

# Emergency Food Safety and Planning in Preparation of Natural Disasters, Power Outages, Fires, and Other Emergency Events

June 15, 2023 6:30 - 7:30 pm



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Agriculture and Natural Resources

UC Master Food Preserver Program

# ***University of California Master Food Preserver Mission Statement***

*The UC Master Food Preserver Program's mission is to keep Californians safe and well as they use culturally appropriate, research-based practices to safely preserve food in the home, reducing food waste, increasing food security, and providing engaging ways for Californians to explore healthy food.*



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# Emergency Preparation

## Presenters:

Amanda, Angelique

## Support:

Chat monitor: Joyce

## Housekeeping:

- Microphones muted; Video off
- Questions via chat to MFP  
Joyce



# Presentation Overview

1. Overview of Emergencies and Natural Disasters
2. Water Preparation for Emergencies
3. Treating water in Emergency Situations
4. Water Storage
5. Emergency Food Storage
  - a. Examples of Store Bought and Homemade (Please include per person / per family estimates/ guideline, if in the MFP manual)
6. Safe Handling of Foods After a Flood
7. Safe Handling of Foods After a Fire
8. Loss of Power to a Freezer or Refrigerator
9. Safe Handling of Canned Foods Frozen During Storage
10. Removing Odors From Refrigerators' and Freezers
11. Other Emergency Items and Considerations
12. Additional Resources



# Presentation Objectives

- Understand recommendations for the household food and water storage in preparation for emergencies
- Recognize how to keep food safe during and after an emergency such as a loss of power, flood, fire or natural disaster
- Understand how to assure safety of drinking water during and after an emergency



# Overview of Emergencies and Natural Disasters

## What is a “Natural Disaster?”

According to the Department of Homeland Security a “Natural disasters include all types of severe weather, which have the potential to pose a significant threat to human health and safety, property, critical infrastructure, and homeland security. Natural disasters occur both seasonally and without warning, subjecting the nation to frequent periods of insecurity, disruption, and economic loss”. (<https://www.dhs.gov/natural-disasters>).



# Examples of Natural Disasters and Emergencies

- Flooding
- Tornadoes
- Tsunamis
- Earthquakes
- Wildfires
- Hurricanes
- Landslides and Debris Flow
- Thunderstorms and Lightning
- Space Weather
- Avalanches
- Volcanoes
- Extreme Heat
- Winter Storms
- Power Outages
- Natural Gas Outages
- Potable Water Shortages
- Utility Fires
- Poor Air Quality
- Road Closures



# Examples of Recent Unexpected Natural Disasters

- 2017 Oroville Dam Crisis
  - [Oroville Dam crisis – Wikipedia](#)
- 2018 Camp Fire
  - [https://en.wikipedia.org/wiki/Camp\\_Fire\\_\(2018\)](https://en.wikipedia.org/wiki/Camp_Fire_(2018))
- 2023 Big Bear Extreme Weather
  - <https://www.cbsnews.com/losangeles/news/big-bear-critically-low-on-food-and-fuel-after-severe-storm-traps-residents/>
- 2023 Flooding in Tulare County
  - <https://www.cnn.com/2023/04/15/us/tulare-lake-california-flood-climate/index.html>



## Examples of Recent Unexpected Natural Disasters (Continued)

Tulare County Flooding 2023



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## Why Plan for Natural Disasters and Other Emergencies?

During a natural disaster or emergency, you and your family may have limited or no access to safe food or water for several day.



# How do I Identify Natural Disasters in My Community?

- The Governor's Office of Emergency Services - MyHazards website (<https://myhazards.caloes.ca.gov/>) provides by address on for earthquake fire, flood, and tsunami risks.
- National Weather Service - <https://www.weather.gov/>. This website offers a search by zip code option. Additional helpful webpages include
- Contact your county emergency alert system (example: <https://www.placer.ca.gov/2426/Placer-Alert>)
- Contact your city's Office of Emergency Management (example: <https://www.cityofsacramento.org/Emergency-Management>)
- Federal Emergency Management Agency: Search Your Location - FEMA.gov (<https://www.fema.gov/locations>)



