### How much does NOW damage cost?

Mel Machado, Blue Diamond Growers













# **NOW - Costs and Impacts**



# NOW Population Potential

110 Trees /Acre
1 Mummy /Tree
25% Female Survival from Mummy Nuts
80 Eggs/Female

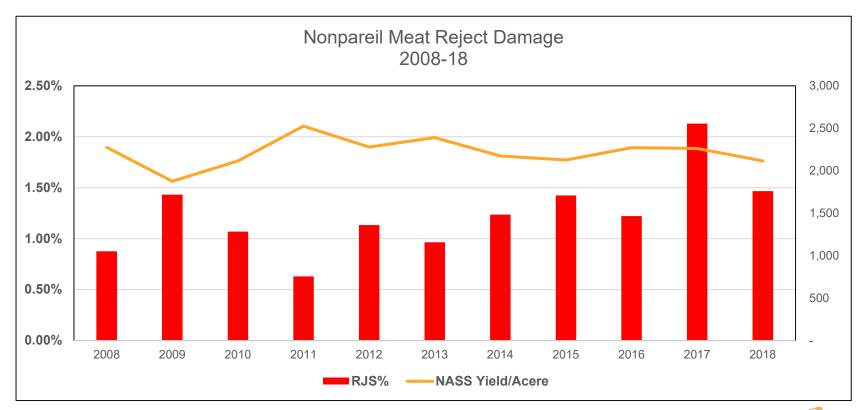
Eggs	Females	Survival	Population
1,120	560	50%	280
22,400	11,200	50%	5,600
448,000	224,000	50%	112,000

Thank You Franz Neiderholzer





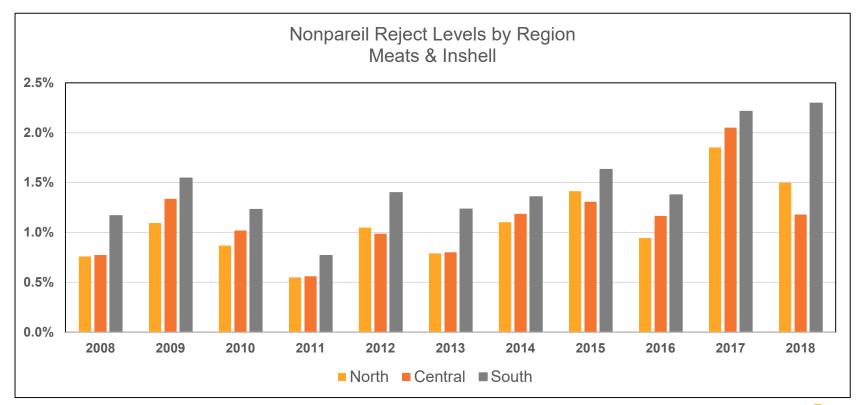
### Nonpareil Reject Levels 2017 vs 2018







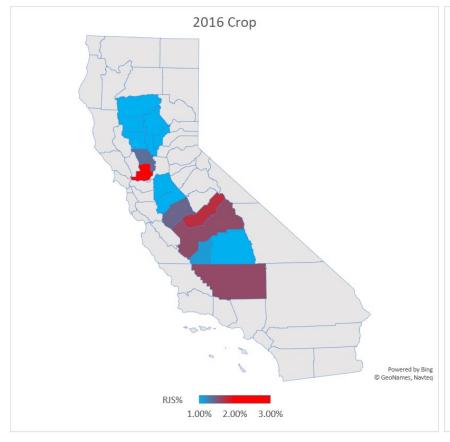
### Nonpareil Reject Levels by Region







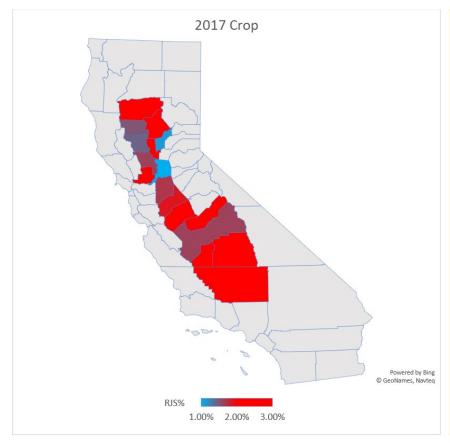
### Nonpareil Reject Levels 2016 vs 2017

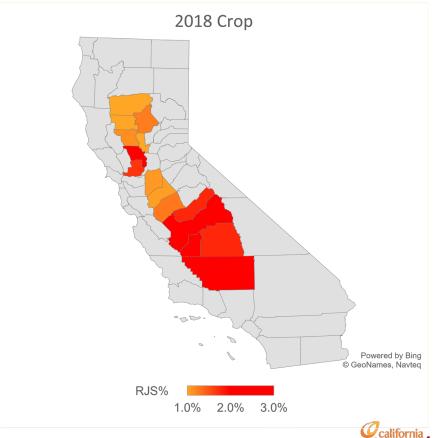






### Nonpareil Reject Levels 2017 vs 2018







## Nonpareil Meats

			2017		2018				
				Premiu			Premiu		
Grade	Max	RJS%	Grade %	m	RJS%	Grade %	m		
		2.1%	100.0%	\$0.104	1.5%	100.0%	\$0.123		
Q+	\$0.185	0.8%	28.5%	\$0.171	0.7%	34.4%	\$0.174		
Q1	\$0.165	0.9%	20.0%	\$0.142	0.7%	27.3%	\$0.144		
Q2	\$0.145	1.6%	15.5%	\$0.107	1.4%	15.2%	\$0.108		
Q3	\$0.125	1.2%	0.9%	\$0.079	1.1%	1.2%	\$0.081		
S1	\$0.105	4.2%	35.1%	\$0.025	3.7%	21.9%	\$0.026		

