

The IPM Continuum: Moving Toward Safer Alternatives

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Overview



- 🐞 What is IPM?
- 🐞 What drives IPM adoption in agriculture?
- 🐞 What are the Safer Alternatives and why isn't everyone using them?
- 🐞 My role is to introduce an appreciation for the complexity of our food system
- 🐞 I introduce concepts using a broad brush for other speakers to develop later & provide specific examples

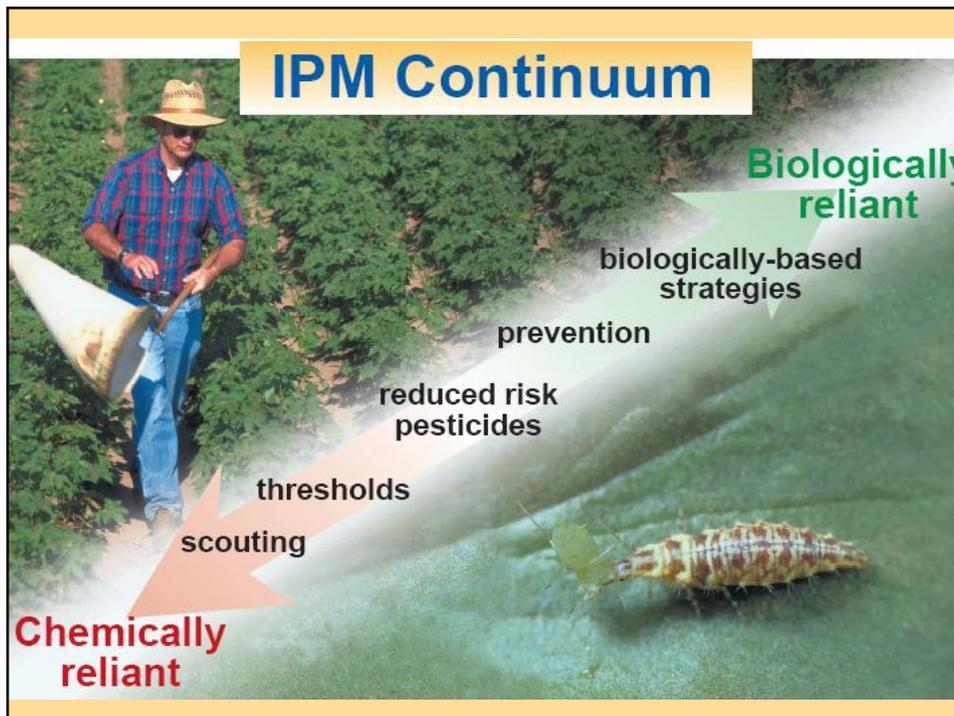


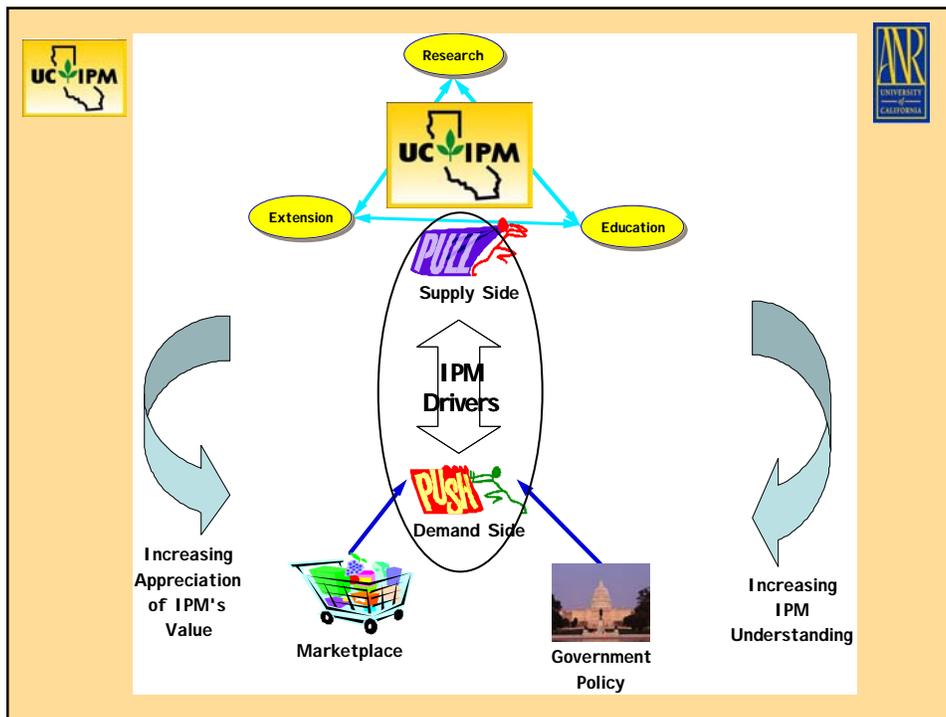


Integrated Pest Management Defined



- Ecosystem-based strategy
- Long-term prevention of pests or their damage
- Combination of techniques
 - Biological control,
 - Cultural control,