# How do I Identify Natural Disasters in My Community? (Continued)

The screenshot shows the National Weather Service website interface. At the top, the URL is [https://forecast.weather.gov/MapClick.php?lat=38.74400872753786&lon=-121.31022208206983#.ZHYh0O\\_MLIX](https://forecast.weather.gov/MapClick.php?lat=38.74400872753786&lon=-121.31022208206983#.ZHYh0O_MLIX). The page features the National Weather Service logo and navigation tabs: HOME, FORECAST, PAST WEATHER, SAFETY, INFORMATION, EDUCATION, NEWS, SEARCH, and ABOUT. A search bar is present with a 'Go' button. Below the search bar, the local forecast office is identified as Sacramento, CA. A 'Current conditions at Lincoln Regional Karl Harder Field (KLH)' section shows a clear sky with a temperature of 61°F (16°C). An 'Extended Forecast for Roseville CA' section displays weather icons for Today, Tonight, and Wednesday. A dropdown menu is open under the 'SAFETY' tab, listing various hazards: Floods, Tsunamis, Beach Hazards, Wildfire, Cold, Tornadoes, Air Quality, Fog, Heat, Hurricanes, Lightning, Safe Boating, Rip Currents, Thunderstorms, Space Weather, Sun (Ultraviolet Radiation), Safety Campaigns, Wind, Drought, and Winter Weather. To the right of the dropdown, a section titled 'Excessive Rainfall and Critical Fire Weather Concerns' contains text about severe weather conditions and a 'Read More' link. Below this, a 'More Information' section provides links to the Local Forecast Office, More Local Wx, 3 Day History, Mobile Weather, and Hourly Weather Forecast. At the bottom of the page, a weather forecast grid shows icons for Thursday, Thursday Night, Friday, Friday Night, and Saturday.



# How do I Identify Natural Disasters in My Community? (Continued)

## **Sign up for the following emergency alert systems:**

- FEMA's Emergency Alert System
  - <https://www.ready.gov/alerts>
- National Weather Service Alert System
  - <https://www.weather.gov/enterprise/>
- CalOES Emergency Alerts
  - <https://calalerts.org/>

Local School Districts, Counties, and Cities may have their own alert systems.



# Natural Disasters and Emergencies

Now that I have identified natural disasters and emergencies in my community, what are the next steps in my food and water preparedness journey? Learn about:

- How to plan, store and prepare your water for/in emergencies
- Emergency food storage
- Safe handling of foods after a flood
- Safe handling of foods after a fire
- Loss of power to a freezer or refrigerator
- Safe handling of canned foods frozen during storage
- Removing odors from refrigerators' and freezers
- Other Emergency Items and Considerations
- Additional resources



# Water Safety and Preservation

How to plan, store and prepare your water for/in emergencies

Presented by Amanda C.  
Sacramento County MFP since 2012

June 15, 2023



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# Fun Fact:

A human can live 1-2 months without food but can only go 3-10 days without water.



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# What this presentation covers:

- Preparing water for emergencies
- Long-term water storage and management
- Treating water in emergency situations





## Asking questions now, can save you later!

- How long could I be stuck in my house for?
- Do I have a generator to help run my plumbing?
- Is there a large natural water resource nearby?
  - Is it safe to drink or bathe in? Find out now before you need to know and can't ask anyone.



