Imperial County Agricultural Briefs

University of California
Agriculture and Natural Resources

Features from your Advisors

May 2018 (Volume 21 Issue 5)

Table of Contents

UCCE AGRONOMIC CROPS AND IRRIGATION WATER MANAGEMENT FIELD DAY/WORKSHOP

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

University of California Cooperative Extension - Imperial County held its annual "Agronomic Crops and Irrigation Water Management Field Day / Workshop combination" at the UC Desert Research and Extension Center on April 18th. At this combined event, 26 researchers from UC Davis, UC Riverside, UC Merced, UCCE Imperial and Riverside Counties, the University of Arizona, progressive farmers, the water industry and private sector came together to bring innovative ideas and solutions and to disseminate the outcomes of their recent studies in the desert region. Dr. Mark Bell, UC ANR Vice Provost of Strategic Initiatives and Statewide Programs delivered the opening comments. Twenty-four (24) presentations were given during three sessions of field demonstrations, an indoor workshop, and industry update. The event was co-organized by UCCE Imperial County advisors; Ali Montazar, Pratap Devkota and Oli Bachie and was sponsored by the Toro Company and AquiMax Company. We thank all presenters, the sponsor(s), growers, DREC and all of the participants for making this event successful.

Mark Bell, UC ANR Vice Provost of Strategic Initiatives and Statewide Programs, delivering opening comments at the Field Day/Workshop.

Dan Putnam, UCD Statewide Alfalfa and Forage Extension Specialist, talks about alfalfa variety performance for the low desert during the field demonstration session.

Charles Brummer, UCD Director of the Plant Breeding Center, talks about alfalfa improvement for future California Environments and pest management during the field demonstration session.

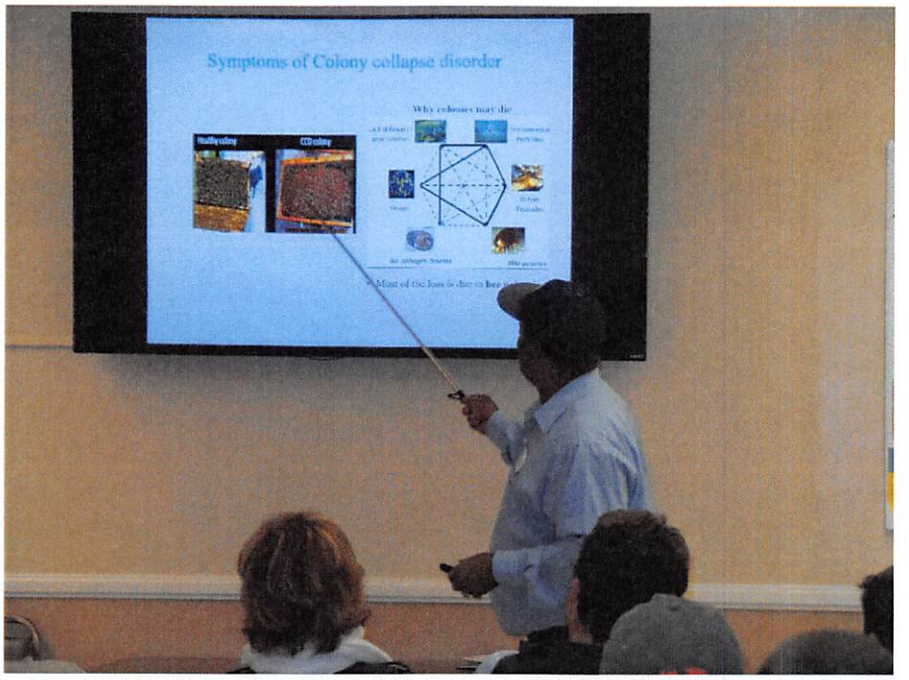
Local farmer, Ronnie Leimgruber shares his experience on automation of flood irrigation during the field demonstration session.

Ali Montazar, UCCE Irrigation and Water Management Advisor, talks about sunflower as a low water user crop and ongoing crop water-use studies for the low desert cropping system at the workshop session.

Pratap Devkota, UCCE Weed Science Advisor, talks about evaluation of residual herbicides for weed control in low desert alfalfa at the field demonstration session.

Mark Roberson and his team, Environmental Consultant Group, talk about Lidar and drone technology during the field demonstration session.

