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EXTENSION

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OREGON Cranberry Winter Workshop 2015

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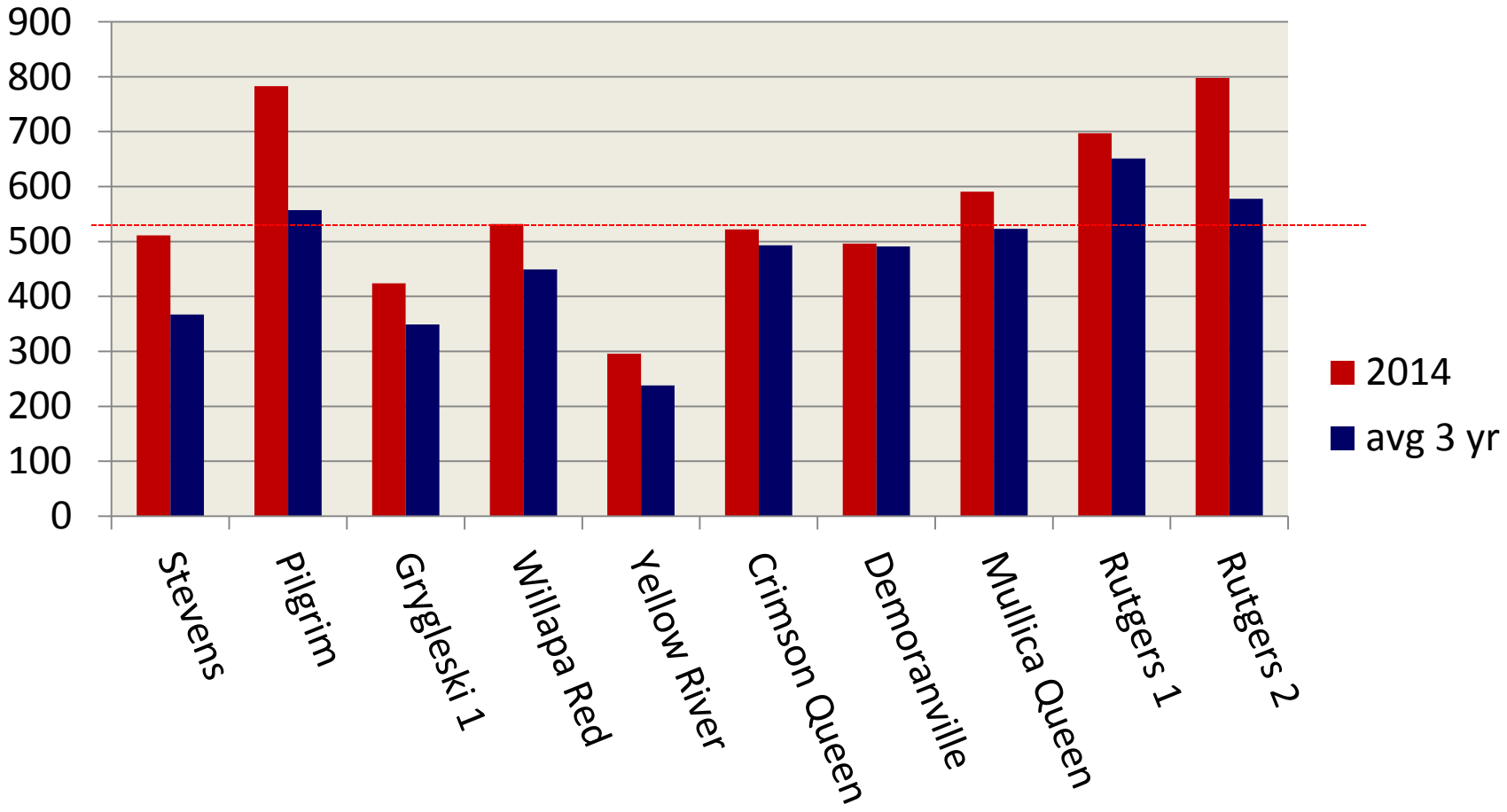
&

Washington State Commission for Pesticide Registration
Washington State Cranberry Commission
Oregon Cranberry Growers Association
The Cranberry Institute
Ocean Spray
PCCRF

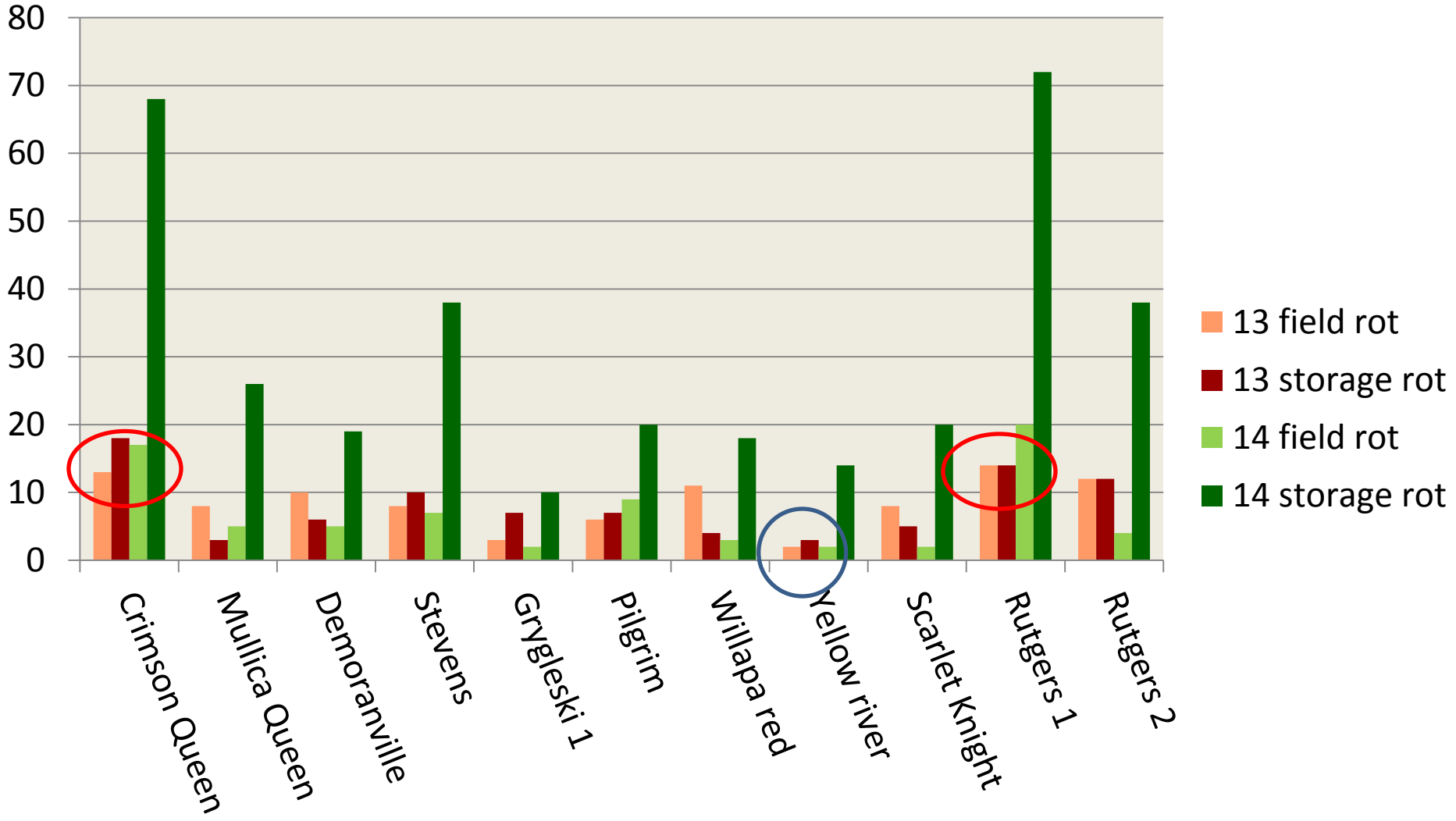
Topics

- Varieties
- Fungicides & fruit rot
- Tipworm
- Fireworm
- Weevil
- Weeds
- Pruning

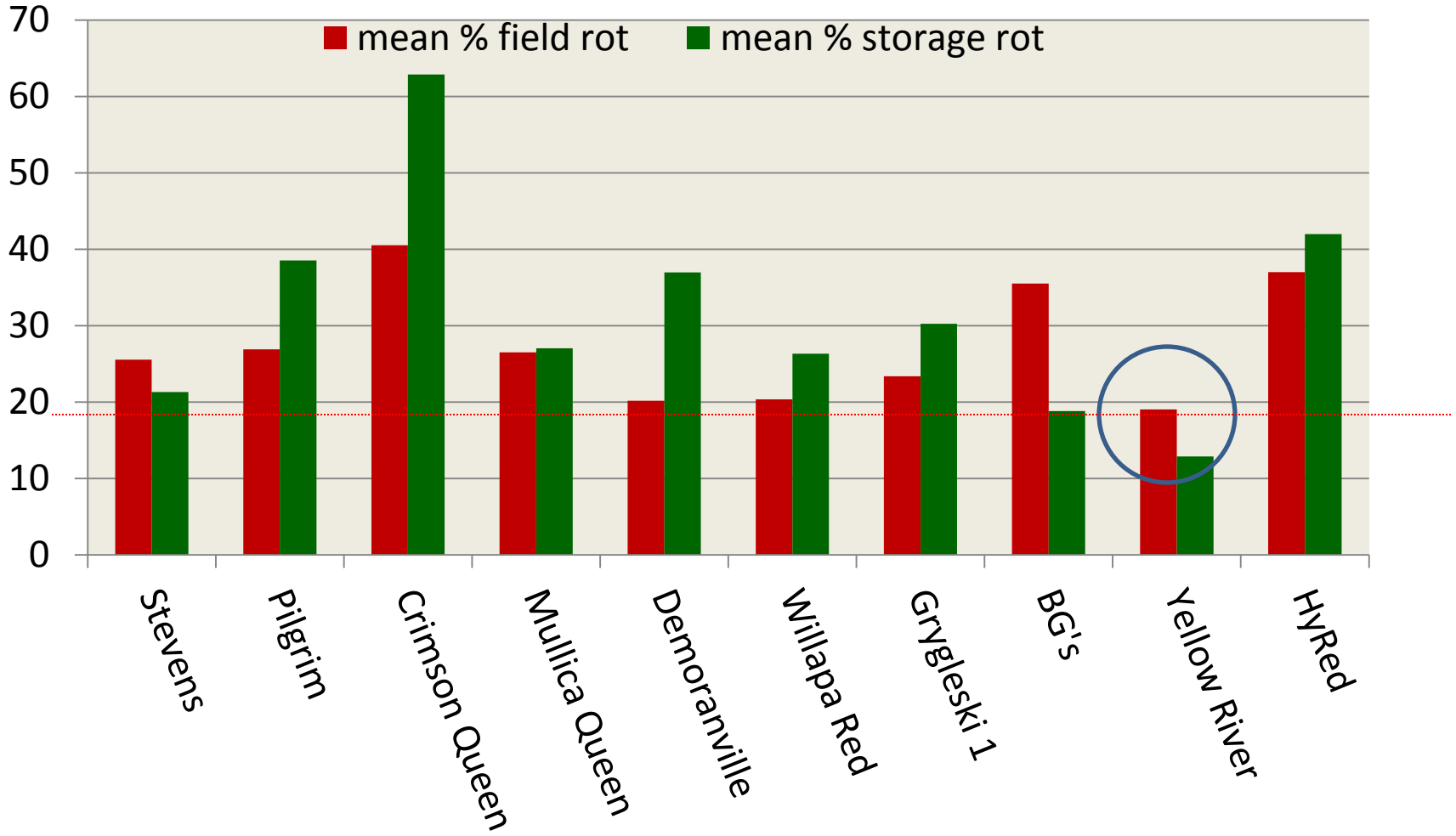
Oregon– yield bbl/ac



Oregon % rot


80
70
60
50
40
30
20
10
0
Crimson Queen
Mullica Queen
Demoranville
Stevens
Grygleski 1
Pilgrim
Willapa red
Yellow river
Scarlet Knight
Rutgers 1
Rutgers 2
13 field rot
13 storage rot
14 field rot
14 storage rot