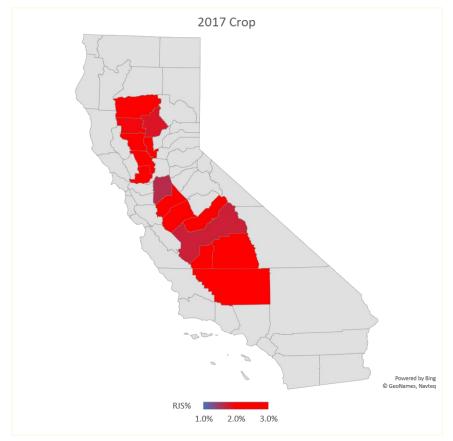


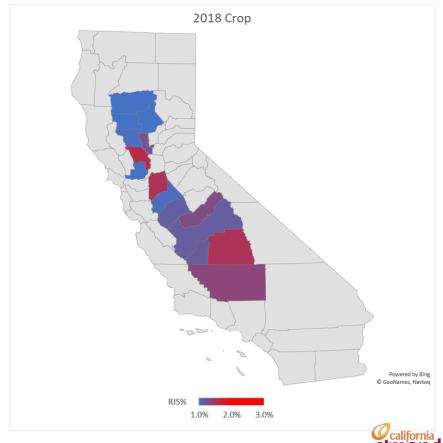
Region	2017	2018
North	1.8%	1.3%
Central	2.1%	1.1%
South	2.3%	2.2%





# Monterey Reject Levels 2017 vs 2018

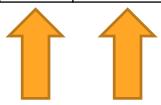






## **Monterey Meats**

		2017				2018			
								Premiu	
Grade	Max	RJS%	Grade %	Premium		RJS%	Grade %	m	
		2.38%	100.0%	\$0.069		1.21%	100.0%	\$0.095	
Q4	\$0.140	1.07%	39.6%	\$0.114		0.79%	61.4%	\$0.118	
Q5	\$0.130	1.05%	17.6%	\$0.089		0.79%	20.3%	\$0.087	
Q6	\$0.120	0.82%	3.1%	\$0.078		0.93%	1.4%	\$0.073	
S1	\$0.100	4.41%	39.6%	\$0.012		3.28%	17.0%	\$0.019	



Region	2017	2018
North	2.28%	1.12%
Central	2.64%	1.16%
South	2.18%	1.31%





Comparative Values at Varying Reject Leve
---

Yield 2.500 Price 2.50 **Total Premium** Incremental TMS RJS% **RJS Wt Field Loss** TGM Base Rate **Amount Total Value** Loss Loss Value/TGM 0.00% 2,500 \$462.50 \$2.685 2,500 \$6,250.00 \$0.185 \$6,712.50 (\$158.75) 1.00% 25 25 2,450 \$6,125.00 \$0.175 \$428.75 \$6,553.75 \$2.675 2,500 50 2.00% 50 2,400 \$6,000.00 \$0.115 \$276.00 \$6,276.00 (\$436.50) (\$277.75) \$2.615 2,500 2,500 3.00% 75 75 \$5,875.00 \$117.50 \$5,992.50 (\$720.00) (\$283.50) \$2.550 2,350 \$0.050 2,500 4.00% 100 100 2,300 \$5,750.00 \$0.045 \$103.50 \$5,853.50 (\$859.00) (\$139.00) \$2.545 2,500 5.00% 125 125 2.250 \$5,625.00 \$0.035 \$78.75 \$5,703.75 (\$1,008.75) (\$149.75) \$2.535 6.00% 150 150 2,200 \$5,500.00 \$0.025 \$55.00 \$5,555.00 (\$1,157.50) (\$148.75) \$2.525 2,500 7.00% 175 175 2,150 \$5,375.00 \$0.015 \$32.25 \$5,407.25 (\$1,305.25) (\$147.75) \$2.515 2,500 8.00% 200 \$5.250.00 \$0.005 \$5,260.50 (\$1,452.00) (\$146.75) \$2.505 2.500 200 2.100 \$10.50 9.00% 225 225 \$5,125.00 (\$0.005)(\$10.25)\$5,114.75 (\$1,597.75) (\$145.75) \$2.495 2,500 2,050 2,500 10.00% 250 250 2,000 \$5,000.00 (\$0.015)(\$30.00) \$4,970.00 (\$1,742.50) (\$144.75) \$2.485

Assumes full premium for Chipped & Broken and Foreign Material = \$.055

Assumes Nonpareil variety, Meat delivery.





