



# Food safety for yourself and for your planet or Food preservation for food waste prevention

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Master Food Preservers



# What we're covering today

- **Who we are**

Why you should bother listening to the Master Food Preservers

- **Food waste**

Why it's important, and some tools you can use to fight it

- **Food preservation tools to prevent food waste**

What to do with produce you can't eat:  
freezing, quick pickles, and shrubs

- **Should I eat it?**

Preventing food waste versus preventing foodborne illness



# The UC Master Food Preserver Program

- Part of the University of California Division of Agriculture and Natural Resources
- Administered by UC Cooperative Extension county offices



Our mission: To extend *research-based* information on safe home food preservation methods to the residents of California



University of California

Agriculture and Natural Resources

UCCE Master Food Preserver

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# Sources of approved recipes



## [So Easy To Preserve](#)

by the Cooperative Extension of  
the University of Georgia.

## **The Ball Complete Book of Home Preserving** 2012, edited by Judi Kingry and Lauren Devine. Robert Rose Inc.

ISBN-10 : 0778801314

ISBN-13 : 978-0778801313



National Center for Home Food  
Preservation

[National Center for Home  
Food Preservation](#)

website

or

Other state extension resources -  
look for .edu URL endings

(You'll see some in this  
presentation)

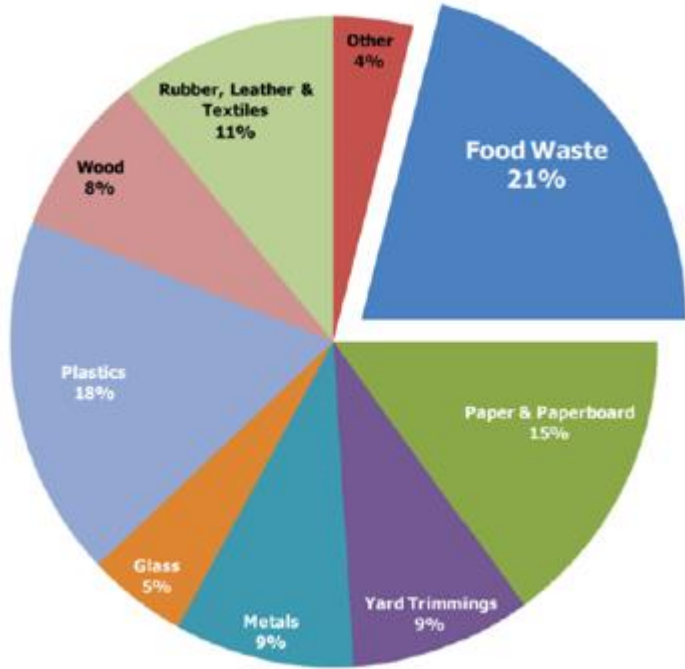


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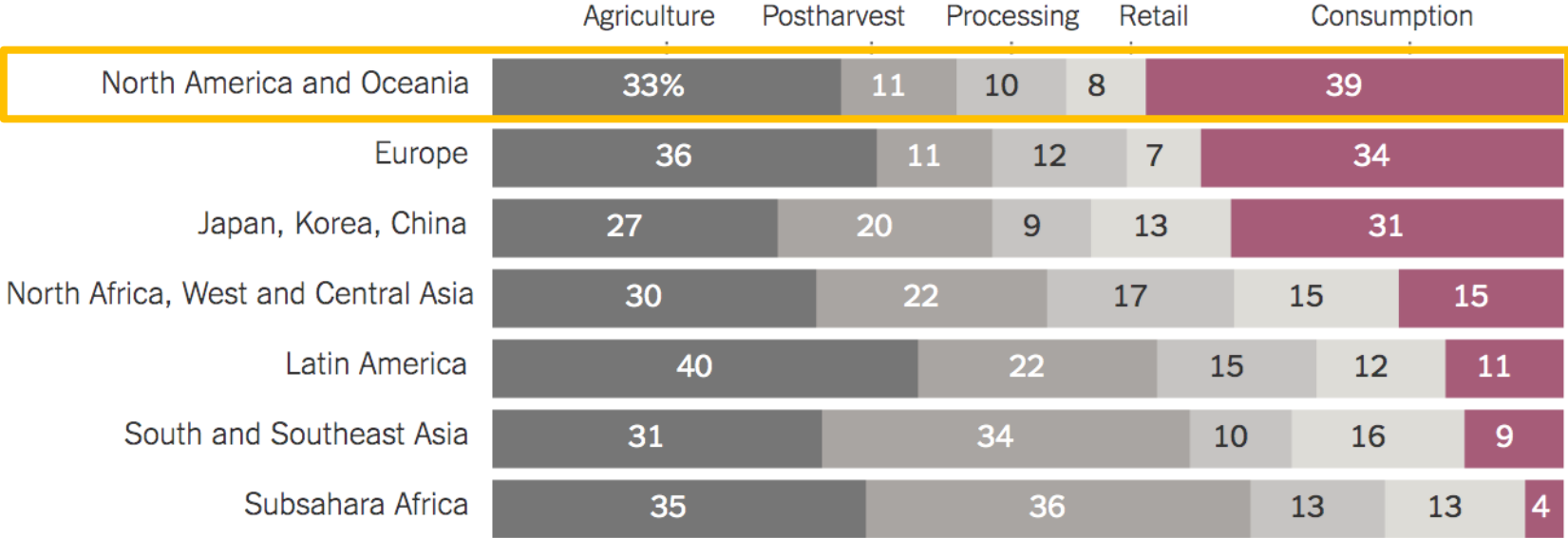
# Food is the largest category of American waste



