

The effect of southern highbush blueberry variety on thrips numbers and fruit injury in Florida

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Blueberries in Florida

- Rabbiteye
 - Mainly for U-pick and local sales
 - Ripen later than southern highbush
 - Blueberry gall midge, *Dasineura oxycoccana* Johnson
- Southern Highbush
 - fresh market blueberries
 - 2007 (USDA, 2008)
 - 3.54 million kg (7.8 million lbs)
 - 1,052.2 ha
 - Average of \$2.27 per kg (\$5.00 per lb)



Flower Thrips

- ~90% of thrips captured in FL blueberries are *Frankliniella bispinosa* (Morgan) (Arevalo, 2006)
- ~1mm in length
- Bristle-like wings and “punch and suck” mouthparts
- Wide host range



Thrips Injury

- Thrips injure flowers in two ways

- Feeding



- Oviposition



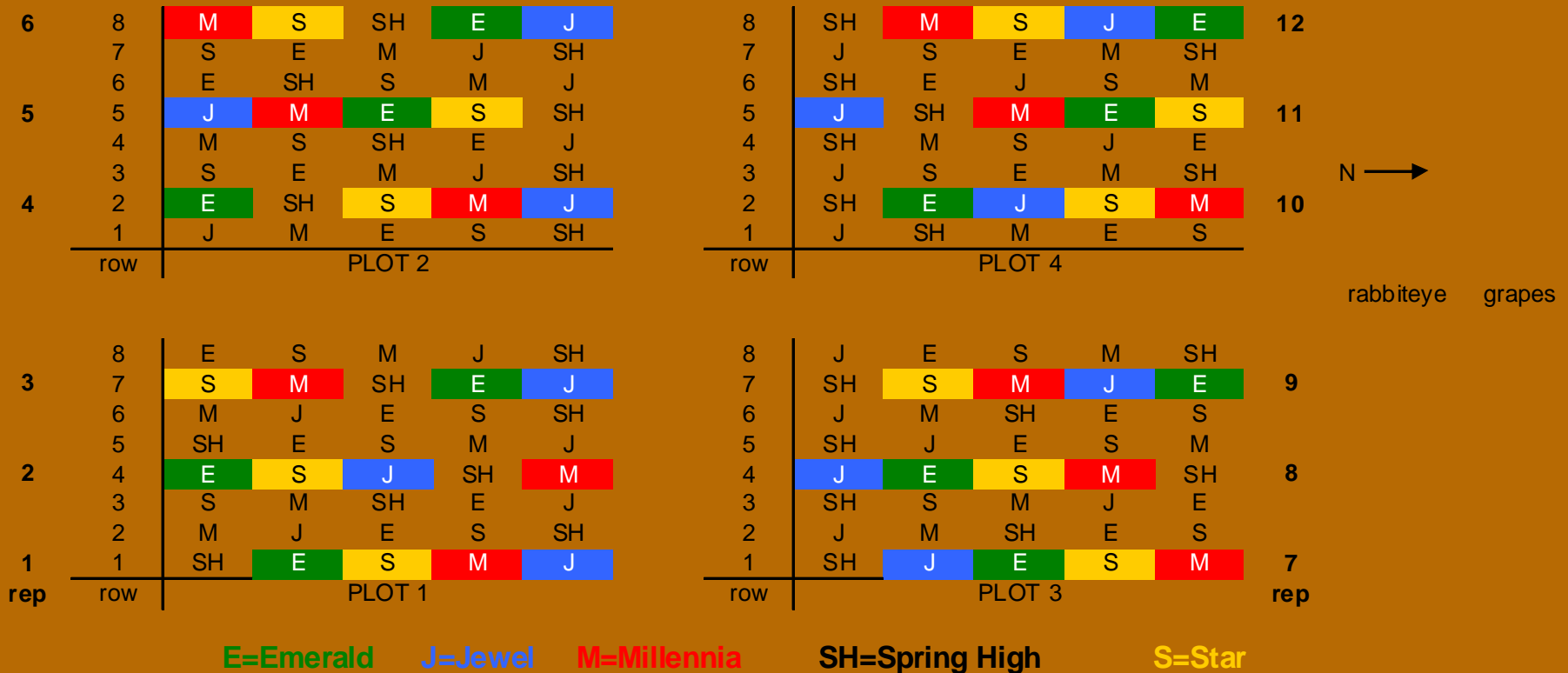
Objective

- Investigate varietal susceptibility in southern highbush blueberries (SHB)
- Hypothesis
 - Different varieties with varying characteristics will attract different numbers of thrips, which will cause different levels of injury

