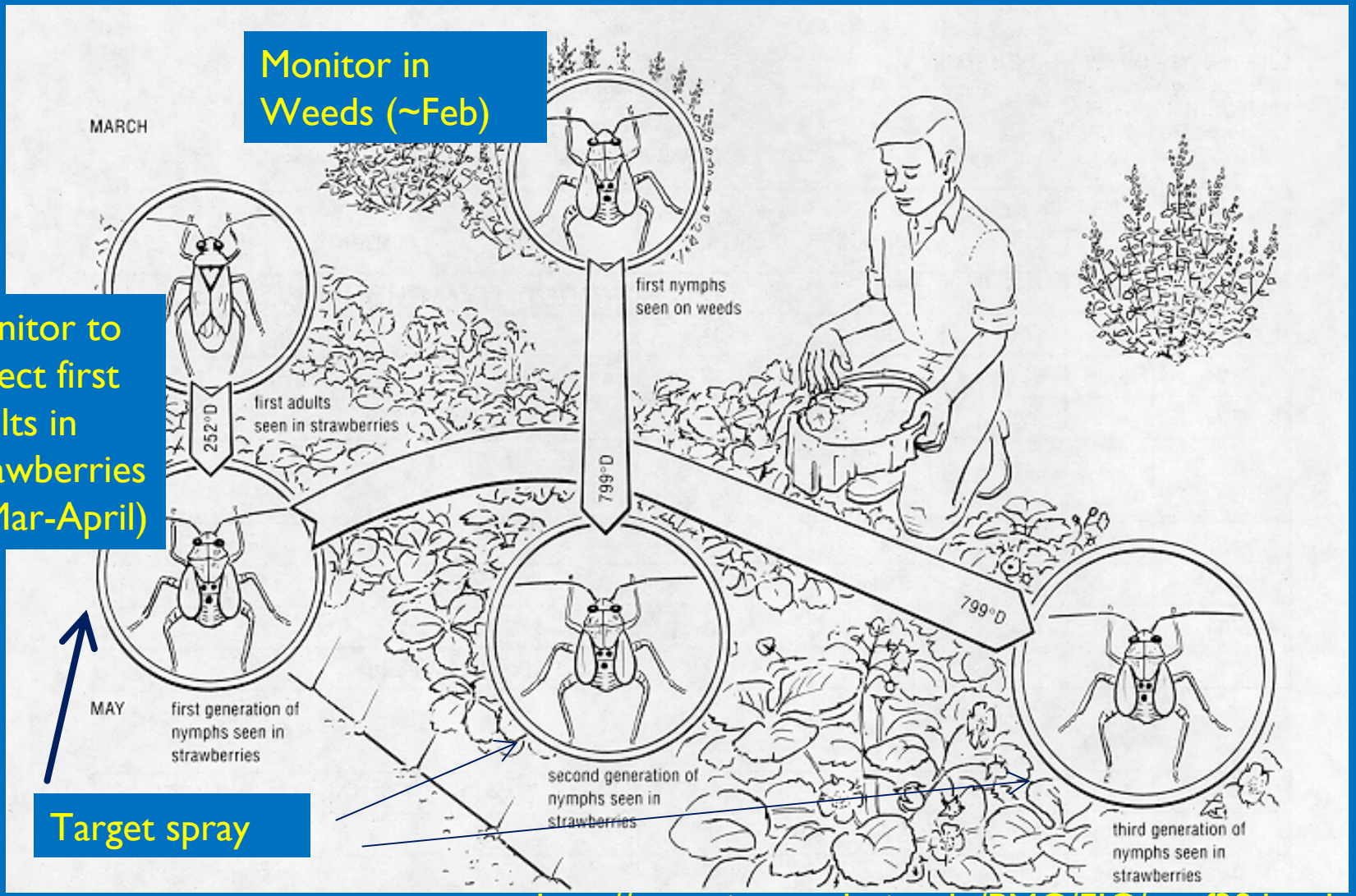
2011 Lygus Monitoring Program:
Degree Day Model Implementation & Resistance Management

