

Status of Insect Pests on Lettuce in Arizona: Economic Impacts and Management

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Arizona Lettuce Insect Loss Workshops

2004-2014



Three Part Survey :

- Part 1** General Management Estimates
- Part 2** Insect Losses/Control Costs
- Part 3** Insecticide Usage

* Fall and Spring data collected separately

Goals:

- To accurately estimate insect related losses and management costs in AZ Lettuce
- Identify insecticide-use patterns
- Generate real world data from licensed pest control advisors (**PCAs**)

Arizona Head Lettuce Insect, Disease and Weed Losses Survey - 2012 / 2013		
Part 1.		
1. Please indicate: PCA _____ Industry _____ Other _____		
2. Reporting Area (county or counties) : _____		
3. Date submitted: (dd/mm/yy): _____		
	Fall Lettuce (Sep - Nov)	Spring Lettuce (Dec-Mar)
4. Lettuce Acreage to which this estimate applies (total acres):		
5. Percent reduction in yield by: Weather (% reduction)		
6. Percent reduction in yield by: Chemical injury (% reduction)		
7. Percent reduction in yield by: Weeds (% reduction)		
8. Percent reduction in yield by: Disease (% reduction)		
9. Percent reduction in yield by: Insects (% reduction)		
10. Percent reduction in yield by: Birds (% reduction)		
11. Percent reduction in yield by: Other Factors (% reduction), please list below		
Insecticide 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 only.		
	Fall Lettuce (Sep - Nov)	Spring Lettuce (Dec-Mar)
Aerial Applications		
12. Avg. % acres treated by AIR		
13. Avg no. of treatments by AIR:		
14. Avg. cost (\$) per acre for a single AIR application:		
Ground Applications		
15. Avg % acres treated by GROUND		
16. Avg no. of treatments by GROUND:		
17. Avg. cost (\$) per acre for a single GROUND application:		
Insect Management Fees: Estimate the cost (\$) of insect management fees paid by growers to pest control advisors.		
	Fall Lettuce (Sep - Nov)	Spring Lettuce (Dec-Mar)
18. % acres where insect monitoring, scouting and sampling was conducted:		
19. Avg no of field visits per week:		
20. Estimated cost (\$) per acre charged to grower for monitoring/advisory:		

Arizona Lettuce Insect Loss Workshops

2004-2014

Season	<i>n</i> PCAs surveyed	Scouted Acres Estimated	% of Total Acres	Avg. Acre Scouted / PCA
2004-05	16	33,970	53.6	2,123
2005-06	15	46,720	65.9	3,115
2006-07	14	32,500	46.1	2,321
2007-08	12	27,219	45.4	2,474
2008-09	12	40,400	68.8	2,867
2009-10	15	38,800	67.4	2,587
2010-11	18	44,720	73.4	2,484
2011-12	13	39,165	58.1	2,859
2012-13	16	44,530	62.7	2,158
2013-14	21	52,300	76.8	2490
Avg.		40,032	61.82	2,548

Insect Management Fees

2004-2014



	Lettuce	
	Fall	Spring
Acreage scouted (%)	100	100
No. field visits / week	4.2	3.1
Scouting Fee (\$) / acre	\$ 23.10	\$ 22.85

Insect Loss Estimates



Yield Losses (%)

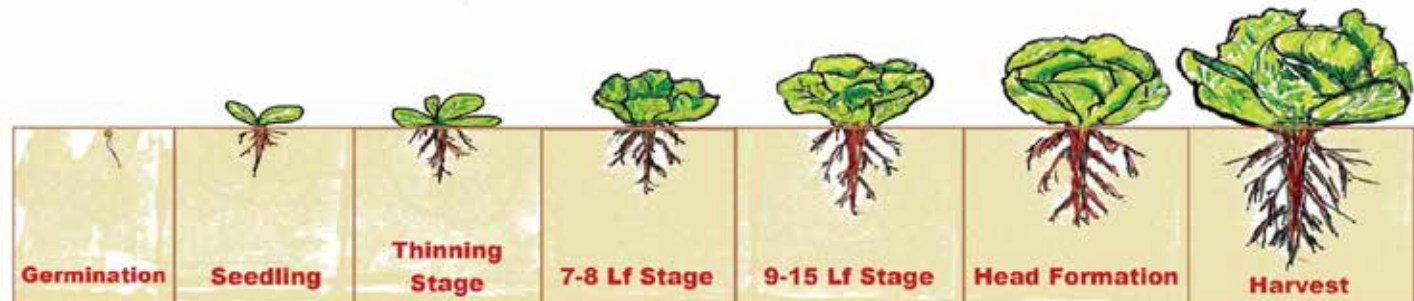
- Stand loss
- Reduced head size
- Lack of uniformity
- Cosmetic damage
- Insect contamination



Economic Losses (\$)

- Acres treated (%)
- Control costs (\$)
- Application frequency

Decision Levels in Lettuce



	Germination	Seedling	Thinning Stage	7-8 Lf Stage	9-15 Lf Stage	Head Formation	Harvest
Seedling Pests	NT	Nom					0-T
<i>Liriomyza</i> leafminer		Nom	Nom	Nom			0-T
Lep Complex	NT	S	S	S	S	S	0-T
<i>Bemisia</i> Whitefly	NT	Nom	Nom	Nom	Nom	Nom	0-T
Western Flower Thrips			Nom	Nom	Nom	Nom	0-T
Aphids				S	S	S	0-T
Trash bugs							0-T

NT, No threshold (*preventative treatments*)

