

Joel Siegel USDA/ARS: What happened  
and try to avoid this next year



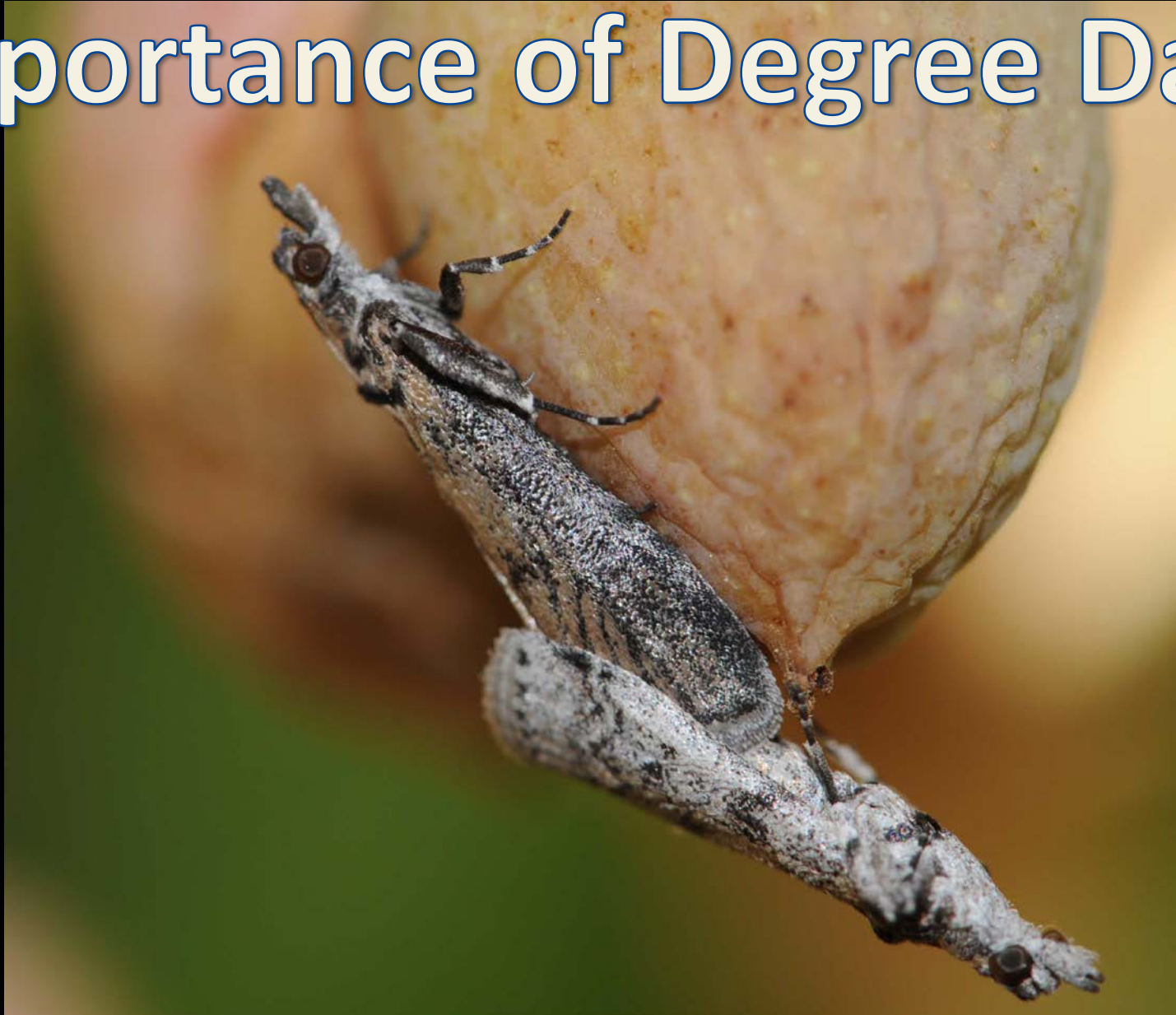
**San Joaquin Valley**

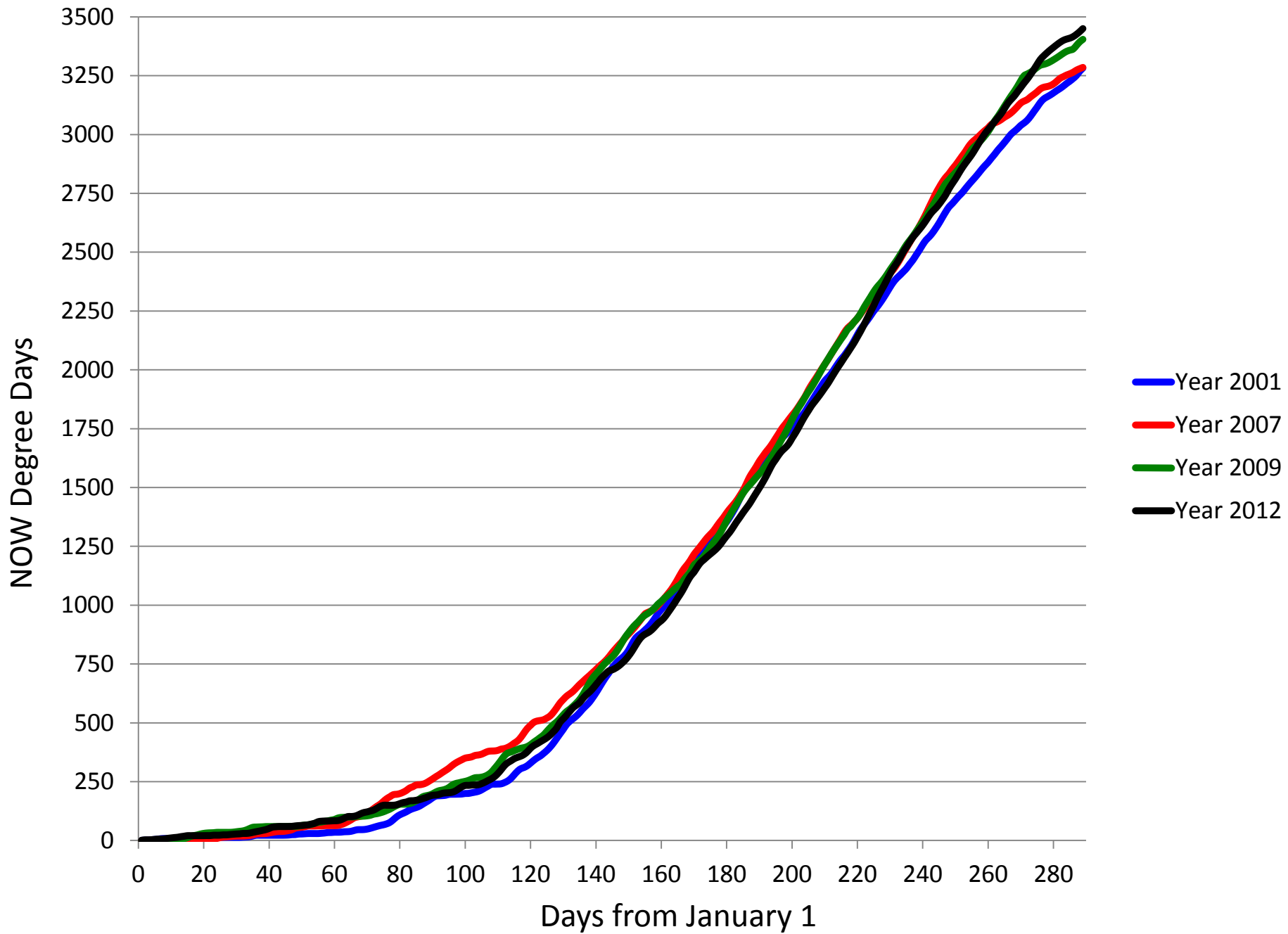
**Perspective**

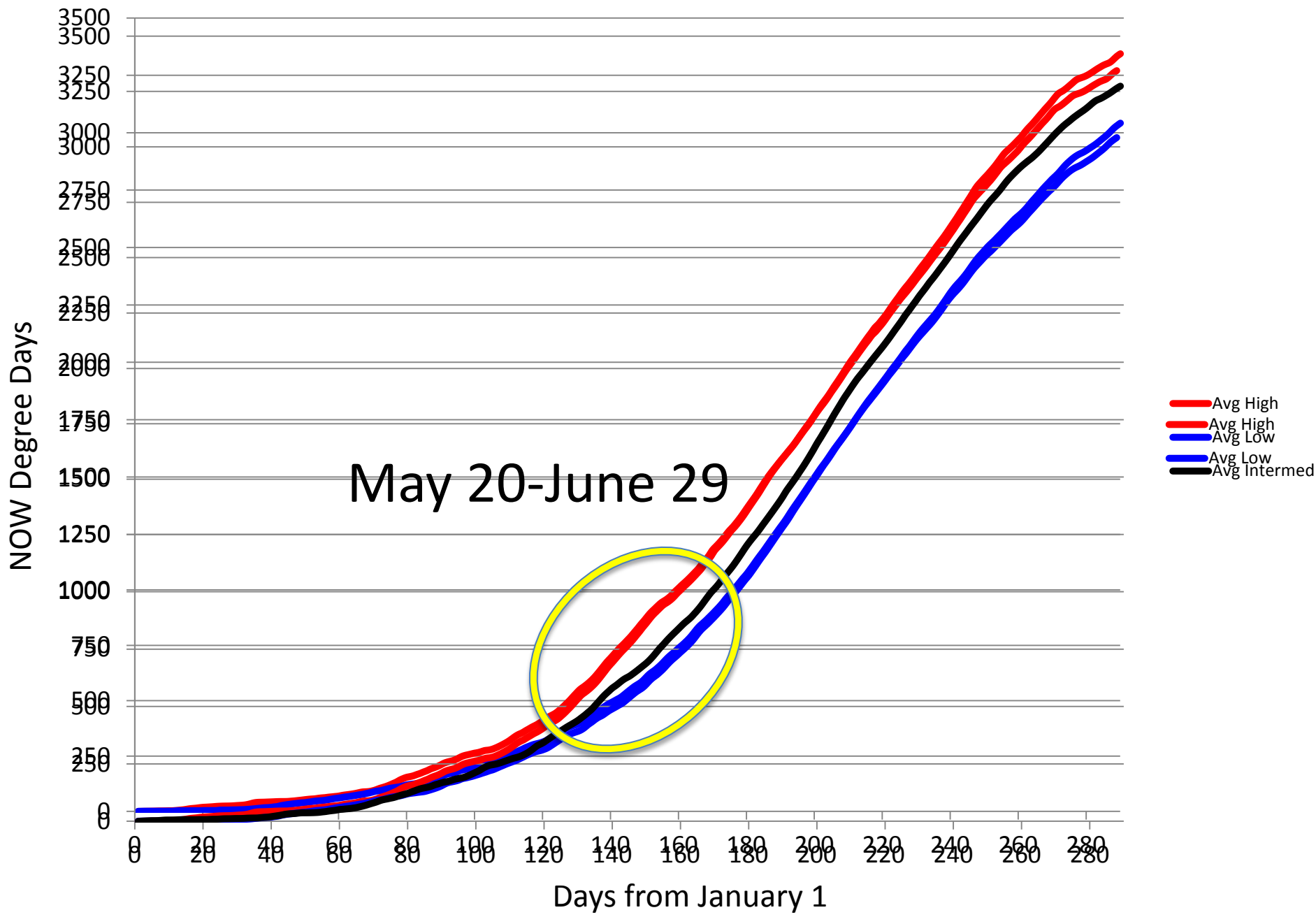
**High Winter Heat**

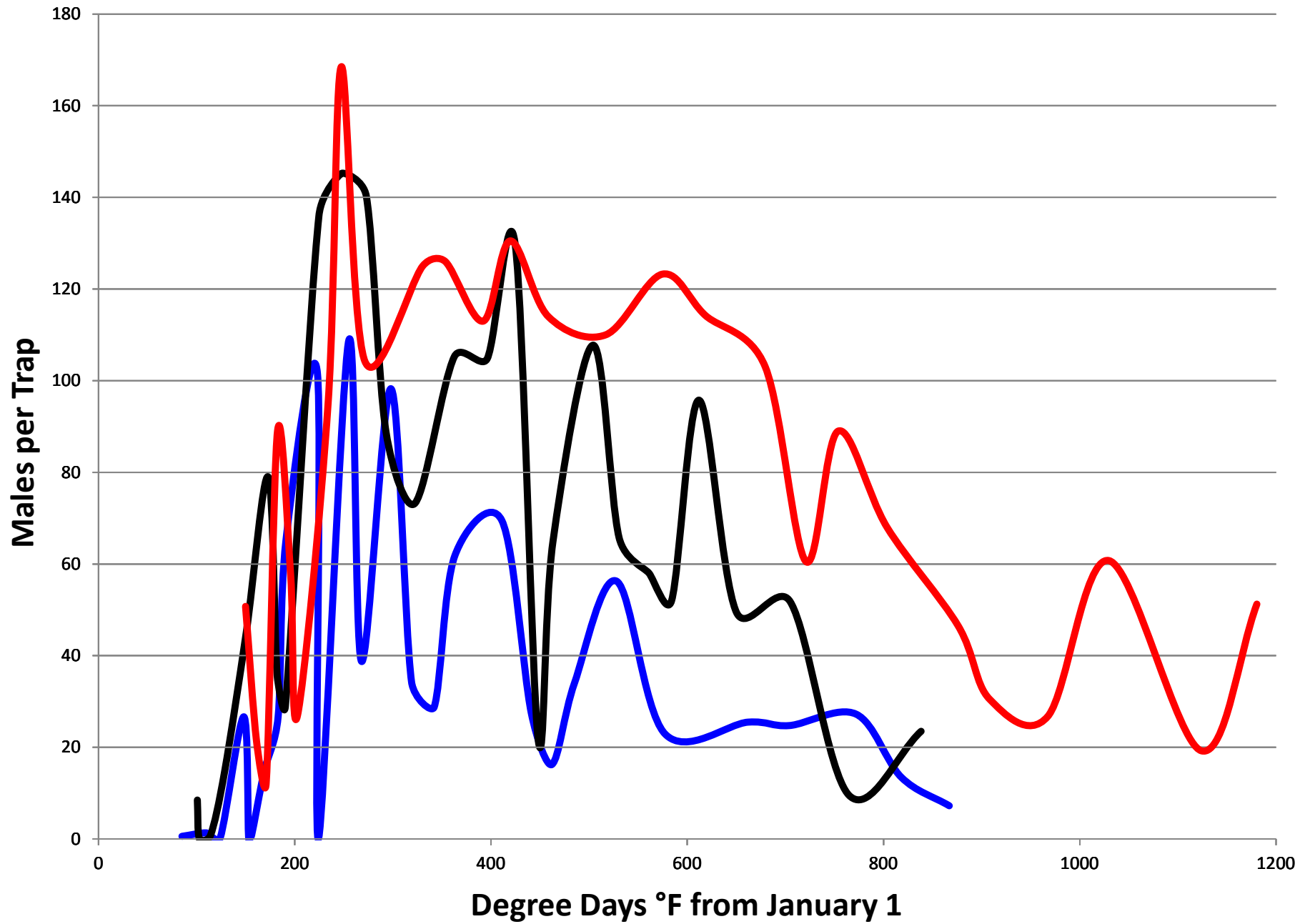
**Drought:  
High Mummy  
Carryover**

# Importance of Degree Days









# Madera CMIS 145 through Feb 13

<b>Year</b>	<b>Degree Days</b>