Figures are from 2013. source: EPA, *Food: Too Good To Waste* toolkit and <https://bosscontrols.co.uk/menacing-methane-menacing-methane-methane-greenhouse-gas-thirty-times-potent-carbon-dioxide/>

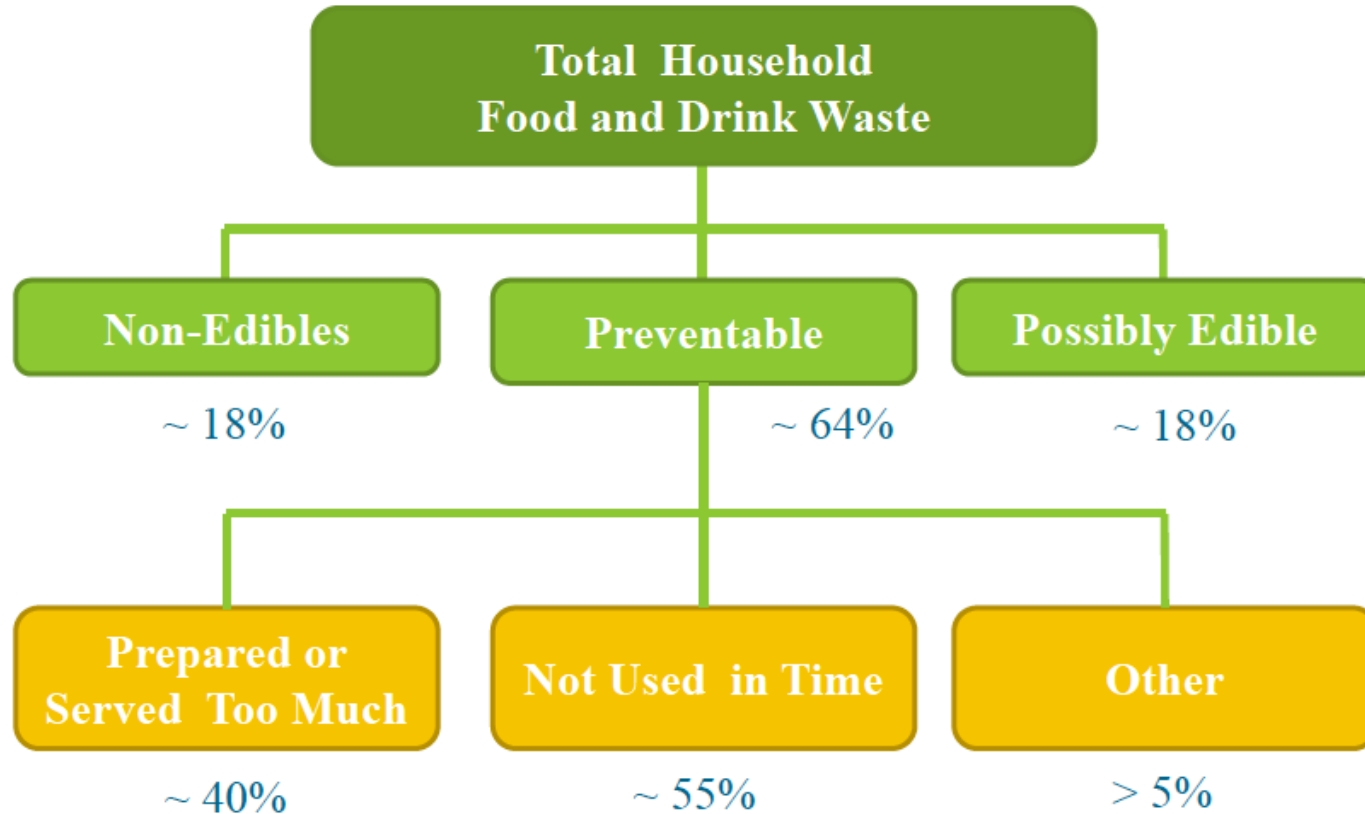
# We consumers can make a huge impact on food waste