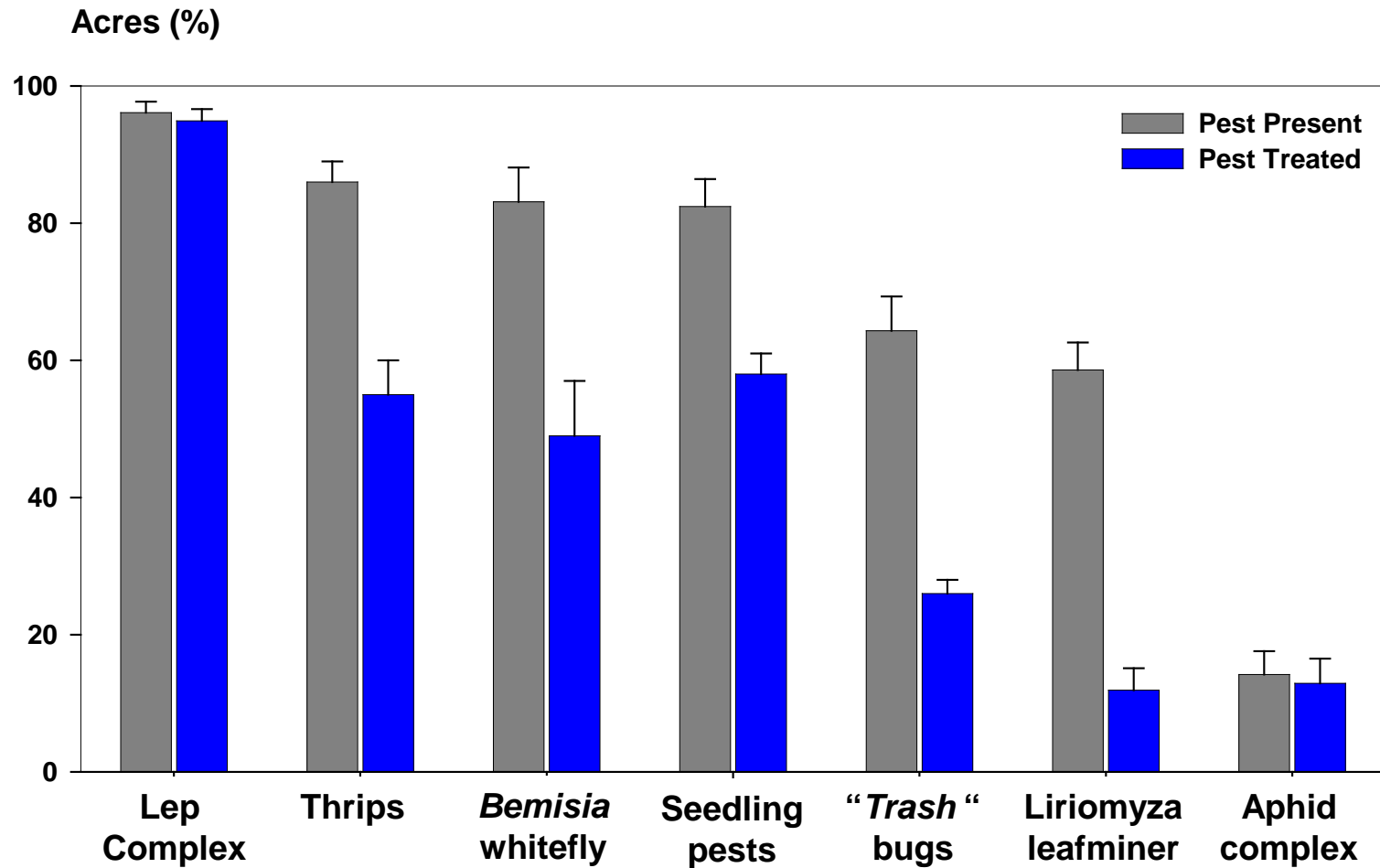
Nom, Nominal Threshold

S, Simple threshold

0-T, Zero-threshold

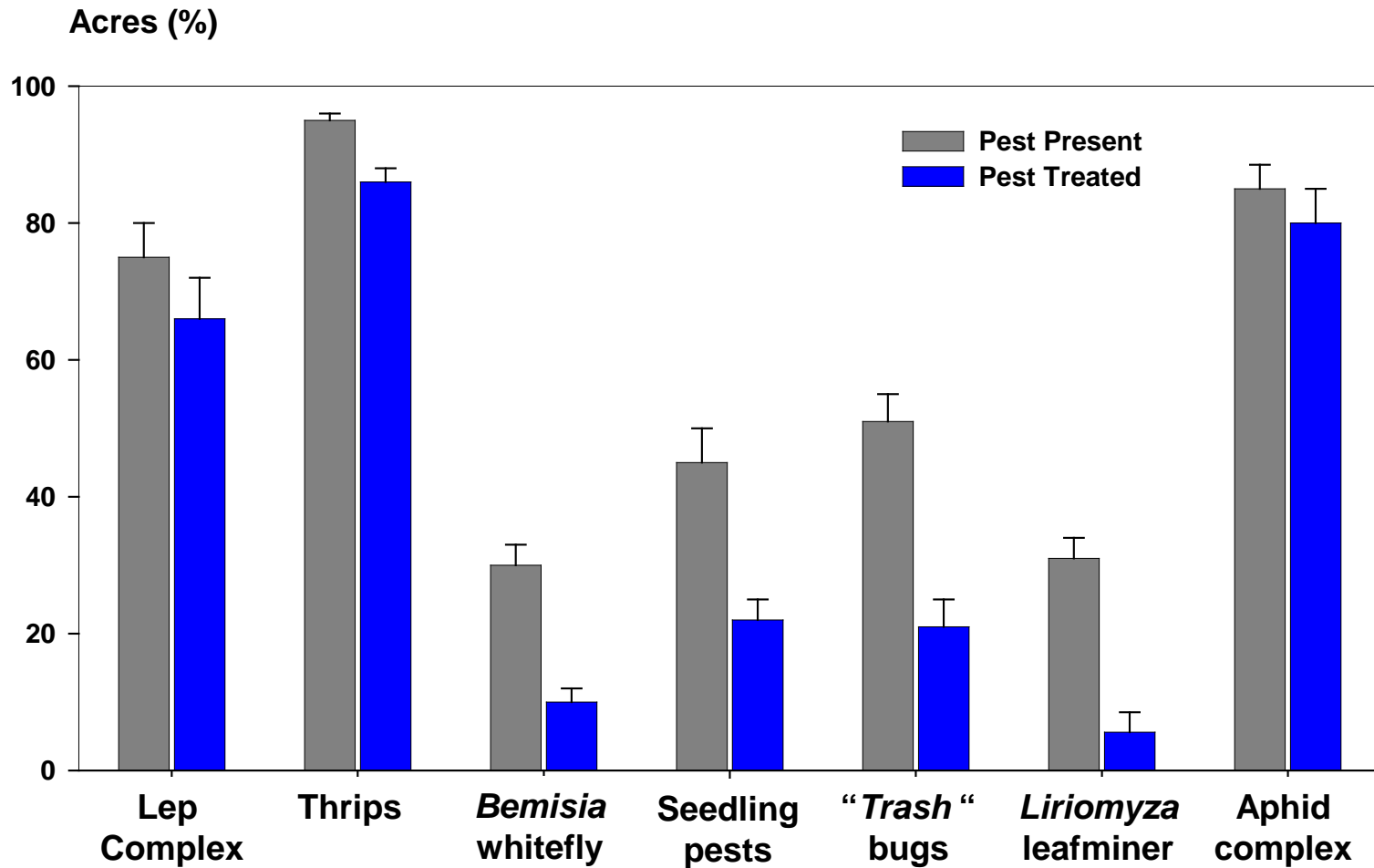
Economic Insects on Desert Lettuce

