



COLLEGE OF AGRICULTURE
AND
LIFE SCIENCES

Topics

- Mission
- Who we are
- Agricultural Programs and Research

Mission and Vision

- **Mission** – To deliver collaborative, transformative research, academics, and outreach that create critical thinkers to build resilient, inclusive, and healthy communities and environments.
- **Vision** - *We envision* a college that moves society continuously towards science-informed decisions to help our community and environments thrive.



THE UNIVERSITY OF VERMONT
**AGRICULTURE &
LIFE SCIENCES**



WE ARE CELLS TO SOCIETY

CALS by the numbers

- 1,570 students
- 17 postdoctoral associates
- 13 undergraduate majors
- 19 undergraduate minors
- 6 academic departments
- \$48 million research funding
- 5 off-site research and teaching facilities
- 11 Extension field offices
- 90 faculty across academic units and Extension
- 180 staff

CALS Leadership




Leslie Parise, Dean



Jane Kolodinsky,
Associate Dean
for Research



Kate Finley-
Woodruff,
Associate Dean
for Student
Services



Stephanie Dion,
Assistant Dean for
Business
Operations



Roy Beckford,
Associate Dean
Dir of Extension



Dept Chairs and
Center Directors

CALS Units & Academic Departments

Animal and Veterinary Sciences: Feng-Qi Zhao

Community Development and Applied Economics: Jane Kolodinsky

Food Systems Research Center: Polly Ericksen, Meredith Niles

*Microbiology and Molecular Genetics: Beth Kirkpatrick

Nutrition and Food Sciences: Amy Trubek

Plant Biology: Jeanne Harris

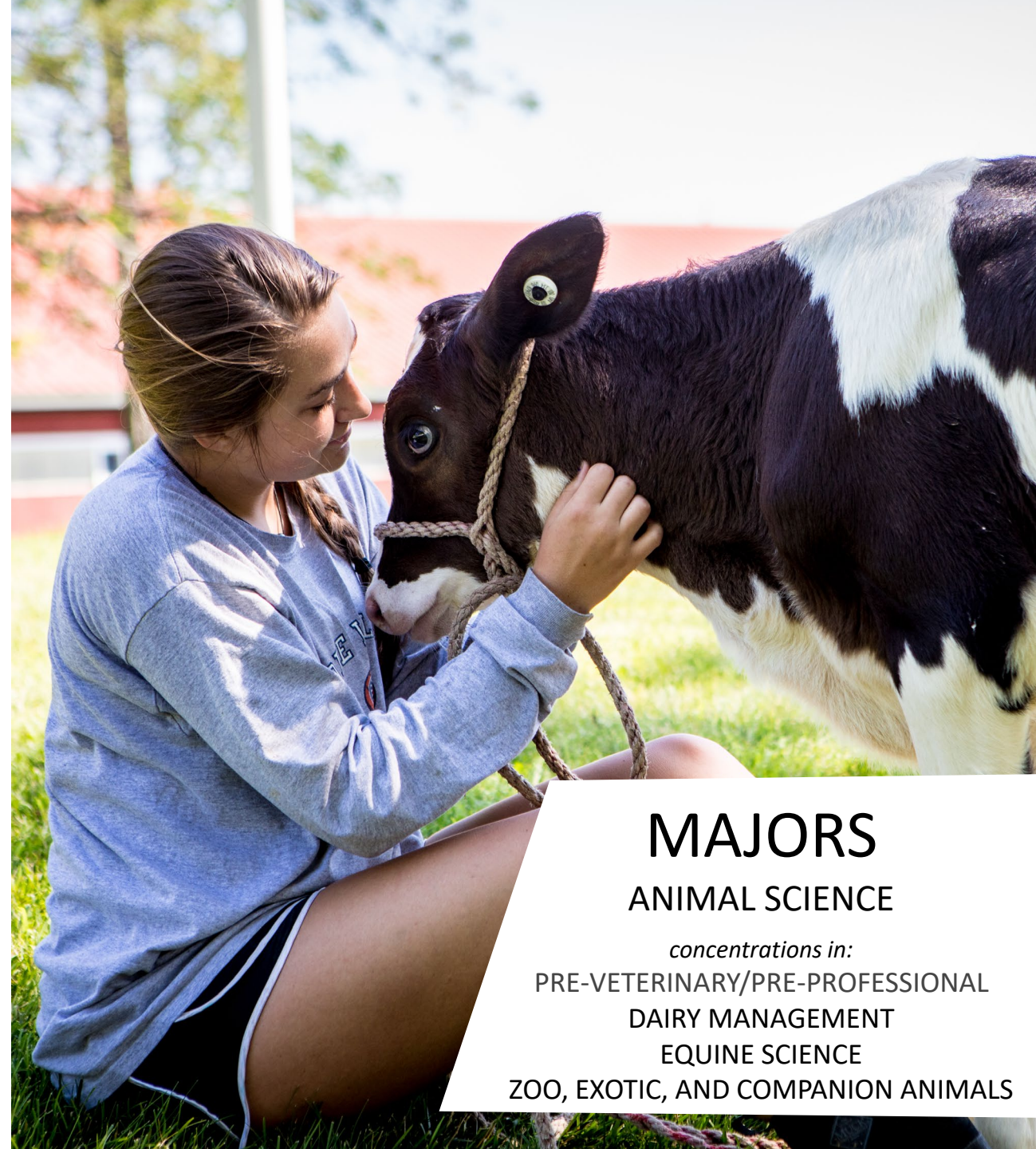
Plant and Soil Sciences: Dave Barrington

