

California's Invasive Species Problem: The Need for Forward-Leaning Programs



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The Issues

- The problem

- Estimated six new species establish per year in CA (Dowell & Gill 1989)

- USA – on average 11 species per year
- Hawaii – 15-18 species per year
- Bob Dowell is revising this 22 yr old data set

- Cost to CA?

- \$3 billion per yr? (Karen Jetter, UCD is revising this)

- Invasions correlated strongly with human activity

Invasion Drivers

- Geography

- Climate

Little can be done to manage these drivers

- Economic prosperity

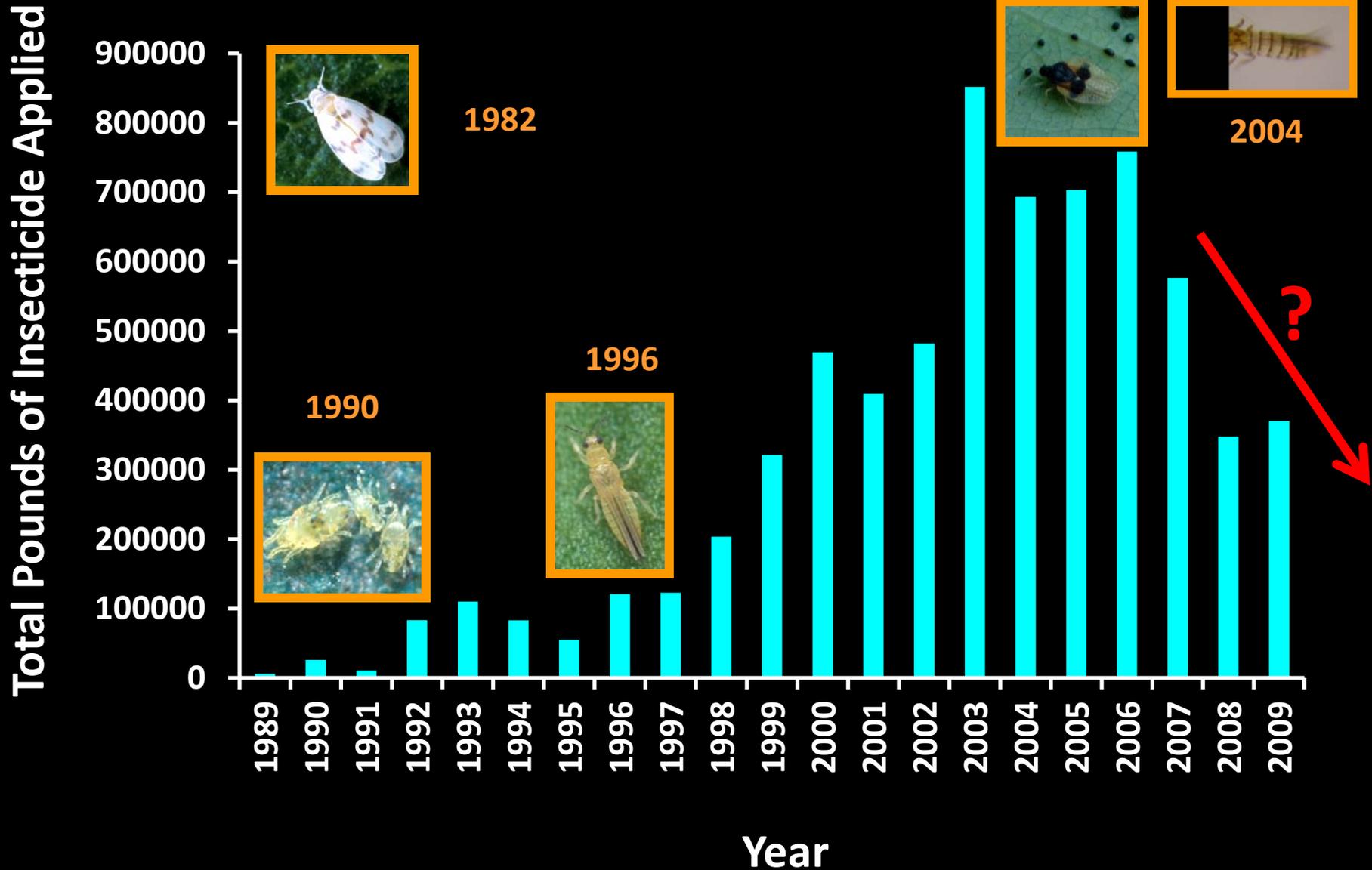
- Population density

Options exist to moderate the effect of these drivers – proactive monitoring?

