

Timing and Insecticide Selection for Pistachio NOW Management

Joel P. Siegel, USDA/ARS; SJVASC; CPQ; Parlier



- **How to attack NOW given prolonged emergence?**

Attack earlier/better timing

**Use insecticides with
LONG duration**

**Target most susceptible stages:
Eggs and Neonates**

Improve Implementation



Timing:

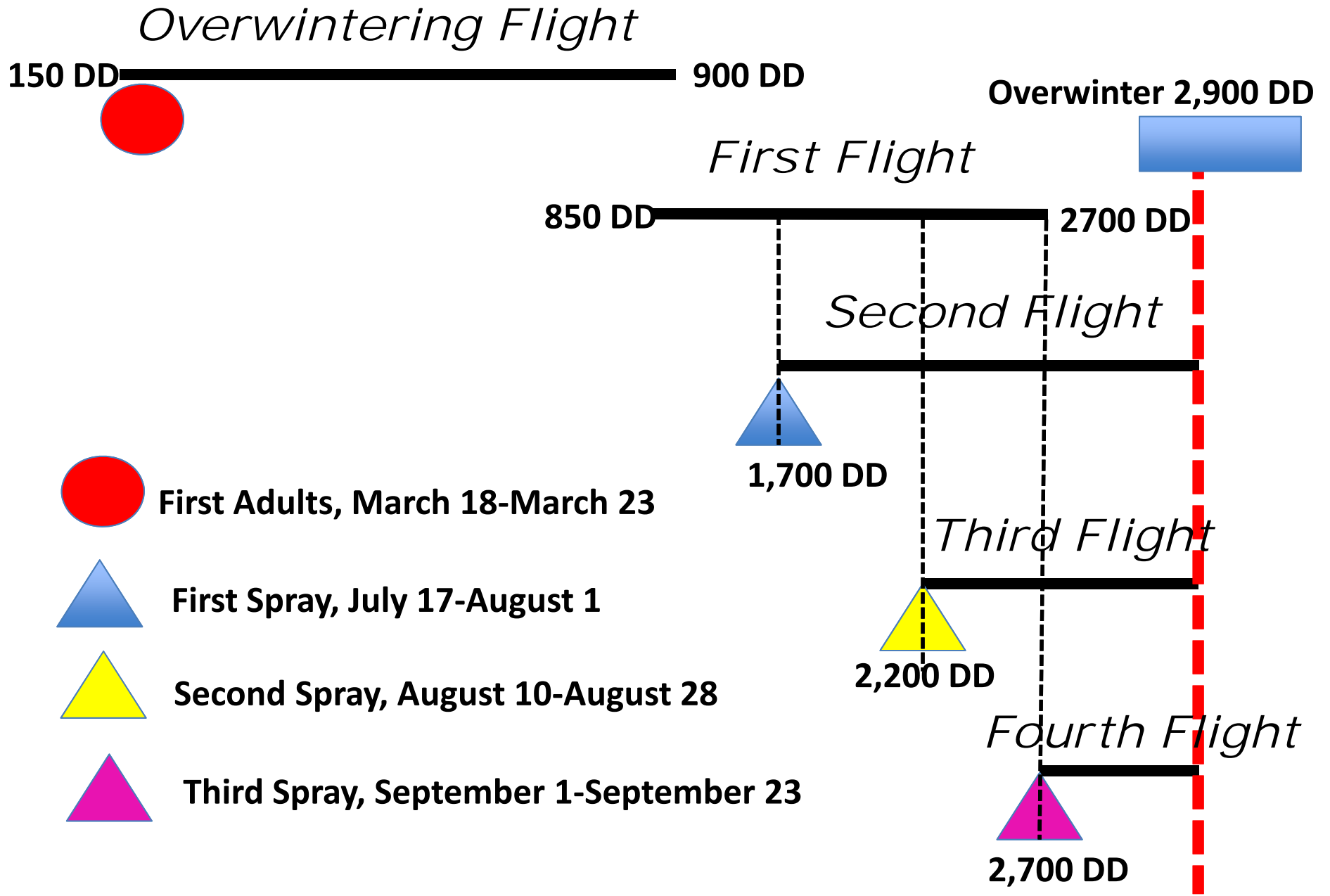
