

An Update on Costs to Implement Pathogen Control in Almonds

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Overview of the Presentation

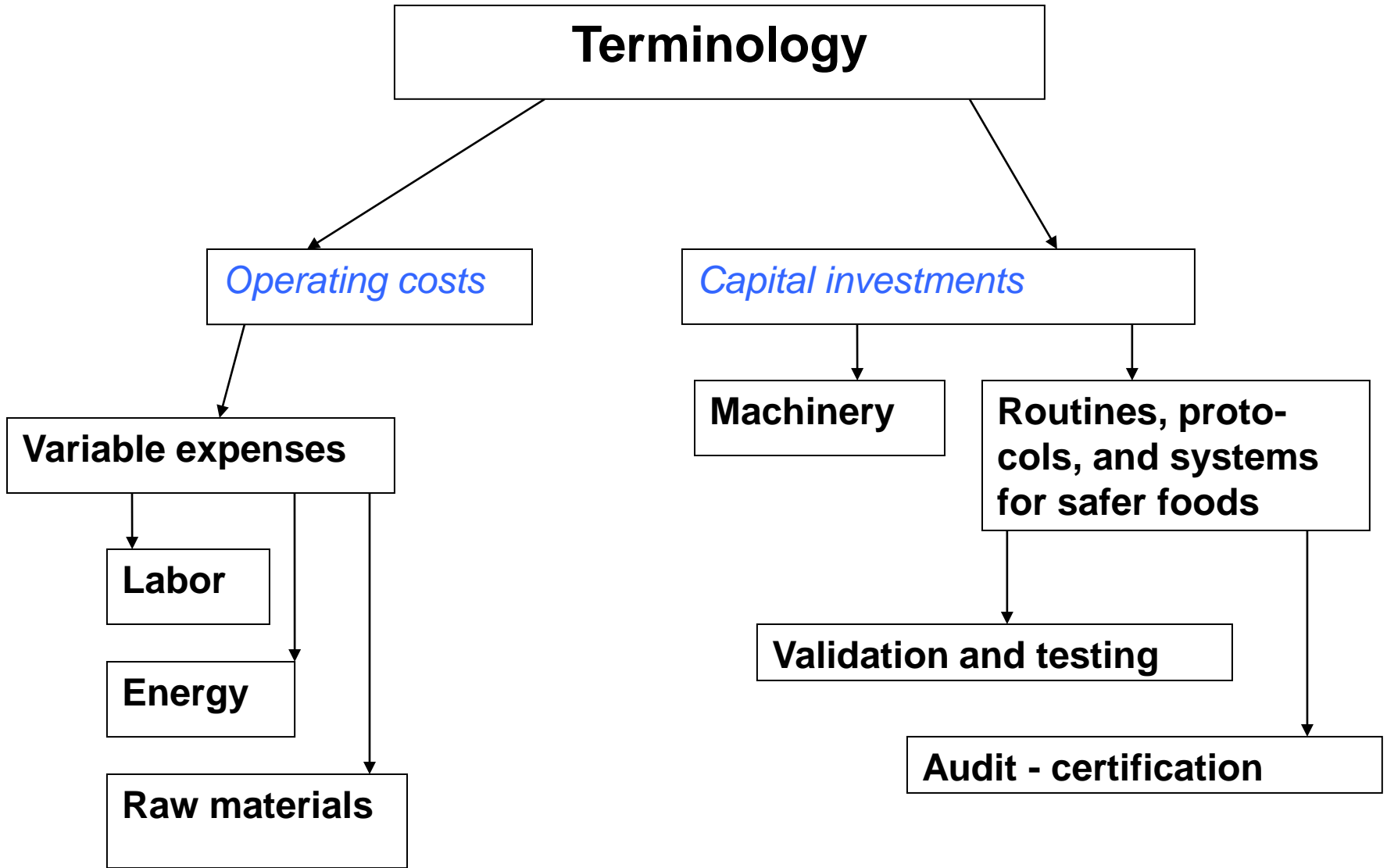
- Findings:
 - Operating costs
 - Capital investments
 - Market disruptions
 - Costs of oversight/assurance
- Conclusions and implications
 - Market for treatment
 - Auditors' credibility
- Research methods

2006



2009

- 810 million pounds would need treatment
- Operating costs ~ \$22-31 million, ignoring transportation
- 502 million pounds shipped to North America
- Operating costs \$28 million - \$34 million
- Capital costs ~ ~ ~ \$4 million -10 million
- Validation of technology is more costly than anticipated.



