

# Options for Controlling Pests in Vegetable Crops

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**Integrated  
Crop Protection**

PROTECTING CROPS





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# Control Options



- Biological
- Cultural
- Chemical
  - Nothing else



# Control of Pests



- Broad-acre
- Horticulture
- Same Options
- Same Problems



# Chemical versus Biological Strategies



- Chemical Controls
  - Spray-based strategy
- IRM Strategies
  - Insecticide Resistance Management
- IPM
  - Integrated Pest Management



# Conventional Control



# Plutella



# Insecticide Resistance





# Virus Vectors



# Contaminants



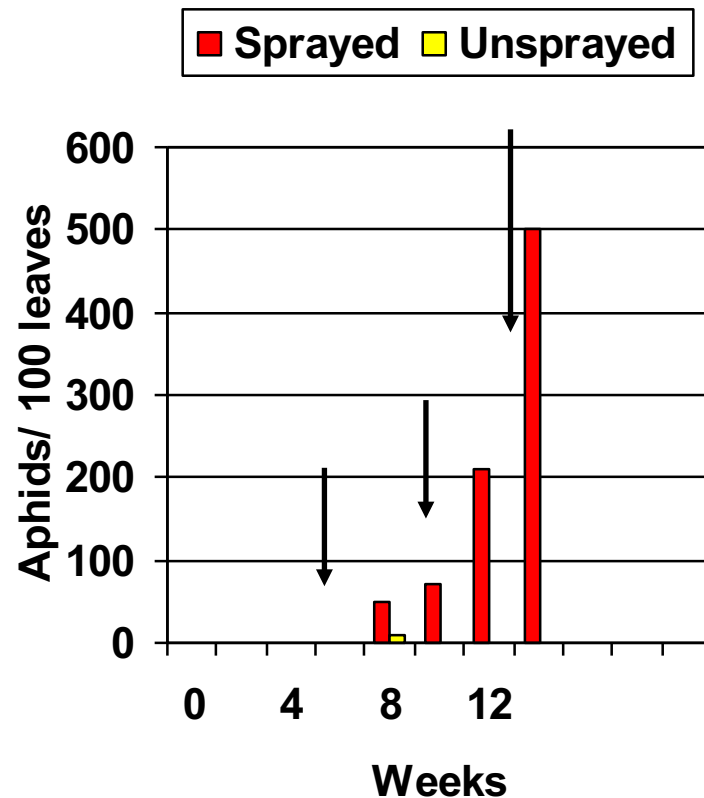
# Why use IPM?



- Pesticides stop working (resistance)
- Pesticides withdrawn,
- Overseas requirements
- Pest Flare
- Residues in produce
- Worker safety



# Do insecticides always make things better?



- Potato Crops
- Spray for “aphids”
- Pest Flare
- Wrong pesticide chosen





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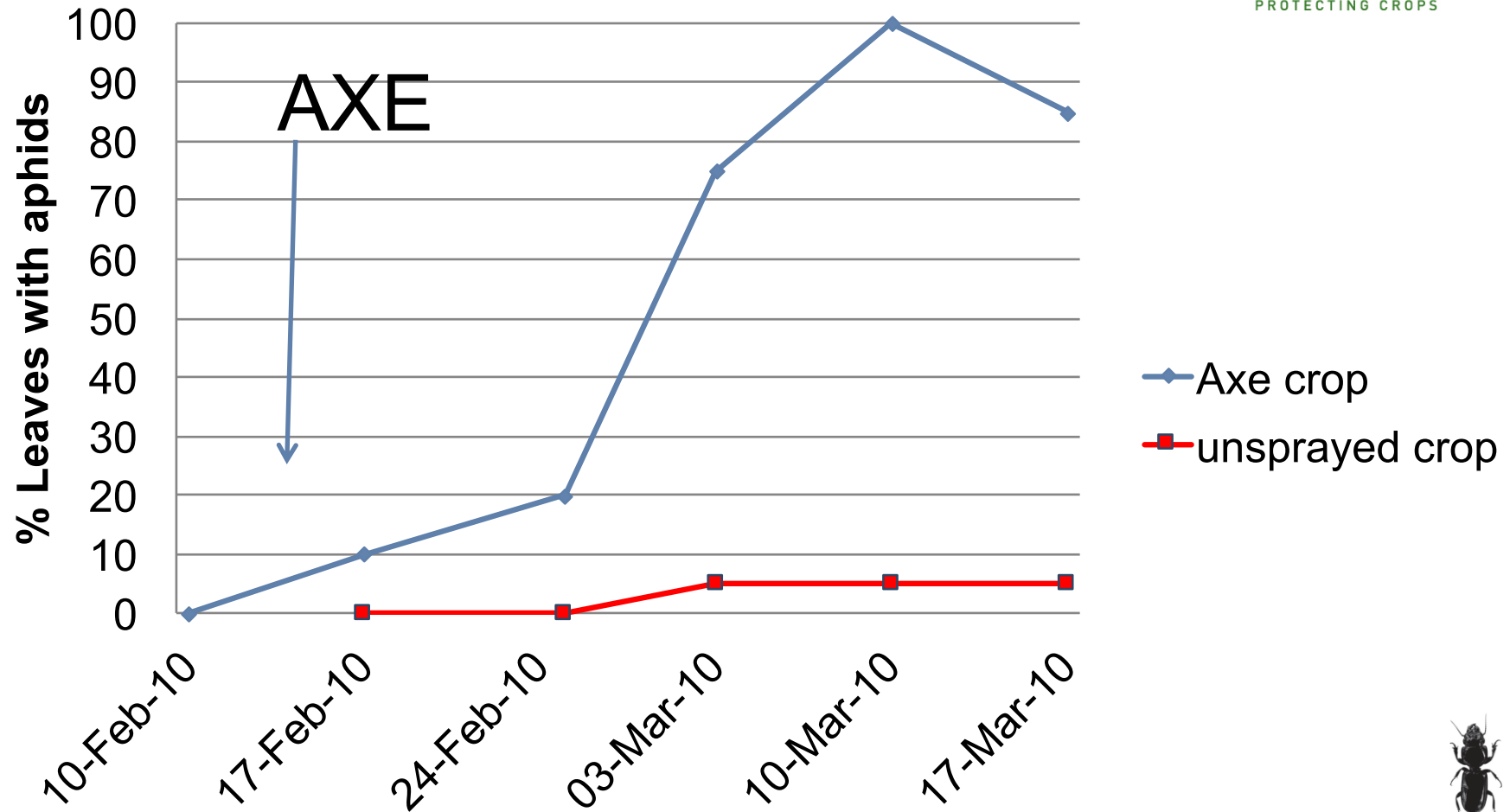
# Pest Flare



