



WELCOME TO UNIVERSITY OF NEBRASKA **FOOD PRESERVATION VIRTUAL SERIES**

Moderator: Cindy Brison

1



**Do you know?** Home Food Preservation Virtual Learning Series

Join Nebraska Extension for the 2021 Canning Season  
7:00pm CT - Free Zoom Classes

Wed, April 14 - Canning 101  
Tues, May 11 - Jams & Jellies  
Thu, June 10 - Canning 101  
Wed, June 23 - Pickles & Relishes  
Thu, July 8 - Tomatoes  
Tues, July 13 - Salsa



**N EXTENSION** #UNLFoodSafety  
Get your questions answered!

Register At:  
[go.unl.edu/homefoodpreservation](http://go.unl.edu/homefoodpreservation)

2



**FOOD PRESERVATION TEAM**

 Carli Wells Hall 308-385-5088 carli.wells@unl.edu	 Nancy Urbaneck Douglas-Sarpy 402-444-3668 nurbaneck1@unl.edu	 Carol Schwarz Buffalo 308-236-1235 cschwarz@unl.edu	 Carol Larvick Dakota, Dixon, Thurston 402-987-2140 clarvick1@unl.edu
 Georgia Jones UNL Nutrition Department gjones@unl.edu	 Nancy Frecks Hitchcock, Dundy, Hayes 308-334-5556 nfrecks1@unl.edu	 Cindy Brison Douglas-Sarpy 402-444-7872 cbrison1@unl.edu	 Brenda Aufdenkamp Lincoln-Logan-McPherson, Keith-Arthur, Billie, Grant, Hooker, Thomas, Perkins 308-532-2653 baufdenkamp1@unl.edu

3



**JAMS & JELLIES**

**Presenter:**  
Carol Schwarz, Extension Educator


4



- Types of Fruit Products
- Ingredients
- Equipment
- Procedures
- Storage and Use



5



**Types of Fruit Products**

- Jellied Products
- Concentrates
- Reduced and No Sugar Products

6

**N**  
EXTENSION

## Jellied Products

Jellies	Jams	Preserves	Conserves	Marmalades
<ul style="list-style-type: none"> <li>• Cooked fruit juice with sugar</li> <li>• Clear and firm enough to hold its shape</li> </ul>	<ul style="list-style-type: none"> <li>• Cooked crushed or chopped fruits with sugar</li> <li>• Tend to hold shape, but less firm than jelly</li> </ul>	<ul style="list-style-type: none"> <li>• Small whole or uniform size pieces of fruit</li> <li>• In a clear, slightly gelled syrup</li> </ul>	<ul style="list-style-type: none"> <li>• Jam-like product with combination of fruits</li> <li>• Also contains nuts, raisins or coconut</li> </ul>	<ul style="list-style-type: none"> <li>• Soft fruit jellies with small pieces of fruit or peel</li> <li>• Evenly suspended in transparent jelly</li> <li>• Often contains citrus fruit</li> </ul>

7

**N**  
EXTENSION

## Concentrates

Fruit Butters	Fruit Syrups	Fruit Honey
<ul style="list-style-type: none"> <li>• Fruit pulp cooked with sugar</li> <li>• Thick consistency</li> <li>• Often with added spices</li> </ul>	<ul style="list-style-type: none"> <li>• Fruit juice or pulp cooked with sugar</li> <li>• Consistency of syrup</li> <li>• Pourable</li> </ul>	<ul style="list-style-type: none"> <li>• Fruit juice or pulp cooked with sugar</li> <li>• Consistency of honey</li> </ul>

8

**N**  
EXTENSION

## Reduced and No Sugar Products

Lower Sugar Products  
Thickened Using Alternative Methods

Modified Pectin	Regular Pectin with Special Recipes	Gelatin	Long Boil Method
<ul style="list-style-type: none"> <li>• Modified to gel at low sugar concentration or without added sugar</li> </ul>	<ul style="list-style-type: none"> <li>• Formulated so no added sugar is needed</li> </ul>	<ul style="list-style-type: none"> <li>• Do not process</li> <li>• Refrigerate and used within 4 weeks</li> </ul>	<ul style="list-style-type: none"> <li>• Boiling fruit pulp for extended periods of time</li> </ul>

9

**N**  
EXTENSION

## For successful jellied products, a proper ratio of fruit, acid and sugar is needed.



10

**N**  
EXTENSION

## Ingredients

- Fruit and Additional Flavors
- Pectin and Substitutes
- Acid
- Sweeteners

11

**N**  
EXTENSION

## Fruit

Fresh Fruit:	Dried Fruit:
<ul style="list-style-type: none"> <li>• Provides the characteristic color and flavor to the jellied product</li> <li>• Furnishes at least part of the pectin and acid needed for a gel</li> <li>• Just at the ripe stage for best natural color and flavor</li> </ul>	<ul style="list-style-type: none"> <li>• Cook in water until tender</li> <li>• Use for jams and conserves</li> <li>• With or without pectin</li> </ul>

