REDUCTION ReFresh Nebraska

Exploring Food Waste Issues

Spring 2024

# **EPA Wasted Food Scale**

The Wasted Food Scale prioritizes actions that prevent and divert wasted food from disposal. Tiers of the scale highlight different pathways for preventing or managing wasted food, arranged in order from most preferred on the top left to least preferred on the top right. Within a given tier, pathways are ranked equally.

The most preferred pathways – prevent wasted food, donate and upcycle food – offer the most benefits to the environment and to a circular economy. These "top" pathways prioritize using food for its intended purpose: to nourish people. The least preferred pathways – landfilling, incineration, and sending food down the drain – have the largest environmental impacts and have limited potential for circularity.



EPA developed the Wasted Food Scale based on the findings of its 2023 report <u>From Field to Bin:</u> <u>The Environmental Impacts of U.S. Food Waste Management Pathways</u>. This report assesses 11 common pathways for managing wasted food in the U.S. based on their environmental impacts and potential contributions to a circular economy. The Wasted Food Scale is an update to the previous Food Recovery Hierarchy and reflects the latest science and changes in technologies and operational practices for wasted food management pathways</u>.

Notes on the Wasted Food Scale:

- The rankings in this scale apply only to the management of wasted food by these pathways and are not applicable to other categories of municipal solid waste that may be managed by the same pathways.
- This scale does not consider economic and social factors.
- "Landfill" and "incinerate" consider impacts with and without energy recovery.
- "Send down the drain" refers to wasted food that travels via the sewer system to a water resource recovery facility with or without anaerobic digestion.
- When food is delivered by truck directly to an anerobic digester this is considered the anaerobic digestion pathway, even if the anaerobic digester is located at a water resource recovery facility.
- The rankings for "leave unharvested" and "apply to the land" are based on limited data.

## Wasted Food Pathways

#### **Prevent Wasted Food**

Preventing food from going to waste in the first place is the most environmentally beneficial option on the Wasted Food Scale. When food is wasted, all the resources that went into producing, processing, distributing, and preparing that food are wasted too. <u>Learn more about preventing</u> <u>wasted food.</u>

#### Donate

Wholesome food that goes unsold or uneaten can be rescued, donated, or redistributed to feed people. This pathway includes food from across the food supply chain, from produce gleaned from farm fields to shelf-stable goods at a grocery store to extra meals prepared at a cafeteria. Donating food is one of the most preferred pathways because it ensures that food and the resources used to produce it are not wasted. When food is donated, it is used for its intended purpose which is to nourish people. Learn more about donating food.

#### Upcycle

Upcycling food into new food products usually takes place at the production or manufacturing stage of the food supply chain. Edible parts of food as well as less desirable scraps can be upcycled into new food products. For example, orange peels can flavor beverages, broccoli stems can be turned into slaw or be dried into powder, and spent grains from the brewing process can be turned into bread. Upcycling food is one of the most preferred pathways because it keeps food in the human food supply chain and avoids the wasting of food and the resources used to produce it.

#### Feed Animals

Using wasted food as animal feed can displace the production of traditional animal feed (e.g., growing soy, corn or barley) and avoid the environmental impacts associated with the production of that feed. Turning wasted food into animal feed often requires some processing such as cooking or drying. Learn more about reducing wasted food by feeding animals.

#### Leave Unharvested

Food crops are ideally harvested and used to nourish people. Sometimes market forces or environmental factors cause crops to remain unharvested in the field. These factors are often beyond the control of farmers, and include commodity prices, market specifications, labor shortages, damage to crops by pests and disease, and weather events such as flooding or drought. Alternative and secondary markets can sell, process, or upcycle crops that do not meet primary market specifications. Gleaning organizations can harvest surplus crops for donation. But if crops will not be consumed even if harvested, leaving them in the field avoids the impacts of picking, processing, packaging, and distributing food that is ultimately wasted. Unharvested crops may be grazed by animals or plowed into the soil. The plant nutrients and carbon in unharvested crops enhance soil health and support the growth of future crops.

