

Impact of Insecticides and Sanitation on NOW Damage – Kern County

Bradley S. Higbee

Paramount Farming Co.

Bakersfield, CA

bradh@paramountfarming.com

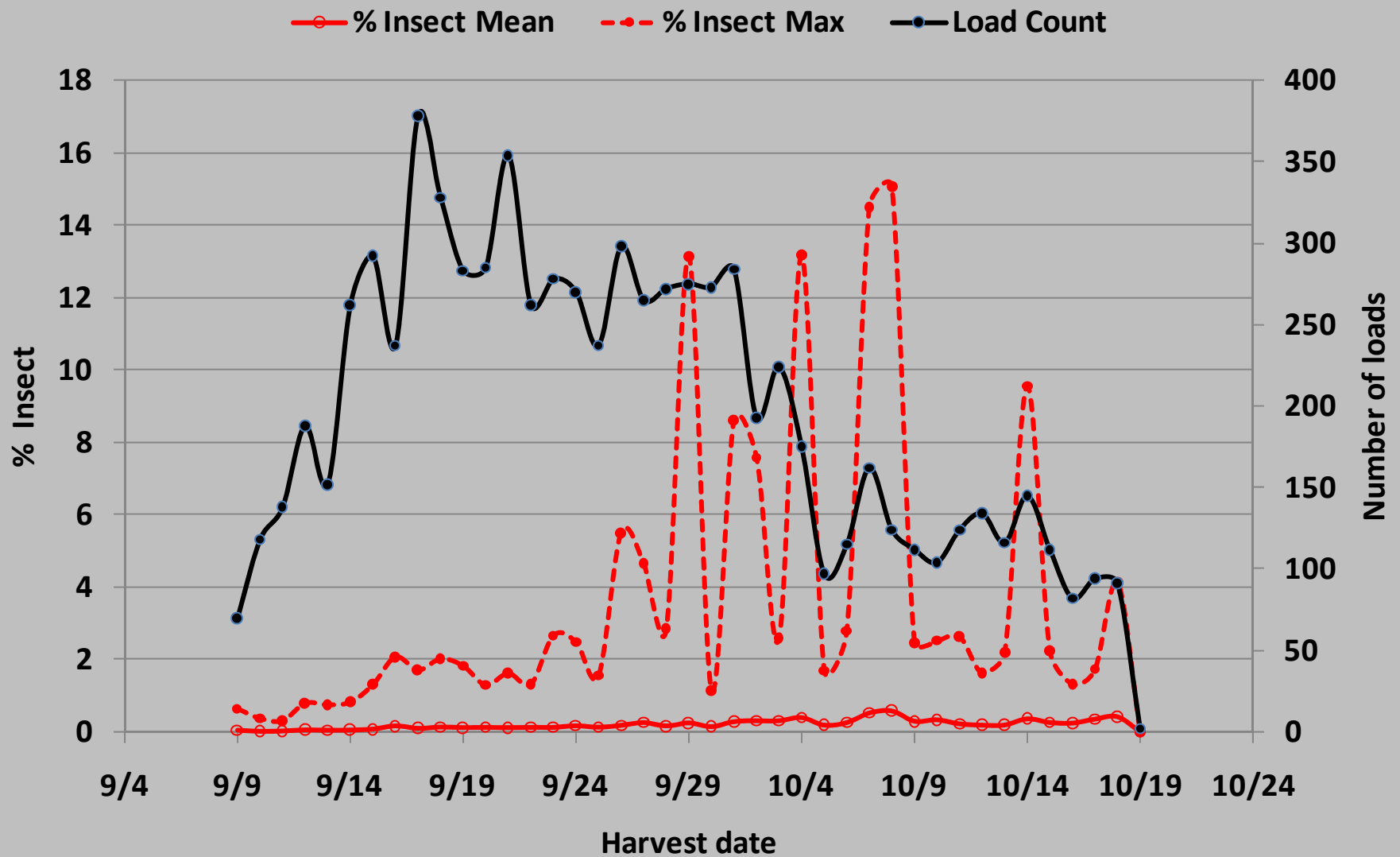
Pist Day Outline

8:50 & 11:20

- Kern County
- Sanitation
- Insecticides vs NOW
- ~~Spray coverage~~
- Pheromone lure

