Imperial County Agricultural Briefs

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Features from your Advisors

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WATER MANAGEMENT IN CALIFORNIA DATE PALMS: RECENT RESEARCH FINDINGS

Ali Montazar, Irrigation & Water Mgmt Advisor, UCCE Imperial and Riverside Counties

Introduction. Dates are one of the world's oldest cultivated fruits. Originating in the Middle East, its distribution extended to the United States in the last century. The geographical distribution of commercial date production is limited to arid and semi-arid regions where there is abundant water supply. The low desert of California with a planted area of nearly 10,000 acres of date palms, is the major date production area within the United States followed by Arizona. Since the date industry is currently economically successful in California, date production is expected to increase as many new groves were planted in recent years and are currently being planted. Accurate information on crop water use along with irrigation best management practices are immediate needs of date palm growers, specifically when the region is facing increasing uncertainty concerning water supplies and efficient use of irrigation water is the highest conservation priority.

Figure 1. An aerial view (top) and ground view (bottom) of one of the experimental date palms in Thermal, CA.

Date palm growers have started to adopt the use of micro irrigation, but, in many instances, irrigation management is based upon data developed decades ago in flood (basin) irrigated orchards. Both micro/drip and flood irrigation are common practices in the low desert region of California, and some growers, who have installed micro irrigation systems in their groves, prefer to irrigate their date palms through an integrated micro-flood irrigation system.

Despite the date palm's regional and international importance and its dependence on irrigation or a shallow

water table for survival, relatively little research on irrigation requirements and management has been conducted worldwide. This article summarizes some of the results obtained from the ongoing irrigation management project in the low desert funded by CDFA 2018 Specialty Crops Block Grant Program.

Methods and materials. Six mature commercial date palm orchards in the Coachella and Imperial Valleys were chosen and instrumentation installed in March 2019. The experimental orchards represent various soil types and conditions, irrigation management practices, canopy features, and the most common date cultivars in the California low desert region ("Medjool' and 'Deglet Noor' cultivars). The irrigation practices consisted of flood irrigation, drip/micro-sprinkler, and integrated drip and flood irrigation. The experimental orchards were 8-22 years old. The orchards have relatively heterogeneous soil; however, the dominant soil type varies from sandy loam to silty loam and silty-clay loam.

A flux density measurement tower was set up in each of the experimental date palm sites.
The actual crop water use (actual crop ET; ET stands for crop evapotranspiration) was measured using the residual of the energy balance method with a combination of surface renewal and eddy covariance equipment. The soil features were surveyed and characterized within an approximate footprint area of 650 ft. × 650 ft. around the flux monitoring towers. An aerial image acquisition and processing was carried out to evaluate canopy characteristics in the experimental sites.

Results. The results demonstrated considerable variability in date palm consumptive water use, both spatially and temporally (Figure 2). The cumulative date palm ET (CET) across the six sites ranged from 51.2 in. (site 6) to 59.1 in. (site 3) with a mean daily ET of 0.28 in d^{-1} in June-July and 0.04 in d^{-1} in December at the site with the highest crop water consumption.

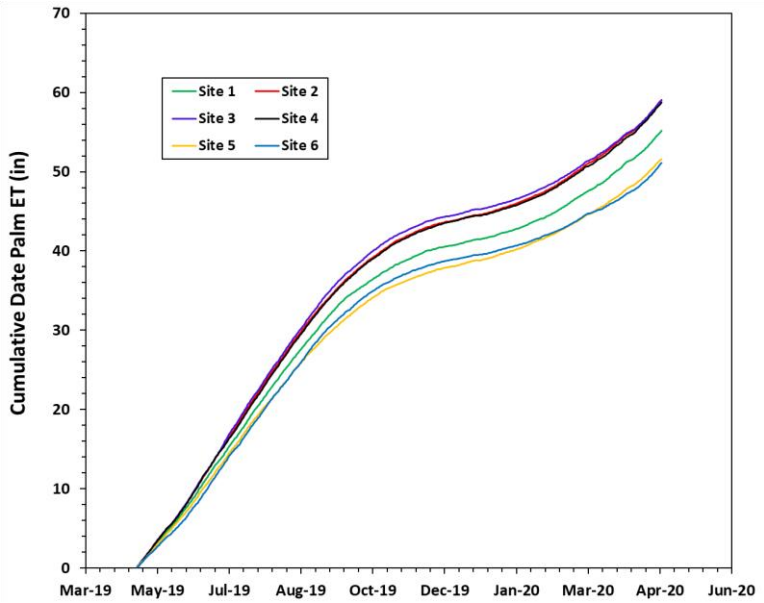


Figure 2. Cumulative date palm ET at the experimental sites over one-year study period.

