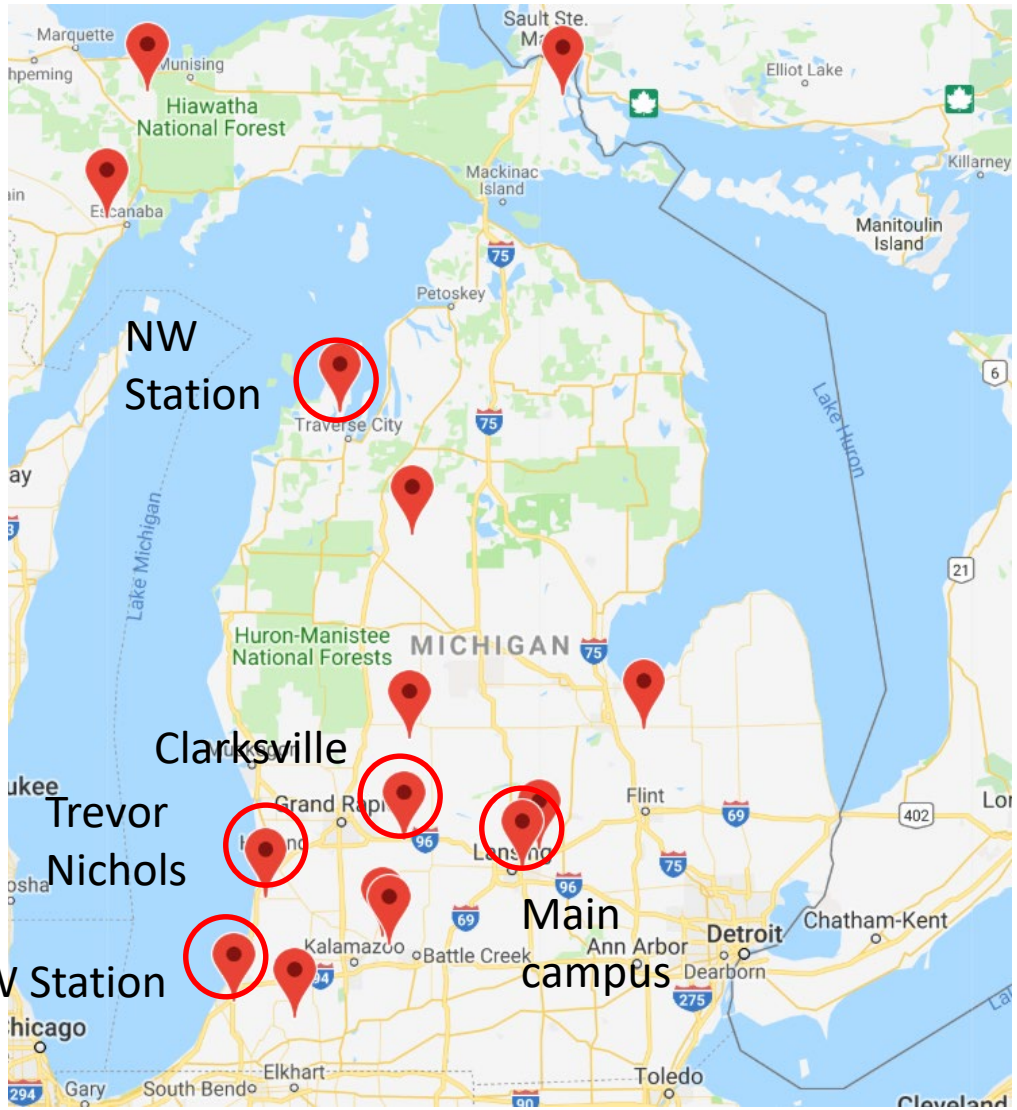
MSU Southwest Michigan Research and Extension Center Overview

SWMREC Mission: Enhance the economic viability of the agriculture in the state of Michigan through the development and practical demonstration of technological advances in plant materials and cultural practices.

