

Canada

United States

Mexico

# Food Matters

## Action Kit

Inspiring youth across North America to prevent food waste and help save our planet



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## About the Commission for Environmental Cooperation

The Commission for Environmental Cooperation (CEC) was established by the governments of Canada, Mexico and the United States through the North American Agreement on Environmental Cooperation, the environmental side agreement to NAFTA. An intergovernmental organization, the CEC brings together citizens and experts from governments, nongovernmental organizations, academia and the business sector to seek solutions to protect North America's shared environment while supporting sustainable economic development. Find out more at: [www.cec.org](http://www.cec.org).





# Acknowledgments

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The CEC's "Engage North American Youth to Prevent, Recover and Recycle Food Loss and Waste" project goal is to develop learning tools that will engage and empower North American youth from diverse backgrounds to prevent, recover and recycle food waste at home, school and in their communities. The development of the learning tools has been led by a Consultant Team and informed by the CEC and a Steering Committee comprised of federal government subject matter experts from Canada, Mexico and the United States. In addition, the Consultant Team worked with the CEC and the Steering Committee to appoint a Youth Advisory Committee (YAC) comprised of 10 individuals representing leading youth-based community associations, academic and educational institutions, nongovernmental organizations, the charitable sector and Indigenous groups. Each YAC member has significant experience engaging youth on the topic of food waste and general social and environmental issues.

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We respectfully acknowledge the Indigenous communities of Canada, Mexico and the United States. We are honoured to live, eat, work and play on this land and we value the food that is grown from it.

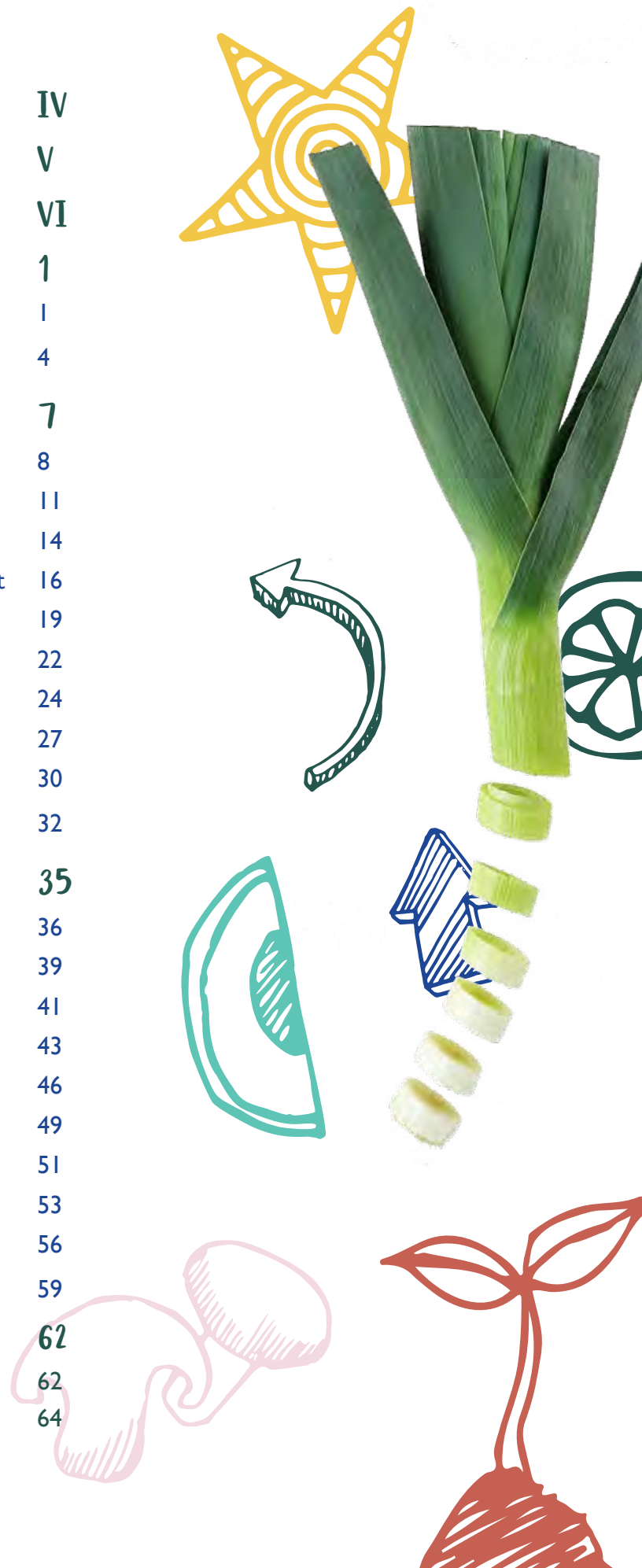
Measurements: This Action Kit uses metric measurements throughout.

All websites listed in the Footnotes were accessed between 1 October and 31 December 2018.



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## Earn Badges!

Use the Action Kit to get recognition for every action you take! Collect points to unlock badges by simply uploading a photo or description of your actions on your profile page. Click the **JOIN THE YOUTH MOVEMENT** at <http://www3.cec.org/flwy> to register. Earn all 5 badges to unlock the coveted Food Waste Master badge. Make them into stickers or buttons, or share them on social media.



### SYSTEMS THINKER

Earn this badge by helping building systems that help others prevent food waste, from designing bins and signage to separating our waste and starting composting, to welcoming local businesses into circular systems thinking



### INNOVATOR

Earn this badge by learning ways of using food by-products or preparing or preserving food that otherwise may have gone to waste



### INFLUENCER

Earn this badge by making posters, holding events and sharing what you've learned about preventing food waste



### RESCUER

Earn this badge by actively rescuing food from the waste stream and ensuring that it gets eaten



### GROWER-CHEF

Earn this badge by increasing your food literacy, learning how to grow food, understanding its value and learning ways of cooking and preparing food that prevent and reduce food waste

# Food Matters Action Kit

Inspiring youth across North America to reduce food waste and help save our planet

## What's the big deal about food waste? How can we prevent food waste?

Did you know that about one third of all food produced for people around the world goes to waste? That's huge. Food waste is what happens in our homes and in stores, restaurants, schools and communities when we throw out perfectly good food. There's nothing wrong with this food, but it's ending up in the landfill, instead of our stomachs, because of decisions we make.

### Why does food waste matter?

When food waste ends up in a landfill, it creates a potent gas called methane—a greenhouse gas that is a major contributor to climate change. Food waste also wastes all the resources—water, energy, labor—that are used to produce food. Food waste is a global problem. In 2015, the General Assembly of the United Nations committed to cut per capita customer and retail food waste in half by 2030.<sup>1</sup> Countries all over the world are taking action to help reach this goal.

You can start today by using this Food Matters Action Kit—it's loaded with informative resources and hands-on, creative activities to inspire kids of all ages to prevent food waste at home, at school and in the community. Activities in the kit are designed for youth across North America, from ages 5 to 25, to start making a positive difference right now to prevent food waste—from small initiatives at home to more ambitious efforts that involve the whole community.

Activities in the kit are arranged in two groups—Part 1: Kids Action Kit for ages 5–13, and Part 2: Youth Action Kit for ages 14–25. There are dozens of inspiring ways for you to explore and discover how to prevent food waste—from organizing a Disco Soup party and learning food preservation techniques from elders, to building worm composters and solar dehydrators. Get started today. Register as an individual, with a group of friends, a class, school or club to share your food waste actions. Challenge others and earn great shareable Food Waste Hero badges. Find out more at [www.cec.org/FoodMattersActionKit](http://www.cec.org/FoodMattersActionKit)



<sup>1</sup>United Nations (2015). "Sustainable Development Goal 12". <<https://sustainabledevelopment.un.org/sdg12>>



Each year, the food we waste costs the North American economy  
\$278 Billion US dollars and could have fed 260 Million people

## This is what else we waste when we waste food

**39 million m<sup>3</sup>**  
of landfill space, equivalent to



**13 football stadiums,**  
gets used up with our food waste each year

**193 million**  
tonnes of greenhouse  
gases emitted needlessly,  
the same as driving

**41 million**  
cars continuously for  
a whole year



**\$1.9 billion**  
US dollars in wasted tipping fees



**Over 32 million hectares**

of wildlife habitat is lost to farmland to grow food  
that is never eaten, in the United States alone



Enough water to fill

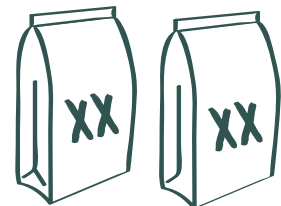
**7 million**  
Olympic-sized  
swimming pools  
(18 Billion m<sup>3</sup>)

Enough energy to power

**274 million Homes**



**3.9 million**  
tonnes of fertilizer



# Introduction

## Food Waste: A Global Problem with Local Solutions

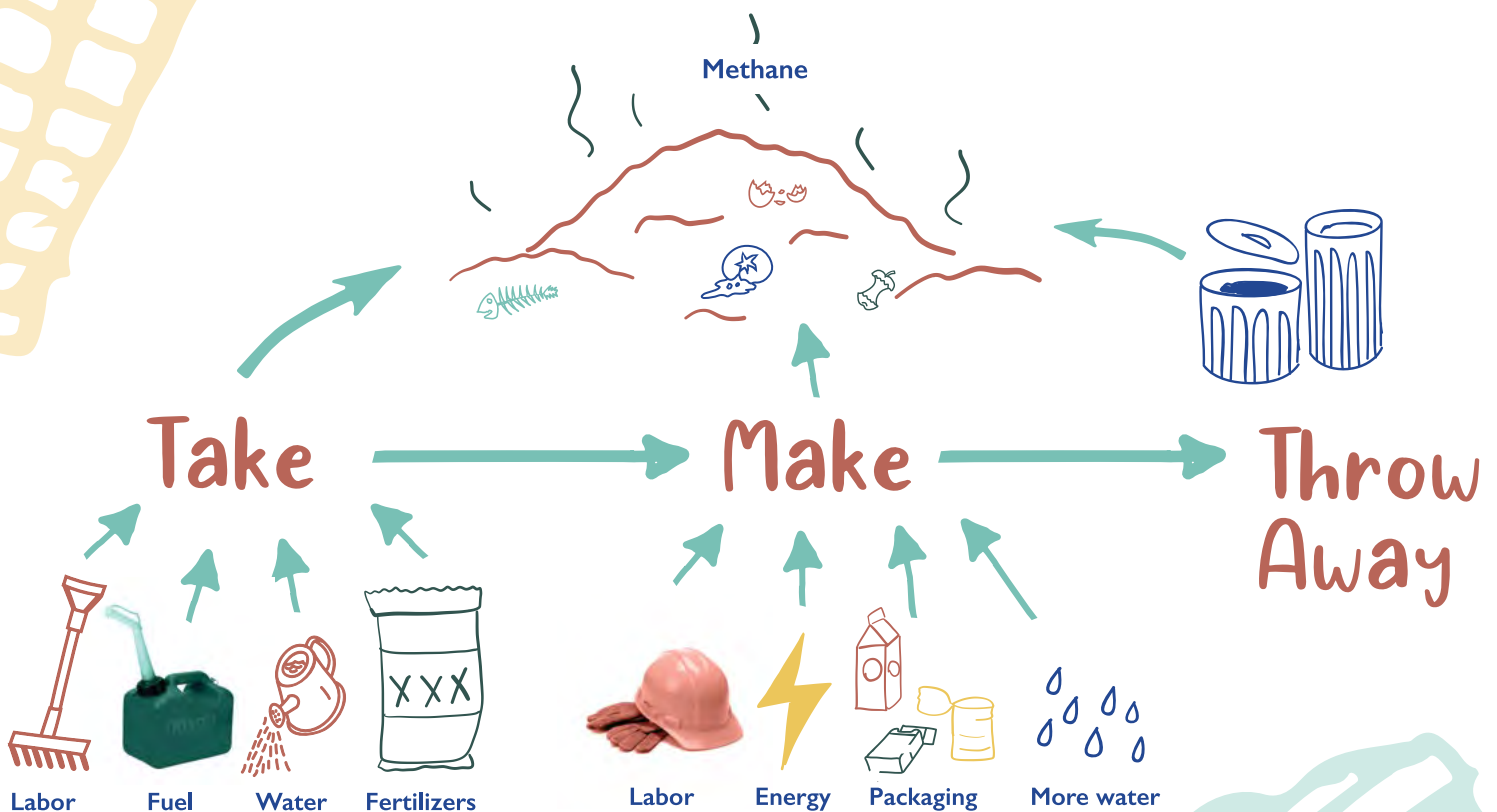
Stopping climate change and protecting the environment are among the greatest challenges of our time, and food waste is a major contributor to both of these issues.

### How, you might ask?

When food ends up in a landfill, it creates methane, a greenhouse gas 25 times more potent than carbon dioxide.<sup>2</sup> In fact, if global food waste were measured as a country, it would be the third worst emitter of greenhouse gases after China and the United States.

But this isn't all. When food gets wasted, we're also wasting all of the land, water, energy and other resources that went into producing it, impacting biodiversity—the variety of life on earth—and the economy. And this food could have been eaten.

