



## Taste It, Don't Trash It!

Do you ever think about what's in your trash? It's sometimes stinky and icky, and maybe one of the chores you have to do often is to take out the trash. There are ways to lighten that load. We CAN reduce our waste!

What percent of food that is grown is never eaten?

- A) 10%   B) 25%   C) 30%   D) 50%

List three food items that you've seen thrown away at school or home that were still edible.

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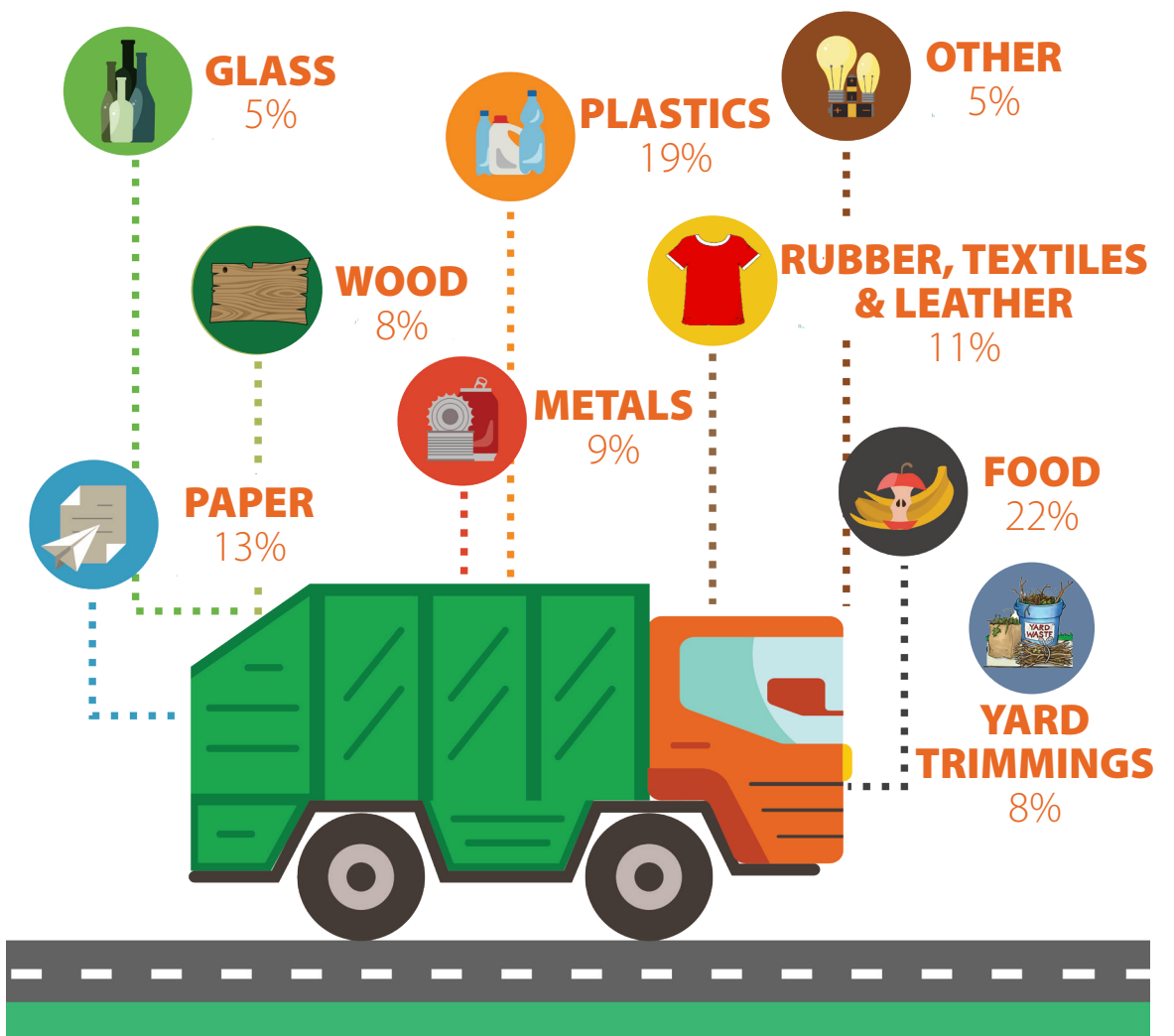


