Food Storage Tips

What Are the Current Recommendations?
"We encourage Church members worldwide to prepare for adversity in life by having a basic supply of food and water and some money in savings."
-The First Presidency, All Is Safely Gathered In: Family Home Storage, Feb. 2007, 1
www.providentliving.org

Prepare One Step at a Time

Assess Your Situation
What are your...
- Food preferences?
- Amounts needed?
- Cooking habits?
- Special needs?
- Budget limitations?
- Space limitations?
- Pets?

My situation
- I like homemade food; also use mixes and canned food; not a fan of pickles
- I usually cook for myself
- I prepare food at home; rarely eat out
- I don’t have food allergies/sensitivities
- I add to storage regularly
- I have plenty of space
- I don’t have any pets

Prepare One Step at a Time

Build Your Storage Wisely
Wisdom and Order Mosiah 4:27

Assess Your Situation
Build Your Storage Wisely
Develop Self-Reliance Skills

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Prepare One Step at a Time

Build Your Storage Wisely
- Get free empty buckets from grocery store bakery
- Stock up when you find a good deal
- Buy in bulk
- Take trips to local Home Storage Center
- Preserve food
- Get organized
- Be creative
Basics of Family Home Storage

THREE-MONTH SUPPLY
Build a small supply of food that is part of your normal, daily diet. One way to do this is to purchase a few extra items each week to build a one-week supply of food. Then you can gradually increase your supply until it is sufficient for three months. These items should be rotated regularly to avoid spoilage.

Tips:
• Look for sales
• Buy items you like
• Continually replenish

Shelf-Life of Pantry Items

“Best if Used By” date is a recommendation, not a deadline for use

- A couple of years
  - Box mixes
  - Flour
  - Vegetable Oil

- Several Years
  - Canned Food

- Indefinite (if kept dry)
  - Salt
  - Baking Soda
  - Baking Powder
  - Granulated Sugar

Canned Food Lasts a Long Time, But Not Forever

When in doubt, throw it out.

Store Food Properly

Effect of Humidity

Nutrient Loss
- Thiamin: -71%
- Riboflavin: -21%
- Vitamin A: -70%
- Lysine: -80%

Effect of Humidity

- From BYU Master’s Research of Michelle Lloyd, 2003
Effect of Air (Oxygen)

Problem:
- Oxygen reacts with food
  - Vitamin loss
  - Off-colors
  - Off-flavors
  - Allows bugs to survive

Solution:
Use an oxygen absorber packet to remove oxygen to extend shelf-life

Effect of Light

- Speeds up reactions
- Faded-colors
- Vitamin loss
- Off-flavors

Effects of Temperature (Heat)

Figure 173 – Dehydrated nitrogen-packed tomato samples after 30 months storage at 40°F, 70°F, and 100°F.

From BYU Master’s Thesis of Amy Norseth, 1986

Basics of Family Home Storage

DRINKING WATER

- Store drinking water for circumstances in which the water supply may be polluted or disrupted.
- If water comes directly from a good, pretreated source then no additional purification is needed; otherwise, pretreat water before use. Store water in sturdy, leak-proof, breakage-resistant containers. Consider using plastic bottles commonly used for juices and soda.
- Keep water containers away from heat sources and direct sunlight.

Tip: Rotate your water; use a variety of containers

Water Storage Options
Basics of Family Home Storage

FINANCIAL RESERVE

Establish a financial reserve by saving a little money each week and gradually increasing it to a reasonable amount (see All Is Safely Gathered: The Family Finances guide).

Tip:
• If you are having trouble budgeting, write down everything you are spending money on and you will likely find ways you can save.

Basics of Family Home Storage

LONGER-TERM SUPPLY

For longer-term needs, and where permitted, gradually build a supply of food that will last a long time and that you can use to stay alive, such as wheat, white rice, and beans.

These items can last 30 years or more when properly packaged and stored in a cool, dry place. A portion of these items may be rotated in your three-month supply.