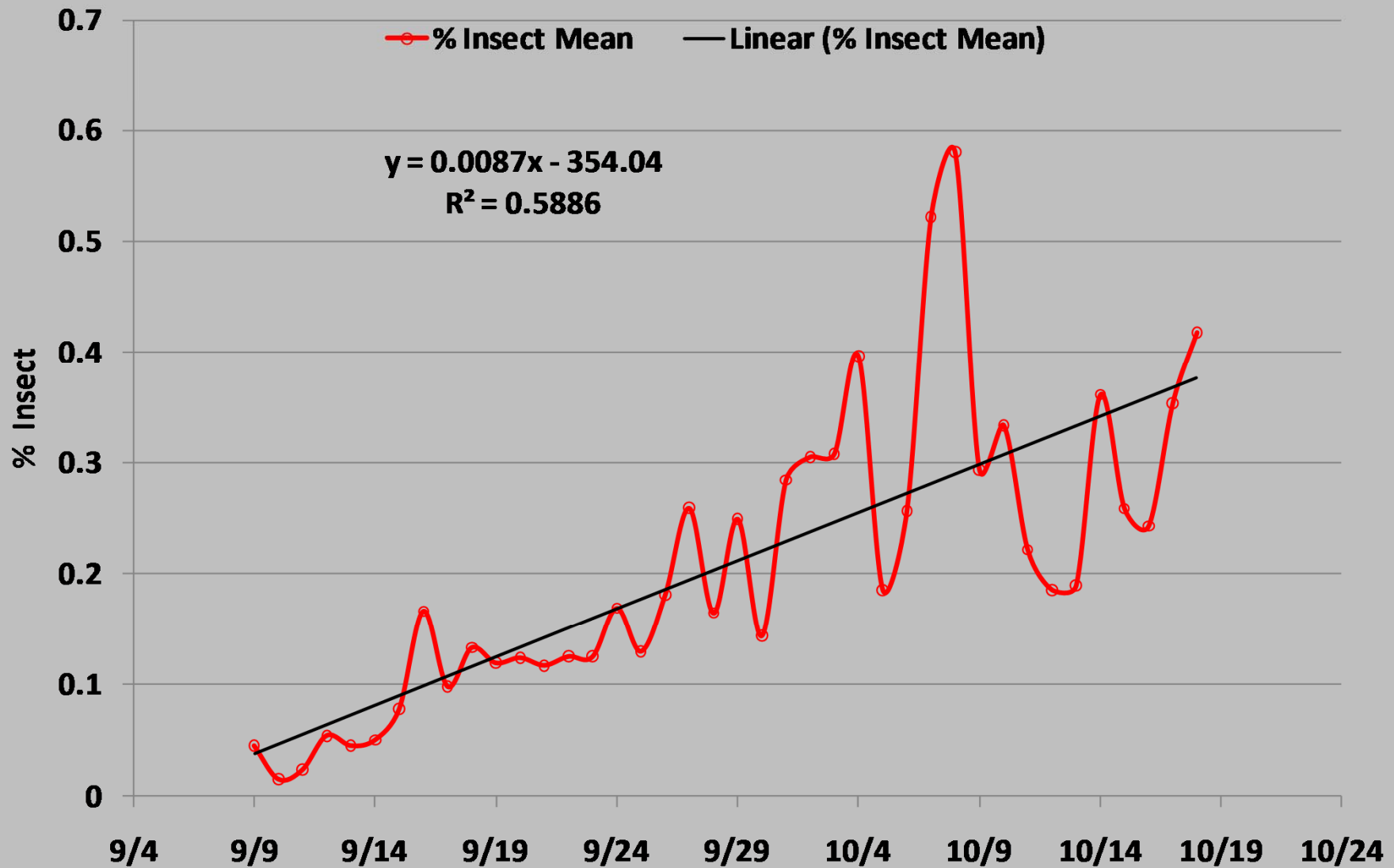
Kern County - 2011

8000 loads



Kern County - 2011

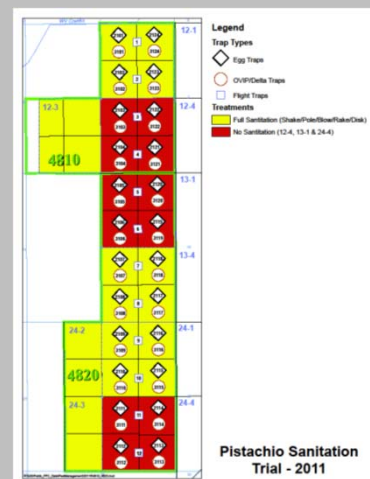
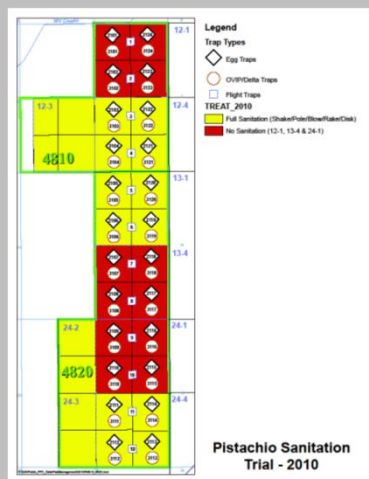
8000 loads



Sanitation

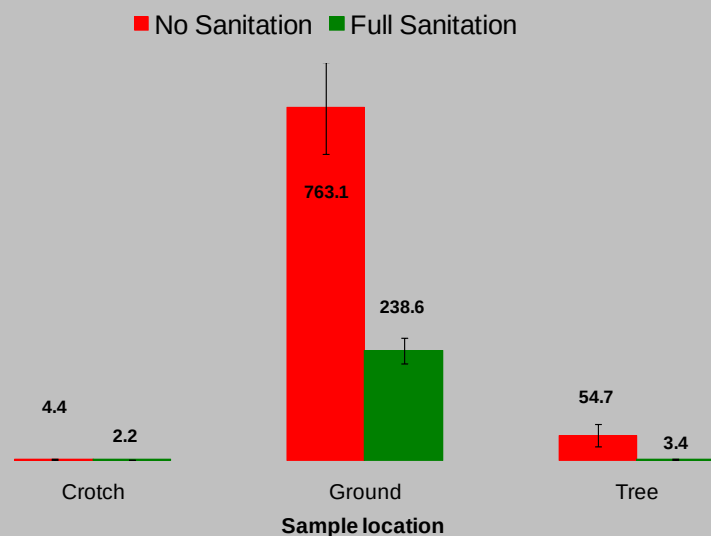
Although not able to achieve mummy levels found in almonds, reduction in damage has been consistent.

		Ground Mummies		Tree Mummies		% NOW Dmg		
		Mean/tree		Mean/tree		mean		* sig diff
Partial Trtmnt		No/Partial San	Full	No	Full	No	Full	diff
None	2005	248.9	25.2	13.41	0.01	2.4	1.73	0.67 *
Shake/Pole	2006	829.3	147.2	0.06	0.01	0.25	0.07	0.18 *
Shake/Pole	2007	600.5	142.5	0	0.01	5.1	3.5	1.6 *
Shake only	2008	931.8	334.5	52.66	0.22	1.43	0.86	0.57 *
None	2009	1730.7	536.9	149.0	0.1	1.67	1.54	0.13
None	2010	728.6	459	8.8	0.23	0.44	0.25	0.19 *
None	2011	763.1	238.6	54.7	3.4	0.42	0.11	0.31 *



Pistachio Sanitation Trial - 2011

Mummy Assessments - Feb/Mar



Infested mummies/tree		
	Full	No San
Grnd	1.51	7.16
Tree	0.11	2.61
Crotch	0.04	0.06
Total	1.7	9.8

Pistachio Sanitation Trial - 2011

Percent of mummies infested



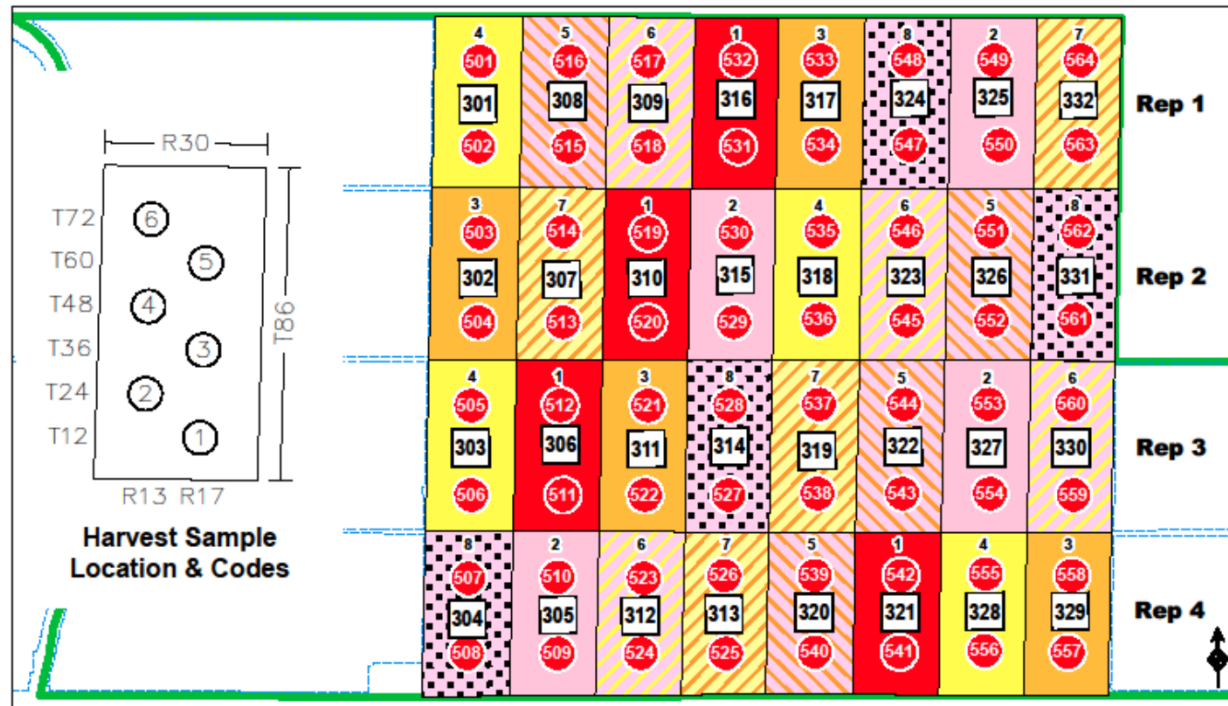
For 150 trees/ac:
 Full San= 255/ac
 No San= 1470/ac
 Nearly 6x increase