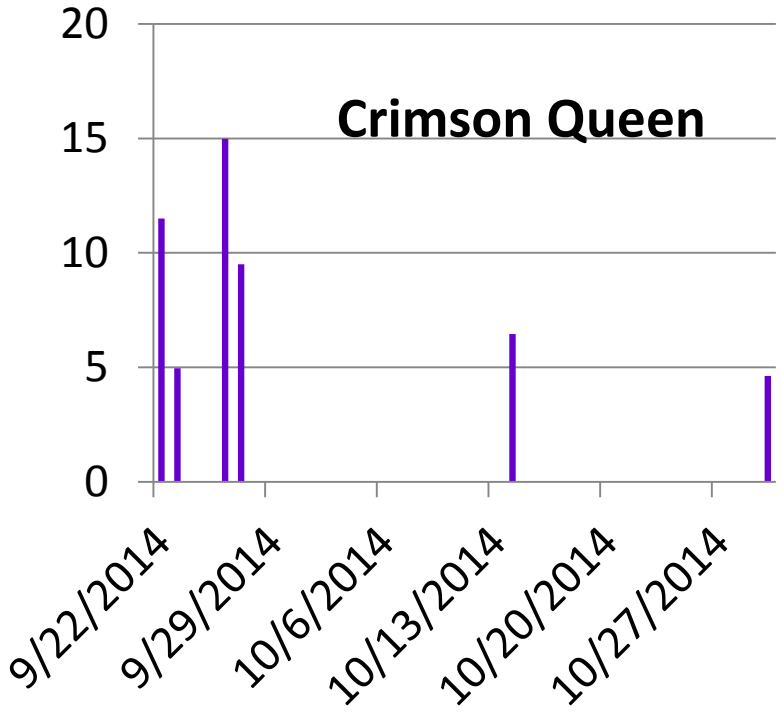
Washington
2012 to 2014 mean % rot

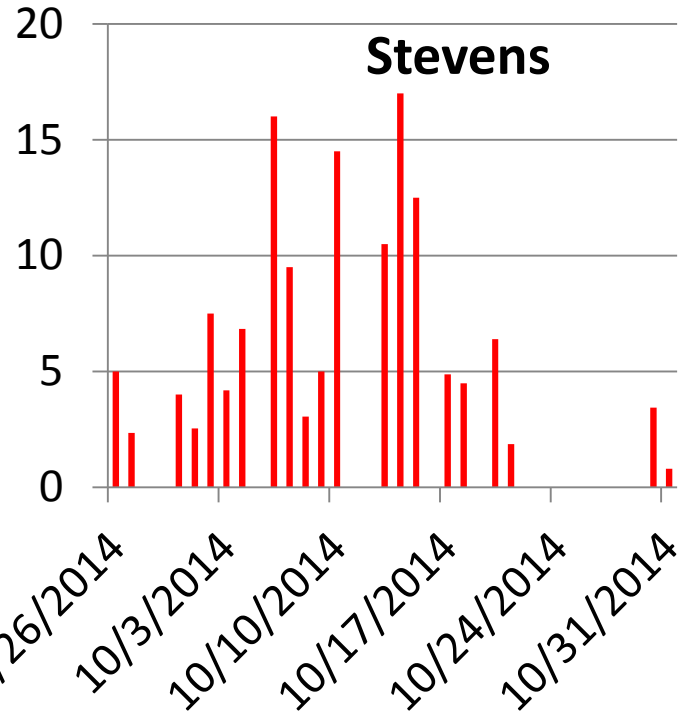


Summary of variety data

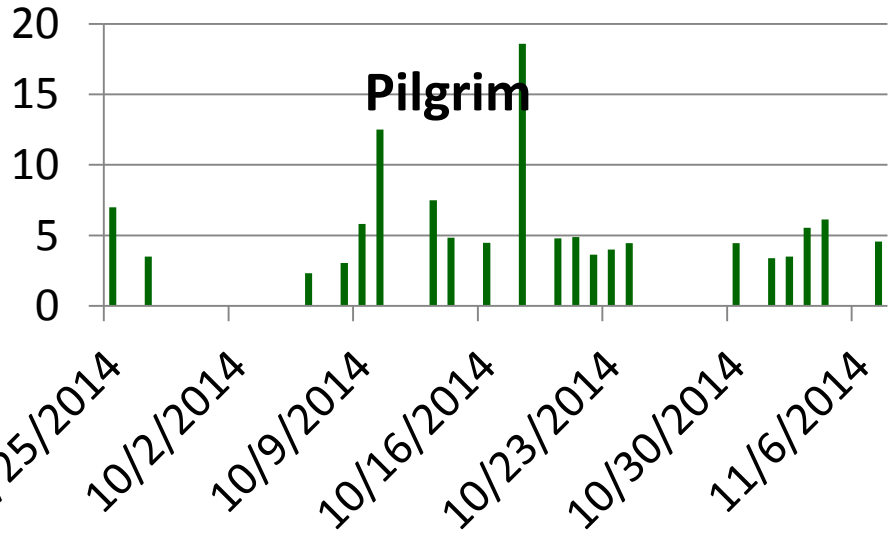
- All hybrids look good
  - Fruit rot can be an issue, need special management.
- Tonnage- R1, R2, Pilgrim
- Low rots- yellow river

More on fruit rot

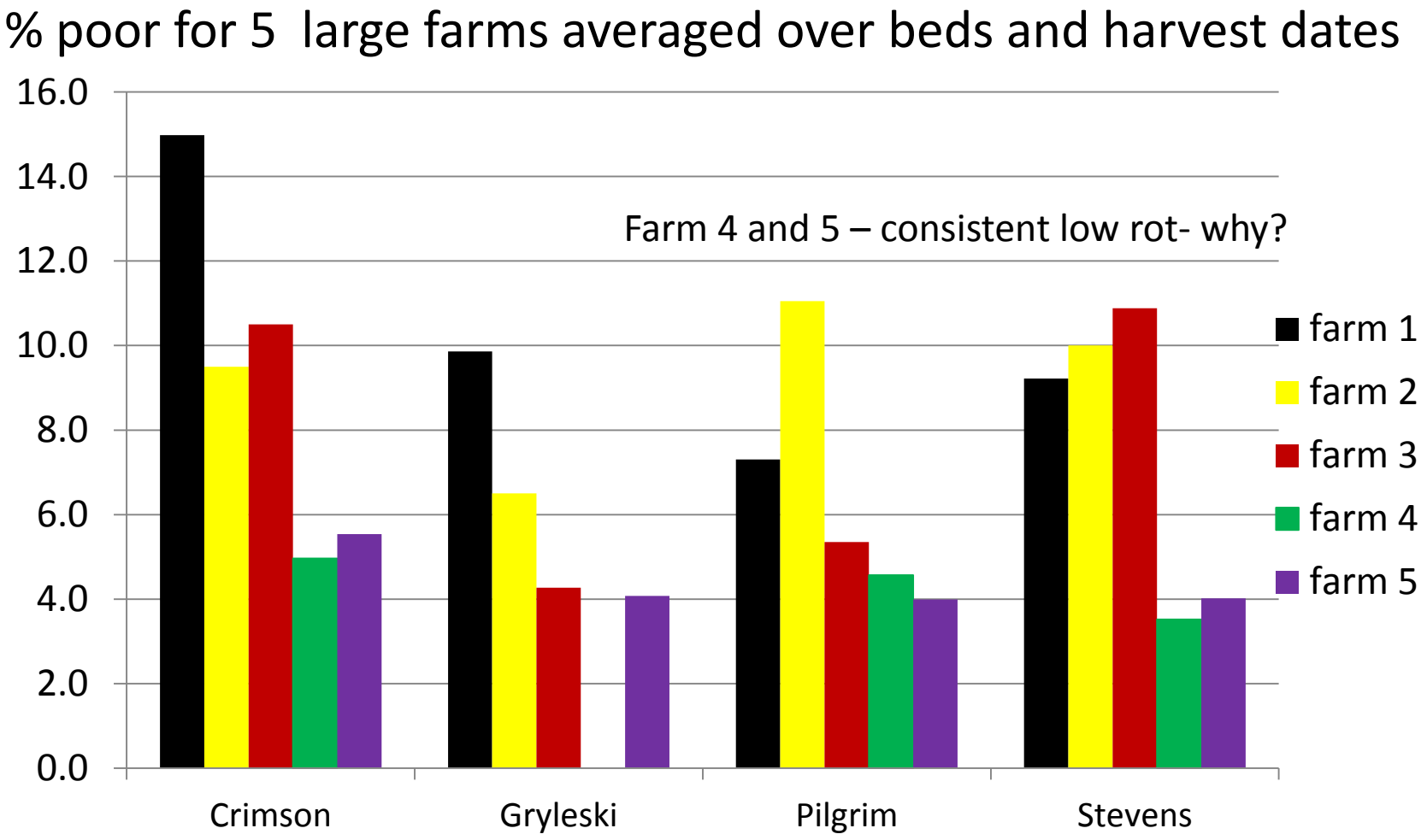




No harvest date trend



Big effect of grower on % poor



Fungicide timing effect by grower?