<b>2007*</b>	<b>38.5</b>
<b>2008</b>	<b>29.5</b>
<b>2009</b>	<b>59.2</b>
<b>2010</b>	<b>23.4</b>
<b>2011</b>	<b>34.1</b>
<b>2012*</b>	<b>59.5</b>
<b>2013</b>	<b>16.9</b>

**If split delayed  
again as in 2010,  
Mummies are even  
more important**

# Almonds: Nonpareil Overwintering 2012

Date	Infestation	Nuts
DEC. 13	29.14%	3,688
DEC. 20	13.17%	3,819
JAN. 5	25.34%	2,829
JAN. 27	17.33%	6,367
MAR. 3	12.65%	2,165

<b>Mummy Type</b>	<b>Date</b>	<b>Infestation per Mummy</b>	<b>Total Sample</b>
<b>FIG</b>			
	<b>Nov 30</b>	<b>39.48%</b>	<b>1,155</b>
	<b>Jan 8</b>	<b>17.45%</b>	<b>871</b>
	<b>Jan 24</b>	<b>18.38%</b>	<b>1,719</b>
	<b>Feb 7</b>	<b>21.69%</b>	<b>1,277</b>
<b>Almond-NP</b>			
	<b>Jan 15</b>	<b>30.54%</b>	<b>2,832</b>
	<b>Jan 31</b>	<b>21.09%</b>	<b>3,106</b>

**Sanitation is the  
foundation**

**Existing population**

**+ mummies as resource**

**Origin of  
2 mummies per tree:  
1 tree mummy =  
1 % damage**

**Is this equally  
applicable to  
Sacramento and  
San Joaquin Valley?**

**NO**

**4 Year study, 10 acre plots**  
**2,596,008 kernels graded**  
**19,200 acres and 15,360 trees**

# Tree Mummies

Average Tree Mummies	Percent Damage	Plots
0	1.63	<b>605</b>
0.01 - 0.49	1.22	<b>1,092</b>
<b>0.5 - 0.69</b>	<b>1.57</b>	<b>91</b>
0.7 - 0.79	2.32	<b>39</b>
0.8 - 1.75	3.53	<b>61</b>
Greater than or equal to 1.76	7.85	<b>44</b>