Our previous work has shown that on farms that plant large areas of the same variety, Emerald attracts significantly higher numbers of thrips compared with other varieties

Methods

2007



6	8	M	S	SH	E	J
	7	S	E	M	J	SH
	6	E	SH	S	M	J
	5	J	M	E	S	SH
	4	M	S	SH	E	J
	3	S	E	M	J	SH
	2	E	SH	S	M	J
	1	J	M	E	S	SH
row		PLOT 2				

6	8	SH	M	S	J	E	12	
	7	J	S	E	M	SH		
	6	SH	E	J	S	M		
	5	J	SH	M	E	S		11
	4	SH	M	S	J	E		
	3	J	S	E	M	SH		
	2	SH	E	J	S	M		
	1	J	SH	M	E	S		
row		PLOT 4						

N →

rabbiteye grapes

3	8	E	S	M	J	SH	
	7	S	M	SH	E	J	
	6	M	J	E	S	SH	
	5	SH	E	S	M	J	
	2	4	E	S	J	SH	M
	3	S	M	SH	E	J	
	2	M	J	E	S	SH	
	1	1	SH	E	S	M	J
rep	row	PLOT 1					

3	8	J	E	S	M	SH	9		
	7	SH	S	M	J	E			
	6	J	M	SH	E	S			
	5	SH	J	E	S	M			
	2	4	J	E	S	M		SH	8
	3	SH	S	M	J	E			
	2	J	M	SH	E	S			
	1	1	SH	J	E	S		M	7
rep	row	PLOT 3							

Methods

2008

strawberries

6	8	M	S	SH	E	J	
	7	S	E	M	J	SH	
5	6	E	SH	S	M	J	
	5	J	M	E	S	SH	
	4	M	S	SH	E	J	
4	3	S	E	M	J	SH	
	2	E	SH	S	M	J	
	1	J	M	E	S	SH	
	row	PLOT 2					

6	8	SH	M	S	J	E	12
	7	J	S	E	M	SH	
	6	SH	E	J	S	M	
5	5	J	SH	M	E	S	11
	4	SH	M	S	J	E	
4	3	J	S	E	M	SH	10
	2	SH	E	J	S	M	
	1	J	SH	M	E	S	
	row	PLOT 4					

N →

rabbiteye grapes

3	8	E	S	M	J	SH	
	7	S	M	SH	E	J	
	6	M	J	E	S	SH	
2	5	SH	E	S	M	J	
	4	E	S	J	SH	M	
1	3	S	M	SH	E	J	
	2	M	J	E	S	SH	
	1	SH	E	S	M	J	
	row	PLOT 1					

3	8	J	E	S	M	SH	9
	7	SH	S	M	J	E	
	6	J	M	SH	E	S	
2	5	SH	J	E	S	M	8
	4	J	E	S	M	SH	
1	3	SH	S	M	J	E	7
	2	J	M	SH	E	S	
	1	SH	J	E	S	M	
	row	PLOT 3					

E=Emerald

J=Jewel

M=Millennia

SH=Spring High

S=Star

Each letter represents 5 plants

FENCE

Methods

- White sticky traps
 - A white sticky trap was hung from the middle bush of each variety
 - 48 total in 2007
 - 36 total in 2008
- Flower Samples
 - Flower samples were collected weekly from the plant each sticky trap was hung from
 - 10 in 2007
 - 15 in 2008