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How much stuff do we throw away? The answer is A LOT. Experts estimate the average person around the world tosses 2.6 pounds of trash EVERY SINGLE DAY. In the United States alone, we throw away about 262 million tons of trash per year. The amount of garbage is growing. Experts say that by 2025, the world will produce nearly two billion tons of trash annually!

This graphic shows the different types of trash that are thrown away. Think about the types of materials in your garbage, and what might be recyclable or compostable.

Community Solid Waste in Landfills 2015 - After Recycling and Composting



# Vocabulary

**compost (V, N)** - A natural way to turn food, leaves, and other things into material that helps soils. Compost feeds soils, helps save water, and helps plants grow better. *Verb: Compost vegetable scraps to help plants grow. Noun: You should put compost in your garden.*

**decompose (V)** - Break down, or decay. *Tree leaves decompose into soil.*

**divert (V)** - To send something a different direction. To change from original direction. *Aluminum cans are recyclable. They should be diverted from landfills.*

**food recovery hierarchy (N)** - A system that ranks ideas for keeping food out of landfills. *Feeding animals is one idea on the food recovery hierarchy.*

**greenhouse gases (N)** - Gases that can change the climate of the earth. *Greenhouse gases are sometimes called "heat-trapping gases."*

**landfill (N)** - A garbage dump. *Sometimes, new cities or parks are built on old landfills.*

**methane (N)** - A colorless, odorless gas used as a fuel. *Methane is an important greenhouse gas.*

**natural resources (N)** - Resources from nature. *Water, land, and air are natural resources.*

**nutrients (N)** - Something that helps a living thing to grow, live,

and stay strong. *Vitamins from food give us nutrients to grow.*

**produce (V, N):** - Verb: to make or manufacture from raw materials. *Food is produced at the farm or ranch.* Noun: Fresh fruits and vegetables. *You can buy good Colorado produce at the store.*

**recover (V)** - To use a waste product again, reuse, or regain. *When you compost banana peels, you recover the nutrients to feed soils.*

**reduce (verb)** - To make smaller, make something less complex, or use less. *If you reduce food you throw away, you can save money at home.*

**soil amendment (N)** - Any material you add to soil to improve its chemical and physical properties. Amendments are different depending upon what the soil needs to grow a healthy plant. *Quality compost is an excellent soil amendment for poor soil.*

**U.S. Environmental Protection Agency (N)** - A part of the U.S. government that keeps people and the environment safe. *The EPA works to keep water, air, and land clean and safe.*

**vermicomposter (N)** - A different type of composting using a special kind of worm to turn food scraps, paper, and leaves into plant food. *Some students recycle food scraps with a vermicomposter in their classroom!*