# Ground Mummies

Average Ground Mummies	Percent Damage	Plots
<b>0 - 4.9</b>	<b>1.39</b>	<b>1,272</b>
<b>4.91 - 7.9</b>	<b>1.57</b>	<b>300</b>
<b>7.91 - 8.9</b>	<b>1.72</b>	<b>67</b>
<b>8.91 - 9.0</b>	<b>2.78</b>	<b>44</b>
<b>Greater than or equal to 9.81</b>	<b>2.72</b>	<b>238</b>

# Conclusions

- Tree mummy threshold as low as 0.2 per tree
- Ground mummy threshold as low as 4 per tree
- Pistachio Effect extends three miles

**Sanitize all nuts**

**Including Hard Shell**

Variety	Percent Infested Nut	Nuts Examined
Nonpareil	54.65	1,246 (6,952)
Butte	57.33	307 (4,084)
Padre	25.00	220 (6,045)





**Insecticides:  
Degradation over  
time, coverage  
decreases with height**

# Day 1

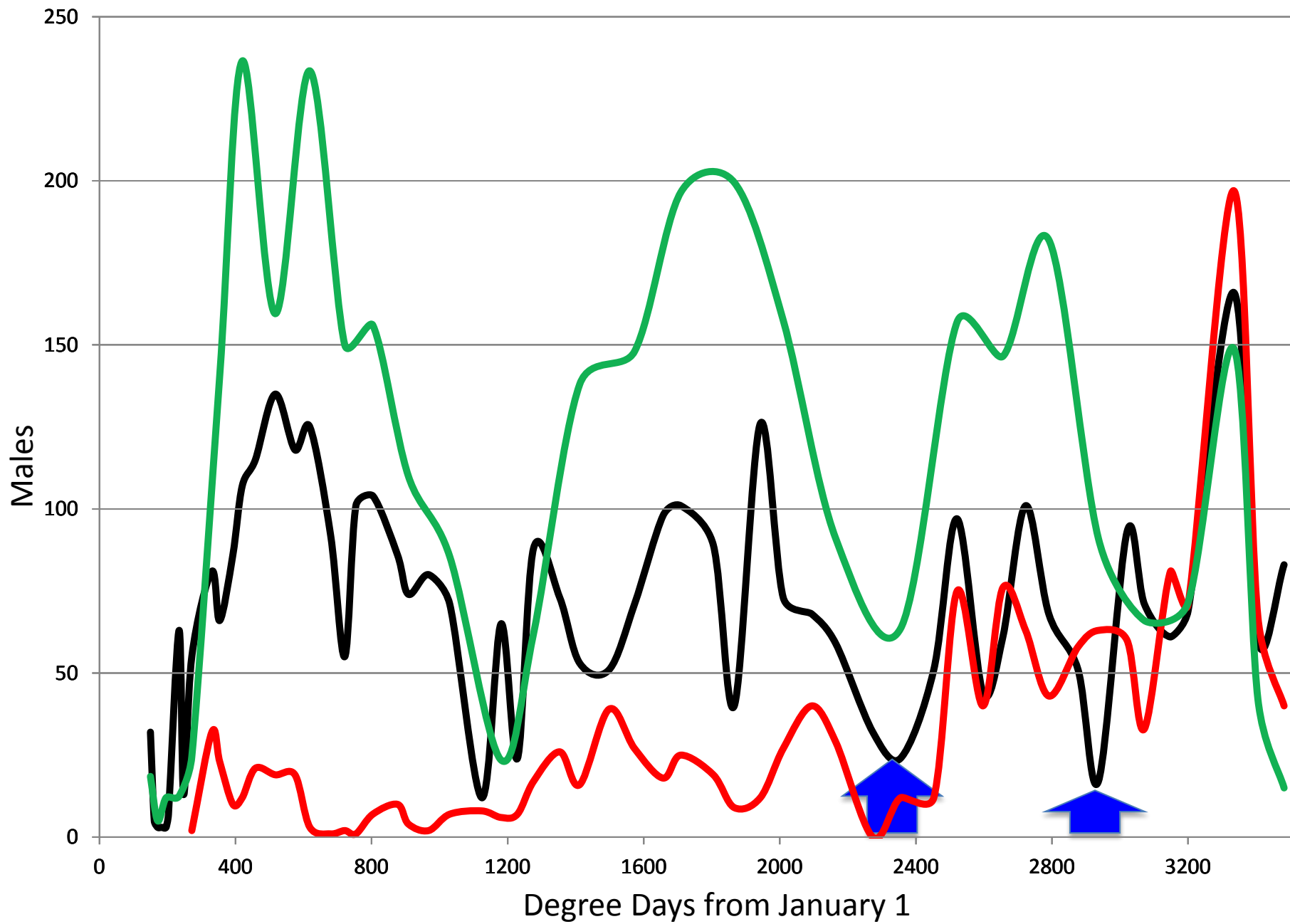
Treatment	Mortality	Eggs
Intrepid 16 oz/acre	99.78%	920
Altacor 4 oz/acre	99.80%	500
Delegate 6.2 oz/acre	99.20%	250