### Linear food system



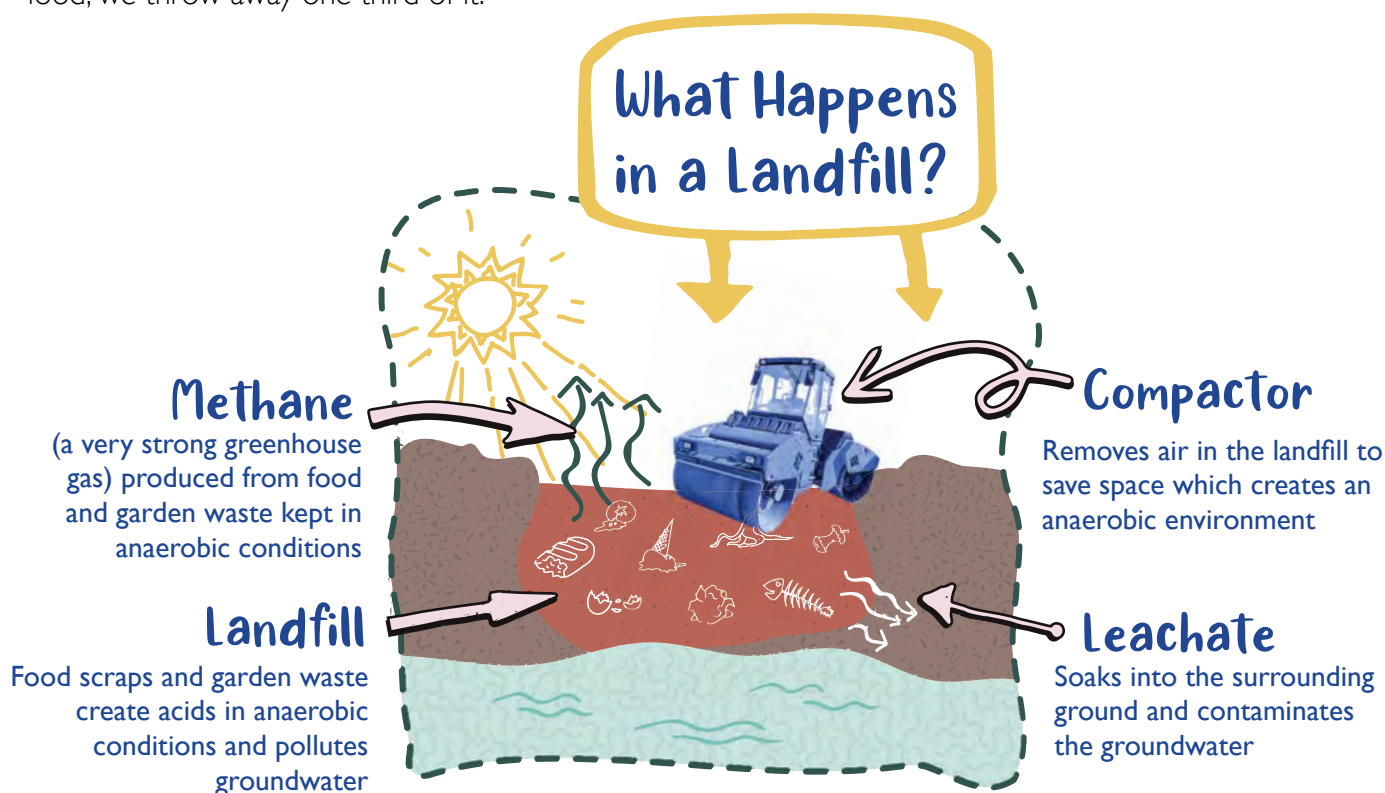
About one third of all food produced for people worldwide goes to waste. It can get lost due to bad weather, pests or lack of labor at harvest time. It can get tossed for being a funny-looking shape or spoiled during its long journey to the store. Food can also get wasted after we purchase it from grocery stores or restaurants.

In Canada and the United States, most food waste is produced in our own kitchens. In Mexico, the majority of waste happens before food ever reaches the store.

Produce, such as fruit and vegetables, takes months to grow and mature before it can be picked or harvested. In North America, food travels an average of 2,500 kilometres before arriving on our plates.<sup>3</sup> Yet, after all that effort to grow, process and transport our food, we throw away one third of it.<sup>4</sup>

That is like going to the grocery store, buying three bags of groceries—then throwing one in the garbage before leaving the store!

But we can stop food waste. By shopping more thoughtfully and cooking more creatively, by salvaging, preserving and sharing food and by ensuring that food scraps get composted or re-purposed and not sent to a landfill. We are saving water, energy and land, and helping to fight climate change. Get organized with other youth and enjoy taking action with the fun and impactful activities in this kit.



Food waste left in a composter will break down into valuable nutrients to make rich, new soil. In landfills, without the help of air and organisms, like bacteria, worms and fungi, food waste can take forever to decompose.

<sup>2</sup>Environment and Climate Change Canada (2017). Solid Waste and Greenhouse Gases. <<http://www.ec.gc.ca/gdd-mw/default.aspx?lang=En&n=6f92e701-1&wbdisable=true>>

<sup>3</sup>Grebitus, C., Lusk, J. L., & Nayga Jr, R. M. (2013). Effect of distance of transportation on willingness to pay for food. *Ecological Economics*, 88, 67-75.

<sup>4</sup>FAO (2018). Food Loss and Waste Facts. <<http://www.fao.org/resources/infographics/infographics-details/en/c/317265/>>



## Some handy food waste vocabulary

**Circular Food System:** In an ideal system, the way we grow, harvest, distribute and eat food and compost its scraps, forms a closed loop where everyone is fed and nothing is wasted. All food and by-products are used and anything left supports another process—just like in nature where all old plant material feeds new, nutrient-rich soil for growing more food. This is called the circular food system.

**Food literacy** is our knowledge of food and nutrition—knowing how to grow, prepare and store food. Food literacy helps us make responsible, sustainable and healthy food choices for ourselves and the planet.

**Food security** means that everyone has access to sufficient, safe and nutritious food to meet their dietary needs for an active and healthy life.

**Food supply chain** represents the long line of processes that take place getting food from the farm to our table. Food gets lost and wasted all along the food supply chain—on the farm, during manufacturing and processing and as part of distribution and retail as well as in service industries like restaurants and catering.

## Different types of food waste

**Food loss** is food that doesn't make it to the store or market because of losses during production or processing. This can be caused by inadequate refrigeration, lack of resources to harvest food before it spoils or damage from pests or extreme weather.

**Food waste** happens in stores, restaurants, homes, schools and communities because of our decisions, behaviors and actions. Activities in this kit focus on food waste.

**Avoidable food waste**, or **edible food waste**, is edible food like a bowl of rice, a loaf of bread or a tomato that is wasted or spoiled.

**Unavoidable food waste**, or inedible food waste, is waste from parts of food that we don't normally eat—like eggshells, meat bones and pineapple rinds.

**Potentially avoidable food waste** or **potentially edible food waste** is food that some people like to eat and others don't—think potato peels and broccoli stalks.



What is considered food waste differs across cultures. For example, **huitlacoche** is corn that has grown an interesting fungus. Some growers may consider the black bumpy corn spoiled, but in Mexico it is a delicacy. Across North America, broccoli stalks are often thrown out, but when peeled, sliced and cooked, they are a delicious, nutritious addition to any meal. We can learn from each other to find ways to prevent food waste.

## *You Can Make a Difference*

Climate change and other environmental issues can be very complex with some of the solutions requiring government decision-making, new technologies and major cultural shifts. Preventing food waste can make a huge impact on tackling these issues, and you can make a difference starting right now.

### **The Food Waste Action Plan**

- 1. Knowledge is Power:** Understand how food waste impacts our planet
- 2. Shift Behavior:** Prevent food waste by changing our attitude about food and developing new habits and skills
- 3. Spread the Word:** Sharing our food waste action and tips at home, school and in our community will help us solve the problem together

Together, we are learning to value food, how it nourishes us and how healthy food systems make a healthy planet.

Dive in, have fun and get your friends and family to come along on this exciting and important adventure to help save our planet!





## Young Food Heroes from Yukon to Yosemite to Yucatán

Youth across North America are taking action on food waste to help the environment. Check out their amazing initiatives as you get ready to take action yourself!

### Indigenous Food Sovereignty<sup>5</sup>

In Northern Canada, kids in the remote community of Teechik (Old Crow) in the Yukon have learned from their ancestors for thousands of years about the role that food plays in their culture and identity, and indeed their very survival. [Our Changing Homelands, Our Changing Lives<sup>6</sup>](#) is a youth-made documentary of their traditional way of life and how it is being impacted by climate change.

### Food Rescue<sup>7</sup>

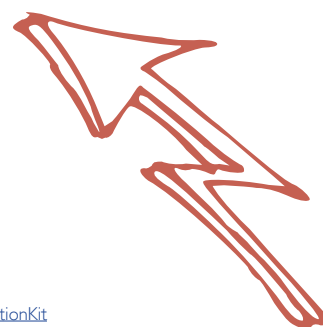
Students at 500 schools across the United States are fighting food waste in their school cafeterias by redistributing edible, unopened food to local people in need. The impact is massive: one billion food items dodge landfills and go to the needy every year thanks to the program.

### Not Far from the Tree<sup>8</sup>

This Toronto, Canada-based fruit picking project began in 2008 led by a youth. Since then, volunteers have harvested about 67 tonnes of fruit that would have rotted in thousands of backyards in the City.<sup>9</sup> Volunteers share the bounty, host events to raise food waste awareness and cook together, preserving their harvests into jams and ciders.

### Worm-Action Network<sup>10</sup>

Oaxaca City, Mexico, creates 1,000 tonnes of garbage a day, and most of it is food-based. SiKanda's youth-based [Worm-Action Network](#) uses worms to transform food and other organic waste into compost for school food gardens that feed the community. This is an example of the circular food system with youth and worms as the heroes!







## Join the global food rescue movement with the touch of a button

All around the world youth are using mobile phone apps like [OLIO](#),<sup>11</sup> [Means Database](#)<sup>12</sup> and [Food Rescue](#)<sup>13</sup> to connect with their local food networks and redirect good surplus food to feed communities. As of 2018, OLIO users alone have rescued nearly 700,000 food items in 41 countries including Canada, Mexico and the United States.<sup>14</sup>



## Mark Your Calendars!

Use this Action Kit to develop programs and themes around these global days of action:

**Earth Day:** 22 April

**Stop Food Waste Day:** 24 April

**World Disco Soup Day:** Last Saturday in April

**World Environment Day:** 5 June

**World Indigenous Day:** 9 August

**World Food Day:** 16 October

**World Soil Day:** 5 December

<sup>5</sup>Arctic Institute of Community-Based Research for Northern Health and Well-Being (2017). <<https://www.aicbr.ca/food-security/>>

<sup>6</sup>Arctic Institute for Community-Based Research (2016). Our Changing Homelands, Our Changing Lives. <<https://youtu.be/rhdo4blsgtHM?t=2>>

<sup>7</sup>Food Rescue. <<http://www.foodrescue.net/>>

<sup>8</sup>Not Far from the Tree. <<https://notfarfromthetree.org/about/>>

<sup>9</sup>Same as above

<sup>10</sup>SiKanda Solidaridad Internacional Kanda A.C.(2015). Children, youth, and earthworms: a friendship built on the soil. <<https://www.si-kanda.org/ninos-ninas-jovenes-y-lombrices-una-amistad-hecha-en-la-tierra/>>

<sup>11</sup>OLIO (2018). Become an OLIO Food Waste Hero. <<https://www.youtube.com/watch?v=SzQKuOUOa4o>>

<sup>12</sup>Means Database (2018). <<https://www.meansdatabase.org/>>

<sup>13</sup>Food Rescue US (2018). <<https://foodrescue.us>>

<sup>14</sup>OLIO (2018). Our Impact.<<https://OLIOex.com/about/our-impact/>>



Part 1

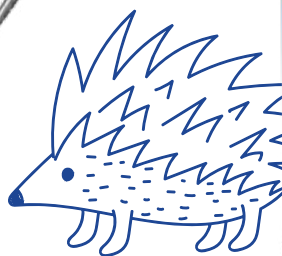
Kid's

Action

Hands-on activities  
for ages 5-13

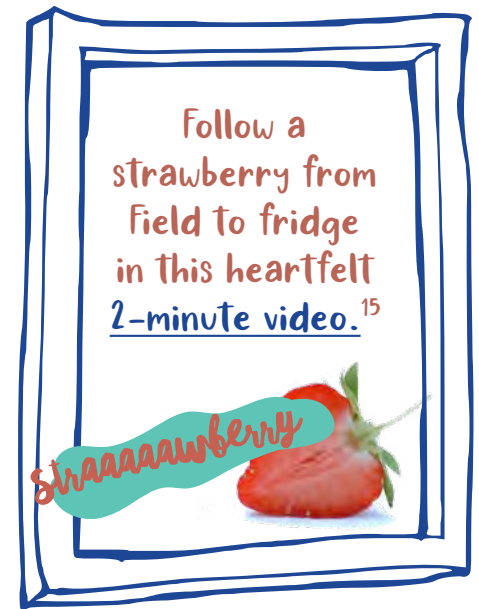
From rescuing food  
to composting with  
worms, here are  
dozens of fun ways  
to take action on  
food waste!

Kit



## Kid's Activity #1

# From Seed to Table



Do you know where your food comes from before it gets to the supermarket?

Food grows in gardens and forests. It is fished from oceans and rivers. It is hunted or gathered from the land. But most of our food comes from farms. Sometimes it's a family-run farm or a community garden, and sometimes it's a big commercial farm that stretches farther than the eye can see.