#### **Comparative Values at Varying Reject Levels**

Yield 2.500 Price 2.50 **Total Premium** Opportunity Incremental TMS RJS% RJS Wt Field Loss TGM Base **Total Value** Value/TGM Rate Amount Loss Loss Loss 2,500 0.00% 2,500 \$6,250.00 \$0.185 \$462.50 \$6,712.50 \$2.685 \$0.000 2,500 1.00% 25 25 2,450 \$6,125.00 \$0.175 \$428.75 \$6,553.75 (\$158.75) \$2.675 (\$0.064)2,500 2.00% 50 50 2,400 \$6,000.00 \$0.115 \$276.00 \$6,276.00 (\$436.50) (\$277.75) \$2.615 (\$0.175)75 2,500 3.00% 75 2,350 \$5,875.00 \$0.050 \$117.50 \$5,992.50 (\$720.00) (\$283.50) \$2.550 (\$0.288)4.00% 100 \$5,750.00 \$0.045 \$103.50 \$5,853.50 (\$859.00) (\$139.00) \$2.545 (\$0.344)2,500 100 2,300 5.00% 125 125 2,250 \$5,625.00 \$0.035 \$78.75 \$5,703.75 (\$1,008.75) (\$149.75) \$2.535 (\$0.404)2,500 2,500 6.00% 150 150 2,200 \$5,500.00 \$0.025 \$55.00 \$5,555.00 (\$1,157.50) (\$148.75) \$2.525 (\$0.463)2,500 7.00% 175 175 2,150 \$5,375.00 \$0.015 \$32.25 \$5,407.25 (\$1,305.25) (\$147.75) \$2.515 (\$0.522)8.00% \$5,250.00 \$5,260.50 (\$1,452.00) (\$146.75)(\$0.581)2,500 200 200 2.100 \$0.005 \$10.50 \$2.505 2.500 9.00% 225 225 2.050 \$5,125.00 (\$0.005)(\$10.25) \$5,114.75 (\$1,597.75) (\$145.75)\$2.495 (\$0.639)

(\$30.00)

\$4.970.00

(\$1,742.50)

(\$144.75)

\$2.485

(\$0.015)

Assumes full premium for Chipped & Broken and Foreign Material = \$.055

250

2.000

\$5,000.00

250

Assumes Nonpareil variety, Meat delivery.

10.00%

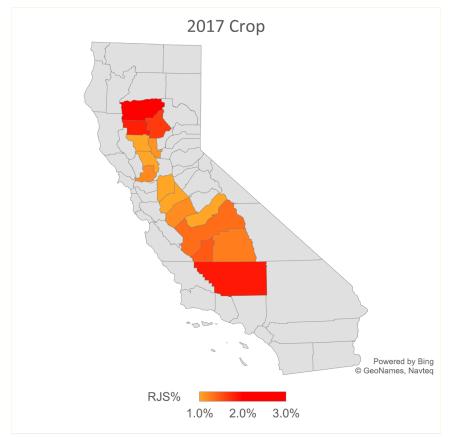
2.500

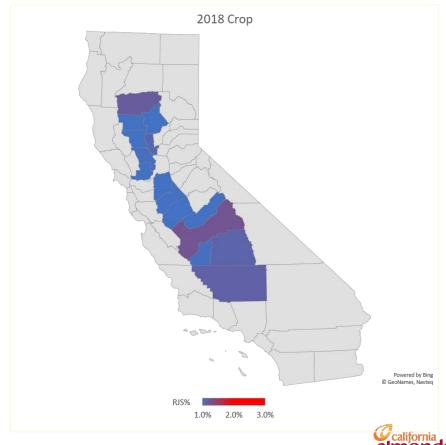


(\$0.697)



### Butte & Padre Reject Levels 2017 vs 2018

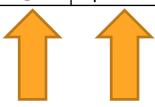






### **Butte & Padre Meats**

		2017				2018				
								Premiu		
Grade	Max	RJS%	Grade %	Premium		RJS%	Grade %	m		
		1.08%	100.0%	\$0.104		0.85%	100.0%	\$0.108		
Q4	\$0.14	0.73%	72.2%	\$0.122		0.64%	73.0%	\$0.122		
Q5	\$0.13	0.74%	13.9%	\$0.092		0.68%	16.3%	\$0.094		
Q6	\$0.12	0.69%	0.8%	\$0.080		0.60%	0.9%	\$0.081		
<b>S1</b>	\$0.10	3.37%	13.2%	\$0.016		2.71%	9.8%	\$0.024		



Region		
	2017	2018
North	1.14%	0.70%
Centra		
I	0.89%	0.69%
South	1 43%	1 24%





# Reject Breakdown

Variety	TMS	Reject %	NOW	Pinhol e	NOW/ PTB	РТВ	Ant s	Gum	Brow n Spot	Mold	Emb Shell
	30,239,629	0.80%	42.4	0.9	0.2	0.6	11.7	14.4	11.8	14.8	2
Butte	7,600,533	1.10%	52.2	1	0.1	0.5	9.2	13.9	14.3	5.9	1.5
Butte/Padr e	21,187,326	0.80%	38.3	0.9	0.3	0.6	13.1	15	10.8	17.9	2.2
Padre	1,451,770	0.60%	32.9	0.6	0.1	0.7	9.9	11.1	9.2	29.5	1.9







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### Sanitation...Implications Beyond the Orchard













# **NOW - Costs and Impacts**



### **Financial Losses Due to NOW**

Bob Klein, California Pistachio Research Board





#### NOW Damage in Pistachios is Unpredictable

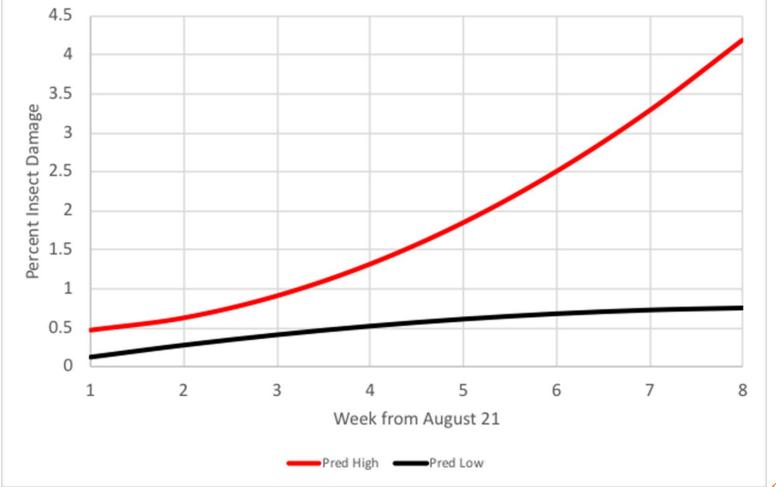
- Overwintering Populations
- Neighborhood
- Susceptibility
  - In some years, nut hulls do not appear to attract NOW egg laying
  - In some years, nut hulls maintain hull integrity
  - In some years, pea and early splits are much reduced