Five MSU Research Centers with emphasis on fruit



SWMREC

Established in 1987, 350 acres

<u>Staff</u>
Vegetable specialist
Grape specialist
Tree fruit specialist

Full time farm manager and 2 crew
1 full time technician
~ 10 summer crew

New Staff Members

Dr. Mike Reinke

New Fruit and Vegetable IPM Educator

Berrien County Extension

New Staff Members

Dr. Katherine East

New grape specialist

High yielding juice grape trellis system

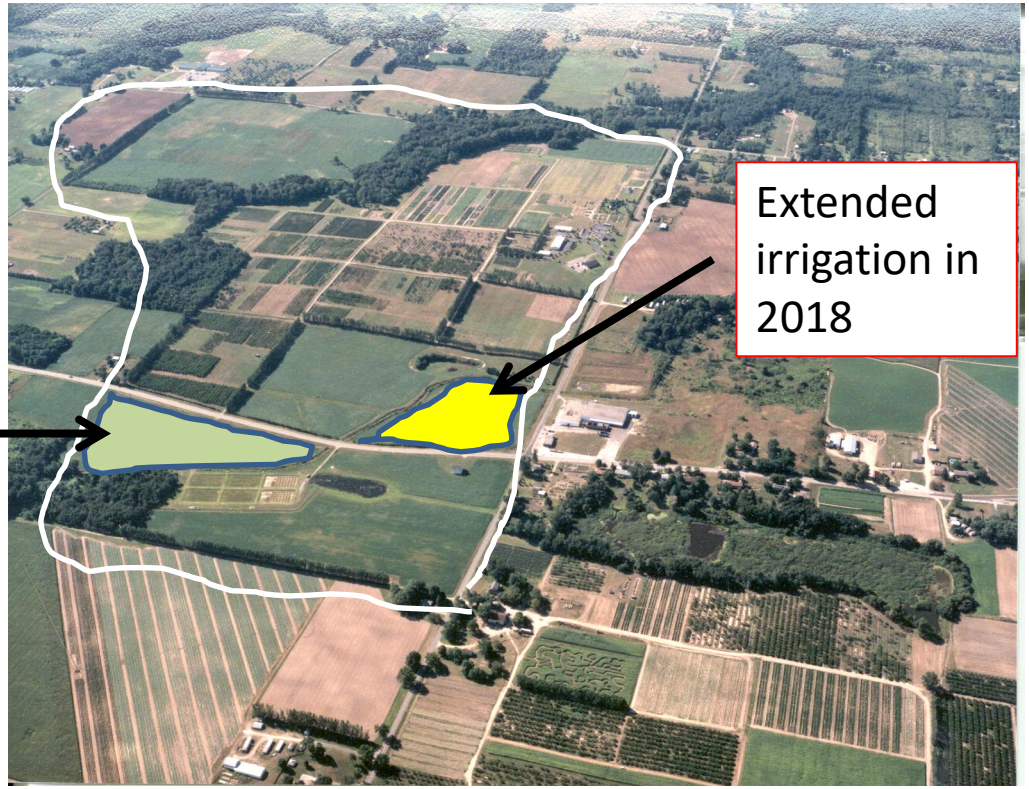
Developing mechanical efficiencies

Equipment and Facilities Upgrade

MICHIGAN STATE UNIVERSITY Extension
MICHIGAN STATE UNIVERSITY AgBioResearch

Michigan Tree Fruit Commission

New drainage tile to be installed



