

APHID DAMAGE AND CONTROL

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Effects of Foliage Injury on Pecan Production Parameters

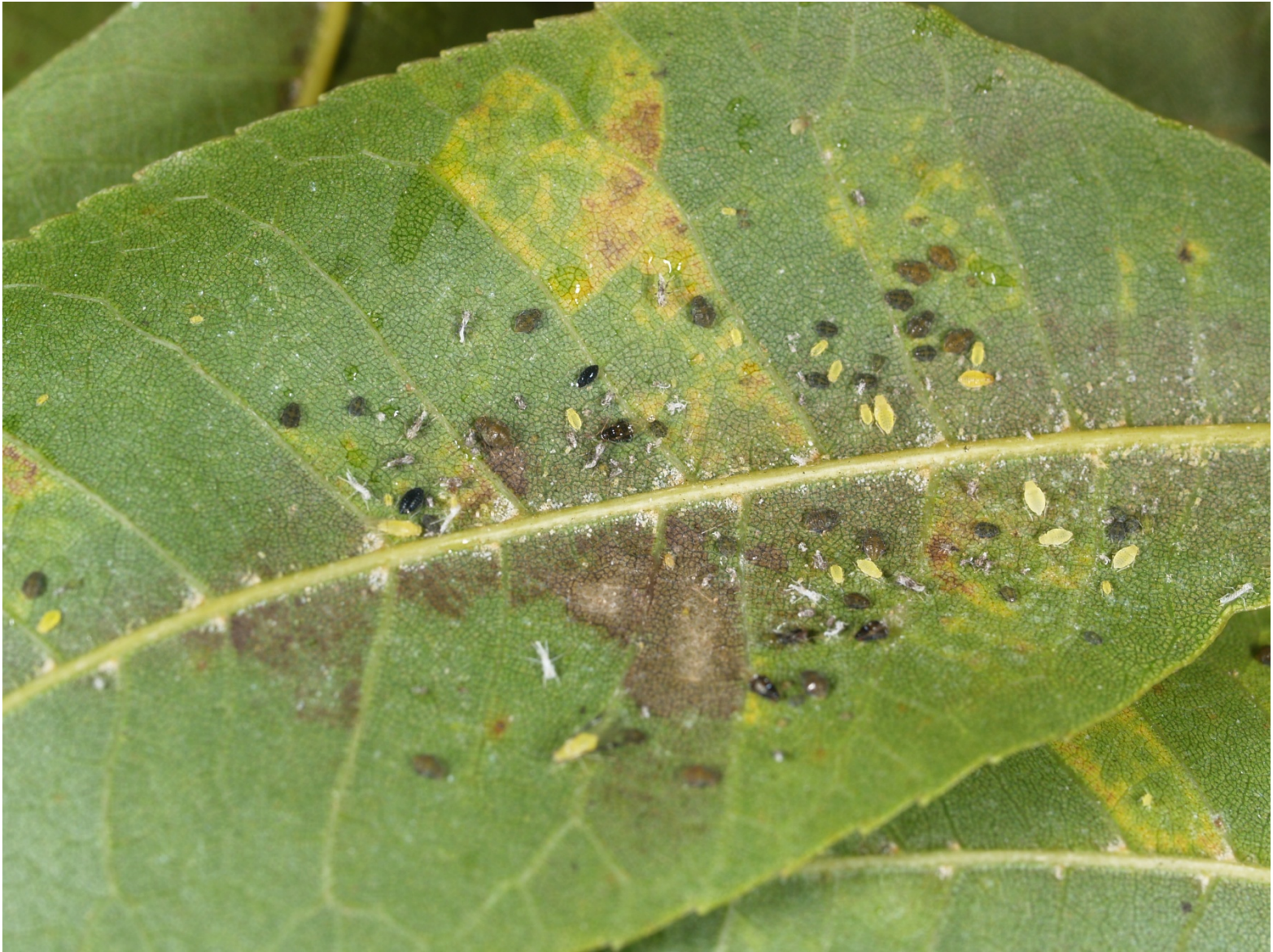
Experiments demonstrate that severe long-term effects by leaf cell sucking arthropods on orchard tree productivity extend at least 2 years and probably much longer after return to control of infestation through chemical intervention.” – M. M. Barnes 1978