## How food is lost varies by region



Source: UN Food and Agriculture Organization  
<https://www.nytimes.com/2017/12/12/climate/food-waste-emissions.html>

# Household food waste IS preventable



# The best thing to do with food is to eat it!



## Food Recovery Hierarchy



Find out more:

<https://www.usda.gov/foodwaste/faqs>

# How not to waste food

- Experiment with the "possibly edible"

# Chipping away at the “possibly edible” (that 18%)

- Beet greens
- Carrot tops
- Broccoli stems
- Broth
  - Onion skins
  - Leek scraps
  - Celery leaves
  - Cheese rinds
- Fillings for enchiladas, lasagna, etc.





### **BASIC VEGETABLE STOCK**

Uses up veggie scraps

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### **BEET GREENS WITH NUTMEG AND CLEMENTINE**

Uses up clementines and beet greens

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### **BLONDE CHICKEN STOCK**

Uses up chicken bones

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### **CARROT CAKE COCONUT MACAROON**

Uses up carrot pulp

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### **CHOPPED SALAD WITH AQUAFABA RANCH**

Uses up Aquafaba

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### **CILANTRO STEM GREEN SAUCE**

Uses up cilantro and cilantro stems

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### **CRISPY SHEET PAN HASH**

Uses up leftover roasted vegetables

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### **DAN BARBER'S ZUCCHINI BROCHETTES**

Uses up zucchini ends

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### **DAN BARBER'S ZUCCHINI STEM "PENNE"**

Uses up zucchini vine stems

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### **FROMAGE FORT**

Uses up cheese rinds

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### **LEFTOVER MASHED POTATO APPLE CIDER DONUTS**

Uses up leftover mashed potatoes

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### **LEFTOVER PUMPKIN PIE AND TURKEY CURRY**

Uses up pumpkin pie and turkey

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# How not to waste food

- Experiment with the "possibly edible" (18%)
- Take care in storage (the 55% not used in time)
  - Inspect and sort produce when you get it home
  - Use short-shelf-life items first
  - Put things in the right placescheck out the guide from Seattle Public Utilities  
<https://www.seattle.gov/utilities/protecting-our-environment/sustainability-tips/waste-prevention/at-home/stop-food-waste/food-storage>

- Toss out any spoiled produce to prevent spread of spoilage to the whole bunch
- Identify any bruised / scratched produce and consume it right away (it will spoil quicker)
- Remove wilted stems and leaves from herbs, onions, lettuce
- Separate greens from roots on carrots and beets
- Remove rubber bands and ties and repack in a container with room to breathe

- Keep an "eat me first" list on your fridge
- Put shorter-shelf-life-stuff in front so it's easy to see
- What has a shorter shelf life?  
Firm foods with low moisture content (apples, root vegetables) last longer than those with thin skins and high moisture content (leaves, berries).

# Refrigerator



## Low-humidity drawer (FRUITS)

Store loose or in breathable bags



**Stone Fruits**  
(ripe) peaches,  
nectarines, plums,  
apricots



**Tropical Fruits**  
(ripe) kiwis,  
mangoes,  
papayas



**Citrus**  
oranges,  
lemons, limes,  
grapefruit



**Apples**



**Pears (ripe)**



**Avocados (ripe)**



## High-humidity drawer (VEGETABLES)

# Refrigerator

Store in airtight bags or containers



**Artichokes**



**Greens**



**Cabbage**



**Celery**



**Bok choy**



**Brussels sprouts**



**Cauliflower**



**Carrots**



**Green onions**



**Peppers**



**Beets**



**Green beans**



**Broccoli**



**Cucumbers**



**Zucchini**



**Herbs**  
(other than basil)



**Radishes**



**Peas**

Store in breathable or loosely sealed bags

## Refrigerator (SHELF)

Store in  
airtight bags or  
containers



Cherries

Store in wax  
or parchment  
paper



Cheese



Meat

Store in original  
or airtight  
packaging

Store loose



Melons (ripe)



Pineapples (ripe)



Butter



Eggs



Milk

Store in original  
packaging

Store in  
breathable bags  
or containers



Berries



Mushrooms



Grapes



Asparagus

[trim a half-inch off  
stalk before storing]

Store in a jar of water  
(1" deep) covered loosely  
with a bag

## Counter Out of direct sunlight

Store loose



Tomatoes



Bananas



Fruits that need to ripen  
(melons, pears, tropical and  
stone fruits, avocados)