- Madera Based

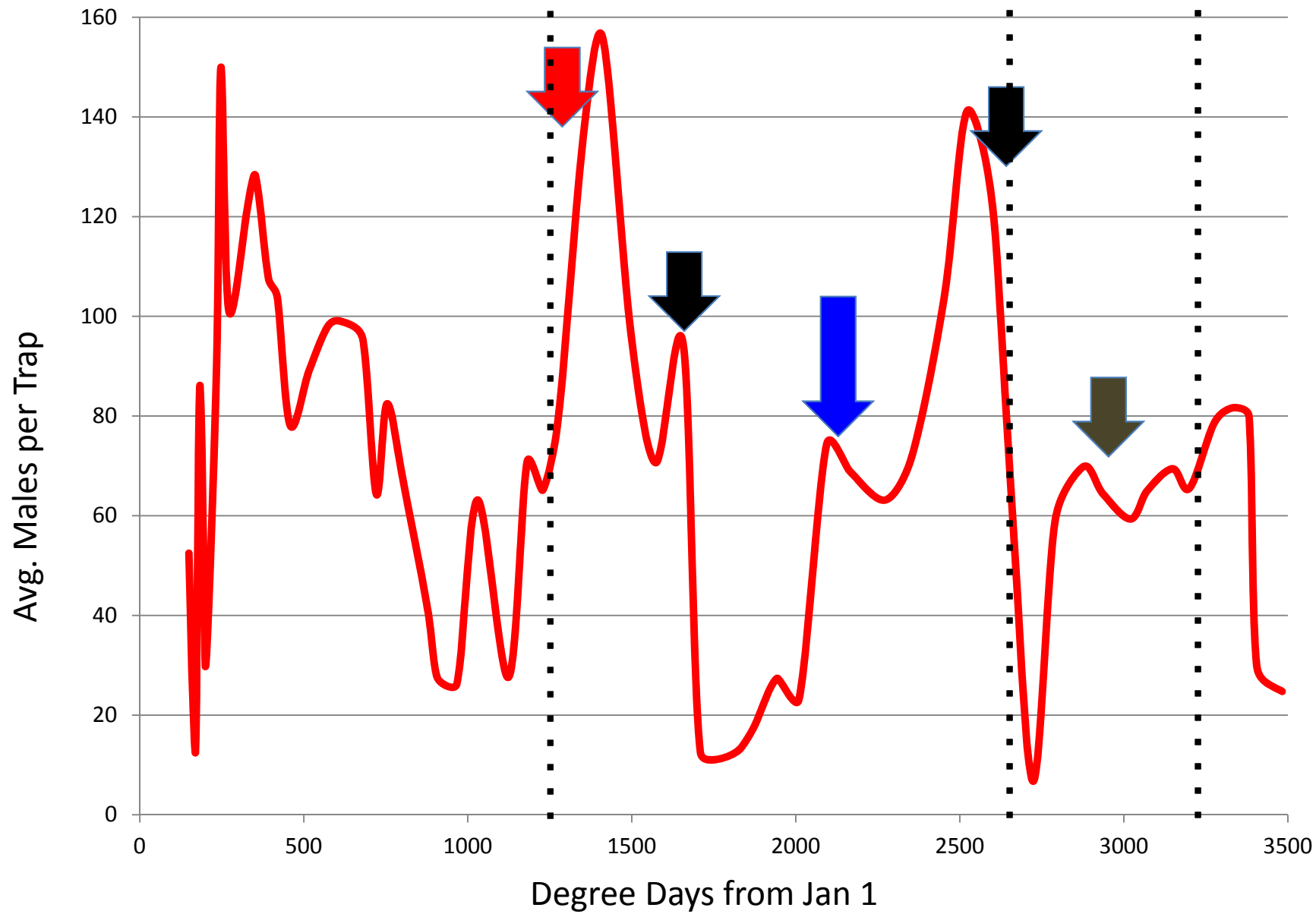
1,700

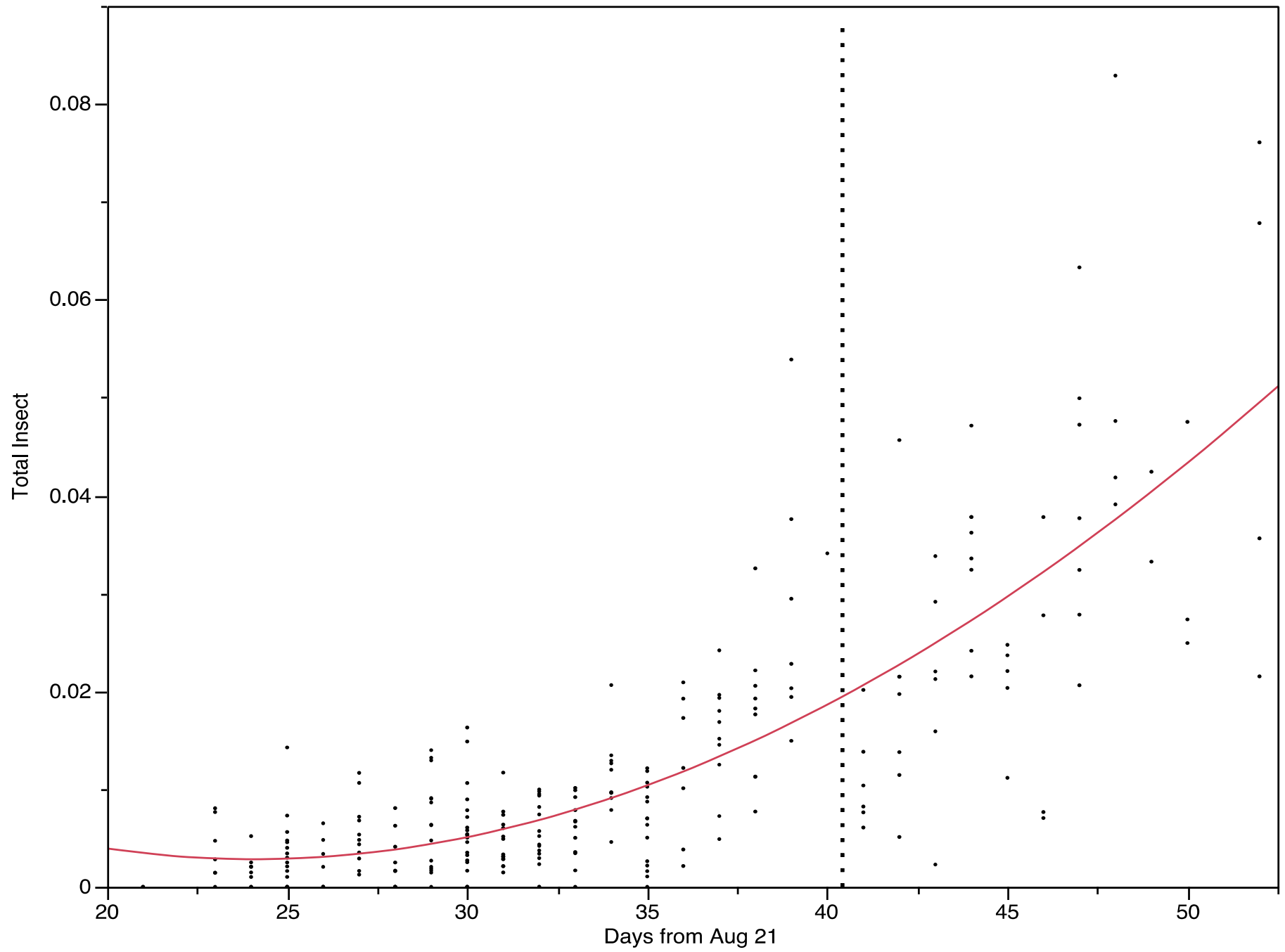
2,200

2,700

Early Madera Spray Strategy (DD°F from Jan 1)