Long – Term Sanitation Study

Typical Almond ground
mummies: 5-10/tree,
Pistachios: 100's/tree
2 Problems: moving
mummies off berm and
destruction in drive row
FAS-TASC grant
examining methods to
improve



Insecticide Trials in 20 ac Plots



Ranch 4840 - Sec 33

2008

Chemical Control Trial 20 Acre Plots

● OVIP/Delta Traps

□ Flight Traps

0 500 1,000
Feet

K:\GIS\Public_PFC_Data\FedManagement\2008R4840_33_Cm_Ctrl_Trial.mxd

Treatment	Targets	300-350 DD 1st	400-500 DD 2nd	200-300 DD 3rd	100-200 DD 4th
	Plot Color	April/May	HS June/July	Post HS Aug	Post HS-2 Sept
1 Red			No Treatments		
2 Pink				Brigade - 2lb.	Permethrin
3 Orange				Delegate	Permethrin
4 Yellow				Brigade - 2lb.	
5 Pink/Orange				Intrepid	Permethrin
6 Pink/Yellow	Intrepid + Perm			Intrepid + Perm	Permethrin
7 Orange/Yellow	Intrepid	Intrepid		Intrepid	Intrepid
8 Pink/Black	Permethrin	Permethrin		Permethrin	Permethrin

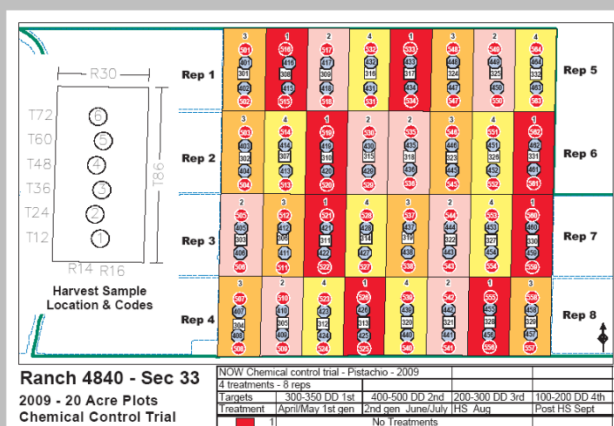
Pistachio Insecticide Trials

Treatments – 2009

8 replicates

Harvest on Sept 19 and Oct 5

Treatment	4/10 (160 dd)	7/2 (1500 dd)	8/19 (2690 dd)	9/21 (3425 dd)
	Control			
			Intrepid	Brigade
			Intrepid	Warrior II
	Intrepid	Intrepid	Intrepid	Intrepid
3/15	1 st 3/15 – 6/11	2 nd 6/11 – 7/25	3 rd 7/25 – 9/7	4 th 9/7 –