#### NOW Damage in Pistachios is Variable

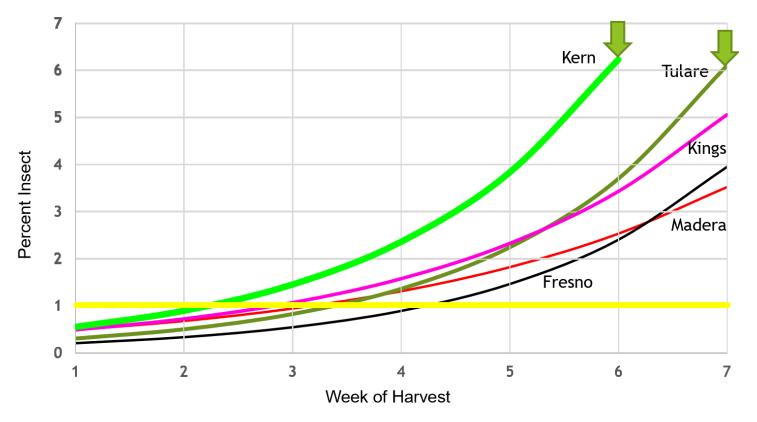
- Varies Annually (Bad vs Good Years)
- Varies Seasonally
  - Early vs Late Harvest
  - First vs Second Shake
- Varies Geographically
  - Expressed on County level but related to
    - DD accumulation
    - Other susceptible crops
    - Grower practices







### Pistachios: Average Weekly Damage 2017





### Defect Premium/Penalty Schedule

Defect	Old(\$)	New(\$)
<1.0%	0.2	0.2
1.0-1.50	0.18	0.18
1.51-1.99	0.15	0.15
2.0-2.99	0.5	0.5
3.0-3.99	0	0
4.0-4.99	-0.2	-0.05
5.0-5.99	-0.2	-0.15
6.0-6.99	-0.2	-0.2
7.0-7.99	-0.2	-0.25
8.0-8.99	-0.2	-0.35
9.0-9.99	-0.2	-0.4
>10	-0.35	-0.45



#### Per Cent of Lots with NOW damage levels in Bad versus Good Years

High Damage All years 2007, 2012, 2013, 2016, 2017

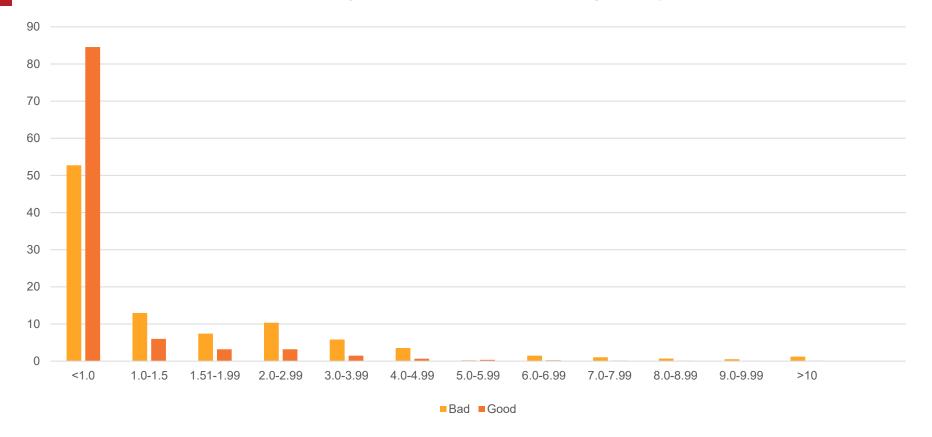
	N	Total	Percent
<1%	43808	83086	52.73%
1-1.50	10784	83086	12.98%
1.51- 1.99	6160	83086	7.41%
2.00 - 2.99	8586	83086	10.33%
3.0 - 3.99	4855	83086	5.84%
4.0 - 4.99	2950	83086	3.55%
5.0-5.99	1850	83086	2.23%
6.0-6.99	1201	83086	1.45%
7.0-7.99	854	83086	1.03%
8.0-8.99	574	83086	0.69%
9.0-9.99	450	83086	0.54%
>10	1014	83086	1.22%

Low Damage
All years 2008, 2009, 2010, 2011, 2014, 2015

- ,				
	N	Total	Percent	
<1%	62517	73940	84.55%	
1-1.50	4424	73940	5.98%	
1.51- 1.99	2353	73940	3.18%	
2.00 - 2.99	2357	73940	3.19%	
3.0 - 3.99	1077	73940	1.46%	
4.0 - 4.99	492	73940	0.67%	
5.0-5.99	276	73940	0.37%	
6.0-6.99	159	73940	0.22%	
7.0-7.99	93	73940	0.13%	
8.0-8.99	72	73940	0.10%	
9.0-9.99	36	73940	0.05%	
>10	84	73940	0.11%	



#### Distribution of NOW damage in lots in bad and good years





#### What if the bad years looked like the good years?

- 2.317 billion pounds of open inshell in five bad years
  - Based solely on insect damage (not total defects):
    - ■Premiums were \$336 million, would have been \$432 million
    - ■Penalties were \$54 million, would have been \$8 million
    - ■Difference of \$142 million over 5 years = \$28.4 million per year
    - ■Average acreage over the years = 180K bearing => \$160 per acre