	Fungicide	L May	E June	M June	L June	E July	M July	L July	E Aug	
Farms 1 & 2	Bravo						X			High rot
	Manzate							X		
	Indar		X							
	Abound		X							
Farm 3	Bravo						X			
	Manzate							X		
	Indar	X		X						
	Abound	X		X						
Farm 4	Bravo					X				
	Manzate						X			
	Indar		X	X						
	Abound		X	X						
Farm 5	Bravo		X	X						Low rot
	Manzate								X	
	Indar		X							
	Abound		X							

Variables affecting % poor

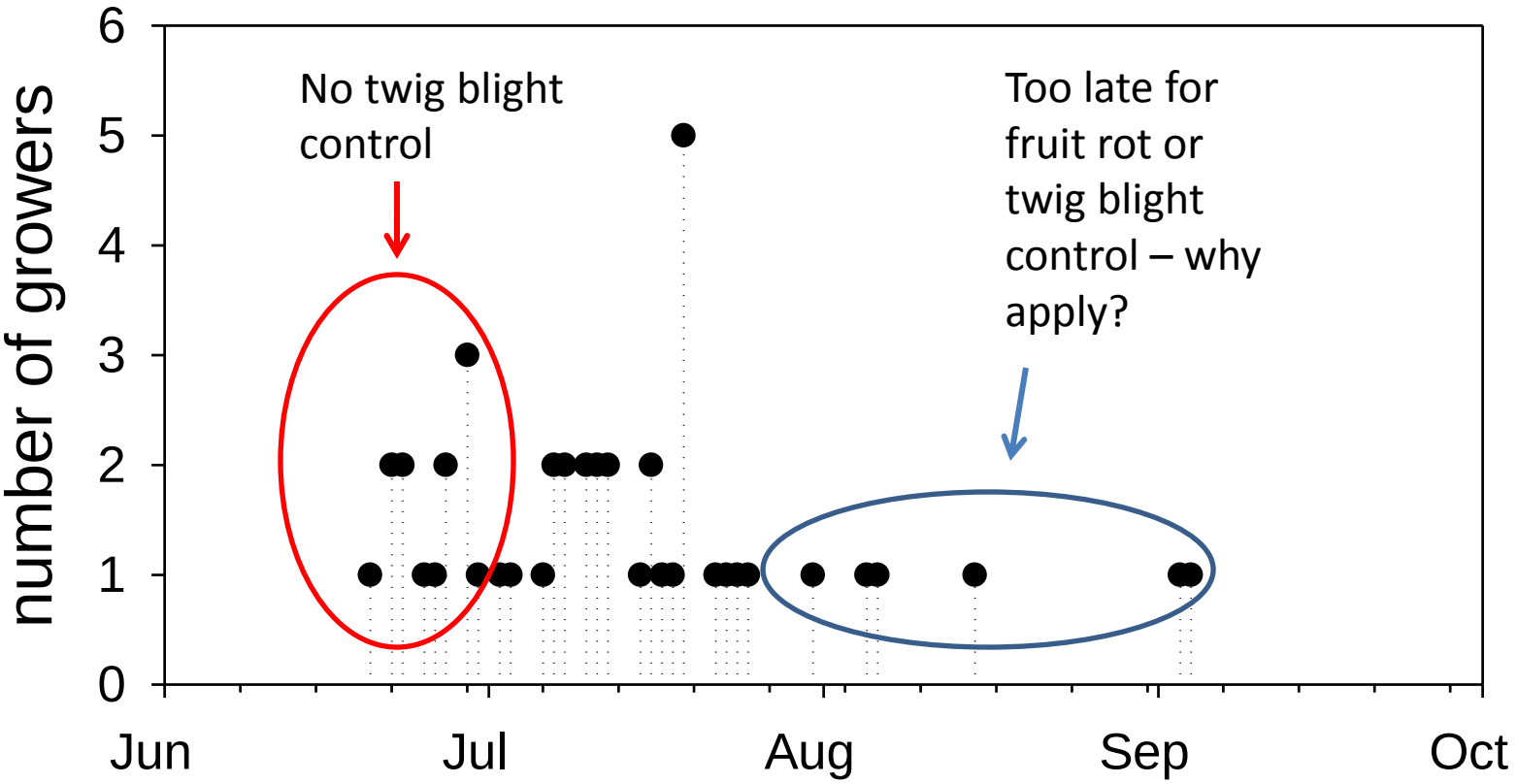
5 farms Long Beach 2014

Farm	Average % poor - Stevens	Two fungicide early bloom	Irrigation ~in/day	Heat protection during Sept.
Farm 1	10	No	0.1	Not really
Farm 2	10	No	0.1	Not really
Farm 3	10	No	0.1	Not really
Farm 4	4	yes	0.1	Yes - manual
Farm 5	4	yes	0.08	Yes- manual

More on fungicide timing

Oregon

Date of last fungicide



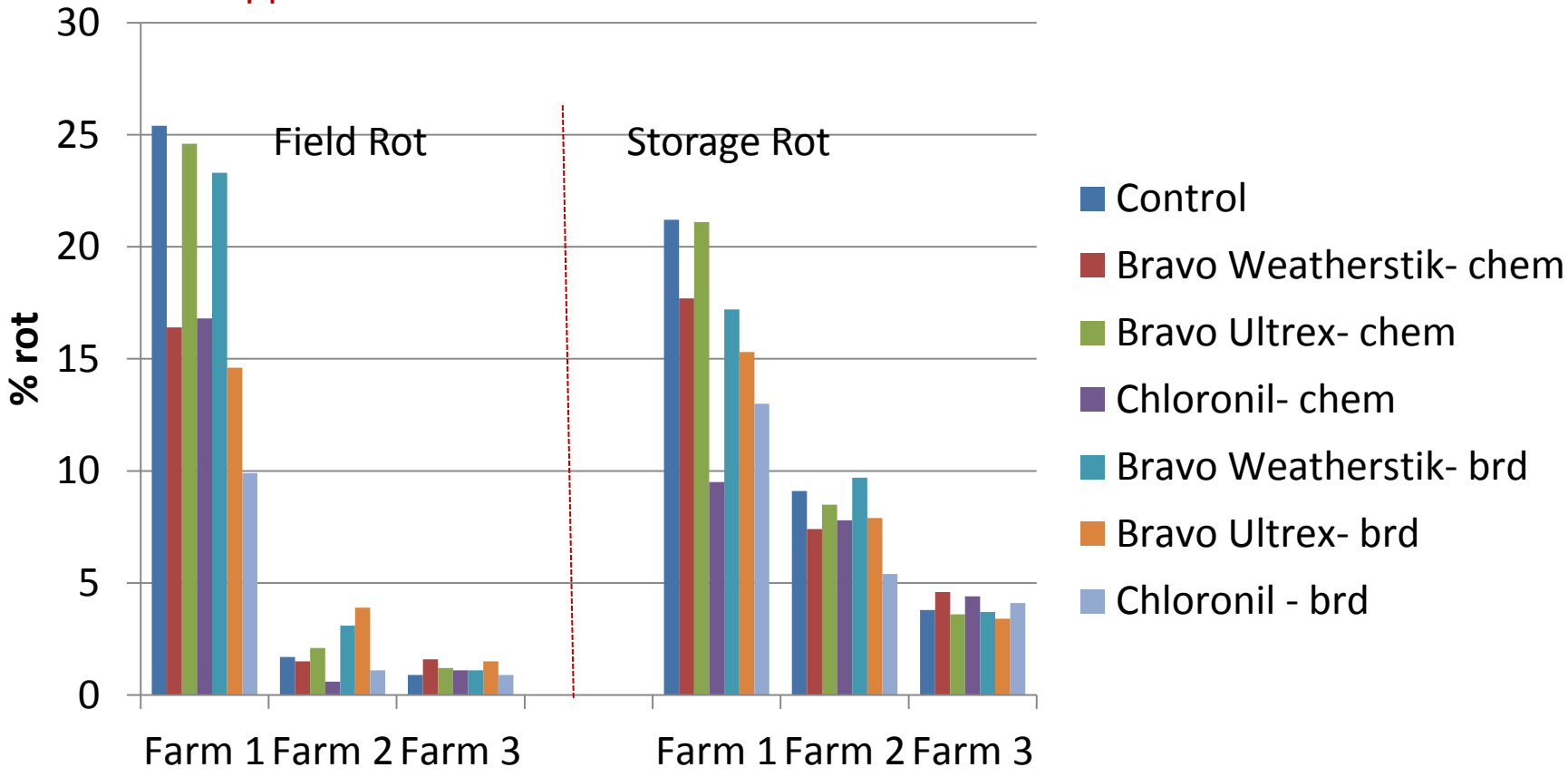
Fungicide scenarios

In bloom 1	In bloom 2	Out of bloom 1	Out of bloom 2	Out of bloom 3
		Dithane	Dithane	

Common fungicide timing in PNW- for twig blight – but does it do anything for fruit rot?

Bravo residue study in 2014 – Two applications in July, 3 farms

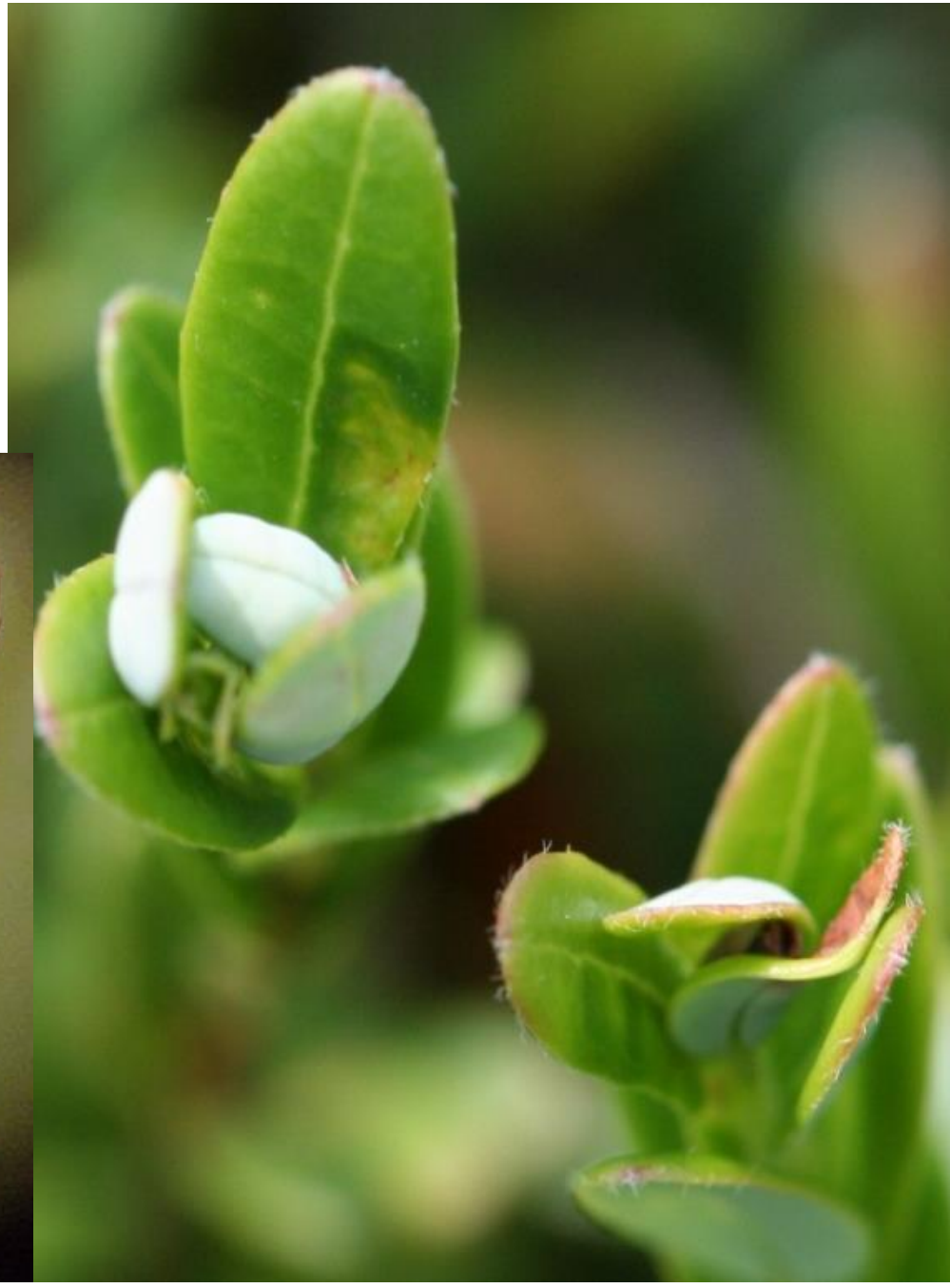
Bravo applied after set – has little to no effect on fruit rot



