Economics of biocontrol

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Economics of biocontrol

Economics is extremely useful as a form of employment for economists.

John Kenneth Galbraith

God created economists to make weather forecasters look good.

The internet

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Cost of pest management includes:

Pesticides

- Pesticides
- Time (qualified personnel)/overtime
- Monitoring
- Crop losses
- Crop quality/phyto
- Application equipment
- Downtime(REIs)/ inconvenience
- Liability

Biocontrol

- Biocontrol inputs
- Time
- Monitoring
- Crop losses
- Crop quality?

Measuring biocontrol input costs

Single crop production: e.g. gh veg

- Input costs are easy to measure and document either currently or retrospectively
- All costs can be assigned to the one crop, often over the whole year
- Pest/disease spectrum is consistent throughout the greenhouse
- Biocontrol inputs are the same throughout the production area
- Costs can be based on greenhouse area with little room for misinterpretation

Measuring biocontrol input costs

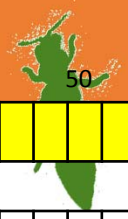
Multiple cropping systems: e.g. many ornamental systems

- Retrospectively, it is more difficult to assign BCAs to individual crops and pests, since overlaps can make it difficult to determine – after the event - which inputs belong to which pest/crop
- Maintaining current records makes it much easier to keep track
- More difficult to measure in terms of greenhouse area
  - Multiple crop turns in a single year
  - Multiple crops
  - Can be 3-dimensional (hanging baskets, or other pots)
  - Some crops are heavy biocontrol users, others light. Depends on which crops are hosts to which pests
- More useful to measure in terms of cost per plant (per crop) or per cutting

So where do thrips fit in?

- In general, we don't have a very good understanding of the economics associated with biocontrol programs
- The feeling of most growers is that thrips use the bulk of the biocontrol budget – depending on crop
- >70% is a figure I have often heard estimated
- Thrips is the reason that many growers are using biocontrol because they cannot achieve the same efficacy with pesticides
- Perhaps also, other (more sporadic) pests can be controlled with compatible pesticides – so reduced biocontrol costs for those pests

Crop schedule



Crop	Week (1 – 10 – 20 – 30 – 40 – 50)
Crop 1	1,289,741 (incl, 2", 4" and 6" and 8")
Crop 2	58,104 (4" - 26,588) (6" – 31,516)
Crop 3	32,025
Crop 4	27,967 (incl 4" and 6")
Crop 5	15,329
Crop 6	7,757 (incl. 8" and 10")
Crop 7	22,151
Crop 8	72,440 (incl. 4" and 6")
Crop 9	29,782