## Anaerobic Digestion with Beneficial use of Digestate/Biosolids

Anaerobic digestion is the process of breaking down organic materials, such as wasted food, in an oxygen-free environment. The anaerobic digester may be a stand-alone digester that primarily processes wasted food, an on-farm digester that co-digests food waste with manures or a digester at a water resource recovery facility that co-digests food waste with wastewater solids. In the Wasted Food Scale, if the wasted food is delivered to a digester at a water resource recovery facility via the sewer system, then that is considered the "down the drain" pathway. Anaerobic digestion generates biogas, which is a source of renewable energy. It also produces digestate or biosolids, nutrient-rich products that can be used beneficially, for example as fertilizer, soil amendment or animal bedding. When the digester is located at a water resource recovery facility, the final product is called biosolids. Digestate and biosolids can be treated in a variety of ways prior to being applied to land, for example by composting. The use of digestate and biosolids on soils can offset the need for synthetic fertilizers and enhance soil health. Learn more about anaerobic digestion.

### Anaerobic Digestion with Disposal of Digestate/Biosolids

Digestate and biosolids are sometimes disposed of in a landfill. When the digestate or biosolids is disposed of, valuable nutrients are lost. Even if renewable energy (biogas) is generated, the environmental benefits are fewer than if digestate or biosolids had been beneficially used. Learn more about anaerobic digestion.

#### Compost

Composting is the controlled, aerobic (oxygen-required) biological decomposition of organic materials by microorganisms. Composting wasted food with other organic materials like yard trim produces a valuable, stable soil amendment that can be used to build soil health, increase soil water retention, and reduce soil erosion. Producing and using compost recycles organic matter and nutrients that are important for long-term soil health and ecosystem resilience. Learn more about composting and using compost.

#### Apply to Land

Raw wasted food from the food manufacturing and processing sector is sometimes applied to fields as a soil amendment. Land application of raw wasted food may involve spreading, spraying, or injecting the wasted food on or below the surface of the soil. The benefits and impacts of land application of food processing waste streams can vary widely based on the composition of the wasted food.

#### Landfill

EPA estimates that in the U.S., 24 percent of material in municipal solid waste landfills is food. Landfilling is one of the least preferred pathways because wasted food in landfills generates methane, a powerful and short-lived greenhouse gas. Because wasted food decays relatively rapidly, most of the methane it emits avoids capture by landfill gas collection systems. Wasted food has an outsized impact on landfill methane emissions: it is responsible for 58 percent of landfill methane emissions to the atmosphere. Also, the valuable nutrients in wasted food are not recovered when landfilled. <u>Read more about landfill methane emissions from wasted food.</u>

#### Incinerate

Wasted food (when it is mixed with other municipal solid waste) may be incinerated (also referred to as combustion with energy recovery, or controlled combustion). Incineration is one of the least preferred pathways because valuable nutrients in wasted food are not recovered. Though incineration produces energy, wasted food makes for a poor feedstock because it is so wet and produces little energy compared to other municipal solid waste.

#### Send Down the Drain

When wasted food is sent down the drain, it combines with other wastes in the sewer system and ends up at a water resource recovery facility, or wastewater treatment plant. Sending wasted food down the drain is one of the least preferred pathways because wasted food decays rapidly in the sewer system and generates methane, a powerful greenhouse gas. Methane emissions from sewers are released directly into the atmosphere. Energy is required to treat wastewater that contains nutrient-rich wasted food. Depending on the operations at the water resource recovery facility, the valuable nutrients in wasted food may not be recovered for beneficial use. Even if the water resource recovery facility generates energy through anaerobic digestion, the recovered energy does not offset the methane emissions from wasted food in sewers and extra energy demand for wastewater treatment.



# **Savory Broccoli, Cheddar and Bacon Scones**

# BAKE SOME GOODS THAT DO SOME GOOD, TOO



These savory buttermilk scones are a "mother" recipe. In other words: this is choose-your-own-adventure territory. Mix and match leftover veggies (like spinach, roasted butternut squash or caramelized onions) and meats with herbs, green onions, and cheese to make a perfectly portable breakfast or lunch.

MAKES

8 Servings

USES UP	
Veggies, Me	eat & Cheese

#### **INGREDIENTS**

# DIRECTIONS

1 cup all-purpose flour

- 1 cup whole-wheat flour
- 2 Tbsp baking powder
- 1 1/2 tsp salt

• 1/2 cup unsalted butter, chilled and cut into cubes

 1/2 cup chopped cooked broccoli

• 1/4 cup crumbled cooked bacon

• 1 green onion, minced

• 1 Tbsp chopped fresh herbs (dill, basil, oregano, etc.)

• 1 cup grated aged cheddar (or Gruyère, Gouda, crumbled blue cheese, feta, etc.)

• 1/3 to 1/2 cup half-and-half or buttermilk, plus more for brushing

• Poppy seeds or sesame seeds, for sprinkling

Preheat the oven to 350°F. Line a baking sheet with parchment paper.