Hillary Q. Thomas
California Strawberry Commission
hthomas@calstrawberry.org

Year-Round IPM for Lygus & The Degree Day Model



Monitor to detect first adults in strawberries (~Mar-April)

Target spray

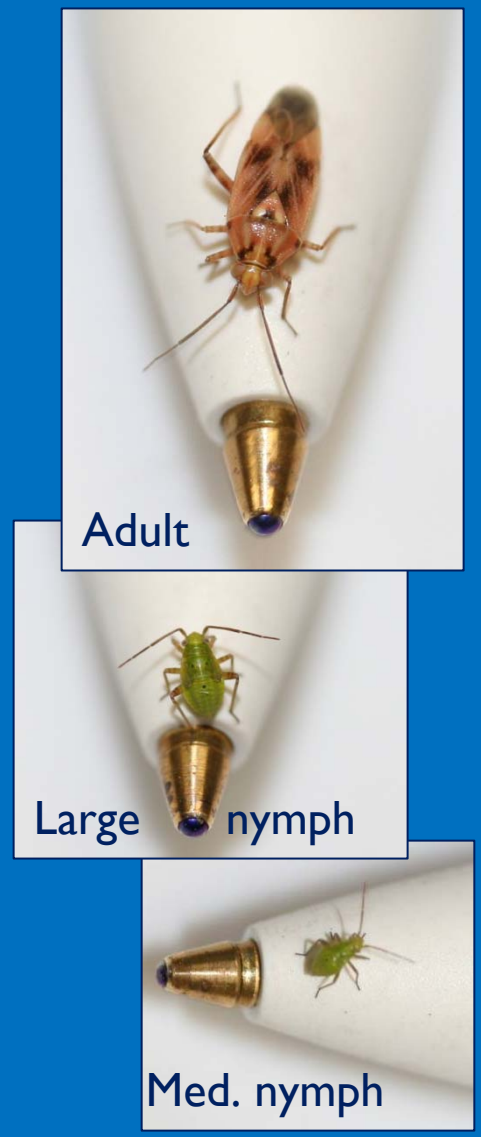
http://www.ipm.ucdavis.edu/PMG/FIG/str-f39.html

Program Goals & Design

• Grower outreach program to make better use of the degree day model

• **in-field/industry assessment: can it *realistically* be used to optimize timing of insecticide sprays for *Lygus* bugs**

*** Year 1: Current practice & impediments to effective *Lygus* management**



Lygus Management Project

- **18 fields in Watsonville/Salinas**
- **14 fields in Santa Maria/Guadalupe**

Phase I -

✓ **Train growers to scout for Lygus (Jan/Feb)**

✓ **Site-specific weather stations aid growers to implement the degree day model (checked regularly) (set date-> spray after hatch)**