UVM Extension: Roy Beckford



ANIMAL WELFARE

CANINE BEHAVIOR RESEARCH
 RESEARCH MILK **PRE-VET**
 REPRODUCTION ANIMAL NUTRITION
 PHYSIOLOGY ANATOMY
CREAM ONE HEALTH MEAT
 DAIRY MANAGEMENT
 FORAGE AND PASTURE MANAGEMENT
 HORSE CO-OP DISEASE GENETICS
 CHEMISTRY **EQUUS**
 WILDLIFE CONSERVATION BIOLOGY



MAJORS
 ANIMAL SCIENCE
concentrations in:
 PRE-VETERINARY/PRE-PROFESSIONAL
 DAIRY MANAGEMENT
 EQUINE SCIENCE
 ZOO, EXOTIC, AND COMPANION ANIMALS

CHEESE

FOOD POLICY CLINICAL NUTRITION

SPORTS NUTRITION OBESITY

DIETETICS HUMAN HEALTH

FOOD SAFETY **FOOD SCIENCE**

ALUMNI

PUBLIC HEALTH

FERMENTATION

KITCHEN SCIENCE

FARM TO TABLE

GLOBAL FOOD SAFETY

DISEASE PREVENTION

CHEMISTRY

MICROBIOLOGY

HACCP



MAJORS
NUTRITION AND FOOD SCIENCES

CONCENTRATIONS IN:

DIETETICS

FOOD SCIENCES

NUTRIITON, SOCIETY & SUSTAINABILITY



THE UNIVERSITY OF VERMONT
**AGRICULTURE &
LIFE SCIENCES**

PERMACULTURE

INSECTS

HORTICULTURE

CLIMATE CHANGE

ECOLOGY

AGROECOLOGY

SUSTAINABILITY

WATER

LANDSCAPE DESIGN

POLLINATORS

ENVIRONMENT

CROP GENETICS

FARM PLANNING

COMPOST

FOOD PRODUCTION

SOIL HEALTH

INTEGRATED PEST MANAGEMENT

FOOD SECURITY

AGRONOMY



MAJORS

AGROECOLOGY AND
LANDSCAPE DESIGN

SOIL SCIENCE (MINOR)