 - Chemical control
- Pesticides are used only after
 - Monitoring
 - Use of decision thresholds
 - Treatments are made with the goal of removing only the target organism.
- Pest control materials should minimize risks to human health, beneficial and nontarget organisms, and the environment, including soil, air and water.





What Are Some Drivers?



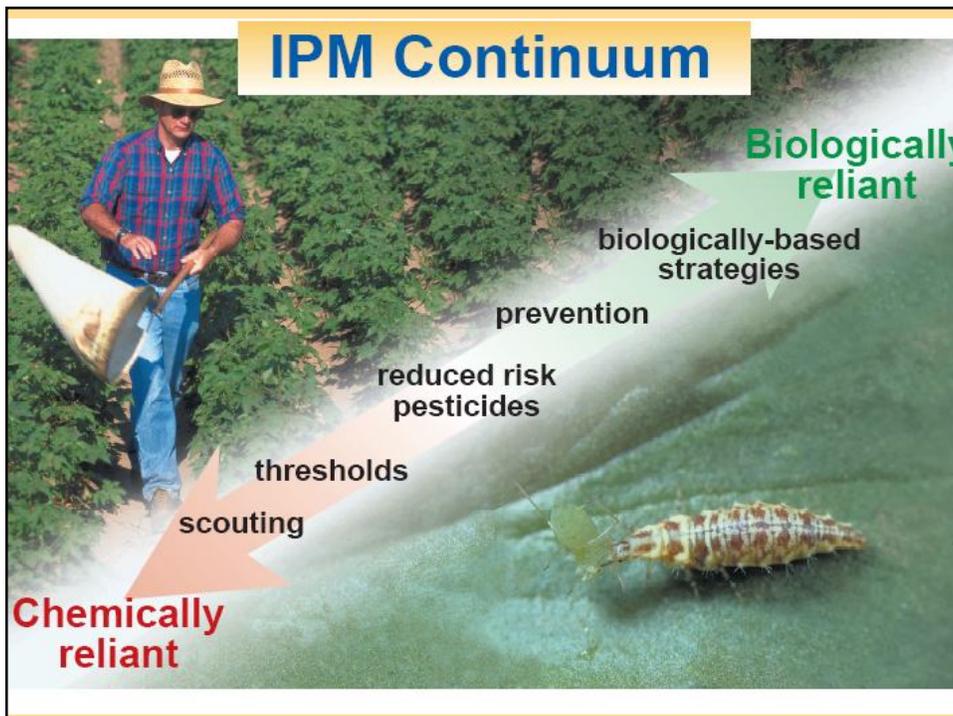
- 🐛 Balancing Economics & Risk
 - 🐛 Water quantity and quality
 - 🐛 Labor availability
- 🐛 Consumer demand for abundant, affordable, high quality and safe food
- 🐛 Regulation
 - 🐛 Human Health
 - 🐛 Environmental Health
 - 🐛 Food Safety
 - 🐛 Export
 - 🐛 Availability of reduced risk products



What Influence Does the Crop Have?

