TECHNOLOGIES FOR SPECIALTY CROPS

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MAJOR RESEARCH AREAS/PROJECTS AT WSU CPAAS

- Apple and Cherry Harvesting
- Apple and Raspberry Pruning
- Intelligent Bin Transport System
- Automated Weed Control in Vegetables
- Water and Nitrogen Stress Sensing
- Solid Set Canopy Delivery System
- Weed Control
- UASs for Production Agriculture; Precision ag
TARGETED SHAKE-AND-CATCH FOR APPLE HARVESTING
SHAKE AND CATCH EXAMPLE
Robotic Apple Harvesting
ROBOTIC APPLE HARVESTING
CATCHING/HANDLING SURFACE STUDIES

- Different Types of Foams
- Non Newtonian Fluid
- Air Suspension
DROP TEST FOR CHERRIES
Automated Bin Handling
A Bin-dog Concept

- Carry an empty bin
- Replace full bin with empty bin
- Load the full bin

- Four-wheel-independent steering system (4WIS)
- Passive suspension
- Bin-loading system
MONITORING SUB-SURFACE MICRO-IRRIGATION (SSMI)

Jacoby, Sankaran, Peters, Keller et al.; WSU

- Precision SSMI to regulate wine grape physiology
- Comparison of SSMI to standard surface drip application

Sub-surface micro-irrigation

Mini-rhizotron camera- root monitoring
AUTONOMOUS/PRECISION SPRAYING

- Substantial acreage sprayed by UAS in Japan.
- Similar application in trial in CA Vineyards; UC Davis
Crop Signaling-based Weeding System

- Identification of crop plants with a crop signaling method
- Development of weeding technique
  - Mechanical
  - Chemical
- Robotic platform, system integration and field evaluation

Weeding Robot

aginnovation
Plant Labels

- Crop Marking at Planting
- Systemic Seed Marking Technology
- Machine Vision Technology
- Targeted Spray Technology
- Crop Signal Detection
- Precision Weed Control
Automatic Weed Control

Before: Weed Knives Closed
- killing weeds in seedline

At Plant: Weed Knives Open
- avoiding tomato plant
Precision Spray Weed Destruction System

- Spray Weed Zone
- No-Spray Crop Zone
Precision Spray System Evaluation