Tips:
• Write dates on your food
• Store it properly

"Life Sustaining" Shelf-Life Foods Stored in No 10 Cans

<table>
<thead>
<tr>
<th>Food</th>
<th>New &quot;Life Sustaining&quot; Shelf-Life Estimates (in Years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wheat</td>
<td>30+</td>
</tr>
<tr>
<td>White rice</td>
<td></td>
</tr>
<tr>
<td>Cornmeal</td>
<td></td>
</tr>
<tr>
<td>Pinto beans</td>
<td>30</td>
</tr>
<tr>
<td>Rolled oats</td>
<td></td>
</tr>
<tr>
<td>Pasta</td>
<td></td>
</tr>
<tr>
<td>Potato flakes</td>
<td></td>
</tr>
<tr>
<td>Apple slices</td>
<td></td>
</tr>
<tr>
<td>Non-fat powdered milk</td>
<td>20</td>
</tr>
<tr>
<td>Dehydrated carrots</td>
<td></td>
</tr>
</tbody>
</table>

http://providentliving.org/content/display/0,11666,7798-1-4224-1,00.html

BYU Research on Long-term Storage

Collecting Samples

LDS Church News, 29 Dec 2001, 10

Research to examine long-term food storage
Foods Tested at BYU (from residential locations)

- Nonfat Dry Milk
- Oatmeal
- Instant Potatoes
- Rice
- Dried Apples
- All-Purpose Flour
- Baking Powder
- Powdered Eggs
- Macaroni
- Pinto Beans
- Wheat
- Cornmeal
- Margarine Powder
- Split Peas
- Dehydrated Carrots

Is it Edible?

Mark whether or not you would drink each sample in an emergency situation.

64% of panelists said they would drink the ‘worst’ sample in an emergency. 79% would use it in a recipe.


Is it Nutritious?

In general, the vitamins we have measured in properly stored foods are fairly stable, although more research is needed.

- Thiamin
- Riboflavin
- Vitamin C
- Vitamin E


Is it Safe?

- Performed Ames Test for mutagenicity
- Tested rice stored long-term

Conclusions

“The results of this study suggest that rice held in accelerated and long-term storage does not increase in mutagenic compounds.”


Prepare One Step at a Time

Assess Your Situation

Build Your Storage Wisely

Develop Self-Reliance Skills
Become Self-Reliant

“How can we give if there is nothing there? Food for the hungry cannot come from empty shelves. Money to assist the needy cannot come from an empty purse. Support and understanding cannot come from the emotionally starved. Teaching cannot come from the unlearned. And most important of all, spiritual guidance cannot come from the spiritually weak.”


Develop Self-Reliance Skills

Cooking
- Try new recipes/cooking techniques

Home preservation
- Canning, freezing, drying

Learn from reliable sources
- National Center for Home Food Preservation [http://nchfp.uga.edu]
- Cooperative Extension [http://extension.usu.edu]
- Provident Living [www.providentliving.org]
- BYU Food Science [http://ndfs.byu.edu/Research/Research on Food Storage]

Budgeting

Bargain shopping

Practice Self Reliance Daily

“The principle of self-reliance is spiritual as well as temporal. It is not a doomsday program; it is something to be practiced each and every day of our lives.”

L. Tom Perry, “Becoming Self-Reliant,” Ensign, Nov. 1991, 64, emphasis added

What are YOU going to do?

Extra Slides

Alma 37: 6-7

6 ...By small and simple things are great things brought to pass; and small means in many instances doth confound the wise.

7 And the Lord God doth work by means to bring about his great and eternal purposes; and by very small means the Lord doth confound the wise and bringeth about the salvation of many souls.
Prepare for Uncertainties

“We do live in turbulent times. Often the future is unknown; therefore, it behooves us to prepare for uncertainties.”

Thomas S. Monson, “If Ye Are Prepared Ye Shall Not Fear,” Ensign, Nov 2004, 113

Do Good

• “President Marion G. Romney said of welfare work, “You cannot give yourself poor in this work.” And then he quoted his mission president, Melvin J. Ballard, this way: “A person cannot give a crust to the Lord without receiving a loaf in return.”
• I have found that to be true in my life. When I am generous to Heavenly Father’s children in need, He is generous to me.