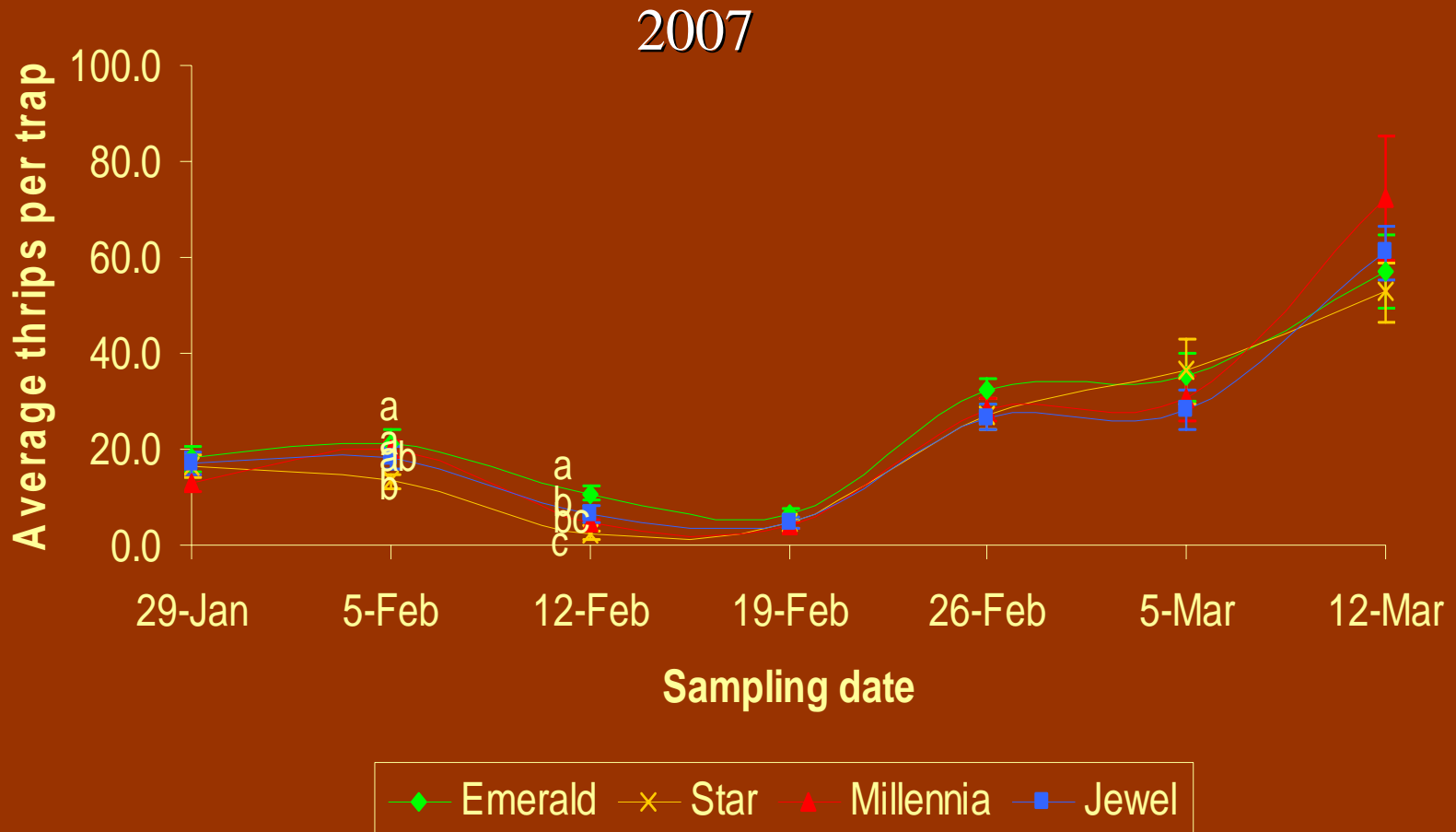
Methods



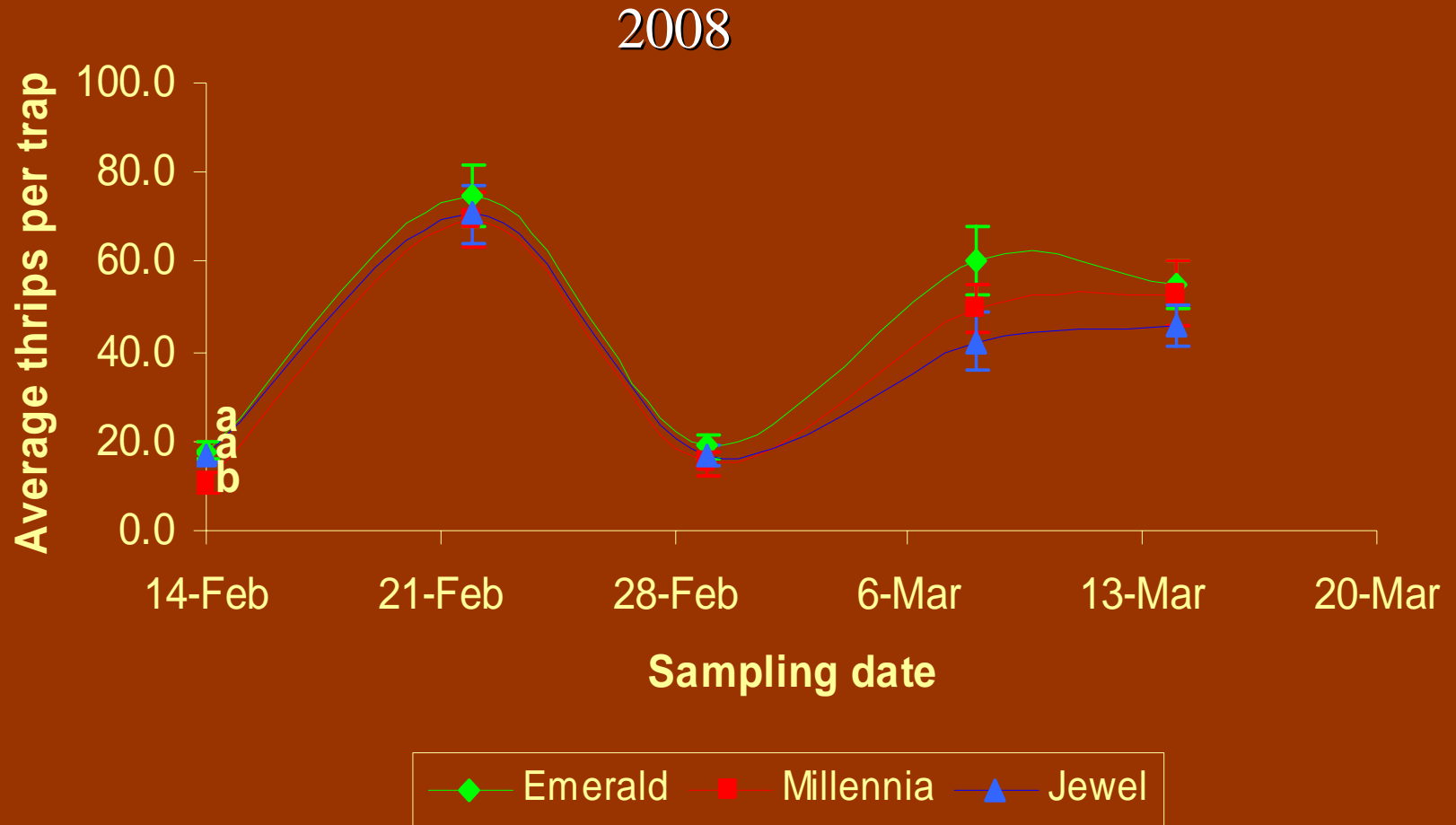
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- Fruit Injury Sampling
 - 2007: 10 fruit from each of 3 plants over a period of 3 weeks
 - 2008: 30 fruit from each of 3 plants one time
 - A total of 90 fruit both years