It takes land, proper soil and weather conditions, skills, labor, money and resources to produce the food we eat. It is a huge investment, and like any business, there is also risk involved—extreme weather events or pests can destroy an entire harvest. To help understand how much effort it takes to produce the food we eat, let's try to grow our own.

## Let's Grow Food!

Time: 30 minutes

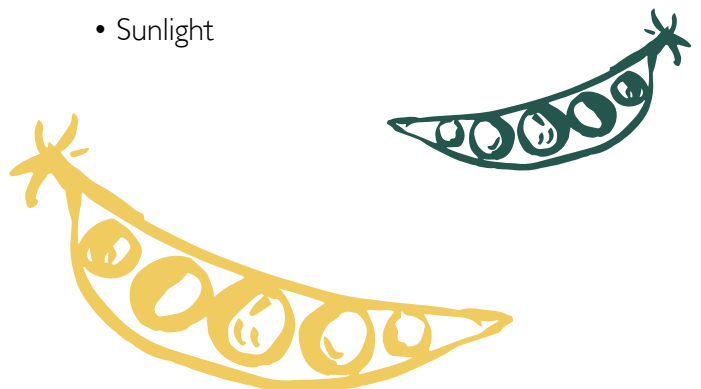
Nurturing: 12-16 weeks

**CLAIM**

5 Grower-Chef points for sprouting your seeds

## You'll Need:

- Seeds (bean, tomato, cucumber, herbs or other edible plants)
- Soil
- Small cups or newspaper to fold into pots<sup>16</sup>
- Sunlight





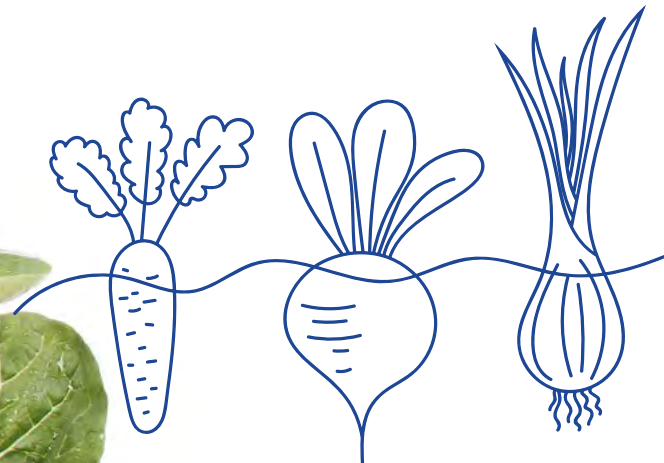
## Making it Happen:

1. Fill pots/cups with soil.
2. Examine your seed. What shape is it? What color is it?
3. Imagine or draw what this little seed will look like as a plant.
4. Poke a tiny two-seed-deep hole in the soil and place your seed in it and gently top with soil.
5. Label the pot with the name of the seed and the date you planted it.
6. Set the pot on a tray and place in a sunny window.
7. Water the soil gently, so you don't wash away the seed.
8. Check daily, keeping soil moist but not soggy.
9. It can take anywhere from 2 to 12 days for different seeds to germinate. When your seedling has three or four sets of leaves and there is no chance of frost, you can transplant it to a sunny location outside.
10. Add compost for extra nutrients. Learn to make your own in Activities #8 and #18.
11. Did you manage to grow something to eat?



WOOHOO

SUCCESS!





## Did you know?

Everything that grows out of the earth can be turned into earth again. Make sure that any trimmings, food scraps or dead plants get composted and never end up in a landfill. Learn to build a garden-scale composter in Activity 18.



## What did you Learn?

- How long did the seed take to sprout?
- Did some grow better than others? Why do you think that was?
- How has this activity changed the way you think about your food and where it comes from?



## Want to do More?

- Visit a farm to learn more about where food comes from.
- Volunteer at a community garden to practice growing all kinds of food.
- Start a garden at home, at school or in your neighborhood. Get permission to use a sunny unused piece of land. Start small and check out online resources like the [Food is Free project](http://foodisfreeproject.org) for tips<sup>17</sup>

**CLAIM**

10 Grower-Chef points each

**CLAIM**

20 Grower-Chef points



<sup>15</sup>Save the Food (2018). The Extraordinary Life and Times of Strawberry. <<https://www.youtube.com/watch?v=WREXBUZBrS8>>

<sup>16</sup>For Greenies (2018). How to make origami newspaper seedling pots. <<http://www.forgreenies.com/origami-newspaper-seedling-pots>>

<sup>17</sup>Food is Free. <<http://foodisfreeproject.org>>

## Kid's Activity #2



# Just Food

Experimenting with food scraps  
as a useful material

Corn is more than just a commodity. From the Hopis of Northeast Arizona to the Tzotzil Maya of Mexico to the Haudenosaunee people living across Canada and the United States, corn has cultural and spiritual importance for many Indigenous peoples.

Of the hundreds of native corn varieties, we now commonly cultivate only 12,<sup>18</sup> and the rest are at risk of becoming extinct.<sup>19</sup> Conserving corn varieties is also about preserving and celebrating cultural identities, the land, biodiversity and Indigenous traditions.<sup>20</sup>

## Corn-husk Creation

**Preparation: 30 minutes**

So much of the corn plant (stalks, husks, cobs) never get eaten and appear to have no use. Yet, cobs can be ground into feed for animals or made into delicious soup stock. Husks are commonly used in Mexico as wraps for corn *tamales* and have been used traditionally across North America by Indigenous communities to make baskets, mats, moccasins and more. Let's experiment by making a corn husk toy.



## You'll Need:

- Corn husks (dry husks under a weight to flatten overnight)
- Yarn or string
- Cloth/paper towel
- Scrap fabric/cloth, markers, buttons for decorating
- Scissors
- Glue





## Making it Happen:

1. Soak husks in warm water for 10–15 minutes to soften
2. Pat dry
3. Follow the illustrations to craft your own corn husk character
4. For a skirt, trim husks evenly. To make pants, separate bottom of husk to make legs and tie husks at knees and ankles.
5. Add accessories to your craft: a superhero cape, mask, traditional outfit, hat or hair using yarn or string.

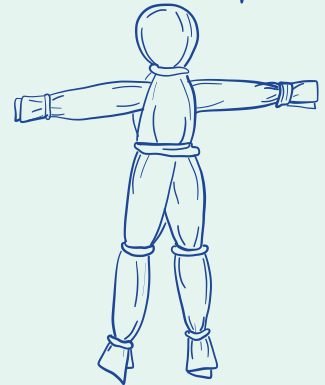
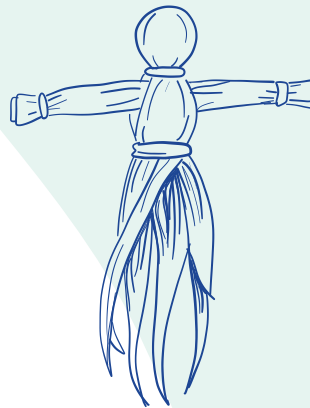
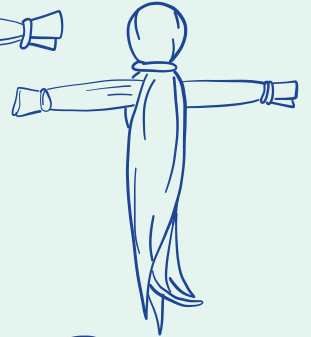
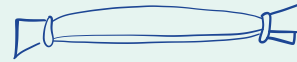
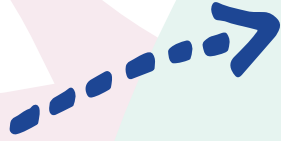


Image reference:

[www.marthastewart.com/968909/harvest-time-corn-husk-dolls](http://www.marthastewart.com/968909/harvest-time-corn-husk-dolls)





## Want to do More?

- Weigh husks before starting to measure food waste prevented.
- Experiment to see what else you can make out of corn husks. Rope? A basket? Use your imagination.
- Share your creation on social media: [#FoodMattersActionKit](#)

**CLAIM**  
5 Innovator points

**CLAIM**  
5 Influencer points



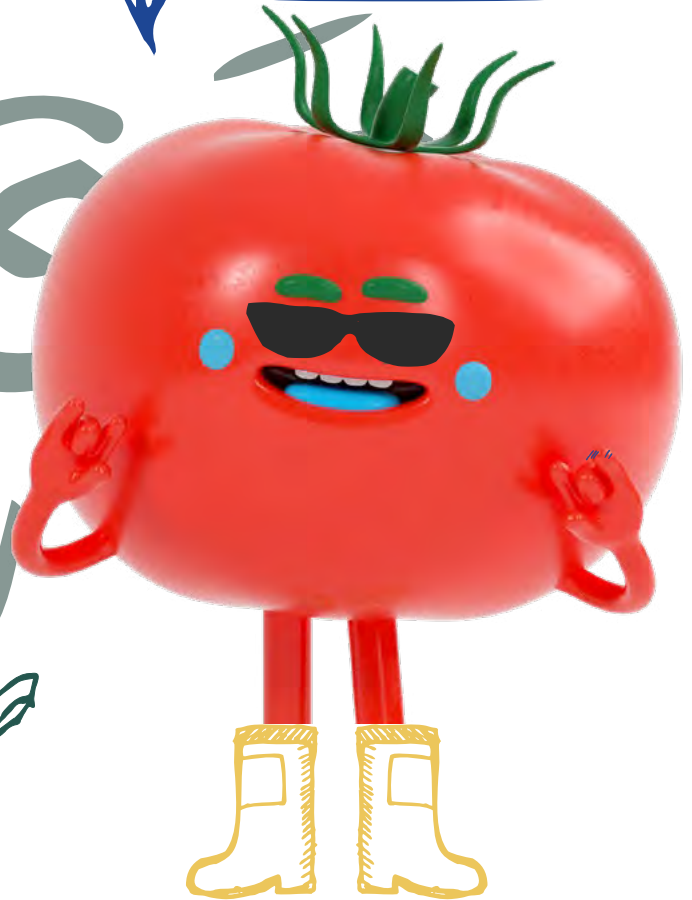
## Did you know?

Corn is important to North America's food system. There are organizations working to conserve corn diversity by cultivating Indigenous corn varieties. Learn more here:

**Canada:** [Mohawk Seed Keepers](#)<sup>21</sup>

**Mexico:** [Chapingo Autonomous University proposal to preserve 65 native corn varieties](#)<sup>22</sup>

**United States:** [Native Seed/SEARCH conservation of native plants, including Indigenous corn](#)<sup>23</sup>



<sup>18</sup>Health Impact News (2018). 93% of the World's Seeds Have Been Lost in the Past 80 Years. <<https://healthimpactnews.com/2015/93-percent-of-the-worlds-seeds-have-been-lost-in-the-last-80-years/>>

<sup>19</sup>Massive Science (2017). What Ancient Corn Farmers Can Teach Us About Engineering Crops For Climate Change. <<https://massivesci.com/articles/ancient-corn-tortillas-farming-genetic-engineering/>>

<sup>20</sup>Eames-Sheavly, Marcia (2002). The Three Sisters: Exploring an Iroquois Garden, Cornell Cooperative Extension. <<https://ecommons.cornell.edu/bitstream/1813/3621/2/Three+Sisters+-+Exploring+an+Iroquois+Garden.pdf>>

<sup>21</sup>Mohawk Seed Keepers (2018). <<http://seedkeeper.ca>>

<sup>22</sup>Food and Agriculture Organization of the United Nations (2017). Preserving 65 native varieties of corn in Mexico: Key to the Sustainability of Indigenous Areas. <<http://www.fao.org/in-action/agronoticias/detail/en/c/1045647/>>

<sup>23</sup>Native Seeds (2015). <<https://www.nativeseeds.org>>

## Kid's Activity #3

# Celebrating

# “Ugly” Food

Superheroes come in  
all shapes and sizes

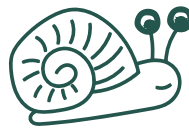
Create an Ugly Fruit or  
Vegetable Superhero Comic

Time: 30 minutes

### You'll Need:

- Markers, pens, crayons, pencils
- Paper or a printable comic book template<sup>25</sup>

Most grocery stores want the fruits and vegetables they sell to look the same so people like you and me will buy them. The odd ones that don't make the cut because they aren't the “right” size, shape, color or texture (and there are many!) are often discarded. These fruit and vegetable misfits are often thrown out before ever leaving the farm because growers know the stores won't accept them. As much as 20 percent of a harvest can be wasted in this way.<sup>24</sup> Knowing that food waste contributes to climate change and other environmental problems, let's help make ugly fruit and vegetables the heroes they are and make sure they get eaten!



## Making it Happen:

1. Create your very own ugly fruit or vegetable superhero!
2. Design a poster starring your superhero.
3. Create a comic strip story where your superhero encounters a big problem and saves the day!
4. Use your superhero(s) to spread the word that eating odd-looking produce can help save the planet.

**CLAIM**

5 Food Influencer points each

## Did you know?

Baby carrots aren't a small variety of carrots, they are shaved-down ugly carrots—and now make up 70 percent of US carrot sales.<sup>26</sup>

## Want to Do More?

- The proof is in the tasting. Find fruit and vegetable oddities from a garden, store or market. Taste-test them alongside "normal" looking produce while blindfolded. Do you taste a difference? Share your experiment on social media with a photo or a short video using #FoodMattersActionKit.
- Host a superhero comic competition and have a teacher, principal or local celebrity choose a winner. Share on Twitter or Instagram using #FoodMattersActionKit.
- Shop for ugly produce and prepare an ugly food-themed meal.