# UNDERSTATES THE LOSS BECAUSE OTHER DEFECTS ASSOCIATED WITH NOW

- 1% NOW => 2% dark stain
- Decreases premiums, increase penalties



#### Bad versus Good Years

- 10% more lots in penalty
  - For simplicity, let's assume that means 10% of acreage = 18,000 acres
  - Average penalty is \$9.2 million => \$511 per acre

### Applying 2013 and 2014 results to potential 2019

- 2013 average bad year, 2014 was not all that good
- 750 million pounds, 80% splits = 600 million pounds OI
- Premium/Penalty difference = \$34 million
- \$12 million in penalties on 10% of deliveries
  - ■\$400 per acre equivalent



### Return per acre in on/off years for shifting premium/penalty

	0.65	0.45	0.25	0.15	0.05
3500					
lbs	2275	1575	\$875	525	175
2300					
lbs	1495	1035	575	345	115



### **NOW** in Walnuts

Eric Heidman, Diamonds Foods, LLC





#### NOW in Walnuts: It's a matter of perspective

- Level of NOW threat that varies greatly by:
  - Variety
    - Early season vs later season
  - Geography & Climate
    - Crop prevalence South to North
    - Degree days/generations
  - Orchard characteristics
    - Age, size, canopy health, sunburn, etc.
  - Cultural practices
    - Pest control
    - Irrigation and harvest management



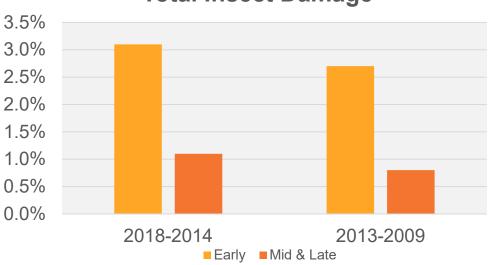
- NOW damage has been somewhat unpredictable in recent years
- For walnuts, Codling Moth plays as much of a role as NOW



#### Putting NOW prevalence into perspective

- Early harvesting varieties tend to be more prone to insect damage
  - Today, these varieties
     represent <10% of the total</li>
     statewide production
    - Primarily impacts second picking deliveries, or generally the last 10-25% of volume where NOW damage can run in excess of 5-10%

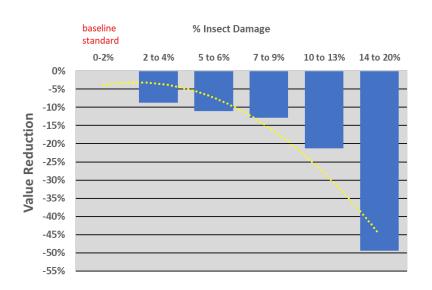
#### **Total Insect Damage**





#### What happens when it goes bad?

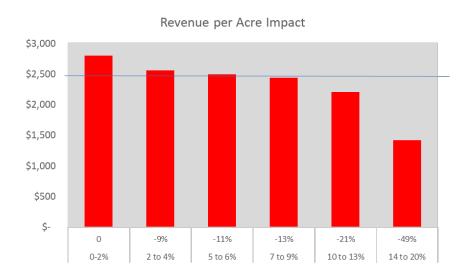
- Negatively impacts the two primary drivers of value: % Edible Yield and Kernel Color
- Depending on handler, there may be additional deducts for increased offgrade, reduced soundness for inshell utilization, etc.
- Degradation in quality has downstream implications
  - Loss of plant yield & lower net recovery leading to increased handling and greater sorting costs
  - Proliferation of lower grade material (size, color, appearance) with limited market opportunities





#### The Bottomline

- Whether subtle or severe, damage is not something you can afford to tolerate
- For an early season variety with generally lower per acre production, damage in excess of 2% may compromise ability to cover annual production costs
- You cannot successfully manage to an acceptable level of damage.
  - Strive for less than 2%
  - Inclusion of preventative measures should be part of everyday management

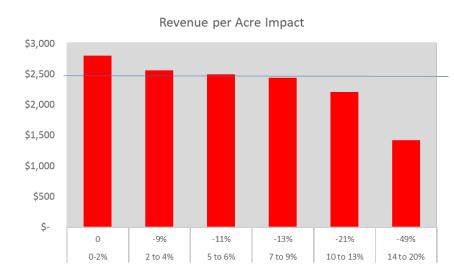


Early Season Variety: 3,500 lbs./ acre at \$.80/lb.



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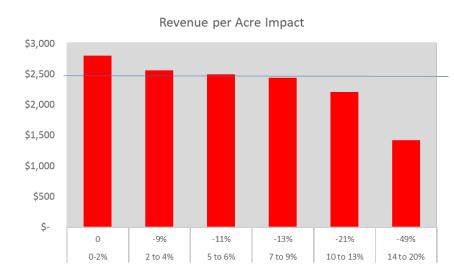


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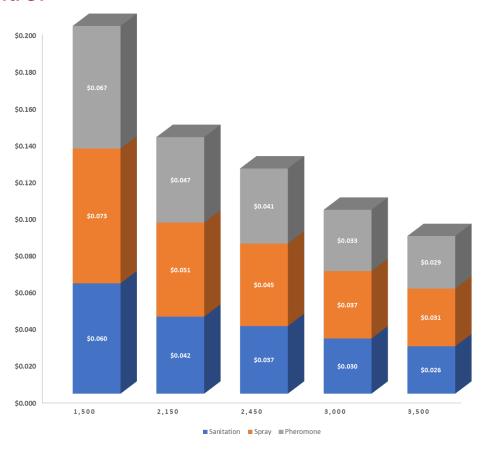
# **Does the Cost of Controlling NOW Pay Off?**

Jonathan Hoff, Monte Vista Farming Co.





