



Arizona Spring Melon Insect Losses Workshop

Crop Insect Loss and Impact Assessment Working Group

July 2, 2007



Crop Insect Losses Working Group

- Goal: To provide information on insecticide-use patterns, insect-related losses and management costs in Arizona vegetable crops.
- Information traditionally provided using “expert” opinion.
- Improve the process with real world data.
- Primarily incorporates data from PCAs, Growers, and Agrichemical Industry.

Why is this Information Important?

Regulatory

- Section 18 Emergency Exemptions / 24C SLN
- Defense and Support of older A.I.s (*ie. Lannate*)
- FQPA: next go-around – endosulfan / pyrethroids

Academic

- Documents the role of new insecticides
- Quantitative measure of impact of IPM
- Historic record of insect losses / outbreaks
- Identifies and prioritizes pest problems

Why is this Information Important?

Industry

- Translates the PCAs job into ***economic*** terms
- Validates the ***necessity*** of PCA to the vegetable industry
- Emphasizes the ***significance*** of insect pests and their management in desert vegetable production
- Demonstrates ***value*** of new pest control technologies

Part 1.

Arizona Spring Melons Insect Losses Survey - : 2007

Part 1.

1. Please indicate: PCA Grower _____ Industry _____ other _____
2. Reporting Area (county or counties) : Yuma / Imperial
3. Date submitted: (dd/mm/yy): 7/2/2007

2006 Spring Melons

	Cantaloupes	Watermelons
4. Melon Acreage to which this estimate applies:	Acre: _____	Acre: _____
5. Estimated yields in cartons or tons (per acre) for this acreage.	_____	_____
6. Potential yield in cartons or tons for this acreage. Assume ideal conditions.	_____	_____
7. % reduction in yield by: Weather (% reduction)	_____	_____
8. % reduction in yield by: Chemical injury (% reduction)	_____	_____
9. % reduction in yield by: Weeds (% reduction)	_____	_____
10. % reduction in yield by: Disease (% reduction)	_____	_____
11. % reduction in yield by: Birds and vetebrates (% reduction)	_____	_____
12. % reduction in yield by: Insects (% reduction)	_____	_____
13. % reduction in yield by Other Factors : List below. (% reduction)	_____	_____

Responses for Spring Melons:



Part 1.

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2. Reporting Area (county or counties) : Yuma / Imperial
3. Date submitted: (dd/mm/yy): 7/2/2007

2006 Spring Melons

	Cantaloupes	Watermelons
4. Melon Acreage to which this estimate applies:	Acre: 3805	Acre: 1370
5. Estimated yields in cartons or tons (per acre) for this acreage.	725	32.5
6. Potential yield in cartons or tons for this acreage. Assume ideal conditions.	1050	47.5
7. % reduction in yield by: Weather (% reduction)	_____	_____
8. % reduction in yield by: Chemical injury (% reduction)	_____	_____
9. % reduction in yield by: Weeds (% reduction)	_____	_____
10. % reduction in yield by: Disease (% reduction)	_____	_____
11. % reduction in yield by: Birds and vetebrates (% reduction)	_____	_____
12. % reduction in yield by: Insects (% reduction)	_____	_____
13. % reduction in yield by Other Factors : List below. (% reduction)	_____	_____

Percent (%) Reductions in Yield



Part 1.

- Please indicate: PCA Grower _____ Industry _____ other _____
- Reporting Area (county or counties) : Yuma / Imperial
- Date submitted: (dd/mm/yy): 6/ 28/ 2006

		2006 Spring Melons	
		Cantaloupes	Watermelons
4. Melon Acreage to which this estimate applies:		Acres: 3805	Acres: 1370
5. Estimated yields in cartons or tons (per acre) for this acreage.		725	32.5
6. Potential yield in cartons or tons for this acreage. Assume ideal conditions.		1050	47.5
7. % reduction in yield by:	Weather (% reduction)	9.9 %	7.5 %
8. % reduction in yield by:	Chemical injury (% reduction)	2.3 %	3.8 %
9. % reduction in yield by:	Weeds (% reduction)	1.1 %	0.3 %
10. % reduction in yield by:	Disease (% reduction)	9.3 %	9.0 %
11. % reduction in yield by:	Birds and vetebrates (% reduction)	3.8 %	2.8 %
12. % reduction in yield by:	Insects (% reduction)	0.3 %	0 %
13. % reduction in yield by Other Factors: List below. (% reduction)	Salt, poor crop management, bad market	0.3 %	0.4 %

