Refuction PROGRAM ReFresh Nebraska

Exploring Food Waste Issues

Spring 2023

# Working Toward Sustainable Dairy Production

A highlight each year here at Keep Nebraska Beautiful, is the opportunity to participate in the controlled chaos that is the grade school Eco-Fair. Hosted by local KNB affiliates in Fremont and Cass County, environmentally focused groups interact with kids on a variety of ecotopics for about 10 minutes. 8-10 kids at a time. For the majority of a school day.

Honestly, it's a ton of fun for everyone, and kids walk away knowing a little more about the world they live in. For the last five years, KNB's presentation has focused on food waste from farm to fork. Along the way, we also look at the food recovery hierarchy, and the resources that go into producing that food in the first place. It's a busy and encouraging 10 minutes, with the majority of kids, interested and engaged to the end. Fidgety maybe, but engaged.

Our simple presentation uses apples to represent food in the supply chain, but what would a more in depth discussion look like? What foods exemplify not only the waste issues faced, but the work being done to address them? One would be hard pressed to find a better example than milk.

Take source reduction. In 1950, dairy U.S. dairy herds stood at 25 million cows. Thanks to new technology and the ability to better monitor cow health, today, that number is closer to 9 million cows that actually produce 60% more milk. In fact, a study published in the Journal of Animal Science found that producing a gallon of milk in 2017 required 30% less water, and 21% less land than in 2007, resulting in a 19% smaller carbon footprint.

In terms of the Food Recovery Hierarchy, cows are the ultimate <u>upcyclers</u>, eating byproducts that humans cannot eat, such as citrus pulp, almond hulls, brewer's/distiller's grain and more. Diet not only reduces a dairy farm's landfill impact, such byproducts are also beneficial to the cows, providing needed energy for more efficient milk production. Each day, cows collectively keep over 306 million pounds of waste out of landfills, the equivalent of taking 25,152 cars off the road for a year.

A recent FAO report found that from 2005 to 2015, Green House Gas (GHG) emissions produced by dairy cows, rose 18% worldwide. However, emissions in North America declined even as production rose, making its Green House Gas (GHG) intensity for dairy products the lowest in the world.

Striving to reduce emissions even further, researchers are studying methane inhibitors that block, or inhibit the formation of methane created during digestion. The most promising of these occurs naturally in the red seaweed Aspargopsis taxiformis. While issues regarding production to scale have yet to be worked out, the potential is huge, reducing methane production in dairy cows a whopping 55%.

According to the Dairy Alliance, Dairy farming can also contribute to crop production. When growing crops, many dairy farmers reuse the waste from other practices. Water used for cooling and cleaning, is often then recycled as irrigation. A benefit of reused water is that it has been Enriched by manure, a natural fertilizer, the recycled water nourishes soil for years, to the benefit of all.

Currently underutilized as a manure treatment option, EPA and the industry itself are looking to anaerobic digestion (AD) of dairy manure for its many environmental and economic benefits. These include renewable energy production, and the reduction of greenhouse gas emissions. As of April 2021, there were 221 AD systems processing dairy cow manure in the U.S., and more than 50 currently under construction with significant opportunity to scale AD capacity in coming years. The AgSTAR program, a collaborative effort of the U.S. Environmental Protection Agency (EPA) and the U.S. Department of Agriculture (USDA), estimates that there is potential for AD systems on approximately 2,700 additional dairy farms, with the potential to reduce 29.9 metric tons of carbon dioxide equivalent each year. That's equivalent to planting nearly 500 million trees!

Turning to consumers, the Fall 2019 issue of ReFresh discussed how a return to milk dispensers in U.S. schools has the potential to eliminate carton waste all together. That's a whopping 5.5 billion milk cartons a year, and we're not talking the difference between recycling and the landfill either, it's source reduction - keeping materials from being produced in the first place.

And here's an added benefit - students not only report the milk tastes better, they're more likely to choose it when given the option to take only as much as they want. In fact, among pilot programs researched, all reported an overall increase in milk purchased. Some even saw a decrease in the amount wasted each day, and while others saw a slight increase, they still found it to be a smaller percentage of overall sales.

From decreasing emissions and improving water usage, to utilizing manure, and addressing package waste, the industry and its farmers are working toward the goal of achieving GHG neutrality by 2050. Known as the U.S. Dairy Net Zero Initiative (NZI), the industry is breaking down barriers to make technology and best practices more accessible and affordable to farms of all sizes and geographies, making them an environmental solution for years to come.



