Light Brown Apple Moth (LBAM) in Caneberries and Strawberries

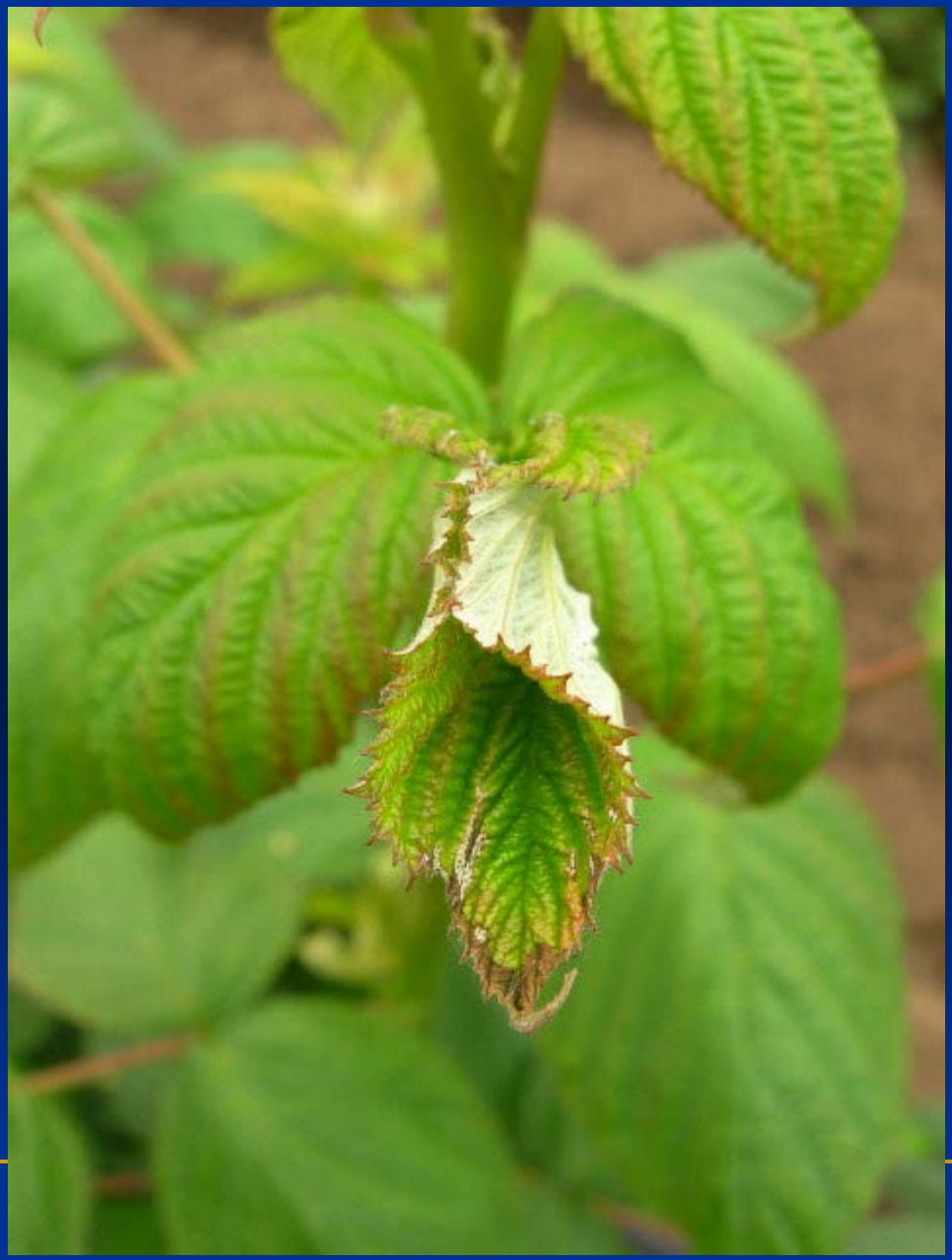
Mark Bolda, UCCE; Hillary Thomas, UC Davis;
Frank Zalom, UC Davis

2009 Regulatory Activity in Caneberries

- Six total field closures; estimated 1.8 million dollars in lost production, 360 people thrown out of work.