Equipment and Facilities Upgrade

Real-Time PCR

Elisa Reader

Tenney programmable step freezer for bud hardiness studies

Laboratory conversion

MICHIGAN STATE UNIVERSITY Extension
MICHIGAN STATE UNIVERSITY AgBioResearch

Michigan Tree Fruit Commission

Equipment and Facilities Upgrade

Automatic irrigation station controller

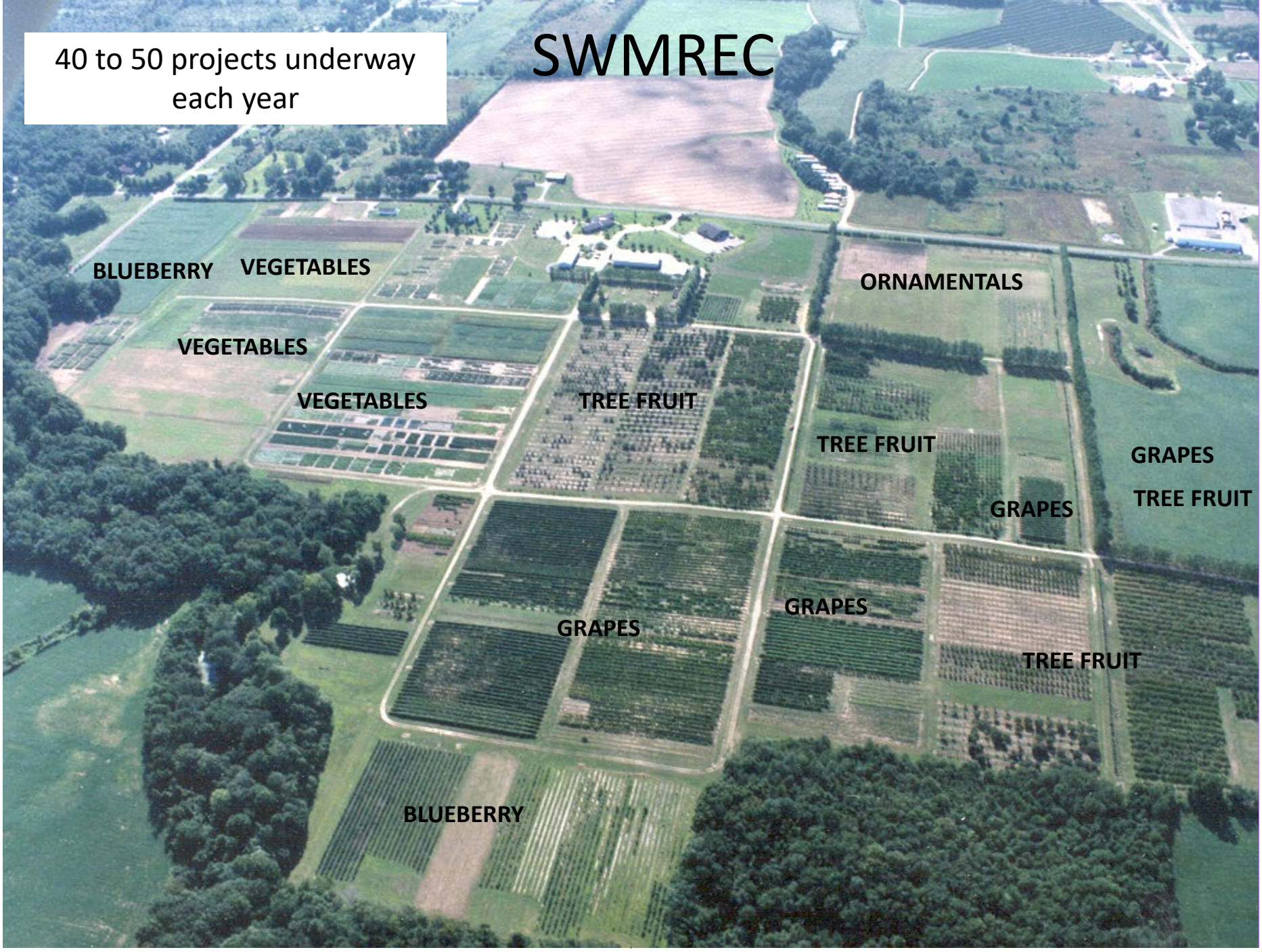
Storage barn

Platform

Deer fence

Concrete floor for indoor meetings

Narrow profile tractor for high density plot work


40 to 50 projects underway each year
SWMREC
BLUEBERRY
VEGETABLES
VEGETABLES
VEGETABLES
TREE FRUIT
ORNAMENTALS
TREE FRUIT
GRAPES
GRAPES
TREE FRUIT
GRAPES
GRAPES
TREE FRUIT
BLUEBERRY