# What's a Landfill?

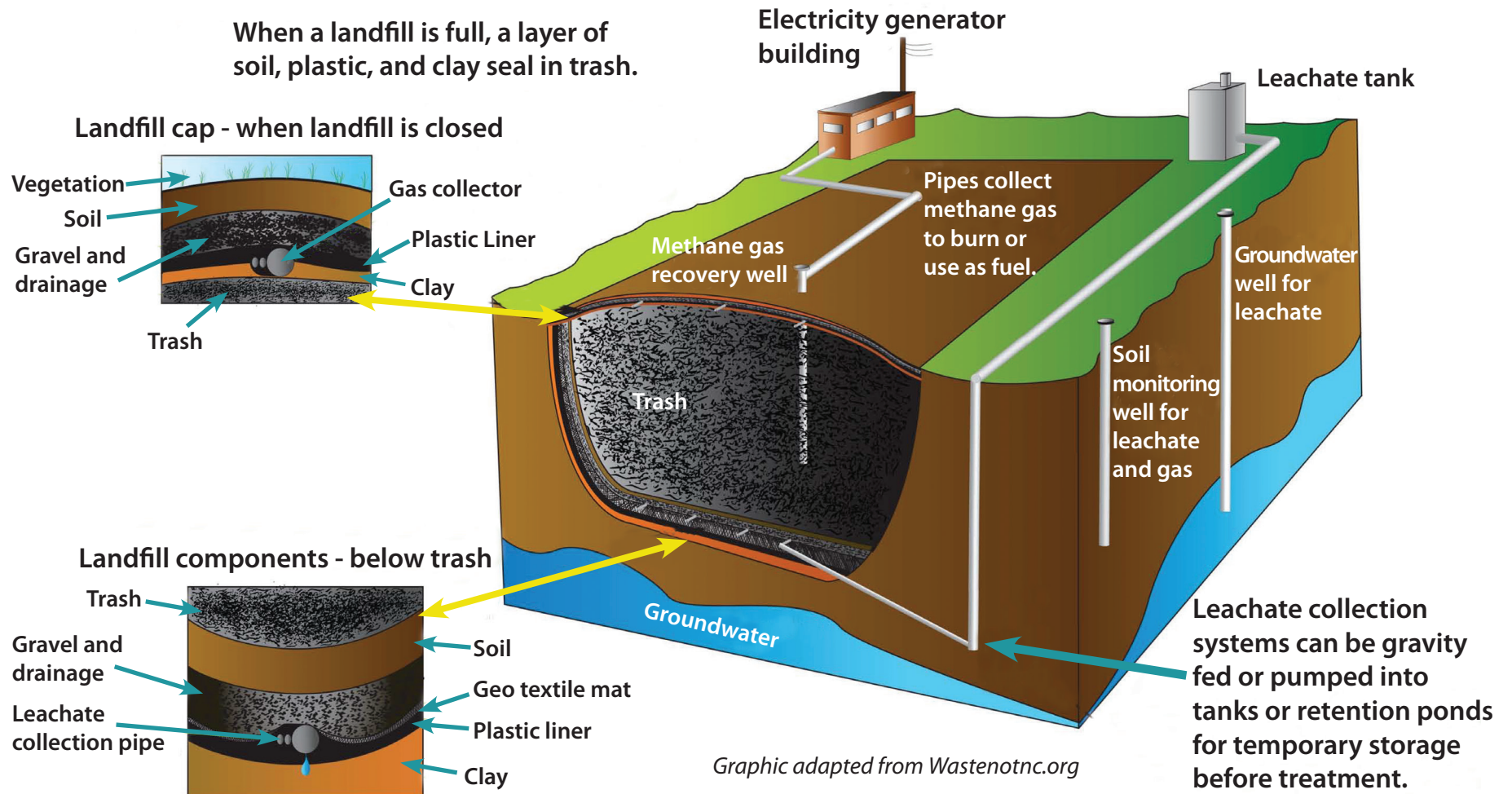
Trash is everywhere. Piling up in **landfills**, scattered in the seas and oceans, and even floating in space. The final resting spot for nearly half of the trash we produce in the United States is the landfill. There are about 2,000 landfills around the country.

When you take out your trash, do you ever wonder where it goes? More than half (about 57 percent) of our trash goes to landfills. About a third (27 percent) of trash can be recycled or composted. Sixteen percent of trash is burned using big incinerators to combust the material.

Garbage has a direct impact on the environment. As trash **decomposes** it produces harmful **greenhouse gases**. The **United States Environmental Protection Agency (EPA)** estimates that landfills are the third leading cause of **methane** emissions in the U.S. alone. Methane is a greenhouse gas that destroys the ozone layer. By simply sitting in landfills, garbage can be causing climate change.