Shopping your fridge first is an important strategy for reducing food waste. Here's a recipe idea that will help you use what you have before buying more!

Homemade Butter

**Turning your heavy whipping cream into butter is fun and easy!** 



Milk is made up of fats and liquids. When it is shaken or beaten for a long time, the solids break apart from the liquids and attach to each other. The end result is a solid fat-based product, butter, and a liquid with a low amount of fat in it, buttermilk. The buttermilk will not last any longer than normal milk, but butter will last for a great deal longer, even left at room temperature.

### <u>USES UP</u>

#### MAKES Separates into 1/2 butter, 1/2 buttermilk

DIRECTIONS

# MATERIALS

Heavy Whipping Cream

- Heavy Whipping
  - Cream
- Mixing BowlElectric Mixer
- Lidded Jar
- Wax Paper
- Pour heavy whipping cream into a mixing bowl.
  Mix at high speed until you have whipped cream.
- Turn the mixer down to a low speed and continue mixing.
- The cream will separate into butter and buttermilk.
- Pour the buttermilk into lidded jar for later use as a beverage or to bake with.
- Continue mixing and pouring out buttermilk until no more is created.
- Fill the bowl with cold water. Washing the butter keeps it from going bad.
- Knead the butter against the side of the bowl.
  Pour off the water.
- Continue until the water runs clear.
- Place the butter on a piece of wax paper, roll and place in the refrigerator.
- The heavy whipping cream you started with, will leave you with half butter, and half
- buttermilk.Enjoy!

CREDIT Education.com

# FOOD STORAGE TIPS FROM SAVETHEFOOD.COM

# **DAIRY & EGGS**

# **BUTTER**

**REFRIGERATE IT:** Yes **AT FRESHEST:** Opened, about 3 weeks; unopened, 2 months; freezer, up to 9 months

**OPTIMAL STORAGE:** Keep reserves in the freezer. Butter can be kept at room temperature if it will be used up within several days, but only if kept out of the light. If used only occasionally, store in the refrigerator in its original packaging and in the cooler parts of the refrigerator (the top and middle shelves near the back). Butter readily absorbs strong odors and flavors from its surroundings; additional wrapping or storing in a closed container (bag or butter dish) can help prevent this.

Clarified butter or "ghee" keeps three times longer than other butters because the milk solids (which cause butter rancidity) have been removed. Clarified butter is good for cooking but not for use as a spread. It will keep, covered, in the refrigerator for up to 3 months.

**FREEZING:** For the best results, freeze fresh butter in its original carton within a ziptop freezer bag.

**USE IT UP/REVIVAL:** The translucent dark yellow patches on the surface of butter are simply spots that have been exposed to air and dried out. Eat them or scrape off. Save butter wrappers to grease pans or separate homemade burger patties. Store each wrapper, folded onto itself, in the freezer in an airtight container, and use as needed.

#### CHEESE, HARD

**REFRIGERATE IT:** Yes**AT FRESHEST:** 1 to 10 months, depending on thecheese

**OPTIMAL STORAGE:** Buy small amounts of cheese. Cheese is best stored loosely wrapped in wax paper or parchment paper to allow it to breathe, which likely means rewrapping it once you get it home to get it out of plastic wrapping. Wrapping it tightly in plastic traps moisture, thus encouraging growth of bacteria and mold. Store in the refrigerator drawer, if possible, to reduce the chance that the cheese will absorb other flavors. For best taste, allow to warm to room temperature before serving (unless it's extremely warm out).

**FREEZING:** Grate or cube before freezing, then seal into a zip-top freezer bag. Thaw in the refrigerator and use soon there-after; the texture may be compromised, so plan to use for cooking and baking rather than straight eating.

**USE IT UP/REVIVAL:** If hard cheese develops a blue-green mold on the exterior, remove ½ in/12 mm below the mold; the remainder will be fine. Use rinds of hard cheeses to flavor soups and stews.

#### CHEESE, SOFT

**REFRIGERATE IT:** Yes**AT FRESHEST:** 1 to 4 weeks, depending on thecheese

**OPTIMAL STORAGE:** Buy small amounts of cheese. Cheese is best stored loosely wrapped in wax paper or parchment paper to allow it to breathe, which likely means rewrapping it once you get it home to get it out of plastic wrapping. Wrapping it tightly in plastic traps moisture, thus encouraging growth of bacteria and mold. Store in the refrigerator drawer, if possible, to reduce the chance of the cheese absorbing other flavors. Strong-smelling cheeses should be wrapped and placed in an airtight

container to avoid having their flavor absorbed into other foods. For best taste, allow to warm to room temperature before serving (unless it's extremely warm out).