MSU Collaborating Departments

DEPARTMENT OF
ENTOMOLOGY

DEPARTMENT OF
PLANT, SOIL AND MICROBIAL SCIENCES

Department of Geography, Environment, and Spatial Sciences

DEPARTMENT OF
HORTICULTURE

DEPARTMENT OF BIOSYSTEMS & AGRICULTURAL ENGINEERING

DEPARTMENT OF
AGRICULTURAL, FOOD, AND RESOURCE ECONOMICS

SWMREC External Funding / Collaborators

Syngenta
Monsanto
RiceTec
Rogers Seed
Harris Moran
Seminis Seeds
Sakata
Abbott & Cobb
Rispens
Valent
Bayer
US Agriseeds
Gowan
Nunhems
Bejo Seeds
Biogenic
Johnny's Seeds
Crop Production Services
Wilbur-Ellis

Michigan Peach Sponsors
Michigan Apple Committee
Michigan Plum Advisory Board
Michigan State Horticultural Society
Michigan Grape Society
Michigan Grape and Wine Industry Council
Michigan Tree Fruit Commission
National Grape
Michigan Vegetable Council

& Many local companies and equipment dealers

Partial lists of ongoing / recent projects at SWMREC

Wine grape variety trial: NE1020 Project	Compost tea for disease control on grape
Growing vinifera grape on own roots	Microvinification / LMC wine grape collaborative vineyard
Blueberry breeding **Grapes**	Improved concord vineyard design & practices
Blueberry Cultural Practices	Breeding day-neutrality strawberry varieties **Strawberries**
Blueberry postharvest insect control	Weed management on new planted hops **Hops**
Blueberry fungicide evaluations **Blueberries**	Poly-coated urea as a nitrogen source
Improved herbicides for blueberry	Refining fungicide application methods to better control Phytophthora capsici on vegetables
Insecticides for blueberry – IR4	Chestnut production practices **Vegetables**
Bacterial spot management for plum and peaches	Squash, pickle, and pepper varieties
Peach breeding and variety evaluation	Tomato bacterial disease control
Tart Cherry Breeding **Tree Fruit**	Long-term rotation of field crops **Field crops**
Plum variety evaluation	Safety of turf herbicides on non-target landscape trees **Landscape trees**
Apple experimental selection & variety evaluation	Insectary plant evaluations /Common garden project
Improved irrigation scheduling - SW Michigan Irrigation Network **Irrigation**	High Tunnel Production to Expand Markets and Value of Michigan Fresh Produce **Brambles**
Soil water retention systems trial	

High tunnel research


Dr. Eric Hanson

Organic Raspberry Production in Three-Season High Tunnels

by Eric Hanson[1], Vicki Morrone[2], Rufus Isaacs[3], Michigan State University Extension
[1]MSU Department of Horticulture, [2]MSU Department of Community Sustainability, [3]MSU Department of Entomology
Extension Bulletin E3235

High tunnels offer several potential advantages for production of raspberries in humid regions such as the Midwest, including:

- Improved plant vigor and yields.
- Extended harvest and marketing season.
- Improved berry quality.
- Reduced damage from several pests and diseases.

For organic producers, these benefits may be particularly valuable since pesticide options are limited. This bulletin integrates knowledge on conventional culture of high tunnel rasperries (see Cornell publication in references) with information collected from a Michigan State University organic high tunnel research project. Initiated in 2009, the project tested cultural methods for organic production of fruits under high tunnels.