Around the world, people throw away roughly four million tons of trash every day. That's enough to fill 44 Olympic-size swimming pools.

# Parts of a Municipal Solid Waste Landfill



## Landfill Language

**Ground water** - Water that flows beneath the ground and needs to be protected.

**Compacted clay** - A type of soil that is nearly waterproof when compacted.

**Plastic liner** - A puncture-resistant plastic layer.

**Leachate collection pipe** - Water that trickles through the landfill is called leachate and may contain

harmful substances that need to be separated from groundwater.

**Geotextile mat** - A mat that allows water to drain through to the leachate collection system and protects the liner from tearing or puncturing.

**Gravel and drainage layer**- Stones and rock that help filter the leachate.

**Soil** - The final layer before trash is put into the landfill.

"I used to think that when I threw away a banana peel, it would compost and return nutrients to soils. Then I started my job and learned that throwing away food is like putting the peel in a plastic bag (trash bag) inside another plastic bag (lined landfill). The food decomposes and releases methane (gas) affecting the environment. The valuable nutrients are lost because they never return to feed the soil. What a waste!" - Virginia Till, EPA



# Why is Wasted Food a Problem?

The graphic on this cover shows us that 22 percent of trash is food. Did you know that most of that food does not have to go to the landfill?

According to the U.S. Environmental Protection Agency, Americans threw out more than 39 million tons of food waste in 2015. **From farms to supermarkets and then to consumers' tables, approximately 30 percent of the food grown is never eaten.** The average family of four could save more than \$1,000 worth of edible food per year!

Not only is uneaten food a waste of money, it is also bad for the environment. If global food waste were a country, it would be the third largest generator of greenhouse gases in the world behind China and the United States. More food reaches landfills than any other single solid-waste material.