President Henry B. Eyring, “Opportunities to Do Good”, April 2011 General Conference

Wet-Canned Foods

<table>
<thead>
<tr>
<th>Approximate Shelf-life</th>
<th>Canned Food</th>
</tr>
</thead>
<tbody>
<tr>
<td>8+ years</td>
<td>corn, hominy, peas, lima beans</td>
</tr>
<tr>
<td>15+ years</td>
<td>pumpkin and squash, sweet potatoes, tomatoes, beets, brussel sprouts, cabbage, cauliflower</td>
</tr>
<tr>
<td>10 years</td>
<td>asparagus, stringless beans, carrots, spinach, grapefruit</td>
</tr>
<tr>
<td>5 years</td>
<td>apples, applesauce, apricots, fruit salad, peaches, pears, pineapple</td>
</tr>
<tr>
<td>7 years</td>
<td>canned meats</td>
</tr>
<tr>
<td>11 years</td>
<td>plums, rhubarb, blackberries, blueberries, cherries, cranberry sauce, grapes, picnics, sauerkraut, canned milk (evaporated, sweetened condensed)</td>
</tr>
</tbody>
</table>


Make sure cans are sealed properly when using a #10 can sealer

Keep the Bugs Out!

Loose Seam

Notice how the loose seam is thicker than the good seam.

Good Seam
What Should I Store?

White Wheat vs. Red Wheat

Hard White Wheat Makes a Lighter Loaf of Bread (in color, flavor and texture)

White Wheat vs. Red Wheat

Hard White Wheat
Hard Red Wheat

What is Food Science?

Product Development
Processing
Preservation and Storage

FOOD SCIENCE

Quality Assurance
Food Analysis and Sensory Evaluation
Food Regulations

Vitamin Loss

Vitamin C Loss in Green Beans

SOURCE: Institute of Food Technologists

Vitamin Stability

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>Neutral</th>
<th>Acid</th>
<th>Alkaline</th>
<th>Air of oxygen</th>
<th>Light</th>
<th>Heat</th>
<th>Maximum cooking loss</th>
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</thead>
<tbody>
<tr>
<td>Vitamin A</td>
<td>S</td>
<td>U</td>
<td>S</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>40</td>
</tr>
<tr>
<td>Vitamin C (ascorbic acid)</td>
<td>U</td>
<td>S</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>100</td>
</tr>
<tr>
<td>Vitamin B12</td>
<td>S</td>
<td>S</td>
<td>S</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>10</td>
</tr>
<tr>
<td>Vitamin D</td>
<td>S</td>
<td>S</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>40</td>
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<tr>
<td>Folate</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>100</td>
</tr>
<tr>
<td>Niacin</td>
<td>S</td>
<td>S</td>
<td>S</td>
<td>S</td>
<td>S</td>
<td>S</td>
<td>75</td>
</tr>
<tr>
<td>Vitamin B6</td>
<td>S</td>
<td>S</td>
<td>S</td>
<td>S</td>
<td>U</td>
<td>S</td>
<td>40</td>
</tr>
<tr>
<td>Riboflavin</td>
<td>S</td>
<td>S</td>
<td>U</td>
<td>S</td>
<td>U</td>
<td>S</td>
<td>75</td>
</tr>
<tr>
<td>Thiamin</td>
<td>U</td>
<td>S</td>
<td>U</td>
<td>U</td>
<td>S</td>
<td>S</td>
<td>80</td>
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<tr>
<td>Vitamin E (tocopherols)</td>
<td>S</td>
<td>S</td>
<td>S</td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>55</td>
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Caution: These conclusions are oversimplifications and may not accurately represent stability under all circumstances.


Is it Edible?

Dehydrated potatoes stored up to 30 yrs
Dehydrated apple slices stored up to 30 yrs

From BYU Food Storage Research, 2003

What affects shelf-life of food?

Composition
Preservation Techniques
Storage Conditions
**Composition**

- Water
- Fat
- Protein
- Carbohydrate
- Vitamins
- Minerals
- Enzymes

**Preservation Techniques**

- Drying
- Canning
- Freezing
- Irradiation
- High Pressure Processing
- Preservatives
- Etc.

**Preservatives**

- Ingredients added to food to extend its shelf-life
- Example: calcium propionate
  - Found in Swiss cheese
  - Prevents mold growth in bread

**For More Information...**

BYU Food Storage Research: [http://ndfs.byu.edu/](http://ndfs.byu.edu/)