THE UNIVERSITY OF VERMONT
**AGRICULTURE &
LIFE SCIENCES**

DNA REPAIR

BIOMEDICAL

BIOINFORMATICS

POLIO VACCINES

RESEARCH

MEDICINE

STRUCTURAL BIOLOGY

CANCER

GLOBAL HEALTH

INFECTIOUS DISEASES

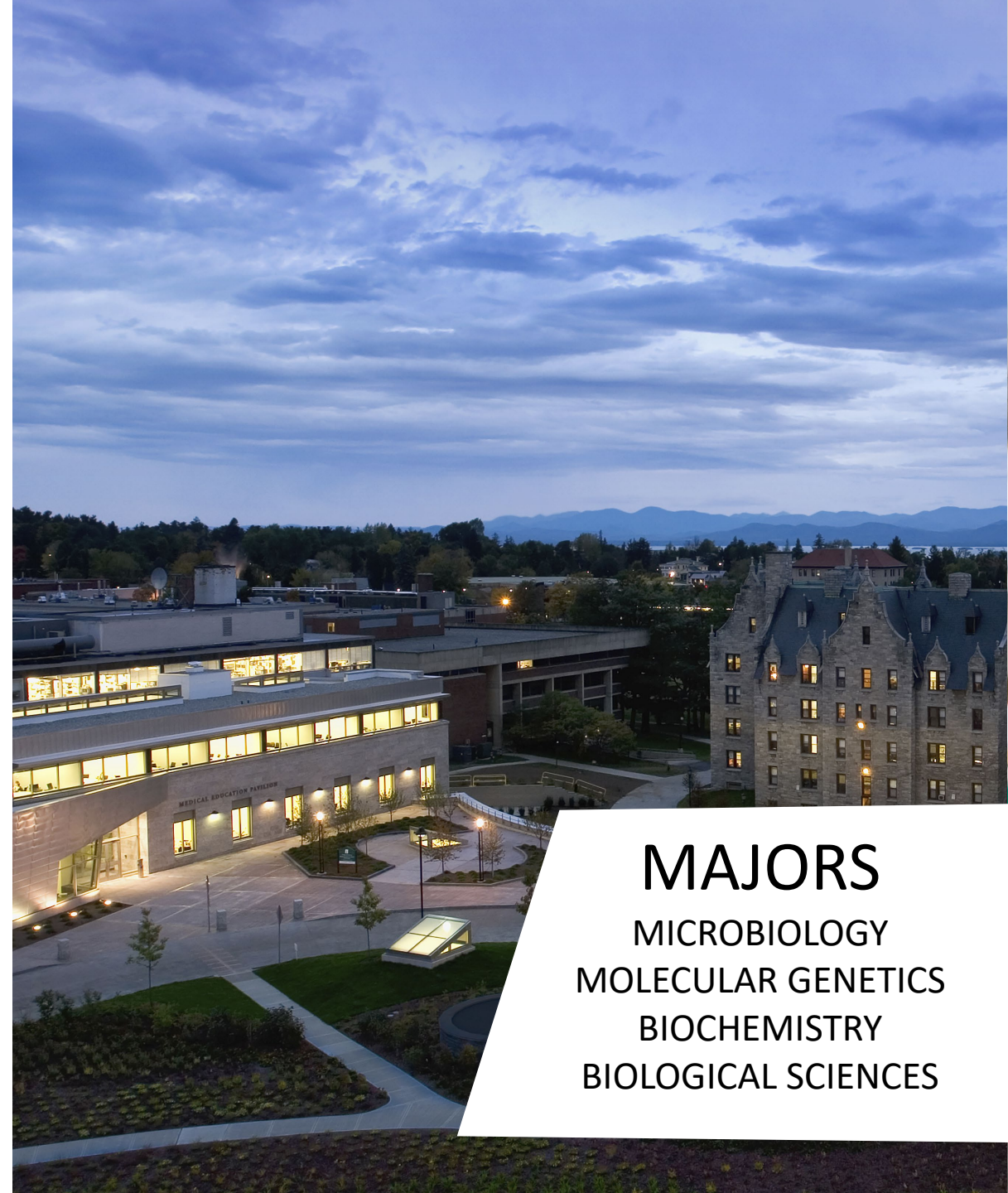
GENETICS

HUMAN IMMUNOLOGY

COVID VACCINE RESEARCH

HUMAN DISEASE

MICROBES



MAJORS

MICROBIOLOGY

MOLECULAR GENETICS

BIOCHEMISTRY

BIOLOGICAL SCIENCES



THE UNIVERSITY OF VERMONT
**AGRICULTURE &
LIFE SCIENCES**

EVOLUTION

CELLS

PLANT DIVERSITY

CLIMATE CHANGE

ECOLOGY

PLANT SPECIES

FERNS

ECOSYSTEM

BIODIVERSITY

HERBARIUM

SUSTAINABILITY

RENEWABLE ENERGY

BIOLOGY

GLOBAL

RESEARCH

GENETICS

CHEMISTRY

MICROBES

PHYSIOLOGY

MAPLE



MAJORS
PLANT BIOLOGY

DESIGN

SCIENCE COMMUNICATION

PUBLIC POLICY

DIGITAL ILLUSTRATION

SOCIAL EQUITY

MARKETING

SUSTAINABLE DEVELOPMENT

FOOD

COMMUNITY

INTERNATIONAL
DEVELOPMENT

GREEN BUILDING

CONSUMERS **APPLIED ECONOMICS**

FARM TO TABLE

ECONOMICS

ENTREPRENEURSHIP

MICROECONOMICS

MEDIA

MACROECONOMICS

TRANSDISCIPLINARY

STRATEGIC WRITING



MAJORS

COMMUNITY & INTERNATIONAL
DEVELOPMENT
COMMUNITY ENTREPRENEURSHIP
COMMUNITY CENTERED DESIGN
PUBLIC COMMUNICATION
FOOD SYSTEMS
SELF DESIGN

New On-Campus Food Systems Partnership with USDA-ARS

Focused on small and medium-sized farms and food systems

\$10M/y Partnership with USDA/ARS

Funds both government ARS Research Unit and collaborative UVM Food Systems Research Center (FSRC) on campus

How is UVM partnering?

CALS and ARS-UVM each receive 50% of the allocation

Our scientists operate within a new UVM Food Systems Research Center (FSRC)

Government scientists operate within an "ARS research unit"

FSRC director, Polly Ericksen, assoc director, Meredith Niles and ARS unit director, Dr. Chris Peters, co-create high-impact programming