The results from these six commercial date palm groves revealed clearly that water consumption of date palm varies significantly depending upon site-specific conditions. Various factors could impact the date palm ET including irrigation management practices, salinity and/or soil differences, groundwater table, height of trees, and percentage ground shading or canopy cover (likely most important driver) that provides a good estimation of canopy size/volume and the amount of light that it can intercept. For instance, the cumulative data palm ET was observed 58.8 in. in a non-salt-affected, sandy loam soil date palm with an average density of 50 plants ac^{-1} and an average canopy cover and tree height of more than 81% and 36.1 ft., respectively. However, the CET was 51.6 in. in a silty clay loam saline-sodic date palm orchard with 55% canopy cover, density of 59 plants ac^{-1}, and 24.0 ft. tree height. Canopy cover feature is defined as the percentage of the allocated area for each tree (a rectangle with dimension tree spacing and row spacing).

Soil salinity varied considerably amongst the experimental sites. The mean EC_e (soil electrical conductivity) at the experimental sites showed that while the entire soil profile is saline at one of the sites close to the Salton Sea (average EC_e of the top 4 ft. of the soil > 12 dS m^{-1}), relatively low values of EC_e (average EC_e of the top 4 ft. of the soil < 5 dS m^{-1}) were observed within the crop root zone at the other experimental sites. Inverse relationship was found between date palm CET and soil salinity which means crop water use and as a result fruit production could be negatively impacted by salinity stress. Earlier studies indicated that all aspects of date

palm vegetative growth may negatively respond to salinity including the rate of production of new leaves and the size of the leaf canopy.

The findings of this ongoing research may assist growers in employing adaptive tools and water management practices that support efficient and sustainable date palm production and optimize use of water resources. A very comprehensive version of the findings of this project is published in a peer-review journal article as well as several user-friendly tools are under preparation for irrigation management of date palms.

If you have any question regarding this article and the ongoing study, please feel free to contact me at (442) 265-7707 or amontazar@ucanr.edu.

LIVESTOCK RESEARCH BRIEF

UC CE University of California Agriculture and Natural Resources Cooperative Extension

1050 E. Holton Rd.
Holtville, CA, 92250
(442) 265-7700

Hello,

I hope everyone has been able to stay safe and well throughout this unprecedented time. While cooperative extension is working remotely for the time being, we are still available to help answer any questions you have. Feel free to contact me on my cell phone (269-313-2579) or through email.

This month examines a study looking at the effect of using a two or three phase feeding system to meet early metabolizable amino acid requirements for calf-fed Holstein steers.

If you have any comments, questions, recommendations, or know someone who would like to be included on the mailing list, please feel free to contact me.

Best wishes,

Brooke Latack
Livestock Advisor
UC Cooperative Extension – Imperial, Riverside, and San Bernardino counties
1050 E Holton Rd
Holtville, CA 92250
442-265-7712
bclatack@ucanr.edu
http://ceimperial.ucanr.edu/Livestock/

USING PHASE FEEDING TO MEET METABOLIZABLE AMINO ACID REQUIREMENTS FOR CALF-FED HOLSTEIN STEERS

Brooke Latack
Livestock Advisor

Introduction

Previous studies found that while a single steam-flaked corn- based diet met the average metabolizable amino acid requirements of Holstein steers over the entire feeding period, the diet did not meet the metabolizable amino acid needs specific to the initial 112 days on feed. This single diet, using urea as the sole supplemental nitrogen source, limited growth in the initial 112 days at the feedlot. This study evaluated the use of two and three phase feeding programs to better meet metabolizable amino acid requirements during the first 112 days on feed for calf-fed Holstein steers.

Methods

108 calf-fed Holstein steers (114 ±8 kg) housed at UC DREC were sorted into 18 pens (6 animals per pen). Steers were fed a steam flaked corn based finishing diet. Three feeding methods were used:

- Single phase treatment – Control diet (Diet 1) with a single feeding phase (11.5% CP). Urea used as sole supplemental nitrogen source for entire growth period.
- Two phase treatment – Steers initially fed a diet to meet metabolizable amino acid requirements (Diet 2) for first 112 d of growth (14% CP). Fed control diet (Diet 1) from 112 d to finish.
- Three phase diet – Steers fed primary diet (Diet 3a) from 1-56 d (15% CP) and a second diet (Diet 3b) from 57-112 d (13%). Both diets formulated to meet metabolizable amino acid requirements for those specific periods. Steers were fed control diet (Diet 1) from 112 d to finish.