Basil

Store in a glass  
of water, covered loosely  
with a bag

## Pantry or Cupboard

Store in breathable  
bags or containers



Garlic



Onions



Potatoes



Bread



Winter squash



Eggplant

Store loose

# How not to waste food

- Experiment with the "possibly edible"
- Take care in storage
  - Inspect produce when you get it home
  - Use short-shelf-life items first
  - Put things in the right places
- Work leftovers into your weekly rhythm
  - Have a "leftovers for dinner" night
  - Make a "leftover soup" (uncooked veg) or "leftover frittata" (cooked veg/starches)



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- Experiment with the "possibly edible"
- Take care in storage
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  - Put things in the right places
- Work leftovers into your weekly routine
  - Have a "leftovers for dinner" night
  - Make a "leftover soup" (uncooked vegetables)
- Preserve the bounty!
  - Pickling
  - Freezing



# How not to waste food



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- Take care in storage
  - Inspect produce when you get it
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- Preserve the bounty!
  - Pickling
  - Freezing

## Pickling: Easy

Turns your food into a new delicious product

Few food safety concerns

Takes wide variety and any quantity of fruits and veg

Lends itself to creativity

Includes quick pickles and shrubs

## Freezing: Versatile

Preserves your food as is (minor flavor/texture changes)

Few food safety concerns

Takes wide variety and any quantity of fruits and veg

Requires only a freezer



# When to freeze foods

As soon as you realize you have too much food and too little time!

**Not**

after the food has started to spoil

# How freezing preserves foods

Low temperatures slow down microbial activity and chemical reactions.  
This means in slower spoilage!

Freezing does NOT:

- Kill microbes
- Completely stop chemical spoilage (like oxidation)
- Prevent moisture from escaping

# How to freeze broccoli



# How to freeze broccoli

**1. Wash and separate**  
Don't forget the stems!



# How to freeze broccoli

## 2. Blanch in boiling water

- inactivates enzymes that lead to flavor/color deterioration
- reduces harmful microbes
- makes veg easier to pack



# How to freeze broccoli

## 2. Blanch in boiling water

1. Boil water (1 gallon / lb veg)
2. Add vegetables
3. Wait for water to return to boil



# How to freeze broccoli

## 2. Blanch in boiling water

1. Boil water (1 gallon / lb veg)
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3. Wait for water to return to boil
4. Boil for x minutes (3 for broccoli)
5. Drain



# How to freeze broccoli

## 2. Blanch in boiling water

1. Boil water (1 gallon / lb veg)
2. Add vegetables
3. Wait for water to return to boil
4. Boil for x minutes (3 for broccoli)
5. Drain
6. Plunge into cold water to cool rapidly



# How to freeze broccoli

3. Dry and lay out on baking sheet; freeze until solid

Individual Quick- Freezing (IQF) means it doesn't become a big block of broccoli

- freezing happens quicker
- thaw just as much as you need
- thaw quickly



# How to freeze broccoli

## 4. Transfer to storage container and wrap well

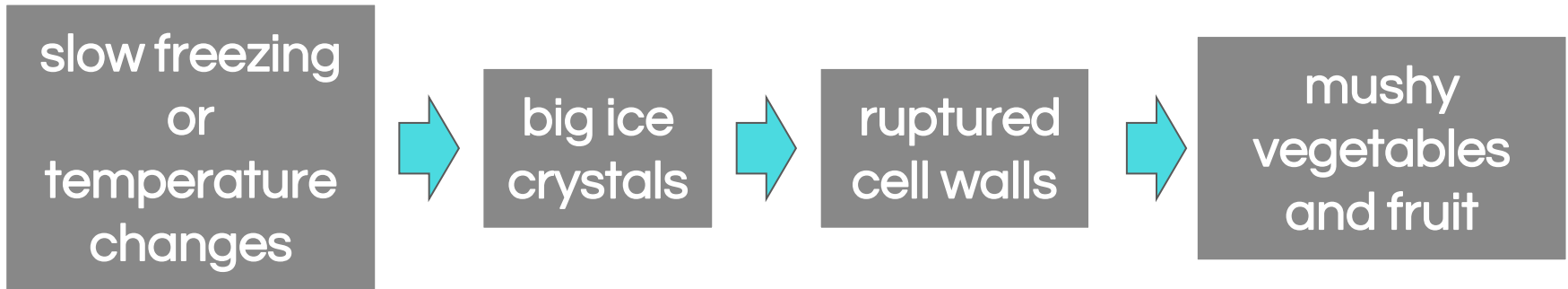
- Protect from air to prevent off flavors
- Protect from moisture loss to prevent freezer burn
- Choose containers that don't get brittle
- LABEL to prevent loss of information!



