



Inside this issue:

4-H Wheat Expo	2
Fair Food Safety Guidance	2
Conditioning Dehydrated Fruit	2
What is Freeze Drying?	3
Restaurants Struggle	3
What is Freezer Burn?	3
Vinegar	4
Packaging for Freezing Food	4



Now on Facebook, Twitter and Pinterest!

- On Facebook—
www.facebook.com/KSREfoodie
- On Twitter—
[@KSREfoodie](https://twitter.com/KSREfoodie)
- On Pinterest—
www.pinterest.com/ksrefoodie/



The Science of Freezing Food



Photo: Newell Brands, Inc.

Freezing food can be quick and convenient. But there is a lot of science behind how food freezes that can affect the outcome.

After harvesting fruits and vegetables, chemical changes still occur due to enzymes naturally within the food. These enzymes can change color, texture, flavor, and some nutrients. To stop enzymatic changes, there are key steps to take.

For most vegetables, blanching is effective to inactivate enzymes. This exposes

the vegetables to boiling water or steam for a brief amount of time, then rapidly chilled in ice water. Blanching is essential for high quality vegetables. It also helps destroy any microorganisms. Blanching time varies by vegetable.

For light colored fruit, such as peaches and apples, enzymes can cause browning and loss of vitamin C. Instead of blanching, fruit can be treated with ascorbic acid (vitamin C) to interfere with the chemical reaction that causes the color changes. Use pure ascorbic acid or commercial ascorbic acid mixtures.

Texture of frozen food can depend on the rate of freezing. Don't overload your freezer as that will slow the freezing process and result in poor quality food. Typically, freezing 2 to 3 pounds at a time is best.

For more information on freezing, see the [National Center for Home Food Preservation](http://www.nationalcenterforhomefoodpreservation.org/) website.

Source: [University of Minnesota Extension](http://www.extension.umn.edu/)

2021 National Festival of Breads—Recap

The 2021 National Festival of Breads was held virtually this year. But that did not diminish the excitement of this event!

Over 300 recipes were submitted and on June 9, 2021, the winner was an-

nounced. You can watch the announcement video at <https://nfb2021.com/>.

The Best of Breads winner was Savory Thai Peanut Sauce Rolls by Anakkarat Barth. The People's Choice award, from Face-

book voters, was Strawberry Lemonade Swirls by Maggie Sleichter, who was in the youth category.

Check out [all of the recipes](#) and choose your favorite!

2021 Kansas 4-H Wheat Expo

The 2021 Kansas 4-H Wheat Expo will be on Wednesday, August 11, 2021, at the Butler County Community Building in El Dorado, KS. The 2021 Wheat Expo will be one of Kansas 4-H's **first** face-to-face state 4-H events since COVID-19 shut down physical/face-to-face 4-H programming in March 2020. We are excited to bring the Wheat Expo back for a

fun, educational and hands-on program in person for all Kansas 4-H members, siblings, parents, grandparents, and KSRE Extension staff.

There will be eight contests open to youth members with cash prizes and ribbons awarded. Youth may bring multiple exhibits in Divisions 3-9. Classes include: (1) 1 lb. bin run for crops members; or (2) 1 lb. bin run

for "adopt a producer"; (3) 1 quart jar sample of cleaned wheat; (4) three standard yeast rolls; (5) three standard sized cookies; (6) three standard muffins; (7) wheat photography contest; (8) wheat educational posters and (9) Cloverbuds, (5-6-year-olds) with participation ribbons.

See details on the [Kansas 4-H Wheat Expo](https://www.kansas4-h.org/events/index.html) website.



Registration <https://www.kansas4-h.org/events/index.html>

County Fair Food Safety Guidance

Posters are available in the KSRE Resources, Nutrition, Food Safety and Health PFT Teams entitled "4H Food Stand Signs."

It's almost fair time! Fairs bring together many people for fun, food, and more. Fair food stands are temporary but they still need to comply with food safety guidelines. To help reduce risks that could lead to

foodborne illness issues, many resources are available to help guide food stands or other food service operations at www.ksre.k-state.edu/foodsafety/topics/4h.html.

Handling animals can also lead to foodborne illnesses if hands are not washed. Resources are also available on the above website.

Have a safe and fun fair!

Conditioning Dehydrated Fruit

Dehydrating fruit is a great way to make tasty snacks or to add fruit to a quick breakfast. When dehydrated fruit, how do you know when the fruit is dry?

Different fruits take different amounts of time to dry. The fruit pieces should be pliable but not tacky when touched. This is a visual clue that there is <20% moisture content remaining in the fruit. Cut open a piece and squeeze it, there should not be any remaining moisture. Let the fruit cool completely and package in an airtight container.

Allow the fruit condition about 7-10 days. This helps distribute the 20% moisture evenly. Shake the package each day and look for any visible moisture.

Learn more from [Penn State Extension Food Preservation](https://www.pennstate.edu/extension/food-preservation/).



Photo: University of Georgia

What is Freeze Drying?



Freeze dried raspberries
Photo: Canva.com

Freeze drying food is another form of preserving food. Food can last longer and is very lightweight. Freeze-dried food also retains the color and shape of the food better. It is possible to freeze dry complete meals. But, the machine required to do this is expensive, takes up a lot of space, is heavy, noisy and uses more electricity. This machine works best in a room temperature range between 45-75°F and takes about 24-48 hours drying time.

Fruits and vegetables still need to be pretreated as in traditional dehydration. Fruit color should be protected using ascorbic acid or ascorbic acid mixtures. Vegetables should be blanched. These steps help control enzyme activity that can change color, texture, flavor and some nutrients.

It is important to note that raw and cooked meat and eggs can be freeze dried. This process does not kill harmful microorganisms that can cause foodborne illness. Care must be taken in handling and labeling these foods.