Research & Equipment

- Research funded to date:
 - Food and farm sustainability metrics
 - COVID-19 impacts
 - Sustainable dairy systems
 - Equipment funding
 - Genetic, environment, and management impacts on nutrition in Northeast foods
- Collectively funded more than:
 - \$2.4 million in research to date
 - More than 100 people
 - 17 departments, 11 colleges/external organizations

FSRC Shared Equipment Award Winners

The FSRC made a call for shared equipment grants in the spring of 2022. We are excited to share our winners!



FSRC Shared Equipment Grant winners, Joshua Paulkne, Stacie Kostall, Heather Darby, and Mark Iselhardt. Details of their proposals below.

Traineeships

- Launched a PhD Fellows program in 2022 (Funding 8 fellows)
- Launched a Summer undergraduate research fellowship in food systems in 2022 (Funded 10 students)
- Supporting 9 postdoctoral fellows
- Monthly professional development seminar for postdocs and graduate students
- Collectively funded nearly \$1 million to date



Sandra Nnadi

Plant Biology
Advisor: Jeanne Harris, PhD
Effects of mycorrhizal fungi inoculation on the fungal microbiome of blueberry roots and how the interactions between roots and the microbiome influence northeast blueberry production



Jorge Ruiz-Arocho

Plant and Soil Sciences
Advisor: Yolanda Chen, PhD
Origins of agriculture have shaped insect agrobiodiversity and herbivory in agroecosystems in Mexican heritage crops commonly grown in the Northeast



Tung-Lin Liu

Food Systems
Advisor: Chris Koliba, PhD
Informing global efforts to produce enough food for our growing population in a sustainable and equitable way through the use of diversified farming systems