# You want to prepare, now what?

## Plan for your water needs

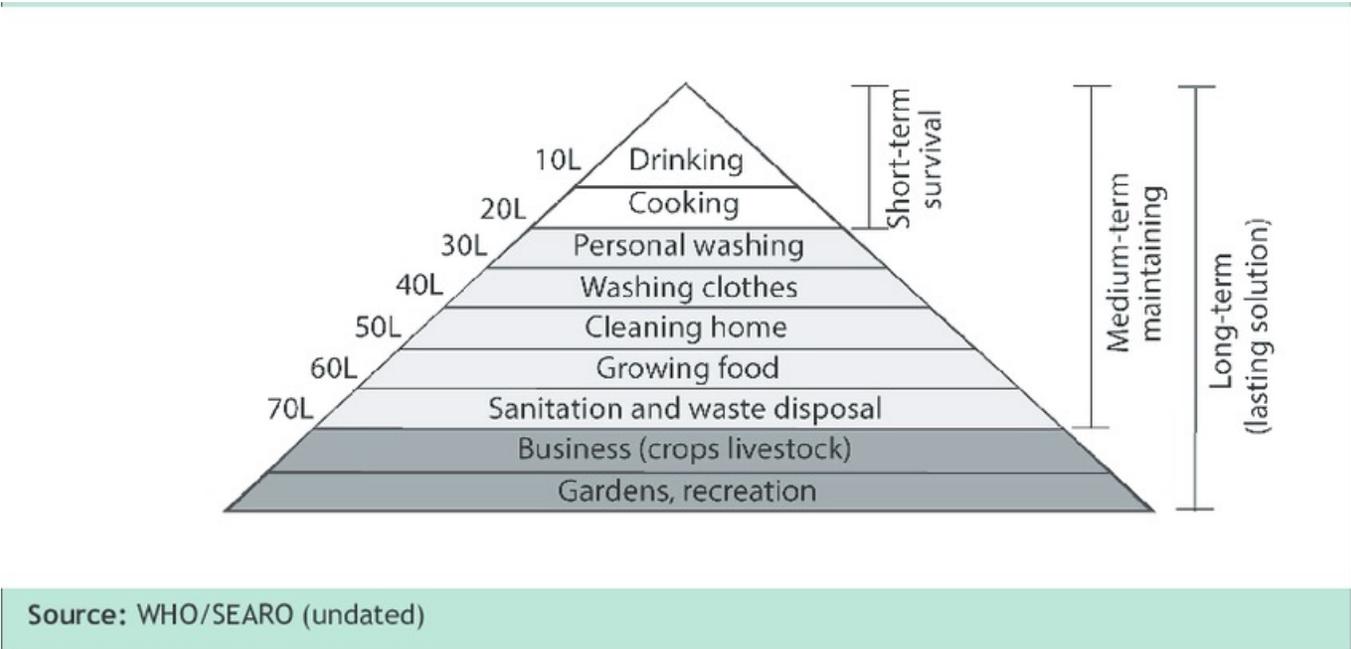
- People need about 1 gallon per day for a minimum of drinking and sanitation.
- 3 days worth per person is the recommended minimum, 2 weeks is more ideal.
- How many people/animals are depending on your plan?
- Individuals' needs (i.e. pregnant, sick, elderly)
- Location factors: hot, dry, remoteness and accessibility are all needing to be accounted for with additional water.

## Prepare your water for your home

- Does it need to be mobile (i.e. transporting livestock)?
- Can all of it be stored correctly at home, or if not, how much can you store?
- What various water sources do you have access to (i.e. nearby river, pond, lake, well)?
- Will it need to be treated during a possible emergency?
- Can you get to emergency service providers or will you be stuck at home to wait on rescue?



# World Health Organization's Hierarchy of Water Needs



## Calculating a household's water needs

	Daily Drinking Water	Weight - lbs	1 Day - oz	1 Day - gal	3 Day	2 Weeks - gal
<b>Human (Drinking)</b>	.5-1 oz/1 lb	160	80-160	.625-1.25	1.875-3.75 gal	8.75-17.5
<b>Human (Sanitation)</b>	64 oz	N/A	64	0.5	1.5 gal	7
<b>Dog</b>	1 oz/1 lb	40	40	0.3125	0.9375 gal	4.375
<b>Cat</b>	4 oz/5 lb	10	8	0.0625	24 oz	0.875
<b>Chicken</b>	16 oz	N/A	16	0.125	48 oz	1.75
<b>Horse</b>	6.6 gal/1100 lbs	1100	844.8	6.6	19.8 gal	92.4
<b>Goat</b>	2-3 gal	N/A	256-384	2-3 gal	6-9 gal	28-42

	1 Day - gal	3 Day - gal	2 Weeks - gal
<b>2 Humans, 1 cat</b>	2.3125	6.9375	32.375
<b>5 Humans</b>	5.625	16.875	78.75
<b>4 Humans, 2 chickens</b>	4.75	14.25	66.5
<b>4 Humans, 1 horse, 1 dog, 1 cat</b>	11.475	34.425	160.65

# We have our amount of water, now we prepare for it!

- Assess what kind of space do you have for storage
  - Water in home packed containers should be stored away from direct sunlight and between 50-70°F (see your manufacturer guidelines).
  - There are several storage receptacle options available, stackable, portable, soft sided, heavy duty and all various sizes.
  - Some could fit under a bed or at the bottom of a closet, you could mix and match based on your space to get the water amount you need stored and accessible to your household.



# Storage Options

- Long term
- Commercially packed, up to 5 years
- Home packed, up to 1 year



# Collecting and Cleaning Water During Emergencies

- Tub Bags
- Filters
- Clear plastic bottles





## Sanitizing water during an emergency

- Boiling water for 10 minutes
- Bleach
- Clear water in a clear container can be placed on a reflective metal surface (corrugated roofing) and left in the sun for 6 hours to sanitize it.