**CLAIM**

5 Grower-Chef or Rescuer points

**CLAIM**

10 Food Influencer points

**CLAIM**

10 Grower-Chef or Rescue points



<sup>24</sup>Food and Agriculture Organization of the United Nations (2011). Global food losses and food waste—Extent, causes and prevention. Rome. <<http://www.fao.org/3/a-i2697e.pdf>>

<sup>25</sup>Printable Comic Book Template. <[https://picklebums.com/images/printables/picklebums\\_comicpages\\_big.pdf](https://picklebums.com/images/printables/picklebums_comicpages_big.pdf)>

<sup>26</sup>Amidor;Toby (2016).The Truth About Baby Carrots. <<https://www.foodnetwork.com/healthyeats/2016/05/the-truth-about-baby-carrots>>



# Secret Mission to Save Food, Money and the Planet

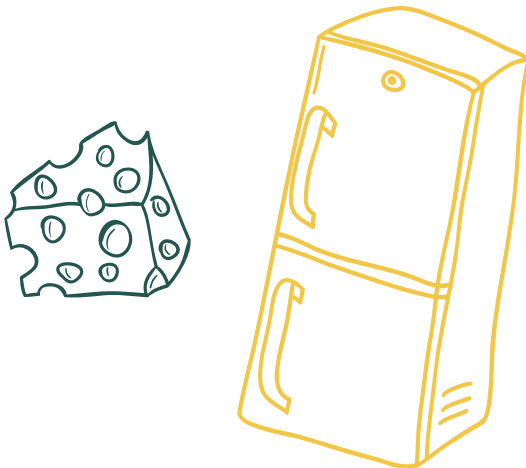
Investigate where  
food is being  
wasted at home

Sometimes we buy food but never get around to eating it. Maybe it was on sale and we bought too much. Maybe we didn't make a plan for the food we have. Sometimes we throw food out because of the expiry and best-before dates.<sup>27</sup> Or sometimes we forget about food in the back of the refrigerator. Now is the chance for you to be part of the solution and help your family save food and money.

## Food Waste Detectives

**Time: 1-2 hours**

Calling all food-waste detectives! Your mission is to prevent food waste at home by "shopping" from your kitchen with your family. Save money and the planet by making your next meal with food you already have instead of buying more!







# Food Detective List



Food Product	Quantity	Where is it stored?	Cost	State of the Food (freshness, etc.)
Fruit				
eg: Apples	5	Fridge	3.99	Brown spots forming
Vegetables				
Dairy				
Meat/ Protein				
Carbohydrate/ Staples				
Other				



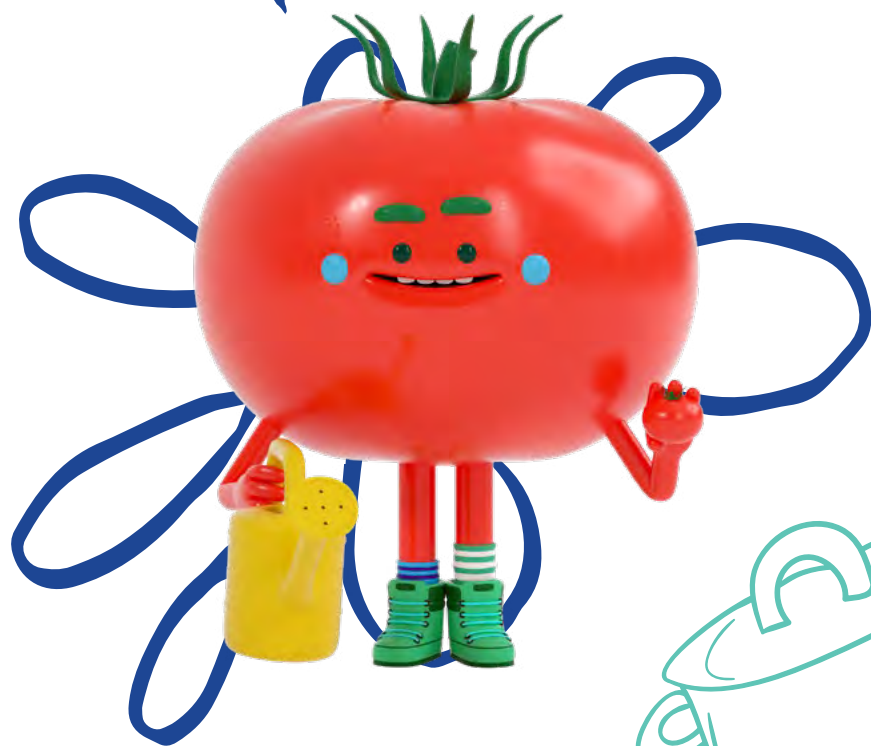
# Making it Happen:

1. Find food in your kitchen that needs to be eaten.
2. Look for food that is wilting, spotting or near its expiry date.
3. Add the food to your food inventory list. Does it smell okay? Can it be saved?
4. Make sure food is properly stored in the refrigerator (fruits and vegetables in the crisper, dairy on the top shelf and meat on the lower shelf).<sup>28</sup>
5. Freeze food that is still good but that you don't plan to eat right away.
6. Share your food detective list with your family and friends.
7. Develop a meal plan based on ingredients you have and share it with your family. Need ideas for how to prepare your ingredients? Enter them at [Supercook.com](http://Supercook.com)<sup>29</sup> for recipe and meal ideas.

**CLAIM**  
Claim 5 Grower-Chef, Rescuer, or Systems Thinker points

## Did you know?

Almost half of the food waste produced across North America comes from our own kitchens. Learning shopping, storage and cooking tips to reduce food waste at home makes a huge difference.



## Want to do More?

**CLAIM**  
10 Grower-Chef or Innovator points

- It's time for a feast! Select items from each of your food inventories and prepare a meal.
- Share your inventory list and menu. Take before and after pictures of your salvaged ingredients and the meal you prepared. Share on Twitter or Instagram using #FoodMattersActionKit.
- See how often you can shop from your kitchen, saving food, money, preventing food waste and helping to save the planet!

**CLAIM**  
5 Food Influencer points

<sup>27</sup>Health Canada (2012). Best Before and Expiration Dates on Foods- What do they mean? <[http://www.healthycanadians.gc.ca/recall-alert-rappel-avis/hc-sc/2012/13660a-eng.php?\\_ga=1.232986716.339146496.1415224617](http://www.healthycanadians.gc.ca/recall-alert-rappel-avis/hc-sc/2012/13660a-eng.php?_ga=1.232986716.339146496.1415224617)>

<sup>28</sup>Save the Food (2018). Where to Store Food. <<https://cswd.net/wp-content/uploads/CSWD-SAVE-THE-FOOD-Fridge-Guide-horizontal.jpg>>

<sup>29</sup>Super Cook. <<https://www.supercook.com/#/recipes>>



≡ Kid's Activity #5 ≡

# "Garbology" 101

Be a food waste scientist!

Archeologists like to study the garbage dumps of ancient civilizations because they tell us a lot about the everyday lives of people and their lifestyles throughout history.

What would our garbage say about us? Likely that we wasted a lot! Let's see for ourselves with a simple food waste audit.

## Food Waste Audit:

**Time: 1-2 hours**

Audits are a way of closely examining something. In a food waste audit, we will separate our waste, then categorize and weigh it to see what we are throwing out and how much we waste.

**CLAIM**  
10 Influencer  
or Systems  
Thinker points

## You'll Need:

- Rubber gloves
- 3 large buckets or bins
- Plastic waste bags
- Portable or bathroom weight scale
- Log sheet or simple piece of paper to record weights
- Table, bench or chairs
- Clean-up materials (soap, spray, cloths, broom, mop)





## Making it Happen:

There are many ways to collect and measure food waste<sup>30</sup> and you can do it anywhere that people eat—in your home kitchen, school cafeteria, place of worship, community center, park or food court. Here's a simple waste audit to separate food waste from garbage and recycling and discover how much food could be saved from the landfill. See Activity #15 if you want to do a more in-depth audit.

1. Pick a time and location where people eat and get your supplies ready.
2. Share your waste audit plan with whoever usually takes care of the garbage.
3. Prepare a log sheet with two or three categories: 1) Food waste 2) Other waste 3) Recycling (if available).
4. Set up a measuring station near where people eat with two or three buckets or bins lined with clear plastic bags on a table, bench or chairs.
5. Remember to weigh the empty bucket or bin first and record the weight on your log sheet.
6. As people finish their meals, help separate their waste into the right buckets or bins. Ask them why they didn't finish their food.
7. Keep track of how many people bring their waste to calculate how much waste was produced per person.
8. When meal time is over, record the weight of each kind of waste and subtract the weight of its empty bin.





## What did you Learn?

- How much of the waste was food? (Example: 5 kg food waste / 10 kg total waste  $\times$  100 = 50 percent of our waste was food!)
- You can also divide food waste by the number of people or multiply it by the number of days in the year to find out how much you waste per person or over the entire year.
- What were the most common foods wasted?
- What were some of the reasons that food was thrown out?

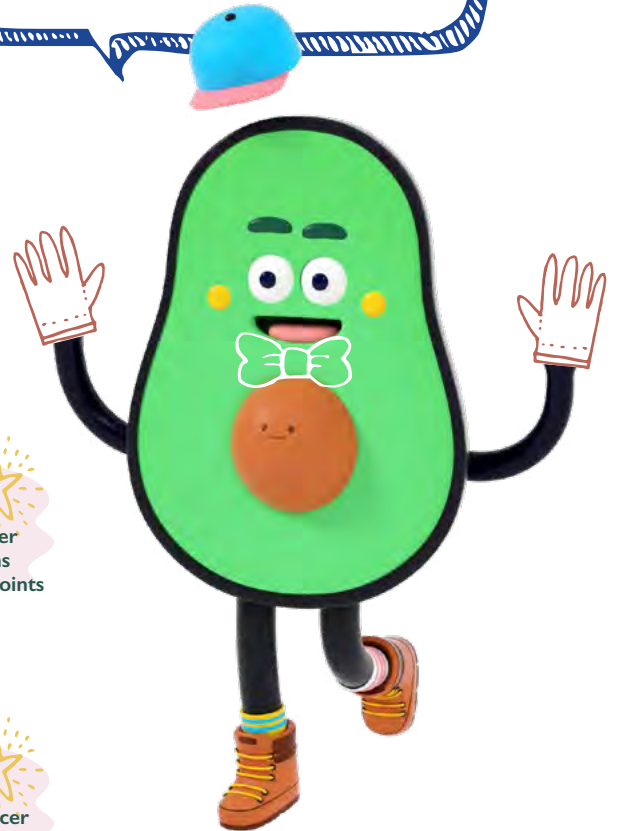
## Want to do More?

- Create a poster to encourage your friends to help prevent food waste.
- Brainstorm menu changes or other ideas that might help reduce food waste. See [Smarter Lunchrooms](#) for ideas.<sup>31</sup>
- Round Two! Set a goal of how much food waste could be prevented. Perform a second waste audit at a similar time of day for best comparison. When food is thrown out, ask and record why it wasn't finished. What are the most common reasons? Did you reach your waste reduction goal?
- Present your results on a poster or chart to show the difference between the first and second audits. Set goals and even a challenge for a third audit.
- If your location doesn't compost food scraps, could you help them start? Check out Activities #8 and #18 for everything you need to know to get started composting.



### Did you know?

The average school-aged kid throws out their own weight in food waste each year.<sup>32</sup>



**CLAIM**

5 Influencer  
or Systems  
Thinker points

**CLAIM**

10 Influencer  
or Systems  
Thinker points

**CLAIM**

5 Influencer  
or Systems  
Thinker points



<sup>30</sup>EPA (2017). A Guide to Conducting Student Food Waste Audits: A Resource for Schools. <<https://www.epa.gov/sustainable-management-food/guide-conducting-student-food-waste-audits-resource-schools>>

<sup>31</sup>Smarter Lunchrooms (2017). Resources from Smarter Lunchrooms Pioneers. <<https://www.smarterlunchrooms.org/scorecard-tools/resources-smarter-lunchrooms-pioneers/#WasteRedu>>

<sup>32</sup>Based on US estimates from: Recycling Works Massachusetts (2018). Food Waste Estimator Guide. <<https://recyclingworksma.com/food-waste-estimation-guide/#jump5>>



## Kid's Activity #6

# Food Innovators

## Transforming unwanted food into delicious treats

We throw out a lot of food. As much as 60 percent of our food waste is avoidable and could have been eaten.<sup>33</sup> And with a little creative thinking we can keep even more food from going to waste.

Old tortillas are perfect for making chips and enchiladas. French toast and croutons are best made with stale bread. Browning or overripe bananas are perfect for baking banana bread. There are even delicious treats made from fruit peels like candied orange rinds dipped in chocolate or candied lime peel with coconut filling.

## Food Waste Fighting Popsicles

**Time:** 30 minutes to prepare, overnight in a freezer

**Your assignment:** You are a flavor researcher hired by a popsicle company that sells to grocery stores across North America. Your new job is to invent a tasty popsicle flavor made of rescued fruit. People will love it because it is delicious and helping keep old fruit out of landfill. The company is happy saving money by using rescued ingredients, and you will be known as a super innovator who is helping save the planet!

