CSU SPECIALTY CROPS PROGRAM 2021-2022 RESEARCH HIGHLIGHTS

Mark Uchanski, Program Director
Jane Davey, Research Associate

Antoinette Machado Burke (M.S.)
Thomas Hickey (M.S.)

SPECIALTY CROPS PROGRAM
COLORADO STATE UNIVERSITY

MISSION STATEMENT: The Specialty Crops Program at CSU empowers growers and producers throughout Colorado by supplying them with science-based information to inspire innovation, competitiveness and success.

STOP THE ROT

The 'Stop the Rot' project organizes 24 scientists across the onion growing regions of the U.S. to research the complete system (host, pathogen, and environment) of bacterial bulb rotting diseases of onion.

PROJECT OBJECTIVES

A. National Onion Survey
-Evaluate the prevalence of bacterial genera associated with bacterial bulb rot
-Include isolates in the National Onion Bacterial Strain Collection (NOBSC).
https://alliumnet.com/nobsc/
-Use marker and sequencing data to develop diagnostic and breeding tools.

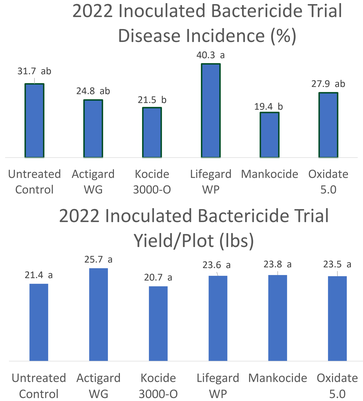
Onion field at ARDEC South 2021.

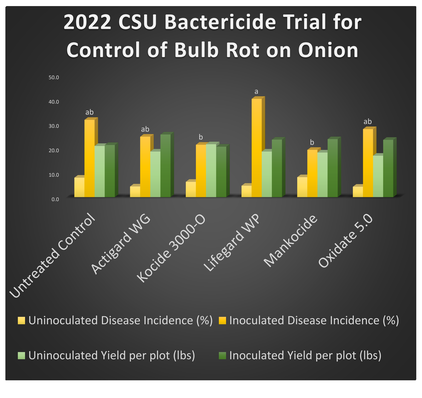
Onion showing bacterial symptoms from a grower's field 2021.

Onion with bacterial symptoms labelled for isolation in the lab 2021.

B. Replicated Research Trials
-Identify onion production practices, environmental factors, and inoculum sources that impact bacterial diseases in onions.
-Develop effective, practical solutions for managing bacterial diseases.

RESULTS





This work is supported by Specialty Crops Research Initiative Award 2019-51181-30013 from the USDA National Institute of Food and Agriculture.

ORGANIC VEGETABLES

NOVIC Northern Organic Vegetable Improvement Collaborative

The Northern Organic Vegetable Improvement Collaborative (NOVIC) joins researchers, seed breeders, the USDA, and farmers in the Northern U.S. states to address organic farmers' seed and plant breeding needs. The overall goal is to increase the proportion of US agriculture that is managed organically.

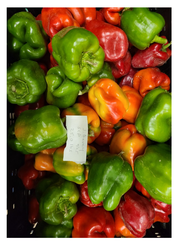
PROJECT OBJECTIVES

A. Breed vegetables for adaptation for production in organic systems
B. Establish an organic trialing network in the Northern tier of the U.S.
C. Host field days for cultivar trials and participatory plant breeding workshops
D. Create a public outreach database https://varietytrials.eorganic.info/
-All published organic cultivar trialing results
-Organic plant breeding content
-Publications on quality organic seed production

Tomatoes grown in high tunnels 2021.

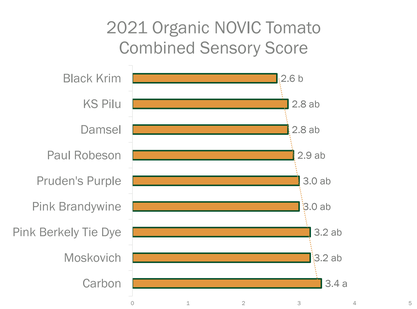
Chili pepper harvest 2021.

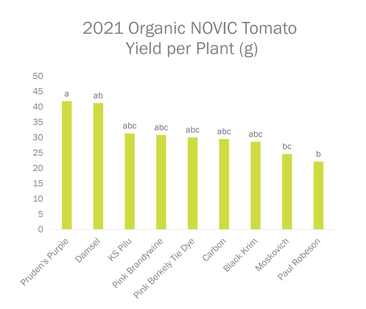
Tomato harvest 2021.



Bell pepper harvest 2021.

RESULTS





ACKNOWLEDGEMENTS

This project is funded by the Organic Research and Extension Initiative (OREI), part of the USDA National Institute of Food and Agriculture.

AGRIVOLTAICS

Solar modules (photovoltaics or PV) generate grid scale renewable energy while providing unique microclimates for crop growth. Agrivoltaic benefits include:
-Increased land use efficiency
-Increase U.S. renewable energy generation
-Opportunity for dual income

PROJECT OBJECTIVES

A. Analyze crop and plant response under various PV modules.
B. Evaluate environmental response under various PV modules.
-soil, air, and water effects
C. Make recommendations for future agrivoltaic systems.
-crops (agronomic, ornamental, filed) and module types

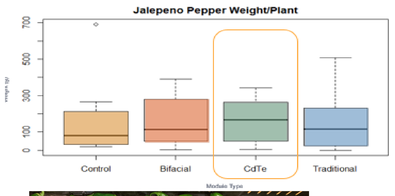
TYPES OF PV ARRAYS LOCATED AT ARDEC-SOUTH

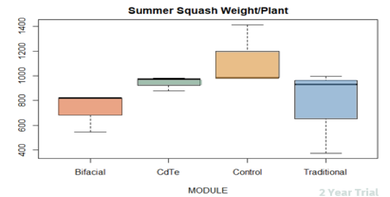
Si Polycrystalline Monofacial Module.

Si Monocrystalline Bifacial Module.

CdTe Semi-Transparent Module.

RESULTS





Jalepeno pepper harvest 2021.

2 Year Trial

SANDBOX SOLAR

Squash under CdTe Semi-Transparent Module 2021.

This project is funded by a Small Business Innovation Research (SBIR) Phase 1 grant.

COLORADO STATE UNIVERSITY EXTENSION

COLORADO Department of Agriculture

CONTACT INFORMATION: mark.uchanski@colostate.edu and jane.davey@colostate.edu