Ask Steward: **How can I safely store food at home?**

There are a few safety and quality considerations for storing food for the week or the year. Safe food storage means we have attempted to reduce or eliminate conditions favorable to growing harmful microorganisms (germs), food spoilage, and foodborne illness. Unfortunately, germs in stored foods may not be seen, smelled, or tasted and can still cause serious illness.

Foodborne illness often goes underreported or underdiagnosed because it can happen in different timeframes with different symptoms, depending on the germ. Even if luck helps someone avoid the more harmful foodborne illnesses, Extension has research-based reasons food spoils and best practices for staying healthy with safely stored foods.

Photo: Sara Adlington, MSU Extension

CONSIDER FAT TOM FOR SAFE FOOD STORAGE. We are trying to avoid promoting the growth of germs as well as cross-contamination when germs or other foreign materials are unintentionally moved from one surface to another. **FAT TOM** is an acronym that describes the conditions necessary for bacterial growth: Food, Acidity, Time, Temperature, Oxygen, and Moisture. Consider these **FAT TOM** conditions to reduce the potential for germs to thrive in food products.

- **Food** – Germs need a food source to grow. Use fresh, quality foods and avoid cross-contamination with other foods, particularly high-risk foods like raw or undercooked meat, poultry, and eggs, unpasteurized (raw) milk, and raw shellfish.
- **Acidity** – Most germs like to grow in neutral pH environments. Acidic foods like most fruits, pickled or fermented foods, or recipes with added acid are less likely to grow germs.
- **Time** – Germs take time to grow and reproduce. Reduce the time that food may be in the temperature "danger zone" to limit germ growth.
- **Temperature** – Germs grow best between approximately 40-140 degrees F. This is known as the 'danger zone.' Minimize the length of time that foods are in this temperature zone.
- **Oxygen** – Many germs need oxygen to grow. Consider how to reduce the amount of oxygen accessible to food while in storage.
- **Moisture** – Many germs need moisture to grow. Consider how to reduce the amount of moisture accessible to food in storage.

HOW AND WHERE TO SAFELY STORE FOODS IN DIFFERENT SPACES

How and where food is stored can change FAT TOM conditions that reduce or slow spoilage. While expiration dates indicate a food may no longer be safe or not function as intended, most other 'use-by' and 'sell-by' dates are for quality purposes. Once opened, these dates no longer apply and additional safe storage practices are needed. Here are some tips to consider when storing food in different locations:

Fridge: Perishable Foods

- **Check the temperature.** To keep foods out of the danger zone (40-140 degrees F), refrigerator temperatures should be at or below 40°F (4°C). Check the temperature daily or weekly.
- **Put food in safe locations in the fridge.** Avoid fluctuating temperatures by storing milk and eggs in the door of fridge as the temperature regularly fluctuates with opening. Place raw meats, poultry, or fish in a sealed container on the bottom of the fridge to avoid drip contamination.
- **Do not overload the fridge.** Allow space between and around foods to ensure cool air can circulate and keep foods consistently cool.

Freezer: Perishable and Preserved Foods

- **Check the temperature.** To make sure foods freeze, freezer temperatures should be at 0°F (-18°C) or lower. Check the temperature regularly.
- **Consider the container.** Maintain quality and prevent freezer burn, use plastic freezer bags, freezer paper, freezer aluminum foil, glass, or plastic containers with the snowflake symbol.
- **Keep the freezer full of frozen items.** Frozen items help the freezer maintain consistent temperature. Do not overload with warm or unfrozen foods or it will slow down the freezing rate. Usually, 2 to 3 pounds of food per cubic foot of storage space can freeze within 24 hours.
- **Treat food before freezing to stop spoilage.** Many vegetables should be blanched before freezing and fruits should be steamed, cooked, or treated with ascorbic acid to inactivate enzymes that cause browning.
- **Thaw food safely.** Foods should never be left to thaw on a counter because this may create unsafe temperature differences throughout the product. Thaw in the refrigerator, microwave or in cold water for safest results.

Photo: Erika Malo, MSU Extension

Cupboards and Pantry: Dry Goods and Preserved Foods

- **Put food in safe locations for consistent storage.** Consider the location for storing non-perishable foods to avoid temperature or humidity fluctuation (near the oven, dishwasher, air vent, or exterior door)
- **First in, first out.** Use the oldest product first and move new product to the back. Store only those items that will be used. If a food is not currently used regularly, it is not likely to be used.
- **Consider the container.** If properly preserved, sealed, and stored in temperature-stable, sun-free locations, these foods can last for extended periods. Check that products had no container damage before opening.
- **Practice safe, research-based preservation.** Montana State University Extension has multiple resources for safe processes considering freezing, drying, curing, and canning. *(https://nutrition.msuextension.org/food-safety-preservation/index.html)*
- **Rotate for best quality.** To reduce food waste, do not store more than what can be rotated into regular meals and use within one year for home-preserved food and 2-3 years for commercially-preserved food. Food stored for longer than labeling recommendations may have changes in quality, color, flavor, or function.

LEFTOVERS

Making extra for another meal is a great way to stretch food dollars and save time. Leftovers should be refrigerated or frozen in airtight containers within two hours of being prepared. Divide leftovers into small, shallow containers for quick cooling. Plan to eat the leftovers from the fridge and reheat within 3-4 days or put them into the freezer immediately.

Reach out to local Extension Agents or state Food and Family Specialist Brianna Routh, PhD, MPH, RDN, for food safety and storage questions and explore online resources, *https://nutrition.msuextension.org/*.

Brianna Routh, PhD, RDN, is the MSU Extension Food and Family Specialist.

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