Steve Kaffka, UCD Extension Agronomist and Director of California Biomass Collaborative, talks about the causes of sugarbeet seedling mortality and emergence failure in the Imperial Valley at the workshop session.



Oli Bachie, UCCE Imperial County Director and Agronomy Advisor, talks about Alfalfa selfing and pollinator management at the workshop session.

Fred Ahnert, The Toro Company's District Sales Manager, talks about optimizing irrigation uniformity and water use efficiency at the industry update session.

Kyle Harrington, Program Coordinator Field Crop IPM at the University of Arizona Maricopa County Cooperative Extension, is taking about alfalfa and sorghum pest management for 2018 at the workshop session.

PRELIMINARY RESULTS ON:

EVALUATION OF SUMMER APPLICATION OF SAFLUFENACIL ON NON-DORMANT ALFALFA

Pratap Devkota, UCCE Weed Science Advisor, Imperial and Riverside Counties

Background

Currently, field trials are being conducted to determine if Sharpen (active ingredient in saflufenacil) herbicide is a potential fit for a weed control program during summer slump in non-dormant alfalfa. In the low desert region, alfalfa varieties have reduced growth during summer months which is generally referred to as summer slump (Ottman and Mostafa 2014). Summer slump timing coincides with the months of July and August when the relative humidity is high (due to the summer monsoon) and maximum daily temperature exceeds 100 F. The primary goal of this research is to evaluate crop safety from Sharpen (***please note that the Sharpen label does not include non-dormant alfalfa***) herbicide applied alone and tank-mixed with other POST herbicides registered for use in non-dormant alfalfa grown in the low desert region.

Materials and Methods

A field trial was conducted in the summer of 2017 at University of California Desert Research and Extension Center near Holtville, CA. The same trial will be repeated in the Summer of 2018. The study was conducted as a randomized complete block design with four replications. Each plot size was 10 ft by 30 ft (3 beds on 40-inch and 30 ft long). The treatment lists are provided below.

SN	*Treatments*	*Rate*
1	Untreated check	-
2	Sharpen (saflufenacil) Ammonium sulfate plus MSO	2 fl oz/A 8.5 lb/100 gal + 1% v/v
3	Sharpen (saflufenacil) Ammonium sulfate plus MSO	4 fl oz/A 8.5 lb/100 gal + 1% v/v
4	Sharpen (saflufenacil) plus Raptor (imazamox) Ammonium sulfate plus MSO	4 fl oz/A + 6 fl oz/A 8.5 lb/100 gal + 1% v/v
5	Sharpen (saflufenacil) plus Brox (bromoxynil) Ammonium sulfate plus MSO	4 fl oz/A + 1.5 pt/A 8.5 lb/100 gal + 1% v/v
6	Sharpen (saflufenacil) plus Tricor (metribuzin) Ammonium sulfate plus MSO	4 fl oz/A + 1.33 lb/A 8.5 lb/100 gal + 1% v/v

Treatments were applied in mid-August with a CO2 pressurized back-pack sprayer. Spray volume was delivered at 25 gallons/acre and sprayed at 3 MPH with Teejet XR 11003 nozzles.

The alfalfa variety was CUF 101. Alfalfa was cut prior and had regrowth of 3-4 inches when herbicides were applied. The maximum air temperature from the spraying day through the next two weeks ranged from 105 to 113 F.

Data collection and analysis:

Data was collected for alfalfa injury at two days after treatment (DAT); 1, 2, 3, and 4 weeks after treatment (WAT). For injury rating, a scale of 0 to 100 % was used, where 0 = no injury, 100 = complete death of crop. Alfalfa height was recorded from five plants within each plot at 2 and 4 WAT, and above-ground biomass was harvested from 10.76 ft^2 (1m^2) area after the final rating. Plant biomass was hot-air dried and dry weight was recorded for yield comparison. Data was subjected to ANOVA in JMP 13. Means were compared with Tukey HSD at $\alpha = 0.05$.

Results

These are preliminary results from data collected over one-year of research. The research trial will be conducted over the summer of 2018 for another run, and the results will be reported by analyzing data from two years.

