

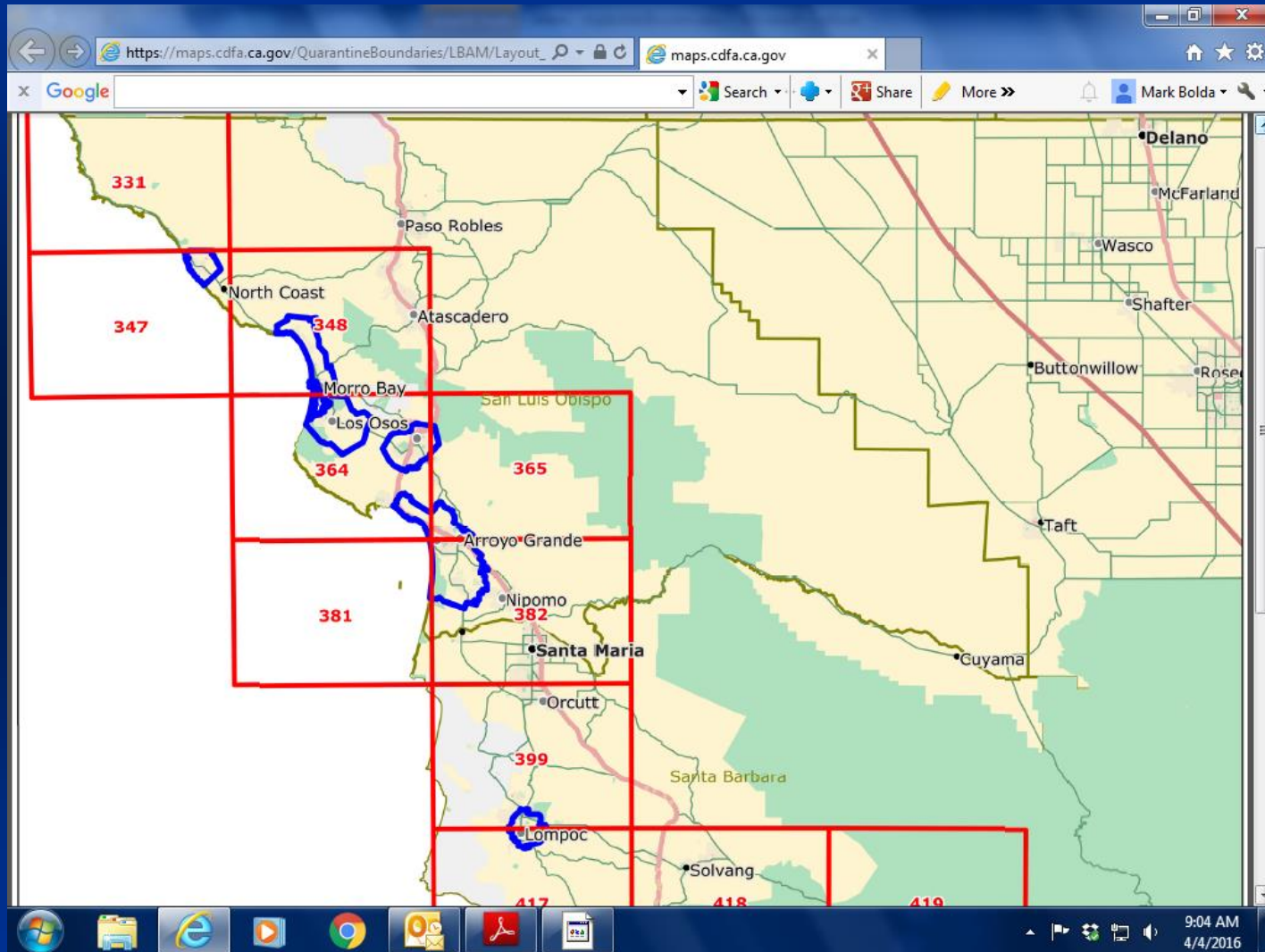
# Light Brown Apple Moth (LBAM) in Caneberries