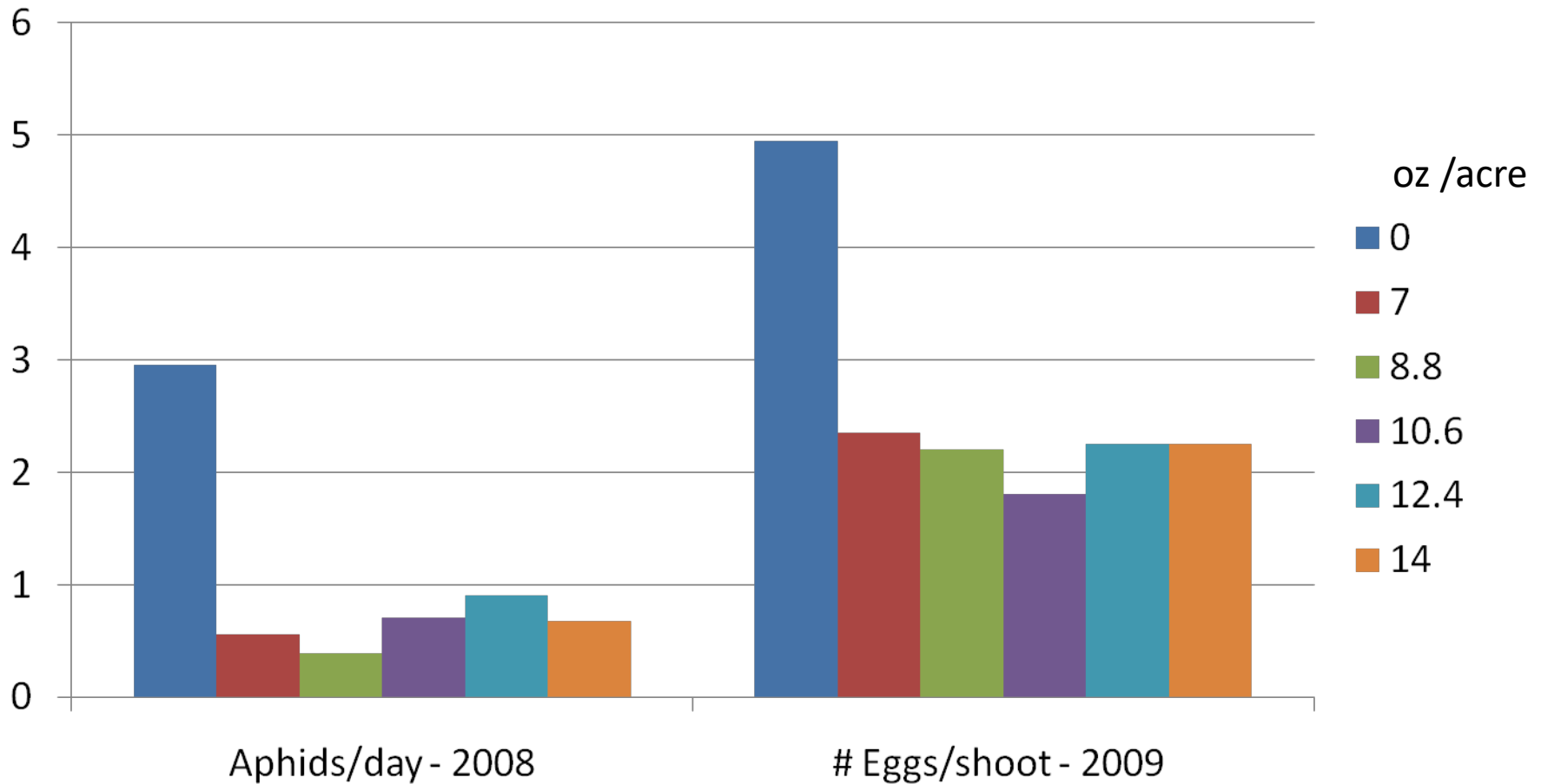
“Yellow” Aphid Injury Types

- Sooty mold reduces light penetration to the leaf surface by 25-50% and this interferes with photosynthesis
- Stylets of the aphids injure the vascular system of the leaf and cause it to shed.
- Photosynthate production is reduced by aphid feeding and the chlorophyll concentration in the affected leaflets is reduced.

Recent Data



Aphid carryover in Trees Treated with Admire Pro (applied adjacent to the irrigation emitters in mid-June 2008)