Insecticide Applications



Application Costs: It is possible that acreage could have been treated using both air and ground sprayer, thus, when combined, percentages may total > 100%. These estimates are for Insecticide Applications		Cantaloupes	Watermelons
14. Percent acres (for this estimate) treated by air in 2006:		70 %	58 %
15. Average number of insecticide treatments by air :		1.5	0.8
16. Cost (\$) per acre for a single aerial application:		\$ 9.00	\$ 8.75
17. Percent acres (for this estimate) treated by ground in 2006:			
18. Average number of insecticide treatments by ground :			
19. Cost (\$) per acre for a single ground application:			

Insecticide Applications



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14. Percent acres (for this estimate) treated by air in 2006:	70 %	58 %
15. Average number of insecticide treatments by air :	1.5	0.8
16. Cost (\$) per acre for a single aerial application:	\$ 9.00	\$ 8.75
17. Percent acres (for this estimate) treated by ground in 2006:	75 %	100 %
18. Average number of insecticide treatments by ground :	1.7	2.3
19. Cost (\$) per acre for a single ground application:	\$ 14.60	\$ 13.60

Insect Management Fees



Insect Management Fees: Estimate the cost (\$) of insect management fees paid by growers to pest control advisors.	Cantaloupes	Watermelons
20. % acres where insect monitoring, scouting and sampling was conducted:	100 %	100 %
21. Number of field visits per week:	3.3	3.3
22. Estimated cost (\$) per acre for insect monitoring/advisory:	\$ 16.90	\$ 15.75

Part 2. Insecticide Treated Acres and Insect Losses



Part 2.

Part 2.

Arizona Spring Melons Insect Losses Survey - 2006

Pest	A		B		C		D		E	
	% acres where pest was present		% acres treated for this pest		Number of Follar Insecticide sprays used to control this pest		Cost \$ of a single spray application per / acre (include application cost)		% reduction in yield due to this pest	
	Cantaloupe	Watermelon	Cantaloupe	Watermelon	Cantaloupe	Watermelon	Cantaloupe	Watermelon	Cantaloupe	Watermelon
23 Seedling Pests -ground beetles, earwigs, crickets										
24 Seedcorn Maggot										
25 Flea beetles										
26 Leafminers										
27 Beet armyworm										
28 Cabbage looper	99.3 %	100%	80.2%	100%						
29 Whiteflys										
30 Aphids										
31 Thrips										
32 Spider Mites										
33 Trash bugs (Lygus, False chinch bugs, etc.)										
34 Darkling Beetles										
35 Other insects (list below)										

Part 2.

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26 Leafminers										
27 Beet armyworm										
28 Cabbage looper	99.3 %	100%	80.2%	100%	1	2				
29 Whitefllys										
30 Aphids										
31 Thrips										
32 Spider Mites										
33 Trash bugs (Lygus, False chinch bugs, etc.)										
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35 Other Insects (list below)										

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28 Cabbage looper	99.3 %	100%	80.2%	100%	1	2	\$ 29.50	\$ 31.50		
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28 Cabbage looper	99.3 %	100%	80.2%	100%	1	2	\$ 29.50	\$ 31.50	2%	1%
29 Whitefllys										
30 Aphids										
31 Thrips										
32 Spider Mites										
33 Trash bugs (Lygus, False chinch bugs, etc.)										
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35 Other Insects (list below)										

CYSDV - Yuma Ag Center
October 13 (60 DAP)





May 14, 2007



Part 2.

		B		C		D	
		% acres treated		No. of applications used		Cost \$ of a single application per acre	
		Cantaloupe	Watermelon	Cantaloupe	Watermelon	Cantaloupe	Watermelon
36	Chemigation treatments used at stand establishment during 2005:	45 %	0 %	1	0	\$12.50	\$0.00
37	Soil-applied insecticide used (Admire, Generic Imidacloprid, Platinum or Venom):	94 %	30 %	1	1	\$63.00	\$68.00