Operating costs

Table 1. Operating costs of the almond food safety Action Plan, by category

	All respondents (Unadjusted)	Within group statistics – (Unadjusted)			
		<i>Small</i>	<i>Medium</i>	<i>Large</i>	
Shipments (average per firm)	4,685,302	282,195	2,211,500	19,613,400	← pounds
<i>Cost items</i>					
Total Cost	6.52	6.05	10.08	3.10	} Cents per pound
Custom treatment charges	4.74	4.75	5.10	4.37	
Packaging	1.30	1.39	1.43	1.09	
Transport	2.30	2.02	2.59	2.37	
Identify custom provider	1.70	1.44	2.02	1.67	
Handler treatment plan	0.44	0.39	0.50	0.43	
Audits by DFA	0.31	0.38	0.17	0.40	
ABC compliance reports	0.76	1.04	0.71	0.48	
USDA inspection	0.27	0.30	0.09	0.41	
DV program recordkeeping	1.06	1.32	0.75	1.16	
DV program plans	0.34	0.36	0.41	0.26	
% treated in-house	11.39	4.44	7.14	24.57	
% treated custom	60.95	61.89	78.83	44.43	
% DV	18.14	11.67	12.83	31.00	

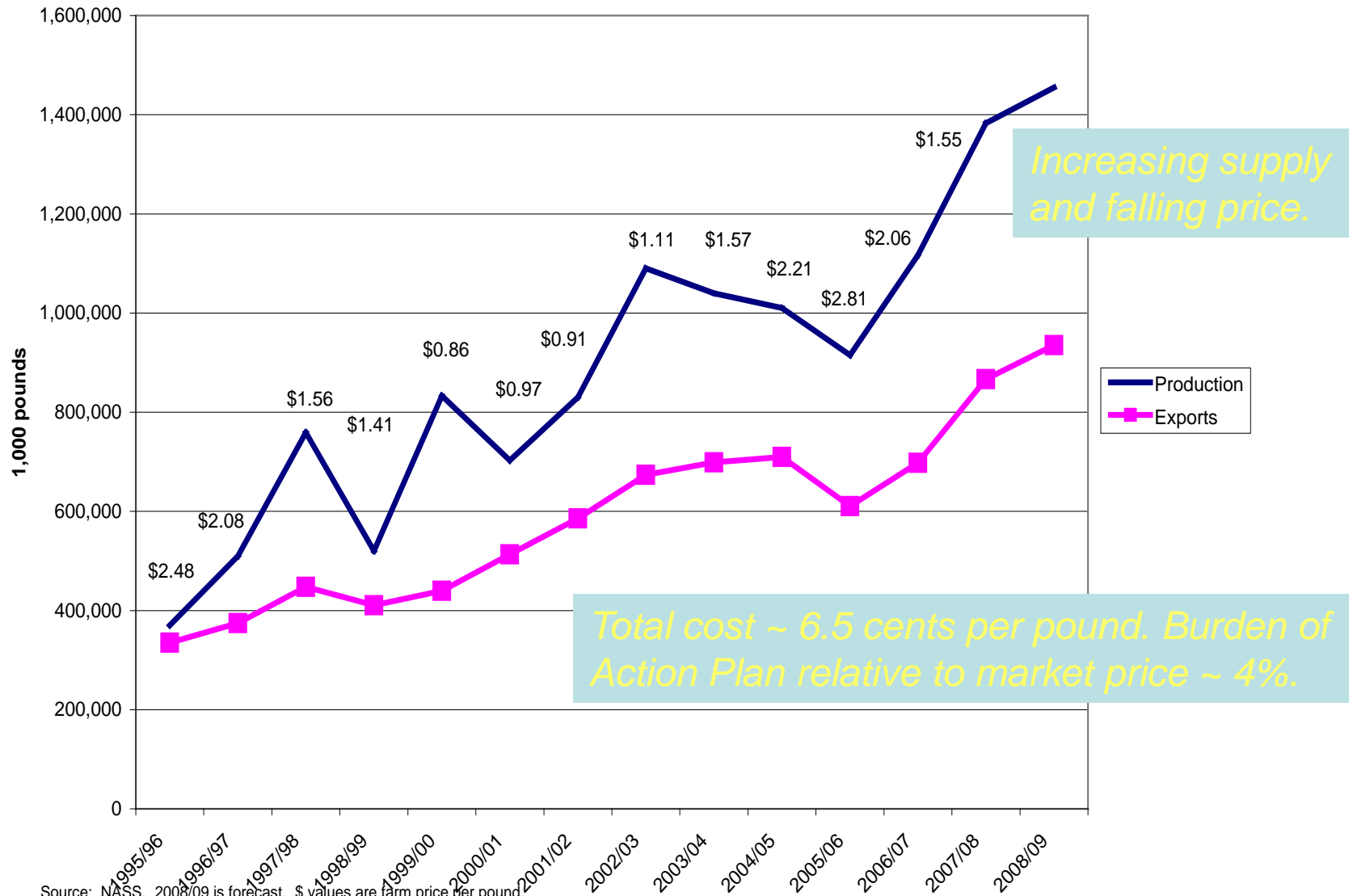
Source: Survey of almond handlers.