Fall Lettuce, 2004-2014



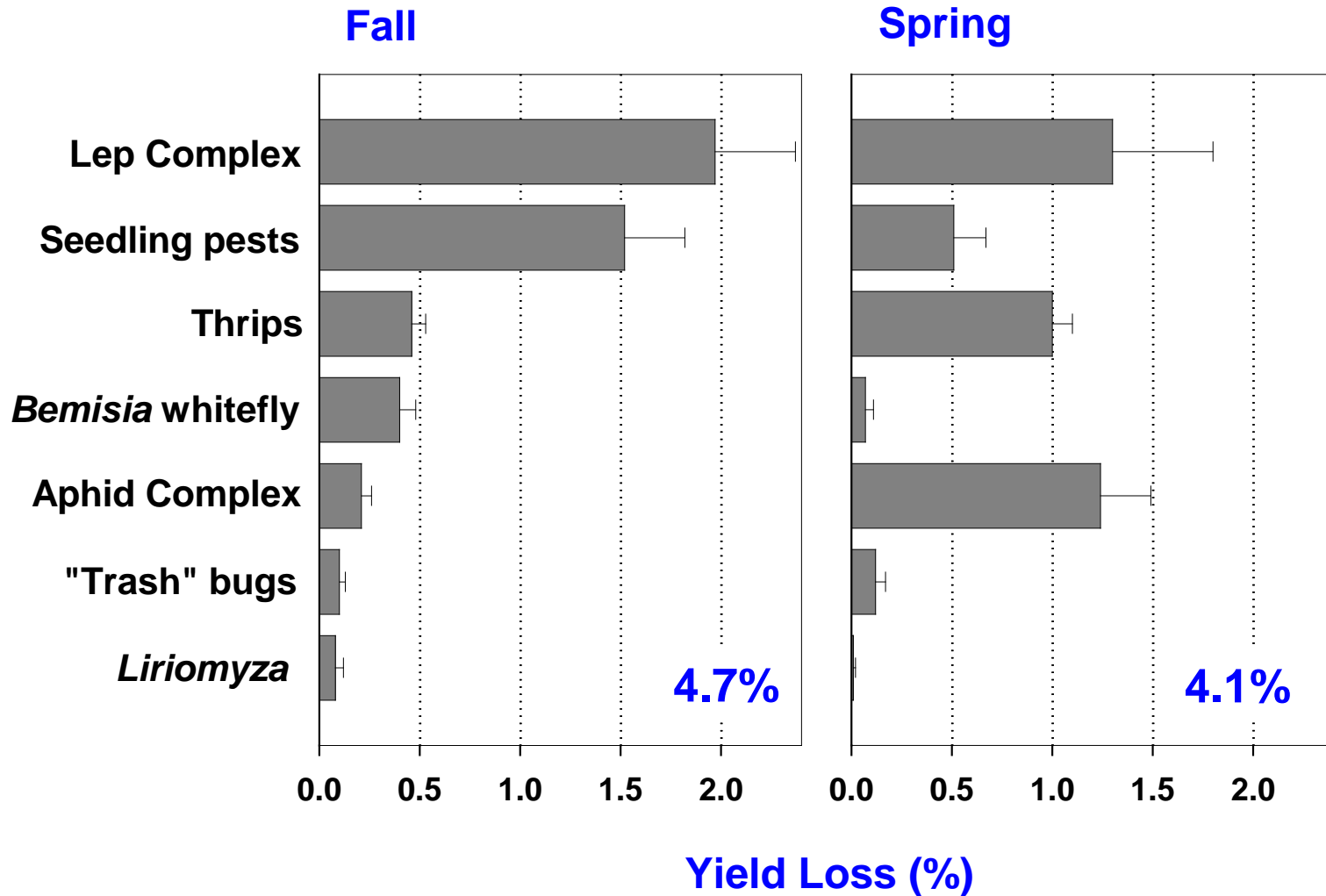
Economic Insects on Desert Lettuce

Spring Lettuce, 2004-2014



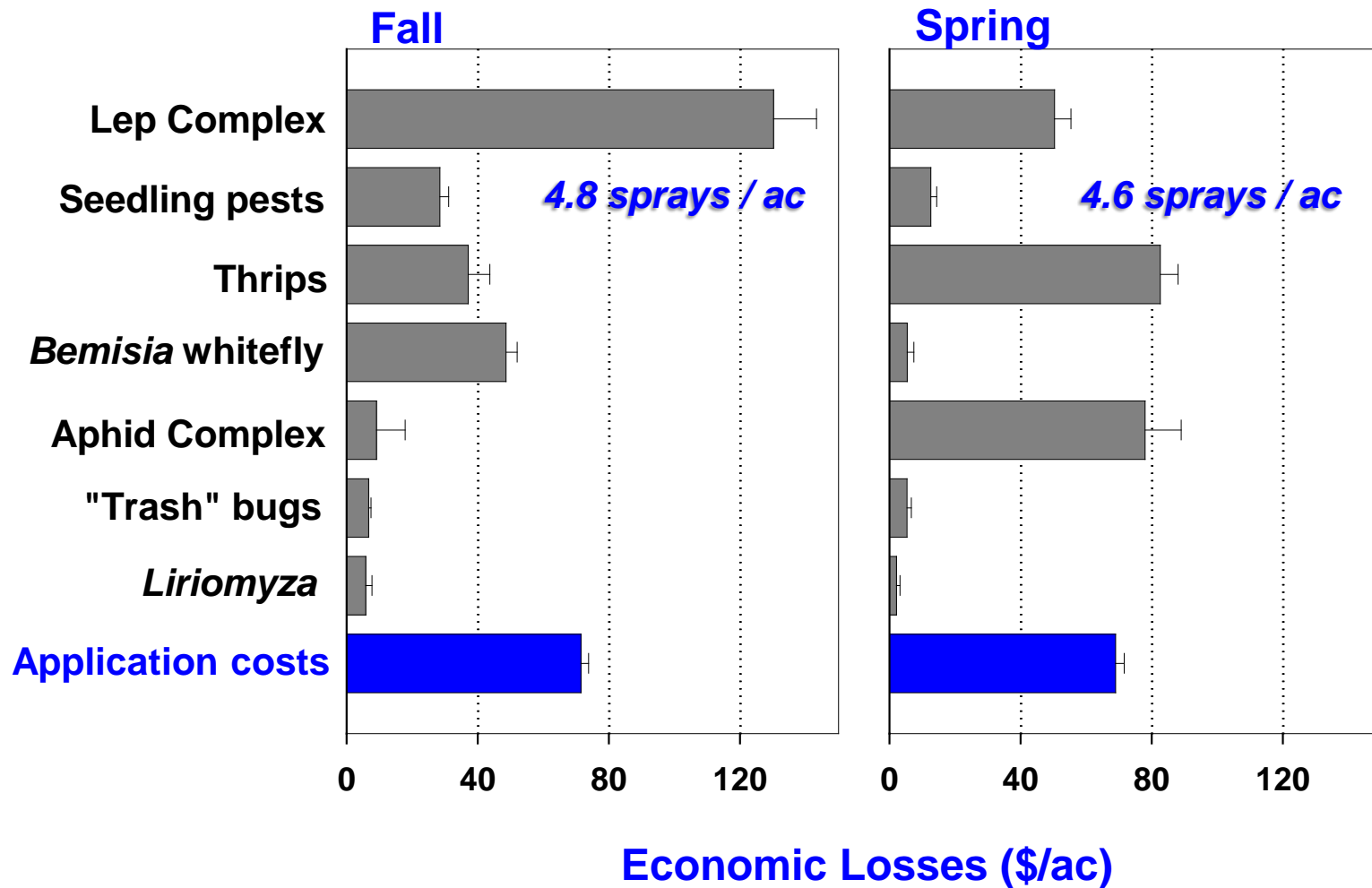