Major pests in 2005

- Treated Acres and No. of Sprays

Cantaloupes



Cabbage looper
80.2 % acres treated
1.1 sprays

Whiteflies
64.7 % acres treated
1.3 sprays

Watermelons



Whiteflies
100 % acres treated
2.0 sprays

Cabbage Looper
100 % acres treated
1.7 sprays

Major pests in 2005

- % Reduction in Yield

Cantaloupes



Cabbage looper
1.1 % loss

Seed corn maggot
0.8% loss

Watermelons



Whiteflies
1.3 % loss

Cabbage Looper
<0.1% loss

Part 3. Insecticide Use Survey



Part 3. Arizona Melons Insect Losses Survey - 2006

	Cantaloupes		Watermelons	
	Acres (%) treated with this product	Avg no. of times treated with product	Acres (%) treated with this product	Avg no. of times treated with product
Endosulfan	12.7 %	1.4	26.3	1.3
Vydate				
Pyrethroids - Foliar - Chemigation				
Admire				
Generic imidacloprid				
Platinum				
Venom				
Courier	5.4 %	1	68.6 %	1
Oberon				
Fulfill				
Intrepid				
Agrimek				
Success				

Part 3. Arizona Melons Insect Losses Survey - 2006

	Cantaloupes		Watermelons	
	Acres (%) treated with this product	Avg no. of times treated with product	Acres (%) treated with this product	Avg no. of times treated with product
Endosulfan				
Vydate				
Pyrethroids - Foliar - Chemigation				
Admire				
Generic imidacloprid				
Platinum				
Venom				
Courier				
Oberon				
Fulfill				
Intrepid				
Agrimek				
Success				

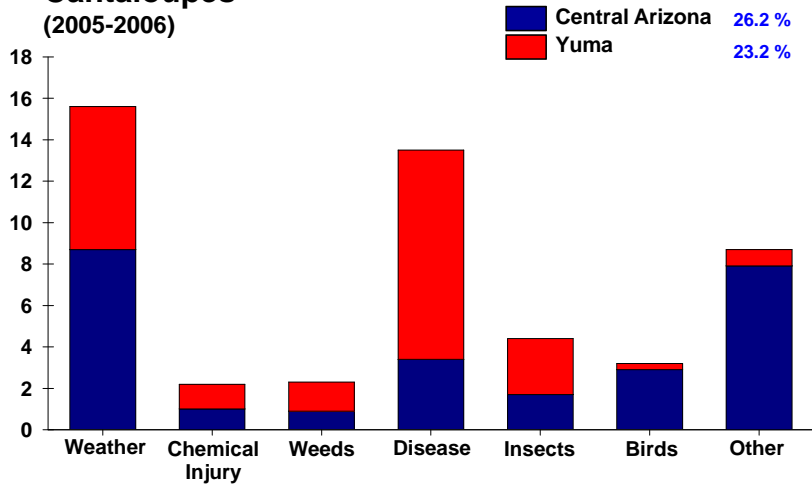


<http://ag.arizona.edu/crops/>



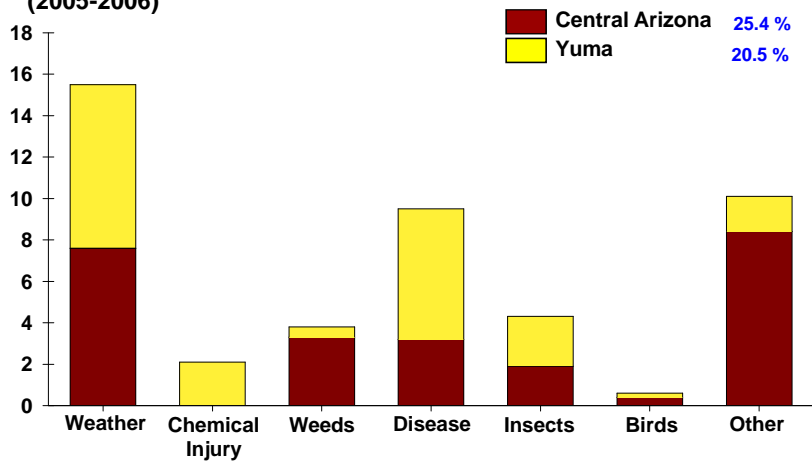
Overall Crop Losses (%)

Cantaloupes (2005-2006)



Overall Crop Losses (%)

Watermelons (2005-2006)