**FREEZING:** Cheese can be frozen but may become crumbly and lose flavor, and is therefore best used in cooking when thawed. Cube before freezing for ease of use. Very soft cheeses such as Brie will not freeze all that well.

**USE IT UP/REVIVAL:** Soft cheeses with blue or green molds (that are not intentional as in blue cheese) should be discarded. Take care with unpasteurized cheeses, which carry food safety risks and are not recommended for populations at higher risk for food-borne illness. Rinds of soft cheeses can often be eaten. Whip small amounts of leftover soft cheeses together with some olive oil to create a delicious whipped cheese dip.

COTTAGE CHEESE

**REFRIGERATE IT:** Yes**AT FRESHEST:** Unopened, up to 10 days; opened, 7days

**OPTIMAL STORAGE:** Closed container in the refrigerator.

**FREEZING:** Not recommended, although dishes that include cottage cheese as an ingredient may be frozen.

**USE IT UP/REVIVAL:** Substitute for ricotta cheese in lasagna. Cottage cheese can be used in place of cream cheese or ricotta cheese in dips, casseroles, pancakes, and desserts. Process in a blender if you prefer a smoother texture. Add cottage cheese to custards, pasta sauces, egg dishes, cheesecakes, and all sorts of recipes where cheese or milk would normally be used.

#### <u>EGGS</u>

**REFRIGERATE IT:** Yes

**AT FRESHEST:** Fresh, 3 to 5 weeks after sell-by date; freezer, 12 months; hard-boiled, 1 week.

**OPTIMAL STORAGE:** Keep in a cold part of the refrigerator in their original carton (not in the door, even if there's a space for them—it is too warm).

**FREEZING:** Eggs should not be frozen in their shells. Lightly beaten eggs can be frozen in an airtight container, with 1-in/2.5-cm headspace, or sealed in a zip-top bag with as much air removed as possible. Yolks can be frozen alone if mixed with 1 tsp salt per 1 pt/480 ml, and whites can be frozen without salt.

**USE IT UP/REVIVAL:** Cracked eggs should be placed into a clean, airtight container and used within 2 days. If you're not sure when it cracked, it's best to discard the egg. As eggs age, the whites will thin and the yolks will flatten, but the nutritional value will not diminish. Older egg whites are actually better for whipping up into a voluminous meringue than fresh egg whites. Egg grades (such as A and AA) are a reflection of how well the yolk and white hold together and the appearance of the shells, not size or flavor. Frittatas make quick work of extra eggs (and anything else in your fridge).

#### EGG SUBSTITUTES

**REFRIGERATE IT:** Yes

**AT FRESHEST:** Fresh, unopened, 10 days; opened, 3 days; frozen, 12 months; thawed, 7 days

**OPTIMAL STORAGE:** Store in a cold part of the refrigerator, sealed in the original container. If the original container is not airtight once opened, transfer to an airtight container to extend life.

**FREEZING:** Freeze in the original unopened package. Freeze portions in zip-top bags with the air removed. Once thawed, do not refreeze.

**USE IT UP/REVIVAL:** Egg substitutes can be used just as you'd use traditional eggs, so if you're nearing the expiration of your egg substitute, bake up some cookies or make a seasonal frittata.

#### <u>MILK</u>

**REFRIGERATE IT:** Yes (if in shelf-stable carton, refrigerate after opening)

**AT FRESHEST:** Pasteurized, 1 week beyond sell-by date; freezer, 3 months; shelf-stable carton, unopened, 6 months; opened, 7 to 10 days

**OPTIMAL STORAGE:** Keep milk in a cold part of the refrigerator (not the door), closed in its original container. It keeps its flavor better in opaque, sealable containers. Milk that comes in a shelf-stable carton has gone through ultrahigh-temperature pasteurization and can be stored in the pantry until opened, then refrigerated.

**FREEZING:** Milk can be frozen, but it will separate if left frozen for long periods. Lowfat and nonfat milk separate less than whole milk. Thawed milk is best for cooking or baking purposes. Freeze in airtight containers, leaving 1-in/2.5-cm headspace. You can also freeze it in ice-cube trays, then seal the frozen cubes in a zip-top freezer bag. Thaw in the refrigerator. Do not freeze again once thawed.