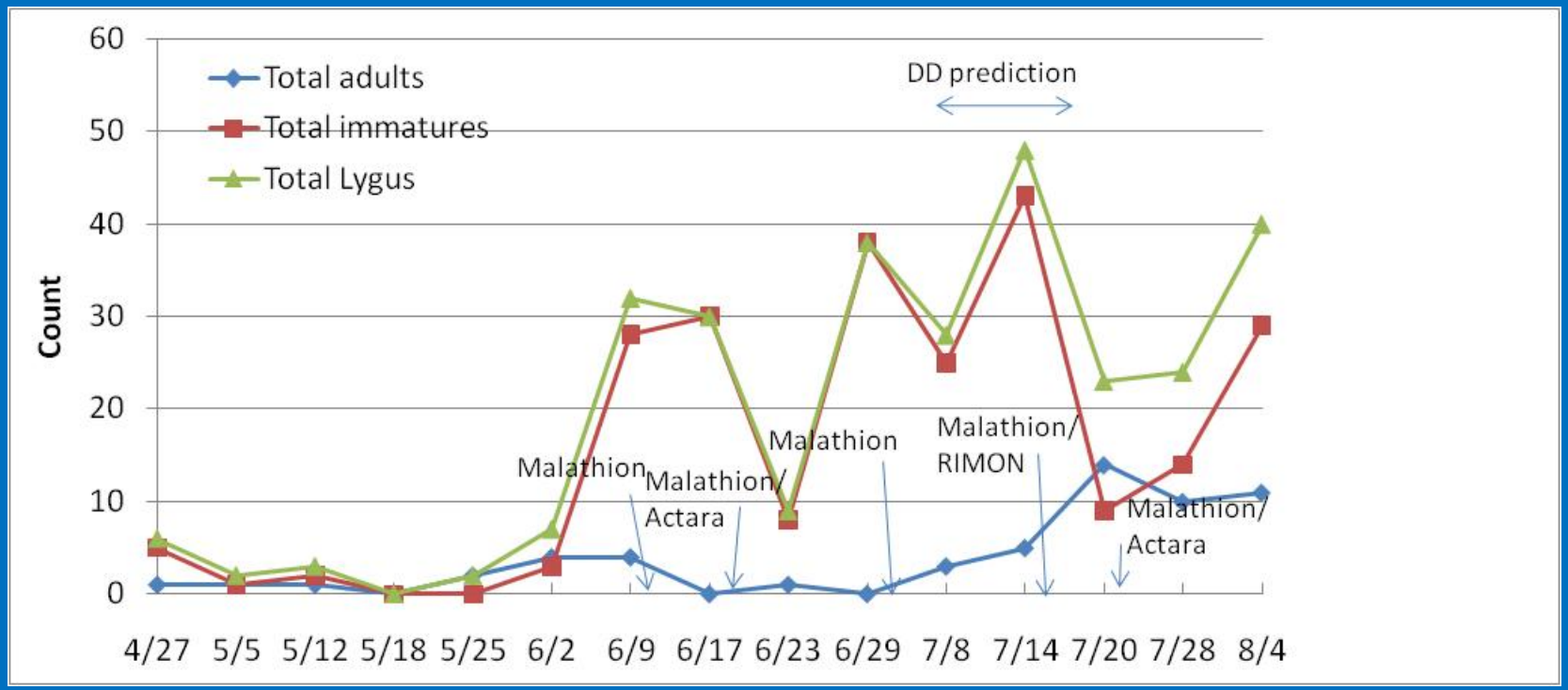
Phase II –

✓ **Conduct resistance testing to aid growers in spray decisions (July/Aug)**

Results I: Degree Day Model Predictions

Model predictions were typically later than actual spray dates

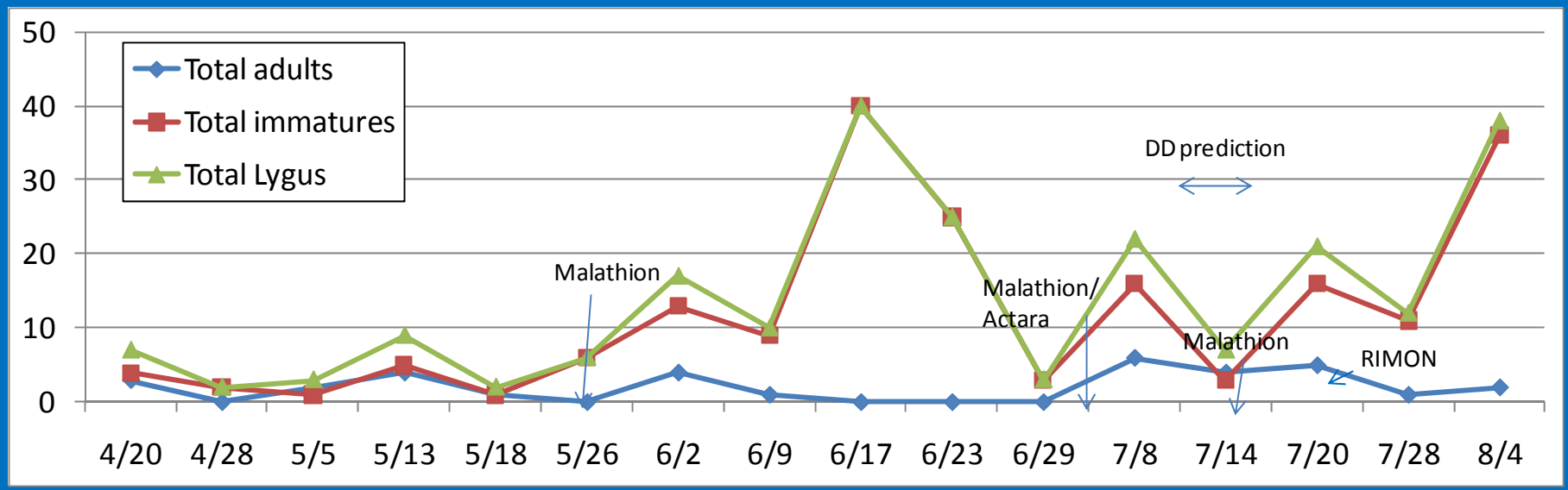
- PCA monitoring
- Average of 6 samples/date
- Sweep net of 20 plants



