UNIVERSITY OF CALIFORNIA
Agriculture and Natural Resources | Research and Extension Center System

Desert Research and Extension Center – DREC
2023-2024 Research Projects and Educational Programs

Greetings to All,

During the fiscal year 07/2023-06/2024, we conducted 22 projects in the following areas: Plant Breeding and Variety Trials (5), Irrigation and Fertilizer Management (5), Weed Management (2), Food Safety (2), Livestock (1), and Outreach and Educational Programs (7). Lead academics are from the University of California system (ANR and Davis campus), the US Department of Agriculture, and Canada. Research at the center tackles current diverse issues in the top 10 agricultural and livestock commodities in the Imperial County. The center invested over $100,000 in several maintenance projects including replacement of air conditioners in the main building, water plant and laboratory; installation of a fence on the west side of the center near the main building will improve safety of participants during outdoor activities; replacement of fiber optic for UC Extension Office; and landscaping improvements and clean up in the headquarters.

Our Farm Smart educational programs were well attended, reaching 12,130 participants during onsite and offsite events. During this annual report, Farm Smart reached 200,000 participants since the program started in 2001. Farm Smart provided internship opportunities to 18 local college students. Farm Smart hosted the 2024 Food and Ag Summer Learning Program in collaboration with the USDA and Imperial Vallery College. This program offered 10 community college students a paid opportunity to explore different Agri-STEM careers in the Imperial Valley. The Farm to Preschool Festival hosted over 1,300 participants and volunteers on Saturday, January 27, 2024. Children aged 0-5 and their families who participated in the event benefited directly by learning about fruits and vegetables through crafted activities in their farm-to-Preschool kits and harvesting their own vegetables to take home and enjoy with their families. The Imperial County Farm-To-School Community Engagement Initiative provided hands-on learning opportunities for over 40 educators as well as offer a new curriculum to 4th through 6th grade students. You can learn more about our Farm Smart programs at: https://drec.ucanr.edu/Farm_Smart/.

In the next pages you will find a complete list of our current projects, goals, and contact info of project leader. Feel free to contact project leader for specific questions you may have. I am happy to help connect with them as well.

Sincerely,

Jairo Diaz

Jairo Diaz
Director

Plant Breeding and Variety Trials

Project/Goal	Leader
Winter nursery for new cereal varieties. To evaluate genetic lines of barley, wheat, and triticale that have potential for genetics and commercial applications.	Mike Oro, Field Crop Development Centre, Olds College - Canada, 403-391-8671, moro@oldscollege.ca
Wheat breeding for the Imperial Valley. The overall goal of this project will continue to be the production and evaluation of new durum varieties and improved germplasm to be distributed to growers, breeders, and other researchers.	Jorge Dubcovsky, UC Davis – Plant Sciences, 530-752-5159, jdubcovsky@ucdavis.edu
Carrot germplasm. The objectives of the project are to establish a winter carrot nursery and to have commercial carrot varieties from various seed companies planted in side by side comparisons for a carrot field day.	Jaspreet Sidhu, UCCE Kern County, 661-868-6222, jaksidhu@ucdavis.edu
Breeding drought resistance alfalfa for Imperial Valley. To screen and evaluate breeding populations in conventional fields and continue to develop the breeding program pipeline for cultivar delivery.	Charles Brummer, UC Davis – Plant Sciences, 530-574-6133, ecbrummer@ucdavis.edu
Breeding stress-tolerant chickpeas. Screen segregating populations of cultivar x wild introgressions for grain yield under high temperatures and make selections for use in backcross breeding.	Varma Penmetsa, UC Davis – Plant Sciences, 916-502-5474, rvpenmetsa@ucdavis.edu

Irrigation and Fertilizer Management

Project/Goal	leader
Olive production practices in the Imperial Valley. The objective of this research is to study the efficiency and the economic feasibility of various olive production practices in the Imperial Valley with emphases on water use efficiency and the possibility of the reuse of surface and subsurface drainage waters to supplement crop water needs.	Khaled Bali, UC ANR Specialist, 559-646-6541, kmbali@ucanr.edu
Assessment of drone imagery and proximity sensing tools on deficit irrigation of melons. Evaluate the response of cantaloupes to different irrigation regimes and assess drone imagery and plant diagnostic tools throughout the growing season.	Jairo Diaz, UC ANR DREC, 760-791-0521, jdiazr@ucanr.edu
Developing Information on the Best Nitrogen and Water Management Practices in Desert Lettuce. Develop knowledge and information on improving and promoting adaptation of management practices that optimize N and irrigation water use efficiency in the California's Low Desert Lettuce Production Systems under drip irrigation.	Aliasghar Montazar, UCCE Imperial County, 442-265-7707, amontazar@ucanr.edu
Nitrogen fertilizer and irrigation best management practices for the low desert sundangrass production systems. Develop improved N and irrigation management strategies for Sudan grass production in the low desert.	Oli Bachie, UCCE Imperial County, 442-265-7700, obachie@ucanr.edu

Improved irrigation strategies for alfalfa production in California. Develop and improve irrigation strategies to increase water use efficiency in alfalfa production in California across different soil and climatic conditions.	Khaled Bali, UC ANR Specialist, 559-646-6541, kmbali@ucanr.edu

Weed Management

Project/Goal	leader
Efficacy or suitability of selected pre-emergent herbicides for Guayule. Evaluate various preemergent herbicides that may be efficient to control / suppress weeds and registered for weed management for guayule production system.	Oli Bachie, UCCE Imperial County, 442-265-7700, obachie@ucanr.edu
Testing site of robotic farming operations for weed control. Develop and demonstrate the capability to sustainably and robotically remove weeds from a sugarbeet field.	Jairo Diaz, UC ANR DREC, 760-791-0521, jdiazr@ucanr.edu

Food Safety

Project/Goal	leader
Understanding and enhancing the safe use of biological soil amendments in fresh produce production. Through this work, we anticipate the discovery of new strategies to reduce introduction of microbial hazards into leafy green fields during pre-harvest production, which will benefit industry stakeholders and protect consumers.	Michele Jay-Russell, UC Davis, Western Institute for Food Safety & Security, 530-219-4628, mjay@ucdavis.edu
Assessment of antibiotic resistance in fresh vegetables from farm to fork. Identify critical factors contributing to antibiotic resistance transmission during vegetable production.	Erin DiCaprio, UC Davis, Food Science and Technology, 530-752-6594, eldicaprio@ucdavis.edu

Livestock

Project/Goal	leader
Cattle nutrition and management. Examine how varying levels of metabolizable protein and the inclusion of essential oils in the diet affect the growth performance and carcass characteristics of calf-fed Holstein and Holstein cross cattle.	Brooke Latack, UC CE Imperial County, 442- 265-7712, bclatack@ucanr.edu

Outreach and Educational Programs

Project/Goal	Leader
Farm Smart educational programs. The program promotes a better understanding of agriculture, the source of our food, fiber and energy, and its impact on our economy and daily lives, as well as protecting natural resources and cultivating healthy people and communities. Information about our programs can be found at **http://drec.ucanr.edu/Farm_Smart**	Jairo Diaz, UC ANR DREC, 760-791-0521, jdiazr@ucanr.edu