Farm Forward
Creating sustainable farming for the future

Dr. David Slaughter
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Biological and Agricultural Engineering Department
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Creating sustainable farming for the future
Population will reach 9.7 BILLION by 2050

To meet demand, ag output will need to increase by 70%.

Challenges facing Agriculture
Pests, Pathogens, Invasive Species

Photo by Nathan Mueller
Resources

Photo by Floki
Harmony with Nature

Photo by Ron Cooper
Climate
Traditional Precision Ag. Maps
Real-Time Monitoring and Control

Randall Benton
Pistachio Yield
Smart Farm

- Plant Water Status Sensing
- Field Computer
- Soil Water Status Sensing
- Variable Rate Irrigation Management
- Canopy PAR Absorption Management
- Canopy Shape Measurement by LIDAR
- Canopy Reflectance Measurement by Drone Copter

- Shrini Upadhyaya

UCDAVIS
Smart Sensors

- Bruce Lampinen

Big IDEAS

UC DAVIS
Applied
PLANT-BY-PLANT
At the
OPTIMUM TIME

Smart Farm

Big IDEAS
Observable characteristics of an individual resulting from the interaction of its genotype with the environment.
Bird Phenotyping
- Kristen Zumdahl
Arabica Coffee Genome Sequenced

By Pat Bailey on January 13, 2017 in Food & Agriculture
36 High-Definition Cameras
Each connected to a Intel Server
Era of Farm Labor Scarcity
California banned the use of short handled tools in 1975.
Modern Agriculture
Hand weeding in California

Richard Thornton
RTK GPS
Plant Mapping
Miniature Robotic Hoes
Robotic Hoes
Move Around Crop
Killing Weeds
Smart Collar
Undergraduate Training

Digital Camera
Why UC Davis?

PLANT AND ANIMAL SCIENCE

UC Davis is ranked #1 in PLANT AND ANIMAL SCIENCE by U.S. News & World Report (2017). The campus consists of 5,300 acres, the largest in UC.

UCDAVIS

Main Campus
Davis, California

Tahoe Environmental Research Center
Incline Village, Nevada

UC Davis Health
Sacramento, California

Bodega Marine Laboratory
Bodega Bay, California

San Francisco
Los Angeles
Designing SmartFarm

... as a state-of-the-art facility for Innovation, Discovery, and Sustainable Food Production in the 21st Century
SmartFarm Philanthropic Opportunities . . .

. . . to usher in the new era of agriculture
Autonomous Smart Sprayer

- Prof. Ken Giles & Yamaha
How Can You Help?

UC Davis seeks to partner with passionate donors to help shape the future of agriculture through this transformative idea.

You can HELP us connect with:

• Forward thinking farmers, ranchers and ag tech innovators

• Philanthropic partners!
  – SmartFarm Student Fellowships
  – SmartFarm UAV Hands-on Learning Center