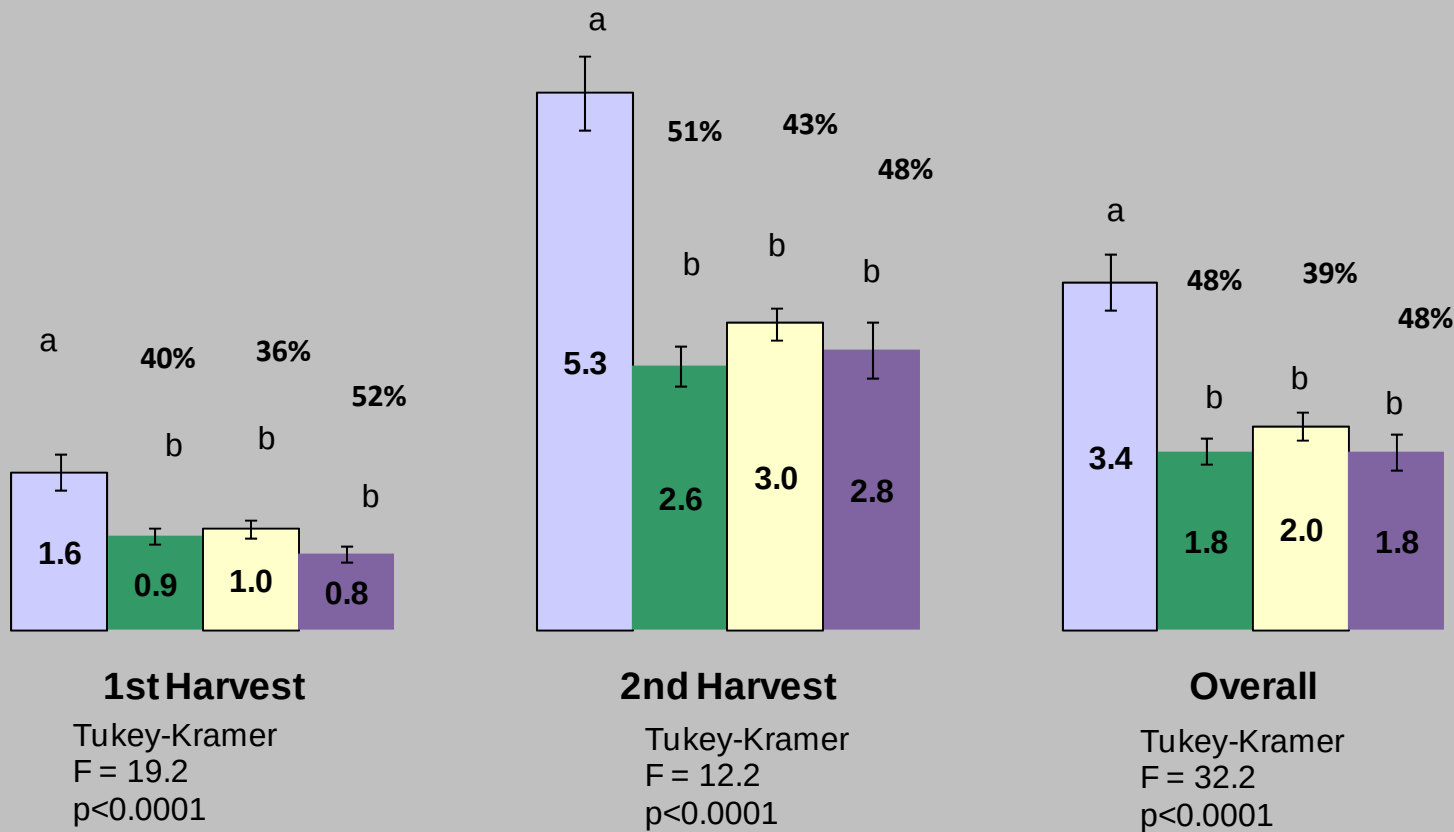


NOW Insecticide Trials - 2009

Pistachios Infested by NOW - Sept 19, Oct 5

Treatments applied 4/10, 7/2, 8/19, 9/21

Control Intrep-Brig Intrep-Warrior Intrep x 4

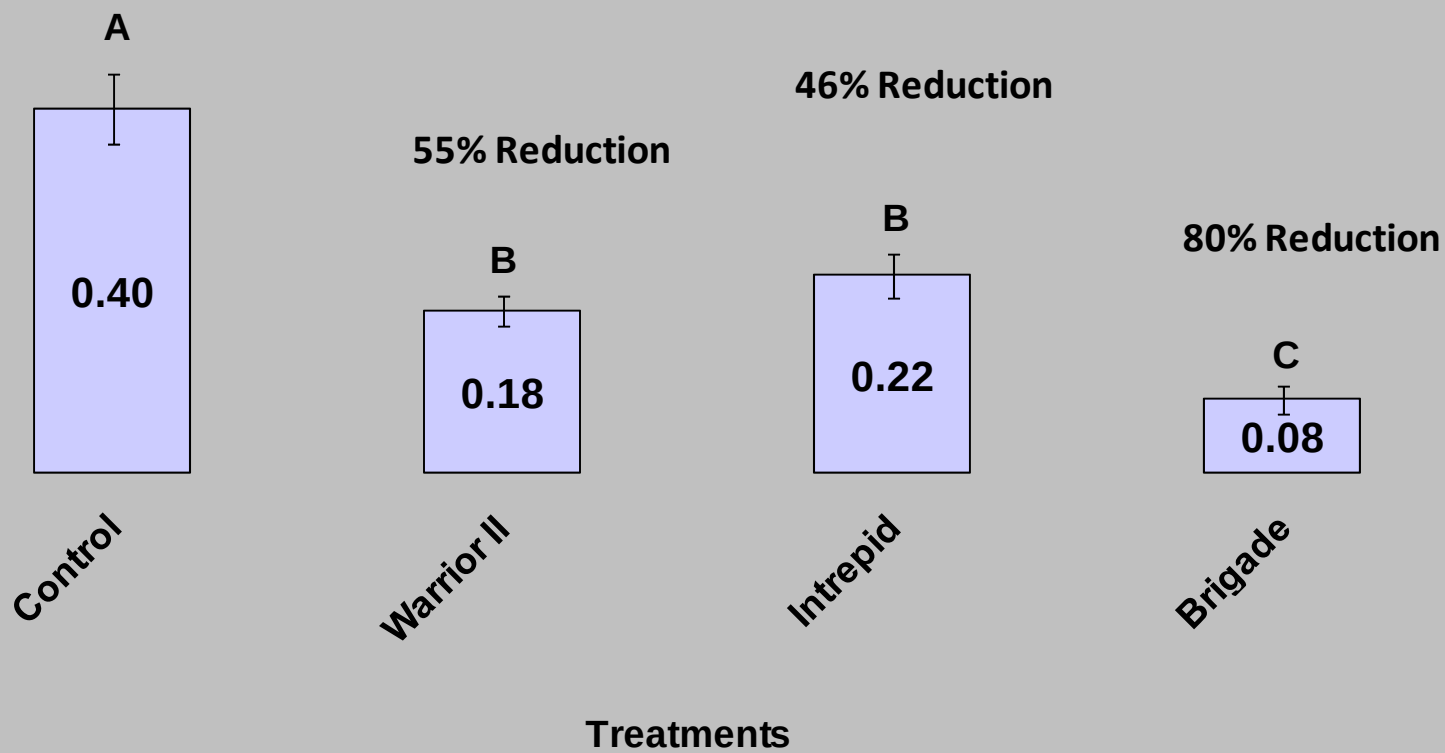


NOW Insecticide Trials - 2010

Pistachios Infested by NOW - Oct 5

Treatments applied on Sept 5

Tukey-Kramer
F = 27.89
p < 0.0001

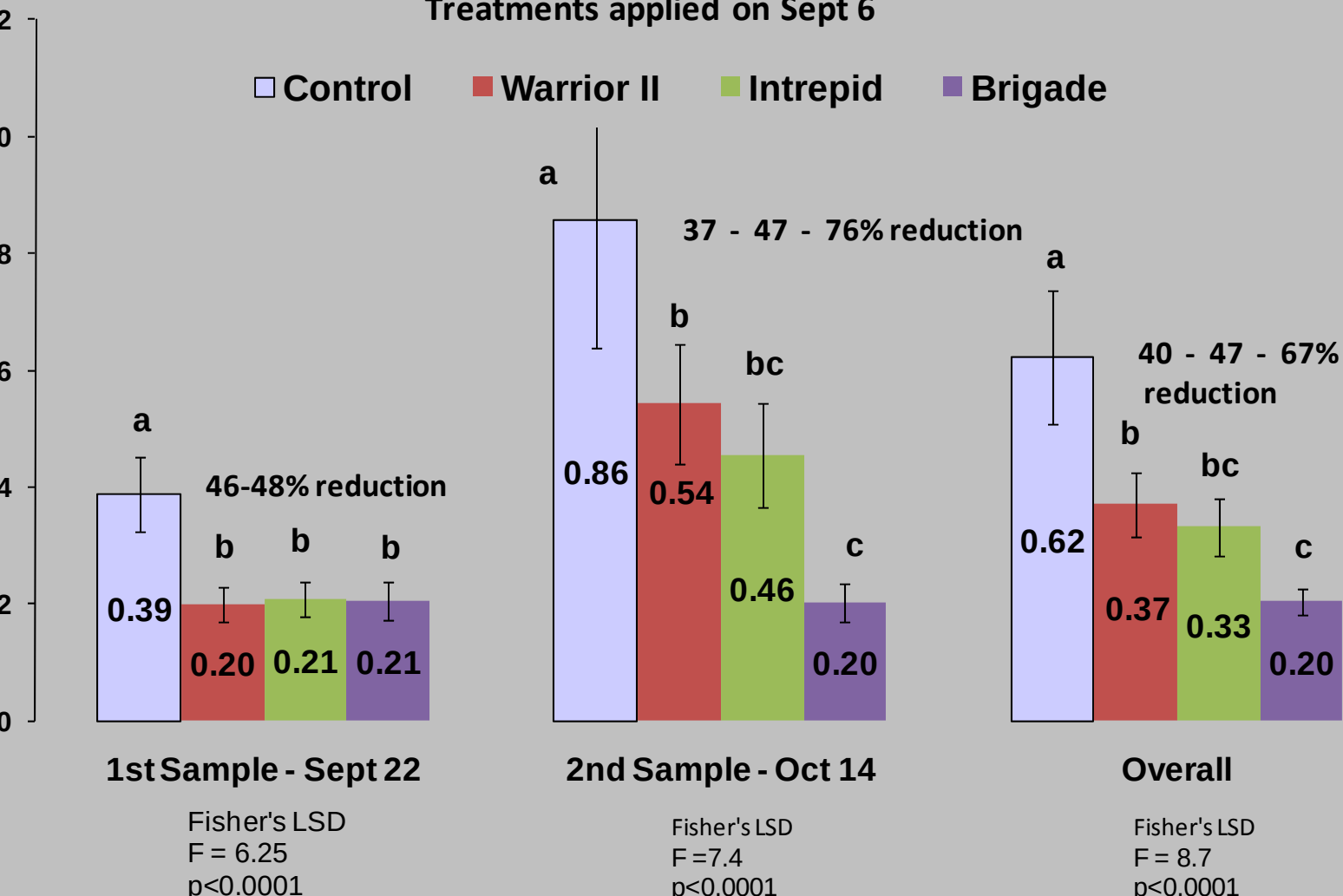


NOW Insecticide Trials - 2011

Pistachios Infested by NOW - Sept 22 and Oct 14

Treatments applied on Sept 6

Control Warrior II Intrepid Brigade