- AXE vs ACE
- ACE = Fungicide
- AXE = Broad-spectrum Insecticide
- Half a paddock sprayed with AXE by mistake



# AXE vs ACE!



# Why do we see pest flare?



- Loss of beneficial species
- Pesticide targeting one pest can flare another pest
- If we kill predators -
- Induce new pests
- Tougher pests





# Beneficial Species



- Biological Control Agents
- Predators
- Parasitoids
- Resident
- Transient



# Identification of Pests and Beneficials



- Correct ID is essential for IPM
- Monitoring is done to form a picture of the relative numbers of beneficials to pests
- Mis-identification of either a pest as a beneficial, or a beneficial as a pest will mean wrong actions taken (eg slug bait for earwigs)



# Predators



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# Brown Lacewings



# Hoverflies





# Predators







# Parasites



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# Native



# Cultural Controls



- Management options
- Eg: Variety selection
- Irrigation
- Weed control
- Border plantings



# Chemical Controls



- Chemicals are the support tools, not the mainstay
- Choose products based on effects of beneficial species, not just effect on pests
- More selective products available than ever
  - Avoid overuse and resistance
- Baits, border sprays



# IPM: Integrated Pest Management



- IPM means using 3 measures:
  - 1. Biological
  - 2. Cultural
  - 3. Chemicals (support)

Plus

- 4. Monitoring



# An Example of an IPM strategy



Pest	Beneficial	Cultural	Chemical
Diamondback moth			
Cabbage White			
Aphids			
Thrips			



# An Example of an IPM strategy



Pest	Beneficial	Cultural	Chemical
Diamondback moth	Wasps Damsel bugs		
Cabbage White	“ “		
Aphids	Wasps, Lacewings, Hoverflies		
Thrips	Predatory thrips Predatory bugs		





# An Example of an IPM strategy



Pest	Beneficial	Cultural	Chemical
Diamondback moth	Wasps Damsel bugs	Sequential planting Control flowering brassica weeds	
Cabbage White	“ “	“ “	
Aphids	Wasps, Lacewings, Hoverflies	Weed control	
Thrips	Predatory thrips Predatory bugs	Planting location	



# An Example of an IPM strategy



Pest	Beneficial	Cultural	Chemical*
Diamondback moth	Wasps Damsel bugs	Sequential planting Control flowering brassica weeds	BT Group 28
Cabbage White	“ “	“ “	BT
Aphids	Wasps, Lacewings, Hoverflies	Weed control	Selective aphicides
Thrips	Predatory thrips Predatory bugs	Planting location	SuccessNeo

\* For example



# Thank You



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# Next steps



## Webinar Series on Pest Management

- 2. Resistance Management (20 October 2016)
- 3. Pesticide Effects on Beneficial Insects (25 January 2017)
- 4. Cultural Controls (27 April 2017)