Panagiota Stamatopoulou

Civil and Environmental Engineering
Advisor: Matthew Scarborough, PhD
Recovery of valuable products from wastes in food systems through development of bioreactors with an emphasis on farms in Vermont



Natalia Aristizábal

Natural Resources
Advisor: Taylor Ricketts, PhD
Climate and land-use effects on ecosystem services and agricultural livelihoods



Vitória Cardoso

Sustainable Development Policy, Economics, and Governance
Advisor: Dan Tobin, PhD
Policies impacting small family farms and supply chains and sustainable development



Shiva Soroushnia

Food Systems
Advisor: David Conner, PhD
Investigating and comparing models of agrotourism destinations in Vermont and Iran to determine supply and demand successes

CALS Facilities

- *Paul Miller Research Complex* (University Farm), S. Burlington
- *Ellen A. Hardacre Equine Center* (@ University Farm), S. Burlington
- *UVM Horticulture Research & Education Center (HREC)*, S. Burlington
- *UVM BioResearch Complex*, S. Burlington
- *Proctor Maple Research Center*, Underhill
- *Morgan Horse Farm*, Weybridge
- *UVM Extension*, S. Burlington, Berlin, Bennington, Brattleboro, Middlebury, Newport, Rutland, Springfield, St. Albans, St. Johnsbury, Campus

CREAM at Miller Research Complex

- Student-run dairy farm and business
 - 16-25 students
- Among the highest producing herds in Vermont
- Cooperative with Cabot Creamery, Dairy Bar
- Experiential learning



Ellen A. Hardacre Equine Center Facilities



- ❖ 22 Stall Barn
- ❖ 12 Pastures
- ❖ Indoor and Outdoor Riding Arenas
- ❖ Feed room
- ❖ Hay loft
- ❖ Tack room / meeting space
- ❖ Wash stall
- ❖ Utility Room

Farmer Training Program @ HREC

Skills and Knowledge *will include*

▶ Organic Crop Production

- Vegetable, flower, and herb production
- Integrated grazing systems
- Organic soil fertility management
- Compost production and use
- Cover cropping and crop rotation systems
- Propagation and greenhouse management
- Direct sowing and transplanting
- Crop families
- Individual crop classes
- Harvest and post-harvest handling techniques
- Strawberry, blueberry, raspberry, and apple production
- Season extension
- Organic pest, disease, and weed management
- Irrigation systems
- Tractor and small equipment operation
- Tillage systems including regular, low, and no till
- Hand tools and field systems
- Product safety
- Winter greens production
- Perennial systems
- Understanding of food production as part of an ecological system
- Basic carpentry skills
- Electric fence systems

▶ Marketing

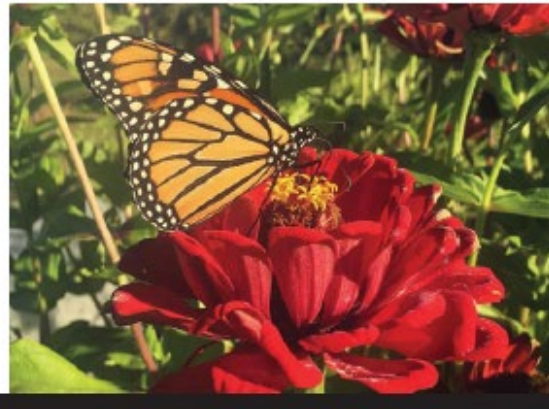
- CSA management
- Farmers market
- Wholesale marketing
- Marketing to a retail co-op

▶ Farm Business Management

- Farm financials
- Agricultural business planning
- Collective farm model
- Crop planning and field mapping
- Organic certification process
- Land access
- Systems and record keeping