2008 Systemic Emitter Adjacent Aphidicide Field Trials

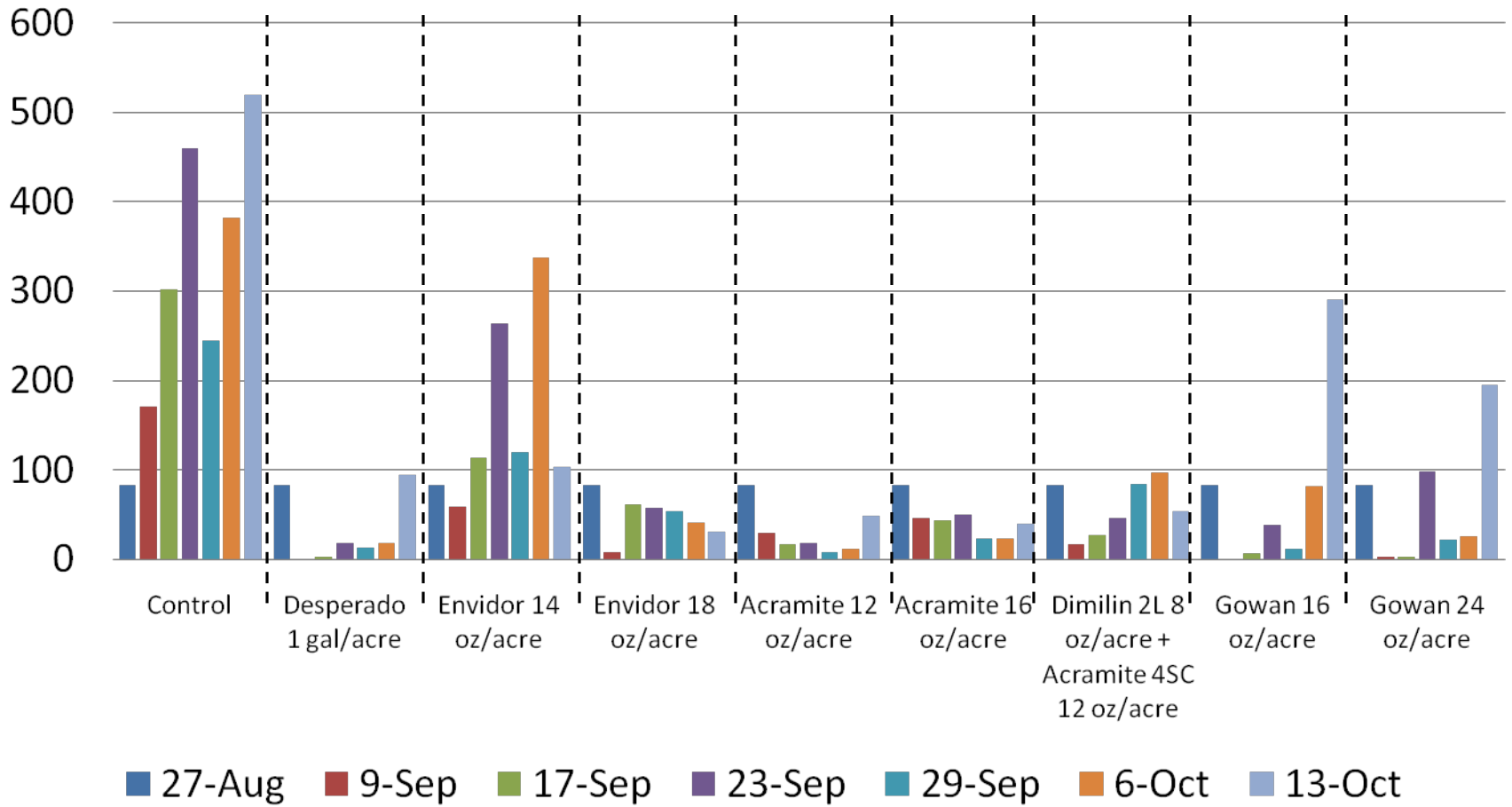
Treatment	Nut Yield			
Amt form/acre	(lbs/tree)	% Standard	# Nuts/lb	% kernel
Control	92.4 a	65 c	51.4 a	59.4 a
MANA AG 16 oz	96.4 a	87 b	50.8 a	55.7 b
Movento 9 oz	98.7 a	79 b	49.4 a	58.2 a
Movento 12 oz	96.5 a	100 a	52.2 a	57.8 a
Admire Pro 7 oz	93.4 a	83 b	58.2 a	57.2 ab
Admire Pro 14 oz	91.2 a	79 b	52.2 a	57.5 ab

MANA AG = a 4 lbs ai/gal formulation of imidacloprid - Mana Ag Blend 8412-94B

Means in the same column and followed by the same letter are not significantly different (ANOVA, LSD Test $P < 0.05$)