Yield Losses on Desert Lettuce

2004-2014



Economic Losses on Desert Lettuce

2004-2014



Insecticide Usage on Desert Lettuce

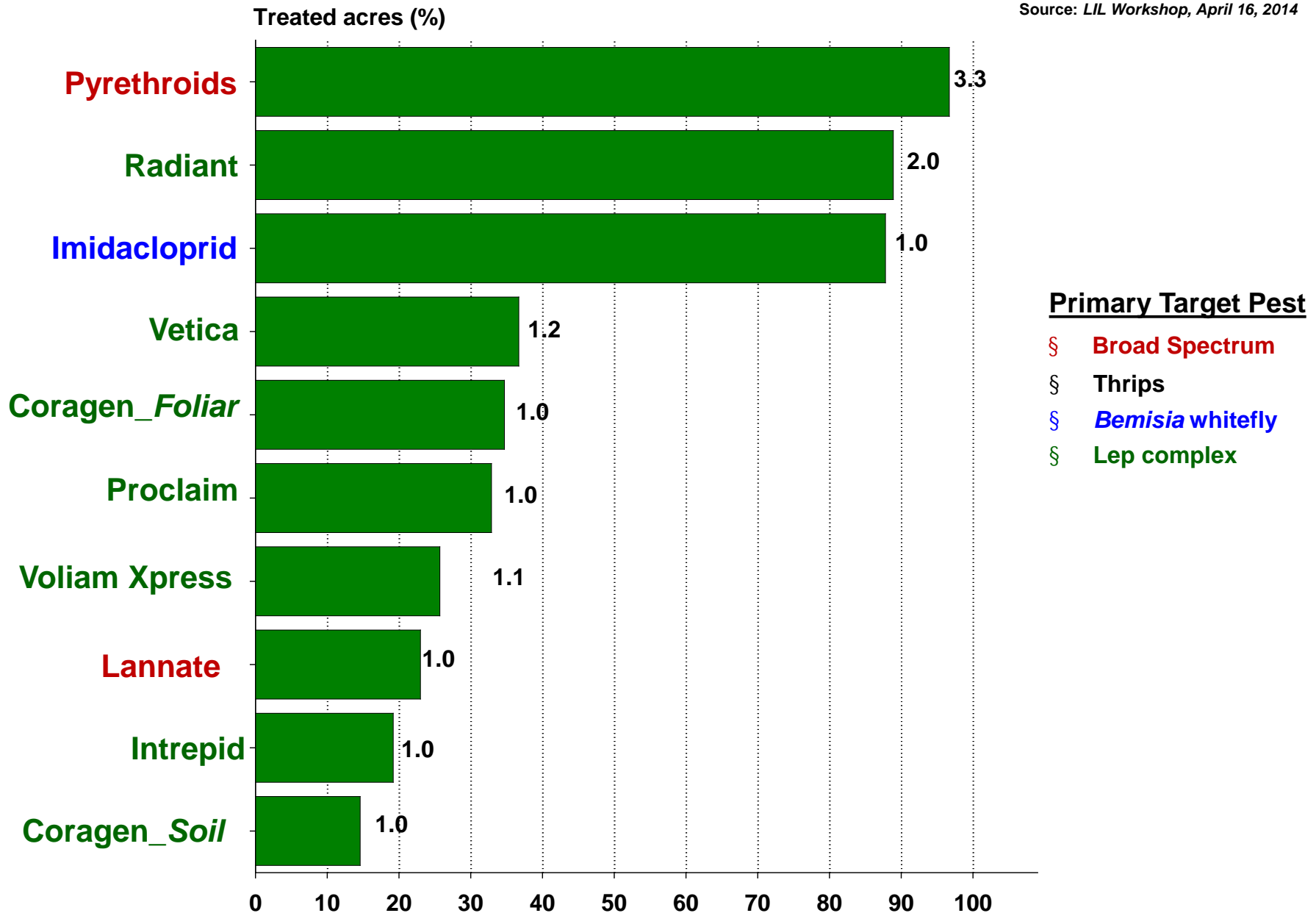
2004-2014