Alfalfa Injury:

Injury was observed from all herbicide treatments starting from 2 DAT up to 2 WAT (Figure 1). Among the herbicide treatments, Sharpen applied at 2 fl oz/A showed the least injury (21%) and Sharpen plus Brox showed the greatest injury (45%) up to 2 WAT (Figure 2).

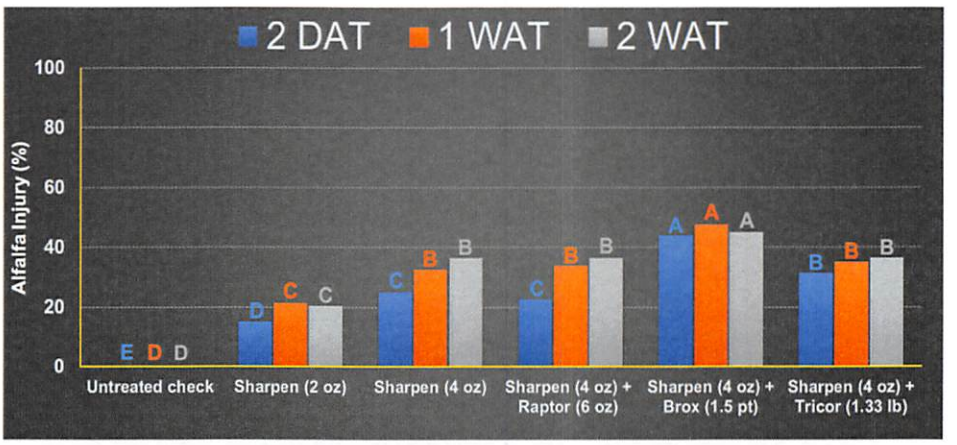


Fig 1. Injury from sharpen applied alone and tank-mixed with other POST herbicides on non-dormant alfalfa. Bars labeled with different letters within each WAT are significantly different with Tukey HSD (α=0.05).

Fig 2. Pictures comparing injury from saflufenacil applied alone and tank-mixed with other POST herbicides on non-dormant alfalfa at 2 WAT.

Alfalfa recovery was observed after 2 WAT, and by 3 WAT, the highest injury observed was 13% from Sharpen plus Brox treatment (Figure 3). At 4 WAT, alfalfa almost completely recovered from the injury, and very minimal injury (≤ 3%) was observed from all the herbicide treatments (Figure 4).

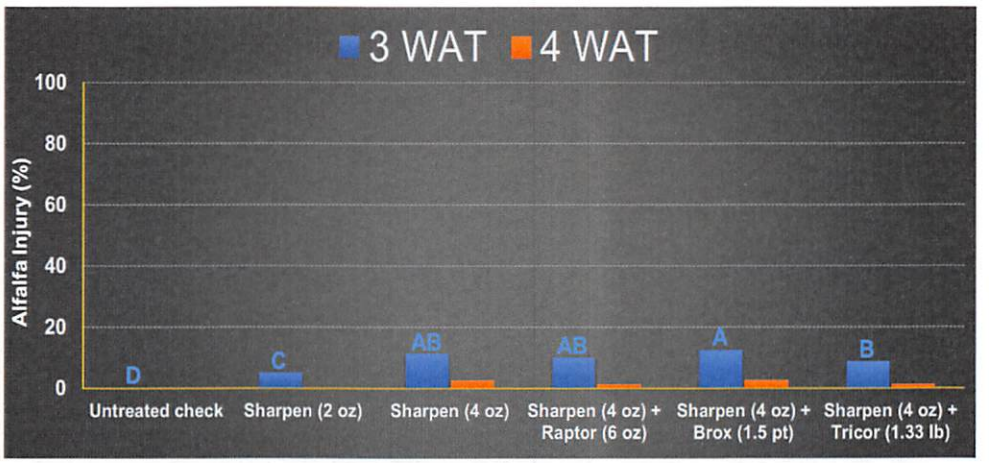


Fig 3. Injury from sharpen applied alone and tank-mixed with other POST herbicides on non-dormant alfalfa. Bars labeled with different letters within each WAT are significantly different with Tukey HSD (α=0.05).