## The Cost of Control

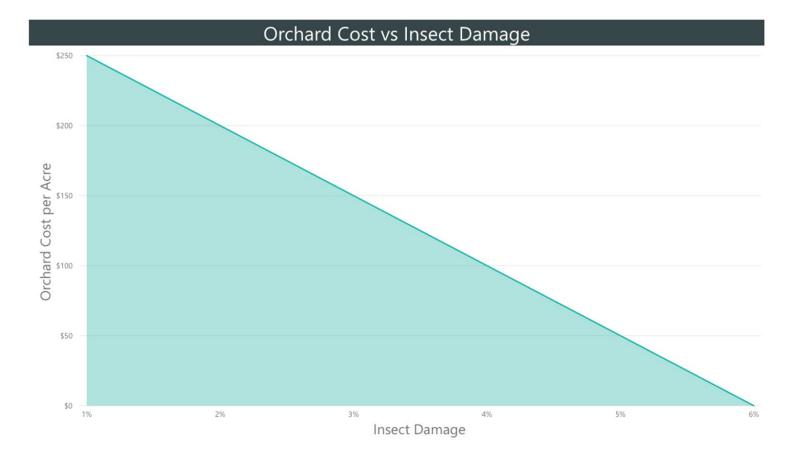




### The Costs Per Acre

- Orchard sanitation range: \$90-\$130 per acre
- Airblast sprayer application: \$50-\$65 per acre/application
- Mating disruption: ??
- Other IPM: ?
- Aerial application: ?







## The Components of Increasing Margin





## Marketability

- Consumer expectations are higher than ever
- Major CPG's have increased sensitivity to quality defects
- Higher defect limits buyer audience and therefore decreases demand

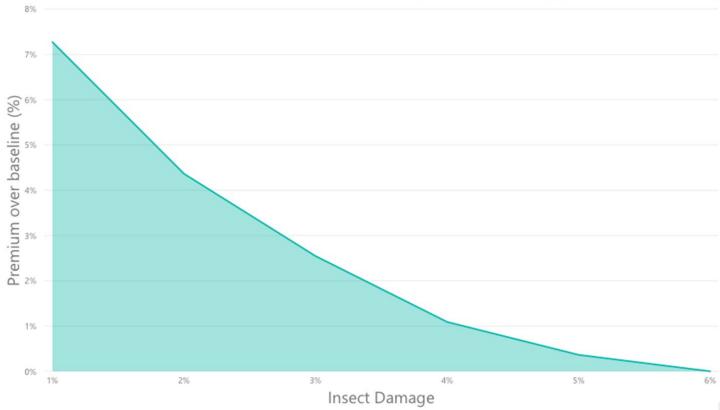


# Buyer Expectation in 2019

		1	Physical Sp		Special Requirements  GREEN automatic Double Pass					
Dissimilar	Doubles	Chip & Scratch	Foreign Material	Particles & Dust	Split & Broken	Other Defects	Serious Defects	J SPEC: % Doubles dendending on Crop Year 2019 - 3%		
5%	15%	10%	0.05%	0.1%	1%	5%	1.50%	TARGET ONLY - Thickness: 6.88 mm min with 1% max less 6.8mm - U.S. No.1 Carmel Type (sheet)		
5%	0.5% *	2% *	2ppt	0.1%	0.2% *	4%	0.5% *	TARGET ONLY - Thickness: 6.88 mm min with 1% max less than 6.8mm Length: 19mm - 24mm with 1% max less than 19mm or more than 24mm - Extra No. 1- Nonvareil (sheet)		
5%	1.16%	0.24%	2ppt	0.1%	0.04%	0.19%	0.14%	Thickness:7.0mm min Lenthg:22.5mm +/- 3.5mm -		
No more than 1.45% combined, including shriveled				Max 0.33%, 0% Mold/Gummy		d/Gummy	Extra No. I- Nonpareil (customer spec)			
5%	15%	20%	5ppt	0.1%	5%	3%	0.3%	Select Sheller Run - Carmel(sheet)		
5%	5%	3%	0.03%	0.1%	0.7%	4%	1.5%	Extra No.1 - Nonpareil (sheet)		
3%	3%	3%	5ppt	0.1%	0.5%	3%	0.5%	Extra No. 1- Nonpareil (email)		
2%	5%	3%	0.05%	0.1%	0.5%	1%	0.5%	Extra No.1- Nonpareil (email)		
2%	2%	2%	5ppt	0.1%	0.5%	2%	0.75%	Extra No. 1- Nonpareil (ønail)		
3%	3%	2%	0.05%	0.1%	0.5%	2%	0.5%	Extra No.1- Nonpareil (email)		
5%	15%	20%	10ppt	0.1%	5%	3%	1.5%	Select Sheller Run (customer spec)		
5%	15%	20%	10ppt	0.1%	5%	3%	1.5%	Select Sheller Run (customer spec)		
7%	15%	8%	0.05%	0.1%	1.0%	3%	0.8%	NP 27/30 AOL 501b Carton (email)		
7%	10%	10%	0.05%	0.1%	1.0%	3%	0.5%	NP 27/30 AOL Super Sacktote 22001b(email)		
	Scored 1/8"		•							
5%	7%	15%	0.05%	0.1%	1%	4%	1.5%	NPS 23/25 (customer spec)		
5%	5%	4%	0.05%	0.1%	1.0%	4%	1.5%	Extra No1 - Nonpareil & Carmel Type		
5%	15%	4%	0.05%	0.1%	1.0%	5%	1.5%	U.S. NO 1 (supreme) Nonpareil		
5%	15%	7%	0.05%	0.1%	1.0%	5%	1.5%	U.S. NO 1 (suprene) Carmel Type		
3%	2%	3%	5 ppt	0.1%	0.5%	3%	0.5%	Extra No. 1- Nonpareil (email)		