## You'll Need:

- Rescued fruit
- Yogurt, juice, syrup, honey
- Several large bowls
- Blender, food processor or hand mixer
- Popsicle sticks and molds (ice-cube trays or small bowls work well)
- Freezer or below zero weather



## Making it Happen:

1. Gather your ingredients. Is there any fruit getting overripe at your house, school cafeteria or local store that you could rescue? These could be browning bananas, slightly soft berries, bruised apples or half-eaten melons. Are there freezer-burned fruits in your freezer that need to be eaten?
2. Weigh your ingredients before processing them to learn how much food waste you prevented.
3. Create and test your recipe. In groups or teams, take turns deciding what to add to your creation, making sure to use all of the ingredients. Use bananas to help thicken or juice to thin your creations. Label your flavors.
4. Remember to report back to the company president!



## Want to do More?

- Promote your amazing new earth-saving flavor on a cool poster. What is the name of your flavor? Let your happy customers know what inspired your ingredients and how much food you rescued.
- Serve popsicles to friends and family or at fundraisers to raise money for your school, organization or a local charity.
- Today popsicles ... tomorrow the world! You can use rescued food to make baked goods, soups and lots of other things! Learn how to host a Disco Soup event in Activity #17.



In Mexico 40 million tonnes of fruit and vegetable seeds and peels are thrown out every year. A start-up company called Eat Limmo is turning this food waste into nutritious flours to make bread, cakes and tortillas.

## Did you know?

Food can be rescued in many ways besides making popsicles. Traditional food preservation techniques that have been used for many centuries and are still popular today and include smoking, drying, salting, sugaring, pickling, freezing, refrigerating and canning. Learn more in Activity #16.



<sup>33</sup>Shaw, P., Smith, M., & Williams, I. (2018). On the Prevention of Avoidable Food Waste from Domestic Households. Recycling, 3(2), 24. <<http://doi.org/10.3390/recycling3020024>>



## Kid's Activity #7

# Food Sharing

Rediscovering food-sharing traditions

## Food-sharing Traditions

Learn about food-sharing traditions and prepare a delicious meal together.

### Time:

**1 hour:** researching holidays, festivals and ceremonies (can be done in advance)

**1 hour:** stories about food-sharing traditions

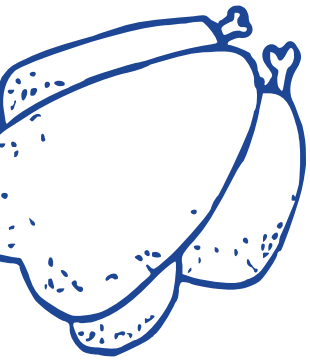
**1 hour:** food preparation

Many cultures around the world celebrate seasonal harvests and food traditions with feasts or fasts recognizing times of plenty or scarcity.

The Indigenous communities of the Pacific Northwest Coast celebrate *potlaches*. The potlatch is a gift-giving feast that has been celebrated for centuries. Preserved food called *sta-bigs* is given to guests.<sup>34</sup>

In Mexico, sharing food is an essential part of traditions like *Día de los Muertos* (Day of the Dead). Families gather around an *altar de muertos* (shrine for the dead) in their homes to share their favorite foods and tell stories of their loved ones who are no longer with them.

Celebrations, like Thanksgiving, that center around food are the perfect time to rediscover traditions or invent new ones that honor food, share it and make sure it doesn't go to waste.





## Making it Happen:

Before you get started, research holidays, local harvest festivals or ceremonies where food is shared. Come to the table with what you've learned and when you gather to eat you can share your knowledge.

1. Where and when is the celebration held?
2. What culture is it from?
3. What dishes are prepared? What are they made from?
4. Is sharing or gifting food part of the celebration?
5. Can you think of similar celebrations that you share with your family? What's different? What's the same?

Make a poster showing different food celebrations and when and where they are celebrated. Include recipes, special clothing and pictures of the food.



## Cooking Stone Soup 1 hour

Now that you've learned about food and harvest celebrations, let's gather a group to cook and eat together. Everyone brings one ingredient from home that needs to be eaten up. The teacher or group leader can bring the missing ingredients.

- Rescued or leftover vegetables, leftover beans or rice, tomato sauce (use your investigator skills from Activity #4 to find food items that need to be used up)
- Cooking oil
- Knife, cutting board and cooking pot
- Hot plate or stove
- For a simple no-cook version of this activity, bring fruit or vegetables for salad-making
- Watch the [Stone Soup story](#)<sup>35</sup> or find a copy to read.
- With adult supervision, carefully chop the ingredients into small pieces.
- Warm the pot, add cooking oil and begin cooking the strongest flavors like onions and garlic first. Next, add the firmest ingredients (like carrots) for 5 minutes, stirring frequently. Add water and let soup come to a boil, then simmer. Taste often and decide as a group which flavors are missing and need to be added.



## Read or Watch the Stone Soup Story

Stone Soup is an old folk story where a hungry stranger convinces the people of a town to each share a small amount of their food in order to make a meal that everyone enjoys in the end.

## Did you know?

All across North America various organizations rescue food and engage volunteers to distribute it. For example:

- Canada: [Second Harvest](#) and [Food Banks of Canada](#)<sup>36</sup>
- Mexico: [Bancos de Alimentos de Mexico](#)<sup>37</sup>
- United States: [City Harvest](#)<sup>38</sup>

With your parent's permission, check out local organizations that rescue food and see if you can volunteer or help.



## Want to do More?

- Discover how food is celebrated by attending a harvest festival in your community.
- If you enjoyed making stone soup, make a plan to cook together once a week to feed your group or others. See Activity #17 to learn about hosting a Disco Soup Party.

**CLAIM**

5 Influencer or Innovator points

**CLAIM**

10 Grower-Chef, Innovator or Rescuer points



<sup>34</sup>Snyder, S. (1975). Quest for the sacred in Northern Puget Sound: An interpretation of potlatch. *Ethnology*, 14(2), 149–161.

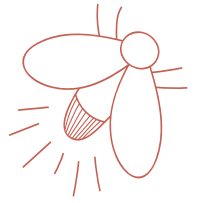
<sup>35</sup>August House/Story Cove (2017). Stone Soup (Animated Stories for Kids). <<https://www.youtube.com/watch?v=BZf60cb3Th8>>

<sup>36</sup>Second Harvest (2018). <<https://secondharvest.ca/>> and Food Banks of Canada. <<https://www.foodbankscanada.ca/Home.aspx?lang=en-CA>>

<sup>37</sup>Bancos de Alimentos de Mexico (2018). <<https://bamx.org.mx/>>

<sup>38</sup>City Harvest (2018). <<https://www.cityharvest.org>>



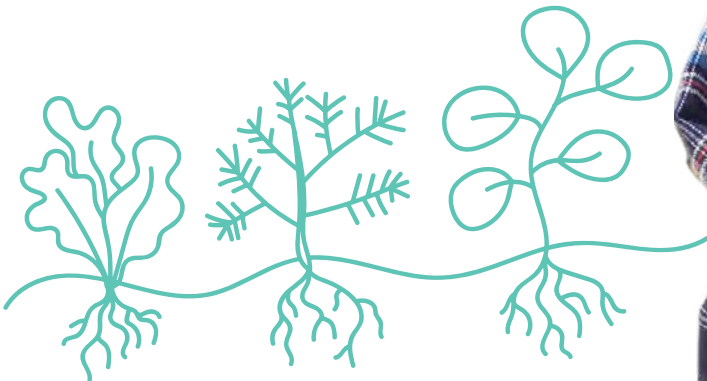


# Tackle Food Waste with Worms

Nourishing the soil with vermicomposting

There are hundreds of ways to prevent food waste in your home and community. But no matter how good we are at not wasting food, there will always be food scraps that can't be eaten—at least not by us! However, worms love to eat apple cores, pea shells, pepper stems and all kinds of organic material that we don't like to eat.

Composting with worms is called *vermicomposting*. And what the worms poop out is called *worm castings*, which make fresh, nutrient-rich soil. Worms are a sign of healthy soil so pay attention whenever you dig.



WORMS!



# Understanding avoidable and unavoidable food waste

The first step to vermicomposting is knowing which foods can be eaten and which can be composted. To prevent food waste, it is important to know what foods can still be eaten and what should be composted.

## Edible and Inedible Food Waste

Which items can be eaten and which are for compost?

**CLAIM**  
5 Grower-Chef points



**Wait! There are some tricks...** [broccoli stalks](#)<sup>39</sup>, [watermelon rinds](#)<sup>40</sup>, [onion skins](#)<sup>41</sup> and [corn cobs](#)<sup>42</sup> can all be made into delicious and nutritious meals. In Activity #6, learn all about preparing commonly tossed food parts like orange peels.

# Vermicomposting Making Compost With the Help of Worms



Estimated time: 2 hours

## You'll Need:

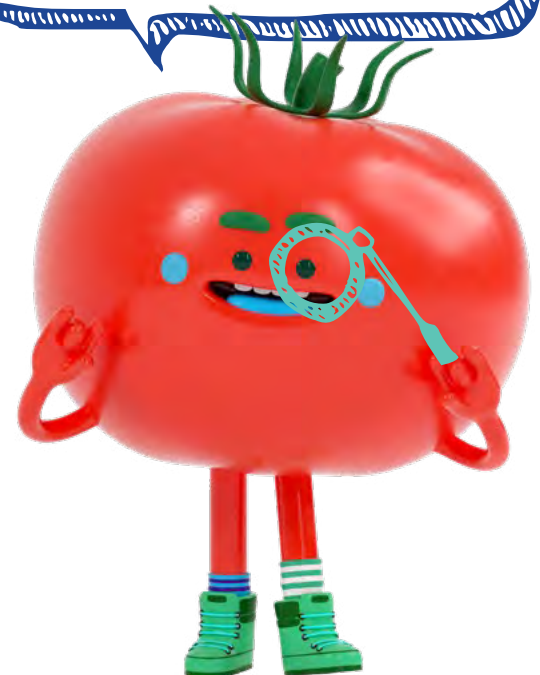
- A plastic tub with a screen or air holes in the lid
- Newspaper
- Coffee grounds, apple cores or other food scraps
- Red wiggler worms (*Eisenia fetida*). You can order these worms online or ask someone with a vermicompost bin to share theirs with you. They will reproduce, but the more you start with, the more food scraps they'll eat right away.

## Making it Happen:

- Shred newspaper and spray it with water to make a soft, moist environment for your worms.
- Feed your worms small pieces of inedible food waste. They like banana peels, carrot tops, avocado skins and most kinds of raw food scraps. They don't like acidic foods like oranges and lemons or strong-smelling foods like onions and chili peppers.
- Feed your worms daily, and keep newspaper moist by spraying with water.

## Did you know?

Worms eat half their body weight daily. A bin containing 500 grams of worms will eat 250 grams of food scraps every day.<sup>44</sup>



## Want to do More?

- Learn more about vermicomposting and fun projects to do with your worms.<sup>43</sup>
- Are you ready to take your composting to the next level? See Activity #18 to learn how to build an outdoor composter—it can compost much more food than your vermicompost bin.



<sup>39</sup>According to Elle (2013). Cooking broccoli stalks. <<https://www.accordingtoelle.com/broccoli-stems-as-healthy-as-the-florets/>>

<sup>40</sup>A Taste of Home (2018). Watermelon Rind Pickles. <<https://www.tasteofhome.com/recipes/watermelon-rind-pickles/>>

<sup>41</sup>Farmers Almanac (2018). 10 Good Reasons to Save Those Onion and Garlic Skins. <<https://www.farmersalmanac.com/uses-onion-garlic-skins-30580>>

<sup>42</sup>Wide Open Eats (2018). Your Bare Corn Cobs Have 7 More Ways to Help you in the Kitchen. <<https://www.wideopeneats.com/corn-cobs-use/>>

<sup>43</sup>Recipe for Success (2014). In our garden: Vermiculture (Worm Composting) with Kids. <<https://www.youtube.com/watch?v=t3s9US4cl20>>

<sup>44</sup>Worm Composting Headquarters. <<https://wormcompostinghq.com/feeding-your-worms/>>



## ≡ Kid's Activity #9 ≡

# Where Does it all Go?

Help save  
food scraps  
from going to  
landfill

### Organic matter is anything derived from plant material.

Because it originates from the earth, when we separate it from other waste and compost it, it decomposes easily and naturally into nutrients to make fresh, rich soil.

When we put something in the garbage, we say we “threw it away,” but there is no such place as “away.” Anywhere we send our food waste affects the quality of the land, water or air where it ends up. This creates environmental impacts that won’t just “go away.”

Our best strategy against food waste is *prevention*. We need systems in place to ensure that edible food does not get wasted on farms, in stores, in restaurants or at home.

But there will always be food scraps—like pits, skins or other organic or inedible food waste—that contribute to climate change when they end up in landfills (just like avoidable food waste).

This is why we also need good easy-to-use systems to make sure we organize our waste so that food scraps can get composted, recyclable materials can get reused and as little waste as possible goes to landfills.

## Design your own Green Bins and Labels

**Time: 1-2 hours**

Study the waste bins around your building or neighborhood. Are there separate bins for different things like garbage, recyclables and organic waste? Is it clear what should go in each bin?

If there is only one bin, this is your opportunity to get composting. Complete Activity #18 first to learn how to build a composter or composting program, then return to this activity to design your bins and labels.

Now's your chance to design your very own customized bin system.