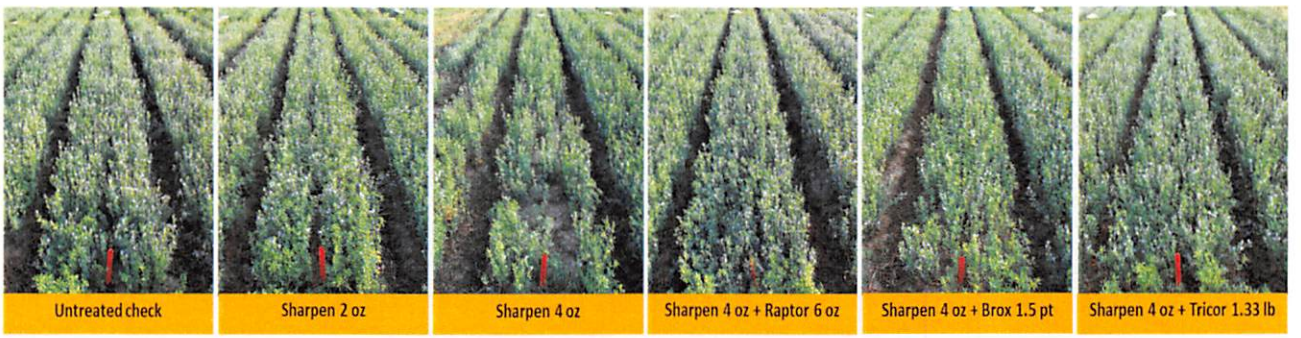


Fig 4. Pictures comparing injury from saflufenacil applied alone and tank-mixed with other POST herbicides on non-dormant alfalfa at 4 WAT.

Alfalfa Height:

There was no difference on alfalfa height among herbicide treatments and non-treated check (Figure 5). Alfalfa height was greater than 9-inches with the herbicide application at 2 WAT. Likewise, alfalfa height was greater than 11-inches from all the treatments at 4 WAT.

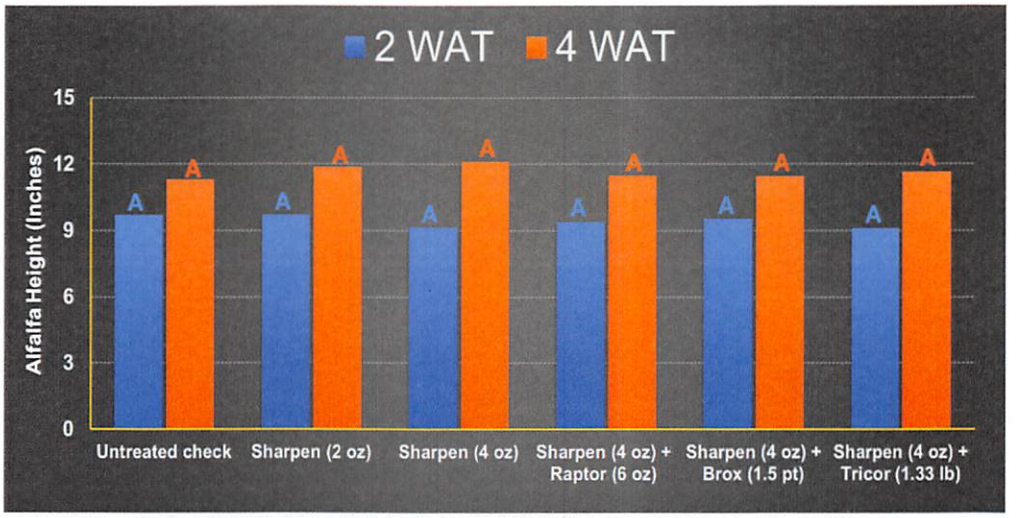


Fig 5. Injury from sharpen applied alone and tank-mixed with other POST herbicides on non-dormant alfalfa. Bars labeled with different letters within each WAT are significantly different with Tukey HSD (α=0.05).

Alfalfa Yield:

There was no difference on alfalfa yield among herbicide treatments and non-treated check (Figure 6). Alfalfa yield for each treatment was greater than 0.57 ton/A when biomass was harvested at 4 WAT.