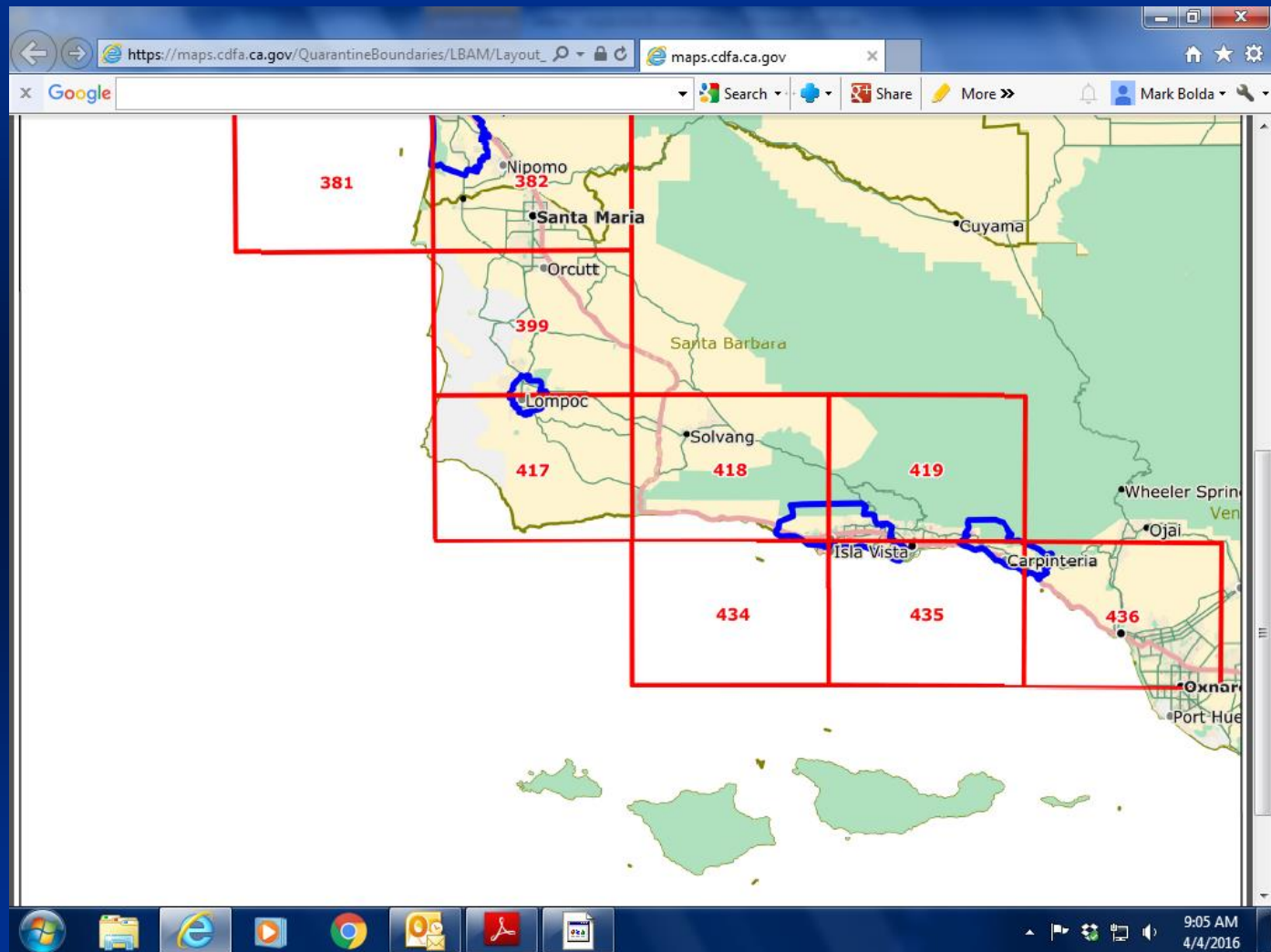
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San Luis Obispo, April 13, 2016

Mark Bolda, UCCE

# Why should this be important to you?





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# 2016 Regulatory Activity in Caneberries and Strawberries

- USDA and CDFA regulatory program on the move.
- Many fields shut down for shipment outside of the quarantine, expensive and disruptive!

# Identification of Light Brown Apple Moth

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# 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

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- Physical removal of rolls from the field.