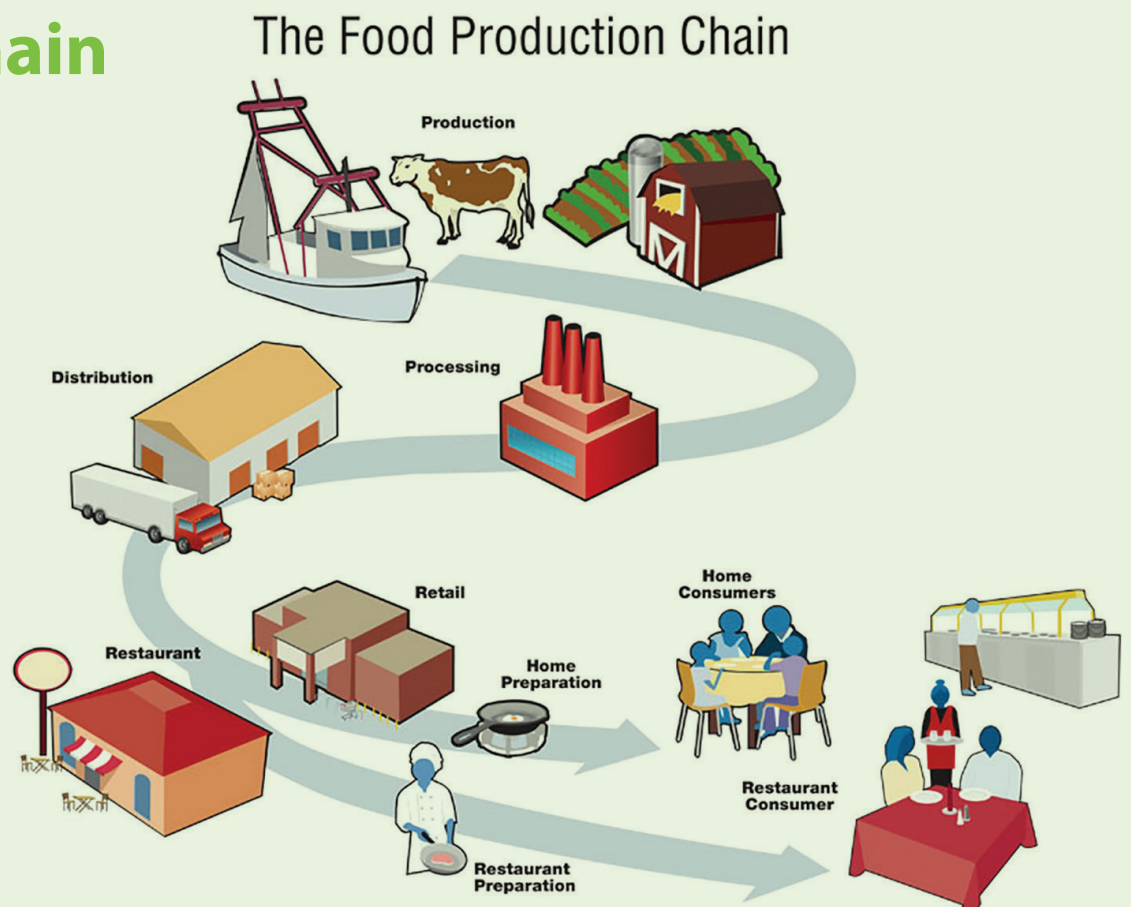


## Food Production Chain

There are several steps food takes to go from the farm or ranch where it is produced to get to your table. When all of these steps are put together, it is called the food production chain.

All food starts in the production step. Some people may think food is grown in the supermarket, but that is not the case. All food begins at a farm or ranch.

From there, food travels to processing and distribution centers. Finally, food reaches consumers at grocery stores or restaurants. Take a look at the food production chain to see all the steps included between the farm or ranch before it gets to consumers.



# Water Grows Food

Throwing away food wastes not only the money families spend on the food, but also wastes the water, work, and time used to grow the food. Think of the food production chain and all the steps food takes to arrive at your table.

Farmers and ranchers need resources to grow food. They need **natural resources** such as land, soil, air, **nutrients**, water, and sunlight. Farmers and ranchers also need energy, water, technology, tools, machinery, and money to be able to produce food.

Think about the food you eat everyday. How much water does it take to produce those foods? The chart to the right shows how many gallons of water is needed to make one pound (lb.) of each food item.



Remember when we said every person around the world throws out about 2.6 pounds of trash every single day? Let's calculate how many gallons of water is wasted by throwing away food.

Using the numbers in the chart, complete the equations below to calculate the number of gallons of water needed to produce each of the given amounts of food:

$$2 \text{ pounds of chicken} \times \underline{518} \text{ gallons of water per lb. of food} = \underline{1,036 \text{ gallons}}$$

$$6 \text{ pounds of butter} \times \underline{\hspace{2cm}} \text{ gallons of water per lb. of food} = \underline{\hspace{2cm}}$$

$$12 \text{ pounds of peaches} \times \underline{\hspace{2cm}} \text{ gallons of water per lb. of food} = \underline{\hspace{2cm}}$$

$$20 \text{ pounds of potatoes} \times \underline{\hspace{2cm}} \text{ gallons of water per lb. of food} = \underline{\hspace{2cm}}$$

$$3 \text{ pounds of chocolate} \times \underline{\hspace{2cm}} \text{ gallons of water per lb. of food} = \underline{\hspace{2cm}}$$

Food Item	Number of Gallons of Water Needed to Produce 1 Pound of that Food
Avocados	141
Bananas	95
Beef	1,847
Bread	193
Broccoli	34
Butter	665
Cabbage	28
Cheese	381
Chicken	518
Chickpeas	501
Chocolate	2,061
Cucumbers	42
Eggplant	43
Eggs	391
Lamb	1,248
Lemons	77
Lentils	704
Lettuce	28
Milk	122
Oranges	67
Pasta	222
Peaches	109
Pork	718
Potatoes	34
Rice	299
Tomatoes	26