## Making it Happen:

1. In pairs or a small group, look around your school, park, streets, shopping or public transit areas to identify different bins for collecting waste. What did you find?
2. Photograph or draw the bins, labels and signs, instructions or colors. Are the bins the same or are they different near transit, main streets or in stores?
3. If possible, choose a set of bins in a busy spot and watch for 10 minutes. Are people putting the right things in the bins? Do they seem confused about which bin to use? Are the bins conveniently located? What do you think would make it easier for people? Put together your results in a booklet or poster.
4. Using your research, design your own label or bin to make separating waste easier for people. Where would be the best spot to locate it?



## Did you know?

In North America, 39 million litres of space is taken up in landfills every year with wasted food. That's equivalent to 13 football stadiums full of food that could have been eaten or composted and is now contributing to climate change.<sup>46</sup>

**CLAIM**  
5 Systems Thinker points

## Want to do More?

- Conduct before-and-after waste audits (see Activity #15) with the old bin and your new design to measure how much better your design works.
- As a group project, connect with [pen pals](#)<sup>45</sup> or others in a similar youth group in another city or country. Share this activity with them and compare bin design ideas.
- Share your cool design on Instagram and Twitter: #FoodMattersActionKit

**CLAIM**  
Claim 5 Influencer points



<sup>45</sup>Students of the World (2001). <[http://www.studentsoftheworld.info/menu\\_penpals.php](http://www.studentsoftheworld.info/menu_penpals.php)>

<sup>46</sup>CEC (2017). Characterization and Management of Food Loss and Waste in North America—White Paper. Montreal, Canada: Commission for Environmental Cooperation. 48 pp. <<http://www3.cec.org/fw/organic-waste-reports/>>

## Kid's Activity #10

# Imagining a Circular Food System

Learning from nature to create sustainable food systems

"Waste is nothing more than a failure of imagination."

- Aaron Kramer, poet and social activist



**candied orange  
and lime peel!**

Every year, we create an estimated 2 billion tonnes of waste. If trucks were filled with all this waste and lined up, they would circle the world 24 times!<sup>48</sup>

Think of all the items we buy and only ever use once, like straws, balloons and plastic knives and forks. In fact, 99 percent of the things we buy become garbage within 6 months.<sup>49</sup> But with a little imagination we can create products and systems where nothing goes to waste.



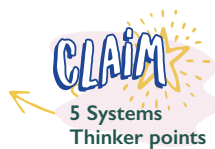
## What is a Circular Food System?

In a *circular food system* everyone is fed and nothing is wasted. Just like in nature, we could design everything we make to be repaired, reused, recycled or composted when we're done with it. Check out the great four-minute video [Re-thinking Progress](#)<sup>50</sup> about our circular economic future.

[Check out the Linear Food Chain vs. Circular Food System diagram](#)<sup>47</sup>

# Race to the heart of the circular food system

Time: 45 mins

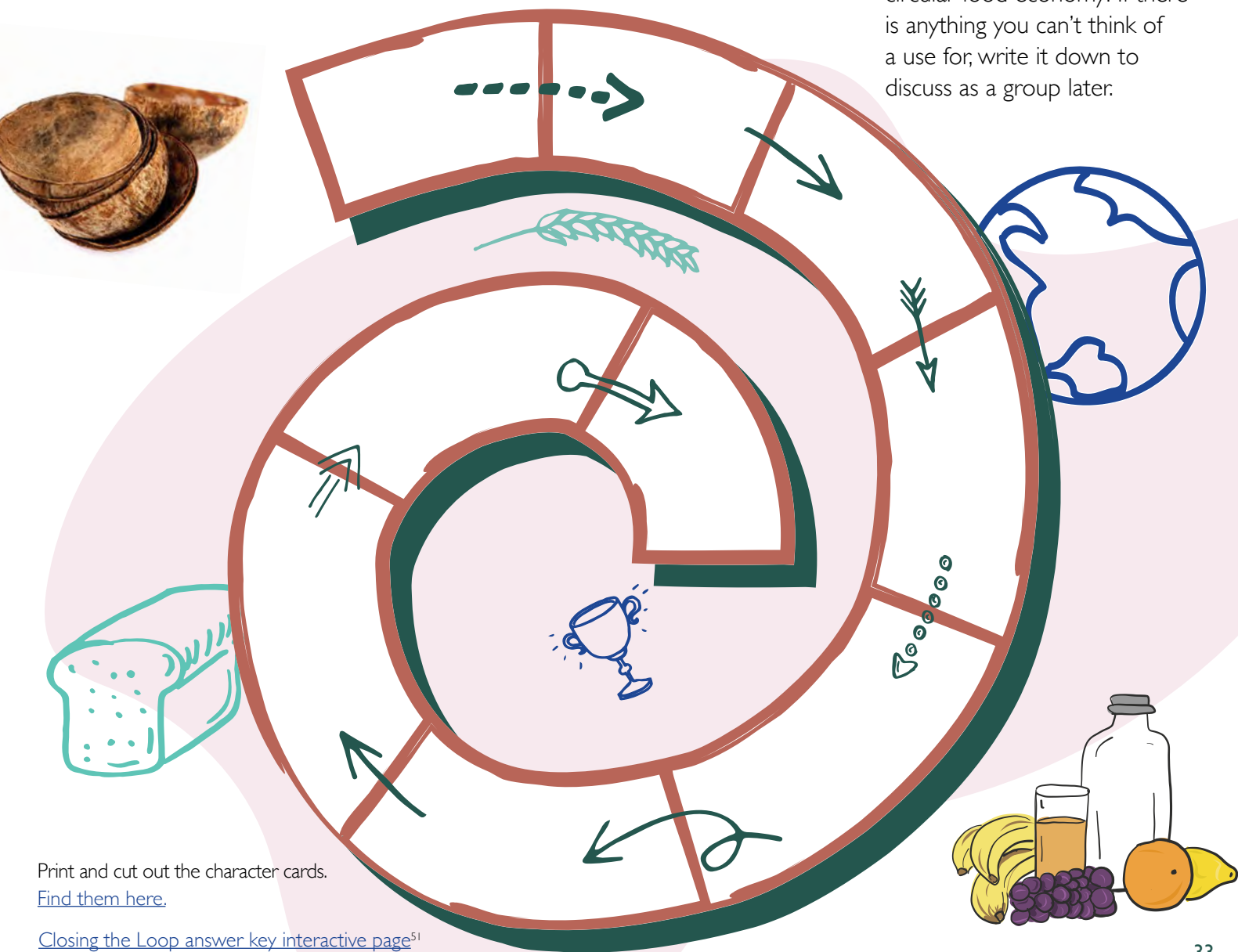


## You'll Need:

- Printer
- Scissors
- Game pieces for everyone (coins, seeds or anything small)

## Making it Happen:

1. [Print and cut out the character cards.](#)
2. In a group of three or more, find any small item to be your marker and cut out the cards. Turn cards upside down. The first player chooses a random card. This is your food production job.
3. Think about how your product is made and tell the other players. Are there any leftovers after your product was made?
4. What if your food does not get sold? What could you make from it?
5. Do your customers use all of the product? What could they do with what's left? Together, imagine a use for every step of production and waste.
6. If you can think of a use for every part of your product, go three steps. If you get stuck, but someone else can think of more, they go a step for each. It's a race to the heart of the circular food economy! If there is anything you can't think of a use for, write it down to discuss as a group later.



Print and cut out the character cards.  
[Find them here.](#)

[Closing the Loop answer key interactive page](#)<sup>51</sup>

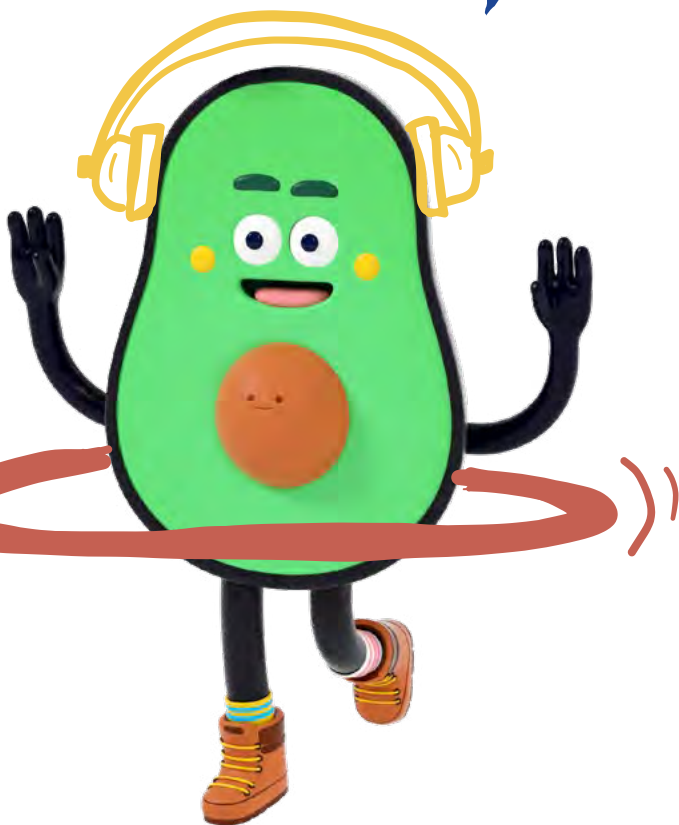


# What did you Learn?

- Were there any products that have zero waste?
- Did you think of uses for your product that could help one of the other players/producers?
- Were there any by-products that could be used by another business or that could be turned into a new product?
- Were there still any by-products that no one could find a use for?<sup>50</sup> Check out our [answer key](#) to help “Close the Loop” for each of the products.

## Did you know?

A circular food system can also include using vacant lots and other underused land for growing free, healthy and culturally appropriate food.



## Want to do More?

Get on board the closed-loop train challenge.

- Think of someone you know who works with food (parent, friend, neighbor) and invite them to play the game with you. Remember to find a thoughtful way to thank them for participating in the challenge.

**CLAIM**  
10 Systems Thinker  
or Influencer points



<sup>47</sup> Ellen MacArthur Foundation (2017). What is the Circular Economy? <https://www.ellenmacarthurfoundation.org/circular-economy>

<sup>48</sup> The World Counts (2018). World Waste Facts. <[http://www.theworldcounts.com/counters/shocking\\_environmental\\_facts\\_and\\_statistics/world\\_waste\\_facts](http://www.theworldcounts.com/counters/shocking_environmental_facts_and_statistics/world_waste_facts)>

<sup>49</sup> The World Counts (2018). World Waste Facts. <[http://www.theworldcounts.com/counters/shocking\\_environmental\\_facts\\_and\\_statistics/world\\_waste\\_facts](http://www.theworldcounts.com/counters/shocking_environmental_facts_and_statistics/world_waste_facts)>

<sup>50</sup> Ellen MacArthur Foundation (2011). Re-thinking Progress. The Circular Economy. <<https://www.youtube.com/watch?v=zCRKvDyyHmI>>

<sup>51</sup> Closing the Loop answer key interactive page. <<https://prezi.com/view/4j3BaXG70KjTaa3i5OTt/>>

Part 2

# Youth Action Kit

**Practical activities for  
ages 14-25**

From learning food  
preservation techniques to  
throwing Disco Soup parties,  
here are dozens of great ways  
to make an impact on food  
waste in your community.



# Growing Food

Grow food, don't waste it ↗



The food that we see in the grocery store comes to us from all around the world. Have you ever wondered what the food journey looks like?

Let's consider the journey of a single strawberry. It begins as a seed and relies on water, sunlight and good weather conditions to grow into a plant. Because they are so delicate, strawberries are picked by hand, then

sorted by size, color and shape. Some strawberries make the cut but many don't. Those that do are packaged and shipped, often traveling thousands of kilometers before they get onto our table. So, if we waste even a single strawberry, we are wasting all of the energy that went into getting it into our hands. To learn more, follow the strawberry's journey from flower to the refrigerator in this [2-minute video](#).<sup>52</sup>

## Companion Planting—Growing Food with Friends!

**Time:** 30 mins

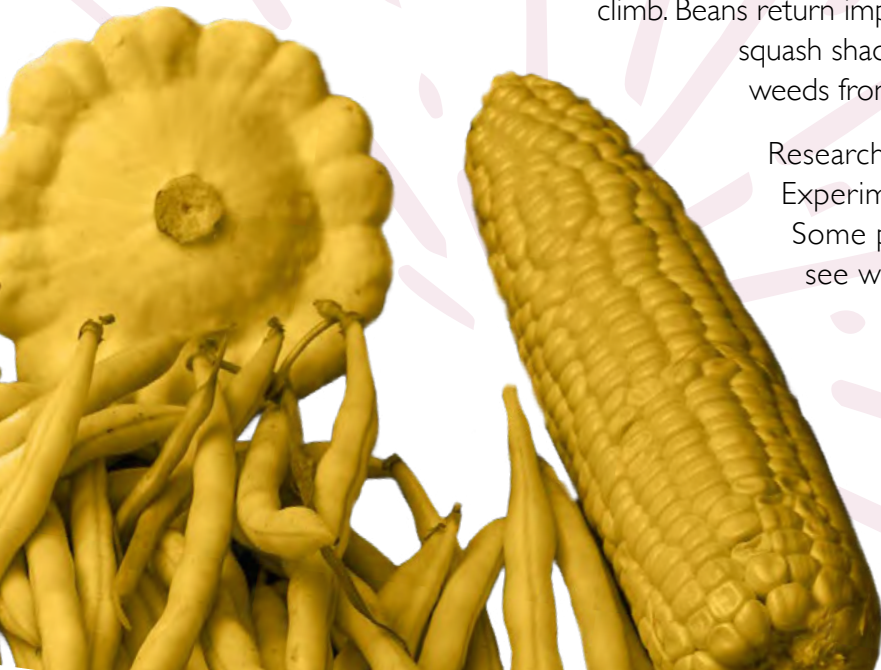
**Nurturing:** 12-16 weeks

Some plants grow well together; these are called *companion plants*. [The Three Sisters](#): corn, beans and squash, for example, have been grown together by Indigenous communities across North America for thousands of years. Corn grows tall and provides a stalk for beans to climb. Beans return important nutrients to the soil as they grow, and squash shades the ground with her broad leaves to keep weeds from moving in.<sup>53</sup>

Research combinations of companion plants.