Results: Sticky Traps

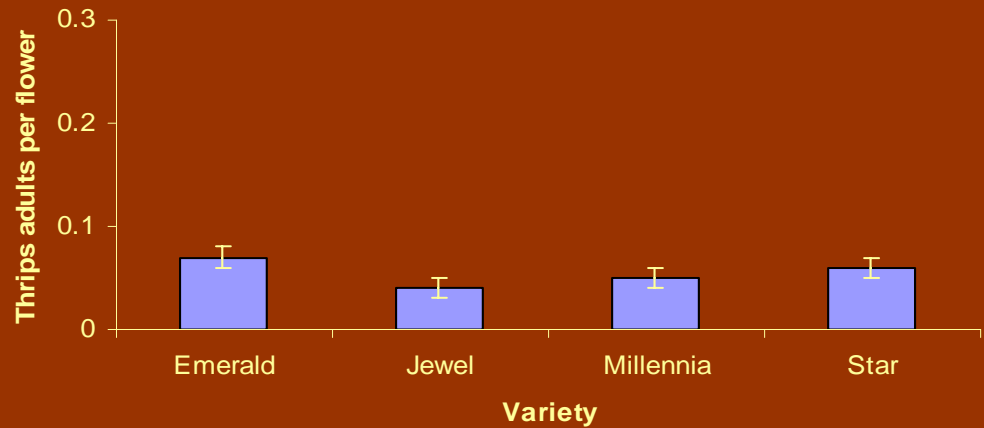
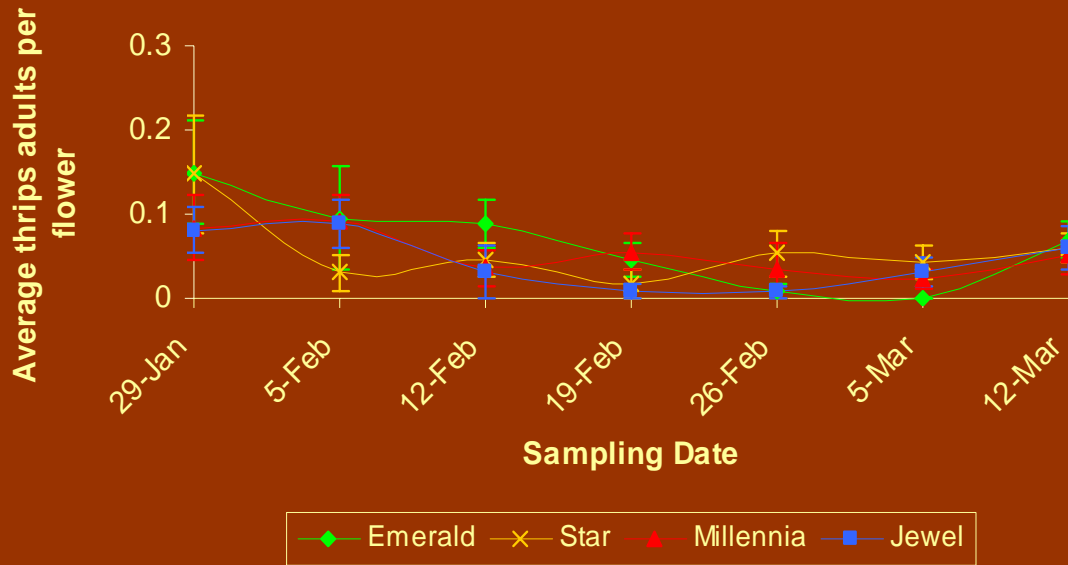


