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Exploring Food Waste Issues

Summer 2025

Hail Hail the Steel Cow

While researching school food waste recently, I came across The Lunchbox - Tools for School Food Change, and was excited to find that their Bulk Milk Program provides grant packages to help schools transition from single-serving cartons to bulk dispensers and reusable cups. Applications for the year are due by June 26, so thought it a good time to reissue our Fall 2019 article on the subject. Interested parties can then go to www.thelunchbox.org/apply-for-a-grant/bulk-milk/ for more information.

Call to mind the 8 ounce milk carton, and chances are you'll find yourself back in the grade school lunch line, wishing it was chocolate milk day. Okay, maybe you never liked chocolate milk, and long suffered the sneaking suspicion they used slightly soured milk to make it. The point is that for many, 8 oz. milk cartons and school cafeterias are inextricably linked. Given today's focus on waste reduction, whether they should remain that way is another matter.

Let's start with the carton. Whether landfilled or recycled, the sheer number of single-use containers can be mind boggling. According to Lincoln Public Schools (LPS) for example, 31,000 cartons of milk are served and recycled each day. That translates to some 5.5 million over a 180 day school year. Scale that up to 30 million daily meals served by National School Lunch Program (NSLP) and we're talking around 5.5 billion cartons a year. Plastic alternatives can be easier to recycle, but in the age of China and Basel Convention import bans, such a switch would do nothing to relieve overburdened processors.

As for the milk itself, a USDA School Nutrition and Meal Cost Study released in April (2019) found that 29 percent of milk served in schools gets tossed every day - the second highest rate of plate waste after vegetables (31%). Apply that average to LPS serving totals, and we're talking some 100,000 gallons thrown out each year. Unopened containers can be saved at schools offering food share tables, but otherwise it all goes down the drain.

While USDA found a significant association between the timing of lunch periods and plate waste (2% lower in meals served at or after 12:00pm), local studies in Oregon, Washington and Virginia focused on student perceptions. For example, some students said they didn't realize milk remained in the carton because they couldn't see it, while others complained that it didn't taste good. Still others report it was simply more than they could drink.

Which begs the question: who determined the size of milk cartons in the first place, and why are we tied to that amount? The answer is that NSLP guidelines require participating schools offer 8 oz. of milk with every meal. Offer anything less, the theory goes, and you're no longer in compliance with program guidelines. That's not an accurate interpretation however, as schools are only required to **offer** that amount.

Here's the distinction: NSLP's New Meal Pattern Requirements and Nutrition Standards states that five components must be offered with every meal: Fruits, Vegetables, Grains, Meat/Meat Alternate, and Milk. Meal patterns, sodium requirements, and milk choices aside, following are the only guidelines regarding what must be taken in order to qualify:

- Must take at least 3 of 5 components
- Must take at least 1/2 cup serving of the fruit or vegetable component

In other words, any meal containing three of the five components is eligible for reimbursement as long as one of those components is a full serving of fruit or vegetables. Only when milk is taken to fulfill a requirement, does it need to be 8 oz. School districts across the country have started taking notice, often at the request of students concerned with waste.

The solution they say, is a switch to reusable plastic cups and some good old fashioned technology affectionately referred to as the steel cow. No longer the commonplace equipment of old, such dispensers can still be found in places like summer camps or college dorms, and while implementation can be challenging, they also appear to be a good fit for schools as well.

The impact on single-use packaging is profound, with schools reporting up to a 90 percent reduction in such waste. And this isn't the difference between recycling and the landfill either, this is source reduction - keeping materials from being produced in the first place.

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. Schools with a chocolate option found they can barely keep up with demand, and when applicable, the 8 oz requirement was as easy to enforce at checkout as cartoned milk.

Assuming an existing dishwasher, startup costs for a school of 400 can run from \$3,000 to \$4,200 and include the purchase of 9-10 oz. reusable plastic cups (sized to prevent spills), washing racks, and a two or three valve milk dispenser. That's a lot of money for cash-strapped food service departments, but some found relief through state sponsored waste reduction grants. Those that incurred the startup costs themselves figured to recoup them over time through reduced waste collection fees, combined with lower energy costs incurred by dispensers compared to milk coolers.

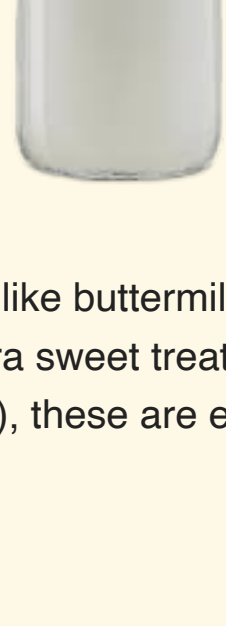
Cost comparisons of the milk itself varied depending on availability of bagged options. Some districts reported a \$.02 increase per 8 oz serving due to hand filling of bags at the dairy. Others report about the same amount in savings, thanks to reductions in packaging. Results may vary, but whatever the case and across pilot programs, students, cafeteria and custodial staff, teachers and administration alike, agreed that the benefits outweighed the disadvantages. Well, as long as meals remain in the cafeteria anyway, where staff can keep an eye on those cups. They may reach their lifecycle benefit after only 10 uses, but longevity is key if they're ever to replace the carton in the future recollections of today's students!