12

**N**  
EXTENSION

## Fruit

**Commercially Canned or Frozen Fruit or Juice:**

- Select ones that have no sugar added
- Select fruit canned in their own juice
- Pectin must be added

**Home Canned or Frozen Fruit or Juice:**


- Use 1/4 slightly underripe and 3/4 fully ripe fruit
- Can fruit in its own juice

13

**N**  
EXTENSION

## Vegetable and Additional Flavors

- Use a vegetable for flavor – such as pepper jelly



- Specialty jellies and jams – use edible products such as herbs and edible flowers for flavor

14

**N**  
EXTENSION

## Pectin

- Naturally occurring plant fiber in most fruits
- Pectin causes the fruit to gel
- Some fruits have enough natural pectin
- Other fruit require added pectin – especially if used for making jelly
- Highest quality pectin - in *just* ripe fruit

15

**N**  
EXTENSION

### Pectin – Acid Content of Fruit

<p><b>Group 1 - If not overripe, has enough natural pectin and acid for gel formation with only added sugar.</b></p> <ul style="list-style-type: none"> <li>*Apples, sour</li> <li>*Blackberries, sour</li> <li>*Cherries, sour</li> <li>*Crabapples</li> <li>*Cranberries</li> <li>*Currants</li> <li>*Gooseberries</li> <li>*Grapes (Eastern Concord)</li> <li>*Lemons</li> <li>*Loganberries</li> <li>*Plums (not Italian)</li> <li>*Quinces</li> </ul>	<p><b>Group 2 - Low in natural acid or pectin and may need addition of either acid or pectin.</b></p> <ul style="list-style-type: none"> <li>*Apples, ripe</li> <li>*Blackberries, ripe</li> <li>*Cherries, sour</li> <li>*Chokecherries</li> <li>*Elderberries</li> <li>*Grapefruit</li> <li>*Grape juice, bottled (Eastern Concord)</li> <li>*Grapes (California)</li> <li>*Loquats</li> <li>*Oranges</li> </ul>	<p><b>Group 3 - Always needs added acid, pectin or both.</b></p> <ul style="list-style-type: none"> <li>*Apricots</li> <li>*Blueberries</li> <li>*Figs</li> <li>*Grapes (Western Concord)</li> <li>*Guavas</li> <li>*Peaches</li> <li>*Pears</li> <li>*Plums (Italian)</li> <li>*Raspberries</li> <li>*Strawberries</li> </ul>
--	--	--

Source: So Easy to Preserve, 6<sup>th</sup> ed. 2014, Cooperative Extension, The University of Georgia


16

**N**  
EXTENSION

## Pectin

**Traditional Commercial Pectin**

- Made from apples or citrus fruits
- Liquid and powdered forms – not interchangeable in recipes
- Liquid Pectin – added to hot fruit and sugar, then boiled
- Powdered Pectin – mixed with unheated fruit or juice, boil, add sugar after pectin is dissolved



17

**N**  
EXTENSION

## Pectin




**Modified Commercial Pectin**

- Will form a gel with less or no added sugar - label will say “light,” “lite,” “low or no sugar,” or “no sugar needed”
- Only available in powdered form
- Use specific recipes and follow directions carefully

18

**N**  
EXTENSION

## Pectin Substitute



**Gelatin:**

- Protein substance from collagen
- Texture similar to gelatin desserts
- Not heat processed
- Stored in refrigerator and used within 4 weeks

19

**N**  
EXTENSION

## Acid

Varies in types of fruit and vegetables	Needed for gel formation and flavor	Higher in under ripe fruit	Lemon juice or citric acid maybe used to increase acid content
Too much acid results in weeping	Too little acid results in runny, weak gel	Traditional commercial pectin contain acids	Modified commercial pectin does not need acid – maybe added to ensure final product is safe for boiling water canning

20

**N**  
EXTENSION

## Sweeteners

<b>Sugar</b>	<ul style="list-style-type: none"> <li>• Adds flavor</li> <li>• Prevents microbial growth</li> <li>• Helps set the pectin</li> </ul>
<b>Honey</b>	<ul style="list-style-type: none"> <li>• No added pectin – replace 1/2 the sugar</li> <li>• Pectin added – replace 1/4 the sugar</li> <li>• Darker color and slightly different flavor</li> </ul>
<b>Light Corn Syrup</b>	<ul style="list-style-type: none"> <li>• No added pectin – replace 1/4 the sugar</li> <li>• Added powdered pectin – replace 1/2 the sugar</li> <li>• Added liquid pectin – can replace up to 2 cups of sugar</li> </ul>

