Jairo Diaz, DREC director |760-791-0521 | jdiazr@ucanr.edu | http://drec.ucanr.edu

University of California - UC
Agriculture and Natural Resources - ANR
Desert Research and Extension Center – DREC

2020-2021 Research Projects and Educational Programs

Dear Stakeholders,

In our current fiscal year 07/2020-06/2021 we conduct 32 projects in the following areas: Plant Breeding and Variety Trials (10), Irrigation and Fertilizer Management (7), Forage and Agronomic Crops (3), Vegetable Disease Management (3), Environmental Studies (1), Food Safety (1), Livestock (2), and Outreach and Educational Programs (5). Lead academics are from the University of California system (ANR, Davis campus, and Riverside 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.

As in nature, adaptations are meant to support survival in changing conditions. Our Farm Smart educational program has rallied in record speed to adapt to the necessary changes during this most unusual time of home-sheltering and parents as teachers. Responding to school, parents and community partner's requests, Farm Smart has gone virtual and invested in e-learning strategies to maintain and even expand program offerings. In our current fiscal year, Farm Smart e-learning activities (http://drec.ucanr.edu/Farm_Smart/Virtual/) have reached over 10,000 participants.

In the next pages you will find a complete list of our current projects, goals, and contact info of lead academics. Feel free to contact lead academics 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	Researcher
Alfalfa breeding nursery. We will be evaluating individual plants from a number of experimental populations in order to select persistent, disease and insect resistant, and high yielding plants to develop populations that will be evaluated for potential cultivar release.	Charles Brummer, UC Davis – Plant Sciences, 530-574-6133, ecbrummer@ucdavis.edu
Alfalfa germplasm evaluation. To evaluate new sources of alfalfa germplasm for productivity and persistence under heat, limited water, and salinity using subsurface drip irrigation.	Charles Brummer, UC Davis – Plant Sciences, 530-574-6133, ecbrummer@ucdavis.edu
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
Organic carrot trials. This project evaluates experimental breeding stocks to address needs of the organic carrot crop production industry.	Jaspreet Sidhu, UCCE Kern County, 661-868-6222, jaksidhu@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 baby leaf spinach for California growers. To screen and evaluate breeding populations in conventional and organic fields in the Salinas Valley (spring-fall) and Imperial Valley (DREC in winter), and continue to develop the breeding program pipeline for cultivar delivery.	Charles Brummer, UC Davis – Plant Sciences, 530-574-6133, ecbrummer@ucdavis.edu
Wheat variety evaluation. The objective of this research is to evaluate commercial and advanced small grain varieties in order to identify and develop superior varieties for California growers.	Mark Lundy, UC Davis – Plant Sciences, 530-902-7295, melundy@ucdavis.edu
Investigating the microbiome and post-harvest quality of a lettuce diversity panel. Establish a fully replicated, blocked design field trial of a lettuce genome-wide association population comprising ~500 accessions. Conduct genome-wide association analyses to identify significant marker-trait associations for microbiome and leaf traits.	Gail Taylor, UC Davis – Plant Sciences, 530-752-9165, gtaylor@ucdavis.edu
Broccoli and cabbage seed trials. Evaluate commercial broccoli and cabbage seed varieties under local growing conditions.	Jairo Diaz, UC ANR DREC, 760-791-0521, jdiazr@ucanr.edu

Irrigation and Fertilizer Management

Project/Goal	Researcher
Evaluation of drip irrigation in organic spinach production and downy mildew management. This project aims to evaluate the viability of adapting drip irrigation for organic spinach production compared with sprinkler irrigation, and to assess the impact of drip irrigation on the management of spinach downy mildew in the Imperial Valley.	Aliasghar Montazar, UCCE Imperial County, 442-265-7707, amontazar@ucanr.edu
Improving water use efficiency in alfalfa forage production through sub-surface drip irrigation and optimal irrigation water management practices. This study aims to initiate a field experiment at UC Desert Research and Extension Center to improve the efficiency of water-use in alfalfa systems via sub-surface drip irrigation (SDI), and to identify and evaluate the technical and economic viability of deficit irrigation management practices that can optimize alfalfa forage production while conserving water in the Imperial Valley.	Aliasghar Montazar, UCCE Imperial County, 442-265-7707, amontazar@ucanr.edu
Evaluation of water management techniques and fertilizer rates in onion production in California low desert areas. The main goal of this project is to evaluate different water management techniques and fertilizer rates in onion production in arid regions.	Jairo Diaz, UC ANR DREC, 760-791-0521, jdiazr@ucanr.edu
Automation of surface irrigation systems in the Imperial Valley. This project will demonstrate the potential use of innovative automation technology in water conservation to increase irrigation efficiency and demonstrate the use of this technology to growers in the Imperial Valley.	Khaled Bali, UC ANR Specialist, 559-646-6541, kmbali@ucanr.edu
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
Best nitrogen and irrigation management practices in California low desert carrots. The project aims to develop knowledge and information on improving and promoting adaptation of management practices that optimize N and irrigation water use efficiency in California low desert carrots.	Aliasghar Montazar, UCCE Imperial County, 442-265-7707, amontazar@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