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# Putting it All Together

- 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.
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# Spotted Wing Drosophila

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Mark Bolda, UCCE and Ed Show, Driscoll  
Research Associates





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# 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.
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# Monitoring and trapping for spotted wing drosophila

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# Yeast + Sugar + Water

- One package Baker's yeast (0.25 oz)
- 12 ounces water
- 4 teaspoons sugar
- Will fill 4 to 5 traps

OR

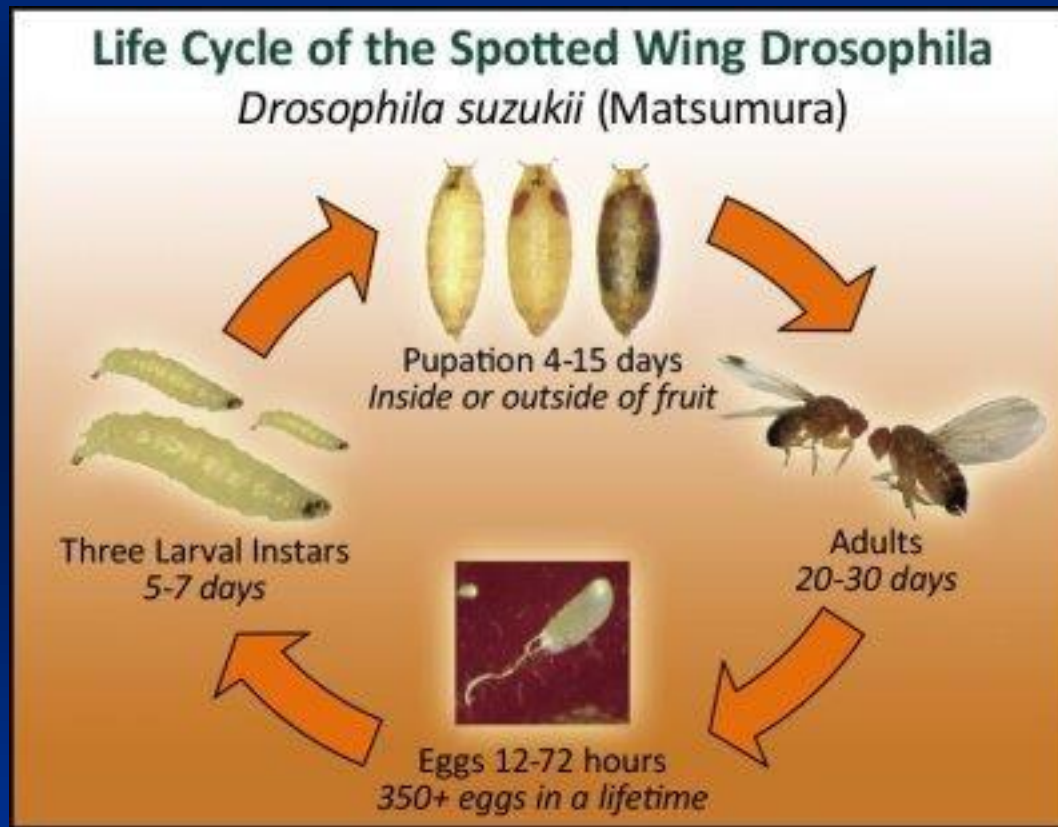
- Apple cider vinegar



# Monitoring – Early Detection



# What is the life cycle of SWD in the Central Coast?



# Sampling to find where SWD is in the winter time

- Work done by Katrina Hunter as senior thesis
- Sampling of areas surrounding fields, further away from fields and pupae in soil.

# Overwintering

- Overwintering as adults of both genders, in very low numbers but associated with agricultural areas.
- Not overwintering as pupae.
- Flies start flowing back into fields March, populations damaging from mid-July on.

# Spraying to Control Spotted Wing Drosophila

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# Chemical Sprays for Spotted Wing Drosophila Management

- Work well

Malathion, Mustang and Delegate

- Work OK

Entrust, Pyganic

- Don't work

Oils

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# A note regarding the spinosyns Delegate, Success and Entrust

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



# Organic Pesticide Testing 2015 – IR4

- Venerate
- Grandevo
- Entrust
- Veratran
- Cimex

# Organic Management of SWD

- Pyganic and Entrust give very short periods of control.
- Two closely spaced max rate Pyganic applications.
- A single Entrust gives the same.
- Sanitation key.

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# Cultural management

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# Implementing Sanitation





# Implementing Sanitation







# Implementing Sanitation





# Implementing Sanitation



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# 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.

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# Recommendations for Spotted Wing *Drosophila* Management in Berries

- The pesticides malathion, Mustang and Delegate are very effective in controlling spotted wing *drosophila*.
  - Organic growers: high, frequent rates of Pyganic or Entrust work.
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# 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.