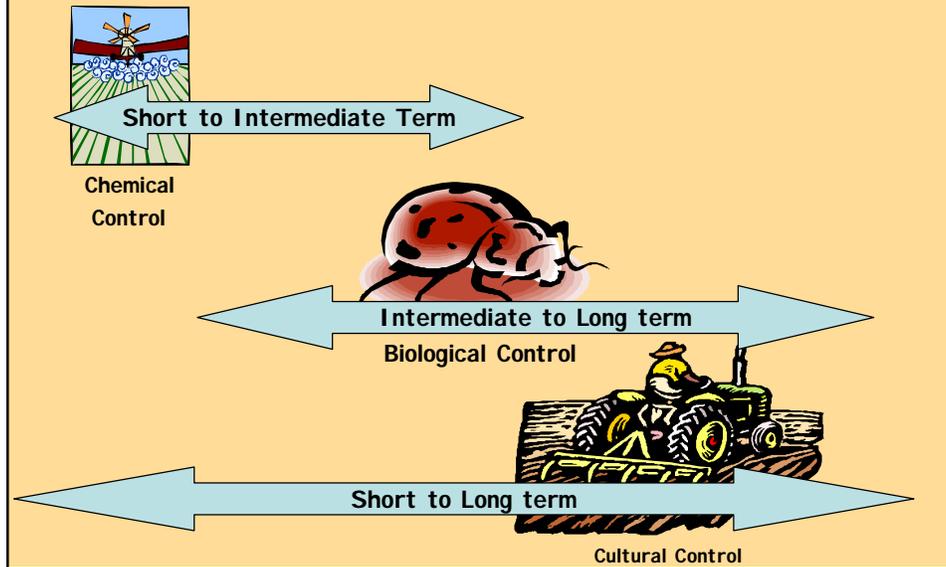


- 🐛 Annual or perennial?
- 🐛 Long season or short season?
- 🐛 Food or fiber?
- 🐛 Fresh or processed?
 - 🐛 Cosmetic appearance important?
 - 🐛 FDA filth regulations?
- 🐛 Domestic or export?





Time Scales of IPM Management Approaches



Biological Control



- 🐜 Conserve natural enemies
 - 🐜 They provide valuable service for free!
- 🐜 Augment existing levels
 - 🐜 Lacewings, predatory mites - expensive
- 🐜 Why doesn't everyone just let nature take its course?
 - 🐜 Not reliable enough (risk aversion)
 - 🐜 Not enough control (economics)
 - 🐜 Not timely enough (e.g. migrations or invasive species)



Cultural Control



- 🐛 Resistant crops
 - 🐛 Traditional breeding vs. bioengineered
- 🐛 Develop healthy plants
 - 🐛 Avoid stressing plants
- 🐛 Planting and/or harvest timing
- 🐛 Seeding rates - cotton
- 🐛 Sanitation - reduce sources of infestation