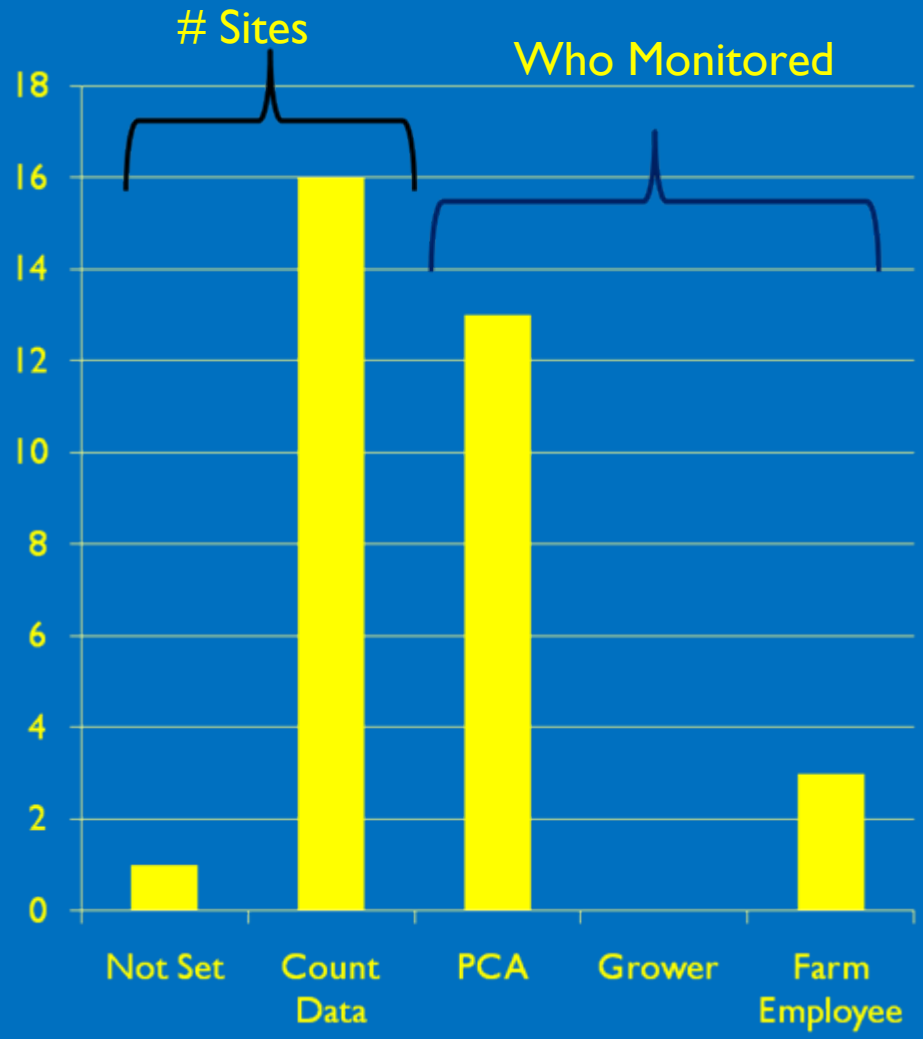
- Possible causes: late set date, weather station location