21

**N**  
EXTENSION

## Sweeteners

**Sugar Substitutes**

- Traditional pectin recipes – cannot substitute artificial sweeteners for sugar
- Modified pectin – artificial sweeteners acceptable
- Alternative thickeners – artificial sweeteners acceptable

Cooked product – use heat-stable sweetener  
Follow manufacturer directions for best results

22

**N**  
EXTENSION

## Preparation Methods

- Long Cook
- Short Boil
- Modified Pectin
- Pectin Substitute
- Freezer or Uncooked
- Juice for Jelly

23

**N**  
EXTENSION

## Long Cook



- Relies on natural pectin in fruit
  - 3/4 ripe and 1/4 under ripe fruit
  - Cannot use commercially canned or frozen fruit juices
- Fruit mixed with sugar and cooked 30 to 45 minutes
  - Dissolve the sugar and evaporates water
  - Boil quickly and vigorously as possible

24

**N**  
EXTENSION

## Long Cook


### Testing for Doneness

– Temperature test – use jelly or candy thermometer; most reliable

Elevation	Sea Level	1,000 ft	2,000 ft	3,000 ft	4,000 ft	5,000 ft	6,000 ft	7,000 ft	8,000 ft
Temperature Needed	220°F	218°F	216°F	214°F	212°F	211°F	209°F	207°F	205°F

Source: "Fundamentals of Consumer Food Safety and Preservation: Master Handbook", 2018, Washington State University Extension

– Sheet or spoon test – dip cool metal spoon into boiling mixture, raise 12 inches above pan, turn so mixture runs off spoon, done if 2 drops flow together off edge of spoon




– Refrigerator or freezer test – remove from heat, pour small amount onto cold plate, refrigerate or freeze couple of minutes, if jells it is done

25

**N**  
EXTENSION

## Short Boil

- Add traditional commercial pectin – powdered or liquid
- Any fruit, some vegetables and edible products can be used
- Can use fruit at peak ripeness
- Cook for 1 to 4 minutes – larger yield, less time, more reliable outcomes
  - Heat to *full rolling boil* – cannot be stirred down
  - Limited exposure to heat maximizes gel strength
- Follow directions carefully – *never double the recipe*

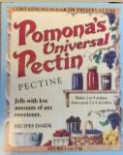


26

**N**  
EXTENSION

## Modified Pectin

- Similar to short boil method
- Low-methoxyl pectin – tendency to become lumpy, mix with liquid before adding to fruit
- Calcium can be separate, must make ahead then added into fruit and pectin mixture
- Amount of sugar added for taste
- Follow directions carefully



27

**N**  
EXTENSION

## Pectin Substitute

- Gelatin
  - Not stable at room temperature
  - Do not freeze – gel will disintegrate when thawed
  - Do not can
- Follow directions carefully

28

**N**  
EXTENSION

## Freezer or Uncooked

- Fresh fruit taste, retain brighter color, quick and easy
- Fresh or frozen fruits or juices can be used
- Need to add more pectin
- Greater concentration of sugar
- Stirring replaces cooking
- Hold in refrigerator *instead* of room temperature to increase gel formation

29

**N**  
EXTENSION

## Juice for Jelly

- Clear, sparkling jelly needs clear juice
- Put fruit and water in large saucepan and bring to boil, stir, simmer
- 1 pound fruit yields at least 1 cup clear juice
- Strain through a colander
- Restrain through double layer cheesecloth or jelly bag, using a stand or colander to hold bag – allow to drip without pressing or squeezing

30

**N**  
EXTENSION

## Processing Methods

- Canning
- Freezing
- Refrigeration

31

**N**  
EXTENSION

## Processing Methods: Do's and Don'ts

DO	Don't	Don't
<ul style="list-style-type: none"> <li>Process jams and jellies in a boiling water or steam canner for a shelf-stable product.</li> <li>Sugar has a strong preservative effect, but yeast and mold can still grow and spoil the product.</li> </ul>	<ul style="list-style-type: none"> <li>Turn the jar upside down on its lid.</li> <li>This only creates a weak vacuum seal that can allow spoilage by bacteria, yeast and mold.</li> </ul>	<ul style="list-style-type: none"> <li>Use wax to seal jar.</li> <li>Spoilage organisms can still enter the jar and cause spoilage.</li> </ul>

32

**N**  
EXTENSION

## Canners



**Steam Canner**


**Boiling Water Canners**

33

**N**  
EXTENSION

## Processing Tips

- Pre-sterilize jars if processing time is less than 10 minutes
- Skim foam
- Leave 1/4-inch headspace
- Seal with 2-piece lid
- Use half-pint canning jar unless otherwise specified
- Adjust time for elevation
- Keeping hot jars upright when moving
- Leave undisturbed for 12 hours to allow for gel formation, check seals