In a food processor, combine the all-purpose flour, whole-wheat flour, baking powder, salt, and butter. Pulse until the mixture resembles coarse crumbs, then transfer to a bowl.

Stir the broccoli and bacon into the flour mixture along with the green onion, herbs, and cheese. Add just enough cream to make a soft dough (the amount of cream you'll need depends on how wet the vegetable mixture is), and stir with a fork until the mixture just comes together. Don't work the dough too much—the less it's handled, the flakier the scones.

Dump the dough onto a floured work surface and knead gently, then pat lightly into a rectangle about 1½ to 2 inches thick. Cut into 4-inch squares, then cut the squares crosswise into triangles (or make round scones with a 3-inch biscuit cutter). Set the scones on the prepared baking sheet. Use a pastry brush to brush the tops lightly with extra cream, and sprinkle with seeds.

Bake for 20 to 25 minutes, until golden, then transfer to a rack to cool slightly. Serve warm with butter.

Tip: Take a look at what you've got in the fridge, and think about classic and complementary combinations — red pepper with oregano and cheddar cheese; spinach with dill and feta; chopped prosciutto or cooked Italian sausage with basil and Parmesan; caramelized onions, cheddar, and thyme.

# FOOD STORAGE TIPS FROM SAVETHEFOOD.COM

#### **BUTTER & CHEESE**

#### 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 zip-top 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 the cheese

**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 the cheese

**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.

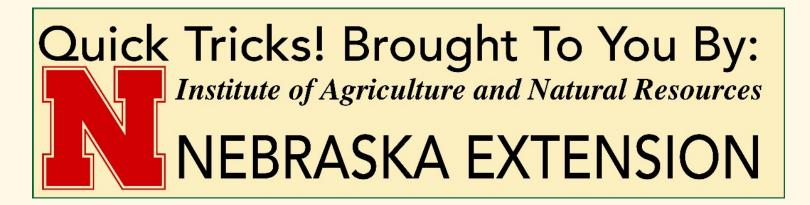
 COTTAGE CHEESE

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

 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.



# **QUICK TRICKS**

Food tossed is money lost. One way to add new life to still edible foods is to re-purpose 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