# How to freeze broccoli

## Freezer tips

- Prevent textural changes: freeze as quickly as possible
- Prevent textural changes: avoid temperature fluctuations
- Main tain top quality: store below 0°F



# How to thaw foods

Freezing food at home is super safe! As long as...

- the food was safe before freezing
- it stays frozen
- it is thawed in a safe way



# How to thaw foods

## 1. Easiest and safest: don't thaw!

Add frozen ingredients directly to your recipe

## 2. Easy but slow: thaw in fridge

Note: Big items take 1 day per 5 lbs

## 3. Faster but more complicated: In a sealed bag in cold water bath

Change water every 30 min

Bag must be sealed to ensure food safety and non-sogginess!

## 4. Not recommended: microwave

It's just really hard to thaw evenly without cooking



# What not to freeze

*Recommendations based on **quality** considerations, **not safety***

- Salad greens, celery, cucumbers
- Cooked potatoes
- Cooked egg whites
- Meringue
- Custard and cream fillings, milk sauces, sour cream, cream for whipping
- Mayonnaise
- Gelatin
- Cooked pasta



In summary:

- anything that needs to be crispy
- anything with important textural properties based on a delicate gel or emulsion

# Where to learn more



## National Center for Home Food Preservation

[Home](#)

How Do I ... *Freeze?*

How do I?

General Freezing Information

for information on other vegetables, as well as fruit, meats, and other products as well as freezer management and care

<https://nchfp.uga.edu/how/freeze#gsc.tab=0>

# When to pickle foods

As soon as you realize you have too much food and too little time!

**Not**

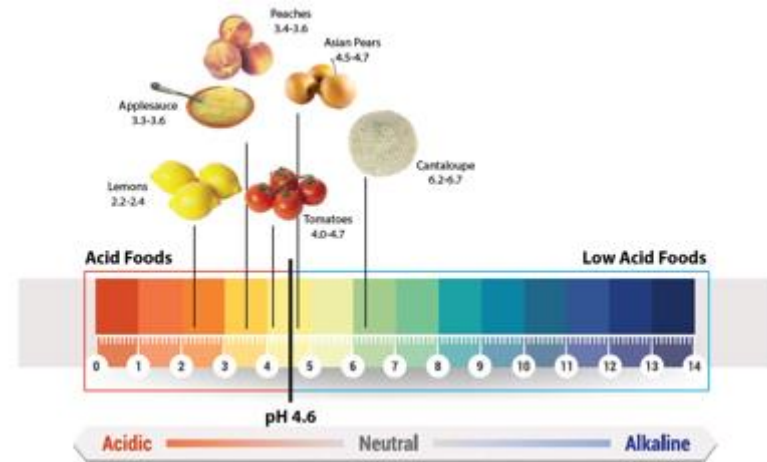
after the food has started to spoil

# How pickling preserves food

Low pH prevents the growth of many microbial pathogens, such as *Listeria*, *Salmonella*, *E. coli*, and *C. botulinum*.  
This means in slower spoilage!

It does NOT:

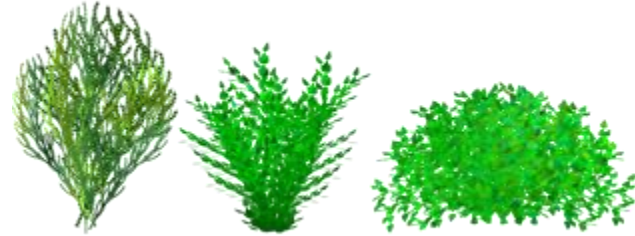
- Completely stop all microbes
  - Preserve food safely all on its own
- Pickles and shrubs should be either canned or kept in the fridge



# Shrubs

## What is a shrub?

A lovely, drinkable  
vinegar-fruit-sugar concoction



*Not THAT kind of shrub!*

Image by [OpenClipart-Vectors](#) from [Pixabay](#)

## Why to make them

- Instant refreshing drink - just add water!
- Plays great in cocktails and mocktails
- Preserve and develop flavors from fresh fruit of the season
- Easy to be creative and still be safe!

# Shrubs: how to make them

## 1. Prepare ingredients

fruit, sugar, vinegar, optional spices

Use a fruit:sugar:vinegar ratio of either 1:1:1 or 2:1:1

## 2. Macerate

Room temp for 24 hours. If longer, in fridge.

## 3. Strain

Use a paper filter for extra clarity

## 4. Store in fridge up to 1 year

Flavor develops over time!