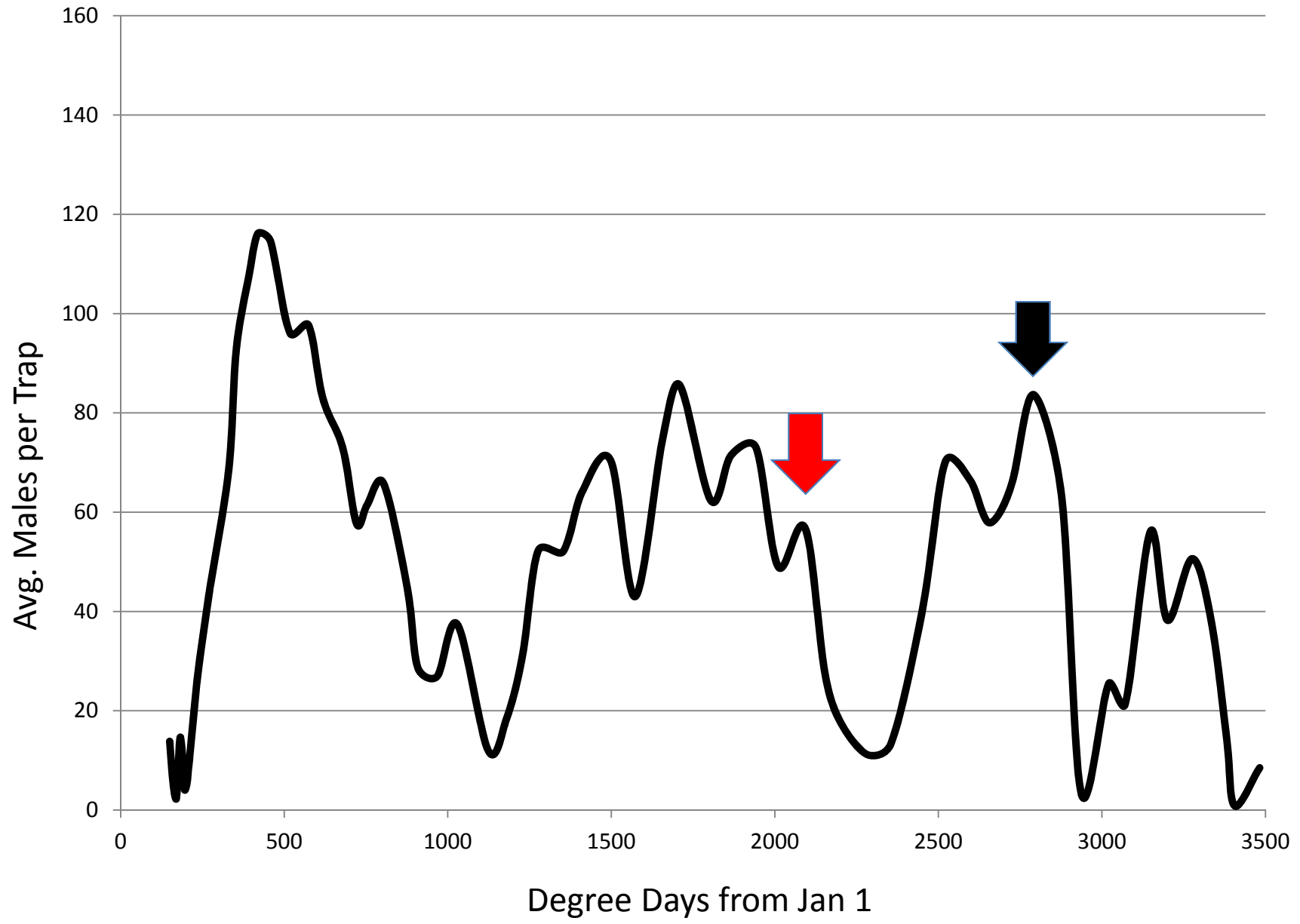






2,200

2,700



Duration of Control

Eggs on field

treated nuts

I control the pressure

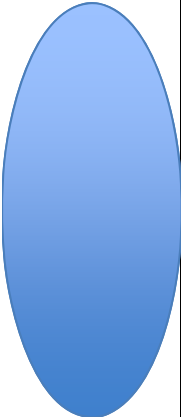
Long Lasting Insecticides (30 Days+)

