and some technical barriers to gaining knowledge were also brought up as challenges for management of HR weeds. Furthermore, the participants pointed out that there is a lack of collaboration between various public and private agencies, and lack of effective stewardship on growers and PCAs for solving HR weed problem. In California, stringent rules and regulations on herbicide registration and applications in specialty crop was pointed out as critical constraint for addressing HR weeds.

The session also focused on nailing down some of the key features to effectively address the HR weed issue. Some of the suggestions made to the growers were to take proactive measures for scouting fields, identifying weeds, and applying management tools at the early stage of weed growth. Additionally, implementing best management practices: integrated weed management, implementing automated cultivation technology, stale seed bed technique, crop rotation, incorporating PRE-herbicides in weed control programs, rotating chemistry, and tank-mixing multiple modes in POST herbicide programs were pointed out as critical practices for managing HR weeds. Ag-retailers and consultants were advised for proper application of pesticides, record keeping, and selecting herbicide products unbiasedly from various companies while making herbicide recommendations. Some of the suggestions for the grower's organization included targeting and focusing outreach program to the growers, strengthening grower's accessibility to the resources, and voicing for allocation of CDFA and federal grant on HR research and extension programs. For the university personnel, there was a call for more applied research, unbiased research on the herbicide performance, and strong collaboration among the campus based specialists and county based farm advisors. The Government agencies were suggested for serious consideration for weed control on public right of way, irrigation canal, and ditches; funding for the cost-benefit researches; and visiting grower's fields, university research and extension centers; and making the policy appropriate at grassroot levels. The lenders and bankers were suggested for understanding and considering HR issue as a factor for assessing risk management in the agriculture production. Last but not least, investment on new herbicide pipeline products and their commercial development was sought to be the critical contribution from the agricultural chemical industries.

INTEGRATED PEST MANAGEMENT IN IRRIGATED DESERT ALFALFA

Oli Bachie, Agronomy Advisor, Director UCCE Imperial County

The Imperial Valley had about 141K acres of alfalfa hay production last year, worth more than \$169 million. Alfalfa hay production ranks second in value among the top ten commodity in the low desert; exceeded only by cattle production. Therefore, alfalfa occupies a prominent place for the low desert agriculture.

Alfalfa, is one of man's oldest crops. Being a long-standing crop, it has sustained the development of a diverse community of organisms as a host plant. While most of these organisms may have little or no impact, a few can cause extensive damage as a pest. Arthropods, plant pathogens, weeds, vertebrates, and plant parasitic nematodes can all cause significant yield reductions and contribute to shortening the productive life of alfalfa.

With the diversity of pests and the need to control these pests, be it culturally or chemically, there are substantial environmental footprints. With environmental issues continuing to increase, there is a need to seriously consider the impact of our pest management and production practices on the air, water and wildlife of the low desert. Having said that, I believe that the alfalfa IPM will focus on managing pests while Protecting the Environment.

The Imperial County UC Cooperative Extension Office (UCCE) provides multi-disciplinary IPM information (entomology, pathology, weeds, and nematodes) and brings a diverse range of information exchange and raise awareness about why it's important to protect and improve alfalfa productivity.

Save the Date...

April 11, 2017

Field Day Demonstration & Indoor Workshop

Location: UC Desert Research & Extension Center (DREC)
1004 E Holton Road Holtville, CA 92250

Registration: 6:30 am Time: 7:00am-12:30pm

Presented by the

University of California Cooperative Extension Imperial County

For more information you can contact Oli Bachie, Pratap Devkota or office at (760) 352-9474

More Information to follow regarding the event; topics, agenda, CEU's, etc.



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CIMIS REPORT AND UC DROUGHT RESOURCES

Khaled M. Bali, Irrigation Water Mgmt Specialist, Kearney Ag Research & Extension
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 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_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	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.

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