# Do you have any questions about water?



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# Emergency Food Storage

When handling food and water during an emergency, the basic principles of food and water safety include:

- Avoid food and water from unsafe sources
- Practice good personal and food-handling hygiene
  - Link to FEMA's [Water, Sanitation, & Hygiene \(WASH\)-related Emergencies & Outbreaks](#) webpage.
- Avoid cross-contamination
- Cook foods adequately
- Keep foods at safe temperatures
  - <https://www.cdc.gov/foodsafety/keep-food-safe.html>



# Emergency Food Storage (Continued)

## Additional Recommendations

- Creating an emergency plan for the care of pets, young children, and the disabled.
- Experts recommend that everyone has at least a three-day supply of food and water on hand.



# Emergency Food Storage (Continued)

## Emergency Food Storage Planning

- Is the plan that you preparing for your home, work, car, or other location?
  - Does the emergency require that you evacuate and have mobile access to emergency food and water?
- How many people do you need to feed? Will you need to plan for people other than your immediate household?
  - For how many days?
  - Does anyone in the group have any dietary restrictions that would require special planning?



# Emergency Food Storage (Continued)

## Emergency Food Storage Planning (Continued)

- Will you be incorporating existing food stocks or will you be building your emergency food storage supply from scratch?
  - Have you taken an inventory of your emergency food supplies including verifying the food packaging and expiration dates?
  - How will you continue to track your emergency food inventory?
- Have you considered which types of emergency foods make sense for the natural disaster or emergency (example: dehydrated, vacuum packed (store bought), canned, freeze dried, or frozen)?



# Emergency Food Storage (Continued)

## What to Store

- Store foods that are familiar to you
- Canned foods & retort packages
- Ready to eat canned meats, fruits, vegetables and soup
- Shelf stable meats (example jerky)
- Cold cereals
- Dried Soups
- Juices (canned or powdered)
- Milk (canned or powdered)
- Peanut butter and Jelly
- Crackers, nuts, trail mixes
- Cookies and granola bars



# Emergency Food Storage (Continued)

## Check foods periodically for:

- Expiration dates
- Condition of containers
- Store utensils

## Store:

- Where safe from pests
- Above possible flood areas
- With manual can openers and a way to heat food
  - Sterno (indoor use)
  - Grills and camp stoves (outdoor use)

## Avoid:

- High sodium foods and foods that can make you thirsty.
- Foods that you will not eat

## Consider:

- Dietary restrictions
- Storing comfort foods
- Incorporating home preserved foods when appropriate.

## Additional Resources

- [Food | Ready.gov](https://www.foodready.gov)



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# Emergency Food Storage (Continued)

## Other Tips and Food Storage Options

- Take an in-person or online class with the [UCCE Master Food Preservers of Sacramento County](#) to learn about food safety and preservation technique.
- Learn how to safely preserve food at [National Center for Home Food Preservation](#).
- Add dehydrated foods to your emergency food storage supply. Reliable recipes can be found on the [National Center for Home Food Preservation](#) website.
- Plan emergency meals (shown in the picture: dehydrated nettles, pressure canned chicken, commercial low sodium chicken broth, and vacuum packed heart of palm noodles).



# Emergency Food Storage (Continued)



# Safe Handling of Water After a Flood

Advanced warning: Raise refrigerators and freezers by putting cement blocks under their corners. Move canned goods from basement or low cabinet to higher ground

- Drink only bottled water that hasn't been exposed to flood waters
- If no bottled water, follow instructions to treat water to make it safe
- Flooded well: test water and disinfect after flood waters recede
- If you suspect your well may be contaminated, contact local or state health dept or ag extension agent for specific advice



# Safe Handling of Foods After a Flood

- Do not eat food that may have come into contact with flood water (dangers are silt, raw sewage, oil, and chemical waste)

Discard	
Meat, poultry, fish, eggs	Fresh fruits, vegetables, other garden produce
Home-canned foods	Commercial glass jars of food or beverages with waxed cardboard seals, corks, pop tops, or peel-off tops (even if never opened)
All food in cardboard boxes, paper, foil, cellophane, or cloth	Spices, seasonings, extracts
Opened containers and packages	Flour, sugar, grain, coffee, and other staples in canisters
Dented, leaking, bulging, or rusted cans	Any food not in waterproof container
Cardboard juice, milk, or baby formula boxes and home-canned food that come into contact with flood water	



# Safe Handling of Foods After a Flood

- All-metal cans and retort pouches: These are the only items that can be saved after contact with flood waters and they must be sanitized before safe to use
- To salvage cans and retort pouches:
  - Inspect containers and discard any pouch that is damaged (swelling, leaking, punctures, fractures, extensive deep rusting, or crushing and denting severe enough to prevent normal stacking or opening with manual can opener)