Product Flows and Costs under Action Plan

	Share of North Amer. shipments	Survey reported costs (cents per pound) <i>Total cost ~ 6.76 cents/pound.</i>
Custom treatment	61%	4.74 + 1.3 + 2.3 + ...
In-house treatment	11%	*****
Direct verifiable	18%	1.06 + .34
Other	10%	

Source: Survey of almond handlers.

Market Price and Supply Situation



Capital Investments

Survey reports are very limited and should be interpreted with caution.

- Total \$4-10 million.
- Modifications to known processes are significant.
- Some respondents excluded investments made prior to official rule.

Table 2. Capital investments associated with the Action Plan,
for new facilities and for modifications to existing equipment or facilities

	New	Modification
Average of those reporting an investment	\$1,050,000	\$193,000
Median (value greater than half of responses)	\$725,000	\$150,000

Technology validation has been costly

- Process authorities \$6,500 to \$50,000. Access / delays were mentioned.
- Laboratory costs have been high, particularly when repeated trials are needed.
- Pathogen-reduction goals have conflicted with quality.

Market Disruptions

Sales Losses or Delays

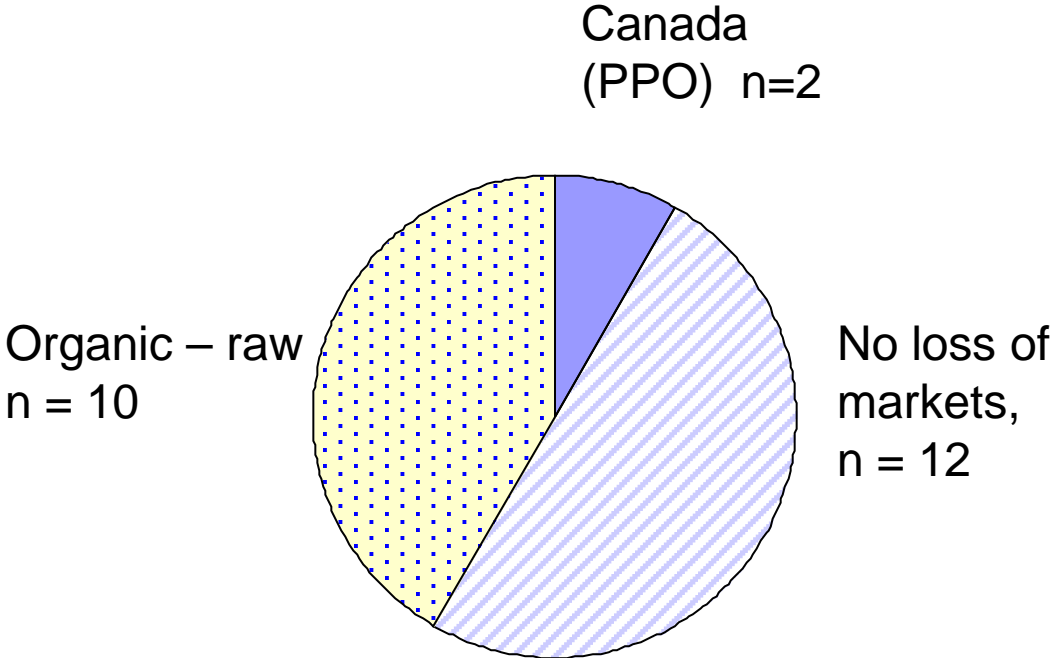
- Loss of sales to raw-organic consumer segment
- Loss of sales to Canada due to PPO
- Lost markets reported as major burden to smaller handlers
- Timeliness of custom treatment