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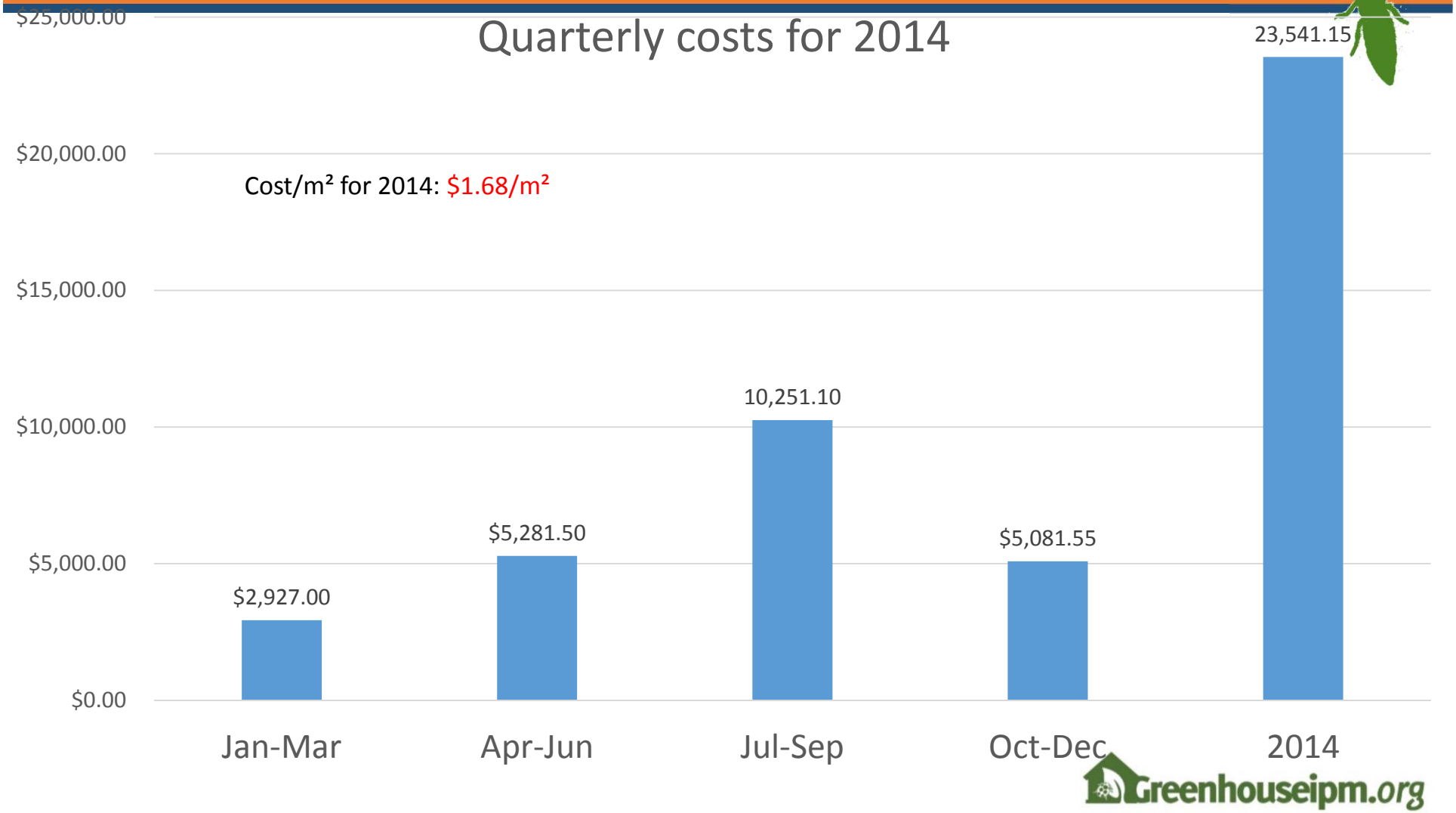
		2014		Crop 1	Crop 2		Crop 3	Crop 4	Crop 5	Aphids - a		Crop 6	Crop 7	Crop 8	Crop 9		Crop 10	Thrips
	Jan-Mar				Apr-Jun				Jul-Sep					Oct-Dec				
18-Dec	Hypoaspis	35.2		01-Apr	A. cuc sachets	72.1			08-Jul	Hypoaspis	35.2			07-Oct	Hypoaspis	70.4		
	A. cuc	13.7			A. s sachets	492.2			15-Jul	Hypoaspis	35.2				A. swirskii	154.2		
20-Dec	Nemasys	179			Hypoaspis	35.2			17-Jul	A. swirskii	102.8				A. californi	17.9		
30-Dec	Hypoaspis	35.2			A.cuc	27.4			22-Jul	Nemasys	369				Nutrimite	280		
	A. cuc	13.7		08-Apr	A. cuc	27.4				Hypoaspis	35.2			15-Oct	Hypoaspis	52.8		
06-Jan	A. cuc	13.7			Hypoaspis	35.2				A. swirskii	102.8				A. swirskii	102.8		
	Hypoaspis	35.2			Nemasys	369				Orius	35.9				Enc/Eret Bli	122.2		
13-Jan	Hypoaspis	35.2		14-Apr	A. swirskii	129.1			29-Jul	Hypoaspis	35.2			21-Oct	Nutrimite	280		
	A. cuc	13.7		15-Apr	Hypoaspis	35.2				A. swirskii	102.8				Hypoaspis	52.8		
21-Jan	A. cuc	13.7		22-Apr	Persimilis	24.2				Orius	35.9				A. swirskii	102.8		
	Hypoaspis	35.2			Orius	35.9				BotaniGard	988.8				Eret. Mix	167.4		
28-Jan	A. cuc	13.7			A. ervi	59.2			06-Aug	Hypoaspis	35.2			28-Oct	A. swirskii	154.2		
	Hypoaspis	35.2			Encarsia	27.2				A. swirskii	205				Hypoaspis	52.8		
	Nemasys	179			Hypoaspis	35.2				Orius	35.9				Eret. Mix	167.4		
	A. colemani	63			A. cuc	27.4				A. cuc Sach	225.3				Nemasys	369		
04-Feb	A. colemani	63			A.swirskii	102.8				A. cuc Sach	39.5			04-Nov	A. swirskii	154.2		
	A. cuc	13.7		29-Apr	Hypoaspis	35.2			12-Aug	A. swirskii	205.6				Hypoaspis	52.8		
	Hypoaspis	35.2			A. cuc	27.4				Hypoaspis	35.2				Met52	195.75		
11-Feb	A. colemani	63			A. swirskii	102.8				Aphidius	21				Nutrimite	280		
	A. cuc	13.7		05-May	Hypoaspis	35.2				Nutrimite	280			11-Nov	A. swirskii	154.2		