- % acres applied
- no. applications



10 Most Commonly Applied Insecticides in Lettuce, Fall 2013

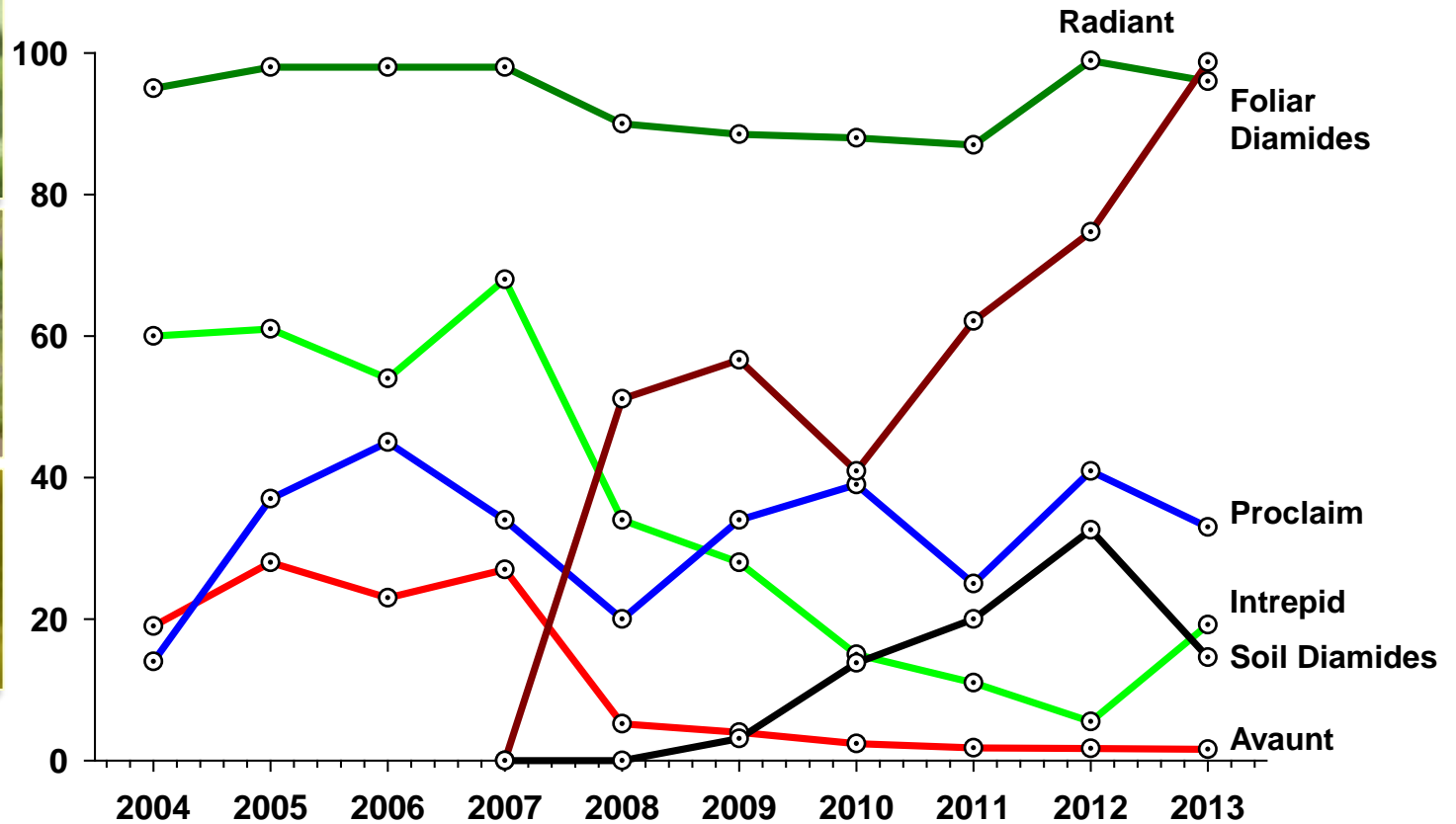
Source: LIL Workshop, April 16, 2014