Insect Management Costs

Cost (\$) of IPM



Insect Management Costs

Cost (\$) of IPM

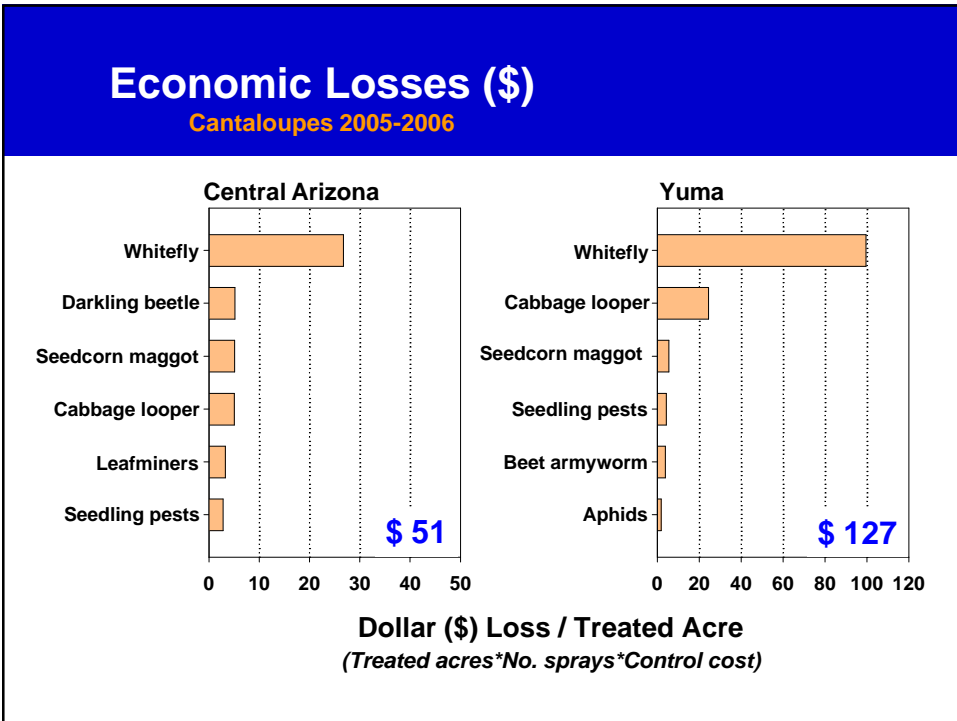
IPM	Melons	
	Central AZ	Yuma
Acreage scouted (%)	100	100
No. field visits / week	2.2	3.4
Cost (\$) / acre	\$12.70	\$17.50

Economic Losses (\$)

**Control costs (\$)
Application frequency (No.)
Acres treated (%)**

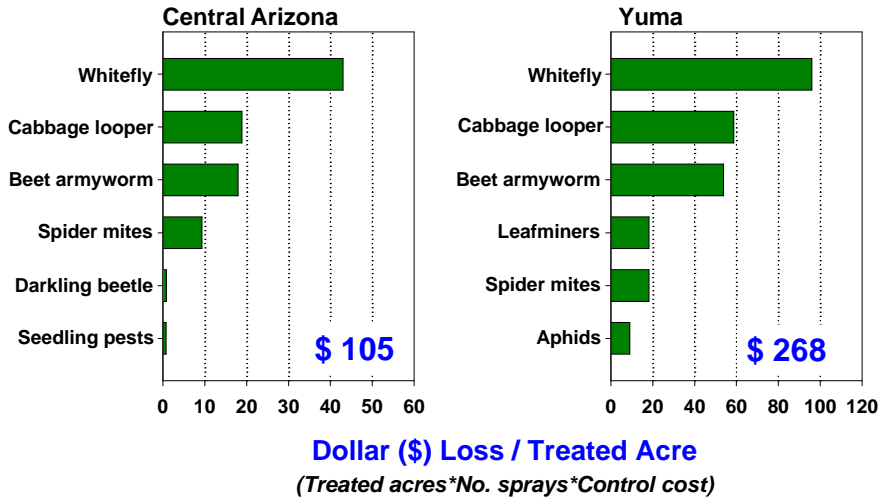






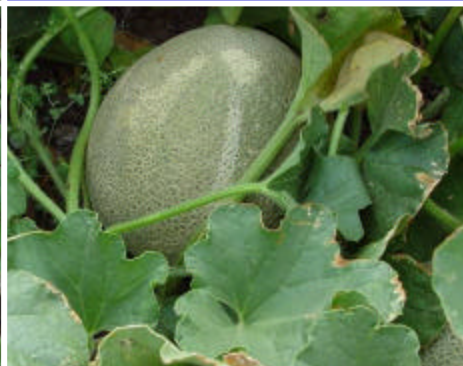
Economic Losses (\$)