Total biocontrol costs – annual and quarterly



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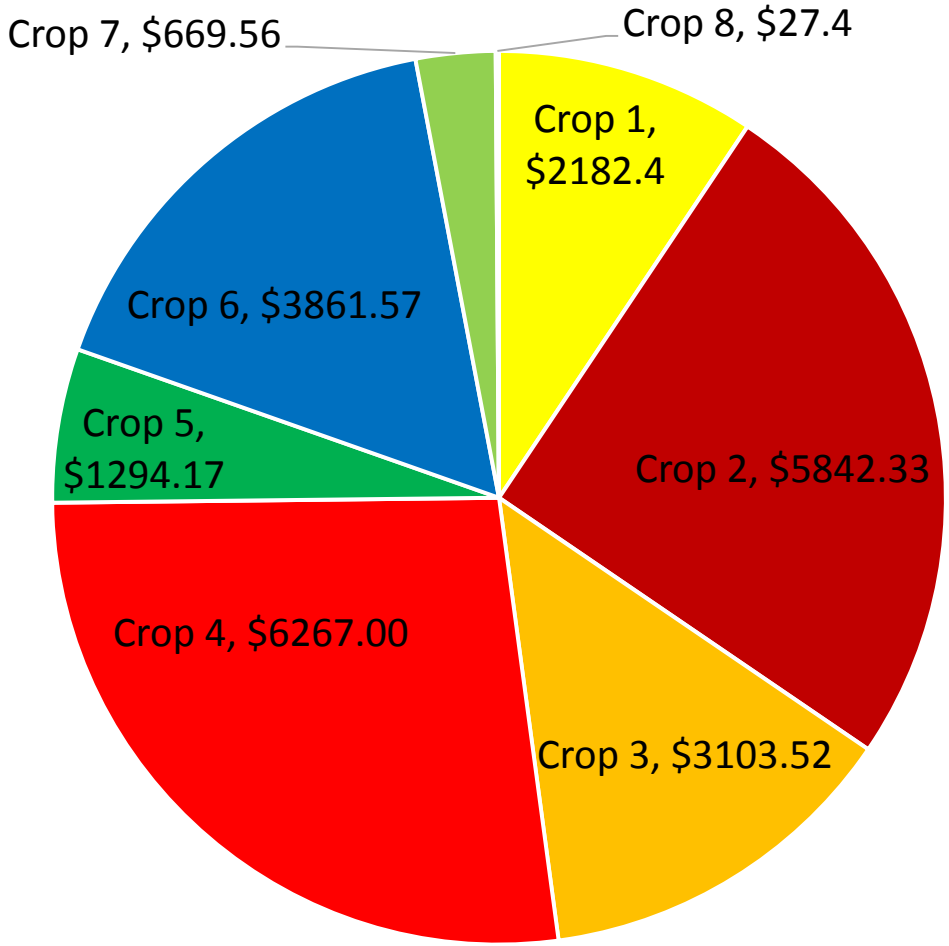
Biocontrol costs by crop