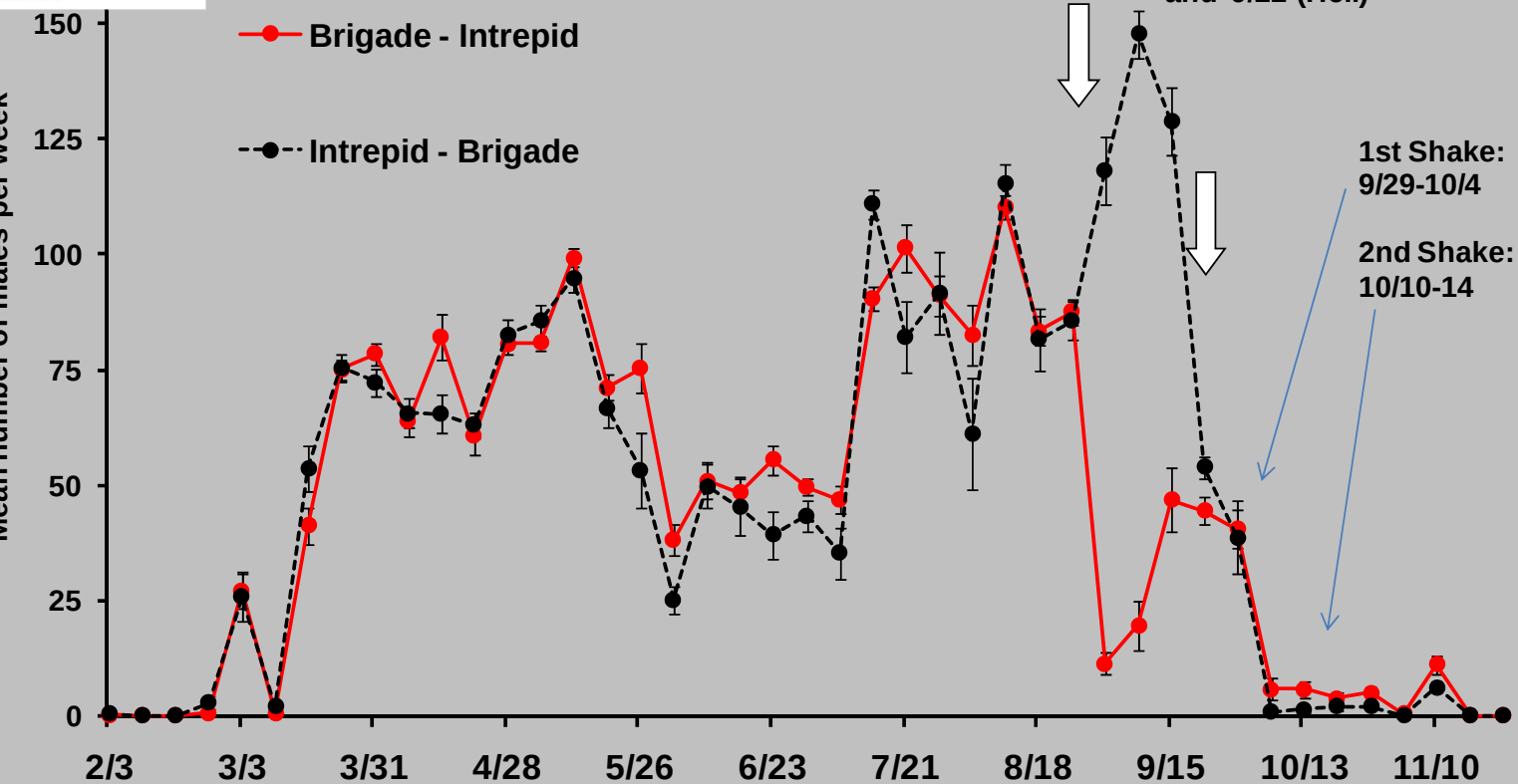
Insecticide Comparisons in Large Areas



Insecticide Impact on NOW in large areas

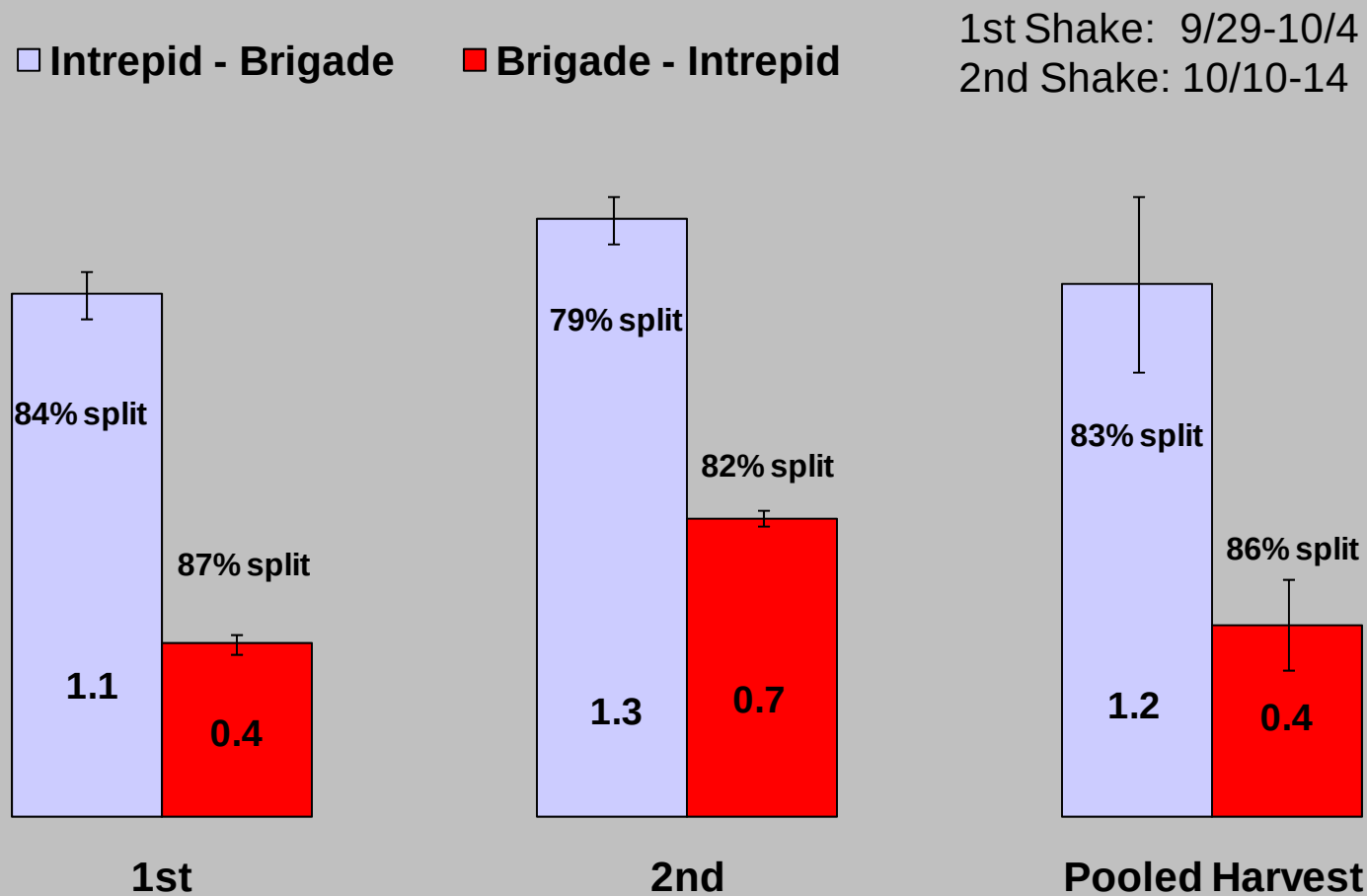
300-640 ac plots

Pheromone traps - 2009



Insecticide Impact on NOW in Pistachio

300-640 ac plots - 2009

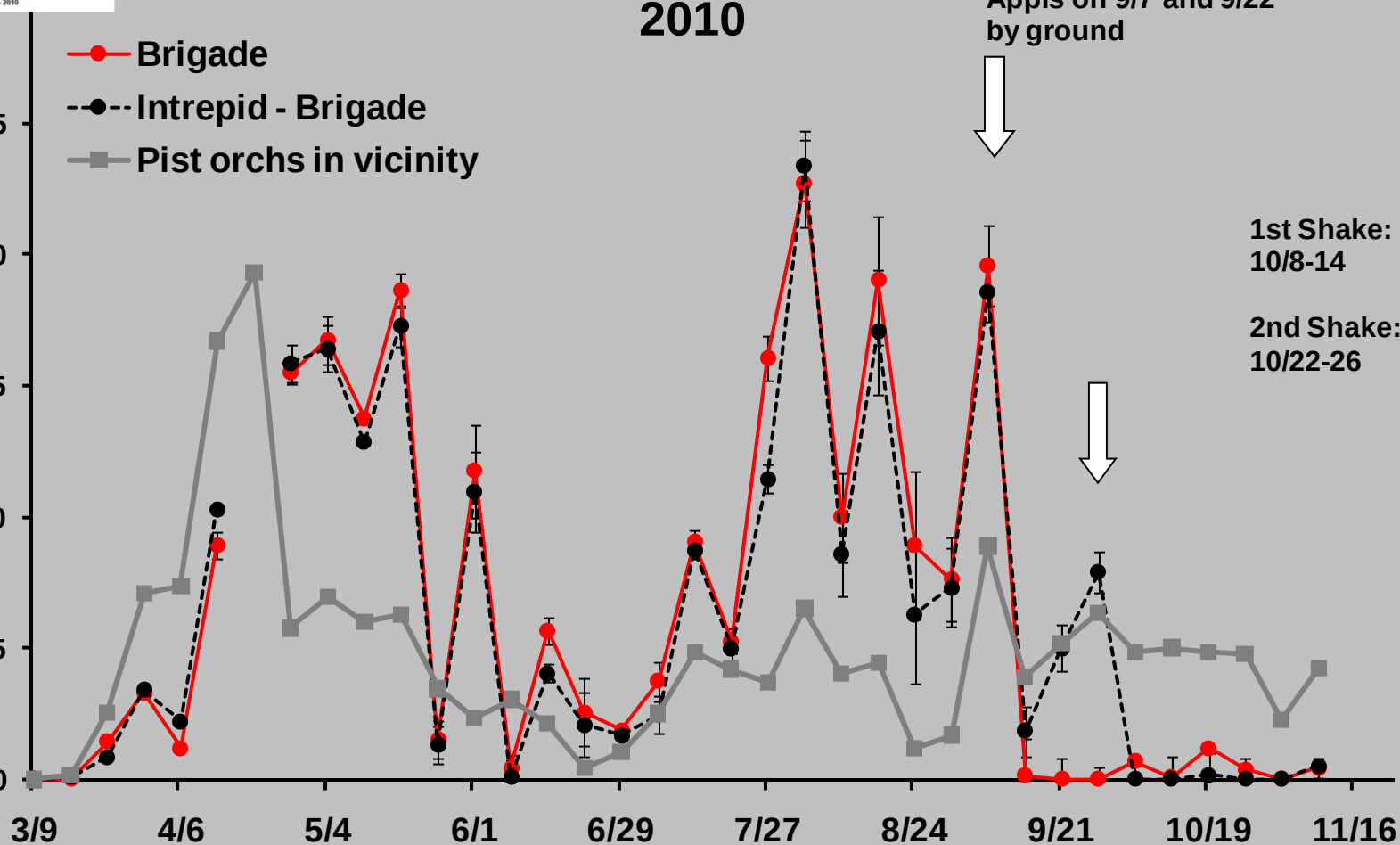




Insecticide Treatments in Pistachio

Pheromone traps

2010



Insecticide Comparison in Pistachio

Processor samples - 2010

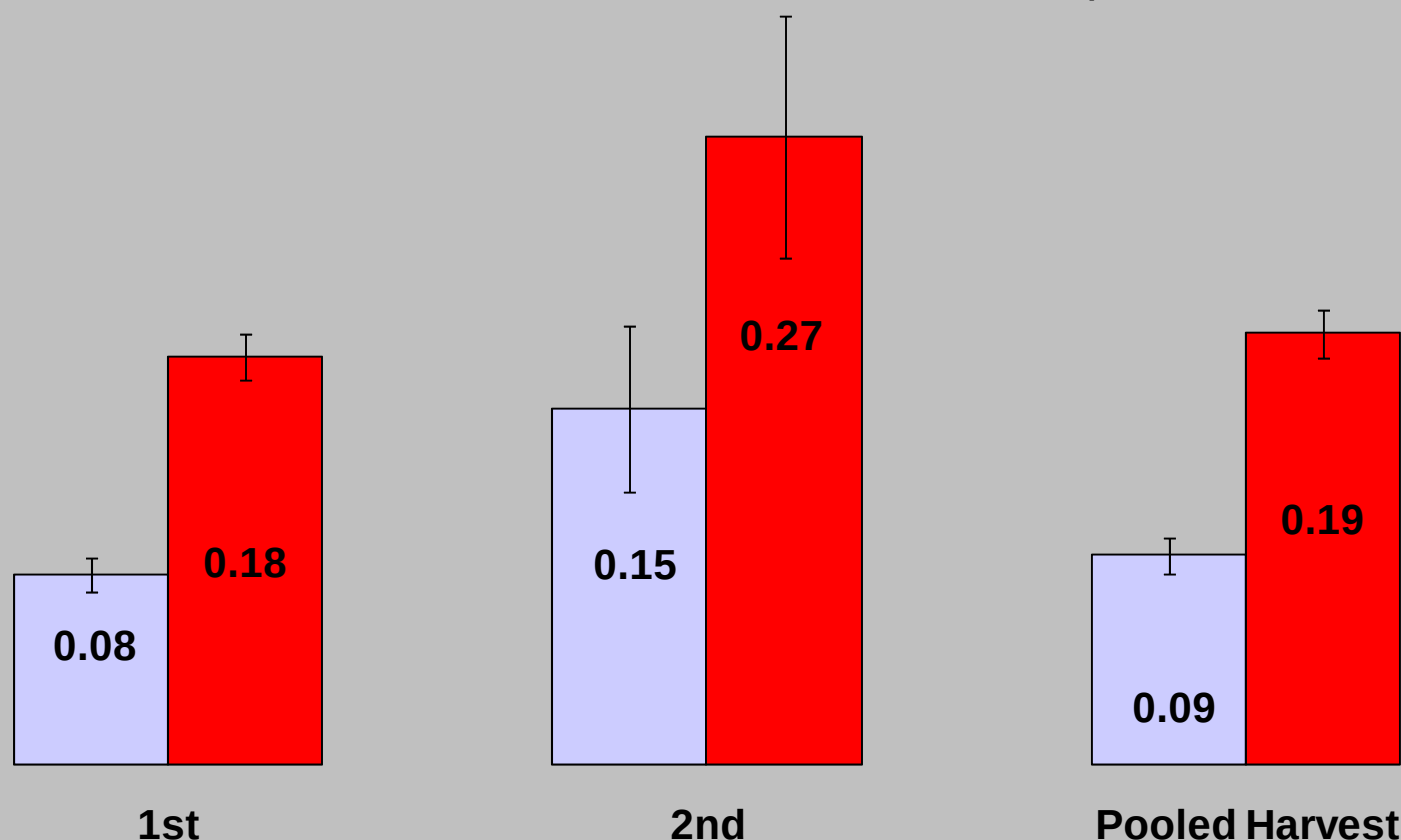
□ Brigade

■ Intrep-Brig

1st Shake: 10/8 -14

2nd Shake: 10/22-26

67% split overall

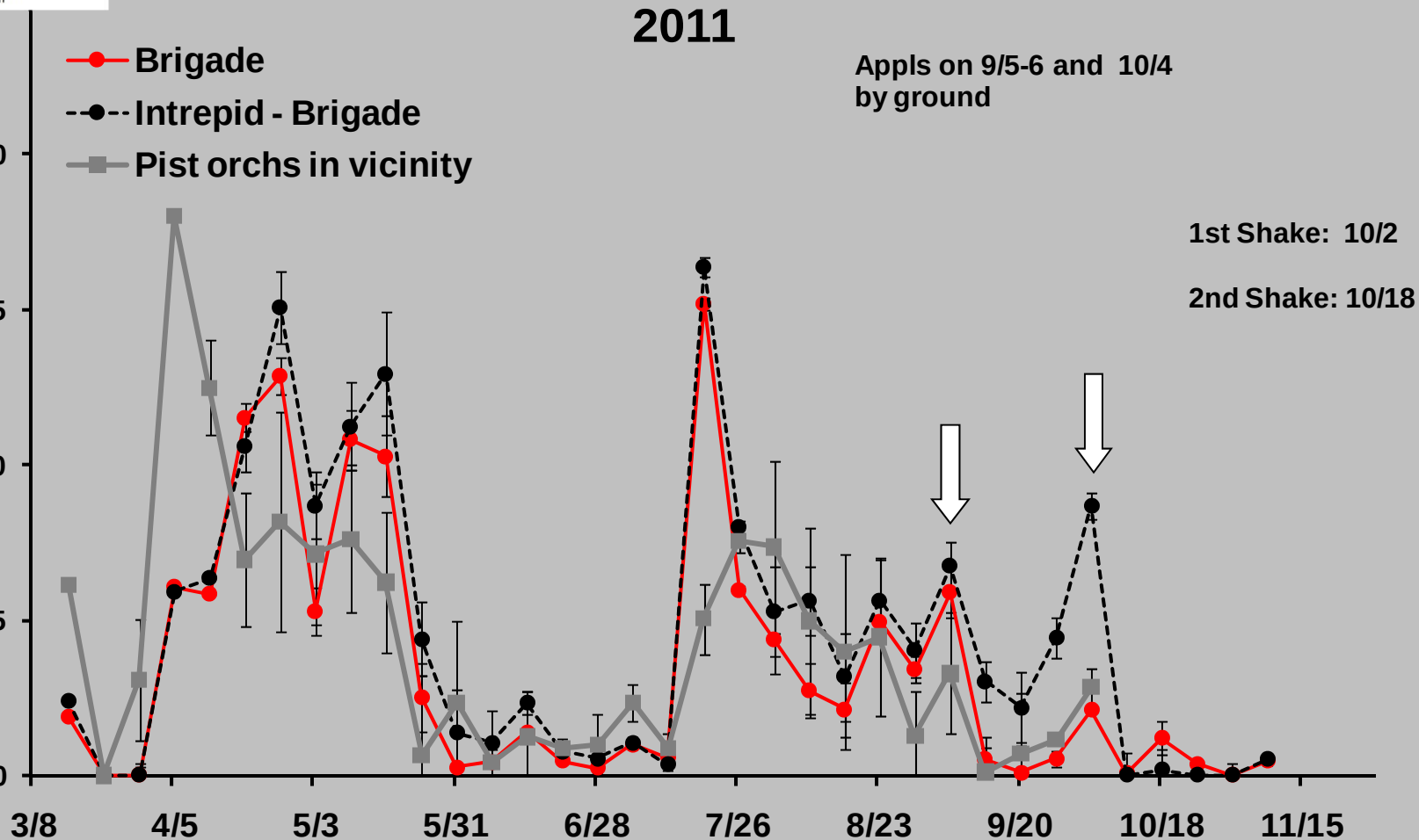