In bloom 1	In bloom 2	Out of bloom 1	Out of bloom 2	Out of bloom 3
Indar/ Abound or Proline/ Abound	Indar/ Abound or Proline/ Abound	Dithane		

Timing for Fruit rot plus resistance management

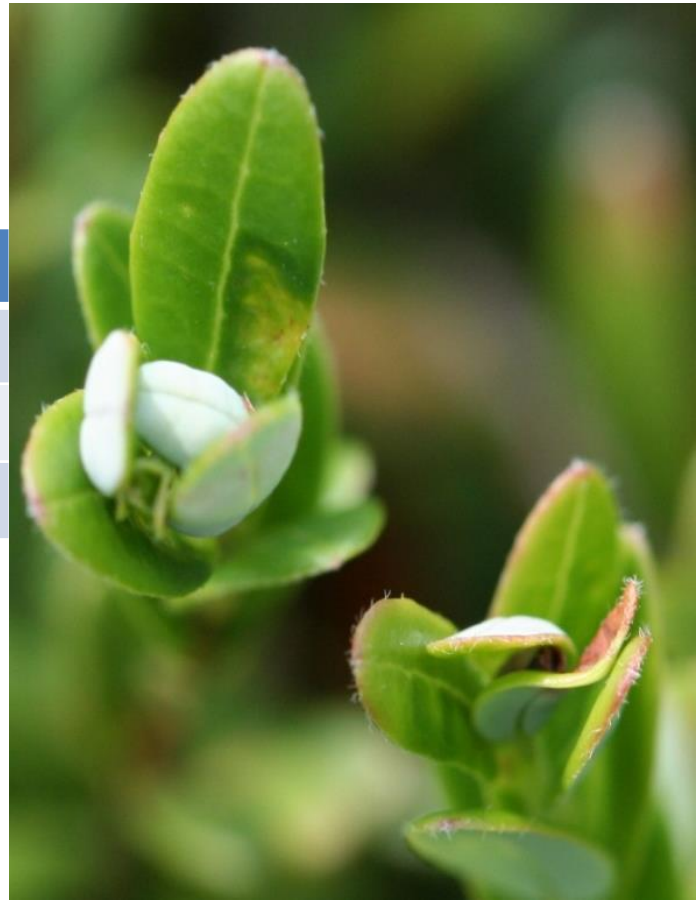
Tipworm – too darn small to monitor for spray timing. By the time you see damage- too late to treat.



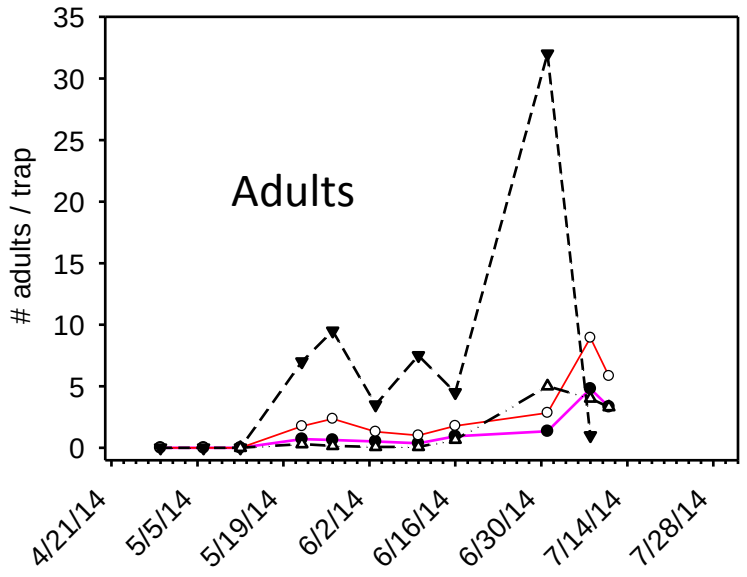
Does tipworm affect yield?

Hatton's farm 2014- Grayland

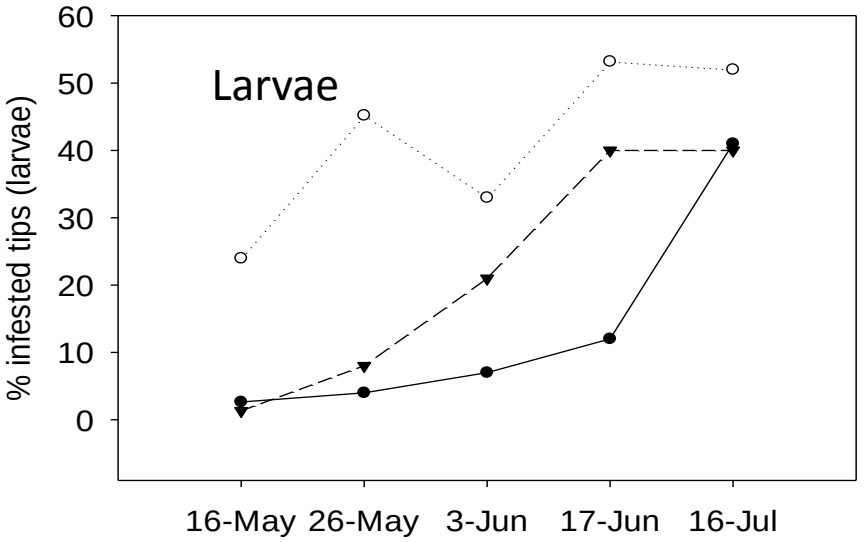
	No tipworm	Heavy tipworm
Variety	% fruiting upright	
Hyred	36	27
Stevens	38	11



Adult tipworm in emergence traps for 4 farms in Grayland (#/week)

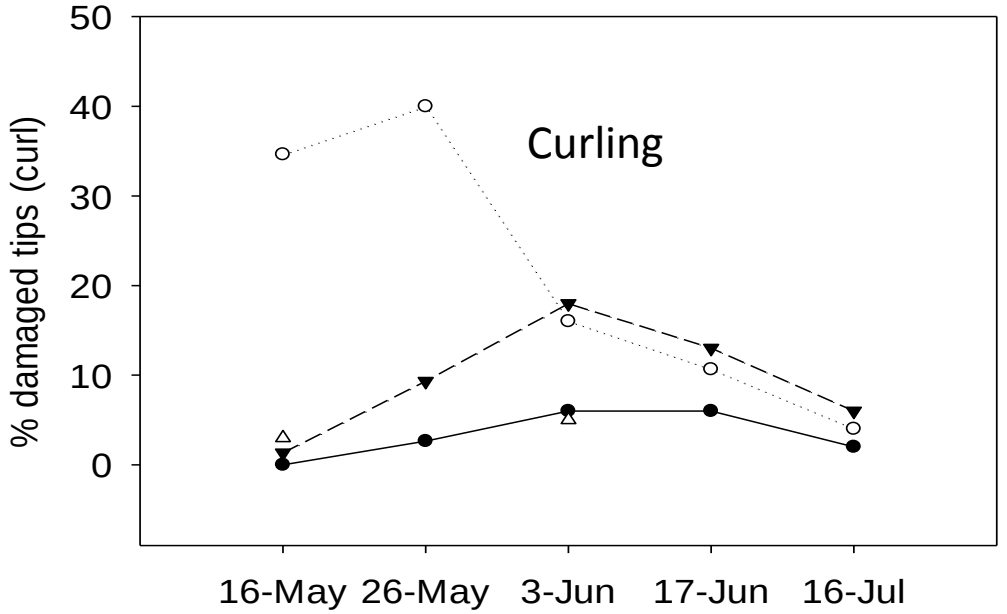


% Infested tips with tipwork larvae in 3 farms in Grayland 2014



It appears that the first sign of tip curling on a farm would the most sensitive and easy to monitor signal for spray timing.

Damaged tips (curling) in 3 farms in Grayland 2014

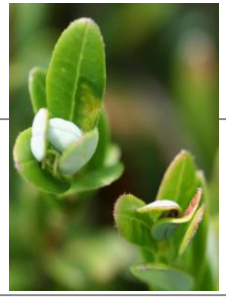


Tipworm Efficacy of across 5 best trials

Treatment	% control					
	Study 2	Study 3	Study 5	Study 6	Study 7	Mean control
Sevin	82	79	97	82	76	83
Grandevo	65	16				41
Venerate	51	13				32
Altacor	74	21	39			45
Altacor + Delegate	71	34				52
Pyganic	70	59				64
Synthetic pyrethoid			99	93	95	96
Cpd -e			30	0	52	27