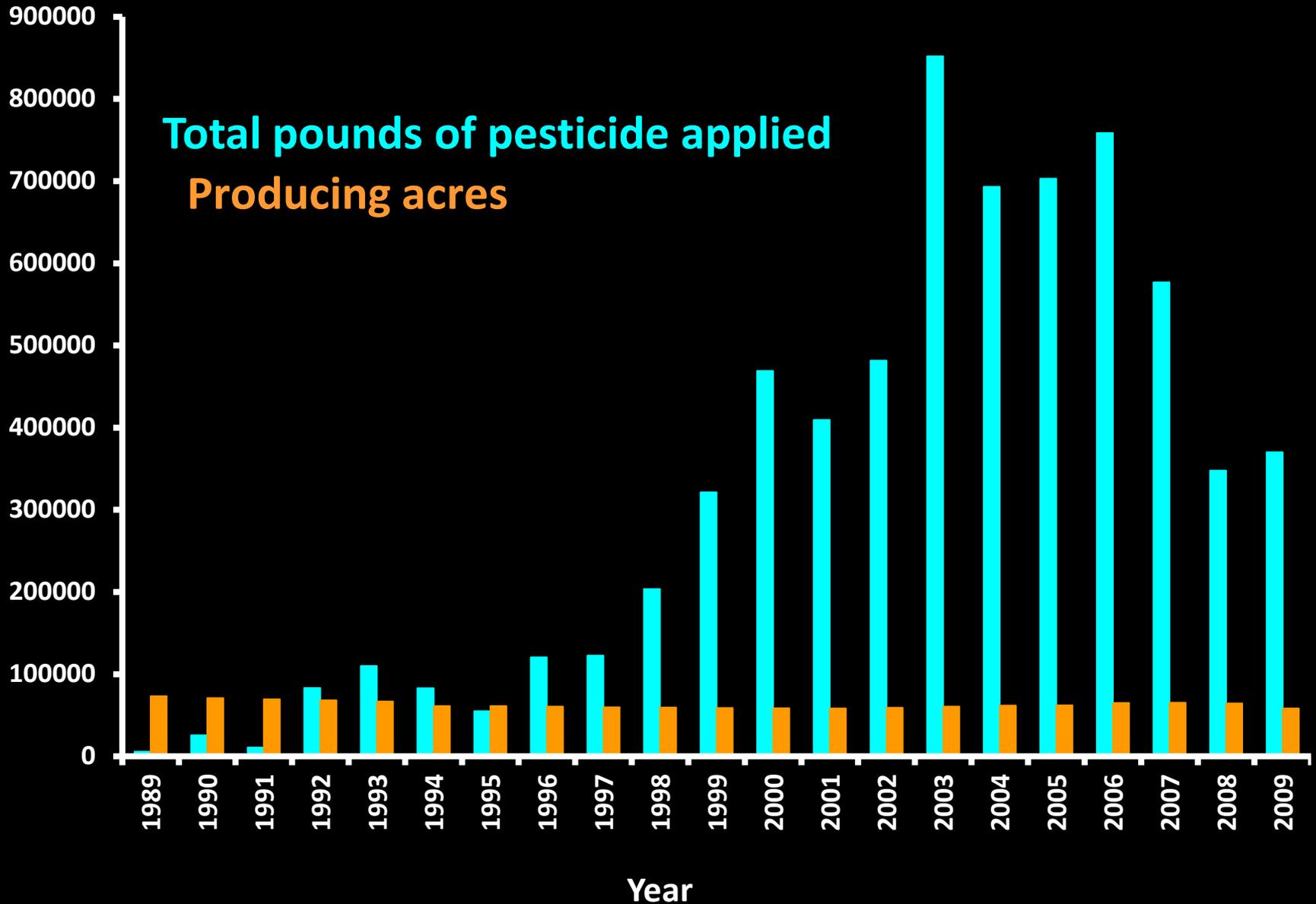
Invasive Species & IPM Programs

- **Invasive pests disrupt IPM programs**
 - **Drive greater pesticide use**
 - **Disrupts programs for existing pests**
 - **Interferes with biocontrol**
 - **Management uncertainty – need insurance policies**
 - **Commodity boards forced to re-direct research funds**
 - **Fund pesticide research & resistance monitoring**
 - **Residues & re-entry intervals**
 - **Re-invent IPM & sampling programs**
 - **Education and outreach efforts need re-vamping**
 - **Threaten sustainability of organic production**
 - **Export & quarantine issues**

Amount of Insecticide Applied to Avocados



Total Pounds of Insecticides Applied and Total Avocado Production Acreage by Year in California



"MR. AVOCADO"

SENDS HIS BEST FROM CALIFORNIA

PACKED and SHIPPED by INDEX MUTUAL ASSN.
CALIFORNIA, CALIFORNIA

PRODUCE
OF U.S.A.



Proactive Monitoring

- Many potential threats to CA well recognized and programs address these:
 - Gypsy moth
 - Japanese beetle
- Other high risk invaders known but not monitored even though monitoring tools were available
 - European grape vine moth
 - Light brown apple moth
 - Palm weevils
- What about the lurkers on the threshold?
 - Known pests
 - Avocado seed moth and avocado seed weevils
 - Fresh fruit imports from area of origin of avocados increasing exponentially
 - Wild cards
 - Unknown species that pose risks
 - Surveys in Guatemala revealed 8 moth species associated with mature fruit; 2-3 were new species, and of described species first host records were obtained for 2

Where to Put the Effort?

- Where would traps be deployed for proactive monitoring programs for agricultural pests?
- **Two major zones**
 - **Urban areas**
 - **Farms and orchards**
- **Urban areas proactively monitored for avocado and citrus pests**
 - Detections suggest smuggling of back yard plants likely mechanism for introduction
- **Agricultural areas proactively monitored for grape pests**
 - Grape pests more likely to be introduced into vineyards(?)

Current Projects

- Gold spotted oak borer
 - Arizona, Mexico
- Asian citrus psyllid
 - Pakistan
- Red palm weevil
 - Saudi Arabia
- Recent successes
 - Giant whitefly
 - GWSS –
 - 98% reduction in SoCal
 - French Polynesia > 99% reduction



Conclusions

- Invasive pests disrupt IPM programs
- Sensitive monitoring tools available for many potential invaders
 - More needs to be done to proactively monitor for a greater variety of threats – we know this, lack of resources to do it
- Greater overseas efforts needed to survey for pests and potential natural enemies
 - No incentive for exporting nations to generate detailed pest lists
- Historical analyses may be able to direct monitoring efforts in urban vs. ag areas
- Who pays?
 - Pesticide tax on home use & commercial products to sponsor monitoring programs and invasive species research