Reports of Lost Markets due to Action Plan

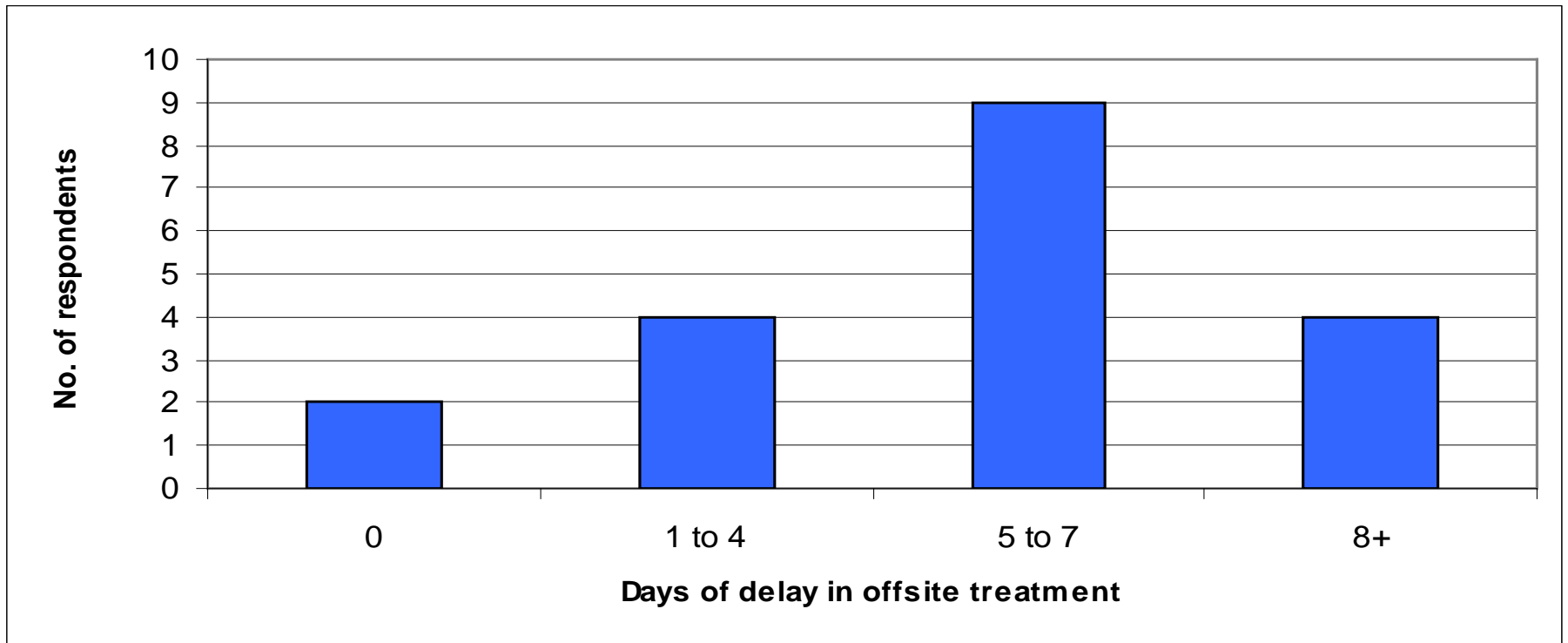


Source: Survey of almond handlers. 2 unquantified responses on losses are not included here.

Reasons for loss of markets



Timeliness of Custom Treatment



Source: Survey of almond handlers.

Logistics Model Results

- Treatment step in the marketing channel adds \$28 million to the total cost
- Capacity is adequate, with some constraints in the South
- Diesel fuel is a relatively minor contributor to total cost (\$2 more in fuel = \$290,000)

Costs of Oversight and Assurance

Cost of Auditing

- DFA audits the Handler Treatment Plans
 - Costs are low - \$27,489 total – for 3 audits per year at each handler.
 - Recent adverse publicity on 3rd party audits, particularly the payment incentives.
- Larger firms report higher auditing costs
- Time, effort, hassle factor are difficult to quantify.

Note: DFA = Amer. Council of Food Safety and Quality.

Issues for Further Consideration

- Competitiveness of the market for treatment services is a key issue in outlook for the program.
- Acceptance of heat-treatment in the raw-organic customer segment merits attention.
- Credibility of third-party expertise supporting audit-verification functions is essential.

Methods and Information Used in the Study

Features of the Logistics Model

- Linear programming – the gold standard for transportation modeling
- Limitations of this model, mainly in the production features
 - Common treatment technology
 - Costs are the same everywhere
 - Result: the complex product flows are not recognized.
 - Much more data would be required to fix this.

Issues not analyzed:

Constraints on capacity at critical times throughout the year.

Complexity of product types and access to acceptable treatment technology for that product.

Information Sources

Industry Survey

24
responses

Almond Board
records

Handler
treatment
plans

Shipments
data

Public secondary
sources

Energy
Information
Admin.

Road
atlas

Survey and its Limitations

- Field work is the best possible information
 - Specific to the industry
 - Original
 - Up-to-date
 - Drawbacks: Sensitive information, burdensome to respondents
- There are a few problems in interpretation or understanding of the questions
- Major issue with non-response
 - Analysis and adjustments for potential non-response bias

Weighting for Size Classes

Table i. Cost estimates based on unadjusted survey responses compared with two weighting methods.

	Unadjusted	Adjusted by Numbers of Respondents in Group	Adjusted by Shipment Volumes in Group
Total Cost (cents/pound)	6.52	6.76	4.24
Charge for Custom Treatment (cents/pound)	4.74	4.79	4.49