Results: Sticky Traps

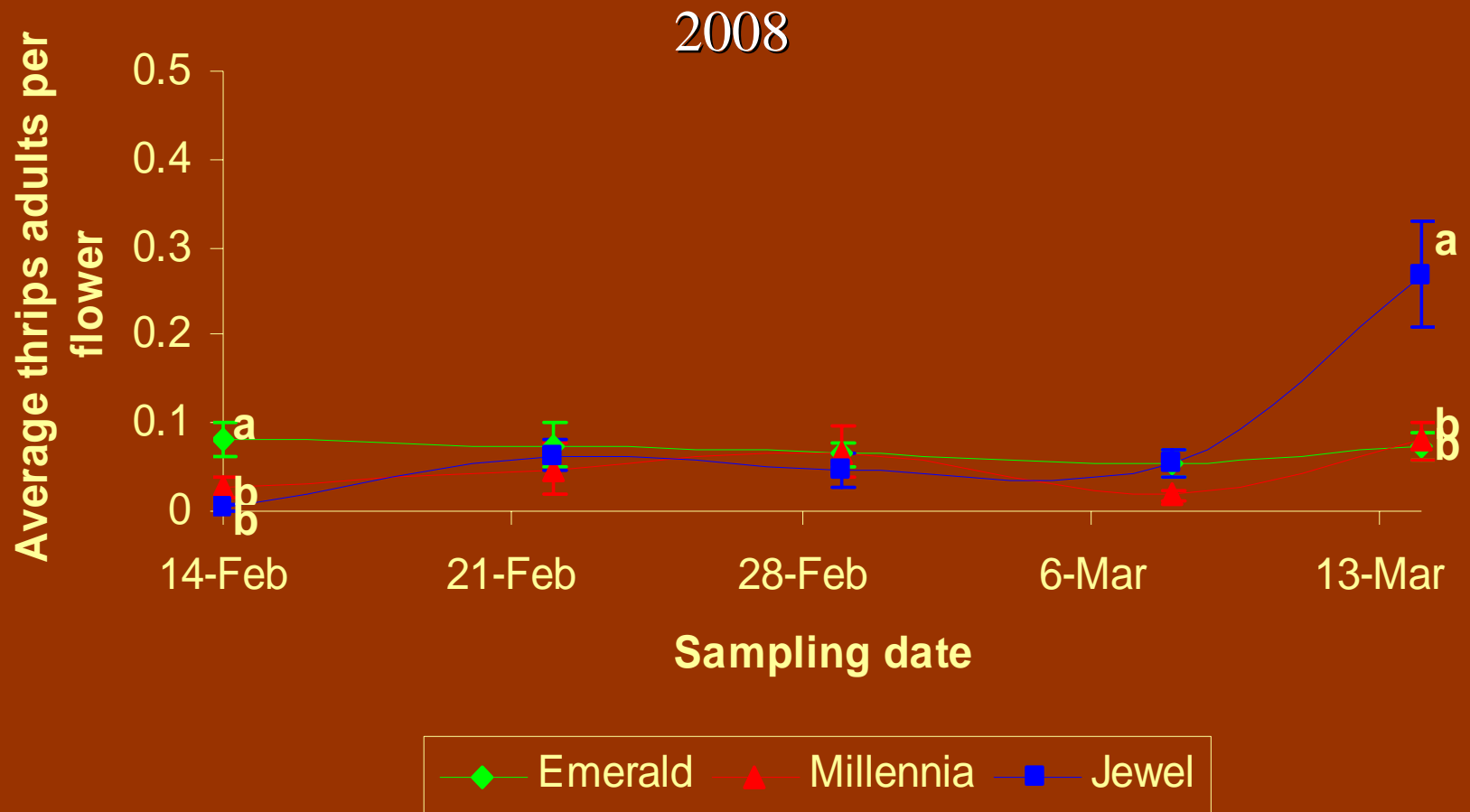


Results: Adults per Flower

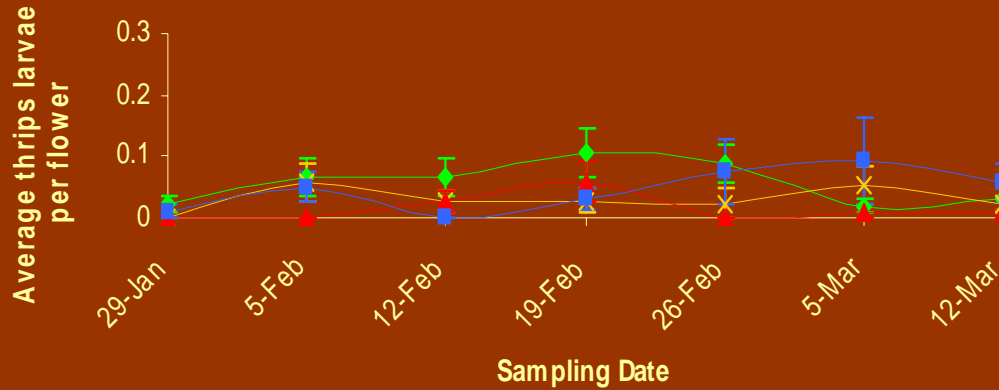
2007



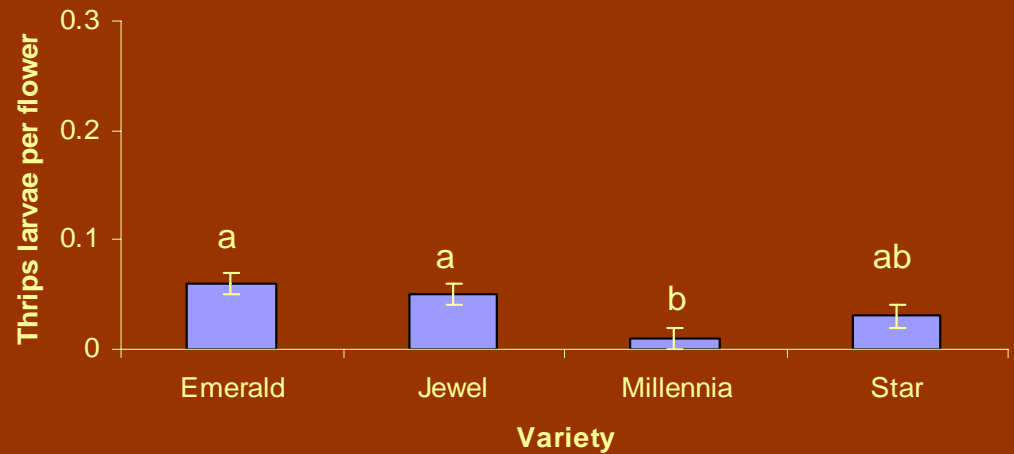
Results: Adults per Flower



Results: Larvae per Flower

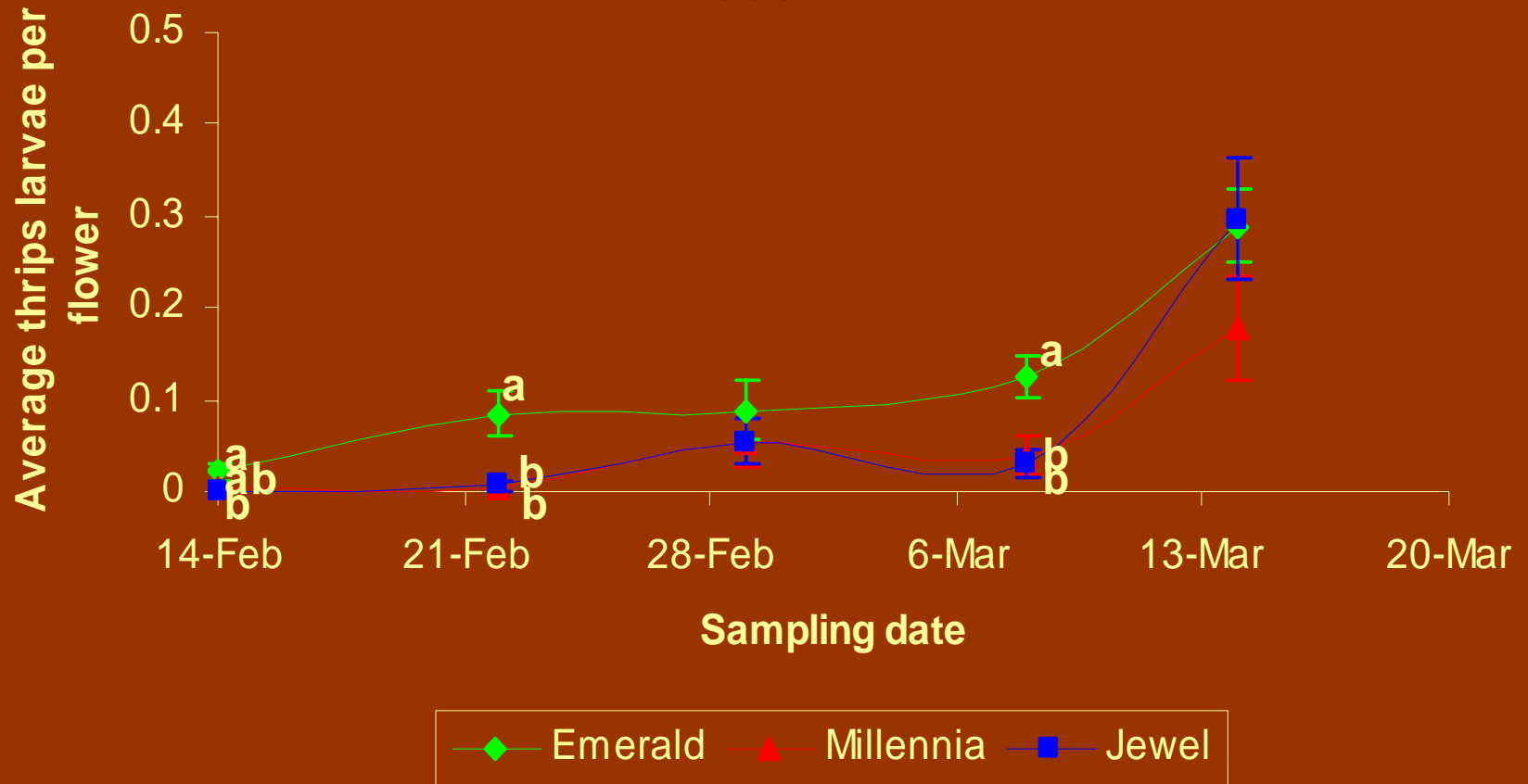


2007

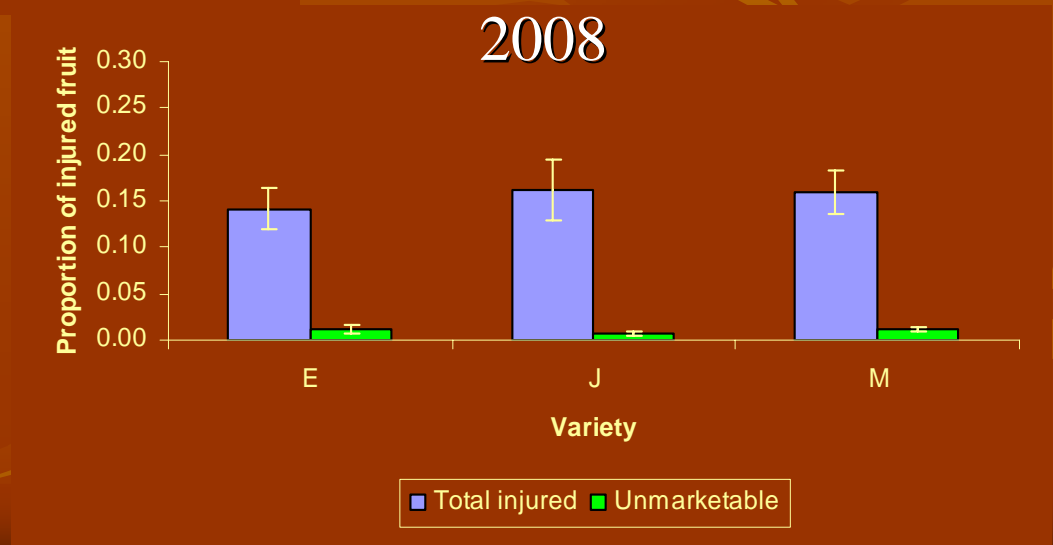
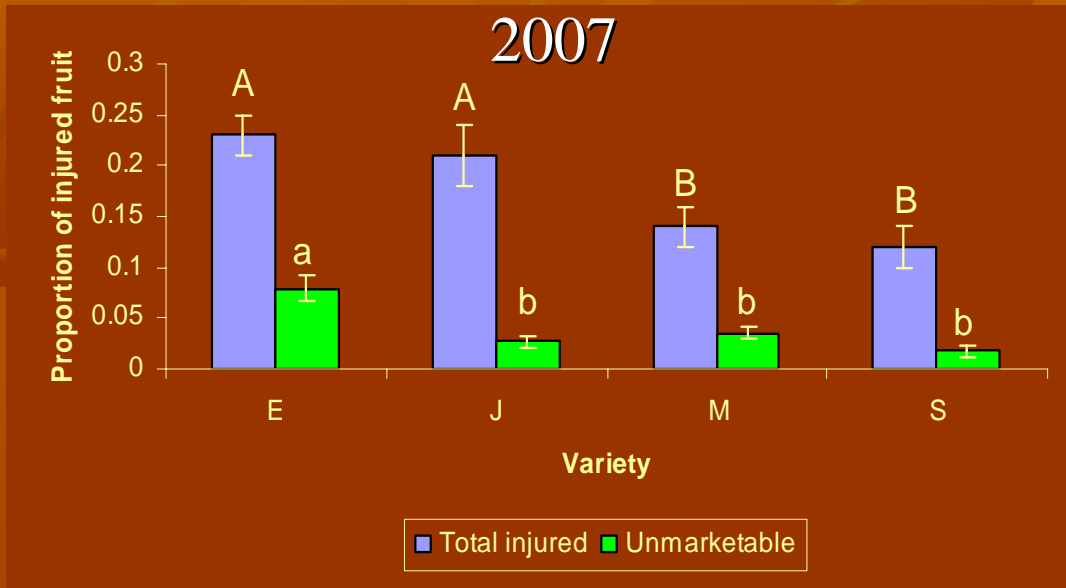


Results: Larvae per Flower

2008



Results: Fruit Injury



Summary

- In both years there were significantly more thrips larvae per flower in the Emerald variety compared with the other varieties
- There were few differences in thrips per trap and thrips adults per flower among varieties in both years
- In 2007, Emerald had a significantly higher proportion of unmarketable fruit than the other varieties and a significantly higher proportion of total injured fruit than Millennia and Star
- There were no differences in the proportion of injured or unmarketable fruit among varieties in 2008

The Bottom Line

- Interplanting southern highbush blueberry varieties evenly among each other may reduce the formation of ‘hot spots’ of flower thrips on a farm



Acknowledgements

- Dr. Oscar Liburd
- Dr. Joseph Funderburk
- Dr. Robert McSorley
- Dr. Sabine Grunwald

- Citra PSREU staff

- Small Fruit and Vegetable
IPM laboratory staff and
students



Questions?