# Premium over baseline (%) by Insect Damage





## **Processing Costs and NOW**



**INCREASED SORTING COSTS** 



**INCREASED TESTING COSTS** 



INCREASED FUMIGATION COSTS



INCREASED STORAGE, RE-WORK, AND HANDLING COSTS



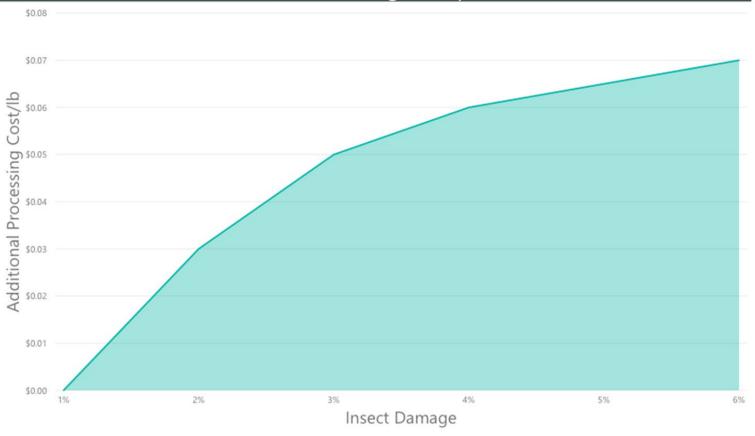
INCREASED PEST
MANAGEMENT AND
INFESTATION MITIGATION
COSTS



INCREASED REJECTION RATE

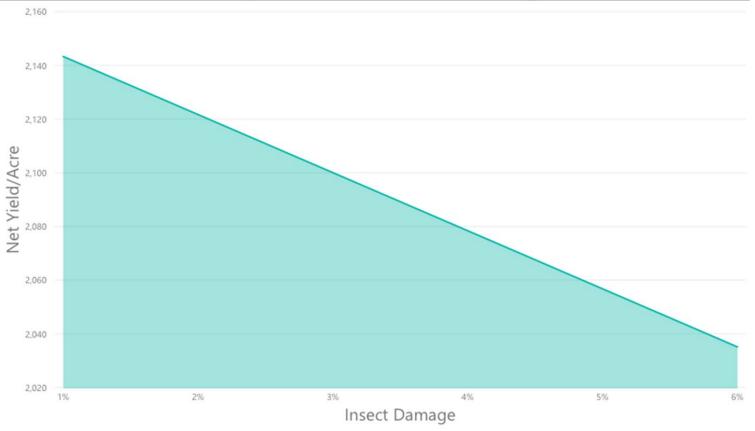


## Additional Processing Cost per Pound

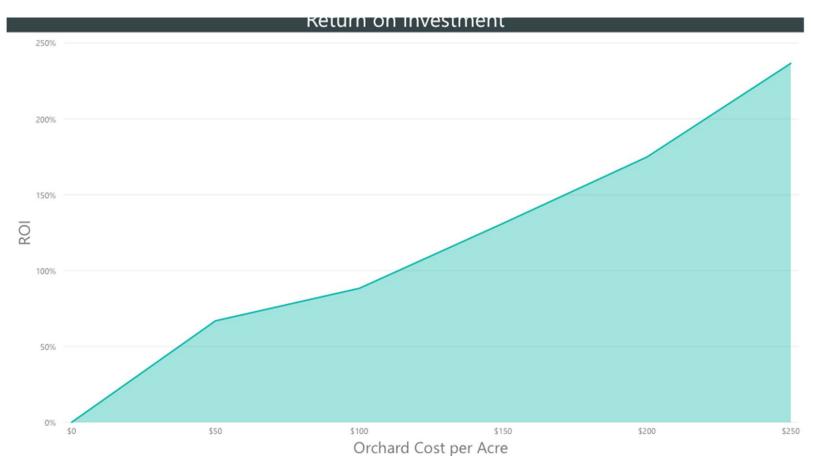




## Yield per Acre Net of Insect Damage









## **Aflatoxin & International Market Access**

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### Aflatoxin and NOW

#### What is Aflatoxin?

Aflatoxin is a carcinogen produced by a variety of species of the fungal genus Aspergillus (mainly A. flavus and A. parasiticus).<sup>1</sup>

### Why is Aflatoxin an issue?

The spores of the aflatoxin producing fungi are naturally occurring and common in air and soil of agricultural areas; in both temperate and tropical environments. Because these fungi are ubiquitous and opportunistic, aflatoxin contamination has become a food safety concern.<sup>1</sup>

What is the relationship between Aflatoxin and Navel Orangeworm (NOW)? Studies have shown that insect damage can lead to fungal infection and subsequent aflatoxin contamination- this is especially true with navel orangeworm damage. <sup>1</sup>



### Aflatoxin and Me

#### What does this have to do with me?

Aflatoxin impacts the bottom line for our growers and the overall health of our industry in a few ways...

- Cost of pest management in the field.
- 2. Monitoring cost at the handler level.
- 3. Cost associated with the market disruption caused by increased occurrences of aflatoxin and hypersensitivity (i.e. crop year 2017).