Insecticide Treatments in Pistachio

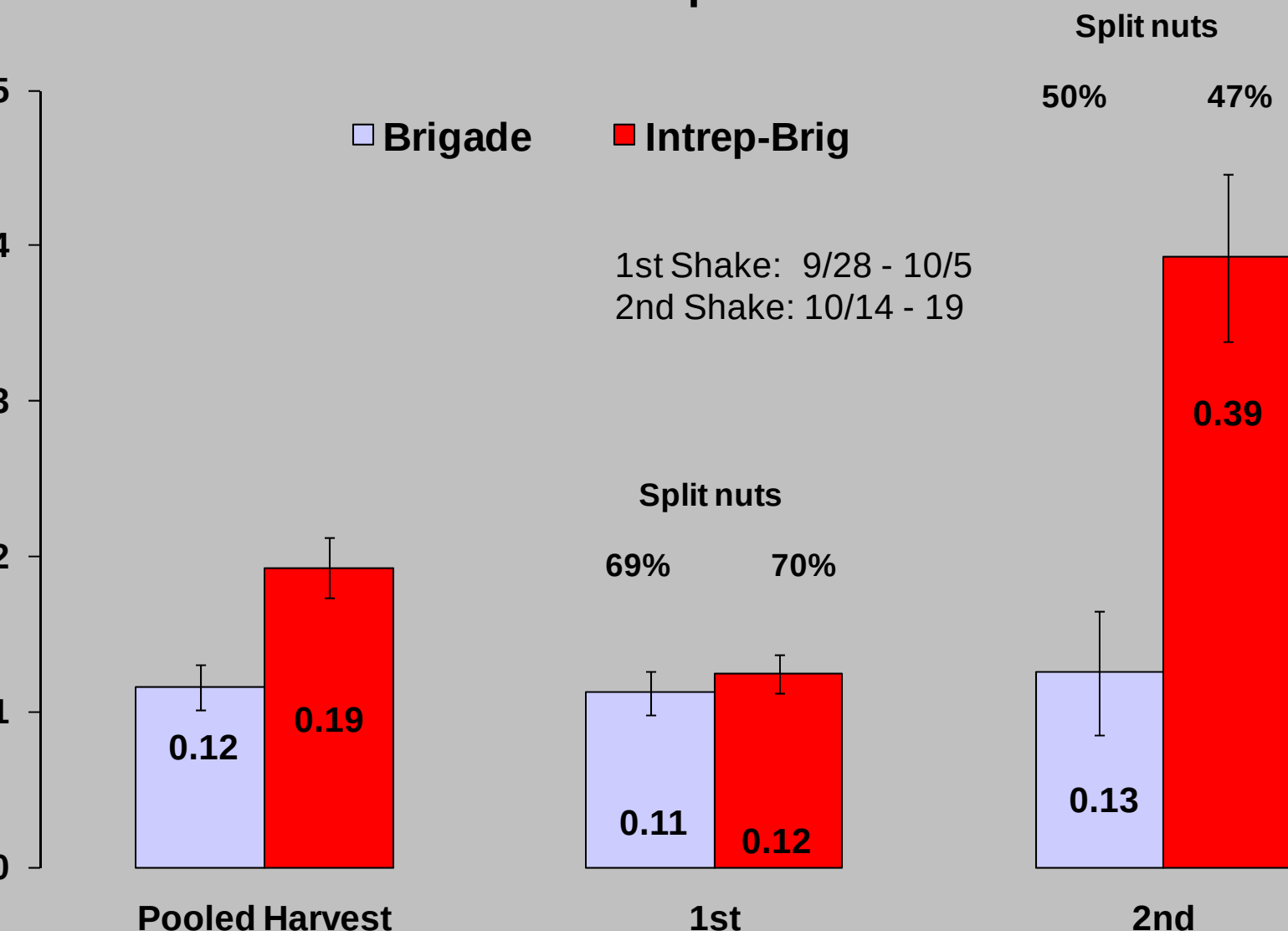
Pheromone traps

2011



Insecticide Comparison in Pistachio

Processor samples - 2011



NOW Insecticides in Pistachio

Permethrin not very effective
vs NOW...BUT likely targets
same detox system as other
pyrethroids

Brigade and Warrior have
remendous impact on NOW
hops and damage, particularly
as the treated area increases in
size

A single, well timed (Aug, 25-
2800 dd) application of
pyrethroids may be optimum,
in both 1 and 2 harvest
programs

It is all about the hull

Permethrin

- Relatively little impact