**USE IT UP/REVIVAL:** Sour milk can still be used in all sorts of recipes, such as baked goods, pancakes, homemade cottage cheese, cream fillings, etc. Milk will smell or taste bad before it would make you sick, making a sniff test a good method for evaluation. Do not return unused milk to the original container. Store it in its own airtight container instead. A nomadic Asian people used to ferment milk into an alcoholic drink called koumiss, described by Marco Polo as having "the qualities and flavor of white wine."

#### MILK SUBSTITUTES

**REFRIGERATE IT:** Yes. If in shelf-stable carton, refrigerate only once opened.

**AT FRESHEST:** Shelf-stable carton, unopened, up to 12 months; refrigerated packaging, unopened, 7 to 10 days; all packaging, once opened, 5 to 7 days

**OPTIMAL STORAGE:** In the pantry, store in a cool, dry spot. Once in the refrigerator, store sealed in the original carton in the middle of the refrigerator, where the temperatures are not too warm or too cold.

**FREEZING:** Freeze for cooking or baking purposes. Freeze in airtight containers, leaving 1-in/2.5-cm headspace. You can also freeze in ice-cube trays, then seal the frozen cubes into a zip-top freezer bag. Thaw in the refrigerator. Do not freeze again once thawed.

**USE IT UP/REVIVAL:** Milk substitutes are great in place of milk in most recipes, so if you're nearing or just past the expiration date, make a smoothie or pancakes or pudding.



# **QUICK TRICKS**

Food tossed is money lost. One way to add new life to still edible foods is to repurpose leftovers and reuse them in new ways and new recipes. This booklet will get you started with simple tips and recipes. You'll find "recycled" can taste just as good, maybe even better than the original recipe.

Alice Henneman, MS, RDN Extension Educator

## **Dairy**

- Freeze Parmesan rinds and add (frozen) to a soup or stew for extra flavor.
  Use up extra odds and ends of cheese by shredding them with a grater or in a food processor. Mix in your choice of ingredients, cut or chopped into small pieces (i.e. olives, pickles, pimientos, chives, walnuts, peppers, etc.) Add enough mayonnaise (regular or low-fat) to bind the ingredients together.
- Spread on your favorite bread.
- Use vanilla and fruit flavored yogurts as a dressing.

#### How to Freeze Milk and Cheese

Milk and cheese are very affordable sources of nutrition and make it easy to eat healthy. Milk and cheese provide essential nutrients including calcium to build strong bones and protein to support healthy muscles. A frequently asked question is whether milk and cheese can be frozen, such as when meal plans change or there is an especially good sale. Here is how to freeze them.

#### Freezing Milk

While milk can be frozen; it may separate, or be slightly grainy when thawed. Frozen milk works best for cooking, but you may find it is still acceptable for drinking. If you are thinking about freezing milk for drinking, you might try freezing a small amount first to see how you like it before freezing a larger batch.

Freeze milk in plastic freezer containers or special freezer-proof glass jars. Leave some extra space at the top since milk expands during freezing. If packaged in a widemouth container, leave 1/2-inch headspace for pints and 1- inch for quarts. If packaged in a narrow-mouth container (such as jars), leave 1 1/2-inch headspace for either pints or quarts.

Frozen milk will maintain best quality in the freezer for about 3 months; but will remain safe after that if stored at 00F. Thaw milk in the refrigerator. Stir well before using. Plan to drink within two or three days.

#### Freezing Cheese

Hard or semi-hard cheese can be frozen if cut into portions no larger than 1/2 pound blocks. Wrap in plastic wrap and then put in freezer bags. After freezing, cheese may become crumbly and mealy, but it will retain its flavor. It works best for cooking. Plan to use frozen cheese within 4 to 6 months for best quality; however if stored at 00F, it will remain safe after that time. Thaw cheese in the refrigerator. Use soon after thawing.

The cheeses that freeze best are:

- Brick
- CamembertCheddar
- Edam
- MozzarellaMuenster
- Parmesan
- Provolone
- Romano Swiss

Blue cheeses are more prone to becoming crumbly but they will still taste good. Cream cheese and cottage cheese do not freeze well.

www.food.unl.edu/cook-it-quick-documents/makeover-your-leftovers.pdf

For more waste reducing tips, go to:





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