# Safe Handling of Foods After a Flood

- To salvage cans and retort pouches:
  - Sanitize
    - Remove labels
    - Brush or wipe away dirt or silt
    - Mark contents of container on can lid or pouch w permanent marker incl exp date
    - Wash cans or pouches w soap and water, scrub brush and hot water
    - Rinse cans and pouches w warm water safe for drinking
    - Sanitize: (1) Immerse in water and allow water to come to a boil; boil for 2 minutes; or (2) place in solution of one tsp unscented, liquid chlorine bleach per gallon drinking water (cleanest, clearest available) for 15 minutes
    - Air dry for min 1 hour before opening or storing



# Safe Handling of Foods After a Flood

## Cookware and eating utensils

- Clean by washing in dishwasher or by hand (hot water), sanitize with chlorine bleach or boiling
  - Bleach: sanitize dishes, glassware, silverware, and glass cooking equipment by immersing for 15 minutes in sanitizing solution of 1 tsp unscented liquid chlorine bleach per gallon room-temp drinking water; air dry before using
  - Boiling: sanitize metal pans and utensils by boiling them in water for 10 minutes
- Discard all wooden and plastic utensils and containers, as well as baby bottle nipples and pacifiers



# Safe Handling of Foods After a Fire

- Three potential threats to food
  - Heat
  - Smoke fumes
  - Chemicals used to fight fire
- Heat
  - Food in cans or jars may appear to be OK but if they've been close to fire heat may not be safe
  - Heat can activate food spoilage bacteria, cans or jars can split or rupture



# Safe Handling of Foods After a Fire

- Fumes can permeate packaging
- Discard any type of food stored in permeable packaging (cardboard, plastic wrap, etc.)
- Discard raw foods stored outside the fridge (e.g., potatoes or fruit)
- Food in refrigerators or freezers can also be contaminated if seals aren't airtight; if this food has off flavor or odor, discard



# Safe Handling of Foods After a Fire

- Firefighting chemicals have toxic materials that can contaminate food and cookware
- Chemicals can't be washed off
- Dispose of items if they have come into contact with chemicals from firefighting
  - Fresh produce, eat, poultry, fish, and eggs
  - Opened containers and packages
  - Containers with peel-off tops or cork lined, waxed cardboard, or paraffin waxed seals
  - All food in cardboard boxes, paper, foil, plastic, cellophane, cloth
  - Spices, seasonings, extracts; flour, sugar, other staples in canisters



# Safe Handling of Foods After a Fire

- Disinfect cans that have no heat damage and are free from dents and rust
- Mark contents with permanent marker, remove label
- Clean with detergent and scrub brush
- Immerse in solution of 1 tsp chlorine bleach per gallon water for 15 minutes, air dry



# Loss of Power to a Freezer or Refrigerator

## Frozen foods

- Dry ice can be used to maintain frozen foods
- If food has thawed temperature and time will greatly impact the number of bacteria present and whether the food is safe to eat
- If food contains ice crystals or is at 40°F or below the food is safe and can be safely refrozen (may be a lower quality and should be used soon)
- Discard all foods that have been above 40°F for two hours or longer. The only foods that should be kept are breads, cakes, cookies, flour, and nuts.

## Refrigerated foods

- If perishable food has been above 40°F for over two hours it must be discarded



# Safe Handling of Canned Foods Frozen During Storage

## Commercially – canned

- Undamaged cans – food is safe to eat
- Damage or bulged cans that are still frozen can be refrigerated or kept frozen
- Discard all damaged, leaking or bulged cans that have thawed – possible bacterial contamination through minor damage areas on can
- Discard all food with an off color or odor

## Home – canned

- If the jars are still sealed the food is safe to eat
- If the seal is broken but food is still frozen, refrigerate and use soon
- Discard all jars where the seal is broken and the food has thawed
- Discard jars that have been cracked.