- 1 day PHI allows flexibility

Intrepid

- Good activity
- Coverage limits efficacy
- 14 day PHI can be problematic

Brigade

- Greatest impact
- 7 day PHI
- Too good?

NOW Sex Pheromone Lure Development

1979 – Major component discovered – Coffelt et al, USDA-ARS, Gainesville, FL

2005 - Minor components discovery: Walter Leal, UC Davis and Jocelyn Millar, UC Riverside

2009-10 – Determination of attractive blend and ratios: Kanno, Carde', Millar, UC Riverside and Bas Kuenen, USDA-ARS

Long-lasting lure remained a technical problem

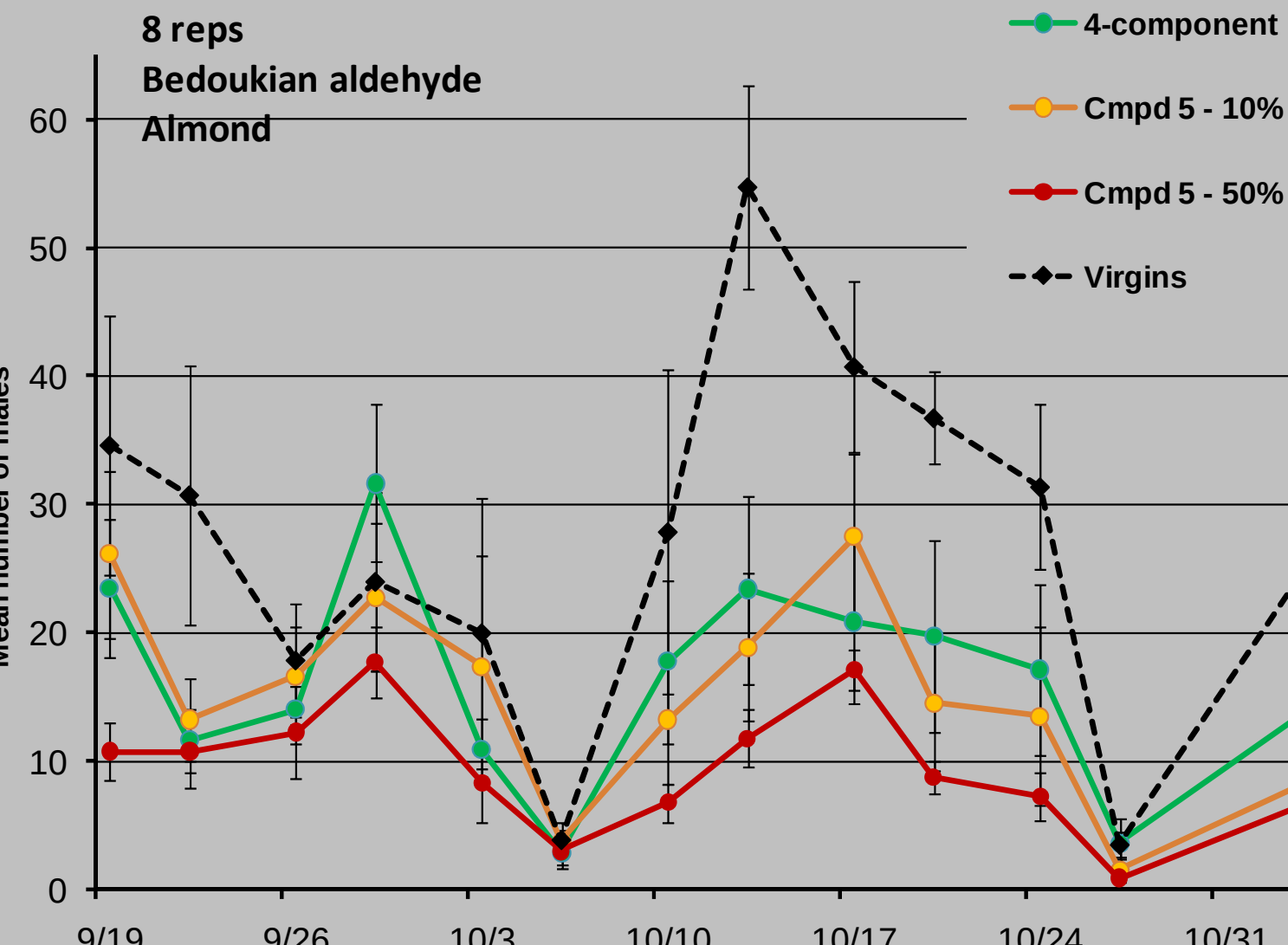
NOW Pheromone Lure Trials - 2011

9/15 trial

8 reps

Bedoukian aldehyde

Almond



Acknowledgements

t of a comprehensive research
ort on NOW biology, phenology,
mical ecology and crop protection

DA-ARS

- Charles Burks
- Bas Kuenen
- Joel Siegel
- John Beck
- Doug Light

iv of California

- Ring Carde'
- Steve Welter
- Walter Leal
- Kent Daane
- Frank Zalom
- David Haviland

Paramount Farming Co. Entomology Research



Technical assistance:

Ashlee Pedro	Candice Rogers
Lori Smith	Fernando Higuera
Cesar Higuera	Emmanuel Higuera
Johnny Magana	Kyle Lemucchi
Gabrielle Chrisco	Eddie Placentia