Results and Implications

The two and three phase feeding management systems had similar performance results. The multiple phase management systems improved overall average daily gain, dry matter intake, and gain efficiency by 6%, 4%, and 3% respectively compared to the single-phase feeding system. The urea-based control diet was found to be deficient in methionine, lysine, and histidine during the first 112 days on feed for calf-fed Holstein steers. However, the urea-based control diet was an adequate source of metabolizable amino acids from 112 d to finish.

Overall, a two-phase feeding system addressing metabolizable amino acid requirements for calf-fed Holstein steers until d 112 on feed (or approximately 280 kg) will enhance several factors of growth performance. From d 112 (or approximately 280 kg) to finish, urea as the sole supplemental nitrogen source is adequate to meet metabolizable amino acid requirements.

Table 1.
Ingredient composition of experiment diet

Ingredient Composition (% DM)				
Item	Diet 1	Diet 2	Diet 3a	Diet 3b
Sudan hay	8	8	8	8
Yellow grease	3.5	3.5	3.5	3.5
Cane molasses	6	6	6	6
Alfalfa hay	4	4	4	4
Steam flaked corn	74.95	65.85	61.60	68.75
Fish meal	0	3.5	5	2.5
Canola meal	0	7	10	5
Urea	1	0.4	0	0.4
Limestone	1.4	1.15	1.3	1.25
Dicalcium phosphate	0.55	0	0	0
Magnesium oxide	0.2	0.2	0.2	0.2
TM salt	0.4	0.4	0.4	0.4

References

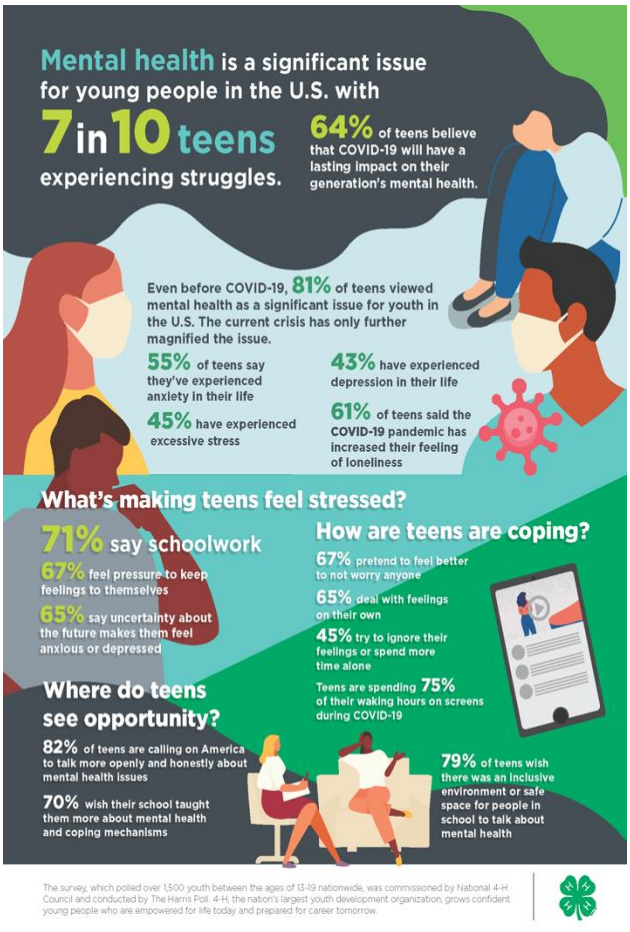
Zinn, R.A., Calderon, J. F., Corona, A, Plascencia, M., Montano, M. F., and Torrentera, RN. Phase feeding strategies to meet metabolizable amino acid requirements of calf-fed Holstein steers. 2007. Professional Animal Scientist, 23, 4.