# Food Recovery Hierarchy

Most Preferred

## Source Reduction

Reduce the volume of surplus food generated

## Feed Hungry People

Donate extra food to food banks, soup kitchens and shelters

## Feed Animals

Divert food scraps to animal feed

## Industrial Uses

Provide waste oils for rendering and fuel conversion and food scraps for digestion to recover energy

## Composting

Create a nutrient-rich soil amendment

## Landfill/ Incineration

Last resort to disposal

Least Preferred

A few years ago, the United States Department of Agriculture (USDA) and EPA announced the first-ever national goal to prevent food loss and waste by 50 percent by 2030.

In 2010, the USDA estimated about 220 pounds of food per person goes to waste each year. Their goal aims to reduce this waste by half, to 110 pounds per person. Both the EPA and USDA established outreach and technical assistance programs for organizations, communities, and others.

Food loss and waste presents many opportunities for people to work together to solve the problem.

Cows are better consumers than most humans. They waste less because they are willing to eat misshapen fruits and veggies!

### The Food Recovery Hierarchy

provides a menu of options for reducing food loss and waste.

In general, the top tiers are better for the environment. The lower tiers have fewer environmental benefits.

However, every community is different and strategies can be customized to fit each situation, organization, and region.

**List three ways you can participate in the food recovery hierarchy at home, school, or in your community.**

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# Tips for Home

What can YOU and your family do at home? Check out these tips:

**Tip #1: Store it!** - Research the best place for storing fruits and veggies. Sometimes it's outside the fridge, like with potatoes. Keep spuds in a cool, dark place.

**Tip #2: Wash it when you use it!** - Wash fruits and vegetables just before you use them, not before you store them. This will help them stay fresh longer.

**Tip #3: Plan it!** - Plan your weekly meals before going to the store.

**Tip #4: Eat it!** - Plan an "eat the leftovers" night each week.

Fruits and vegetables (also called **produce**) are the types of food wasted most often, accounting for 39 percent of wasted food. Dairy products are second at 17 percent, followed by meat at 14 percent.

**Do you like cooking? Guess what? Sometimes people throw away things that could be used to make a delicious dish. You can make yummy things to eat with potato peels, chicken bones, and brown bananas.**

With an adult's permission and help, try this recipe!

## Kid Recipe - Baked Potato Peels

Preheat oven to 450 degrees.

### Ingredients:

- Potato peels
- Butter or oil to lightly coat the peels
- A pinch of salt
- Seasonings (optional: dry herbs, black pepper, chili powder, etc.)



### Preparation tips:

Before you peel the potatoes, be sure to wash them well. For crispy, crunchy peels, cut them thinner. For softer peels, cut them thicker. If there's no time to bake the peels right away, put them in a bowl of water with a pinch of salt and refrigerate for up to one week.

Spray or toss peels in a small amount of oil. One teaspoon of melted butter is enough to toss peels from six medium potatoes.

Layer peels on a baking sheet and sprinkle with a little salt and/or seasonings.

Bake at 450 degrees for 20-30 minutes. For crispier peels, bake about 30 minutes. For softer peels, bake about 20 minutes. Turn peels once during baking so they are baked evenly on both sides.

Peels can be eaten with ketchup, ranch dressing, cheese, or sour cream. Be creative!

# Kid Power!

Kids can make a difference! Do you want to help make sure valuable food is not thrown in the trash? Try these activities at school or home!

## At School

- Organize a green team to prevent waste
- Do a food waste audit
- Work with kitchen staff to set up a Share Table
- Develop a donation program to donate unused, extra food to the community
- Ask about how the school can buy local food from Colorado farmers and ranchers
- Start a school garden
- Start a **vermicomposter** in class

## At Home

- Make a weekly meal plan
- Eat leftovers
- Eat everything you buy
- Make tasty meals with interesting (and usually wasted) food
- Shop your refrigerator first

What can you, your family, or your school do to prevent food from being wasted and going into the trash?"