2010 Regulatory Activity in Strawberries

- 14 organic strawberry fields closed at least temporarily in spring and summer, total cost at least one million.



The Challenge

- Develop an integrated program of LBAM management which brings field populations near to zero, stops fields from being shut down.

Mating Disruption in Caneberries

- Concept

Pheromone based twist tie application for mating disruption

Using twist ties in the field

- 200-300 ties per acre, put ties further around the edge of the field as much as possible.
- Tie's life is 4 to 6 months, replace afterwards.
- Pick up ties from country agricultural commissioner, call 763-8080 and talk to Rosemary.

Couple of items concerning the twist tie use

Chemical Efficacy in Order of Decreasing Effectiveness

- Intrepid, Delegate, Radiant, organophosphates, pyrethroids
- Entrust
- Bt's
- Pyganic
- Oils

- Physical removal of rolls from the field.

Combination of techniques

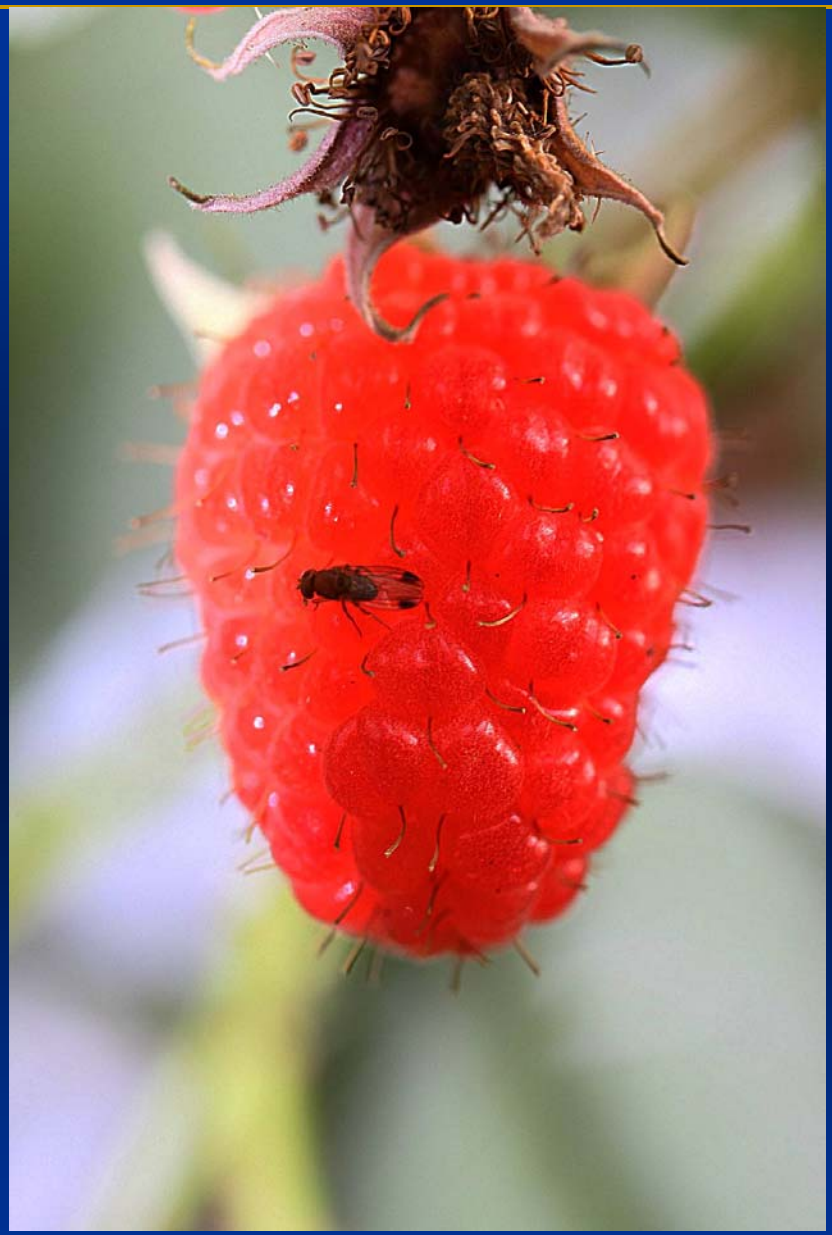
- Insecticide sprays on detection of leafrollers in the production field.
- Physical removal and destruction of leafrolls found in the field.
- Use of pheromone based mating disruption to keep overall numbers down.