- **Altacor**
- **Belt**
- **Intrepid**
- **Lambda Cy/ Warrior II**
- **Voliam Xpress**
- **Baythroid + Intrepid**
- **Lambda Cyhalothrin + Intrepid**
- **Lambda Cyhalothrin + Proclaim**

Intermediate and Short Duration

- **Bifenthrin:** Up to 3 weeks
- **Delegate:** Up to 3 weeks
- **Permethrin:** Up to 3 days (perhaps)
- **Proclaim:** Up to 3 weeks

30 Days Mature Pistachios



Insecticide	Percent Mortality	Eggs
Belt 4 oz + Warrior II 2.5 oz	97.25 A	800
Intrepid 24 oz	95.83 A	600
Proclaim 4.5 oz + Warrior II 2.5 oz	95.67 A	600
Intrepid 18 oz + Lambda Cy 5 oz	94.38 A	800
Intrepid 8 oz + Warrior II 2.5 oz	93.88 AB	800
Voliam Xpress 10 oz	92.50 AB	1,200
Intrepid 8 oz + Warrior II 2.5 oz	92.00 B	800
Bifenture EC 10 oz	91.25 B	800
Proclaim 4.5 oz	89.83 B	600

**Is the control of NOW
equal to the sum across
different life stages?**



Start with the Egg:
Ovicidal/Neonate

Activity



Most Toxic To Eggs

- **Pyrethroids**
 - **Intrepid**
 - **Intrepid + Pyrethroids**
- **Altacor**
 - **Belt**
- **Assail**

Ovicidal/Neonate Activity

Agent	Eggs	Survival	Year
Baythroid XL + Intrepid	3,700	1.35%	2007
Warrior + Intrepid	17,465	0.07%	2008
Brigade	47,287	1.66%	2008
Intrepid	6,881	4.68%	2009
Altacor	5,826	19.02%	2009
Belt	12,256	15.48%	2008
Assail	5,917	30.86%	2009

Contact Assay: Neonate

Contact vs Direct

Substrate	Live	Eggs	Mortality %
Bifenthrin Contact	102	747	86.65 ^A
Bifenthrin Direct	174	2,350	92.60 ^B

P < 0.001

Adult Activity:
Spray

Altacor

at

Delegate

Night

Treatment	Hours	Mortality	Adults
Altacor (3.5oz)	24	32.46%	114
	48	46.67%	120
	72	65.83%	120
Control	72	32.00%	121
Delegate (6.2 oz)	24	66.67%	123
	48	83.33%	120
	72	98.33%	120

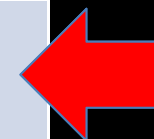
Problem:

Female

Choice

Bifenthrin (12 oz), Aerial

Days After Spray	Survival (Eggs)
11	5.3% (1,000)
11	8.7% (1,800)
17 (bin)	11.6% (800)
18	4.8% (3,200)



Bifenthrin (12 oz), Aerial

Days after Spray	Survival Per Nut	Natural Infestation of Nuts
11	82.5%	28.6% (700)
11	118.4%	20.6% (1,134)
17* bin	50.8%	38.5% (650)
18	58.0%	12.4% (1,826)

Bifenthrin, Bifenthrin + Permethrin Air

Days After Spray	Survival
20	5.5% (2,200)
1*respray	7.3% (1,800)
1*respray	18.0% ← (400)
25	10.8% ← (2,400)
25	5.5% (1,200)

Bifenthrin, Bifenthrin + Permethrin Air

Days after Spray	Survival Per Nut Natural	Infestation (Eggs)
20	103.6%	7.0% (1,183)
1*respray	44.1%	13.2% (1,152)
1*respray	128.4%	26.3% (255)
25	155.5%	0.4% (1,205)
25	191.3%	57.8 (1,146)

**Avoid
Bifenthrin,
Permethrin
Late September**



Thank You