## **PEC Monitoring Cost**

Crop year	2018 *	2017	2016	2015
Total EU Shipments (lb.) <sup>2-5</sup>	463,162,537	616,596,556	588,693,668	538,749,640
Total samples submitted for PEC				
analysis <sup>6</sup>	9,694	15,046	14,648	13,870
Total failed PEC samples <sup>6</sup>	485	951	261	226
Cost of re-sorting failed loads (\$3,000)	\$1,455,000	\$2,853,000	\$783,000	\$678,000
PEC lb. sampled (44lb)	426,536	662,024	644,512	610,280
Value of lb. sampled (\$2)	\$853,072	\$1,324,048	\$1,289,024	\$1,220,560
Cost of lab analysis per certificate (\$120)	\$1,163,280	\$1,805,520	\$1,757,760	\$1,664,400
Cost of PEC certificate (\$15)	\$145,410	\$225,690	\$219,720	\$208,050
Total program cost	\$3,616,762	\$6,208,258	\$3,266,504	\$3,093,010
Cost/lb.	\$0.0078	\$0.0101	\$0.0055	\$0.0057

<sup>\*</sup>Shipments as of 6/10/2019. PEC data as of 4/4/2019



### Hypersensitivity and Market Access

In 2017 we saw a sharp increase in Aflatoxin rejections from the EU and Japan. These two markets are highlighted for a couple of reasons:

- 1. They make up the majority of aflatoxin related rejections.
- 2. Combined, they account for about 45% of all exported almonds.<sup>2-5</sup>

### In Japan...

The Ministry of Health, Labor and Welfare (MHLW) issued an inspection order for Almonds. Under an inspection order, all incoming commodities must be sampled and tested until the order is lifted. To lift an inspection order, the MHLW requires 300 clean shipments of the commodity in a period longer than one year, or a period of two years with no violations. In addition to the increased testing, Japan uses sampling and testing methods that are inconsistent with Codex (international) standards.

#### In the EU...

Member states are violating the PEC agreement and sampling over 1% of shipments. For every load that tests high for aflatoxin (rapid alert) they are flagging the shipper and pulling their next 10 loads, across the EU, for sampling and testing. Because ports have no means of effectively communicating when they are sampling, they often sample more than 10 loads for an indefinite amount of time.



### Cost of Returning a Load

As a result of this hypersensitivity and excessive amount of sampling we continue to see rejections in these two countries.

In the EU there were 8 rapid alert rejections in 2017, 32 in 2018, and 4 so far in 2019.<sup>6</sup> In Japan there has also been a very high number of rejections.

The cost of returning loads (from either country) has run \$25k to \$50k per load. To make matters worse there is no process in place with the FDA to receive returned loads. In some cases loads have actually been destroyed upon returning to the United States!

In Japan, the situation has become so difficult handlers have stopped shipping product there, with others considering the same course of action. There was a recent assessment increase to boost marketing efforts around the world in order to ship more almonds-this aflatoxin problem is thwarting those efforts and may result in damaging the industry reputation if we continue to have issues.



### We Know What We Have To Do

There is a silver lining to the recent events regarding Aflatoxin, we NOW know where to focus our efforts....

- 1. Continue to improve pest management practices in the fields.
- 2. Resolve regulatory issues with export markets.
- Develop standards both domestically and internationally to handle aflatoxin findings-utilizing processes and procedures we already have in place.



### References

- 1. Bruce C. Campbell, Russell J. Molyneux & Thomas F. Schatzki. 2003. Current Research on Reducing Pre- and Post-harvest Aflatoxin Contamination of U.S. Almond, Pistachio, and Walnut. Journal of Toxicology: Toxin Reviews. 22 (2-3): 225-266.
- 2. Almond Board California. 2019. Almond Industry Position Report APRIL 2019. Modesto: Almond Board California. [accessed 2019 Jun 10]. <a href="https://newsroom.almonds.com/sites/default/files/2019-05/2019.04\_PosRpt\_DHCUU.pdf">https://newsroom.almonds.com/sites/default/files/2019-05/2019.04\_PosRpt\_DHCUU.pdf</a>
- 3. Almond Board California. 2018. Almond Industry Position Report JULY 2018. Modesto: Almond Board California. [accessed 2019 Jun 10]. <a href="https://newsroom.almonds.com/sites/default/files/2018-08/2018.07">https://newsroom.almonds.com/sites/default/files/2018-08/2018.07</a> PosRpt.pdf
- 4. Almond Board California. 2017. Almond Industry Position Report JULY 2017. Modesto: Almond Board California. [accessed 2019 Jun 10]. <a href="https://newsroom.almonds.com/sites/default/files/2017.07posrpt.pdf">https://newsroom.almonds.com/sites/default/files/2017.07posrpt.pdf</a>
- 5. Almond Board California. 2016. Almond Industry Position Report JULY 2016. Modesto: Almond Board California. [accessed 2019 Jun 10]. <a href="https://newsroom.almonds.com/sites/default/files/2016.07posrpt.pdf">https://newsroom.almonds.com/sites/default/files/2016.07posrpt.pdf</a>
- 6. Almond Board California. 2019. FY 18/19 Market Update & Overview (TRAC committee).
- USDA Foreign Agricultural Service. 2018. GAIN Report JA8061. USA: USDA Foreign Agricultural Service.
   [accessed 2019 Jun 10].
  - https://gain.fas.usda.gov/Recent%20GAIN%20Publications/Japan%E2%80%99s%20Aflatoxin%20Testing%20Protocol%20\_Tokyo\_Japan\_8-21-2018.pdf

