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AGWEST FARM CREDIT
AMIGO FARMS
BARD VALLEY DATE GrowERS ASSOCIATION
> BARKLEY AG ENTERPRISES, LLC
BRAGA FRESH
> D’ARRIGO BROTHERS CO. OF CALIFORNIA
DUDE FARM FRESH FOODS
FOUR LITTLE DEVILS FARMS
GILA VALLEY FARMS
> GOWAN COMPANY
THE GROWERS COMPANY
> JV SMITH COMPANIES
KEITHLY-WILLIAMS SEEDS
LEE FARMS PRODUCE, LLC
NUNES VEGETABLES/FOXY PRODUCE
NUTRIEN AG SOLUTIONS
OCEAN MIST FARMS
PASQUÉ’S AERIE, LLC
RDO EQUIPMENT CO.
SAINT ISIDORE’S, LLC
> SMITH FARMS COMPANY OF YUMA
> T&P FARMS
> TANIMURA & ANTEL
TAYLOR FARMS
> Advisory Council Member

From the Director

I am very excited to share this 2022 Annual Report with our investors and stakeholders in the desert Ag industry! Why? Because we have accomplished so much, and so much of what we have accomplished is both relevant and timely with the big issues that agriculture faces. Whether it’s mitigating water shortages and plant diseases, expanding our laboratory capabilities for public health, foodborne and plant pathogens, or driving infrastructure investment for on-farm broadband services to help modern AgTech flourish, we have responded to the needs expressed by our stakeholders in direct impactful ways. How? This only happens because of our unique support, partnership and collaboration with those directly involved in agricultural production in the desert as well as expert researchers from throughout academia. Thanks to our growing track record, I believe we are at an inflection point of growth that will allow us to be even more impactful in these challenging times. Both financial support and collaboration from our partners in industry and academia are greatly appreciated as we strive to be uniquely impactful. I, and all of our staff work hard every day to help our stakeholders be successful, and our door is always open to your ideas for how we can do that even more effectively.

To a prosperous 2023!

Paul E. Brierley
YCEDA Executive Director

CONNECT WITH US

EXECUTIVE OFFICES
899 E Plaza Circle, Suite #2
Yuma, AZ 85365
928.773.6101
DesertAgSolutions.org

RESEARCH & LAB FACILITIES
6425 W. 8th St.
Yuma, AZ 85364

THE UNIVERSITY OF ARIZONA
Yuma Center of Excellence
for Desert Agriculture

IMPACT

2022 ANNUAL REPORT
Agricultural Water

YCEDA was formed to provide quick responses to pressing issues faced by desert agriculture production. From our start in 2014, our key focuses included water and nutrient management, plant pests and disease, food safety, soil health, and agricultural technology. With Arizona as a megadrought and the precipitation that 20-40% of annual Colorado River allocations must remain in Lakes Powell and Mead, water immediately became the 1st concern of YCEDA’s stakeholders. We have responded in many ways:

1. Irrigation and Soil Salinity Research Project

IRRIGATION EFFICIENCY – Ultrasound and USDA research partners are wrapping up a Tierer, multi-million dollar study which aimed to quantify existing water and salt management practices and identify opportunities for improvement. These studies show that the irrigation efficiencies of vegetative and rotational cropping systems in the Yuma area are very high. The data also show net excess water growth, meaning pre-season irrigation for salt leaching is of paramount importance to sustainability. Due to the need to manage salt regardless of irrigation method, and since any desert agriculture water saving would increase subsequent off-season leaching requirements, it is not likely that water-constrained applications of drought irrigation will result in significant water savings from the vegetative production systems in the Yuma area. A new whitepaper presents the findings, and crop-by-crop results are being published in peer-reviewed journals. At water scarcity continues, the study’s outputs can help growers apply only what water is needed for the crop plus sufficient leaching to maintain a healthy soil salt balance.

SALINITY MANAGEMENT – The study has created a unique database which can be used for further research and farms the basis for a new Crop App called Ultrasound that we are developing with the Ultrasound Cyber Communicators Team. The DeserAgWATER App will use the research results, real-time weather data and satelite imagery to suggest water scheduling and amounts as well as track soil salt balance for each field throughout the season. Anyone wishing to be an early adopter can visit DeserAgWATER.org.

2. Dairy Water Footprint Research Project

YCEDA has received funding to coordinate research with the Arizona dairy industry on minimizing dairy’s water footprint – especially through producer adoption of improved crop production techniques. The research will be performed by two Cooperative Extension researchers from around the state in the areas of dairy, Ag economics, agronomy, and soil health. Phase 1 includes analysis of producer adoption of water-saving techniques as well as in-person surveys of dairy producers to understand barriers to adoption. This should lead to Phase 2, which will address the knowledge and research gaps identified in Phase 1 to enhance adoption of proven techniques for water savings.

3. Sharing the Story of Ag Water Conservation & Innovation

MEDIA INTERVIEWS – Through dozens of print, radio, television and social media interviews, YCEDA assures that Ag’s voice is heard by sharing the story of desert agriculture’s incredibly productive, efficient and reliable contributions to the nation’s food supply and rural economies.

YAMU AG WATER VIDEO PRODUCTION – We coordinated production of professional videos, 30 seconds to 20 minutes in length, that tell the story of Yuma agriculture’s history, efficiency, productivity, and importance in an effort to inform the public and policymakers that desert agriculture makes excellent use of its water resources and is always working to improve productivity and efficiency. Please watch and share the videos, which can be found at Yamsupportvideo.com.