	a quide for cofo u	se of a product, cor	neult this chart and follow theory	ting	
<ul> <li>Purchase the product bel</li> </ul>			nsult this chart and follow these	ε ups.	
<ul> <li>Follow handling recommendation</li> </ul>		•			
<ul> <li>Keep meat and poultry in</li> </ul>	•				
• • • •	• •		n 2 months, overwrap these pa	ckages with airtigh	nt heavy-duty
foil, plastic wrap, or freez		U U		5 5	, ,
· ·		• •	following recommended storage	e times are for qua	ality only.
- · ·					
Product	Refrigerator	Freezer	Product	Refrigerator	Freeze
Eggs			Soups & Stews		
Fresh, in shell	3 - 5 weeks	Don't freeze	Vegetable or meat-added		
Raw yolks, whites	2 - 4 days	1 year	& mixtures of them	3 - 4 days	2 - 3 month
Hard cooked	1 week	Don't freeze	Bacon & Sausage		
Liquid pasteurized eggs				7 -1	A
or egg substitutes,			Bacon	7 days	1 mont
opened	3 days	Don't freeze	Sausage, raw from pork,	1 O dava	1 0 month
unopened	10 days	1 year	beef, chicken or turkey Smoked breakfast links,	1 - 2 days	1 - 2 month
TV Dinners, Frozen Case	seroles		patties	7 days	1 - 2 month
Keep frozen until ready to he		3 - 4 months	·	-	1 - 2 11011
Deli & Vacuum-Packed F			Fresh Meat (Beef, Veal, L		0.10.00.000
	1000013		Steaks	3 - 5 days 3 - 5 days	6 - 12 month 4 - 6 month
Store-prepared (or homemade) egg,			Chops Roasts	3 - 5 days 3 - 5 days	4 - 12 month
chicken, tuna, ham,			Variety meats (tongue,	5-5 uays	4 - 12 1101101
macaroni salads	3 - 5 days	Don't freeze	kidneys, liver, heart,		
Pre-stuffed pork & lamb	e eurye	Donthoolo	chitterlings)	1 - 2 days	3 - 4 month
chops, chicken breasts				- Eddyo	
stuffed w/dressing	1 day	Don't freeze	Meat Leftovers		
Store-cooked convenience	,		Cooked meat & meat dishes	3 - 4 days	2 - 3 month
meals	3 - 4 days	Don't freeze	Gravy & meat broth	1 - 2 days	2 - 3 month
Commercial brand			Fresh Poultry		
vacuum-packed dinners			Chicken or turkey, whole	1 O dava	1.00
with USDA seal,			Chicken or turkey, whole Chicken or turkey, parts	1 - 2 days 1 - 2 days	1 yea 9 month
unopened	2 weeks	Don't freeze	Giblets	1 - 2 days 1 - 2 days	3 - 4 month
Raw Hamburger, Ground	& Stew Meat			-	5 - 4 monti
Hamburger & stew meats	1 - 2 days	3 - 4 months	Cooked Poultry, Leftove		
Ground turkey, veal, pork,	,		Fried chicken	3 - 4 days	4 month
lamb	1 - 2 days	3 - 4 months	Cooked poultry dishes	3 - 4 days	4 - 6 month
Ham Corned Beef	-		Pieces, plain	3 - 4 days	4 month
Ham, Corned Beef			Pieces covered with broth,	3 1 days	6 month
Corned beef in pouch		Drainad there are the	gravy Chicken nuggets, patties	3 - 4 days 3 - 4 days	6 month 1 - 3 month
with pickling juices Ham, canned, labeled	5 - 7 days	Drained, 1 month		0 Jayo	
"Keep Refrigerated,"			Fish & Shellfish		
unopened	6 - 9 months	Don't freeze	Lean fish	1 - 2 days	6 - 8 month
opened	3 - 5 days	1 - 2 months	Fatty fish	1 - 2 days	2 - 3 month
Ham, fully cooked, whole	7 days	1 - 2 months	Cooked fish	3 - 4 days	4 - 6 month
Ham, fully cooked, half	3 - 5 days	1 - 2 months	Smoked fish	14 days	2 month
Ham, fully cooked, slices	3 - 4 days	1 - 2 months	Fresh shrimp, scallops,		
	-		crawfish, squid	1 - 2 days	3 - 6 month
Hot Dogs & Lunch Meats	s (in freezer wrap	))	Canned seafood	after opening	out of ca
Hot dogs,			(Pantry, 5 years)	3 - 4 days	2 month
opened package	1 week	1 - 2 months			
unopened package	2 weeks	1 - 2 months			
Lunch meats,			AND SECTION OF A		
opened package	3 - 5 days	1 - 2 months		<b>U.S. FOOD</b>	

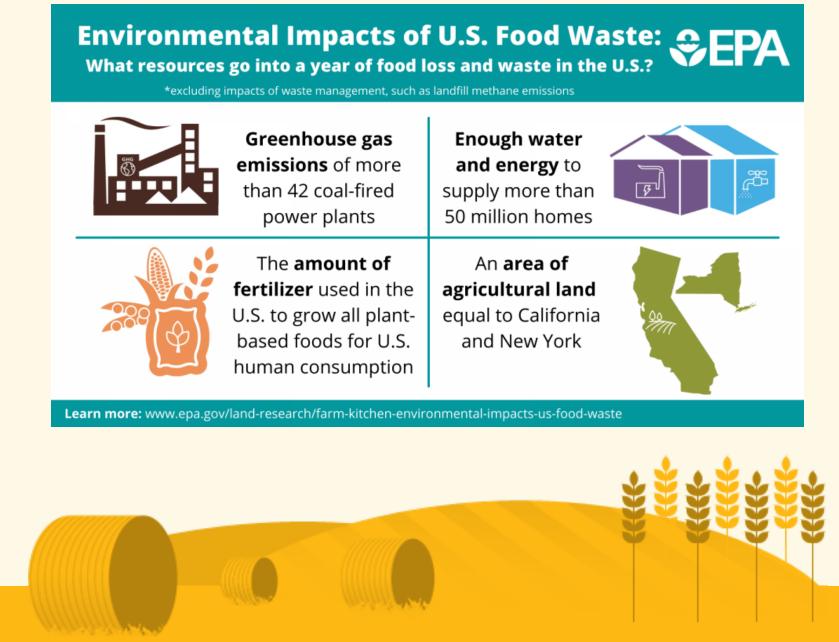
Source: US Food & Drug Administration

March 2018

For more information, go to <u>www.fda.gov/consumers/consumer-updates/are-you-storing-food-safely</u>

For more waste reducing tips, go to:

 $\underline{www.food.unl.edu/cook-it-quick-documents/makeover-your-leftovers.pdf}$ 



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