Novel Weed Control in Fruit Crops

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New York State Agricultural Experiment Station

Weed Control in Perennial Systems

- Competition for water, light, nutrients
- Large vegetation can impact the deposition of crop protection chemicals
- Habitat for pests
- Alter crop microclimates
- Interfere with crop production and harvest operations
- Hazardous to human laborers



Factors that may affect the decision to use/not use herbicides in cropping systems

- Herbicide Resistance
- Injury Potential
- Environmental Concerns
- Worker Safety
- Consumer Preferences
- Regulatory Changes

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Bulletins Live!		Endangered and		

Novel Technologies Being Investigated in NY

Electrical Weeding Support from USDA -OREI



Targeted, Vision-Guided Spraying Support from IR-4, NYWGF



Metal, flexible finger-like electrodes



Front-mounted weeders

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AC, 180 hz Frequency 30 kW power, 3 to 12 KV

Research trials at Oregon State, UC Davis and Cornell

Hazelnuts, grapes, apples, almonds and blueberries

Effects of travel speed and unit setting on effective energy "dose"

Responses of annual and perennial weed species

Effects of electrical weeding on soil microbial activity, soil microarthropods, soil weed seedbank germinability

Economic analyses







No crop-weed discrimination so fast when weeds and sensitive commodity tissue are separated in time/space

Research trials at Rutgers and Cornell in grapes and blueberries to evaluate POST weed control, investigate the safety of novel active ingredients when using precision spray technology, reduce total herbicide use

Grape sucker control

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Results to Date and Future Plans

- WEED-IT Quadro was as effective as banded applications for weed and grape sucker control
- In grape trials, targeted, vision-guided spraying used less herbicide
- Manipulate target size (sucker number, unfolded leaves), compare across Concords and Seyvals
- Compare commercial system to an in-house system developed at CLEREL
- Conduct weed control trials in systems with effective PRE herbicide programs to reduce weed density for POST control

Thoughts Going Forward...

- Costs of equipment purchase, maintenance, and use
- Availability of parts and services
- Trained labor force
- Regulatory impacts on adoption (benefits and barriers)
- Selective forces and weed species shifts (who survives...)
- Integration into diversified weed management programs
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