


## Highlights of FEQL Research-2005/6

The Felsot Chronicles




## Research with American Chemical Society Project SEED Students

- ACS Project SEED is an internship program that provides stipends to economically disadvantaged high school students
- During the summer of 2005, we hosted three students under awards to WSU from ACS
  - Lupe Contreras (Pasco High School)
  - Luis Briseño (Wapato High School)
  - Marilu Cruz (Wapato High School)

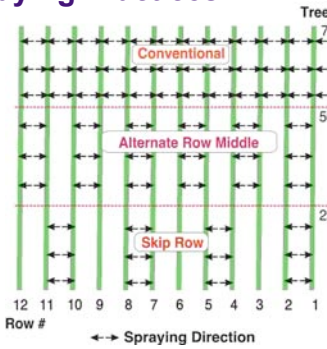



## Student Research

- Lupe & Luis worked under my supervision, assigned to a project funded by EPA Region 10
  - "Reduction of Insecticide Use in Orchards and Implementation of No-Spray Zones Through Alternative Spraying Practices"
    - Test the ability of alternative spraying practices to reduce insecticide use but provide effective insect pest control
    - Determine the capability of alternative spraying practices to help growers meet Federal Court mandates of no-spray zones without sacrificing adequate pest control






## The Idea for Alternative Spraying Practices

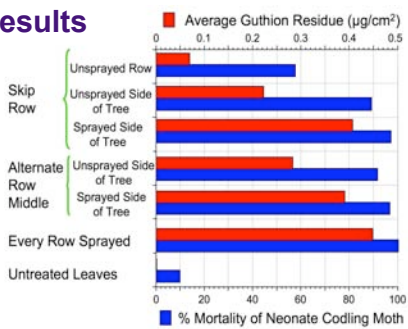


## Briseño Project

- "Effect of Different Spraying Patterns on Insecticide Residue Deposits on Apple Leaves and Bioactivity Against Codling Moth Larvae"
- Collected, extracted, and bioassayed leaves from the orchard treated with Guthion by an airblast sprayer
  - Three treatments:
    - Conventional--every row sprayed
    - Alternative row middle--every other row sprayed
    - Skip row--every other two rows left unsprayed






## Results



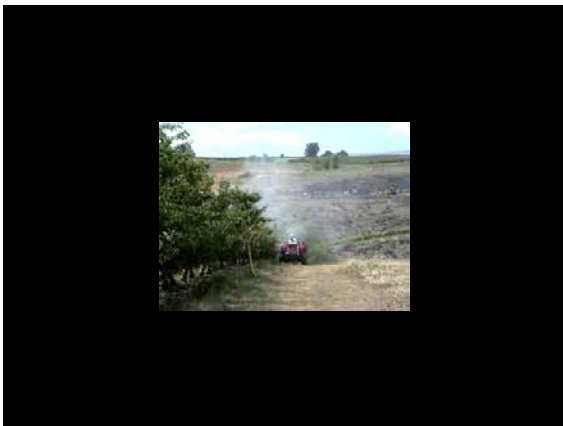
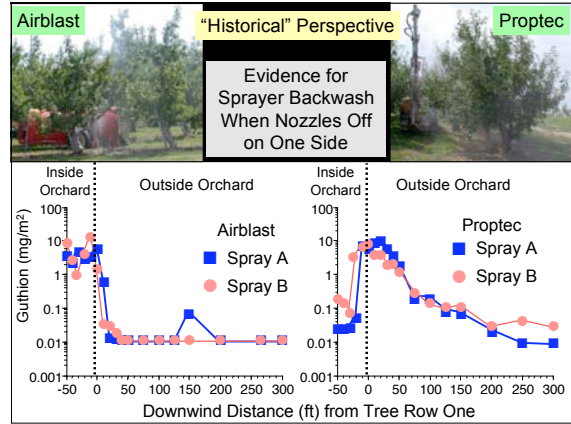
Treatment	Average Guthion Residue (µg/cm²)	% Mortality of Neonate Codling Moth
Conventional (Sprayed Side)	~0.45	~95
Conventional (Unsprayed Side)	~0.15	~95
Alternate Row Middle (Sprayed Side)	~0.35	~95
Alternate Row Middle (Unsprayed Side)	~0.15	~95
Skip Row (Sprayed Side)	~0.45	~95
Skip Row (Unsprayed Side)	~0.15	~95
Every Row Sprayed	~0.45	~95
Untreated Leaves	~0.05	~0

- After application, the residues were lower on leaves from the alternative row middle practice but mortality of neonate codling moth larvae was the same as on leaves from the conventional spraying practice

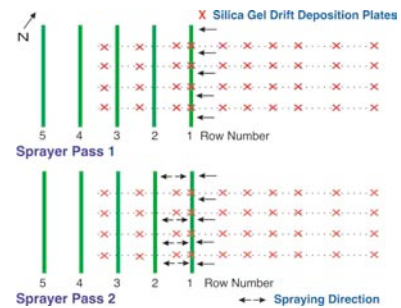


## Contreras Project

- “Contribution of Backwash Effect from an Axial-Fan Orchard Sprayer to Downwind Drift Potential”



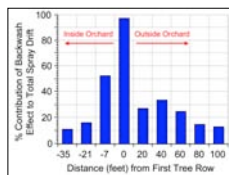
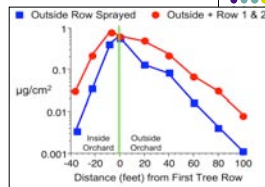
## Experimental Design



- Spray outside row with leeward nozzles off; collect drift cards
- Repeat outside row spray and add row 1 spray; collect drift cards

## Results

- Residues of Guthion were detected at a distance of 100 feet from the orchard following both 1 & 2 sprayer passes. However, residues were lower when only one pass was made.
- Residues were also detected in the alleys between unsprayed rows
- The backwash effect contributed ~35% of the total drift outside of the orchard with a maximum contribution at 40 feet downwind.



## Plans for Summer Research 2006

- Depends on funding from WTFRC-Technology Committee
  - Proposal under consideration for work on drift retardant adjuvants to determine if residues retained better on apples
- Am. Chem. Soc. Project SEED has funded two internships
  - Luis Briseno will be returning
    - His project is likely to be bioassays of new reduced risk insecticides on leaves and apples using neonate codling moths and some residue development to validate concentrations on matrix

## The Buzz



- Strong commitment of time to teaching
  - Fall: ESRP 532, Applied Environmental Toxicology
  - Spring: ENTOM 340, Agricultural Entomology
  - Proposal in works: FEQL faculty develop an instrumental analysis lab course oriented to the Viticulture & Enology students (enology emphasis)
- *In press* production by the American Chemical Society
  - "Crop Protection Products for Organic Agriculture: Environmental, Health, and Efficacy Assessment", edited by A. S. Felsot & K. Racke