Experiment with watering, light and adding compost.

Some plants will grow faster than others—watch and see what you can learn.



↖ *Three sisters*



## You'll Need:

- Seeds (cucumber, beans, tomatoes, squash—seek plants that grow well together and plan to plant in groups once your plants are big enough to move outside)<sup>54</sup>
- Soil
- Small cups or newspaper to [fold into pots](#)<sup>55</sup>
- Sunlight

## Making it Happen:

1. In small groups, research companion planting to decide which plants might grow well together, and decide who your companion planting buddies will be.
2. Fill pots or cups and gently with soil.
3. Check your seed. What shape and color is it? Can you imagine how this hard, dry seed will transform into a full plant and grow food?
4. Poke a small, two-seed-deep hole in soil. Place the seed in the hole and gently cover with soil.
5. Label your pot with the planting date and put it on a tray or plastic lid to catch excess water.
6. Water lightly—too much water can wash away your seed's soil.
7. Place in a sunny window.
8. Check soil every day, keeping it moist but not soggy.
9. Track your plants' growth, leaf color and soil texture.
10. When your plants are big enough and all danger of frost has passed, transplant your plants in their companion groups outside to a sunny location. If you made your own compost (see Activity 18); add it to your soil for extra nutrients.





Agriculture accounts for 70 percent of freshwater use around the world.<sup>57</sup> Even a single hamburger takes 2,500 liters of water to produce! Use the [Water Footprint Calculator](#) to find out how much water goes into producing our food.<sup>58</sup>

## What did you Learn?

- Did you see how your companion plants supported each other?
- What strategies helped or hindered the growth of your plant?
- What did you learn? What would you do differently next time?
- Did you feel a connection with your plant? If so, how did that change the way you think about food?

## Want to do More?

- **Volunteer at a community garden.** Now that you know how to grow food, you can help others in your community do the same.
- **Go gleaning.** At harvest time, food is often not harvested because it's too small, odd-shaped or not quite ripe. You can help a gleaning organization and donate your "second harvest."
- **Start a food garden.** Find space for a garden and start small with compost, seeds or seedlings. Find resources online like the [Food is Free](#) project to get started.<sup>56</sup>



<sup>52</sup>Save the Food / Ad Council (2016). The Extraordinary Life and Times of Strawberry. <<https://www.youtube.com/watch?v=WREXBUZBrS8>>

<sup>53</sup>Winter Green Studios (2009). What is a Three Sisters Garden? <https://www.wintergreenstudios.com/wp-content/uploads/2009/09/Three-Sisters-Garden.pdf>>

<sup>54</sup>Heeman's Beginner's Guide to Companion Planting. <https://heeman.ca/garden-guides/companion-planting/>>

<sup>55</sup>How to make newspaper flower pots. <<https://www.forgreenies.com/origami-newspaper-seedling-pots>>

<sup>56</sup>Food is Free (2018). Grow Free Food and Community in your Front Yard. <<http://foodisfreeproject.org>>

<sup>57</sup>World Bank (2018). Water in Agriculture. <<https://www.worldbank.org/en/topic/water-in-agriculture>>

<sup>58</sup>Water Footprint Calculator (2017). Food's Big Water Footprint. <<https://www.watercalculator.org/water-use/water-in-your-food/foods-big-water-footprint/>>



# Preserving Food knowledge

Learn techniques from your elders to reduce food waste

## How History Helps us Prevent Food Waste

Re-learning ancient ways to cook, preserve and manage foods can help us prevent food waste and become master chefs. Learning from elders in your community will teach you cool tips and help preserve knowledge and recipes that will help reduce food waste for generations to come.

Do your grandparents have a delicious recipe made out of leftovers or salvaged food? Or maybe they know how to use every single part of a vegetable or animal. This is your opportunity to find out!

**CLAIM**  
5 Influencer,  
Grower-Chef or  
Innovator points

## Sharing Stories, Preserving Food

Time: 3-5 days

### You'll Need:

- Tape recorder
- Paper, pen or computer

Amazing Recipe!







During World War I and II, everyone was encouraged to grow food in their yards to help support the war effort—these became known as Victory Gardens. In Canada alone, it was estimated that by 1944, over 200,000 Victory Gardens were in operation, producing over 57,000 tonnes of vegetables.<sup>60</sup>

## Making it Happen:

1. Find someone to interview. This could be an older relative or neighbor.
2. Prepare questions you would like to ask.
3. Ask permission to record the interview and take a photograph. If you are part of a university or school, check if there is an informed consent template that you should use for your interview.
4. Be prepared: check your recorder or charge your phone or computer. Bring a pen and paper or computer to take notes.
5. Do the interview in a comfortable and quiet space.
6. After your interview, ask yourself: What did I learn from this elder? How can I apply what I learned about the past to my own food practices today?

## Sample Interview Questions

1. Do you think people waste more food now than in the past?
2. Are there foods that you used to eat, or parts of foods that were used before, that are now commonly wasted? Why does this happen now; what has changed?
3. Do you have strategies to prevent food waste by transforming ingredients or leftovers into a meal?
4. What dishes do you make where no food is wasted? How did you learn to make this dish?
5. When you were young, what was done with food scraps that weren't eaten?
6. Are there cultural or spiritual traditions that influence your opinion on food and food waste?

## Want to do More?

- **Cookbook:** Compile a cookbook of zero food waste family recipes. Include family stories and descriptions and any techniques you learned.
- **Radio Documentary:** Transform your interview into a radio documentary or podcast by editing the best parts of your interview<sup>59</sup> and adding music or sound. Post it online or submit it to a local radio station to share what you learned with a wider audience.
- **Cook together:** Set a time with the elder(s) you interviewed to cook together. Pledge to master some of their cooking techniques and share a picture of you cooking together.

**CLAIM**  
10 Influencer or Innovator points

**CLAIM**  
10 Influencer points, 20 if its broadcast!

**CLAIM**  
10 Grower-Chef or Innovator points

<sup>59</sup>Mike Russell (2016). How to Use Audacity for Beginners. <<https://www.youtube.com/watch?v=DjhlsLH32I&list=PL6wGbZVVzENlzXKZjz3DlXmOZeL9lGncR&index=2>>

<sup>60</sup>Mosby, I. (2015). Victory Gardens. The Canadian Encyclopedia. <<https://www.thecanadianencyclopedia.ca/en/article/victory-gardens>>



# “Ugly”

## Food Heroes

Ugly food can help save the planet

It takes a lot of resources to grow food. In the United States alone, agriculture uses 10 percent of the total energy budget,<sup>61</sup> 50 percent of all land<sup>62</sup> and 80 percent of all freshwater. Despite all of this, 2.4 million tonnes (6 billion pounds) of fresh produce is left to rot in the fields every year.<sup>63</sup>

Why? There are many reasons. It's hard to harvest at exactly the right time and have enough workers to harvest the food. Food can get damaged by pests or bad weather. A whole crop is almost never ready for picking at the same time. Sometimes production or transportation is backlogged and food spoils. Strict aesthetic standards stipulated by grocery stores and their customers also mean that a lot of odd-looking produce doesn't make the cut.

### Ugly Food Heroes Media Project

**Time: 30-60 minutes, or  
longer for more ambitious  
projects**



Make a commonly wasted “ugly” fruit or vegetable the star of your story. Working on your own or with a group of friends, write a short story, cartoon or documentary about ugly food. You can design a hand-drawn comic, graphic novel, stop-motion animated short or prepare a documentary featuring a real-life hero who rescues misshapen produce to feed people. You may choose to feature the hard-working farmers and farm laborers that grow our food. Or, you can tell your own food rescue story. Here's your chance to tell everyone that odd-looking produce is just as delicious.

## Making it Happen:

Choose your style:

1. **Comic:** Create a comic featuring an ugly fruit or vegetable hero. If working in a group, consider collaborating to make a comic series. Don't forget to draw the cover!
2. **Animation:** Are you a whiz with computer graphics? Animate your comic. Check out [Wideo](#)<sup>64</sup> or [Powtoon](#)<sup>65</sup> for free and simple animation tools.
3. **Stop-motion:** Use your phone camera to string together hundreds of still photos to give your ugly fruit and vegetable characters the impression of movement—it's a fun way to turn everyday objects into animation. Turn your mobile phone into a stop-motion studio with the free [Pic Pac](#)<sup>66</sup> or [Stop Motion Studio](#)<sup>67</sup> apps. Use this [tutorial](#)<sup>68</sup> to get started.
4. **Documentary:** Want to capture the story of a real-life food hero on video or capture consumer shopping habits around ugly produce and food waste? Use these [documentary-making tips](#)<sup>69</sup> to get started.

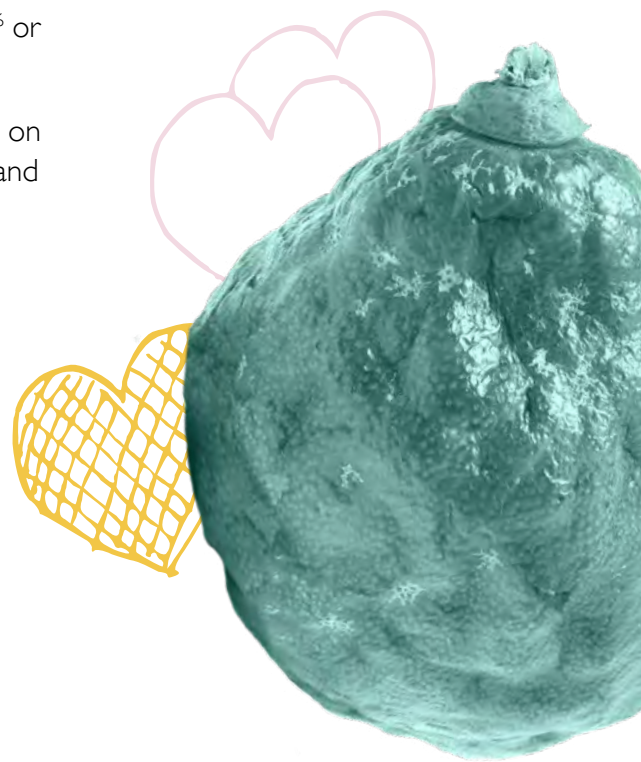
Share your media projects on Twitter or Instagram using #FoodMattersActionKit and add your profile at [www.cec.org/FoodMattersActionKit](http://www.cec.org/FoodMattersActionKit).

## Want to do More?

- Host a film screening to show your work.
- Submit your film to environmental film festivals. Don't be shy, many famous documentary makers started just like this!



Every year film festivals feature the best and brightest documentaries that bring important environmental issues into the public eye. This is your chance to raise awareness about food waste. To learn more about how to submit, visit the [Eco-film Festival](#) website.<sup>70</sup>



<sup>61</sup>Webber, M. (2012 ). How to Make the Food System More Energy Efficient. Scientific American Magazine. Volume 36. Number 1. Pp. 74–79.

<sup>62</sup>USDA Economic Research Service (2002). Major Uses of Land in the United States, Pub. 2002/EIB-14, 2002.

<sup>63</sup>Gunders, D. (2012). Wasted: How America is Losing Up to 40 Per Cent of Its Food From Farm to Fork to Landfill. National Resources Defense Council. <<https://www.nrdc.org/sites/default/files/wasted-food-IP.pdf>>

<sup>64</sup>Wideo (2018) Getting Started: Creating and Sharing Animated Video. <<https://wideo.co/landing-learn/>>

<sup>65</sup>Powtoon (2018) Create Awesome Videos and Presentations. <<https://www.powtoon.com/index/>>

<sup>66</sup>Pic Pac Stop Motion and Time-Lapse App. (2018). <<https://play.google.com/store/apps/details?id=tv.picpac>>

<sup>67</sup>Stop Motion Studio (2018). Let's Make a Movie. <<https://www.cateater.com>>

<sup>68</sup>Edu Puertas (2017). Free Stop motion Animation App (English). < <https://www.youtube.com/watch?v=bVL0CmIHylA>>

<sup>69</sup>Desktop Documentaries (2018). Making Documentaries Step-By-Step: How To Make a Documentary. <<https://www.desktop-documentaries.com/making-documentaries.html>>

<sup>70</sup>Ecofilm Festival (2018). <<https://ecofilmfestival.org/en/ecofilm-festival-eighth-edition/>>

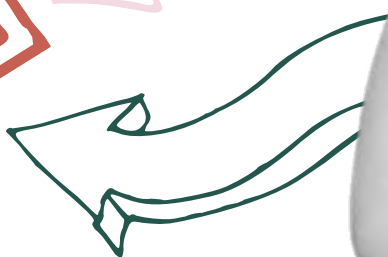


# Agents Of Change

Uncover the root causes of food waste

Almost half of the all food waste across North America is produced in our own kitchens.<sup>71 72 73</sup>

You can make a positive impact and help prevent food waste in your own home. Take a look around, make a plan and you are well on your way to changing your habits. Start by looking at how food is bought, stored, cooked and wasted where you live.