SUPPORT YOUTH MENTAL HEALTH WITH 4-H POSITIVE YOUTH DEVELOPMENT PROGRAM

Yu Meng, Ph.D, Youth, Family, and Community Advisor, UCCE Imperial County

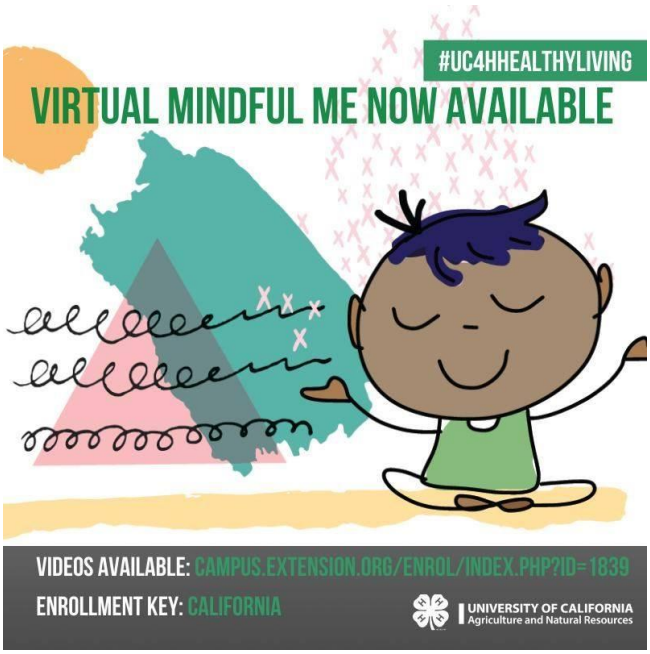
Dealing with at home school children during a pandemic can be very stressful, not only for parents, but also for the children. Fear and anxiety about keeping your family safe and coping with the stress of working and studying can cause strong emotions in adults and children. As a parent, it is important to understand that children also have emotions and that they need help to recognize their feelings. Research shows that when we acknowledge and accept a difficult emotion, we get through it faster and feel it with less intensity than if we try to avoid or resist its existence.

Even before the onset of the pandemic, the social and emotional health of American youth was of growing concern. But, because teenagers and young adults are more adapted to social status than other sectors of the community, it is even more profoundly distressing for them during social isolation and home schooling. A new survey commissioned by National 4-H Council to 1500 youth national-wide, indicated that 7 out of 10 teens are struggling with their mental health during the pandemic. More than half of those surveyed shared that the pandemic has increased their feelings of loneliness, with 64 percent believing it will have a lasting impact on their mental health. The majority (79%) of teens surveyed wished there was an inclusive environment or safe space for people in school to talk about mental health. Seventy percent (70%) wished their school taught them more about mental health and coping mechanisms to deal with it. From the survey results, we learned there are great needs to address youth mental health and teach skills to help them overcome the effects.



The 4-H Positive Youth Development Program of the University of California Agriculture and Nature Resources, developed a 'Mindful Me' curriculum with a goal to promote mindful practices that lead to improvements in managing one's own goals, developing a sense of self, time management, stress management, emotional regulations, and mindful eating practices. These lessons directly benefit the 5-8 years old youth, and indirectly benefit older youth if they practice on becoming teen teachers and deliver these lessons for their younger siblings. The "Teens as Teachers" model has been implemented during the 2019-2020 school year with two elementary after school programs with 25 4-H youth in Imperial county. The latter teaching covered up to 100 children. The teen teachers lead 10 activities with elementary school students and delivered lessons, including story reading, taste testing, and yoga activities. Below are pictures taken during a class at Meadows Elementary School. on the left are older youth reading a story before a class activity starts. On the right is shown a class doing Lesson 10- Yoga: Balance, Flexibility, and Strength.

During the shelter in place, the 4-H Positive Youth Program is looking for ways to engage youth through distance learning. We conducted the stay connected online survey and gave parents and youth an opportunity to ask for resources. At the same time, we also worked on transferring in-person activities into virtual lessons. **Good News: the** Virtual Mindful Me lessons are now online and available for free on the eXtension site at: https://buff.ly/2yPs7gW **Enrollment Key: California.**



Lesson 1	Mindful Eating: Is This Apple Red?
Lesson 2	Affirmations: You Are Great
Lesson 3	The Gift of Presence: Giving Presence
Lesson 4	Describing Feelings: Welcome Feelings
Lesson 5	Mood Management: Smile Tag
Lesson 6	Mood Management: Practice Focus
Lesson 7	Quiet Listening: Finding the Quiet
Lesson 8	Quiet Listening: Creating the Quiet
Lesson 9	Quiet Listening: Being The Quiet
Lesson 10	Yoga: Balance, Flexibility, and Strength