Insecticide Usage on Fall Lettuce, 2004-2013

Source: LIL Workshop, April 16, 2014

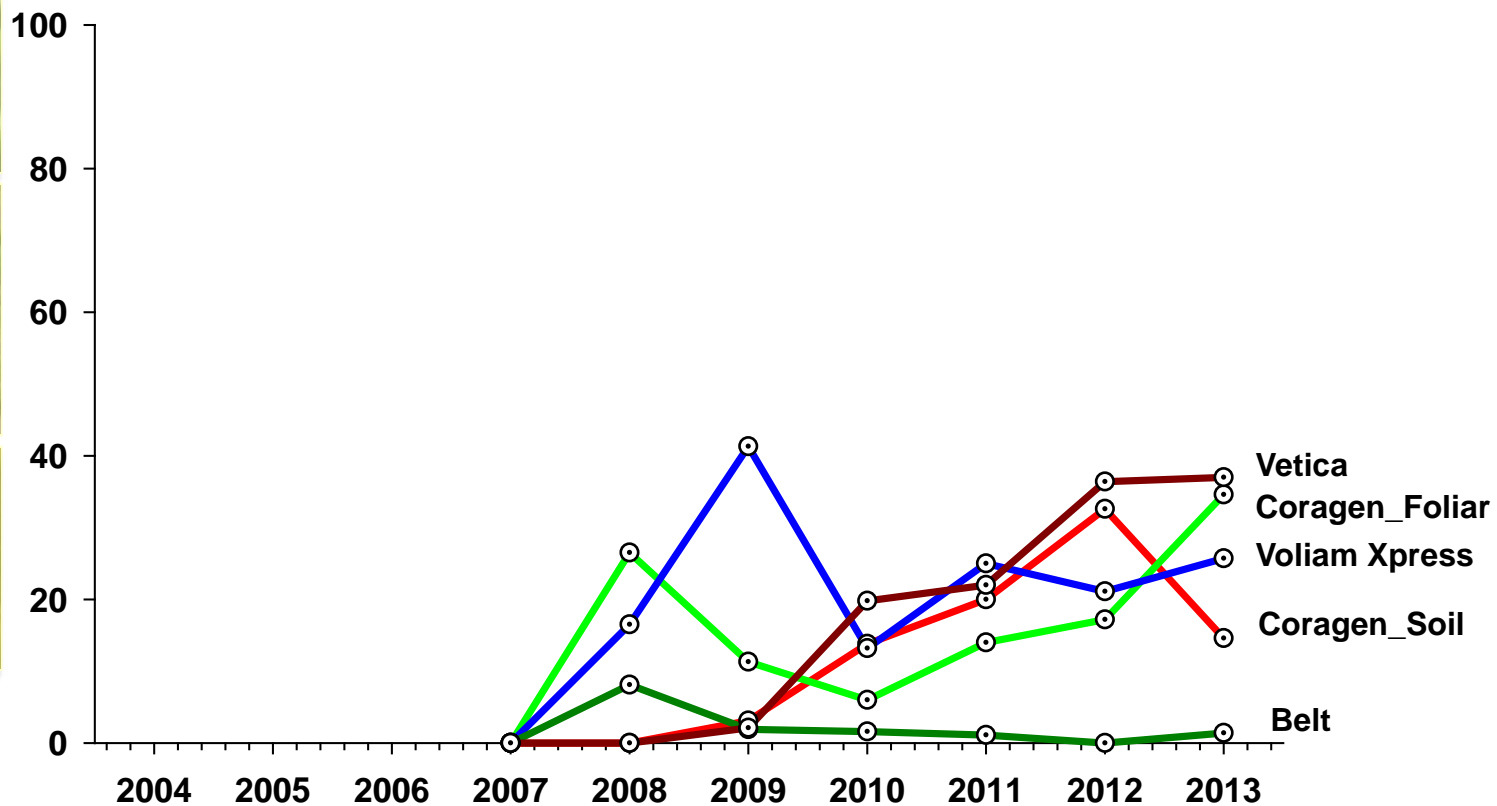
Lep Complex



Insecticide Usage on Fall Lettuce, 2004-2013