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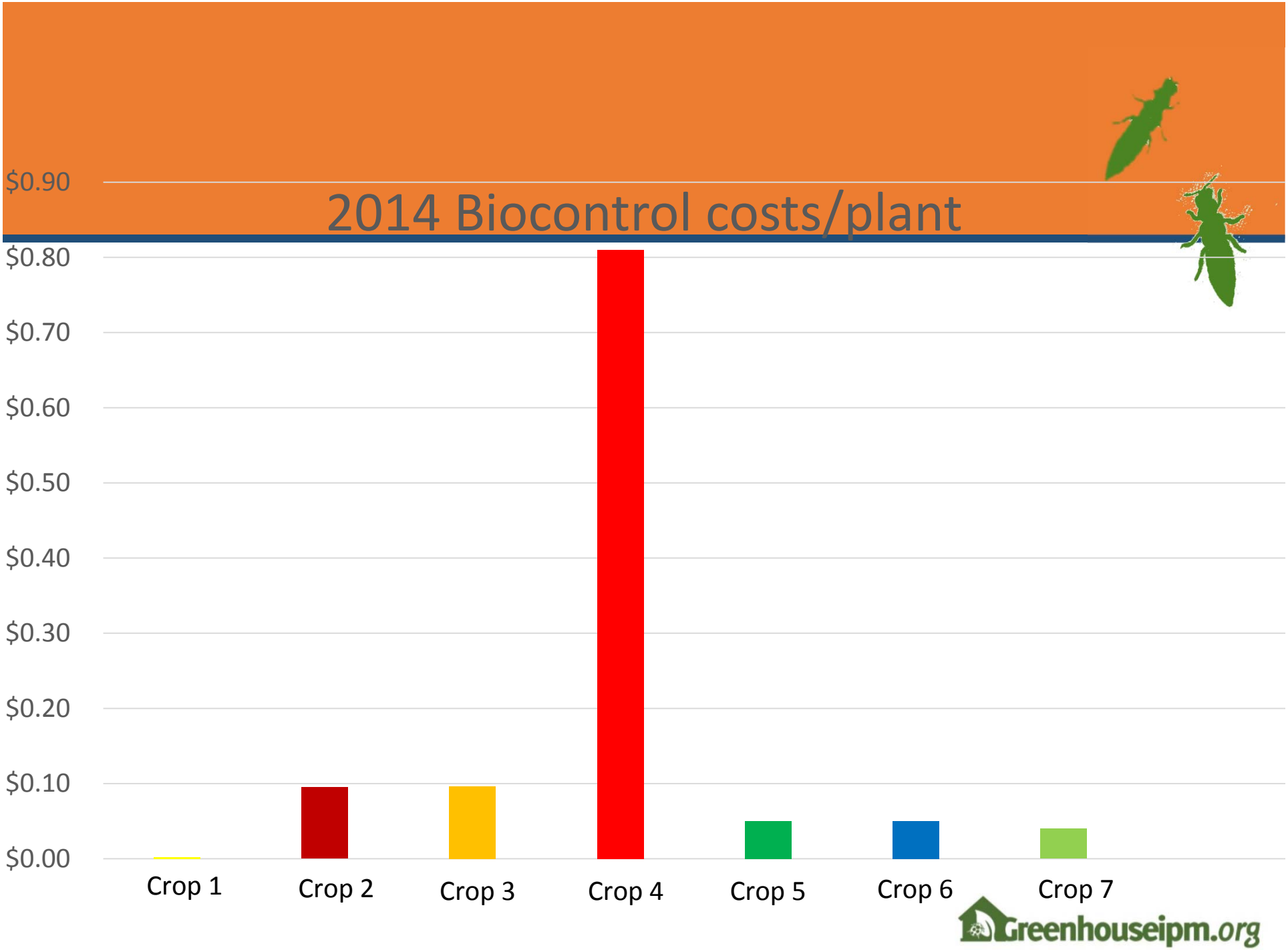
2014 Biocontrol costs/plant