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!

SOUR MILK PANCAKES

COZY COMFORT FOOD THAT WASTES LESS AND TASTES GREAT



The trick here is to use the milk just like buttermilk to yield fluffy, tasty pancakes. Top them with leftover berries for an extra sweet treat. And, since we all have our pancake-eating limits (unfortunately), these are easy to freeze and re-heat for a grab-and-go meal.

USES UP	MAKES
Nearly Sour Milk	8 Servings

INGREDIENTS	DIRECTIONS
1 cup all-purpose flour or whole-wheat flour (or use 1/2 cup of each)	In a large bowl, whisk together the flour, sugar, salt, baking powder, and baking soda until well combined. In a medium bowl, beat together the milk, eggs, and oil. Make a well in the center of the dry ingredients and blend in the milk mixture until the batter is smooth.
2 tsp sugar	
3/4 tsp salt	Heat a large skillet or griddle over medium heat and coat with a little butter.
1/2 tsp baking powder	Ladle 1/4 cup batter onto the pan to make 4 to 5 inch pancakes. Cook for 1 to 2 minutes, until bubbles appear and "dry out," then flip and cook for another 1 to 2 minutes on the second side. Repeat with the remaining batter, using more butter for the pan as needed.
1/4 tsp baking soda	
1 cup nearly sour milk	
2 eggs	
1 Tbsp neutral-flavored oil, such as light olive, grapeseed or canola oil Butter or oil for the pan	Serve warm with the toppings of your choice.
OPTIONAL TOPPINGS Maple syrup Raspberries, blueberries, sliced strawberries Sliced banana Peanut butter or almond butter	Tip: Bake these up to rescue the nearly sour milk, then freeze them for later. Once the pancakes or waffles have cooled, freeze them solid and store in an air-tight container or zip-top bag. Then reheat straight from frozen in a toaster oven or microwave.
	CREDIT From "Waste Free Kitchen Handbook" by Dana Gunders , 2015. Used with permission from Chronicle Books, San Francisco.

FOOD STORAGE TIPS FROM SAVE THE FOOD.COM

MILK
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. Low-fat 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! Brought To You By: Institute of Agriculture and Natural Resources NEBRASKA EXTENSION

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

Ingredient Substitutions

Often for lack of an ingredient, a recipe is ruined or an extra trip to the store is required. Sometimes, you need to buy a large container of an ingredient for just a teaspoon or two needed in a recipe. To the rescue: ingredient substitutions! Your final product made with the substituted ingredient may differ slightly from the original food, but still be acceptable in flavor, texture and appearance.

Product	Amount	Substitute
Allspice	1 tsp	1/2 tsp cinnamon plus 1/2 tsp ground cloves
Apple Pie Spice	1 tsp	1/2 tsp cinnamon plus 1/4 tsp nutmeg plus 1/8 tsp cardamom
Baking Powder, Double-Acting	1 tsp	1/4 tsp baking soda plus 5/8 tsp cream of tartar
Baking Soda		There is NO substitute for baking soda
Butter1, 2	1 cup	1 cup regular margarine; or 1 cup vegetable shortening (for baking); or an equal amount of oil can be substituted. for a similar portion of MELTED butter if the recipe specifies using MELTED butter.
Buttermilk	1 cup	1 tsp lemon juice or vinegar plus enough regular milk to make 1 cup (allow to stand 5 minutes)
Chili Sauce	1 cup	1 cup tomato sauce, 1/4 cup brown sugar, 2 TBSP vinegar, 1/4 tsp cinnamon, dash of ground cloves and dash of allspice
Chocolate, Unsweetened	1 ounce	3 TBSP cocoa plus 1 TBSP butter or regular margarine or vegetable oil

1TIP: According to the National Association of Margarine Manufacturers, you can tell "if the product is regular margarine by checking the Nutrition Facts: a one tablespoon serving will have 100 calories." Products that contain less than 80 percent fat often give the fat percentage on the front of the package. If the margarine is labeled "light," "lower fat," "reduced fat," "reduced calorie/diet" or "fat-free" or is called a "vegetable oil spread," you may be less successful substituting it for butter OR for regular margarine in baking and in some cooking procedures. These products are higher in water and lower in fat content and won't perform in the same way as regular butter or margarine.

2TIP: There is no standard procedure to substitute liquid oil for solid shortenings in cooking. Oil is 100 percent fat, while butter, margarine and other solid shortenings are lower in fat on a volume for volume basis. Also, for some recipes, solid shortening helps incorporate air into the batter when it is whipped with other ingredients such as sugar and eggs. If you try to whip these ingredients with oil, your baked product is likely to be more compact and oily in texture. Your most successful substitution occurs if your recipe calls for MELTED butter, in which case you can usually substitute an equal amount of oil.

For more waste reducing tips, go to:
www.food.unl.edu/cook-it-quick/documents/makeover-your-leftovers.pdf





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