Research Overview

Horticulture applies knowledge from fields of science and biology to improve production and develop sustainable practices for high value, intensively cultivated crops including those used for food, landscapes, ornamentals and medicine. In Landscape Architecture, we analyze, plan, and design the natural and built environment using science, art, and technology.

Combining knowledge from biochemistry, physiology, molecular biology, genetics and ecology with aspects of design, function, and beauty, horticulture and landscape architecture includes people with a broad range of interests.

Research Areas

- Sustainable practices for horticultural crop production
- Alternative crops and cultivars adapted to low-input and organic production systems
- Improvement of postharvest fruit quality
- Controlled environment agriculture
- Herbicide physiology, weed ecology, and mechanisms of herbicide resistance
- Plant interactions with soil microbial communities
- Plant growth and development
- Plant responses to the environment and abiotic stress
- Adapting crops to climate change
- Epigenetic regulation
- Genome editing
- Systems biology
- Plant metabolic biochemistry
- Plant natural product discovery
- Landscape systems and design; land use and planning; landscape ecology
- Plant Nutrition
- Drought Tolerance and Water Management
- Horticultural marketing
- Horticultural education
Faculty Research Areas

Barbarash, David M.  
Digital Landscape Representation  
dbarbara@purdue.edu

Bigelow, Cale A.  
Turfgrass Science; Soil Properties and Turfgrass Nutrition  
cbigelow@purdue.edu

Bilenky, Moriah  
Sustainable Horticulture  
mbilenky@purdue.edu

Bressan, Ray  
Stress Physiology  
bressan@purdue.edu

Dana, Mike  
Native Species for the Landscape  
dana@purdue.edu

Dudareva, Natalia  
Plant Biochemistry and Molecular Biology  
dudareva@purdue.edu

Gómez, Celina  
Controlled Environment Agriculture, Hydroponics, Plant Propagation  
cgomezva@purdue.edu

Guan, Wenjing  
Vegetable and Melon Crop Production  
guan40@purdue.edu

Hallett, Steve  
Sustainable Agriculture  
halletts@purdue.edu

Handa, Avtar  
Post Harvest and Molecular Biology  
ahanda@purdue.edu

Hirst, Peter  
Pomology  
hirst@purdue.edu

Hoagland, Lori  
Speciality Crop Production Systems  
lhoaglan@purdue.edu

Huang, Yiwei  
Landscape Performance and Landscape Ecology  
huan1655@purdue.edu

Li, Ying  
Functional Genomics; Plant Responses to the Environment  
il2627@purdue.edu

Maynard, Elizabeth  
Sustainable Vegetable Production  
emaynard@purdue.edu

Meyers, Stephen  
Specialty Crop Weed Science  
slmeyers@purdue.edu

Mickelbart, Mike  
Horticulture/Plant Physiology  
mmickelb@purdue.edu

Mitchell, Cary  
Controlled Environment Agriculture  
cmitchel@purdue.edu

Nemali, Krishna  
Controlled Environment Agriculture; Hydroponics, Indoor Farming, Floriculture  
kemali@purdue.edu

Orvis, Kathryn  
Horticulture/Youth Education  
orvis@purdue.edu

Patton, Aaron  
Turfgrass Management Systems, Turf Weed Science  
ajpatton@purdue.edu

Porterfield, D. Marshall  
Controlled Environment Agriculture  
porterf@purdue.edu

Prokopy, Linda  
Horticultural Social Science  
lprokopy@purdue.edu

Raghothama, K.G.  
Molecular Biology of Plant Nutrition  
kraghoth@purdue.edu

Rotar, Sean Michael  
American Landscape History, Design Pedagogy  
srotar@purdue.edu

Siciliano, Paul C Jr  
History and Theory of Landscape Architecture, Purdue Arboretum  
sicilian@purdue.edu

Thompson, Aaron  
Human, Ecological, and Spatial Dimensions of Land Use Planning  
aswthomps@purdue.edu

Torres, Ariana  
Marketing of Specialty Crops  
torres2@purdue.edu

Varala, Kranthi  
Plant Abiotic Stress; Systems Biology  
kvarala@purdue.edu

Widhalm, Joshua  
Plant Natural Product Metabolism  
jwidhalm@purdue.edu

Josh Widhalm studies sea slugs to understand how some of the creatures are able to steal the organelles necessary for photosynthesis from the algae they eat.