4. Harnessing University Expertise

PRESIDENTIAL COMMISSION – YCEDA’s Executive Director is chairing the Ultrasound Presidential Advisory Commission on the Future of Agriculture and Food Production in a Drying Climate, with the intent of bringing university expertise and resources to bear on keeping agriculture productive in the face of water cutbacks and other challenges. We plan to be there for you with options and information as you make hard decisions.

Plant Disease and Soil Health

The YCEDA plant health programs have made an impact on the industry by contributing to knowledge for disease management and by supporting projects that bring new expertise into the Ag industry. YCEDA’s Fusarium, leaf blight and tomato black spot, and a wide range of further plant diseases and pests. The plant health projects have a long history of success and a wide range of plant health issues. The plant health projects have a long history of success and a wide range of plant health issues.

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FALLOWING — The impacts of following are not as straightforward as saving the irrigation water that isn’t applied. Capillary rise of shallow saline water during fallow periods increases salinity in the root zone, and a pre-irrigation would be required to restore conditions suitable for self-sufficient vegetable crops. Nectar can produced in the desert continue for business continually remains and because they are thought to provide soil health benefits realized by the subsequent vegetable crops. Future research is needed to address this issue.

IRRIGATION/SOIL SALINITY MANAGEMENT — The study has created a unique database which can be used for further research and farms the basis of a mobile app called DesertAgWAS. We are developing with the UArizona Cyber Communicators Team. The DesertAgWAS app will utilize the research results, real-time weather data and sathe imagery to suggest watering schedules and amounts as well as track soil salinity balance for each field throughout the season. Anyone wishing to be an early adopter can visit DeserAgWAS.org

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YCEDA has new and ongoing projects addressing the important lettuce bolting disease: downy mildew and melon necrotic spot virus (MOSV). A trial was planned recently with commercial cultivars to confirm downy mildew resistance (DMR), and a set of lettuce lines will directly select genes that can contribute to these and future plant diseases, and help identify the pathogen species. The population of the pathogen will shift over time, but this trial continues yearly, the population can be tracked, heeding growers make planting decisions and informing breeding programs on what resistant genes are durable.

A project addressing MOSV in collaboration with Dr. John Palko has shown that the virus comes to Yuma via thrips on fall trousers and does not persist in high levels in the weed population over the summer. YCEDA continues to collaborate with these groups and develop an at home diagnostic tool, a full-steam ahead in adding new pathogen species such as influenza, respiratory syncytial virus (RSV), and Candida auris to our surveillance system and look forward to continuing to bring in new technology, jobs, and expertise to Yuma County that will also allow us to impact food safety and pest disease challenges.

Grants have helped start new disease health programs including projects to investigate the benefit of cover crops and soil health products, the role of pathogens and disease in limiting yield, and to develop a comprehensive soil health assessment in Yuma. These projects are being used to initiate larger projects that can lead to growers’ laboratories for plant disease, water efficiency and productivity.

Broadband Access for AgTech

High value specialty crops are the perfect place to develop and use the latest technology. Whether you call it AgTech, Smart Farming, Precision Ag or something else, one thing underlies them: technologies that are rapidly being deployed and deployed on the farm broadband access from the field and to the cloud. It has to be wireless, because you can’t drag fiber behind a tractor.

YCEDA has successfully worked with Yuma County and the State of Arizona over the past several years to implement a county-wide broadband fiber network to ultimately bring high speed wireless service to all areas in the county. That is all coming to fruition, with over $30M already committed to building additional infrastructure to cover the barrier for service providers to cover the area, and an additional $4M for AgTech broadband towers. We also participated in a National Science Foundation funded planning project to explore high-speed networking for research into Smart Farms, with the goal of getting funding to wire up the Yuma Ag Center as a Smart Farm and connect it to regional research and academic institutions.

It’s all very exciting and Seconding reality, Yuma County will offer some of the best connectivity anywhere, which will attract researchers and developers from around the world to develop AgTech, and enable field sensors, drones, and automated equipment to be deployed anywhere, anytime.

Laboratory Capabilities

With over $1.5M of funding since 2020, YCEDA’s wastewater-based epidemiology sewage testing COVID program has significantly contributed to the growth of our laboratory capabilities. In 2020, we acquired a state-of-the-art genome sequencer, a powerful technology that can read the SARS-CoV-2 RNA sequence of all pathogens, microbes, and co-targets of interest in a sample, and several members of our team have been training to operate the machine. This instrument is the first of its kind in Yuma County and enables an entirely new suite of potential capabilities for tracking public health, water quality, pathogen surveillance, and agriculture samples, amongst many more.

Through the success of this program, we continue to cultivate our research team and develop our staff. Over the past year, we added two Ukraine laboratory technicians dedicated to processing wastewater samples, a remote Ph.D. student at the University of North Carolina to conduct data analysis, a biostatistician to conduct disease modeling, and in collaboration with a public health expert from the Centers for Disease Control and Prevention (CDC) to our nationally recognized visiting researcher. As our capabilities grow, the Arizona Department of Health Services (ADHS) is supporting expansion of our disease surveillance to other communities in Arizona, including Santa Cruz and Pima Counties. In 2023, we are moving to track the virus throughout the year. This work has impacted the handling of treatments brought into Arizona and potentially reduced the spread of disease.

YCEDA’s small grants program is another mechanism to stimulate research work and proof of concept on important topics in desert agriculture. These grants have helped start new disease health programs including projects to investigate the benefit of cover crops and soil health products, the role of pathogens and disease in limiting yield, and to develop a comprehensive soil health assessment in Yuma. These projects are being used to initiate larger projects that can lead to growers’ laboratories for plant disease, water efficiency and productivity.
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Yuma, AZ 85365
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DesertAgSolutions.org