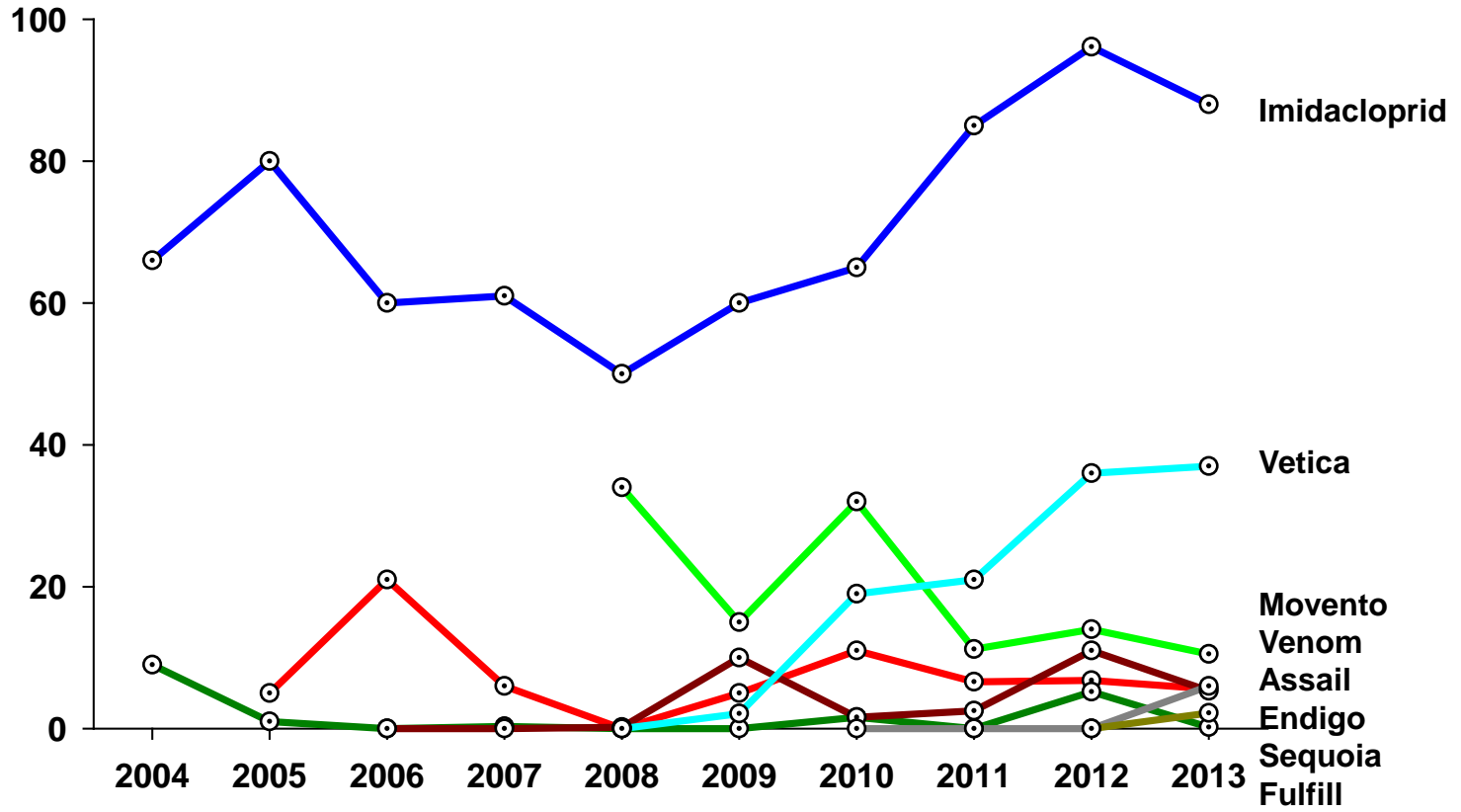
Source: LIL Workshop, April 16, 2014

Diamides



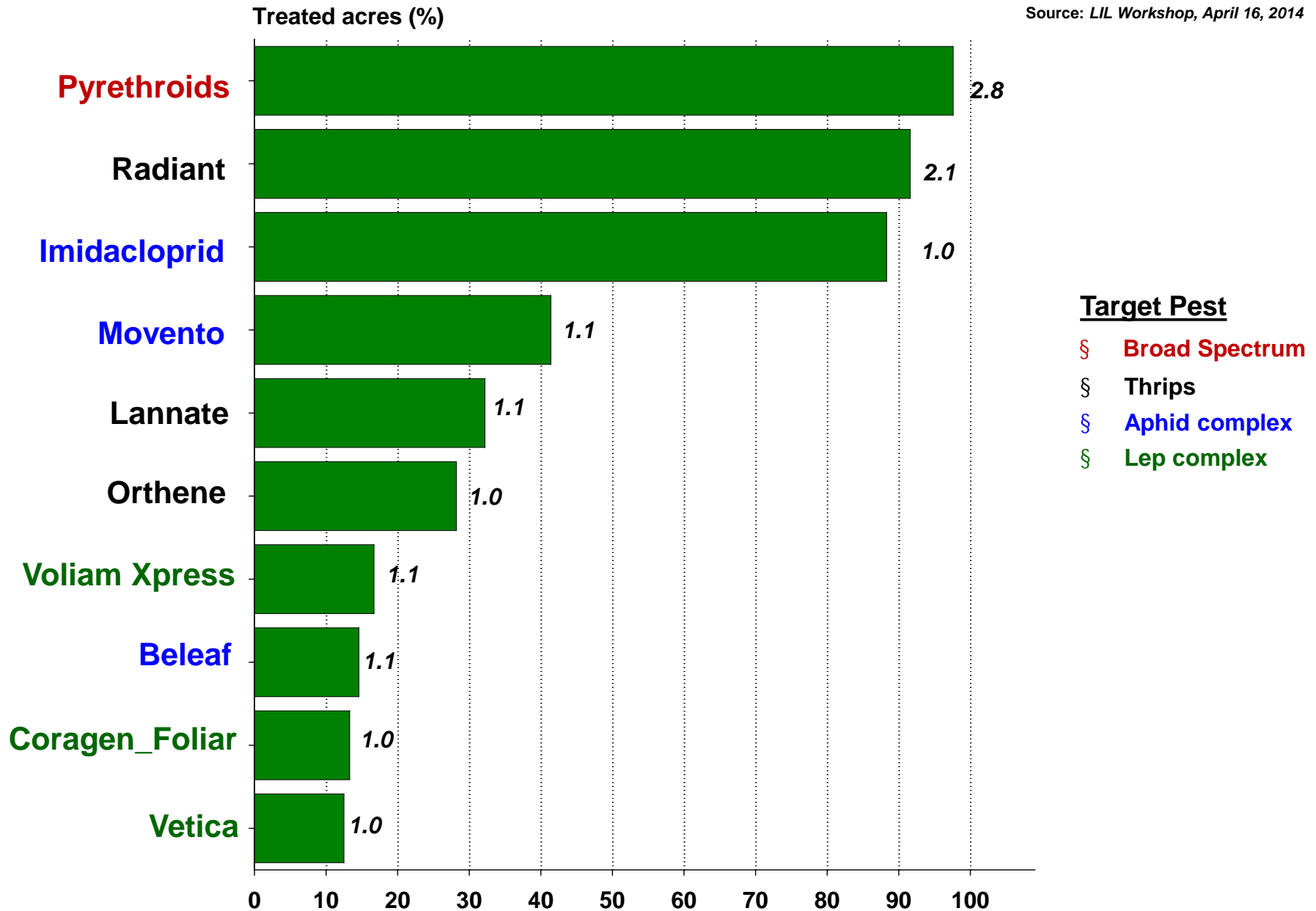
Insecticide Usage on Fall Lettuce, 2004-2013