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What are two harmful effects of throwing away food?

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The Colorado Reader publication is an Agriculture in the Classroom project of the Colorado Foundation for Agriculture. The Colorado Foundation for Agriculture (CFA) is a 501(c)3 non-profit education corporation and works with industry partners to help meet our shared vision of advancing Colorado agricultural literacy. We provide Agriculture in the Classroom resources and programs to Colorado educators and students, many of which are FREE or at minimal cost. For more information or to make a donation to support agricultural

literacy education programs, visit [www.GrowingYourFuture.com](http://www.GrowingYourFuture.com), or contact Jennifer Scharpe, Colorado Foundation for Agriculture, 10343 Federal Blvd Unit J Box 224, Westminster, CO 80260, 970-818-3308, [Info@GrowingYourFuture.com](mailto:Info@GrowingYourFuture.com). Sources used for the content for this Reader include U.S. Environmental Protection Agency Region 8 Sustainable Materials Management Program and "This Book Stinks!" by National Geographic Kids. Although this project was funded by the U.S. Environmental Protection Agency, it does not necessarily reflect the views of the Agency and no endorsement should be inferred. © Copyright 2018 Colorado Foundation for Agriculture. Educational instructors may, for academic purposes, reproduce, download, disseminate, and transfer that material as long as the reproduction credits CFA as its source.

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### Colorado Academic Standard Focus

#### 4th & 5th Grade Reading, Writing, and Communicating:

- Determine the meaning of words and phrases as they are used in a text, including figurative language such as metaphors and similes. (CCSS: RL.5.4)
- Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text. (CCSS: RL.4.1)
- By the end of year, read and comprehend informational texts, including history/social studies, science, and technical texts, in the grades 4–5 text complexity band proficiently, with scaffolding as needed at the high end of the range. (CCSS: RI.4.10)

#### 4th & 5th Grade Mathematics:

- Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. (CCSS: 4.NBT.5)

#### 4th & 5th Grade Life Science:

- Humans can have positive and negative impacts on an ecosystem.
- Nonliving components are cycled and recycled through ecosystems and need to be protected and conserved.
- Analyze and interpret data identifying ways Earth's surface is constantly changing through a variety of processes and forces such as plate tectonics, erosion, deposition, solar influences, climate, and human activity.

### Student Homework

Five days this week, track how much food your family throws away. This can be food left over from meals, food from the refrigerator that spoiled, or extra food that wasn't eaten. OPTIONS: 1) draw pictures of food that was thrown away 2) take pictures of food thrown away 3) make a list of food thrown away.

Results:

- 1) Estimate how many pounds of food were thrown away. A bag of flour weighs about 5 pounds.
- 2) List three ideas you have for what you and your family could do differently to prevent food going into the trash.
- 3) Discuss ideas with your class.

### Additional Resources

**Feed People Not Landfills video:** 3 minute video from the U.S. EPA <https://youtu.be/EwNpnUUSk4M>

**Taste the Waste movie:** <http://tastethewaste.com/info/film>

**Tips on how to start a vermicomposter:** <https://gsiwaste.com/community/kids-corner/>

**U.S. EPA - A Student's Guide to Global Climate Change:** <https://www3.epa.gov/climatechange/kids/index.html>

**U.S. EPA Sustainable Management of Food:** The EPA has a lot of great resources and toolkits to help reduce waste at school, in the community and at home. <https://www.epa.gov/sustainable-management-food>

**www.GrowingYourFuture.com** - The Colorado Foundation for Agriculture is a 501(c)3 non-profit educational corporation and works with industry partners to help meet our shared vision of promoting Colorado agricultural literacy. We provide Agriculture in the Classroom resources and programs to Colorado educators and students, many of which are FREE or at minimal cost. Visit our website for more information about our programs, browse our online digital library, or search the Curriculum Matrix.