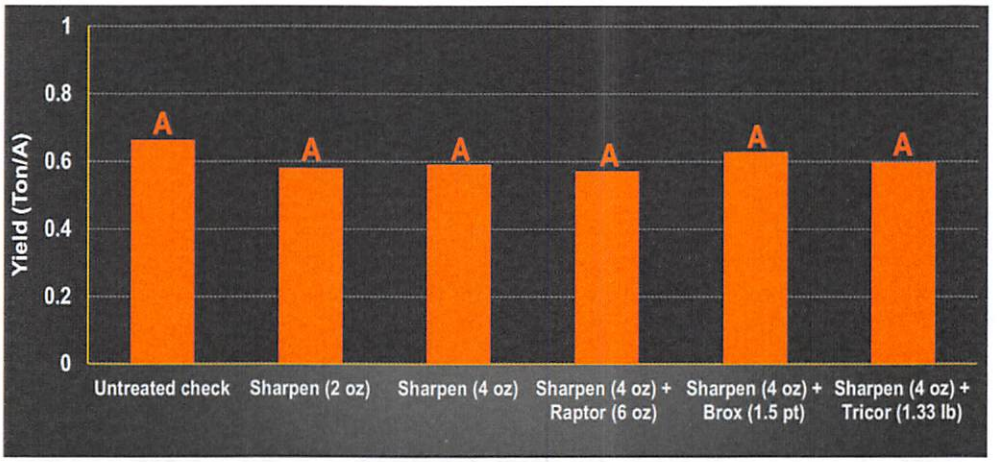


Fig 6. Alfalfa yield from saflufenacil applied alone and tank-mixed with other POST herbicides on non-dormant alfalfa. Bars labeled with different letters within each DAT are significantly different with Tukey HSD (α=0.05).

References

Ottman M. and Mostafa A. (2014) Summer Slump in Alfalfa. The University of Arizona - College of Agriculture and Life Sciences - Cooperative Extension. Publication # AZ1611.

THE BERMUDAGRASS PLANT BUG, *Trigonotylus tenuis*

Michael D. Rethwisch, Crop Production & Entomology Advisor, UCCE Riverside County – Palo Verde Office

Trigonotylus tenuis is a mirid plant bug pest of several grass species, and is sometime called the bermudagrass mirid or the bermudagrass plant bug. It is highly associated with bermudagrass around the world, and is very prevalent on low desert bermudagrass where it is a major pest in seed production. Previous research has noted that a 20 lb./acre seed reduction was correlated for each adult bermudagrass plant bug/sweep late in seed development.

Adult *T. tenuis* also feed on leaves, whorls and stems, resulting in leaf chlorosis/chlorotic spots and severe stem stunting. Studies in Georgia (conducted in cages) noted reductions in bermudagrass stem heights of 30-55%, and yield reductions of 27-60%. These forage losses have not been verified to occur under low desert bermudagrass hay production conditions however. Feeding effect's on feed quality parameters have not been yet been studied.

The bermudagrass plant bug does not exclusively feed on bermudagrass. Some other low desert host plants include johnsongrass, sprangletop, little barley, and purple nutsedge. There are also several reports which notes species of *Eragrostis* (lovegrasses, which includes tef) and *Chloris* (which includes Rhodes grass) serving as hosts. Recently it has been expanding its host range and since 2000 *T. tenuis* has been reported causing damage to rice grains in several countries, where it is called a 'pecky rice bug'.

Trigonotylus spp. plant bugs survive the winters via diapausing eggs. The diapausing aspect is particularly triggered when day length is less than 12.5 hours/day (after Sept. 10) and temperatures are less than 72.5° F. A high percentage of eggs do not enter diapause when temperatures are at 77° F, and above, even with day length being less than 12.5 hours/day. Females lay slightly more than 200 eggs/female.

While the life history of *T. tenuis* in the low desert has not been extensively studied, it was rigorously evaluated in Japan. It took 165 degree days/heat units for egg development (54.5° F baseline), 280 degree days for nymph development (54.9° F baseline) and 90 degree days for the pre-oviposition period (53° F baseline). *Trigonotylus tenuis* therefore can its complete is life cycle with as little as 535 heat units/generation.

A generation can be completed fairly quickly with desert temperatures. Entering 2017 CIMIS data from the Palo Verde Valley data into the UC-IPM insect degree day calculator *(http:/ipm.ucanr.edu/WEATHER/index.html)*, there were enough heat units (5,374) for the plant bugs to complete 10 generations from April 1 to October 31, 2017 (55° F baseline). For the first three weeks of April, 2018 there were approximately 320 degree days (55° F Base), and 938 since January 1. Adult *T. tenuis* were collected from local (Palo Verde Valley) bermudagrass sampling beginning mid-April, 2018. The adults noted on April 13 came from nymphs that had hatched from eggs on or before March 27.