# Day 14

Treatment	Mortality	Eggs
Intrepid 16 oz/acre	99.25%	2,000
Altacor 4 oz/acre	97.50%	2,000
Delegate 6.2 oz/acre	91.85%	2,000

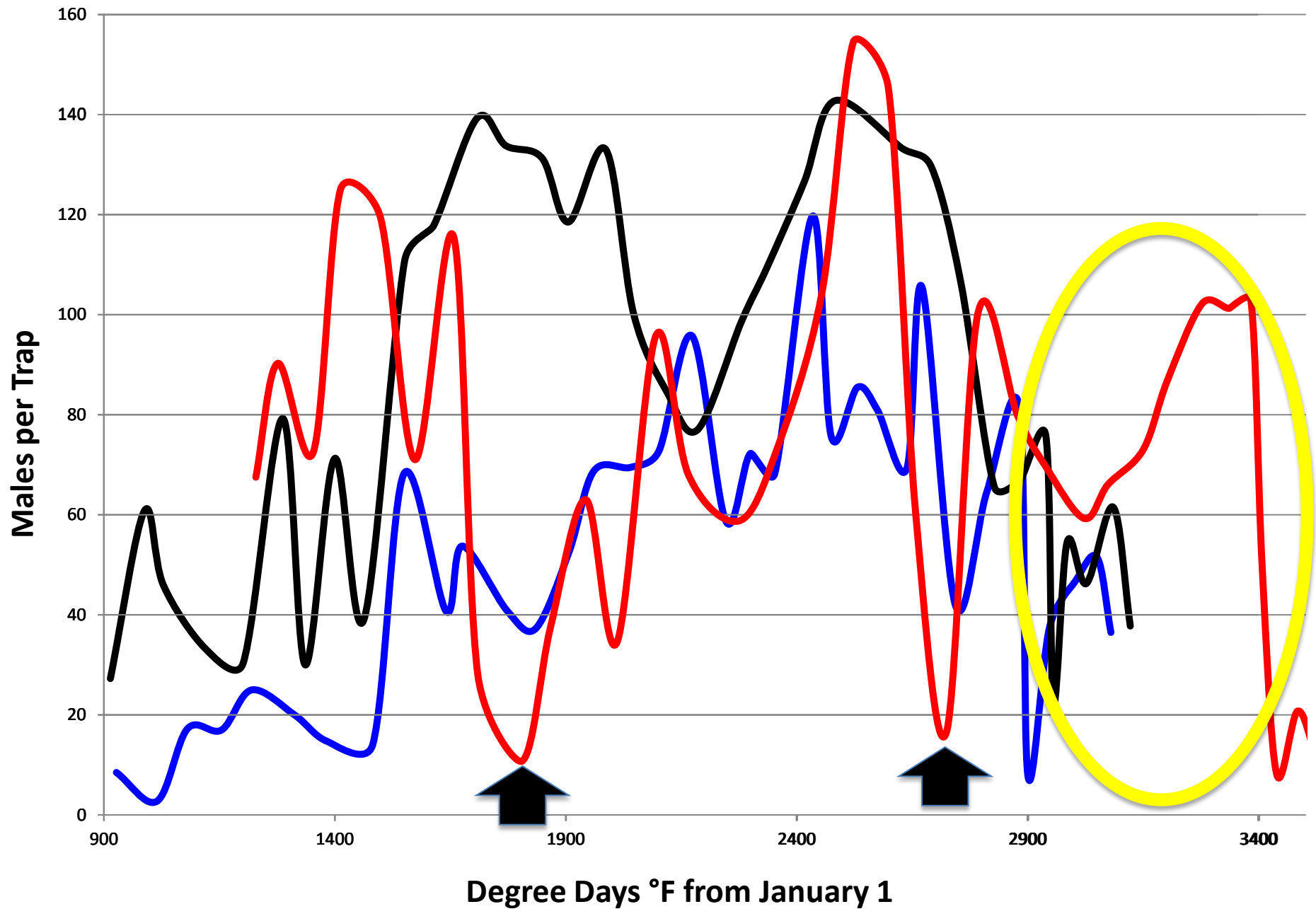
<b>Days Post Spray</b>	<b>Mortality</b>	<b>Reduction</b>
<b>1 (17-20 ft)</b>	<b>98.94%<sup>A</sup></b>	<b>96.93%</b>
<b>1 (5-7 ft)</b>	<b>98.42%<sup>A</sup></b>	<b>97.21%</b>
<b>14 (17-20 ft)</b>	<b>91.50%<sup>B</sup></b>	<b>NA</b>
<b>14 (5-7 ft)</b>	<b>96.20%<sup>C</sup></b>	<b>NA</b>