The high tunnel research included nine, 26-by-200-foot, multi-bay tunnels from Haygrove Tunnels, Ltd., constructed on a sandy loam soil on the Michigan State University campus in East Lansing, Michigan. Three bays were each planted with raspberries, sweet cherries and mixed raspberry and sweet cherry plantings. This publication provides guidance for growers interested in high tunnel production of organic raspberries, though the information is of value to non-organic growers as well. Here are some suggestions based on this and other's work.

Site selection

Sandy loam or loamy sand soils are best because they provide good drainage. Poor drainage promotes root rot in brambles.

With loam and clay loam soils, modify drainage by using raised beds and installing drain tiles under sidewalls. Flooding and erosion can also occur since during rain storms, large volumes of water run off the tunnel sides. If soil does not drain adequately, subsurface drain tile should be installed along each side of the tunnel to help direct rain water away from the plants. Tiling is especially important if the soil has a high percentage of clay or if the slope is negative from surrounding areas.

Sub-surface tile and pea gravel installed along each tunnel leg-row to remove excess water.

The year before planting, be sure to test the soil and adjust the pH to 6.0 to 6.5 with lime or sulphur additions. Soil preparation should also include planting cover crops for a year prior to planting brambles to reduce weeds and improve soil quality. Short-lived cover crops such as buckwheat and oats work well as they can be grown and incorporated twice in one season to add organic matter and suppress weeds. Sorghum-sudangrass is another good option for smothering weeds and producing large quantities of organic matter. Sites may also benefit from applications of 1 to 2 tons of manure per acre the year prior to planting canes.

Tunnel and plastic types

Raspberries grow well in multi-bay tunnels and stand-alone tunnels. Multiple bay tunnels consist of interconnected bays and are relatively inexpensive per area covered, but they can be damaged by snow and need to be uncovered

Experience with high tunnel production: Annual crops that have done well in southwest Michigan

Tomatoes are usually the crop of greatest interest to many tunnel producers, but other crops perform well and should be considered, including many flowers, leafy greens, herbs, cucumbers, pole beans and lesser known crops like okra.

Posted on **January 7, 2013** by **Ron Goldy**, Michigan State University Extension

Even though the main crop in our tunnel trials at the Southwest Michigan Research and Extension Center (SWMREC) has been tomatoes, we have planted other crops to observe how they perform. Vegetable crops performing consistently well include beit alpha cucumbers, pole beans (Photo 1) and okra.

Photo 1. High tunnel-grown pole beans (left) and cucumbers (right). Photo credit: Ron Goldy, MSUE

Dr. Ron Goldy

Tomato production strategies in high tunnels

Dr. Ron Goldy

Trials of vegetable varieties for tomatoes, russet potatoes, Harris Moran zucchini, pickle cucumbers, slicing cucumbers and russet potatoes.

Dr. Ron Goldy

Optimizing Irrigation

Dr. Greg Lang – High tunnel fruiting wall production systems

Dr. Bill Shane

Peach breeding

Rootstocks

precision tree production systems

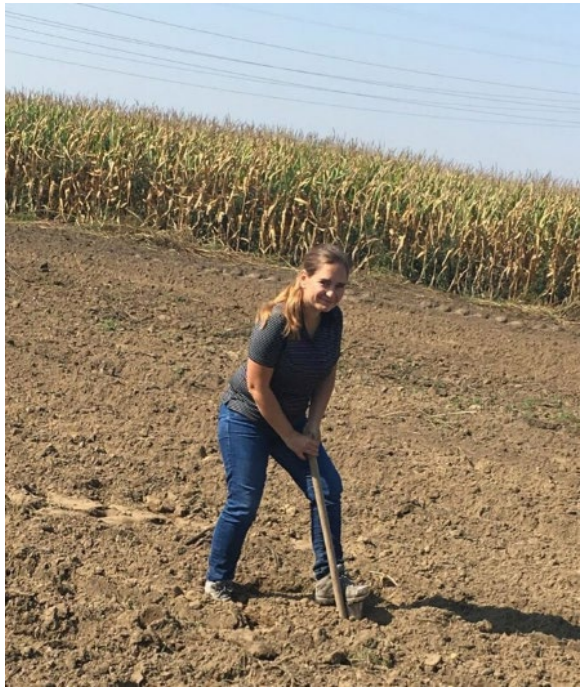
Peach, apple, plum, pear variety evaluation

