



Produce Safety

ALLIANCE



The Produce Safety Rule: What Pistachio Growers Need to Know



Don Stoeckel, PhD
Extension Associate
Cornell University
Based in Sacramento, California



Topics list

- Who is this guy, what does he know?
- What you might want to know
- Key information about Produce Safety Rule
- Questions

- How to get to lunch



Introduction



- Microbial ecologist (science nerd)
- Trained farms about Produce Safety Rule since the beginning, in 2016
- Did time on the regulatory side with CDFA in 2022
- Knows the regulatory language, guidance, and practical implications of the Rule and Good Agricultural Practices
 - Reduce risk while complying with requirements



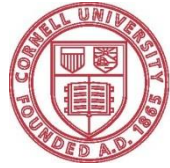
Credits and Caveats

- Imagery is borrowed from material posted online by various talented and dedicated professionals
 - Used with gratitude
 - Image credits are in slide notes, ask if you'd like to know more
- California grows a lot of crops, there is much to know
 - Thanks to Dr. Linda Harris in particular for sharing knowledge
 - You are pistachio experts, I mostly know poop and pathogens





Produce Safety Alliance



Cornell University



- Cooperative agreement between Cornell University, FDA, and USDA
- Established in 2010
- Focused on outreach and education
- Assist with meeting regulatory requirements
- Creation and management of Grower Training course



Produce Safety
ALLIANCE



2023 Produce Safety

Alliance Team



Southwest EA
Thais Ramos, Ph.D.



Spanish-Language EA
Mariana Villarreal D.V.M., Ph.D.
Davis Blasini, M.S.



Northwest EA
Collins Bugingo,
Ph.D.



Spanish-Language EA
Davis Blasini, M.S.



Midwest EA
Laurie George, Ph.D.



Southeast EA
Tommy Saunders, M.S.



Spanish-Language EA
Laura Acuña-Maldonado, Ph.D.



**PSA Coordinator &
Northeast EA**
Donna Clements, M.S.



Cornell Agritech
Betsy Bihn, Ph.D.
Michele
Humiston
Rob Way
Torია Melville



Nuts ... You're Special

- PSR compliance at a pistachio grove or processor looks different from lettuce, cantaloupes, and other operations
 - Lots of equipment, fewer workers
 - Mechanically harvested
 - Water uses
 - Business structures



Setton Farms: Mechanical harvested pistachio



What I hope for

- Share a few particularly important PSR requirements
- Give you something to talk about with inspectors

LET'S GIVE THEM
SOMETHING TO



TACO 'BOUT



We have about 20 more minutes How shall we spend them?

- Inspection preparedness
- Coverage, Exemptions and Exclusions
- Education/training requirements
- Soil Amendments (biological)
- Management of wildlife or domesticated animal intrusion
- Water
- Sanitation



Overall preparedness: On-Farm Readiness Review Data

Based on visits to 1320 farms

#	Health and Hygiene Issue	Number of farms with this issue
1	Inadequate visitor notification of health and hygiene requirements	178
2	Inadequate or missing records of worker hygiene training	175
3	Inadequate worker hygiene training	142
4	Inadequate toilet and hand washing facility	140
5	Lack of annual hygiene training for workers	129
6	Inadequate jewelry policy	71
7	Inadequate sick leave policy	64
8	Inadequate servicing of toilet and hand washing facility	59
9	Inadequate portable toilet spillage emergency plan	58

Meredith Melendez, 2020



Coverage, Exemptions, Exclusions

- Most nut operations will be covered by at least one Rule in the Food Safety Modernization Act
 - Produce Safety Rule: Grow, Harvest, may also pack and hold
 - Preventive Controls Rule for Human Foods: Manufacture/Process, may also pack and hold
 - Exemption for nut processors that only hull, shell nuts but do not roast or otherwise process/mfg (covered under Produce Safety Rule instead)



Education/Training

- General requirements apply



EDUCATE

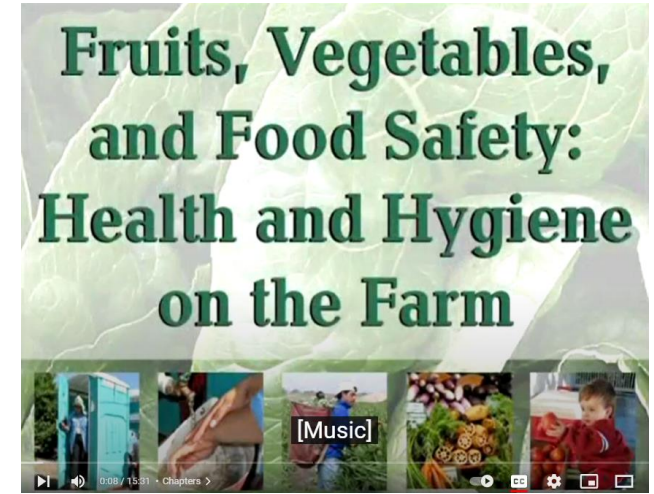
[CDFA Home](#) | [Produce Safety Program](#) | [Educate](#)

The California Department of Agriculture is committed to educating California produce farmers on how to follow the Produce Safety Rule and is working to make sure that produce farmers understand the requirements of the Produce Safety Rule by providing a host of resources.