**PTO, 100 gpa, Altacor at 4 oz/ac**



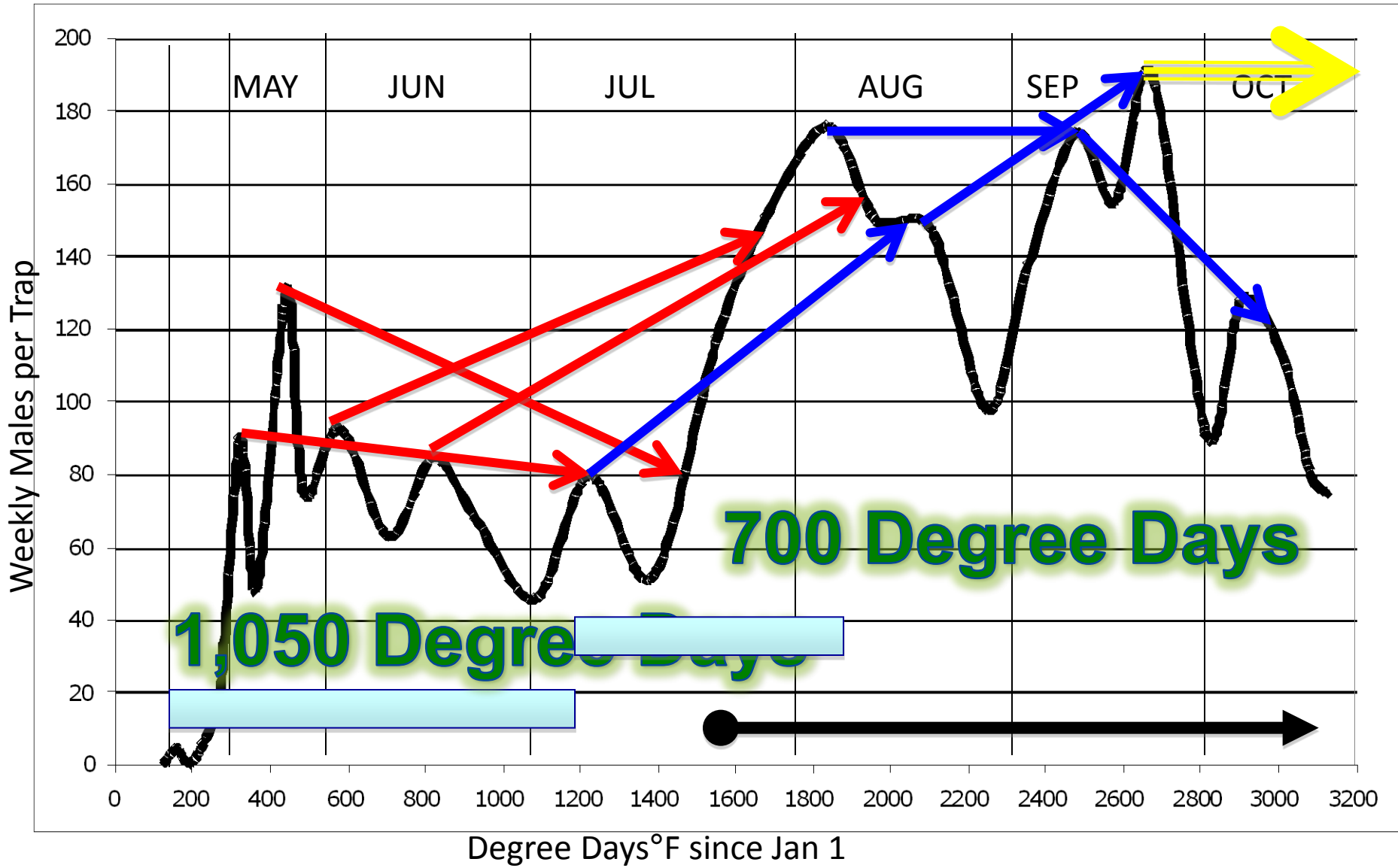
# Thank You





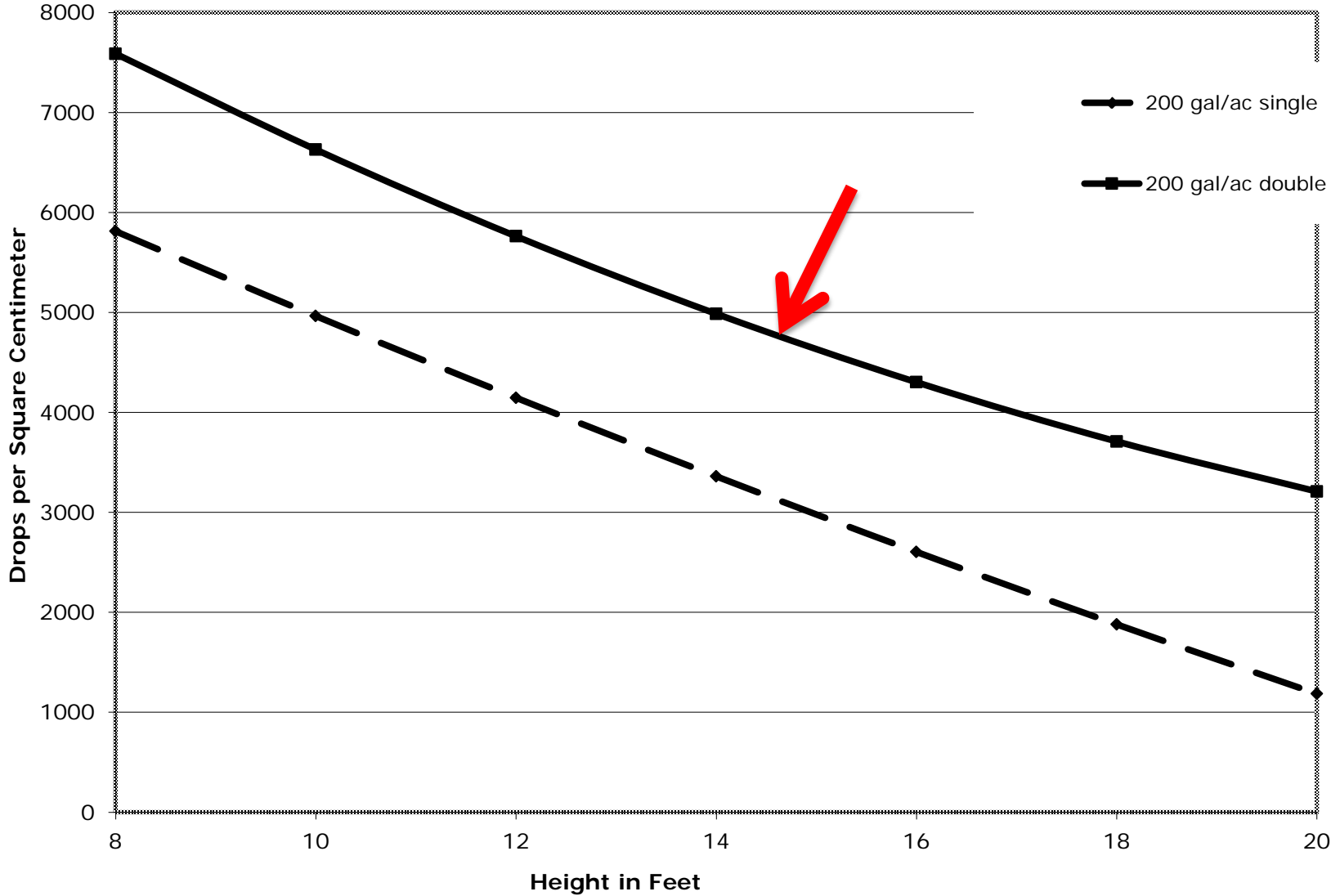
**Don't forget  
the hull**

# Almonds Madera 2010: Block 12-16



**Timing**

### PTO, 2 mph, 200 gal/acre, Large Almonds, Fresno County



<b>Treatment</b>	<b>Hours</b>	<b>Mortality</b>	<b>Adults</b>
Altacor (3.5oz)	24	32.46%	114
	48	46.67%	120
	72	65.83%	120
<b>Control</b>		<b>32.23%</b>	<b>121</b>
Delegate (6.2 oz)	24	66.67%	123
	48	83.33%	120
	72	98.33%	120

### 2 mph, PTO 200 gal/ac vs Engine Driven 150 gal/ac, Large Almonds, Fresno County