# Shrubs: how to make them

## About the ingredients

### Fruit

- Any type can work
- Stone fruits and berries are common. Rhubarb is great!
- Should be great quality!

### Vinegar

- Any type can work. Use one that jives with your fruit!
- Distilled vinegar doesn't taste great.
- Start with vinegar that is 5% acidity... or else keep it in the fridge the whole time

# Example: Strawberry- Vanilla Shrub

## Ingredients:

- Strawberries  
(2 cups)
- Red wine vinegar  
(1 cup)
- Sugar (1 cup)
- Vanilla bean (1)



# Prepare ingredients



wash and slice strawberries



measure sugar and vinegar



slit vanilla bean lengthwise

Combine in a jar



Let sit at room  
temperature 24  
hours



# Strain out fruit and vanilla



first, strain out the fruit



then, strain again with a paper towel or coffee filter for extra clarity



scrape vanilla seeds from bean and add them back to the shrub



Don't toss the fruit!

- eat it on ice cream
- add it to a cobbler



Store the shrub in the fridge for  
up to 1 year.

*Acidity is now only ~2.5%*



**Shrubs make great gifts!**

# Refrigerator pickles

## A gateway pickle recipe

Fridge pickle = vegetables + brine + some time in the fridge

Today's recipe was brought to you by  
the University of Maine Cooperative Extension



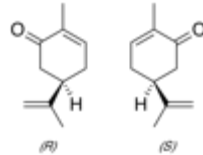
<https://extension.umaine.edu/food-health/food-preservation/lets-preserve-refrigerator-spring-pickles/>

# Refrigerator pickles

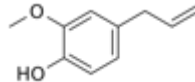
## Vegetables

Cut to the size and shape you prefer  
smaller pieces → faster brine penetration

- asparagus
- ramps
- parsnips
- radishes
- pea pods
- cauliflower
- cucumbers
- carrots
- bell peppers
- celery
- broccoli
- zucchini
- radishes



carvone (cloves, dill)



eugenol  
(cinnamon, cloves, star  
anise, allspice)

## Flavorings

It's a matter of taste!  
Use up to 1 tbsp per 8-oz jar

- Bay leaves
- Caraway seed
- Coriander seed
- Chile peppers
- Cumin seed
- Dill seed
- Fennel seed
- Juniper berries
- Mustard seed
- Oregano
- Pickling spice
- Peppercorns
- Star anise
- Turmeric
- Hot peppers
- Dill
- Garlic
- Oregano
- Shallot
- Horseradish

# Refrigerator pickles

## Brine

Sweet or not, your choice

Boil ingredients together 2 minutes, then cool.

### *Sour*

- 3 cups vinegar
- 3 cups water
- 3 tbsp salt
- 2 tbsp sugar

### *Sweet*

- 2 cups vinegar
- 3 cups water
- 2 tbsp salt
- 1 ½ cups sugar

white or apple cider  
5% acidity



pickling / canning salt  
recommended



# Refrigerator pickles

## Jars

- Any size works; need not be canning jars
- Fill with vegetables
- Top up with brine
- Refrigerate for 1-2 days for best flavor
- Eat within a few months

# Quick pickle demo: Pickled jalapeños



# 1. Prep the 'peños



Wash peppers

Remove stems

Slice thinly

(For less spicy peppers,  
remove seeds and  
membranes)



## 2. Pack jars

Pack the peppers tightly into jars

Add crushed garlic



### 3. Make the brine

Combine water, vinegar, salt, and sugar in a saucepan.

Boil for 2 minutes.



## 4. Fill and lid jars

Pour brine over peppers

Put on lids

Let sit in fridge for 1-2 days to develop flavor.

Use in ~2 weeks



# Should I eat it?



A

<https://www.bonappetit.com/story/is-moldy-cheese-okay>



B

<http://www.niseema.com/blog/2012/4/9/cooked-carrots.html>



C

<https://www.greenbiz.com/article/why-food-companies-need-expire-sell-dates>



D

<https://well.blogs.nytimes.com/2015/10/29/ask-well-is-it-safe-to-eat-moldy-bread/>

# Should I eat it? expiration dates

There is no standardization or regulation around expiration, best by, or use by dates on foods.

They are based on manufacturers' judgments about when their products will be at peak quality, and do not indicate anything about food safety.

One exception: Baby formula

Also note this is separate from pharmaceuticals.