The warm temperatures of fall 2017 combined with above average 2017-2018 winter and spring temperatures may result in increased numbers of *Trigonotylus tenuis* in 2018, especially in bermudagrass seed fields.

Figure 1. Adult *Trigonotylus tenuis* showing top (dorsal) and under view.

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 May 1st to July 31th 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	May		June		July	
	1-15	16-31	1-15	16-30	1-15	16-31
Calipatria	0.27	0.29	0.31	0.32	0.32	0.31
El Centro (Seeley)	0.29	0.31	0.34	0.36	0.33	0.31
Holtville (Meloland)	0.29	0.31	0.33	0.34	0.32	0.31

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/.

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PROGRESSIVE FARMERS

Speaker:

Sonia Rios

Area Subtropical Horticulture Advisor
University of California Coop. Extension
Riverside & San Diego Counties

Topic:

Current Pest Challenges in California Date Production

When: May 17th, 2018
Time: 12 p.m. - 1 p.m.
Where: Riverside County Administration Building Lunch Room 290 N. Broadway, Blythe, CA

Application is being made for 1 hour CEU from California Dept. of Pesticide Regulation (Cal DPR), CCA (Certified Crop Advisor) and Arizona Dept. of Agriculture

Please RSVP to Nisha Noroian at 760-485-4859 by **5/15** for lunch

Or Suzanne at 760-921-5060 (if no answer please leave a message)

Nisha Noroian, President of the Progressive Farmers Group

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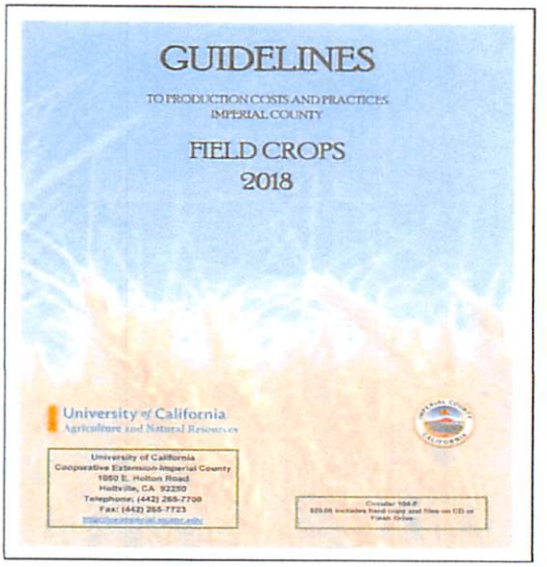
University of California, County of Riverside and U.S. Department of Agriculture Cooperating

The price of the Guidelines will be increasing beginning July 1, 2018.

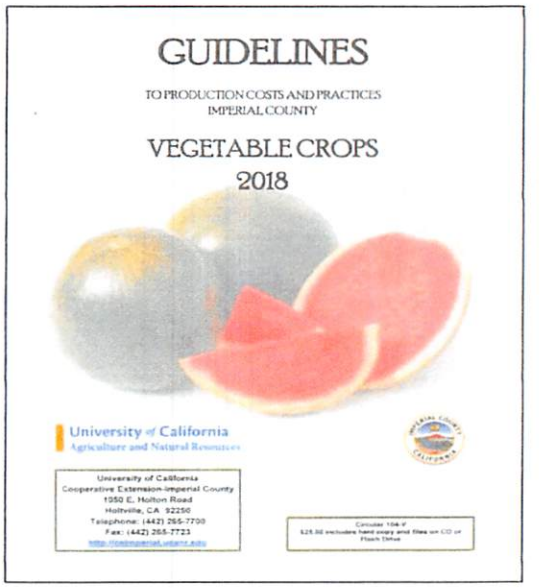
Until then they can still be purchased for $25.00 each.



2018 Field Crops Guidelines

$40.00/book

As of July 1, 2018



2018 Vegetable Crops Guidelines

$40.00/book

As of July 1, 2018

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Make checks payable to:
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Each book includes either a CD or USB.