Watermelons 2005-2006



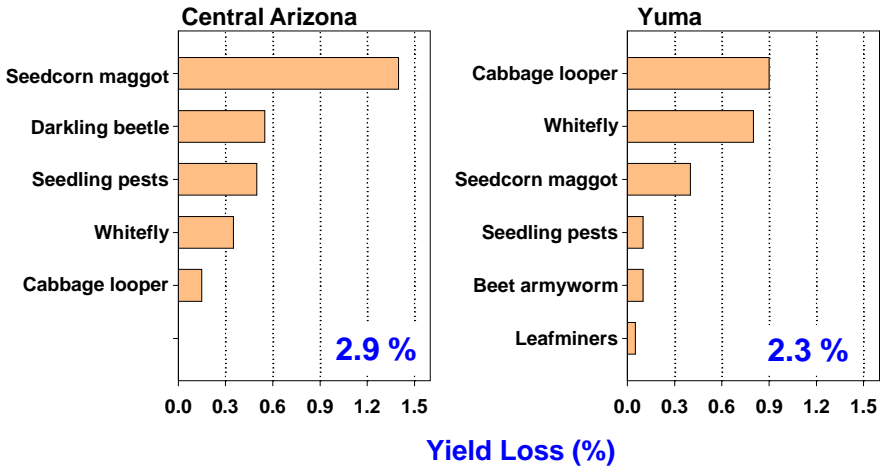
Yield Losses (%)

- Stand loss
- Reduced fruit size
- Uniformity
- Fruit quality
- Contamination



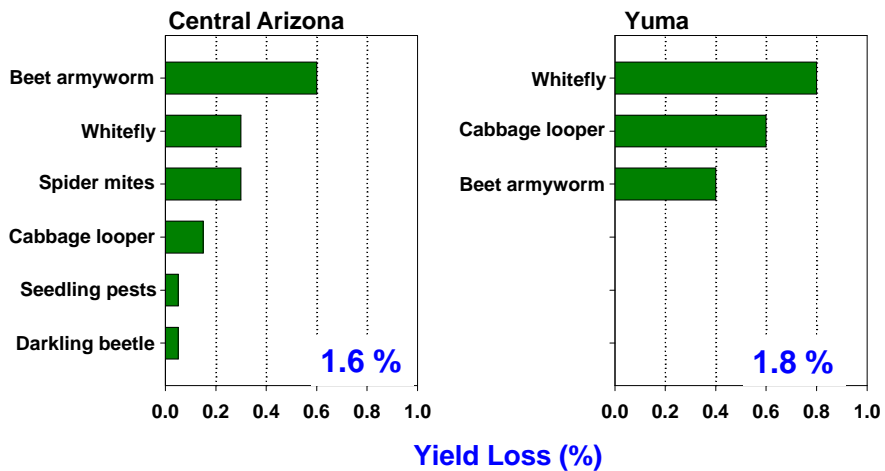
Yield Losses (%)

Cantaloupes



Yield Losses (%)