# Should I eat it? spoilage

**Theresa May admits to eating mouldy jam to cut down on food waste**

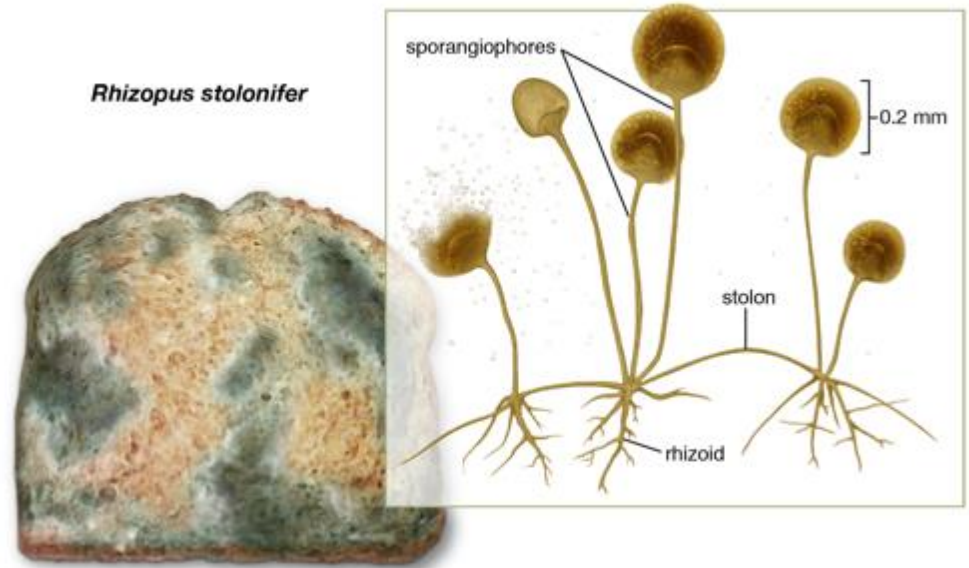


<https://metro.co.uk/2019/02/13/theresa-may-admits-eating-mouldy-jam-cut-food-waste-8607611/>

# About mold

## Mold...

- is a fungus, like mushrooms
- is more extensive than it appears: a network of mycelium extends through food
- reproduces by releasing spores into the air



© 2013 Encyclopædia Britannica, Inc.

# About mold



## Molds are not all created equal:

- many are used in foods: *Geotrichum candidum*, *Penicillium* spp., *Rhizopus* spp, *Aspergillus oryzae*
- but many molds trigger allergies or respiratory problems, or make **mycotoxins**, poisonous chemicals that can make you sick

## USDA recommendations depend on food type:

- for some hard foods, you may cut the mold off and eat the rest: salami, cheese, firm produce
- **for soft foods, discard the whole thing -** that includes jam, bread, soft cheeses, yogurt

# Do I have to decide between food safety and saving the Earth?

**No!**

Now you have multiple tools:

- Trying recipes with the "possibly edible"
- Optimizing your food storage methods
- Eating leftovers on a regular basis
- Using food preservation recipes when you have a bounty