Farm 1 treated 5/6, 5/21, & 5/27

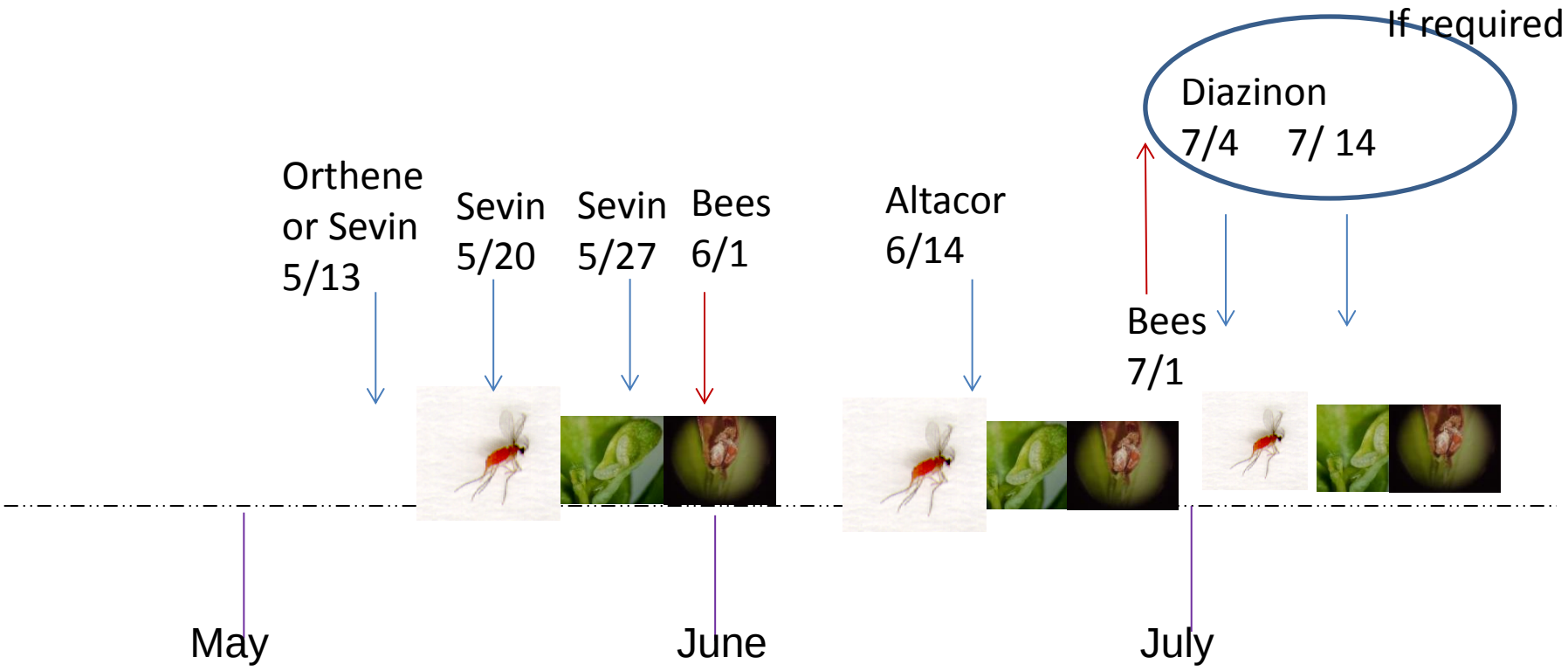
Assessed for damage on 6/17 and 7/16



Tipworm – take home message

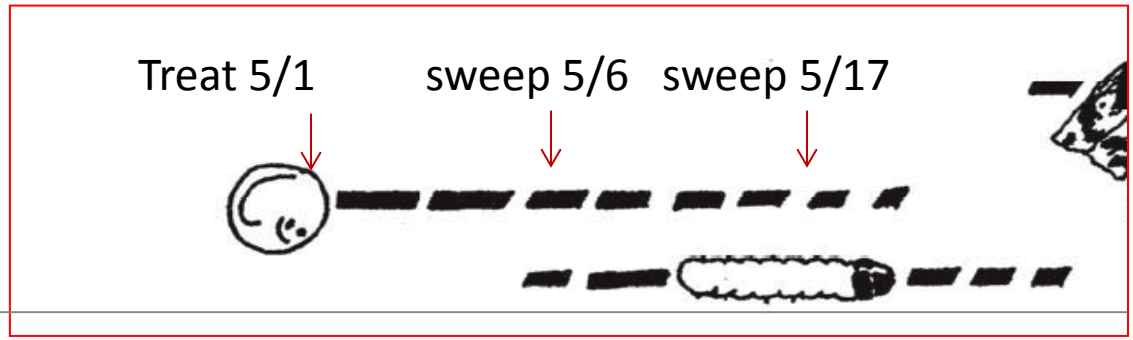
- What to use for control
  - Sevin (label rate, maximum 5 applications/season, 7 days between treatment, don't spray any time during bloom, MRL issues, fresh fruit – nothing past scattered bloom)
  - Altacor, Delegate, Orthene, Diazinon and other insecticides provide some control but can't be relied on for efficacy.
- When to treat – don't expect control after damage is done, and insect is protected by curled leaves.
  - (pre-bloom)
    - First sign of tip curling, repeat in 7 and 14 days
    - Calendar spray blanketing first generation, all prior to bee arrival
  - (bloom)
    - Fireworm timing with Altacor may help suppress.
  - (post-bloom)
    - Look for evidence of damage (tip curling)
    - If present- treat once bees are removed , repeat in 7 to 10 days
    - Use Altacor, Delegate, Diazinon, Sevin, or Pyganic as per PHI, Label and WSDA restrictions, and Code Book.

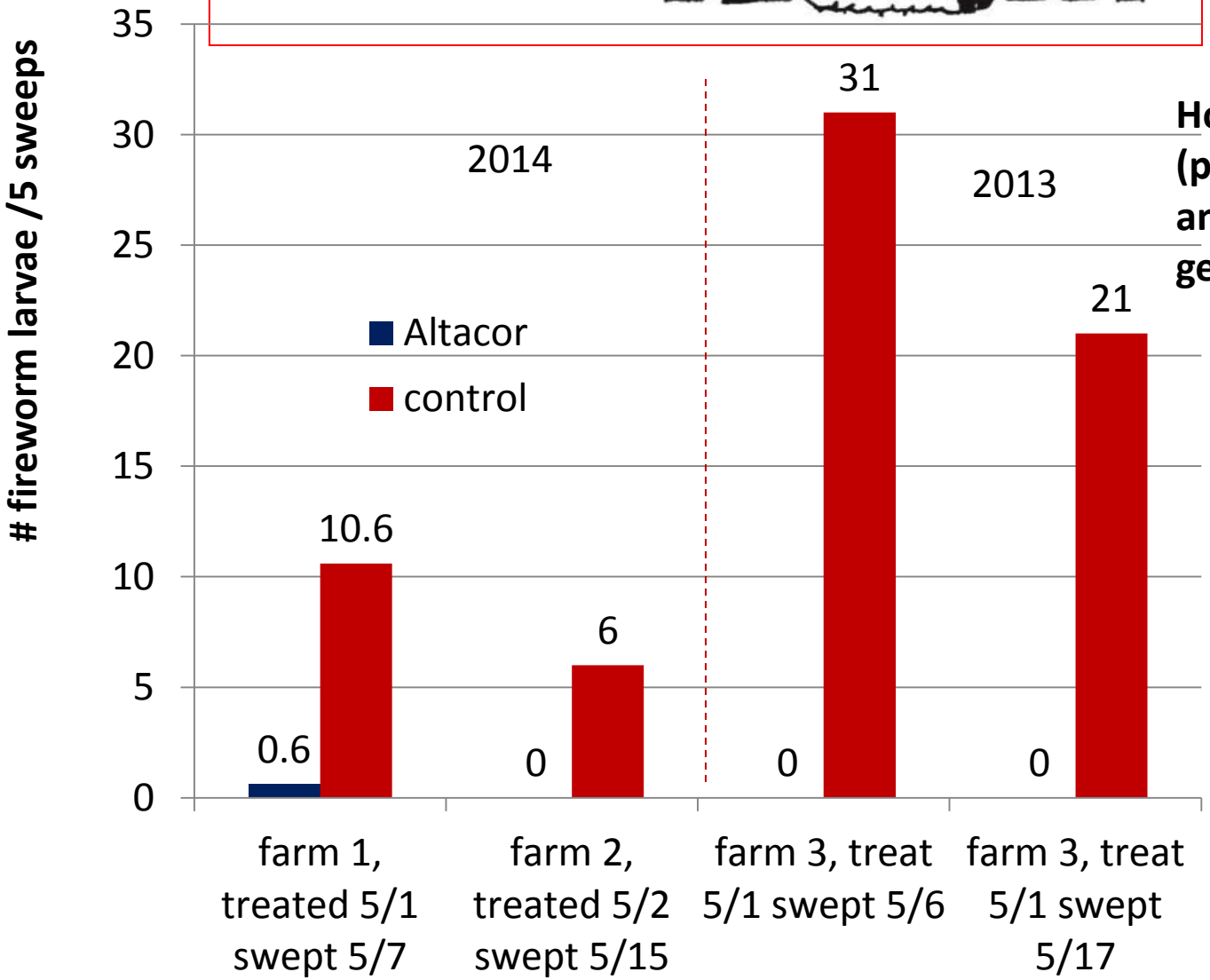
Sample program for export qualification



Fireworm Efficacy across trials

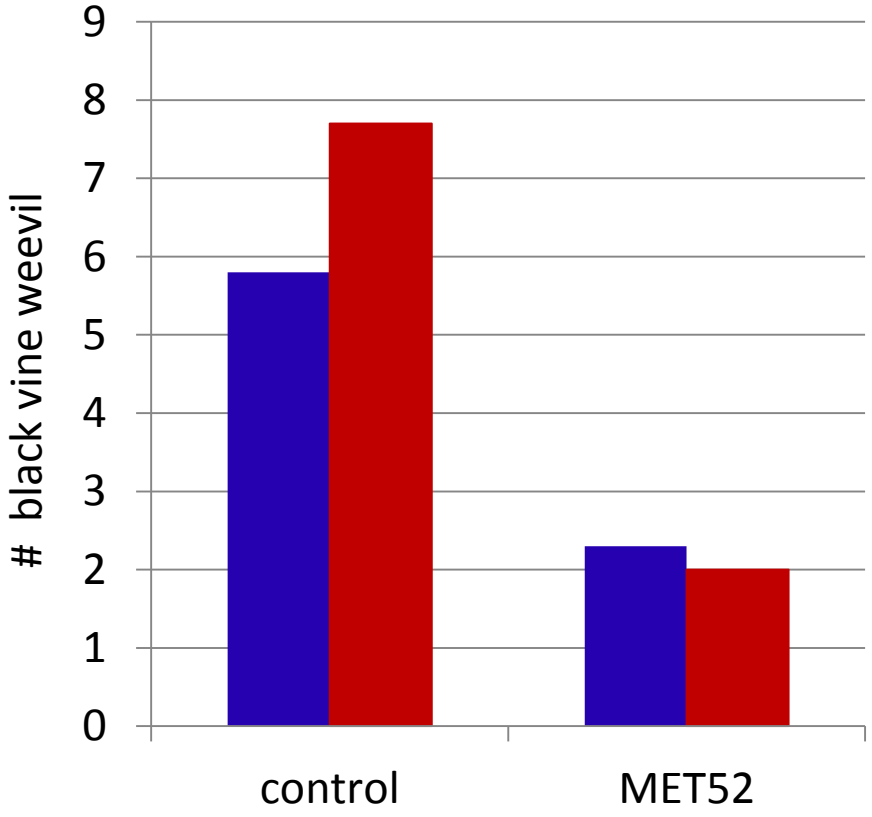
Treatment	% control					
	Study 1	Study 2	Study 3	Study 4	Study 5	Mean control
Altacor	94	100				97
Grandevo	6	58	48	60		43
Venerate	59	85	7	30		45
Synethic Pyrethoid	99	100			89	96
Cpd-i	99	100			83	94
Natural Pyrethrum			88	83		85
Dipel			96	28		62





How early can you treat (pre-hatch application) and get efficacy on 1st generation BHFW?