Predictive models

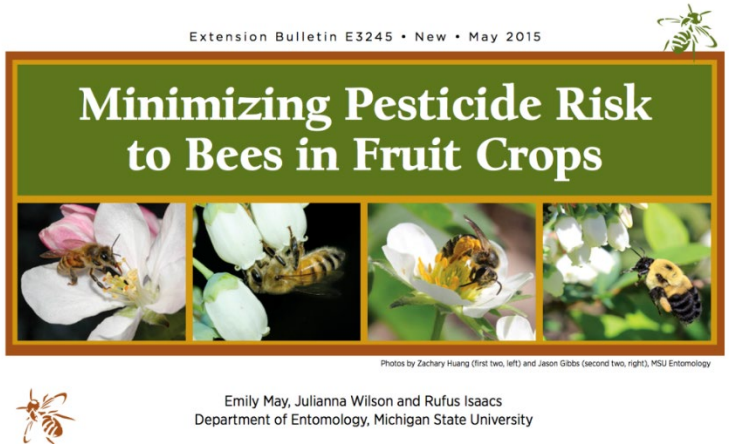
Dr. Zachary Hayden

Cover crop & organic fertility management in vegetables

Marisol Quintanilla



Nematode community structure, soil health and pest management in edible crops. Alternative treatments for managing nematodes in the soil.

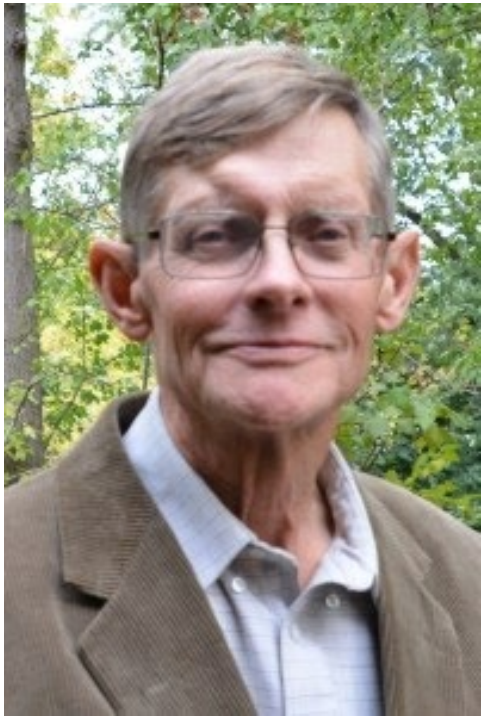


Dr. Rufus Isaacs

Pollinators, insect management in small fruit, blueberry gall wasp, spotted wing drosophila, marmorated stinkbug.

Dr. Dan Brainard

Long-term rotation of field crops - effects on weed problems



Dr. Bernie Zandstra

Weed management in small and tree fruit

Dr. Jim Hancock
- retired -

Dr. Patrick Edger

New blueberry varieties: Aurora, Draper, Huron, Liberty

Strawberry breeding

Downy mildew and Phytophthora research in vegetables and hops, new chemical tools for disease management

Dr. Mary Hausbeck

Dr. Dennis Fulbright

Chestnut research

Variety trials

Asian gall wasp damage

Breeding and genetics of Steevia

Ryan Warner

SW Michigan Research and Extension Center

Michigan State University