Results I: Degree Day Model Predictions

Model predictions were typically later than actual spray dates



Results II: Monitoring



Watsonville/Salinas

Santa Maria/Guadalupe

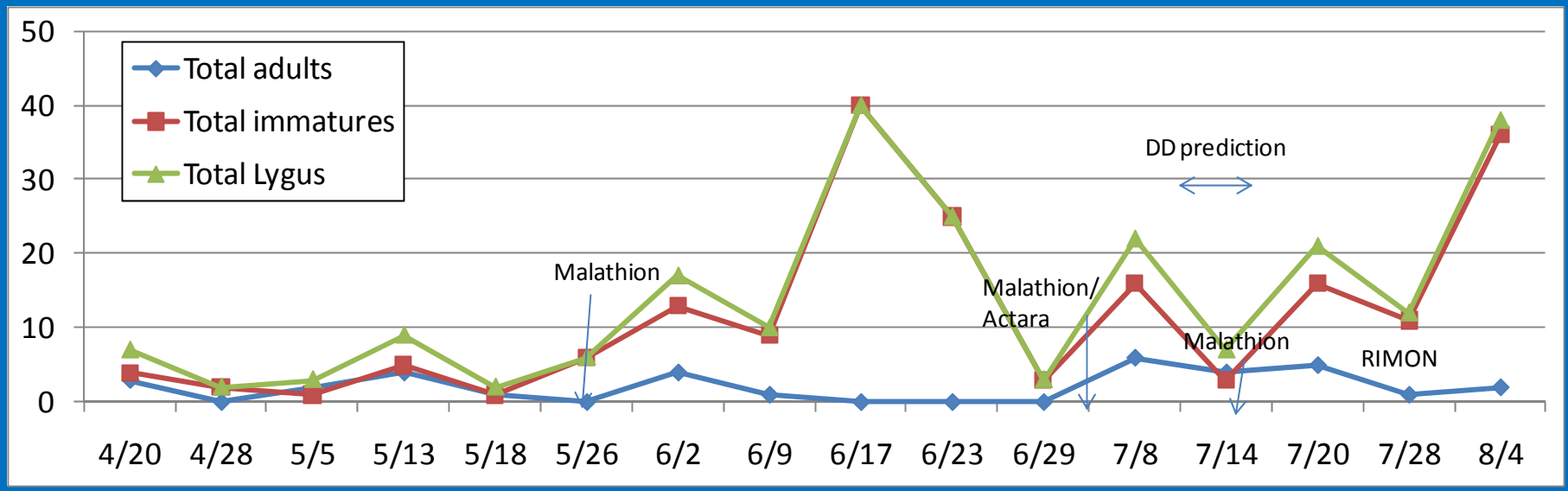
Conclusions - Degree Day Predictions & Monitoring

- Growers allocated largely to PCAs to sample

- Monitoring on a weekly basis for all ranches is unlikely to happen in practice

- Degree day predictions are difficult to fine-tune: missed start dates/early season monitoring, weather station optimization for variable climates

Results III: Resistance Screening



Treatment	% Mortality ± SE
Dibrom 1x + Actara 1x	100.0 ± 00
Malathion 1x + Actara 1x	39.3± 76
Danitol 1x + Actara 1x	80.0 ± 200
Danitol 1x	13.3 ± 67