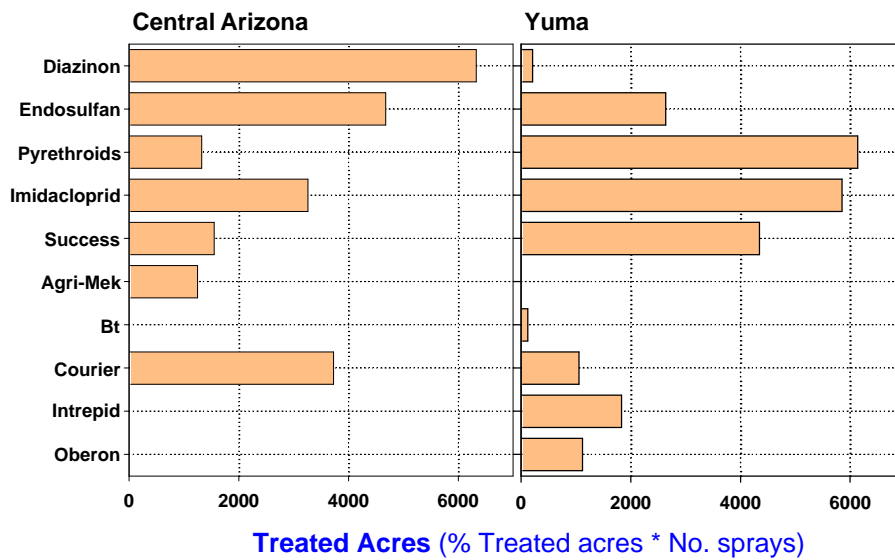
Watermelons



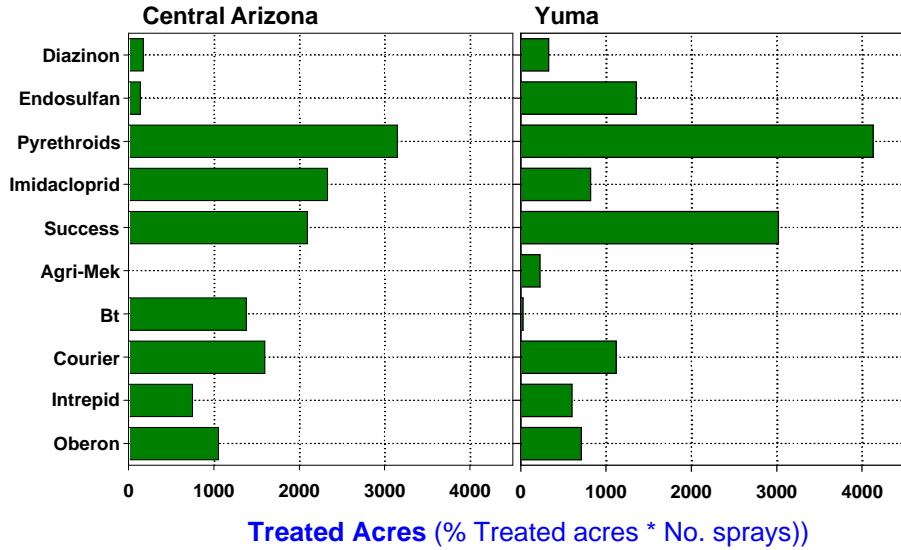
Insecticide Use



Insecticide Use Cantaloupes



Insecticide Use Watermelons



Relevant Outcomes

Regulatory

- ✓ FQPA (Lannate)
- ✓ Section 18 (Birds)

Academic

Industry

Lannate / Larvin Use in Head Lettuce

Feb 2007

Questions posed by USDA OPMP for the Carbamate Cumulative Risk assessment conducted by the EPA.

1. Typical use rates
2. Typical no. of applications
3. Timing of applications
4. Would both be applied to same crop in same growing season?
5. If so, how often ?



The concerns involve drinking water. Apparently thiodicarb breaks down into 2 molecules of methomyl and this is complicating the risk analysis as both products can be used on the same crops; head lettuce and sweet corn being of the most concern.



Relevant Outcomes

Regulatory

- ✓ FQPA (Lannate)
- ✓ Section 18 (Birds)

Academic

- ✓ Cost-effectiveness of IPM
- ✓ Relevancy of Insecticides
- ✓ Research Priorities

Industry





Relevant Outcomes

Regulatory

- ✓ FQPA (Lannate)
- ✓ Section 18 (Birds)

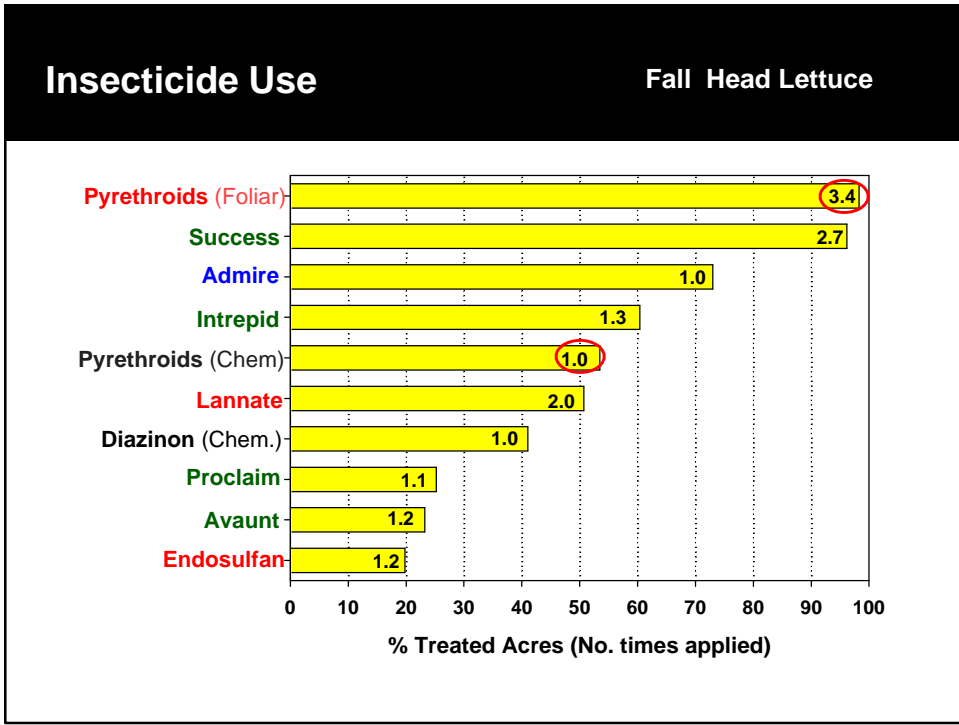
Academic

- ✓ Baseline Data for Education
- ✓ Relevancy of Insecticides
- ✓ Research Priorities