# Removing Odors From Refrigerators and Freezers

- Dispose of any spoiled or questionable food
- Remove shelves, crispers and ice trays
- Wash with hot water and detergent then rinse with a sanitizing solution of one tablespoon unscented bleach per gallon of water
- Wash the interior of the refrigerator and freezer, including door and gasket with hot water and baking soda – rinse with sanitizing solution
- Leave the door open for about 15 minutes to allow air circulation



# Removing Odors From Refrigerators and Freezers (Continued)

## **If the odor persists:**

- Wipe with equal parts water and vinegar. Leave the doors open.
- Stuff the refrigerator with crumbled up paper or news paper. Leave closed for several days.
- Sprinkle fresh coffee grounds in the bottom of the refrigerator and freezer. Place cotton swabs with vanilla in the refrigerator and freezer. Keep closed for several days.
- Use commercial grade products found at hardware stores. Follow the manufacturer's instructions.
- If the odor cannot be removed, the refrigerator may need to be discarded. Consult with your local agency for the disposal process. Child-proof the refrigerator or remove the appliance doors for safety.



# Other Emergency Items and Considerations

## Do you and your family have?

- A means to keep warm or cool during extreme weather?
- An alternative plan for shelter, if needed?
- A means to receive emergency updates?
- A means to update friends and family of your status if there is a power outage?
- Sufficient medication in the event of a natural disaster or emergency?
- Sufficient hygiene supplies (example soap, famine toiletries, and the like)?
- Sufficient evening lighting (examples flashlights and candles, batteries)?
- A means to heat foods during a natural disaster (example: to cook rice or pasta)?
- An alternative source of power?
- A well stocked first aid kit?
- Clothing appropriate for an emergency or natural disaster?
- A means to wash dishes and utensils during an emergency or natural disaster?



# Emergency Planning Resources

- UC Master Food Preserver Program
  - <https://mfp.ucanr.edu/>
- UC Food Safety Website
- National Center for Home Food Preservation
- www.Ready.gov
  - READY Food Resources: <https://www.ready.gov/food#supplies>
  - READY Water Recommendations: <https://www.ready.gov/water>
- <https://www.FEMA.gov/>
- FEMA: Food and Water in an Emergency - See Page 4 for foods that may be stored indefinitely (in proper containers and conditions)
  - <https://www.fema.gov/pdf/library/f&web.pdf>
- Additional Items to Consider Adding to an Emergency Supply Kit:
  - Ready Emergency Supply List



# Emergency Planning Resources (Continued)

- FEMA Emergency Supply List
  - [https://www.ready.gov/sites/default/files/2021-02/ready\\_checklist.pdf](https://www.ready.gov/sites/default/files/2021-02/ready_checklist.pdf)
- California Public Utilities Commission: Public Safety Power Shutoffs
  - <https://www.cpuc.ca.gov/psps/>
- <https://www.airnow.gov/>
- National Weather Service <https://www.weather.gov/>
- Governor's Office of Emergency Services MyHazards
  - <https://myhazards.caloes.ca.gov/>



# Special Thank You To

## UC Master Food Preserver Program

- The primary presentation resource is the “Fundamentals of Consumer Food Safety and Preservation Master Handbook”(ISBN 978-2-62711-021-1)
- [UC Master Food Preservers of Sonoma County](#)
- [Master Food Preserver - UCCE Humboldt - Del ...  
- UC ANR](#)
- [UC Naturalist Program](#)



# Questions

Thank You



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# Upcoming UC Master Food Preserver Events

- Wednesday 6/21: Public demo – “Stone Fruit” (in-person)  
*Hosted by MFP of Sacramento County*
- Friday 6/23: Public Demo – “Emergency Prep for Food (in-person Windsor, CA)  
*Hosted by MFP of Sonoma County*
- Thursday & Saturday, 7/6 & 7/8: Tamale Making Hands-on (in-person)  
*Hosted by MFP of Sacramento County*
- July 17-21: Come meet us in person at the CA State Fair Bldg. B  
*Hosted by MFP of Sacramento County*



# Food Preservation Resources

- National Center for Home Food Preservation (<http://nchfp.uga.edu>)
- UC Master Food Preserver Program (<http://mfp.ucanr.edu>)
  - Recipes, Video Library, Publications
- UC Master Food Preservers of Sacramento County Helpline (<http://sacmfp.ucanr.edu>)
  - Ask a Master Food Preserver
  - Email us at [sacmfp@ucanr.edu](mailto:sacmfp@ucanr.edu)
  - Leave a voice mail message at (916) 875-6913, x7



# Next Steps

- Please give us feedback at <http://ucanr.edu/MFP-SacEval>
- Follow us on Facebook
  - <https://www.facebook.com/UCCEMFPofSacramento>
- Follow us on Instagram
  - <https://www.instagram.com/ucmasterfoodpreserverssaccnty/>
- Not signed up for our email notifications?
  - Sign up at <http://sacmfp.ucanr.edu>



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