Food Safety Challenges Facing the Pistachio Industry

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QUALITY PRODUCT = SAFE PRODUCT

- Safety part science, part consumer perception
- Consumers are not just domestic
  - Domestic, EU, other foreign
- Consumer concerns reflected in regulations
  - Pesticides
  - Aflatoxin
  - Foodborne pathogens
- FARM TO FORK Safety

PESTICIDE USE

- In 1998
  - 20 active ingredients used
  - 10 used on 5% or more of bearing acres
- In 2008
  - 52 a.i.’s
  - 20 used on 5% or more of bearing acres
  - 10 foliar- applied

PESTICIDE TOLERANCES

- Amount of pesticide legally permissible in product
- Determined by toxicology and field experiments
- All registered materials have domestic tolerances
- Tolerances may not exist in all export destinations

AFLATOXIN

- Discovered in late 60s/early 70s
- Particular concern in EU
- Regulated by ACP in domestic shipments
- Navel orangeworm predisposing cause
- Sorting and testing runs into millions of dollars
- Control
  - NOW control
  - Look for potential biocontrol within next few years

FOODBORNE PATHOGENS

- Historical industry perspective: low risk!
  - Harvested fresh
  - No ground contact
  - Washed, hulled, and dried
  - Roasted

PISTACHIO RECALL in 2009

- Late March – Kraft reports Salmonella contamination in pistachios
- Setton Farms initiates recall, ultimately recalls approx. 16 million pounds of pistachios
- Mid- April – industry meets with FDA to outline food safety goals for processors
- Harvest tour of FDA regulators

PROCESSOR ACCOMPLISHMENTS

- Separated raw and ready-to-eat areas
  - Physical separation (walls)
  - Sanitation programs
  - Air flow
  - Traffic flow (equipment and employees)
- Validations
- Environmental and product testing
- Hold and test facilities

REALITY CHECK

- Risk is not negligible or inconsequential
- Salmonella contamination occurs in the field
  - Incidence appears low but not zero
  - Variability among growers, lots not known
- Some risk unknowingly and unintentionally exacerbated by former processing techniques

Commingled Pistachios

WHAT GROWERS CAN DO

- Reduce the risk of contamination in the field by following Good Agricultural Practices
- Conduct GAP Self-Audit
- CPRB has revised (with processor input) industry GAP and self-audit

GAP SELF- AUDIT

	Yes	No	N/A
Record Documentation/Keeping			
Read GAP and performed at least one self-audit performed each year			MUST
The self-audit is documented and kept on file for 3 years			MUST
Orchard Location & Site Preparation			
Ranch History			
Documented history on ranch of prior crop or use before pistachios were planted			
The ranch does not occupy ground previously used as landfill or other types of waste disposal. If yes, document history before planting			
Site Management			
A ranch map has been created			MUST
Potential food safety hazards and mitigation practices are identified			
Water sources and irrigation systems are identified			
Fertilizer, Manures, Bio-Solids and Nutrition			
All applications of fertilizers, both organic and inorganic, have been recorded (Include site, date, fertilizer type, quantity, application method)			MUST
Nutritional needs have been assessed and a fertilizer budget prepared			MUST
Chemical fertilizer application records are available for all application methods used, including soil broadcast/banding, fertigation, and foliar application			MUST
Animal manure is used as a soil supplement or nutrient source			
If used, a risk assessment of manure usage has been conducted			
Dairy lagoon wateris not applied to the orchard			
Bio-solids (sewage sludge) have not been used as a soil supplement or nutrient source			
If used, bio-solids have not been applied within the past five years			MUST
Water Usage			
Records of irrigation water usage are maintained and available for review			
Orchards use the following irrigation water sources:			
Ground water pumped from wells			
Open water source from reservoirs, canals and rivers			
On-ranch reservoir			
Tertiary or "gray water" from water treatment plants			
Potable municipal water			
Annual test results on water sources are available for review			
Untreated sewage water is not used for irrigation			MUST
Water sources are designed and maintained to prevent animal access			MUST
Pesticide Use			
Pest control recommendations are made by a CDPR-certified Pest Control Advisor (PCA) or equivalent before pesticide application			MUST
The pistachio ranch follows the pesticide use reporting requirements of CDPR			MUST
All pesticides used are registered for pistachios by the EPA and CDPR			MUST
Pesticide application follows label and worker protection standard guidelines			MUST
Spray equipment has been properly maintained and calibrated			MUST
Maintenance and calibration logs are available for review			
Standard operating procedures have been developed for pesticide applications			
Aflatoxin			
Navel orangeworm populations are monitored by egg traps and/or visual observation for egg laying on early split nuts			
Harvest timing is used to reduce potential NOW damage			
Orchard sanitation is used to reduce overwintering NOW populations			
Harvest			
Pistachios are harvested mechanically without human contact			
Harvest bins dedicated to ranch or washed before using			
Nuts that come in contact with the ground are not recovered			MUST
Sanitation & Hygiene			
Sanitation facilities are provided as required by law			MUST
Worker sanitation training is provided and documented			

GAP SELF- AUDIT

- One Page, 35 to 40 questions, some musts
- Eight Sections
  - Record Documentation/Keeping
  - Orchard Locations and Site Preparation
  - Fertilizer, Manures, Bio-solids, and Nutrition
  - Water Usage
  - Pesticide Use
  - Aflatoxin
  - Harvest
  - Sanitation and Hygiene

Record Documentation/Keeping

- If it isn't documented, you didn't do it!
- MUSTS:
  - Read GAP and perform at least one self-audit each year
  - Self-audit is documented and kept on file for 3 years

Orchard Location and Site Preparation

- MUST:
  - A ranch map has been created
    - Show water sources and irrigation systems
    - Show potential surface water flows
    - Show roads and access, particularly as it relates to other farm uses
    - Surrounding land uses – how far out?
      - Base on risk – upwind, upstream, potential for contamination and nature of contaminants
      - Dairies, poultry, feedlots, sewage treatment, landfill, etc

Fertilizer, Manures, Bio-Solids and Nutrition

- MUSTS:
  - All applications of fertilizers, both organic and inorganic, have been recorded
    - Site, date, fertilizer type, quantity, application method
  - Nutritional needs have been assessed and a fertilizer budget prepared
  - Chemical fertilizer application records are available for all application methods used, including soil broadcast/banding, fertigation, and foliar application
  - Bio-solids (sewage sludge) have not been used within the past five years

Water Usage

- Annual test results on water sources?
- MUSTS:
  - Untreated sewage water is not used for irrigation
  - Water sources are designed and maintained to prevent animal access
    - Well heads must be designed to prevent backflow, animal access, and surface water flows from entering well

Pesticide Use

- Musts are part of legal requirements
  - Pest control recommendations are made by a CDPR-certified PCA or equivalent before application
  - The pistachio ranch follows pesticide use reporting requirements of CDPR
  - All pesticides used are registered for pistachios by EPA and CDPR
  - Pesticide application follows label and worker protection standard guidelines
  - Spray equipment has been properly maintained and calibrated

Harvest

- MUST:
  - Nuts that come in contact with the ground are not recovered
    - Don’t try raking under trees
    - Don’t collect nuts at the base of the trees
    - Don’t shovel up spillage at the loading site

Sanitation & Hygiene

- MUST:
  - Sanitation facilities as required by law
    - Watch for leakage and disposal site

GAP Self-Audit

- Processors have indicated they will require
- FDA currently has no authority for agricultural activities but may change with new food safety bill
- If FDA visits, self-audit will likely allay some of their concerns
- Due diligence means reading and applying good agricultural practices