Learn more from [Let's Preserve: Freeze Drying](#) from Penn State Extension Food Preservation.

Restaurants Struggle During Pandemic

The food service industry, as well as others, took a big hit during the pandemic. You may know a favorite establishment that had to close its doors.

Research shows that 10.2% of U.S. food es-

tablishments will permanently close. This is not just one type of restaurant, it includes fast food, casual dining, fine dining and food trucks. In fact, 22.5% of food trucks are permanently off the road. Among

chain restaurants, those with 51-100 locations suffered a 16.2% closure rate. Thai and burger restaurants had the lowest closure rate.

Source: Food Technology, June 2021

The data for this research was from Datassential.



Plastic freezer boxes work well for freezing fruits or vegetables.
Photo: University of Georgia

What is Freezer Burn?

Have you opened a frozen food to find it has dry, grayish/brown spots on the surface? This is freezer burn. While not harmful, it's not very appetizing. This defect is most notable on frozen meats.

Freezer burn happens when food is not adequately wrapped to remove oxygen, which has a bleaching effect on the food surface. It causes poor texture, color, flavor, and aroma.

To prevent freezer burn, package food tightly in packaging designed for freezing. Remove as much air as possible. Check your freezer temperature is zero degrees F or lower to help freeze food fast. If using freezer containers, crumple a piece of waterproof paper on top of the food to help minimize headspace. This helps prevent freezer burn, ice crystal formation and keeps food pieces from drying out.

Source: [Understanding the Process of Freezing](#), Penn State Extension Food Preservation

Kansas State University Research & Extension

Rapid Response Center
221 Call Hall
Manhattan, Kansas 66506

Phone: 785-532-1673
Fax: 785-532-3295
Email: kblakesl@ksu.edu



Kansas State University Agricultural Experiment Station and Cooperative Extension Service

K-State Research and Extension is an equal opportunity provider and employer. Issued in furtherance of Cooperative Extension Work, Acts of May 8 and June 30, 1914, as amended. Kansas State University, County Extension Councils, Extension Districts, and United States Department of Agriculture Cooperating, Ernie Minton, Interim Director.

Vinegar and its Shelf Life



For pickling, use vinegar that has 5% acidity.
Photo: Univ. of Georgia

When preserving food, fresh is best. This is also true for pickling. Vinegar is the acid of choice to pickle foods. But if vinegar is past its “Best By” date, is it still safe to use?

Vinegar has an “almost indefinite” shelf life. It’s acidic nature is self-preserving. It does not require refrigeration, just a cool, dry, dark storage location. Over time, there may be slight visible changes. They include:

Cloudiness—After opening the container, vinegar is exposed to other

harmless bacteria that can create cloudiness. It does not affect the flavor of quality. Try straining it through a coffee filter to clear away the cloudiness.

Color—Sulfites help protect the color of red wine vinegar, but color can also change due to Maillard browning reactions. Color changes can also signal flavor changes.

Sediment—Less filtered, or unfiltered, vinegar may form a sediment layer over time. Place a coffee filter in another strainer and strain out the sediment before using.

Mother—Most vinegars are pasteurized. But, if a slimy, amorphous blob or substance forms and floats, the vinegar has been re-inoculated with bacteria after opening. The Mother means some sugars or alcohol were not completely fermented when that vinegar was made.

Source: Iowa State University AnswerLine, May 11, 2021



Karen Blakeslee, M.S.



On the Web at www.rrc.ksu.edu



Packaging for Freezing Food

A walk down the food packaging aisle reveals many choices for storing food. Which ones are best for freezing food? Not all of them are the same.

Food	Refrigerator	Freezer at 0°F	Comments
Unopened yeast dough, rolls, 2-3 days	1 month	1 month	Larger storage means yeast will become inactive, and the dough will rise.
Purified baked cream-whipped milk	2 months	2 months	
Baked pork chops	2 months	2 months	
Roast beef	6-12 months	6-12 months	
Roast beef without cream-sauce	3-6 months	3-6 months	
Unbaked doughnuts	2-4 months	2-4 months	
Yaffles	1 month	1 month	
Unbaked fish pies	1-2 days	2-4 months	
Baked fish pies	2-6 days	6-12 months	
Potatoes or coffee pies	2-3 days	1-2 months	
Pastry croissants	6-12 months	6-12 months	Pastry croissants can be stored in cooler temperatures 3-6 months. Refrigerate high-moisture croissants in airtight containers for 6 months.
Cheese pie shells	1-2 months (unopened)	2 months	
Cheese dough	2 months	2 months	
Unbaked cakes (batter)	1 month	1 month	Use double-acting baking powder for best results.
Unbaked bread rolls	1 month	1 month	
Unbaked bread rolls	1-4 months	1-4 months	
Frozen coffee (Ice, Apple, Fruit)	6-12 months	6-12 months	
Unbaked biscuits, rolls, coffee-cake dough	Expiration date or 6-12 months	Do not freeze	Store in refrigerator for best storage life.

Safe Food Storage: The Refrigerator and Freezer—K-State Research & Extension

For freezing, look for the word “freezer” on the package. Plastic containers for freezing are made of thicker material to resist tearing, moisture migration and protect from off-flavors and odors. Rigid

plastic containers for freezing are also good choices. Freezer paper is best for wrapping meat products. Use a freezer safe tape to hold the package together.

Always label and date the package so you know the contents and how long it has been in the freezer.

Never use packaging not designated for food storage, such as garbage bags.

For more information, see [Pre-serve it Fresh, Preserve it Safe—Freezing](https://www.rrc.ksu.edu/Pre-serve-it-Fresh-Pre-serve-it-Safe-Freezing).