34

**N**  
EXTENSION

## Freezing or Refrigeration

- All traditional and modified pectin fruit products can be frozen instead of processed in a boiling water or steam canner
- Products made with pectin substitutes
  - Should not be processed in a boiling water or steam canner
  - Must be refrigerated or frozen
    - Do not freeze gelatin



35

**N**  
EXTENSION

## Storage and Use



- Full Sugar Cooked Product
- Low & No Sugar Added Product
- Frozen Product
- Refrigerated Product


36

**N EXTENSION**

## Storage and Use

*Label and date all products*

<p><b>Full Sugar Cooked Product</b></p> <ul style="list-style-type: none"> <li>• Store in cool, dry and dark place up to 1 year</li> <li>• Once opened, best stored in refrigerator for 1 month</li> </ul>	<p><b>Low &amp; No Sugar Added Product</b></p> <ul style="list-style-type: none"> <li>• Store in cool, dry and dark place up to 6 - 8 months</li> <li>• Once opened, shorter refrigerated time, flavor and color may change</li> </ul>
--	--




37

**N EXTENSION**

## Storage and Use

*Label and date all products*

<p><b>Frozen Product</b></p> <ul style="list-style-type: none"> <li>• Store in freezer up to 1 year</li> <li>• Once thawed, store in refrigerator for 3 - 4 weeks</li> </ul>	<p><b>Refrigerated Product</b></p> <ul style="list-style-type: none"> <li>• Store in refrigerator up to 4 weeks</li> </ul>
--	--



38

**N EXTENSION**



**Examine jars regularly for signs of spoilage, such as mold, yeast, or off odors.**

**Discard the entire contents of the jar if spoilage is detected.**

39

**N EXTENSION**

## Informational Sources


- National Center for Home Food Preservation, 2015. [https://nchfp.uga.edu/how/can\\_07/types\\_jellied\\_products.html](https://nchfp.uga.edu/how/can_07/types_jellied_products.html)
- "So Easy to Preserve", 6<sup>th</sup> ed. 2014. Cooperative Extension, University of Georgia, Athens.
- "Fundamentals of Consumer Food Safety and Preservation: Master Handbook", 2019, Washington State University Extension
- Steam Canners, University of Wisconsin-Madison <https://fyi.extension.wisc.edu/safefood/2020/08/18/an-update-on-safe-use-of-steam-canners/>
- Canning, Freezing and Drying Website, Nebraska Extension, University of Nebraska-Lincoln, <https://food.unl.edu>

*No product endorsement is implied, nor is discrimination intended against similar materials.*

40

**N EXTENSION**

<https://food.unl.edu/jams-jellies-and-preserves>



41

**N EXTENSION**

## Resources

- National Center for Home Food Preservation - <https://nchfp.uga.edu/>
- Nebraska Food Website - <https://go.unl.edu/foodpreservation>
- Your County Extension Office

42

**If you never ask, the answer remains unknown.**

**Questions ? ? ?**

The University of Nebraska does not discriminate based on race, color, ethnicity, national origin, sex, pregnancy, sexual orientation, gender identity, religion, disability, age, genetic information, veteran status, marital status, and/or political affiliation in its programs, activities, or employment.

43

**Subscribe to the Food Preservation Newsletter**

Sign up for email notification when the latest Food Preservation Newsletter is posted (about once per month) so you don't miss out! Your email address is used only for sending you the latest posting and is not shared. For questions or comments, contact Carol Larvick [carol.larvick@unl.edu](mailto:carol.larvick@unl.edu)

Please note: Remember to check your junk or spam e-mail folder for the initial subscription notification if you don't see an e-mail in your inbox in a timely manner.

**Subscribe**

EMAIL ADDRESS

<https://food.unl.edu/subscribe-food-preservation-newsletter>

44

**GROBigRed Virtual Learning Series**

Join experts from Nebraska Extension experts to learn and ask questions about Vegetable Gardens and Trees.

<https://byf.unl.edu/grobigrd-virtual-learning-series>

**GROBigRed Virtual Learning Series**

- July 14, 2020 - What's Happening in Your Garden?
- July 21, 2020 - Fall Gardening
- July 28, 2020 - Tomato Troubles
- August 4, 2020 - Preserving the Harvest
- August 11, 2020 - Tree Problems
- August 18, 2020 - Growing Herbs
- August 25, 2020 - Tree Selection
- September 1, 2020 - Tree Planting
- September 8, 2020 - Tree Care
- September 15, 2020 - Cover Crops
- September 22, 2020 - Composting
- September 29, 2020 - Putting Your Garden to Bed for Winter

45

**Resources**

- National Center for Home Food Preservation - <https://nchfp.uga.edu/>
- Nebraska Food Website - <https://go.unl.edu/foodpreservation>
- Your County Extension Office

46