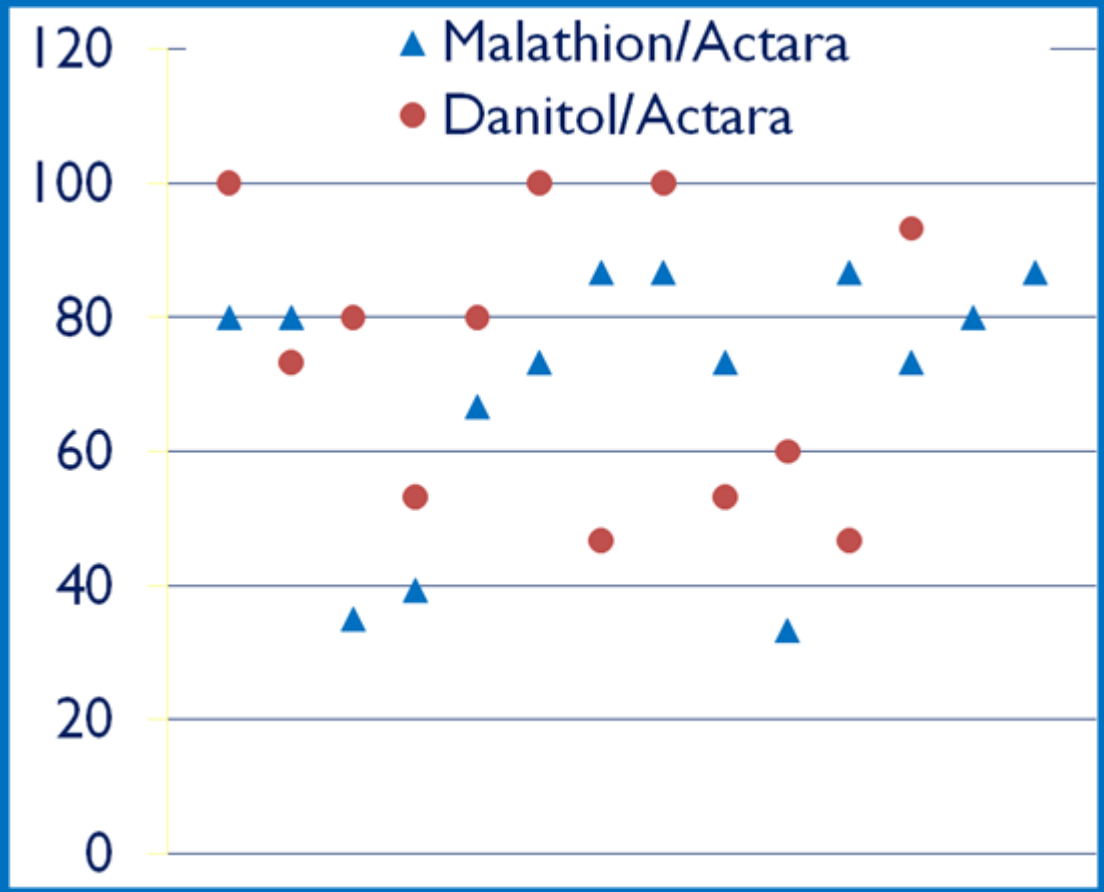
Resistance Results for Multi-season pyrethroid-avoidant ranch

Treatment	Full label rate per acre	% Mortality ± SE
Danitol 1x + Actara 1x	1066 fl oz Danitol 24 EC + 4 oz Actara	100.0 ± 00
Control (water)	100 gallons	0.0 ± 00

Resistance Results for spray-avoidant ranch

Treatment	Full label rate per acre	% Mortality ± SE
Malathion 1x + Actara 1x	2 pts Malathion 8 Aquamul + 4 oz Actara	86.7 ± 67
Danitol 1x + Actara 1x	1066 fl oz Danitol 24 EC + 4 oz Actara	100.0 ± 00
Control (water)	100 gallons	67 ± 67

Resistance Test Patterns



- Dibrom/Actara tank Mix had 100 percent mortality at all but 1 site
- Results were variable and context specific

Conclusions - Resistance Management

- Resistance was clearly reflective of spray patterns in most cases

- Resistance was very site-specific depending on grower practices and those of neighbors

* Do resistance results change grower practice?

Remaining questions & what's next…

- Could the degree day model be used predictively given:
  - -intensive early season monitoring
  - - the right weather data

- Would it be used over regular monitoring?

- Does site-specific resistance testing benefit growers in decision making?

- What about those vacuums?

- GROWER SURVEYS (THIS FALL) and…next season??

Acknowledgments

- > 60 Participating growers, PCAs, and ranch employees
- Chemtura
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- Jianlong Bi & Patricia Love, UCCE Monterey County
- Surendra Dara, UCCE, Santa Barbara County