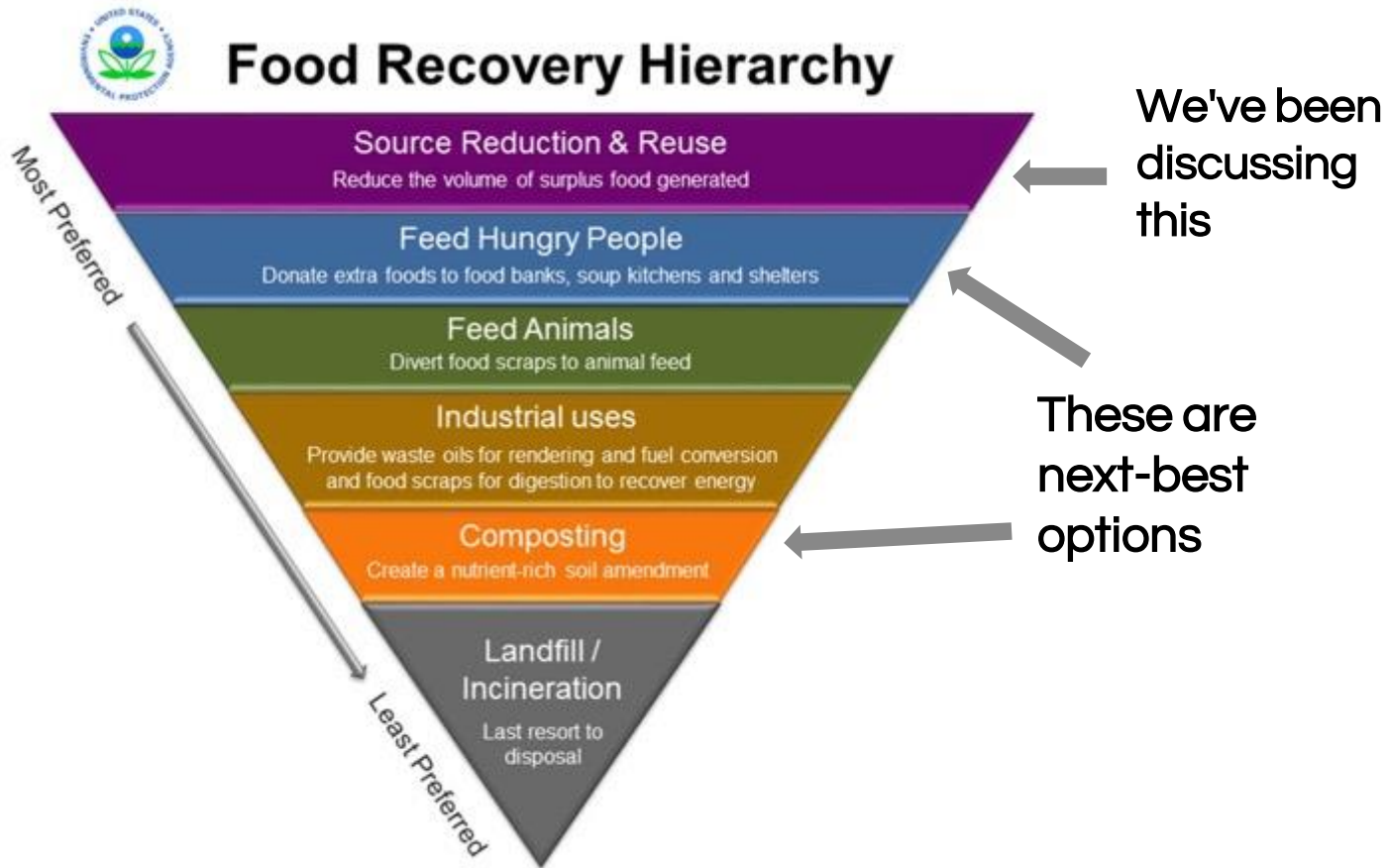
**When in doubt about safety, ask the Master Food Preservers!**

San Mateo / San Francisco: [https://ucanr.edu/sites/Master\\_Food\\_Preservers/](https://ucanr.edu/sites/Master_Food_Preservers/)

Orange County Q&A service: [https://ucanr.edu/sites/mfpoc/Contact\\_Us/Got\\_A\\_Question/](https://ucanr.edu/sites/mfpoc/Contact_Us/Got_A_Question/)

or USDA's Ask Extension: <https://ask2.extension.org/>

# The best thing to do with food is to eat it!



# Have food you can't eat?

Donate it to help those in need.

- **grocery rescue**: retailers can send unsold food to **Second Harvest** <https://www.shfb.org/>
- **backyard produce**: donate the fruit from your garden to **Second Harvest** or **Village Harvest** <https://www.villageharvest.org/>
- **perishable, prepared food** from an event or from your kitchen: call the **Peninsula Food Runners** to pick it up! <https://www.peninsulafoodrunners.org/>

Rest easy knowing that the **Good Samaritan Food Donation act** (AB1219) protects food donors from legal liability.



**SECOND HARVEST**  
of SILICON VALLEY



**Village Harvest**



**PENINSULA**  
FOOD RUNNERS

# Have food you can't eat?

As a last resort, **use your food to feed your garden or worms!**

Learn to compost from our colleagues at:

- The UC Master Gardeners  
<https://smsf-mastergardeners.ucanr.edu/>
- San Mateo County Sustainability Department  
<https://www.smcsustainability.org/waste-reduction/composting/>
- The UCCE Santa Clara Composting Education Program  
[https://ucanr.edu/sites/sccNew\\_style4preview/Home\\_Composting\\_Education/](https://ucanr.edu/sites/sccNew_style4preview/Home_Composting_Education/)



# Stay in Touch!

[https://ucanr.edu/sites/Master\\_Food\\_Preservers/](https://ucanr.edu/sites/Master_Food_Preservers/)

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Agriculture and Natural Resources

Learn more about UC ANR

Master Food Preservers

Master Food Preservers of San Mateo & San Francisco Counties

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Preserve Today, Relish Tomorrow!

Who We Are and What We Do

UC Master Food Preservers (MFPs) are trained volunteers who extend UC research-based information about home food safety and preservation to the public.

Our Events

| Event Name   | Date      |
|--|-----------|
| <a href="#">Spring Garden Market &amp; Educational Fair</a>        | 4/13/2024 |
| <a href="#">MFPs Love Food Hate Waste</a>                          | 4/13/2024 |
| <a href="#">Food Preservation Basics: Canning Pickles - online</a> | 6/6/2024  |

Show More

Fill out our [survey](#) before you leave!