If you would like to read more on how to help teens to shelter in place, you may want to refer to the articles below:

1. https://greatergood.berkeley.edu/article/item/how_to_help_teens_shelter_in_place?fbclid=IwAR3S996sSLQMbuE7GdmFHGZrwGbZ8D0Tcb_Dl09k7TS6oP8EGFw-h3ddYWg
2. https://www.cdc.gov/coronavirus/2019-ncov/daily-life-coping/managing-stress-anxiety.html
3. https://www.washingtonpost.com/lifestyle/2020/04/28/i-wanted-know-how-help-my-teen-through-this-tough-quarantine-so-i-asked-her/?fbclid=IwAR2TUF40FqsNHExPHzWU_lLYYqfDJR8q1jAUAXH1mOcMXPCR-csIsrHx4sI

If you need more information and support on Youth Mental Health, or interested in collaboration and want to learn more about the 4-H after school activities/curriculum, please feel free to contact the University of California Cooperative Extension Imperial County 4-H or email me at ucmeng@ucanr.edu . We are eager to collaborate and share our resources with you and your organization. If you are an individual and want project ideas, feel free to fill out the survey at https://ucanr.co1.qualtrics.com/jfe/form/SV_8uLur6jQjVRnvOl and let us know your needs. Follow the Imperial County 4-H on Facebook for more information upon virtual outreach, camp information, at-home activities, and shared resources: https://www.facebook.com/ImperialCounty4H/.

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USDA Announces Additional Specialty Crops Eligible for Coronavirus Food Assistance Program

USDA Agricultural Marketing Service sent this bulletin at 07/09/2020 02:20 PM EDT

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USDA Announces Additional Specialty Crops Eligible for Coronavirus Food Assistance Program

The U.S. Department of Agriculture (USDA) has released an initial list of additional commodities that have been added to the Coronavirus Food Assistance Program (CFAP) and announced other adjustments to the program based on comments received from agricultural producers and organizations and review of market data.

Producers will be able to submit applications that include the new commodities on Monday, July 13, 2020. USDA's Farm Service Agency (FSA) is accepting applications for CFAP through Aug. 28, 2020. USDA expects additional eligible commodities to be announced in the coming weeks.

Changes to CFAP include:

- Adding the following commodities: alfalfa sprouts, anise, arugula, basil, bean sprouts, beets, blackberries, Brussels sprouts, celeriac (celery root), chives, cilantro,

coconuts, collard greens, dandelion greens, greens (others not listed separately), guava, kale greens, lettuce – including Boston, green leaf, Lolla Rossa, oak leaf green, oak leaf red and red leaf – marjoram, mint, mustard, okra, oregano, parsnips, passion fruit, peas (green), pineapple, pistachios, radicchio, rosemary, sage, savory, sorrel, fresh sugarcane, Swiss chard, thyme and turnip top greens.

- Expanding for seven currently eligible commodities – apples, blueberries, garlic, potatoes, raspberries, tangerines and taro – CARES Act funding for sales losses because USDA found these commodities had a 5 percent or greater price decline between mid-January and mid-April as a result of the COVID-19 pandemic. Originally, these commodities were only eligible for marketing adjustments.
- Determining that peaches and rhubarb no longer qualify for payment under the CARES Act sales loss category.
- Correcting payment rates for apples, artichokes, asparagus, blueberries, cantaloupes, cucumbers, garlic, kiwifruit, mushrooms, papaya, peaches, potatoes, raspberries, rhubarb, tangerines and taro.

Additional details can be found in the Federal Register in the Notice of Funding Availability (NOFA) and Final Rule Correction and at www.farmers.gov/cfap.

Producers have several options for applying to the CFAP program:

- Using an online portal, accessible at farmers.gov/cfap, allows producers with secure USDA login credentials—known as eAuthentication—to certify eligible commodities online, digitally sign applications and submit directly to the local USDA Service Center. New commodities will be available in the system on July 13, 2020.
- Completing the application form using our CFAP Application Generator and Payment Calculator found at farmers.gov/cfap. This Excel workbook allows customers to input information specific to their operation to determine estimated payments and populate the application form, which can be printed, then signed and submitted to their local USDA Service Center. An updated version with the new commodities will be available on the website on July 13, 2020.
- Downloading the AD-3114 application form from farmers.gov/cfap and manually completing the form to submit to the local USDA Service Center by mail, electronically or by hand delivery to an office drop box. In some limited cases, the office may be open for in-person business by appointment.
  Visit farmers.gov/coronavirus/service-center-status to check the status of your local office.