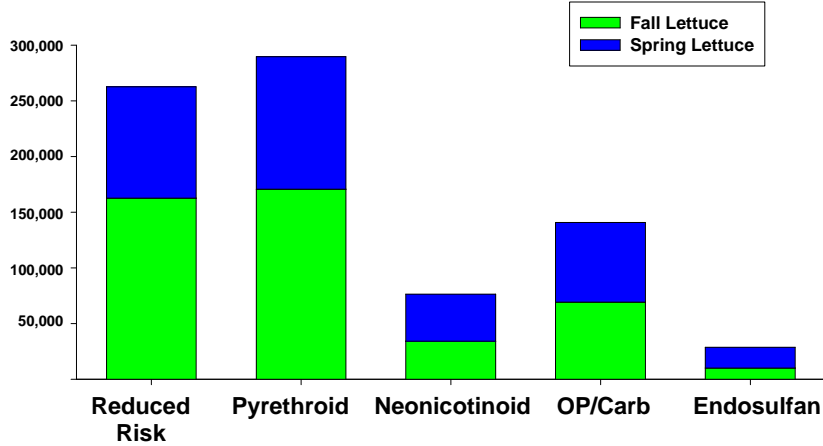
Industry

- ✓ Trends in Chemical Use –*Red Flags*
- ✓ Future Trends in Insect Management

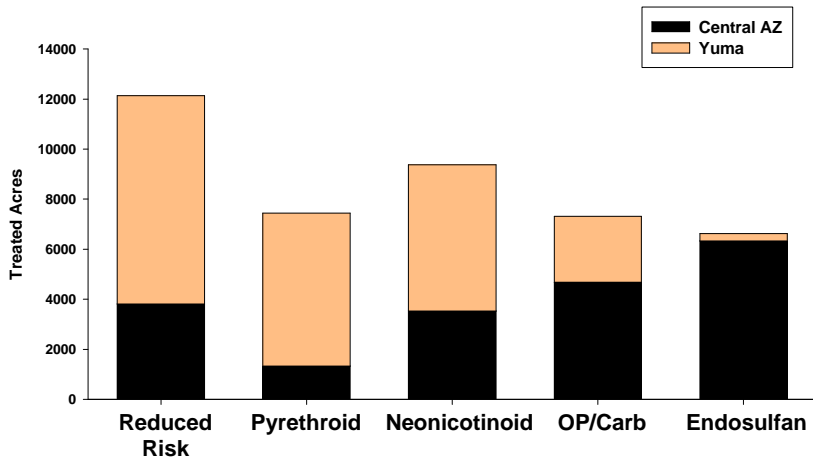




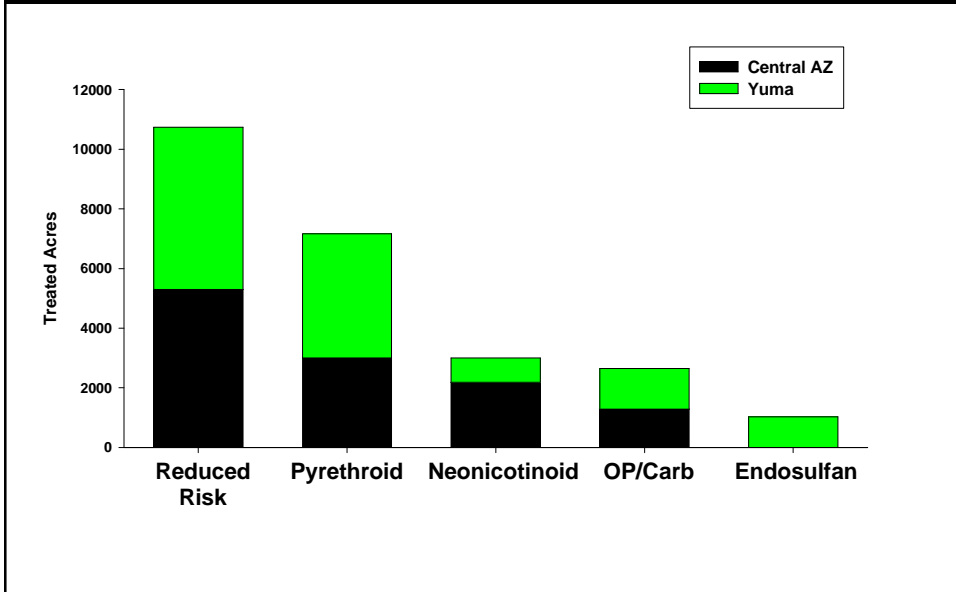
Insecticide Use By Chemical Class Head Lettuce