### Answers

#### Page 1

What percent of food grown is never eaten? Answer is C) 30%

List three food items that you've seen thrown away at school or home that were still edible. Answers can be anything including food not eaten on trays or lunchboxes, partially eaten snacks, extra unopened milk, extra unopened food, etc.

#### Page 5

2 lbs. of chicken x 518 gallons of water = 1,036 gallons

6 lbs. of butter x 665 gallons of water = 3,990 gallons

12 lbs. of peaches x 109 gallons of water = 1,308 gallons

20 lbs. of potatoes x 34 gallons of water = 680 gallons

2 lbs. of chocolate x 2,061 gallons of water = 4,122 gallons

### Tips on starting and using a Share Table

**What is a Share Table?** The Share Table is a place where students can place unopened food and drinks that they choose not to eat or drink. This provides an opportunity for other students to take additional helpings of food or beverages from the Share Table at no cost to them.

**How does a Share Table work?** Students must drop off unwanted food and drink on the Share Table immediately after leaving the serving line. If a student is still hungry after finishing his or her meal, he or she may pick-up items from the Share Table.

**What can be placed on the Share Table?** Pre-packaged food, unopened wrapped food and beverages, or food items with a peel.

Examples include: 1) Unopened milk, cheese sticks, yogurt, and cut fruits and vegetables; 2) Unopened crackers, cereal bars, and chips; 3) Wrapped fresh fruits and vegetables; 4) Unwrapped whole fruits with an inedible peel, such as oranges or bananas

No items from home can be placed on the Sharing Table.



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## Providing FREE Colorado Agriculture in the Classroom Resources!

The Colorado Foundation for Agriculture works with community stakeholders to help meet our shared vision of advancing Colorado agricultural literacy. We provide Agriculture in the Classroom resources and programs to Colorado educators and students, many of which are FREE or at minimal cost. All of our resources reinforce Core Academic Standards making it easy for educators to teach about agriculture while teaching math, science, social studies, and reading, writing and communicating.

### FOOD, FIBER & MORE SUMMER AGRICULTURE INSTITUTE

A five-day course designed for teachers who have little or no agricultural background. This is an opportunity to go “behind the scenes” of Colorado agriculture and learn innovative ways to incorporate food, fiber, fuel, and natural resource topics into academic curriculum. One highlight is the day spent one-on-one working with a producer, gaining hands-on experience on a farm or ranch. Continuing Education Units and CSU graduate level credits are available. Registration opens January 1, 2019 for these Institutes:

**Greeley: June 10-14, 2019; Yuma - June 24-28, 2019; Castle Rock - July 8-12, 2019**

### COLORADO LITERACY PROJECT

Farmers and ranchers visit classrooms and read a book about Colorado agriculture. They answer questions, talk about their farm or ranch, and do an activity with the students. The class keeps the book! This program is appropriate for students in kindergarten through fourth grades. Visits take place from February to May. Teachers may sign up for this program NOW by using the Colorado Literacy Project Sign-Up form GrowingYourFuture.com. Early sign-ups are encouraged.

### COLORADO READER

An 8-page student activity newspaper designed specifically for upper elementary students. Printed 7 times during the school year and directly mailed to 1,800 urban and rural Colorado classrooms. Each issue focuses on a different food, fiber, fuel, and natural resource topic.

### ACTIVITY BOOKS

Designed to increase the level of understanding of a particular topic, each book varies in length ranging from 24 to 72 pages and can be taught over multiple class periods. They include a variety of reading and activity pages to make learning fun!

### CURRICULUM MATRIX

Our best kept secret! The Agricultural Literacy Curriculum Matrix is an online, searchable, standards-based database of classroom ready lesson plans and resources for K-12 educators. The Matrix contextualizes national education standards in science, social studies, and nutrition education with relevant instructional resources linked to Common Core Standards.