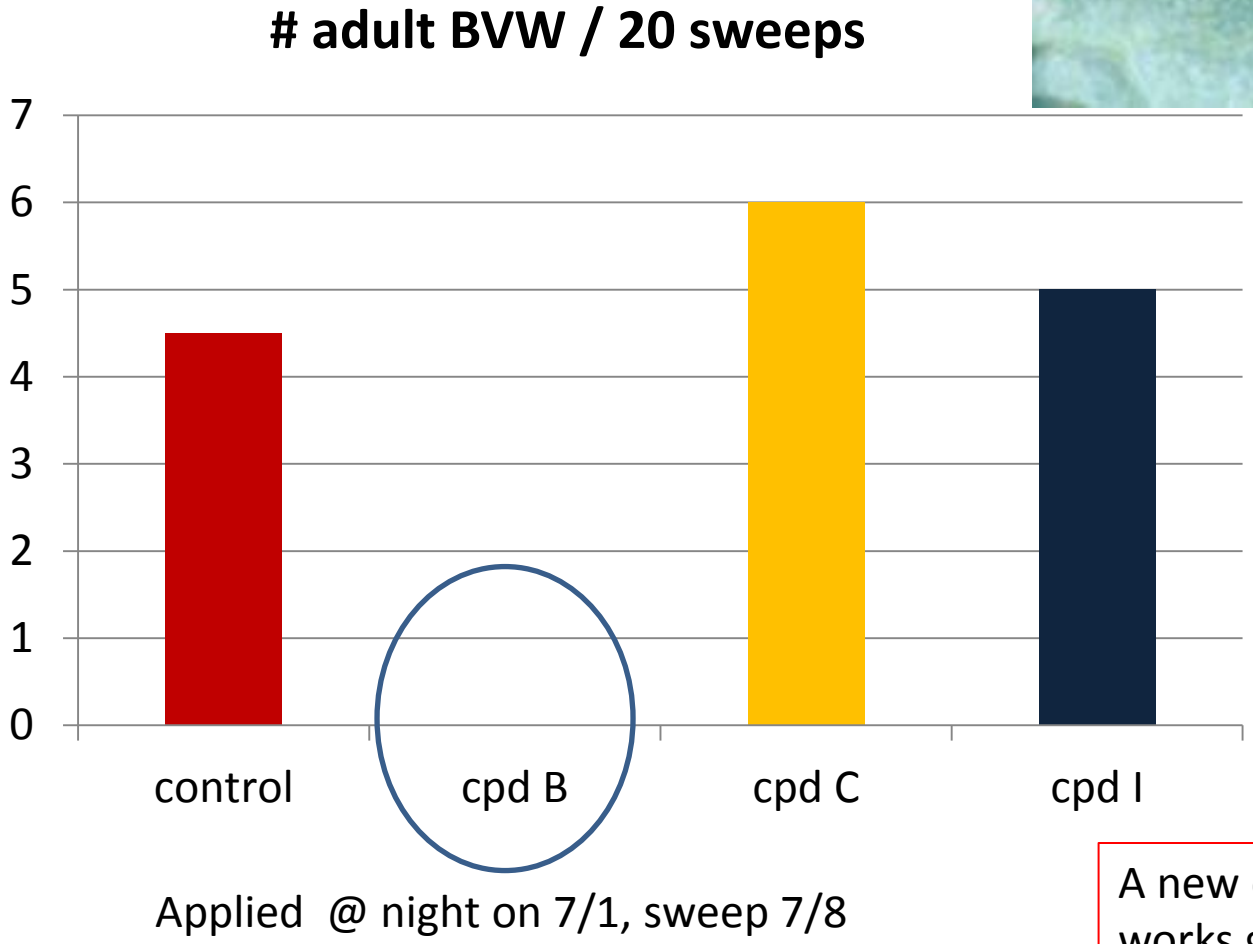
Blackvine weevil larvae control on Grayland farm treated with MET52 – Winter 2014