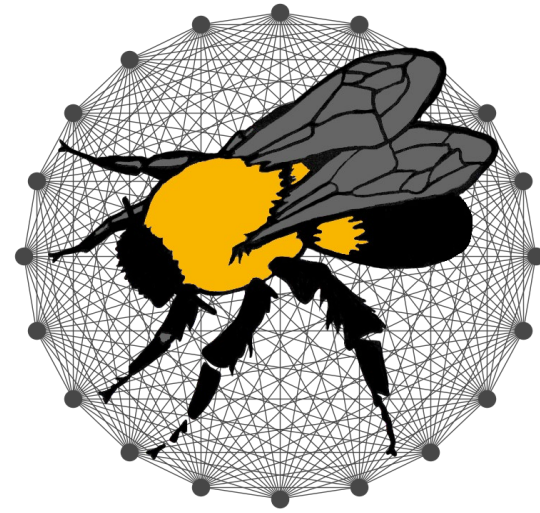
▶ Beyond the Farm

- Farm field trips
- Independent projects
- Social justice issues in the food system



The Vermont Bee Lab

A research and outreach lab dedicated to the protection of pollinators



What we do:

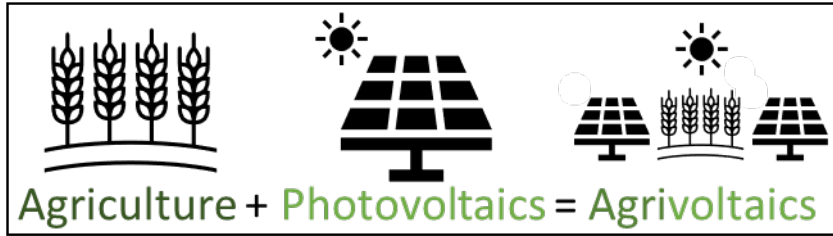
- Disease diagnostic services for beekeepers
- Research
- Education and outreach

Samantha Alger, PhD
Assistant Research Professor
salger@uvm.edu



Agrivoltaics

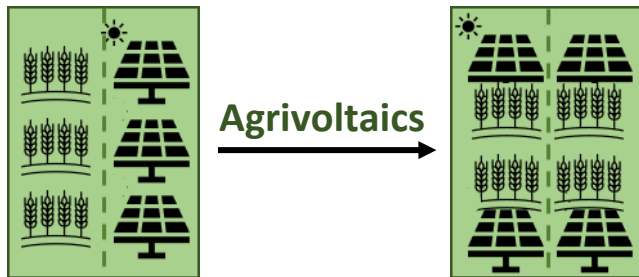
Entomology Research Laboratory



The concept:

Income stability: Renewable electricity is a reliable additional “crop”.

Land use efficiency: Higher total output when practices are combined.



Agrivoltaics full-sun reference plot, 2022, UVM HREC



Crops being evaluated for production in an agrivoltaic system.