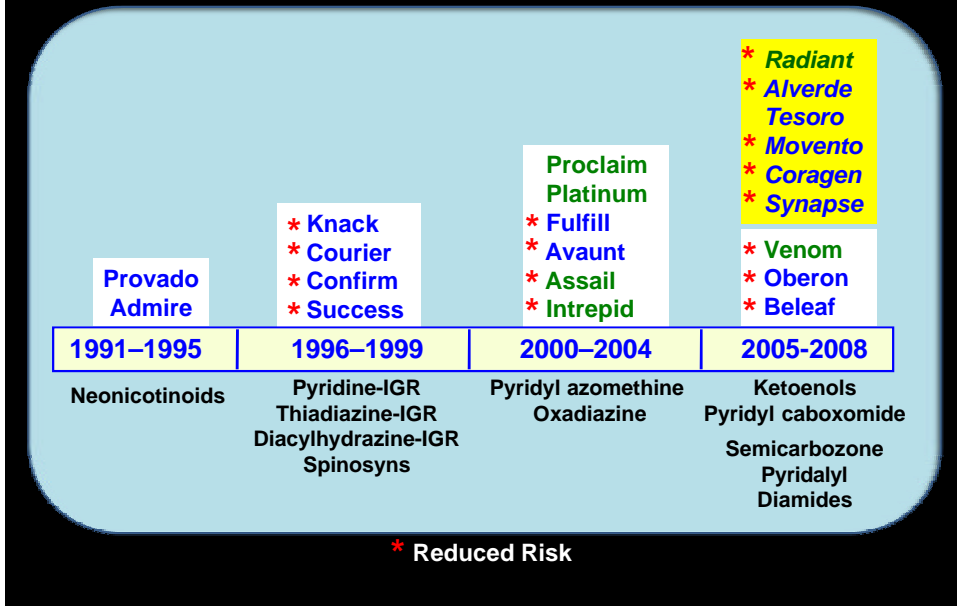
Insecticide Use By Chemical Class Cantaloupes



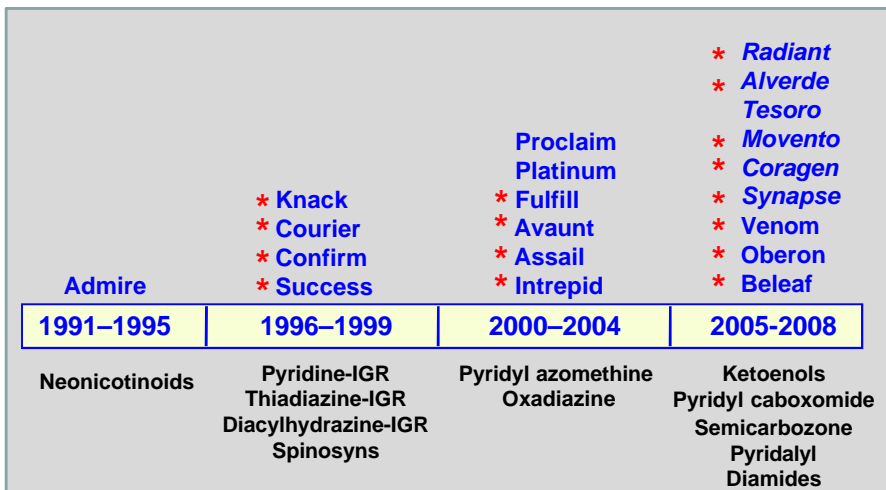
Insecticide Use By Chemical Class Watermelons



Trends in New Product and Chemistry Development in Desert Vegetable Crops



Trends in New Product & Chemistry Development in Desert Vegetable Crops



* Reduced Risk