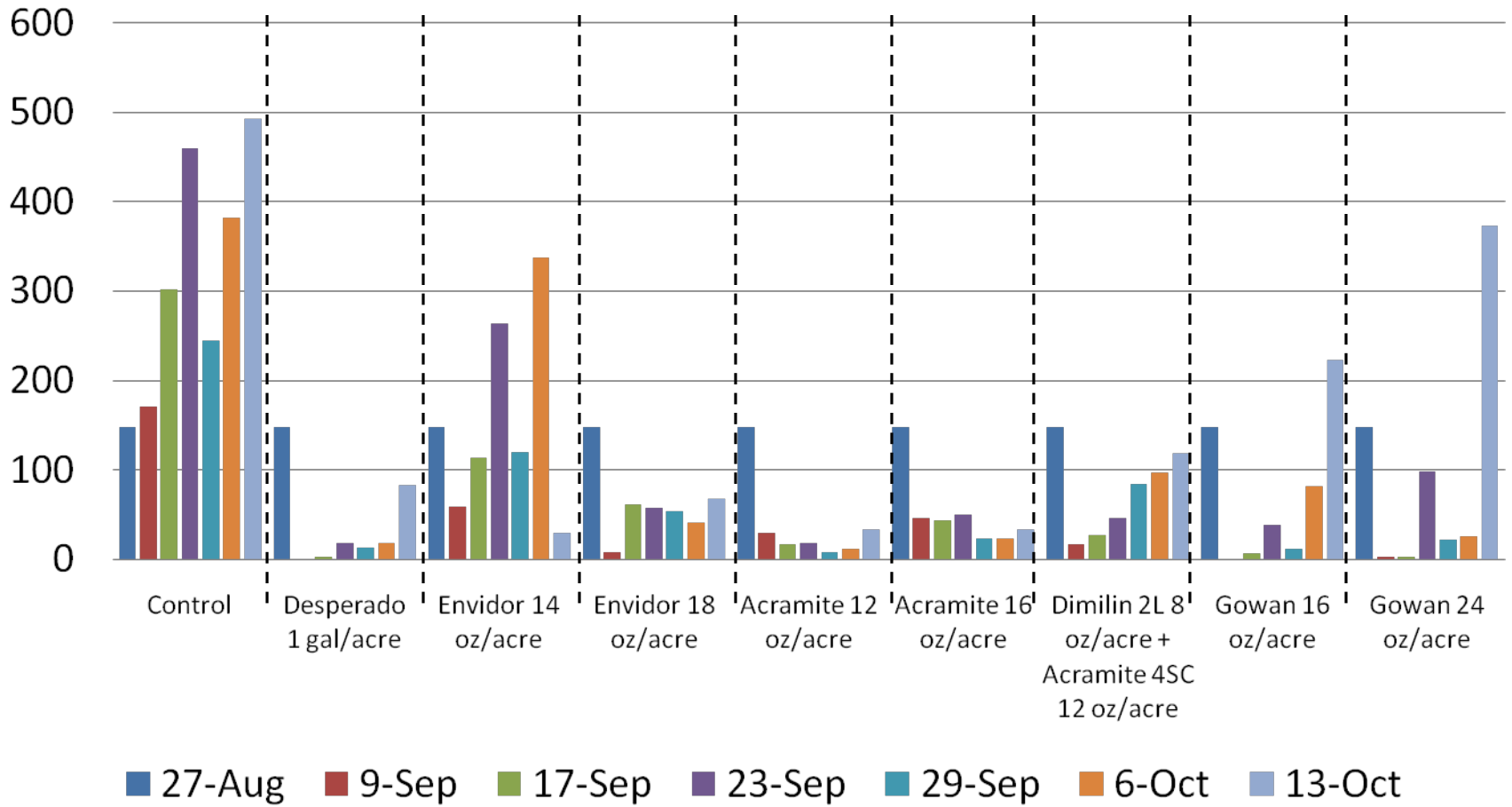
Pecan Leaf Scorch Mite Control 2009

Pecan leaf scorch mite adults and nymphs per 20 leaves



Pecan Leaf Scorch Mite Control 2009

Pecan leaf scorch mite eggs per 20 leaves

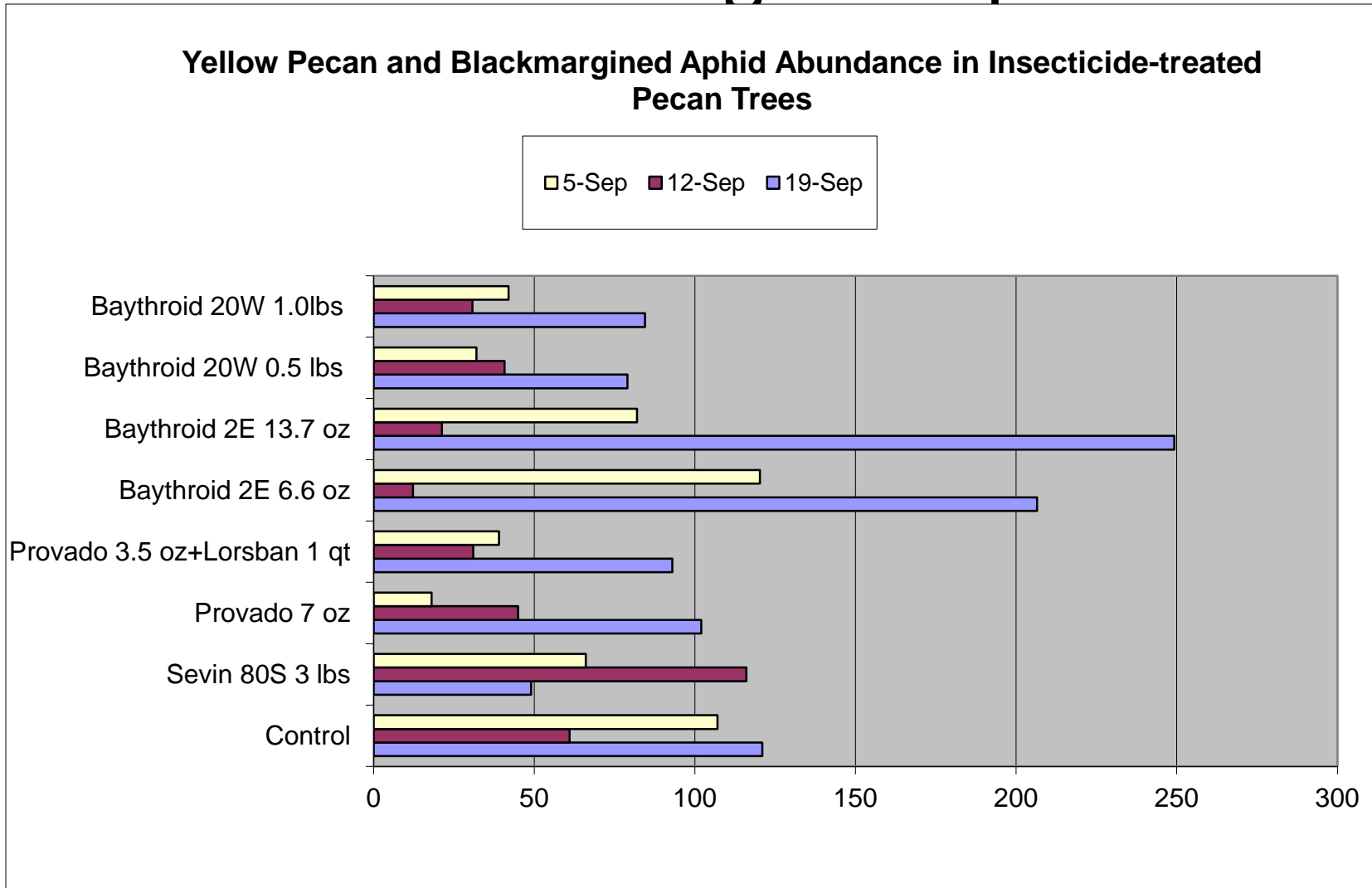


Mean Separation

Nut Yield and Quality - 2009

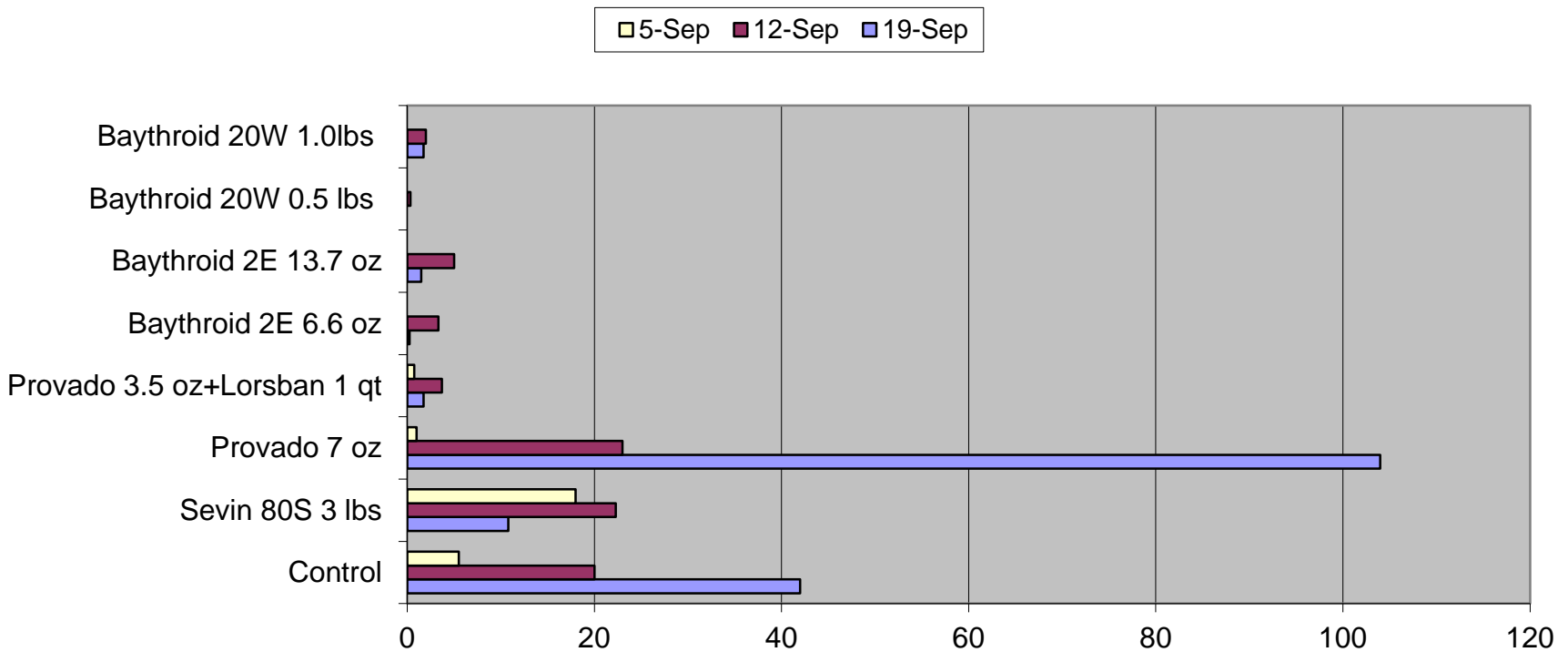
Treatment	Yield (lbs/tree)	# nuts/lb	% standard color	% kernel
Control	77.2 a	59.8 a	59.4 c	46.8 b
Desperado 1 gal/acre	82.2 a	51.8 b	88.6 a	51.4 a
Envidor 14 oz/acre	90.8 a	57.4 a	87.2 a	50.0 ab
Envidor 18 oz/acre	105.8 a	56.8 a	81.6 a	50.2 ab
Acramite 12 oz/acre	84.8 a	59.0 ab	67.4 bc	45.2 b
Acramite 16 oz/acre	78.2 a	59.2 ab	71.0 b	46.0 b
Dimilin 2L 8 oz/acre + Acramite 4SC 12 oz/acre	97.0 a	57.2 a	71.8 b	48.6 ab
Gowan 16 oz/acre	84.4 a	54.6 b	79.8 ab	52.0 a
Gowan 24 oz/acre	105.8 a	54.4 b	88.2 a	51.2 a