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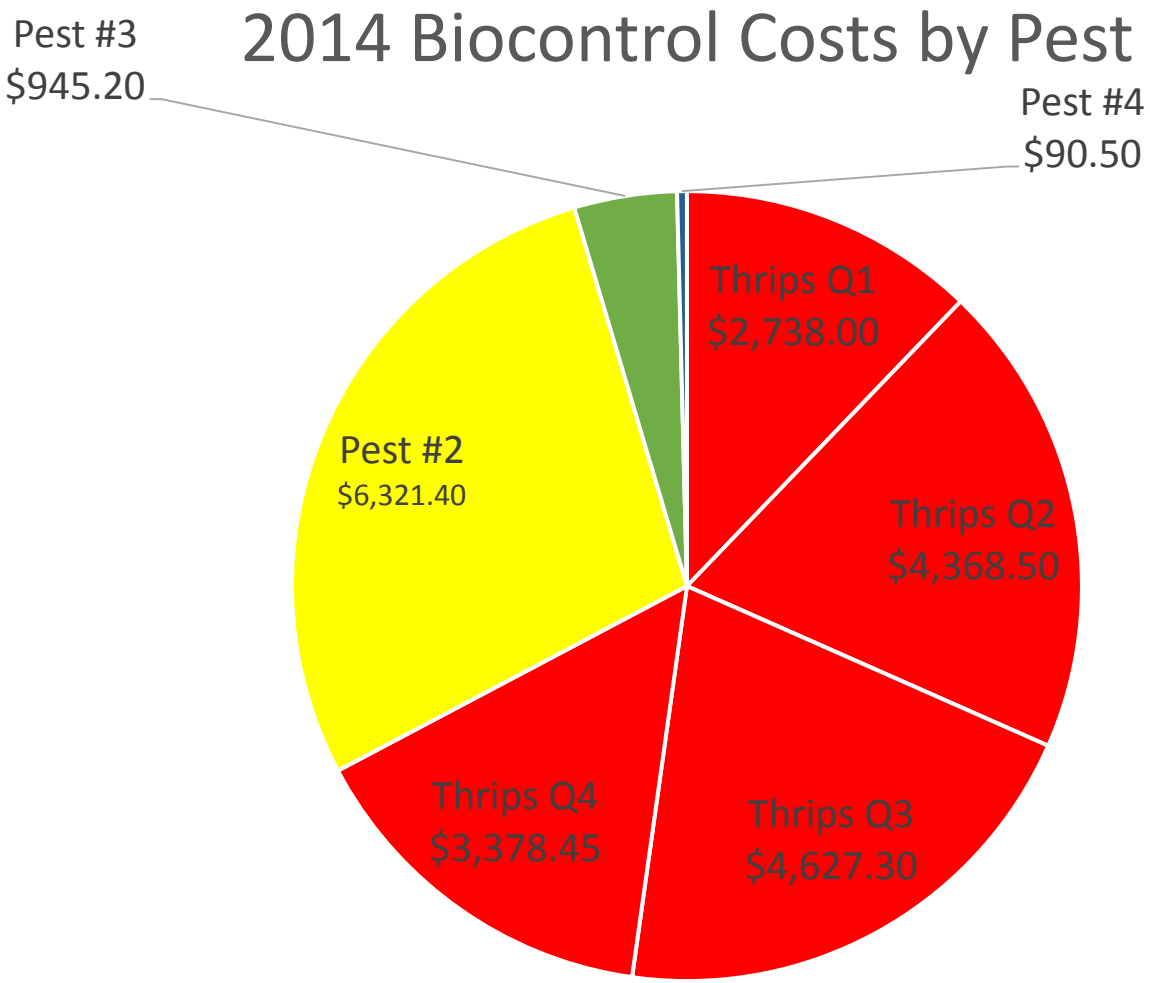
Costs by pest



Total thrips cost
for 2014
$ 15,112.25 (64%)

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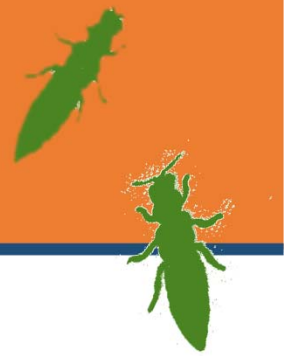
Summary

- Understanding the costs associated with biocontrol is valuable for the grower – and others
- Quantifies the importance of thrips as the driver of many biocontrol programs
- Allows the grower to put into context where, when and why the biocontrol $ are being spent, and where to focus on cost reduction



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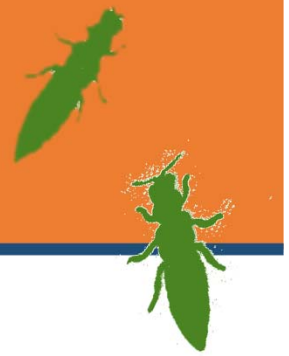

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