LBAM Program as it now stands

- 70 million spent in total up through August 2010
- Goal has switched from eradication to suppression in largest section in the Bay area.
- Fiscal 2011 budget reduced to 2.5 million, asking for more in 2012.

Spotted Wing Drosophila

Mark Bolda, UCCE and Ed Show, Driscoll Research Associates



History of SWD

- First found in strawberry field August, 2008.
- Widely found in strawberry and raspberry fields autumn, 2008.
- Colossal infestations of cherries, spring 2009, with continuing infestation of strawberries and caneberries.
- Continuing spread to Washington, Oregon, British Columbia, Florida, August, 2009.
- Fully spread to Eastern seaboard 2010, Michigan late.
- No regulatory action.

Our challenge in responding to spotted wing drosophila:

- Detection and delimitation.
- Risk analysis
- Development of best management practices and educational materials

- All at the same time!

Keys to Successful Management of the Spotted Wing Drosophila

- Monitoring and trapping to quickly detect infestations.
- Use of sprays or baits to suppress fly populations.
- Use of enhanced sanitation to reduce numbers of flies remaining in the field.

Monitoring and trapping for spotted wing drosophila

Yeast + Sugar + Water

- One package Baker's yeast
- 12 ounces water
- 4 teaspoons sugar
- Will fill 4 to 5 traps

OR

- Apple cider vinegar

Monitoring – Early Detection

Spraying to Control Spotted Wing Drosophila

Chemical Sprays for Spotted Wing Drosophila Management

- Work well

  Malathion, Mustang and Delegate

- Work OK

  Entrust, Pyganic, Aza-Direct

- Don't work

A note regarding the spinosyns Delegate, Radiant, Success and Entrust

- Most of the activity is by ingestation.
- Therefore, by enhancing ingestion we should be able to enhance efficacy.
- Note that Nulure or acetic acid acidify.

Organic Management of SWD

- Pyganic, Azadirectin and Entrust appear to be giving very short periods of control.
- Two closely spaced max rate Pyganic applications, plus or minus Aza-Direct give significant control up to one week.
- A single Entrust gives the same. One to watch.
- Sanitation key.

Organic SWD Management

- Two closely spaced max rate Pyganic applications, plus or minus Aza-Direct give significant control up to one week.
- A single Entrust gives the same. One to watch.
- Sanitation key.

Implementing Sanitation

Implementing Sanitation

Implementing Sanitation

Implementing Sanitation

Recommendations for Monitoring and Trapping Spotted Wing Drosophila

- Use an effective bait placed at regular intervals in the fruiting field to detect initial entrants into the field.

Recommendations for Spotted Wing Drosophila Management in Berries

- Use of protein baits such as GF120 Fruit Fly Bait can be helpful in suppressing low populations of spotted wing drosophila.
- The pesticides malathion, Mustang and Delegate are very effective in controlling spotted wing drosophila.
- Organic growers: high, frequent rates of Pyganic or Entrust work.

Recommendations for Spotted Wing Drosophila Management in Berries

- Sanitation; removal and destruction of infested fruit will be essential in keeping down total numbers of flies.