USDA Service Centers can also work with producers to complete and securely transmit digitally signed applications through two commercially available tools: Box and OneSpan. Producers who are interested in digitally signing their applications should notify their local service centers when calling to discuss the CFAP application process. You can learn more about these solutions at farmers.gov/mydocs.

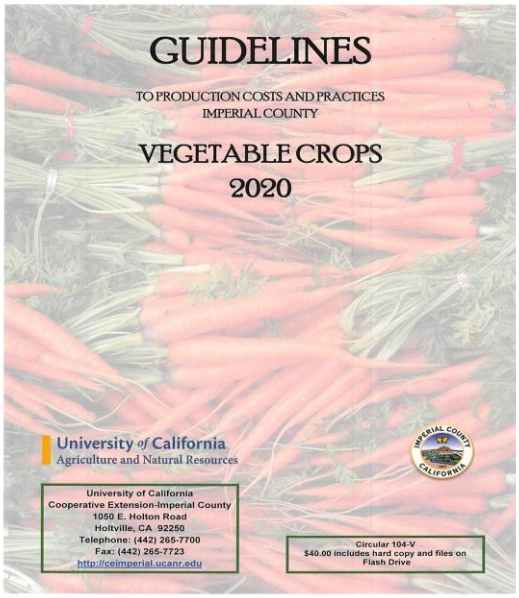
Getting Help from FSA

New customers seeking one-on-one support with the CFAP application process can call 877-508-8364 to speak directly with a USDA employee ready to offer general assistance. This is a recommended first step before a producer engages the team at the FSA county office at their local USDA Service Center.

All other eligibility forms, such as those related to adjusted gross income and payment information, can be downloaded from farmers.gov/cfap. For existing FSA customers, these documents are likely already on file.

All USDA Service Centers are open for business, including some that are open to visitors to conduct business in person by appointment only. All Service Center visitors wishing to

conduct business with FSA, Natural Resources Conservation Service or any other Service Center agency should call ahead and schedule an appointment. Service Centers that are open for appointments will pre-screen visitors based on health concerns or recent travel, and visitors must adhere to social distancing guidelines. Visitors may also be required to wear a face covering during their appointment. Field work will continue with appropriate social distancing. Our program delivery staff will be in the office, and they will be working with our producers in office, by phone and using online tools. More information can be found at farmers.gov/coronavirus.



Coming by mid-August

2020 Field and Vegetable Crops Guidelines

Cost: $40.00 for each

Due to COVID-19 restrictions, our office is closed to the public. If you wish to purchase the Guidelines, please mail in your check along with which books you wish to purchase. Once we receive it, we will mail out the Guideline Books you request along with the USB drive.

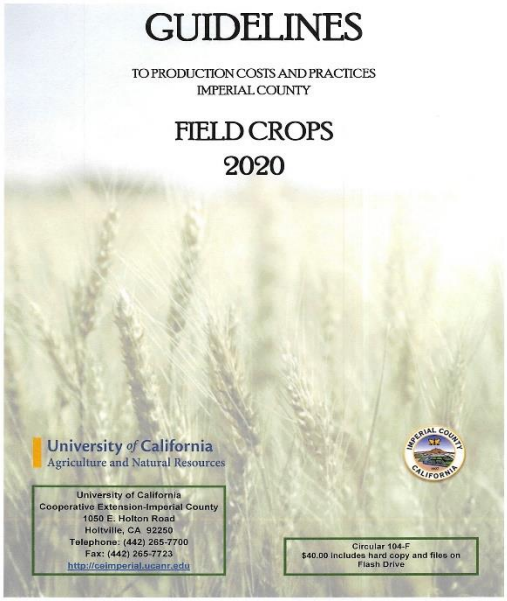
Make Check out to and mail to:

Imperial County Cooperative Extension

1050 Holton Road

Holtville, CA 92250

ATTN: Guidelines



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	July		August		September	
	1-15	16-31	1-15	16-31	1-15	16-30
Calipatria	0.32	0.31	0.30	0.28	0.26	0.23
El Centro (Seeley)	0.33	0.31	0.30	0.28	0.26	0.25
Holtville (Meloland)	0.32	0.31	0.30	0.28	0.26	0.24

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/.