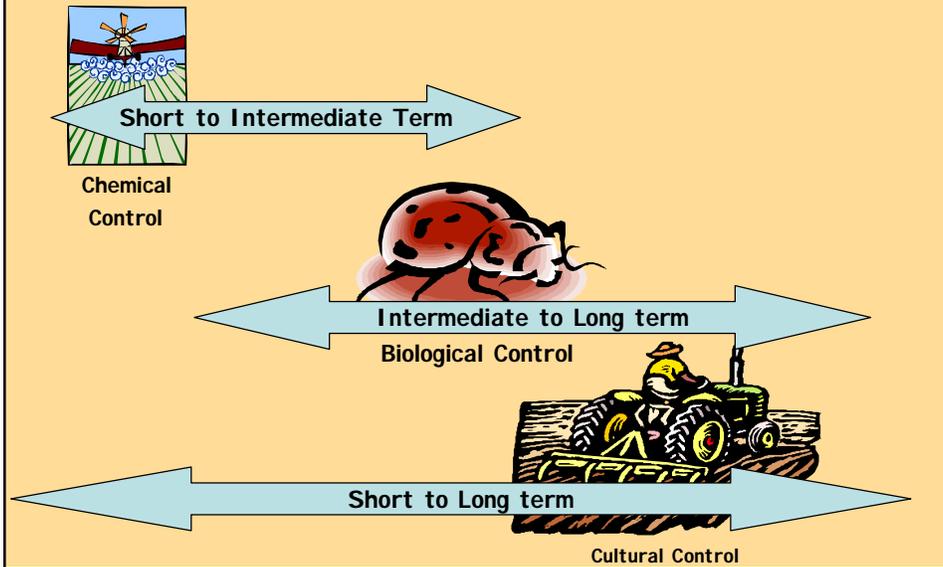


Removing "Mummy" Almonds

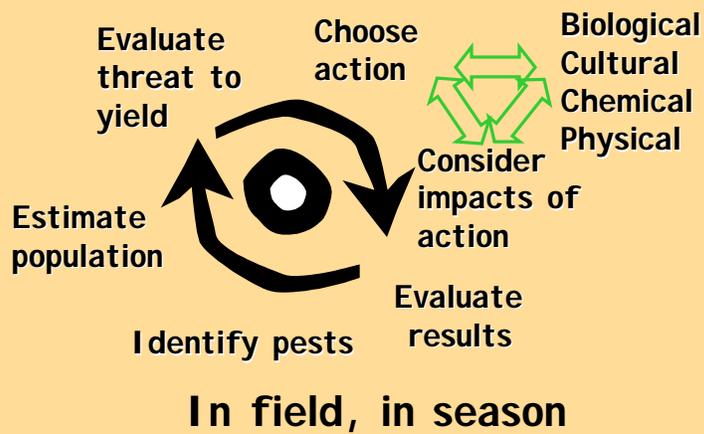




Time Scales of IPM Management Approaches



Making Pest Management Decisions





Chemical Control



- 🐛 Why use chemicals?
 - 🐛 Protect investment now!
 - 🐛 Threat too great
 - 🐛 Risk of loss greater than cost of treatment
- 🐛 How to decide if treatment needed?
 - 🐛 Sample frequently
 - 🐛 Evaluate threat to crop
- 🐛 Pesticide options
 - 🐛 Narrow vs. broad spectrum
 - 🐛 Reduced risk to humans & environment



Pesticide Chemistry: Selective vs. Broad Spectrum



- 🐛 Targeted is good
 - 🐛 Gets only the problem pest
 - 🐛 Preserves natural enemies
 - 🐛 More "surgical"
- 🐛 Too selective can lead to:
 - 🐛 Tank mixes
 - 🐛 Increased applications over a season
 - 🐛 Increased costs, more products, more fuel for applications
 - 🐛 Scheduling conflicts
- 🐛 Mating disruption



Regulation

- 🐛 License required to write pesticide recommendation
- 🐛 Written recommendation required for use products of most pesticides
- 🐛 Pesticides are highly regulated
 - 🐛 Label registration process
 - 🐛 Use according to label



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- 🐛 Alternatives are available for some pests on some crops
- 🐛 Farmers are not in the business to manage pests but to produce food, IPM is part of doing business
- 🐛 Safer to whom?
 - 🐛 What risks are we discussing, health, economics, rural communities
 - 🐛 Safety to whom at what risk to others?



Concluding Remarks



- 🐛 IPM & food production is ecosystem based
- 🐛 Change one variable it can have unintended consequences in other parts of the system
- 🐛 The ideal outcome is to have an appreciation of this balance between the need for abundant, affordable, nutritious and safe food while minimizing side effects

Thanks for your interest