Forage and Agronomic Crops

Project/Goal	Researcher
Plant growth regulator efficacy against durum wheat crop lodging. This project is designed to test lodging and yield enhancement efficacy of two plant growth regulators (both products are in a liquid PGR form) on durum wheat crop under the low desert grower's cropping practices.	Oli Bachie, UCCE Imperial County, 442-265-7700, obachie@ucanr.edu
Alternatives to chlorpyrifos for sugarbeet production in the Imperial Valley. Compare the effects of new, alternative and/or unregistered chemistries with chlorpyrifos on sugarbeets on pests and on crop growth and yields.	Stephen Kaffka, UC ANR Specialist, 530-752-8108, srkaffka@ucdavis.edu
Comparative Evaluation of Various Gibberellic Acid Inhibitors and Stress Reduction Products to Increase Alfalfa Bloom and Seed Set. This project examines anti-stress and anti-gibberellic acid (GA) products for their efficacy to increase alfalfa seed production.	Michael D. Rethwisch, UCCE Riverside - Palo Verde Valley Office, 760- 921-5064, mdrethwisch@ucanr.edu

Vegetable Disease Management

Project/Goal	Researcher
Evaluation of weather-based models for management of onion downy mildew. Evaluate the utility of five epidemiological models of onion downy mildew as fungicide application advisory tools.	Alexander Putman, UC ANR Specialist, 951-827-4212, alexander.putman@ucr.edu
Evaluation of additives for management of spinach downy mildew with a biofungicide. Evaluate several adjuvants for improving efficacy of a biofungicide for management of spinach downy mildew.	Alexander Putman, UC ANR Specialist, 951-827-4212, alexander.putman@ucr.edu
Evaluation of fungicides for management of powdery mildew of lettuce. Evaluate the efficacy of three confidential fungicides for management of lettuce powdery mildew.	Alexander Putman, UC ANR Specialist, 951-827-4212, alexander.putman@ucr.edu

Environmental Studies

Project/Goal	Researcher
Catalyzing Negative Carbon Emissions. Examine effects of single additions and combinations of soil amendment technologies across a variety of crops (corn, alfalfa) on C sequestration, yield, crop health, soil health, water use efficiency, nitrogen fertilizer efficiency, and N2O and CH4 reductions.	Ben Houlton, UC Davis, 530-752-2210, bzhoulton@ucdavis.edu

Food Safety

Project/Goal	Researcher
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

Livestock

Project/Goal	Researcher
Cattle nutrition and management. Project objectives are to investigate the effects of feeding different levels of metabolizable protein, and the effects of feeding a blend of essential oils on calf-fed Holstein growth performance and carcass characteristics.	Richard Zinn, UC Davis – Animal Sciences, 760-356-3068, razinn@ucdavis.edu

Outreach and Educational Programs

Project/Goal	Leader
Farm Smart educational programs. The program strives to raise awareness, educate the public, and provide outreach on several issues such as healthy eating and lifestyles, natural resources conservation, cultural and intergenerational connections, sustainable agriculture, environmental education and career opportunities in food, agriculture and sciences. During our current fiscal year, Farm Smart has gone virtual and invested in e-learning strategies to maintain and even expand program offerings. Information about our virtual programs can be found at **http://drec.ucanr.edu/Farm_Smart/Virtual/**	Stacey Amparano, UC ANR DREC, 760-356-3067, scwills@ucanr.edu