REQUIRED TRAINING

Under the Produce Safety Rule, every produce farm must have an individual employed who has completed an FDA-approved Produce Safety Rule Grower Training, or equivalent course. In addition, all personnel engaged in the supervision of personnel who handle (contact) covered produce or food contact surfaces must receive training as specified in the Rule.

CDFA Produce Safety Program



Cornell University: Worker training video

Pistachios

[UC Food Safety](#) | [Low Moisture Foods](#) | [Nuts and Nut Pastes](#) | [Pistachios](#)

Information from UC

UC-Authored or Co-Authored Pistachio Documents

- [Guidelines for using *Enterococcus faecium* NRRL B-2354 as a surrogate microorganism in pistachio process validation](#) (UC Davis & Michigan State University) (PDF 386 KB)

Publications in Support of a Pistachio Food Safety Plan

Survey of pistachios for the presence of *Salmonella*

Harris, L. J., V. Lieberman, R. P. Mashiana, E. Atwill, M. Yang, J. C. Chandler, B. Bisha, and T. Jones. 2016. Prevalence and amounts of *Salmonella* found on raw California inshell pistachios. *J. Food Prot.* 79:1304–1315. doi:10.4315/0362-028X.JFP-16-054 <https://doi.org/10.4315/0362-028X.JFP-16-054>

UC Davis: Resources for pistachio food safety



Soil amendments

- Application requirements to reduce risk, based on treatment status

Pistachio Nutrients & Fertilization

Home · [Pistachio Nutrients & Fertilization](#)

Robert H. Beede, UCCE Farm Advisor, Kings Co.

A fertilization program is typically designed for a specific crop and orchard. At establishment, the soil is sa initiated, leaf analysis in mid-August is used to monitor it. Growers are advised to keep long-term records fertilizer and soil amendments, results of leaf sampling, and yield. These records provide information for d

UCCE: rates recommendations



WCNGG: Compost use for soil preparation prior to establishment



Animal management

- “Assess relevant area ... for evidence of potential contamination”
- “Take all measures reasonably necessary to identify and not harvest covered produce that is visibly contaminated with animal excreta”



WCNGG: Pistachio harvest



[UC IPM / Agriculture / Pistachio / Birds](#)

Agriculture: Pistachio Pest Management Guidelines

Birds

Crow: *Corvus brachyrhynchos*
Crowned sparrow: *Zonotrichia* spp.
European starling: *Sturnus vulgaris*
House finch: *Carpodacus mexicanus*
Scrub-jay: *Aphelocoma californica*
Yellow-billed magpie: *Pica nuttalli*

UCANR IPM: Pistachio pest management



Agricultural Water

- Agricultural water must be “safe and of adequate sanitary quality for its intended use”
 - “Agricultural water means water used in covered activities on covered produce where **water is intended to, or is likely to, contact covered produce** or food contact surfaces”
 - “Covered produce means produce that is subject to the requirements of the Produce Safety Rule and refers to the **harvestable or harvested part of the crop**”



UC ANR: Irrigation



UCCE: Pesticide spray almond orchard



CMV Group: Pistachio float tank



Agricultural Water *continued*

- Production water (irrigation, protective sprays)
 - Inspections delayed during rule revision
- Postharvest water (hulling, floating)
 - Inspections begin as early as 2023
 - Standard: No detectable generic *E coli* in 100 mL water
 - Requirement: “Manage the water as necessary ... to maintain its safety and adequate sanitary quality” during use



Sanitation

- Different from field sanitation to manage pests
- Food contact surfaces must be cleaned “as frequently as necessary” and sanitized “when necessary and appropriate”



UC ANR: Pistachio harvest



Hanford Sentinel: Pistachio washer



Wonderful: Pistachio dryers



Be in touch

producesafetyalliance.Cornell.edu



The Produce Safety Alliance team at Cornell

Not pictured:

- Thais Ramos, Southwest associate, td396@cornell.edu
- Don Stoeckel, Extension associate, dstoeckel@cornell.edu

Produce Safety
ALLIANCE