Baythroid did not control yellow pecan and blackmargined aphids



Baythroid and Lorsban + Provado did control black pecan aphids

Black Pecan Aphid Abundance in Insecticide-treated Pecan Trees



Conclusions

- The impact of injury from feeding by leaf sucking aphids and mites on yield of tree crops is usually not apparent during the first season of uncontrolled feeding.
- During the second and third seasons the pecan trees can be thrown into a period of lower or no production. In fact, the trees at Plains in plots without aphid and mite controls were non-productive for at least four years after the injury.



Conclusions

- Experiments with pecan where controls applied for multiple seasons against low aphid population levels (Stone and Watterson 1981; Wood, Payne and Smith 1995) have insignificant or no differences in yield.
- Experiments with pecan where controls applied for multiple seasons against high aphid population levels (Tedders and Wood 1985, Dutcher et al 1984) have significant differences in yield 2 and 3 seasons after the onset of uncontrolled population levels.

Conclusions

- Similar tree response to aphid and mite injury occur in almond and walnut trees.
- Insecticides for controls of black pecan aphid have to be applied or the trees will lose foliage soon after an infestation ensues.
- Goal is to maintain at least three chemical aphid controls for black pecan aphid that will also control yellow pecan and black-margined aphids.

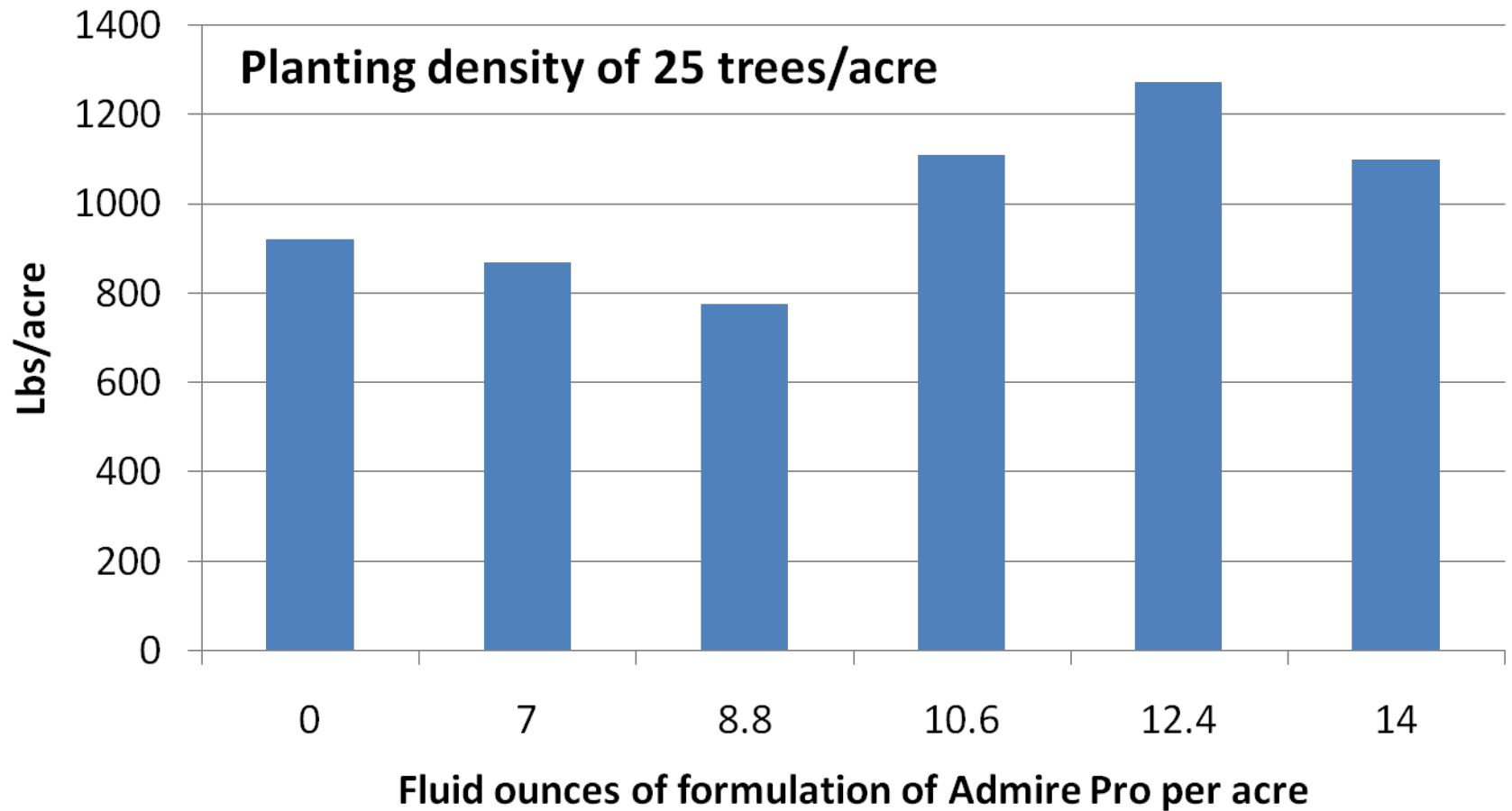
AVAILABLE CONTROLS

- Nicotinyl products
 - Includes imidacloprid, Centric, Assail
- Movento
- Fulfill
- Esteem
- Nexter
- Desperado

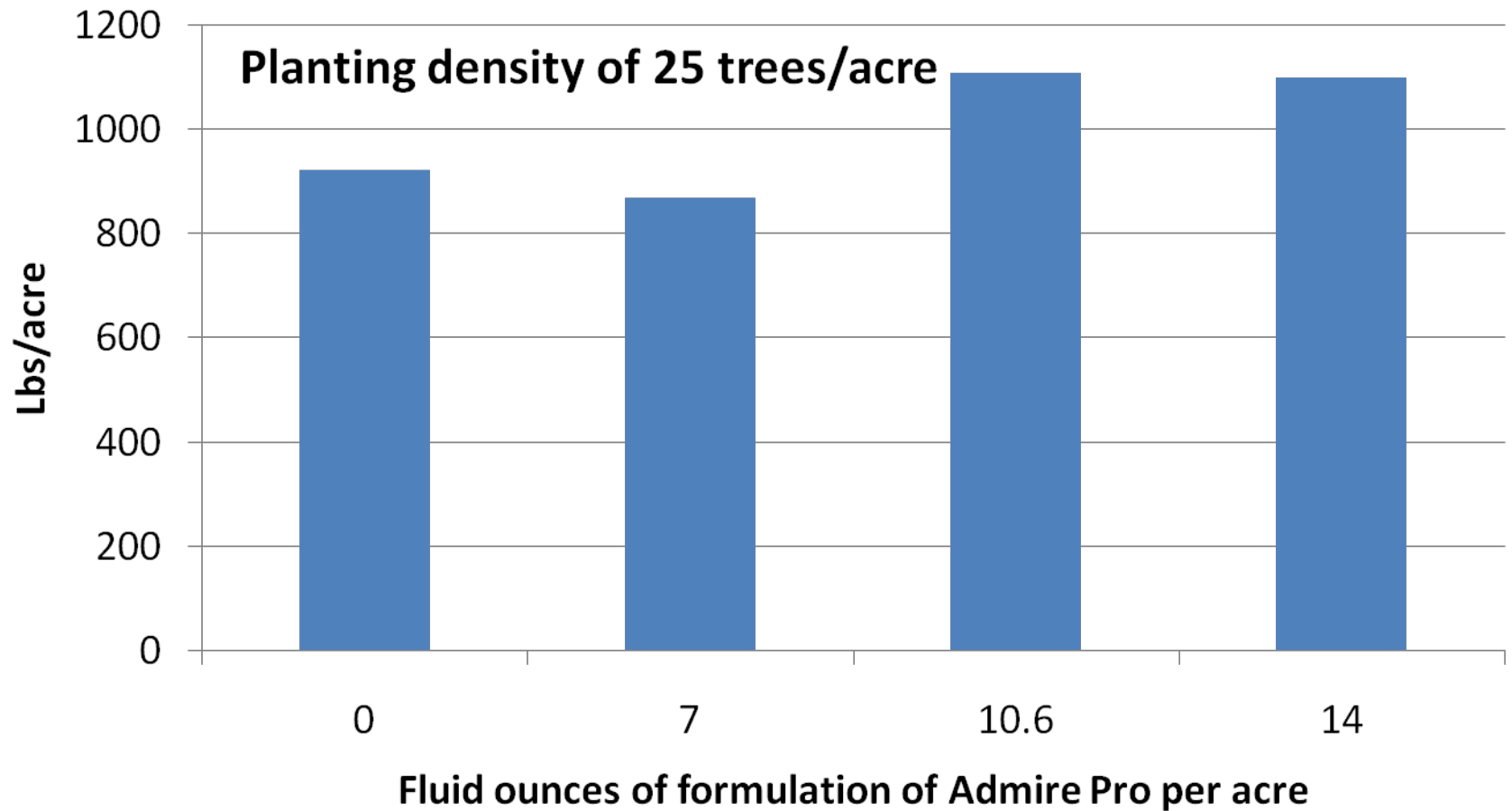
SO, WHAT?