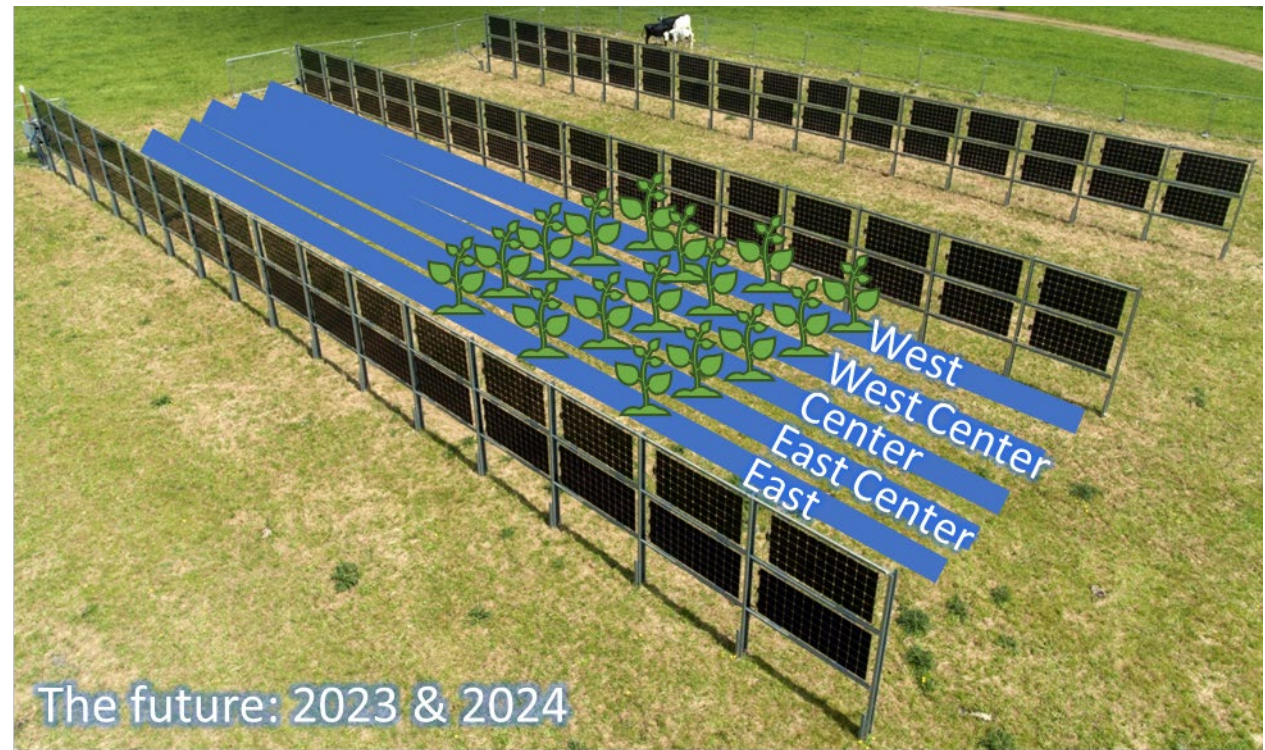
Vertical Agrivoltaics

Entomology Research Laboratory



Research questions:

- Are there different crop outcomes at different locations between arrays?
 - Yield (quantity and quality), presence of insects
- Are there different microenvironmental conditions at different locations?
 - Sunlight, temperature and moisture in soil and air



Vertical bifacial solar arrays, Next2Sun pilot plant, Germany (Next2Sun Technology GmbH, [Pilotanlage Losheim am See Saarland](#))



Research layout for beets and carrots, 2022, UVM HREC

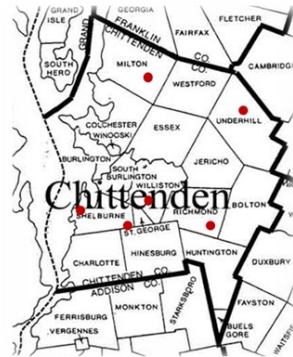
Not So Sweet Tick May Be Lurking in Vermont's Sugarbushes



Blacklegged tick, *Ixodes scapularis* (adult female)

Cheryl Frank Sullivan, Assistant Research Professor
& **Margaret Skinner**, Research Professor/Ext. Entomologist

University of Vermont
Entomology Research Laboratory
Tick Research Program
<https://www.uvm.edu/~uvmticks>
January 20, 2023



Funded by:
Chittenden County Maple Sugarmaker's Association

THE CHITTENDEN COUNTY MAPLE SUGARMAKERS ASSOCIATION

UVM Proctor Maple Research Center



Dr. Timothy Perkins, Director
Dr. Abby van den Berg

Wade Bosley
Brendan Haynes
Jed Abair

Mark Isselhardt – Extension Maple
Specialist

UVM Proctor Maple Research Center Research

Primary Research:

Increase productivity and
profitability of maple production

Ecophysiology of maple
production

Chemistry and flavor of maple
syrup



Mark Isselhardt, UVM Extension

UVM Morgan Horse Farm

- National Historic Site
- Maintains the Vermont State animal, the Morgan horse
- CALS students have worked with the Morgans since the 1950s.
- Apprentice & Equine Management Internships
- Agritourism
- Historic Preservation
- Forestry
- Place-Based Education





Questions?