



THE UNIVERSITY OF ARIZONA

Yuma Center of Excellence for Desert Agriculture

“Solutions to Desert Agriculture’s Pressing Problems” Quarterly Update | Fall/Winter 2020

Fusarium Wilt of Lettuce Research

Mitigating Fusarium wilt of lettuce has been identified as a high-priority issue by the Yuma Center of Excellence for Desert Agriculture (YCEDA) stakeholders. In response to the increasing concerns of the lettuce industry and feedback received from stakeholders, YCEDA has been coordinating annual field trials since 2015. Dr. Stephanie Slinski, YCEDA Associate Director of Applied Research and Development, is working on several fronts to advance research on Fusarium wilt of lettuce and find solutions for improved management to reduce the impact of this challenging plant disease.

Ongoing YCEDA research efforts include evaluating commercial seed varieties reported to be resistant or tolerant, evaluating soil treatments that may reduce the Fusarium population, advancing Fusarium wilt of lettuce resistance breeding programs by screening wild-type varieties to identify new sources of resistance, evaluating breeding lines and pre-commercial cultivars, and coordinating a population study to determine if a new race is present.

YCEDA hosted a field day in November at the 2020 Yuma field trial site to allow YCEDA stakeholders and the crop production industry to discuss this year’s trial with Dr. Slinski and share results. A big Thank You to all who have supported the field trials, especially Gila Valley Farms, Keithly-Williams Seeds, JV Farms, Gowan Company, and Holaday Seed Company.

Wastewater-Based Epidemiology (WBE) Testing

YCEDA is collaborating with Dr. Ian Pepper at the UArizona WEST Center and visiting researcher, Dr. Brad Schmitz, to conduct wastewater testing in Yuma County for early detection and monitoring of COVID-19. This project was launched thanks to a generous donation from Jesus Tovar and his desire to protect the Ag workforce and allow people in



Participants at the 2020 Fusarium Wilt of Lettuce Field Day examine the trial



Dr. Slinski answers questions at the Fusarium Wilt of Lettuce Field Day

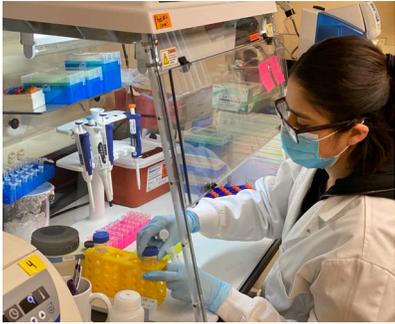


Lab staff conduct wastewater-based epidemiology (WBE) testing at the YCEDA lab in the Yuma Agricultural Center

Fusarium Wilt Population Study

YCEDA is coordinating a project to examine the population structure of Fusarium wilt of lettuce in Arizona. We are collecting samples from 50 locations in the Yuma growing region during Winter/Spring 2021. Fusarium isolated from these samples will be tested to determine if they are all Race 1, or if a new race is present. Isolates will also be evaluated using molecular methods to further define relatedness of the population. If you are interested in participating in this study, please contact Dr. Stephanie Slinski, at sslinski@Arizona.edu for more information.

Yuma County to return to work safely. WBE testing has shown success in providing an advanced warning of COVID-19 before infected people develop symptoms. Yuma County funded the lab set-up, and funding from the AZ Department of Health Services will allow us to apply the testing technology community-wide to identify potential hotspots and support local public health officials in slowing the spread of the virus with targeted responses.



Wastewater testing has shown success in early detection of COVID-19



Dr. Slinski oversees planting lettuce seed for the Fusarium wilt field trial



Additional funding has been received in support of our irrigation/soil salinity management project and development of a mobile App using the unique data set collected throughout the multi-year project

YCEDA Small Grants Program

The Small Grants Program is one way YCEDA supports research and technology development and implementation. The following proposals were selected for funding during 2020 by the stakeholder review panel:

“Tools for Evaluating Soil Health Products used in Yuma Agriculture” -- \$3512.57 awarded to Robert Masson, UArizona Yuma County Cooperative Extension. The study is evaluating commercially available soil health products and their effects on Yuma agriculture. Funding will be used to purchase tools and supplies to conduct ongoing and future experiments designed to validate soil health product label claims and determine how they best fit into Yuma agricultural practices. Results will be disseminated to Yuma growers, PCAs, and CCAs through extension bulletins and newsletters.

“Evaluating Benefits of Cover Crops on Yuma Soil Health” -- \$10,000 awarded to Dr. Joseph Blankinship, UArizona Department of Environmental Science. This project will address two questions: (1) Does cover cropping improve Yuma soil health? (2) Which currently used cover crop improves soil health more, cotton or Sudan grass? The research team will quantify benefits of cotton and Sudan grass compared to fallow areas using a suite of soil health metrics. Project outcomes will be: (1) a methodology for Yuma soil health assessment, (2) a scientific publication advancing knowledge of cover crop effects on desert soil health, and (3) preliminary results to increase the competitiveness of multiple \$500k+ grant proposals for future studies of novel cover crops, long-term trends, and additional management practices to conserve and enhance soil health in desert agriculture.

“Baby Leaf Hemp Variety Trial” -- \$3891 awarded to Robert Masson, UArizona Yuma County Cooperative Extension to harvest a baby leaf hemp variety trial and conduct a consumer sensory evaluation.

Recent Grants Awarded Leveraging Donor Funds

Wastewater-Based Epidemiology (WBE) Projects

- \$274,000 Yuma County – COVID-19 Yuma Lab & School Pilot Project
- \$500,000 AZ Department of Health Services – “Yuma County Pilot Project: COVID-19 Community Protection Early Warning and Response Program”

Irrigation & Soil Salinity Management Project

- \$85,000 USDA/AZDA Specialty Crop Block Grant Program – “Water and Salt Management for Celery”
- \$18,000 AILRC – “Development of an Iceberg Lettuce Irrigation/Salinity Management App”
- \$100,000 USDA-ARS Agricultural Research Service – Quantitative Assessments of Water and Salt Balance for Cropping Systems & App Development for AZ Farms
- \$17,000 AGRPC – App development for Durum Wheat

Fusarium Wilt of Lettuce

- \$41,000 – USDA/AZDA Specialty Crop Block Grant Program – Field Trials for Disease Management of Fusarium Wilt of Lettuce
- \$17,600 AILRC – “Improved Screening of the AZ Population of *Fusarium oxysporum* f.sp. *lactucae*”

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