MET52 works – but $1800/ac

Now Monsanto Product, EC, $400/ac, late summer, efficacy - TBD

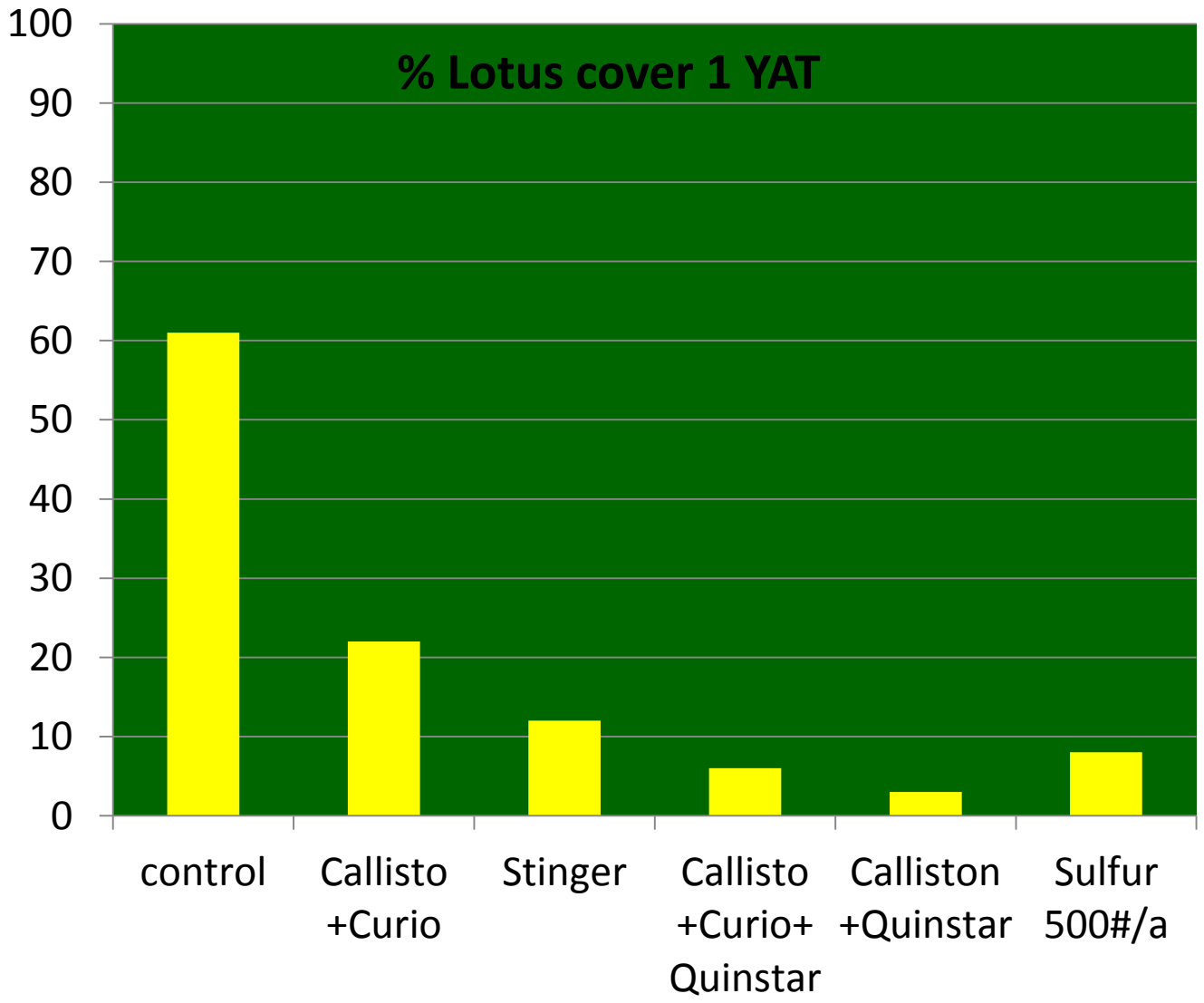
Insecticide screening for weevil



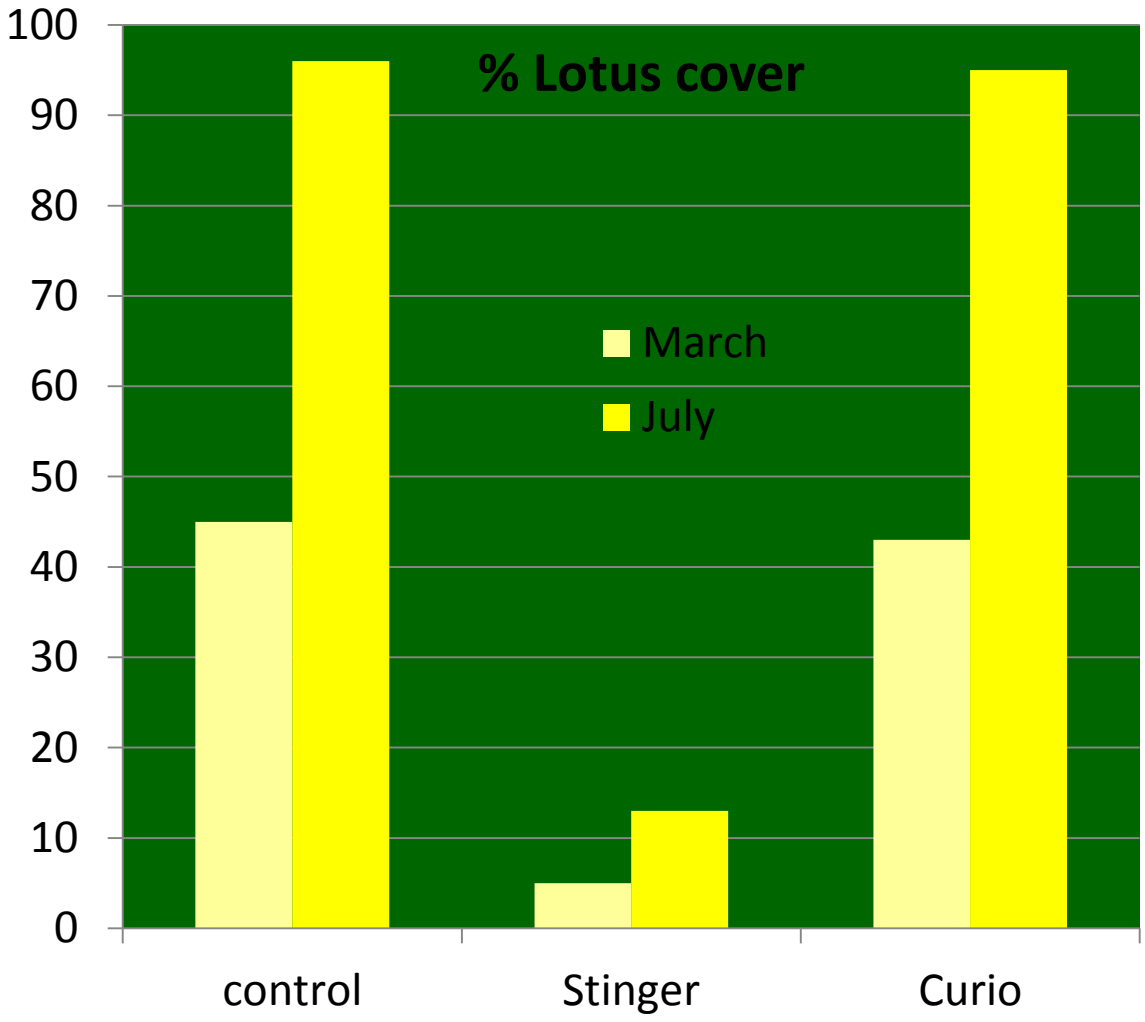
Applied @ night on 7/1, sweep 7/8

A new chemistry that works great on Tipworm and Weevil

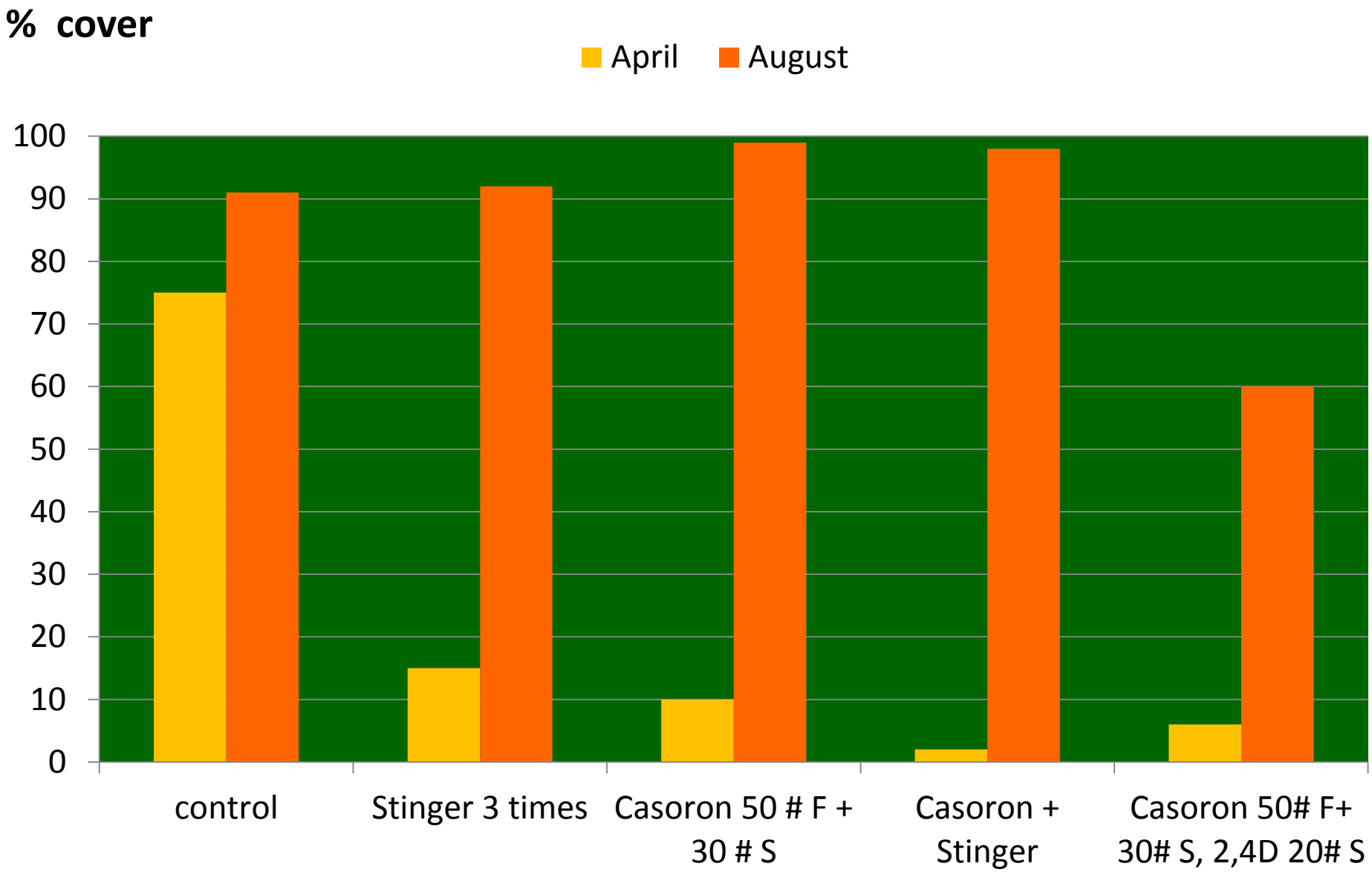
Summer Lotus control (treatments applied 8/20/13, assessed August 2014



Post-harvest Lotus control (treatments applied 10/30/13, assessed 2014



Sheep Sorrel control (treatments fall 2013 to spring 2014



Pruning – We prune every year. Why? Tradition or do we get any net gain out of?

All previous studies done on these subjects have been small replicated plots on one or two beds and only followed for only a few years.

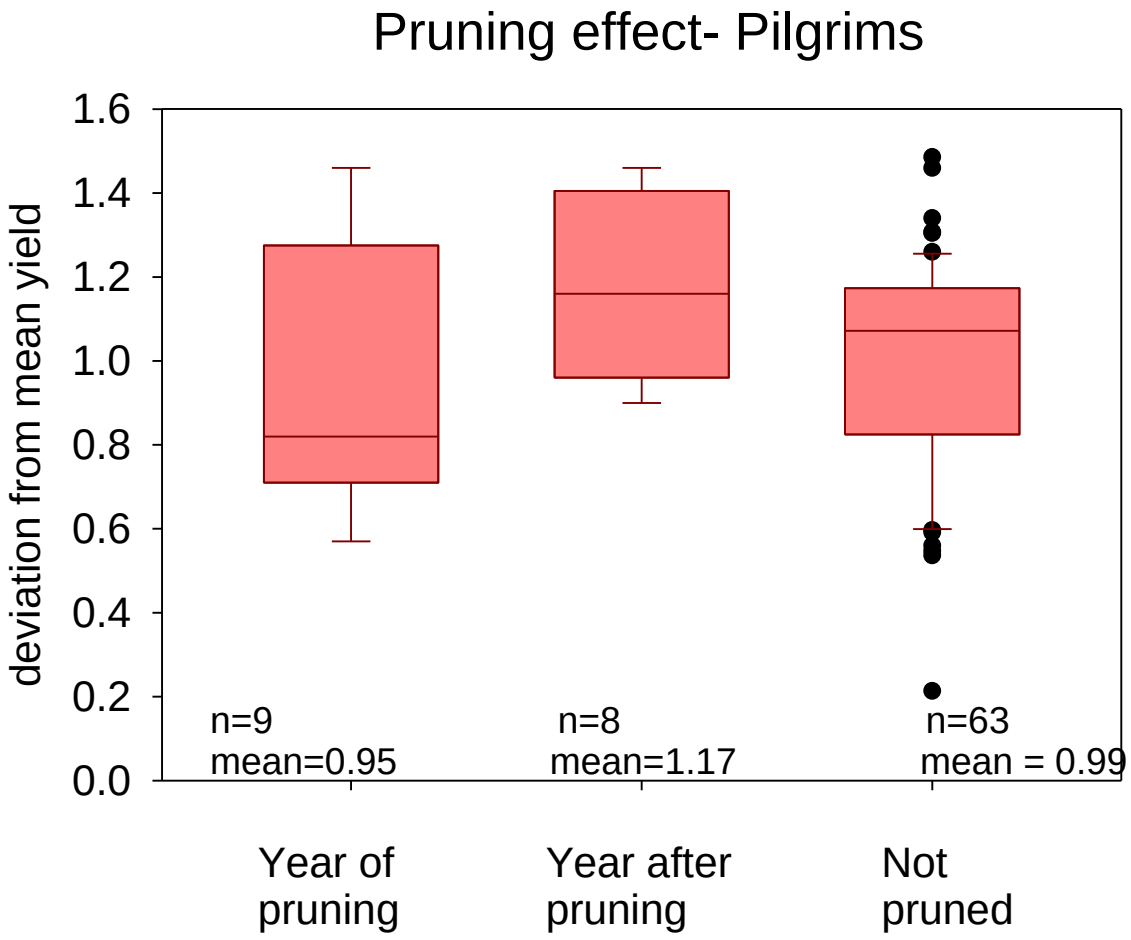
What does “big” data tell us about these practices?

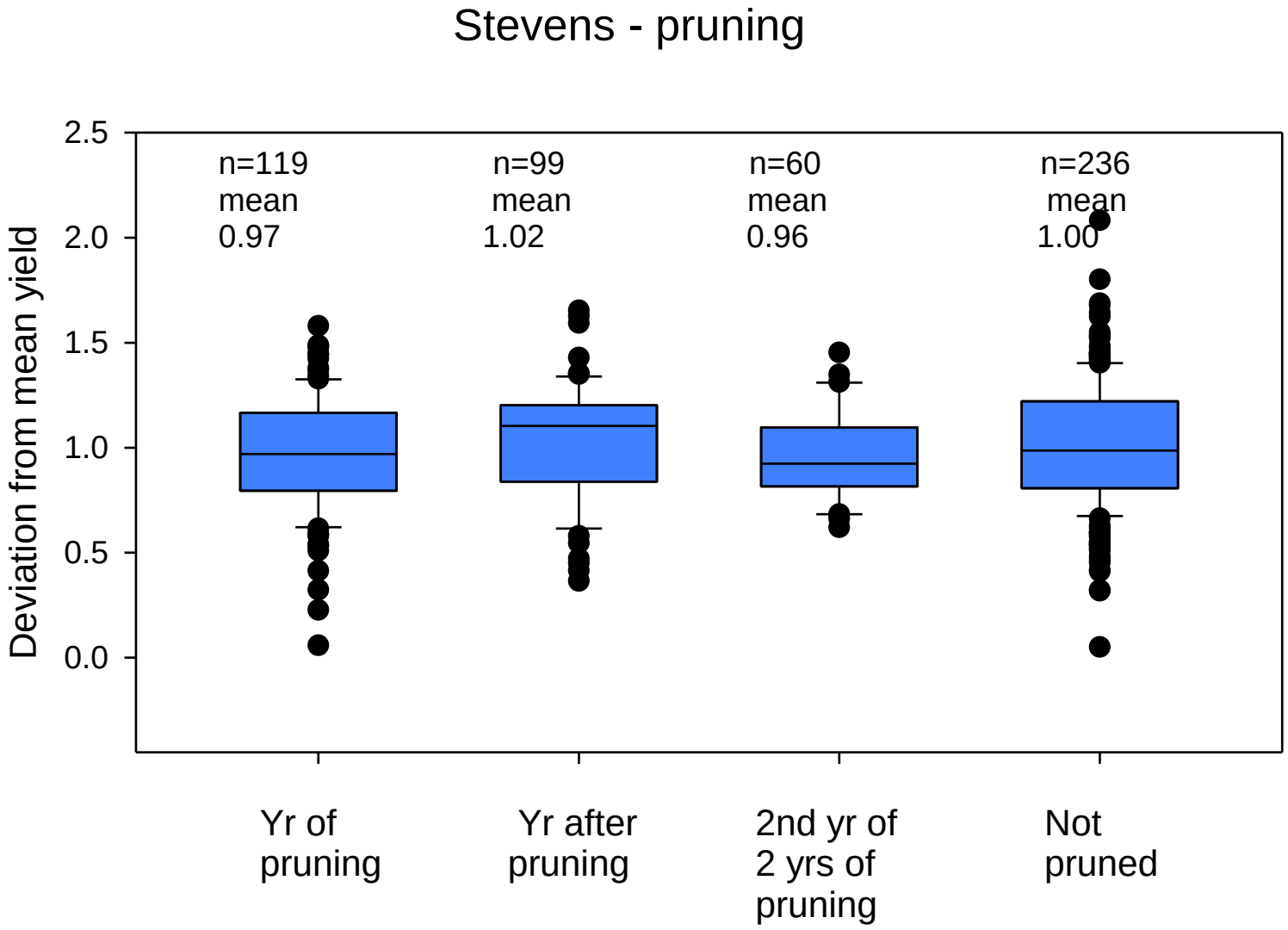
Obtained performances data for 100 beds over 12 years as a function of the frequencies that they were sanded or pruned.