- Rule of thumb: YPA/BMA threshold of >20 aphids per compound leaf early season, >50 after mid August
- Treat black aphids when nymph clusters indicate establishment
- Avoid broad-spectrum insecticides if possible, especially early season
- Rotate!

Yield in Pecan Trees Treated with the Indicated Rate of Admire Pro - 2008



Yield in Pecan Trees Treated with the Indicated Rate of Admire Pro - 2009



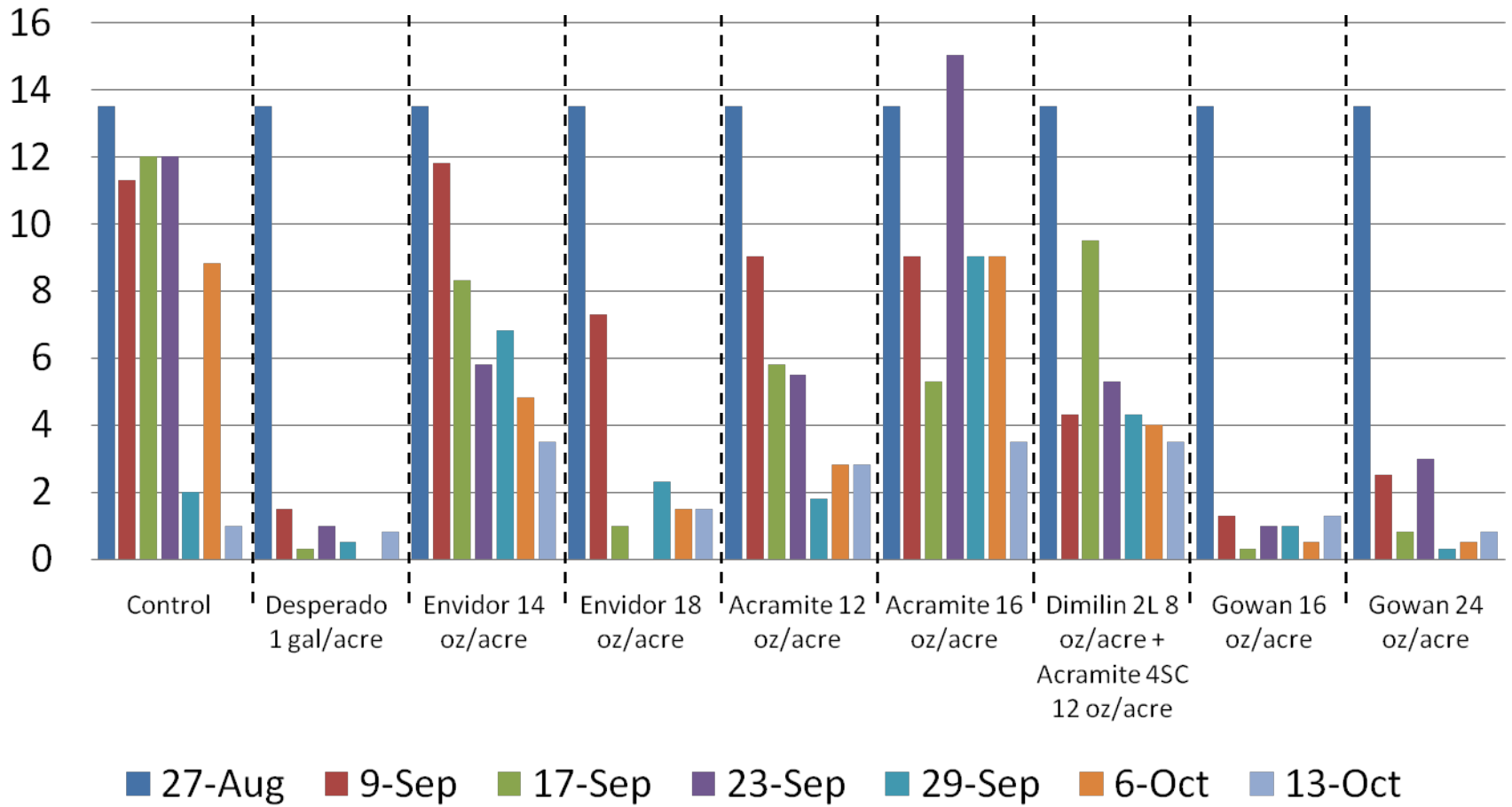
Analysis of Yield Data

Source of Variation	df	SS	MS	F	P
Treatment	5	677,521	135,504	1.61	0.205
Error	18	1,507,247	83,736		
Total	23	2,184,768			

Rate of Admire	0.0	7.0	8.8	10.6	12.4	14.0
Mean	922	869	776	1109	1273	1101
Std. Dev.	366	124	370	326	254	213
C.V. (%)	40	14	48	29	20	19

Phytoseiid Predator Abundance 2009

Predatory mites per 20 leaves



Nut Yield and Quality - 2009

Various parameters see axis labels