Sweetpotato Whitefly



10 Most Commonly Applied Insecticides in Lettuce, Spring 2014

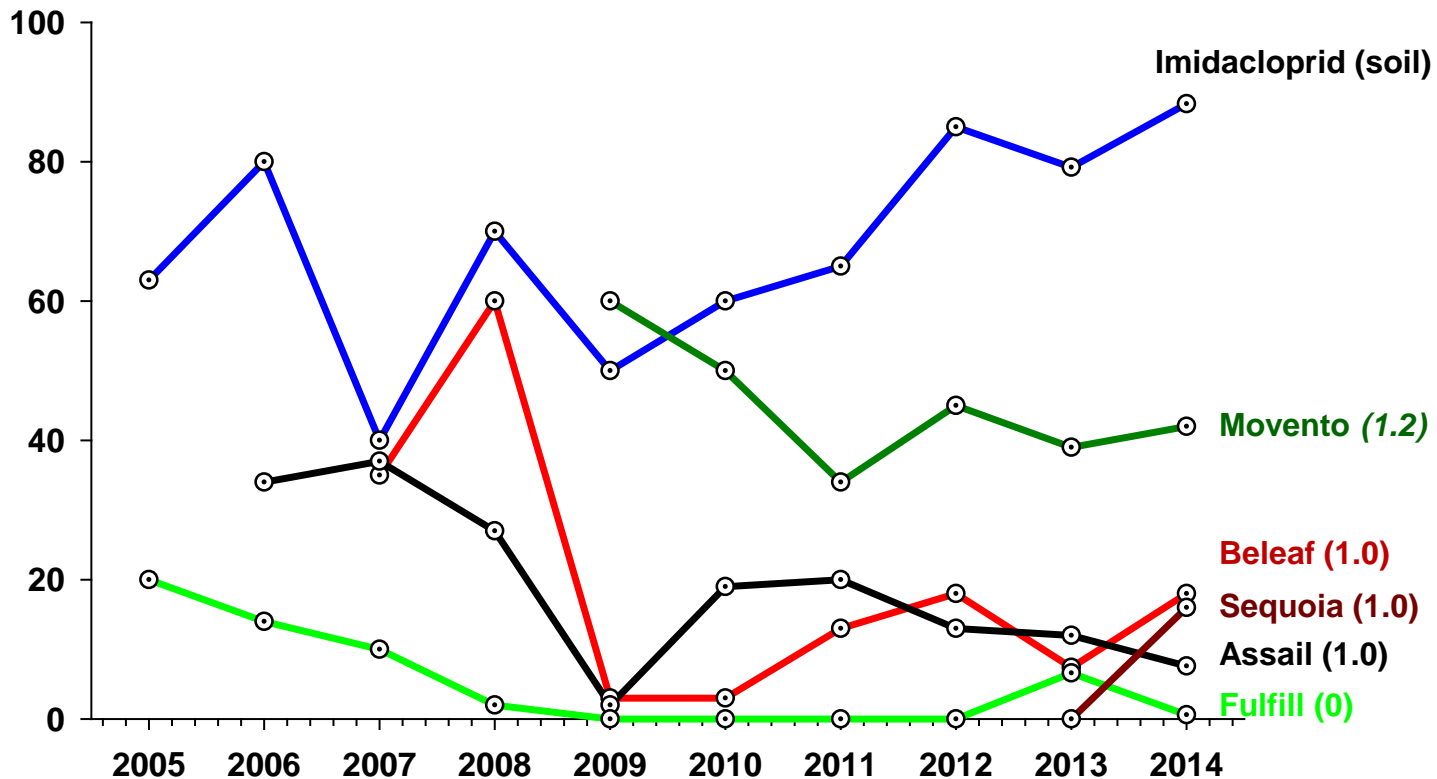
Source: LIL Workshop, April 16, 2014



Insecticide Usage on Spring Lettuce, 2004-2013

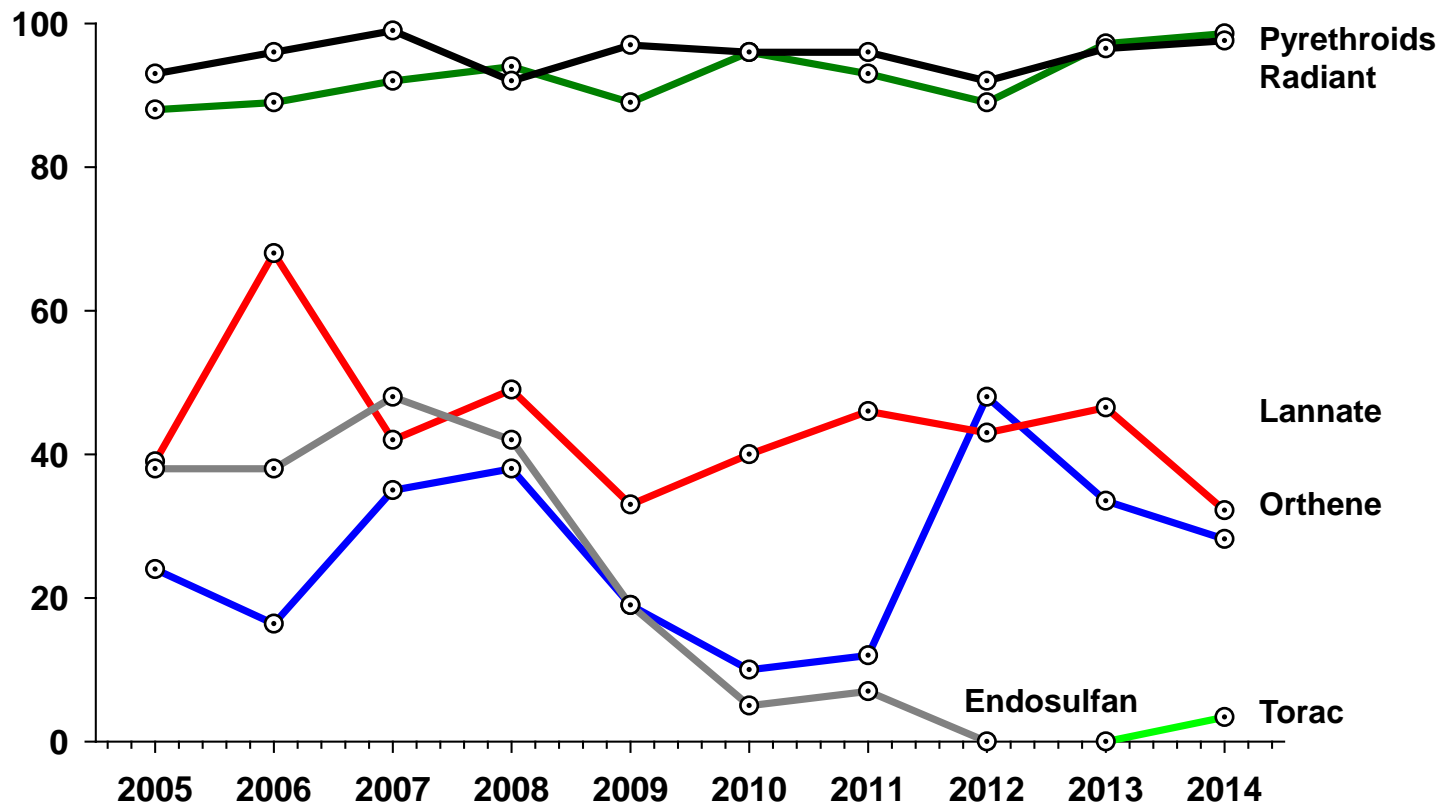
Aphid Complex

% Treated Acres



Insecticide Usage on Spring Lettuce, 2004-2013

Thrips



Seasonal Insecticide Usage on Head Lettuce, 2014

Source: LIL Workshop, April 16, 2014