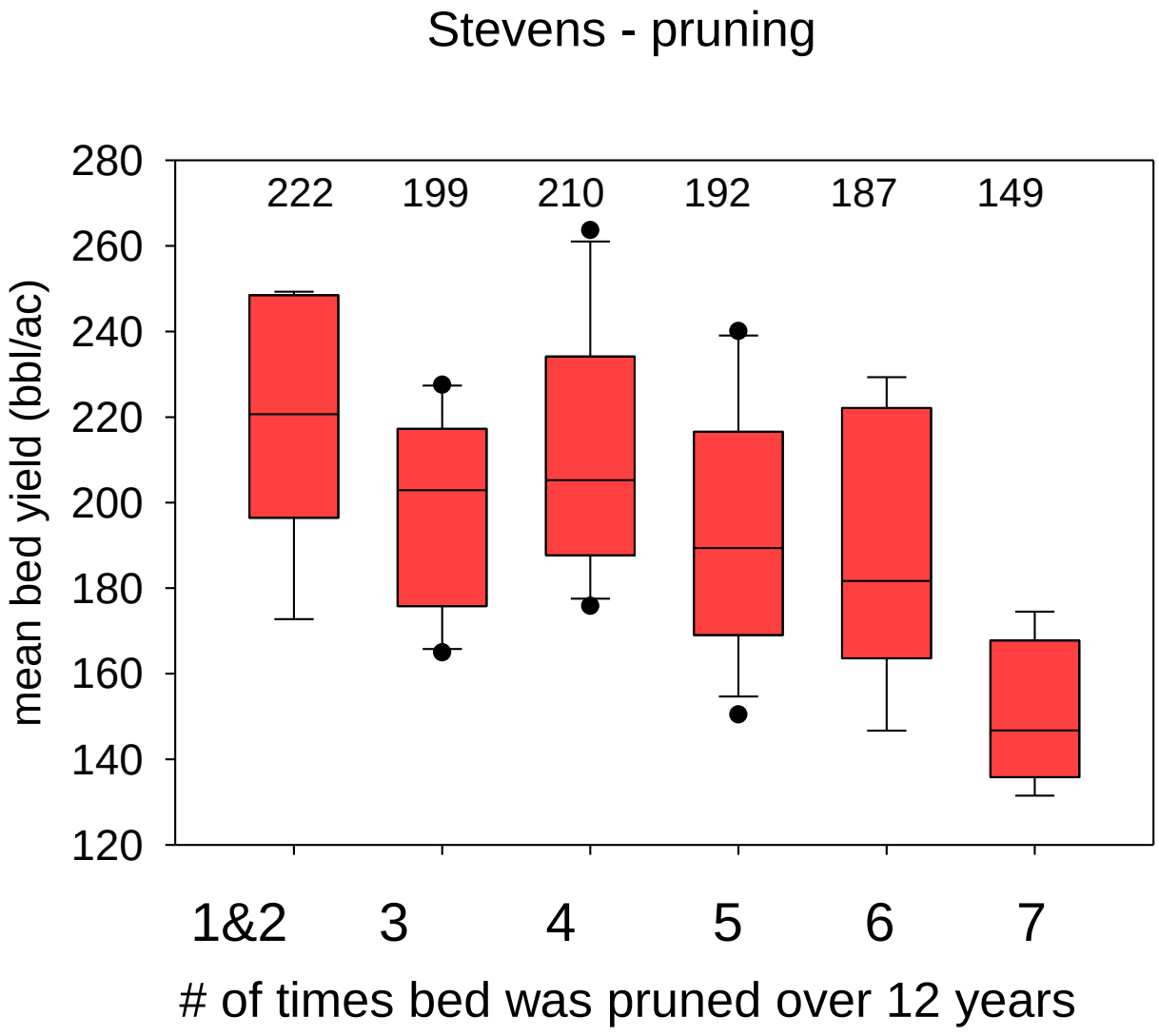
- **Tossed out off-types /low yielding beds, beds that were mowed, and beds that had other issues.**
- **Left with 8 “Pilgrim” beds and 52 “Stevens” beds**
- **Adjusted for mean yield by bed and by year to reduce variability**

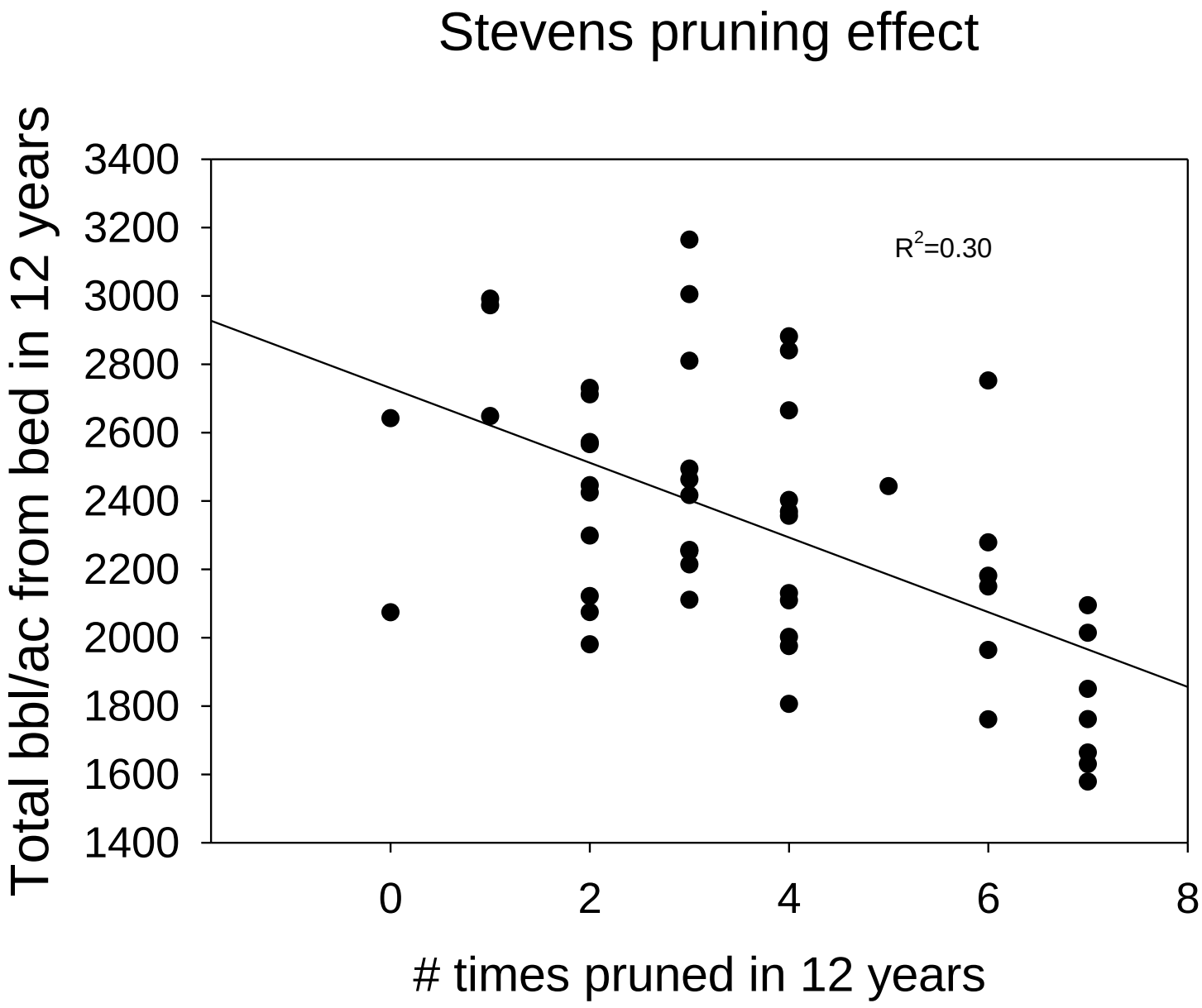
Pruning

- **Across all beds and years**
  - **yr of pruning**
  - **yr after pruning**
  - **pruned 2 yrs in row**
  - **not pruned**
- **Comparison of beds - # times bed was pruned in 12 years**


Pruning effect- Pilgrims
deviation from mean yield
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
n=9
mean=0.95
n=8
mean=1.17
n=63
mean = 0.99
Year of pruning
Year after pruning
Not pruned


Stevens - pruning
Deviation from mean yield
2.5
2.0
1.5
1.0
0.5
0.0
n=119
mean
0.97
n=99
mean
1.02
n=60
mean
0.96
n=236
mean
1.00
Yr of pruning
Yr after pruning
2nd yr of 2 yrs of pruning
Not pruned


Stevens - pruning
mean bed yield (bbl/ac)
280
260
240
220
200
180
160
140
120
222
199
210
192
187
149
1&2
3
4
5
6
7
# of times bed was pruned over 12 years


Stevens pruning effect
Total bbl/ac from bed in 12 years
3400
3200
3000
2800
2600
2400
2200
2000
1800
1600
1400
R2=0.30
0
2
4
6
8
times pruned in 12 years

Pruning – summary

- **Consistent trend for beds that are frequently pruned to have lower yield. This may or may not be direct cause and effect.**

- **Data would suggest that you should minimize pruning frequencies and/ or rigor unless you have a really good reason to do so**.

Questions