## Your Mission

**Time: 5 Days**



## Making it Happen:

1. Use the survey sheet to document how you and your household buy, trade or gather food, and how that food is eaten over a 5-day period. This is a first-hand investigation so it's important to document the facts carefully.

Food Tracking	Day 1	Day 2	Day 3	Day 4	Day 5
Did you purchase or acquire any food today?					
How much did you spend on food?					
Did you make a shopping list?					
Did you check what food you already had at home before shopping?					
Do you have a plan for how to use everything you bought?					
Did you consider portion size when cooking?					
If there were any leftovers what did you do with them?					
Did any food get thrown out today? What did you throw out and why?					
Estimate the cost of the wasted portions.					



## What did you Learn?

1. What are the top three reasons that food is wasted in your home? How can this be changed?
2. What new information have you learned about the way you eat and waste food?
3. Jot down ideas on how you can reduce and prevent food waste.

## Want to do More?

- Create and share a food waste manifesto. Armed with the findings from your investigation, draft a food waste manifesto to publicly declare your commitment to prevent food waste. Post prominently where food is prepared and eaten.
- Share your manifesto #FoodMattersActionKit
- Check out Activities #5 and #15 for how to conduct a food waste audit. Measure your food waste before and after the manifesto to test its impact.



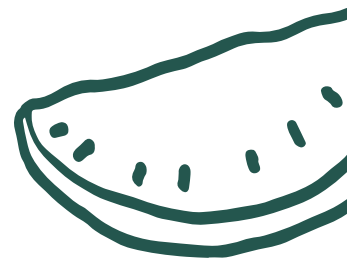
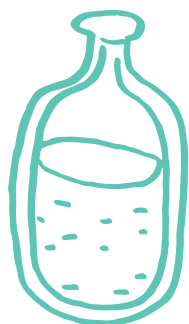
You can check out samples of historic food waste reduction manifestos. This war-time manifesto was developed by the US Food and Drug Administration to raise awareness about the need to conserve food.



**CLAIM**  
5 Influencer points



**CLAIM**  
10 Influencer or Systems Thinker points



<sup>71</sup>Jean-Baptiste, N. (2013). People centered approach towards food waste management in the urban environment of Mexico. Dissertation. <<https://e-pub.uni-weimar.de/opus4/frontdoor/index/index/docId/2063>>

<sup>72</sup>Gooch, M.V., & Fefel, A. (2014). "\$27 BILLION" REVISITED. The Cost of Canada's Annual Food Waste. <<http://vcm-international.com/wp-content/uploads/2014/12/Food-Waste-in-Canada-27-Billion-Revisited-Dec-10-2014.pdf>>

<sup>73</sup>NRDC. (2017). Wasted: How America is Losing Up to 40 percent of its food from farm, to fork to landfill. <<https://www.nrdc.org/resources/wasted-how-america-losing-40-percent-its-food-farm-fork-landfill>>



# "Garbology" 201

*Calling food waste scientists, let's get messy!*

## Food Waste Audit

**Time: 1 hour**

No one promised that research would be clean and tidy! Food waste audits help us measure how much food is wasted so we can make plans to reduce our food waste.



## You'll Need:

- Tables, tarps or washable plastic sheeting
- Rubber gloves
- 4-9 large buckets or bins (depending on the number of waste categories)
- Plastic waste bags
- Portable or bathroom scale
- Clean-up materials
- A log sheet for writing down the weight of various categories of food waste

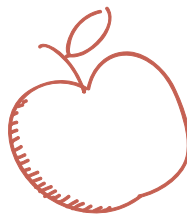


## Making it Happen:

There are many ways to conduct a food waste audit. For a simple version, see Activity #5. Here we'll go a little more in depth.

1. Discuss your food waste audit plans with your school or community custodial team.
2. After at least one meal break, take all the waste, recycling and organic bins outside or to a large, open and well-ventilated space.
3. One at a time, weigh the full bins, noting the weight and what type of waste they were meant to contain. Dump one onto the tarp. Weigh the empty bin and note the weight. Subtract this from your full bin measurement to find the weight of its contents.

4. For a simple audit, use four categories: avoidable food waste, unavoidable food waste, recycling and other waste.
5. Optional: You can subdivide categories into bread, fruit, vegetables, beverages or any other categories that you want to measure.
6. Sort the waste into the clean bins based on your chosen categories. Weigh each category.



## Analyze the Data:

1.

Calculate waste per person by dividing the weight of a category by the number of people eating.

For example,  
**20 KILOGRAMS (KG)**  
of fruit waste  
and **40** students  
**= 20/40**  
**= 0.5 KG**  
of food waste per student

2.

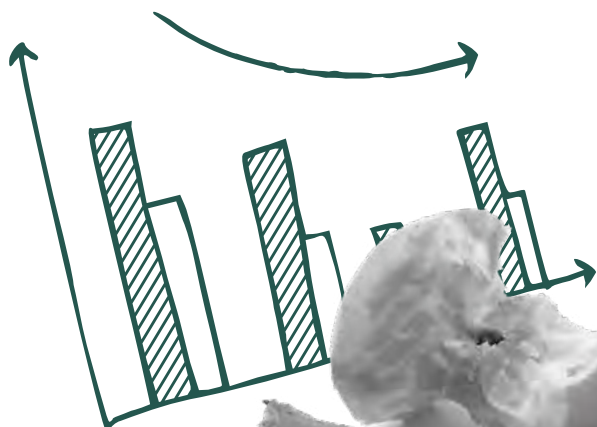
Tally the weight of all the waste categories.

For example:  
**10 KG** (avoidable food waste)  
**+ 5 KG** (unavoidable food waste)  
**+ 2 KG** (beverage waste)  
**+ 3 KG** (other waste)  
**= 20 KG TOTAL WASTE.**  
So, from the example above  
**(10KG / 20 KG) x 100**  
**= 50%** of the total waste  
is avoidable food waste.

3.

Calculate the percentage wasted for each item compared to the total waste.

Avoidable Food Waste  
**% =**  
(avoidable food waste  
amount/ total waste amount)  
**x 100.**





## Want to do More?

- Round two! Set a goal for how much food waste you could prevent. Make posters, tip sheets or a manifesto (Activity #14).
- Try the Diversion Design Activity # 9 to see if you can help reduce contamination.
- Perform a second waste audit, ideally on the same type of day to allow for equivalent comparison. Calculate the per person waste and compare it to the first. Did you reach your waste reduction goal? Share your progress through posters and social media: [#FoodMattersActionKit](#).
- Use a [greenhouse gas calculator](#) to estimate the impact you've had reducing climate change.<sup>74</sup>

**CLAIM**  
5 Influencer points

**CLAIM**  
5 Systems Thinker points

**CLAIM**  
10 Influencer or Systems Thinker points

**CLAIM**  
5 Systems Thinker points



Food scraps and other organic matter break down quickly but, in a landfill, food waste takes a very long time to break down and while it is just sitting there, it creates methane gas the entire time. How long do you think a head of iceberg lettuce takes to decompose in a landfill? William L. Rathje, the founder of garbology, discovered a perfectly preserved head of iceberg lettuce in a landfill that was proven to be 25 years old!



<sup>74</sup>Watch My Waste (2018). Food Waste Greenhouse Gas Calculator: <<https://watchmywaste.com.au/food-waste-greenhouse-gas-calculator/>>



# Food Innovators

*Saving food with science*



From kimchi to sauerkraut, jerky to jam, many of our food-preserving techniques are ancient and have been perfected in kitchens all over the world. Heritage food preservation techniques bring together microbiology, physics and chemistry in delicious ways.

## Food Preservation Exploration

**Time: 1 hour**



To keep food from spoiling, people around the world have found ways to preserve food, including drying, smoking, salting, fermenting, canning and pickling. Do you know how to preserve food? Pick a food-preserving technique and research its application throughout history. Think about:

- How, where and why the technique was developed?
- Who used it?
- How does the technique keep food from spoiling?
- What do you have to be careful of when using this technique?
- What are the advantages and disadvantages of this approach?
- How long does it take?

## Make Watermelon Rind Pickle

**Time: 2 hours**

Try this simple recipe. Watermelon rind pickle is a delicious snack common in the Southern United States, but you can also use other ingredients like cucumbers or carrots.



## Ingredients

- 1 medium watermelon (roughly 1.8 kilograms)
- 8 cups water
- 3 tablespoons coarse salt
- 2 cups sugar
- 1 1/4 cups apple cider vinegar
- 8 whole black peppercorns
- 2 cinnamon sticks
- 1/4 teaspoon ground allspice
- 1/4 teaspoon ground ginger
- 8 whole cloves



## Making it Happen:

1. Cut the pink pulp off the rind to enjoy right away, leaving a thin layer of pink.
2. Peel off the green skin and slice into 1 x 1/2-inch pieces to measure about 4 cups.
3. Combine 8 cups water and 2 tablespoons salt in large pot; bring to boil.
4. Add rind pieces and boil until tender; about 5 minutes.
5. Strain and transfer rinds to large metal bowl.
6. Combine the remaining salt and the next seven ingredients in large saucepan. Bring to boil, stirring until sugar dissolves.
7. Pour liquid over watermelon rinds in bowl. Cover the bowl to keep rinds submerged in pickling liquid.
8. Refrigerate at least 8 hours or overnight.
9. Strain liquid from rinds into saucepan; bring to boil. Pour over rinds again. Cover and refrigerate overnight. Repeat straining and boiling of liquid and pour over rinds one more time.
10. Chill in covered jars and enjoy within 2 weeks as a sweet and tangy condiment with deserts or as a chutney with main dishes or snacks.



You can harness the sun's power to convert fresh foods into storable snacks to eat year-round. You can build your own solar dehydrator to dry apples, grapes and any fruit or vegetable. Here is a great, simple solar dehydrator design.<sup>75</sup>

**CLAIM**

20 Innovator points



## Want to do More?

Create a cookbook of food preservation recipes. As a group you can:



10 Influencer points

- Create a cooking blog and have teams each contribute a post.
- Create a cookbook with each team contributing a group of recipes (fruit preserves, condiments, preserving meat and fish).
- Create a YouTube channel with each team creating a cooking video.



<sup>75</sup>Mother Earth News (2018). Best-Ever Solar Dehydrator Plans. <<https://www.motherearthnews.com/diy/tools/solar-food-dehydrator-plans-zm0z14ijzmar>>

More

Parties,

Less Waste

Join the Global Disco Soup Movement

The international Disco Soup initiative throws big parties where people rescue food, prepare a big feast, then eat and celebrate together sharing food with their communities. These events raise awareness, prevent food waste and build community by feeding each other. You can apply this approach to all kinds of events.

### Mini Disco Soup Party

Time: 1-2 hours



### You'll Need:

- Cutting boards, knives and forks, plates
- Containers for leftovers
- Camera
- Cooking surface (hot plate, stove or barbecue)







Disco Soup events are held in over 40 countries around the world, rescuing 5,000 kilograms of food to date and turning it into 25,000 meals!

## Making it Happen:

1. Check your kitchen for vegetables and staples that need to be used up.
2. Weigh how much food you salvaged to measure your impact.
3. Make a soup with all of your findings using the recipe below. Some ingredients can be used to make side dishes like fruit salads, pies or snacks. Use stale bread for croutons or toast.
4. Photograph or draw your creations.
5. Eat together! If you have leftovers, pack them up to share or eat later.

## Vegetarian Disco Soup

There are so many ways to prepare soup, it's hard to go wrong. Here are some simple soup guidelines where you can include almost anything!

1. Begin your soup by frying chopped onion, garlic and/or ginger in oil until it's tender and golden.
2. Add rescued vegetables (firmest ones first) and enough water to make it soupy. It will thicken as it cooks.
3. Taste your soup often and add salt, pepper, chilis, herbs and spices until you have a delightful flavor combination. Don't be shy to ask other cooks what flavor they think is missing.

## Want to do More?

For a practical and radical guide to organize a Mega Disco Soup party for your whole community, check this useful [toolkit](#).<sup>76</sup>



1. With permission, secure an easy-to-access location with electricity.
2. Borrow a sound system to play music.
3. Find unwanted foods. Ask farmers, gardeners, managers of markets, supermarkets or bakeries if you can have their unsold food that would otherwise go to waste for a good cause. Weigh or count your rescued ingredients to measure your impact.
4. Recruit friends and family to help you collect rescued food. Turn your food saving into a competition to see who can collect the most.
5. Create a buzz! Design a fun invitation online or through flyers and word of mouth.
6. Ask everyone to bring their own bowls and cutlery and a few extras for unexpected guests. Set-up a dishwashing station.
7. Add your favorite dance tunes to the [World Disco Soup Day 2017 playlist](#)<sup>77</sup> on Spotify to keep your party hopping!
8. Cook, serve and enjoy the party! Be sure to let everyone know how much food you rescued and how many people you fed.

<sup>76</sup>Slow Food (2017). Practical Guide to Organize a Disco Soup. <<https://www.slowfood.com/wp-content/uploads/2017/03/TOOLKIT-WDSD17.pdf>>

<sup>77</sup>Slow Food Youth Network (2017). World Disco Soup Playlist. <[https://open.spotify.com/user/sfyn\\_nl/playlist/3SzLd1IUqvi8UHpmJmJU2Lo](https://open.spotify.com/user/sfyn_nl/playlist/3SzLd1IUqvi8UHpmJmJU2Lo)>



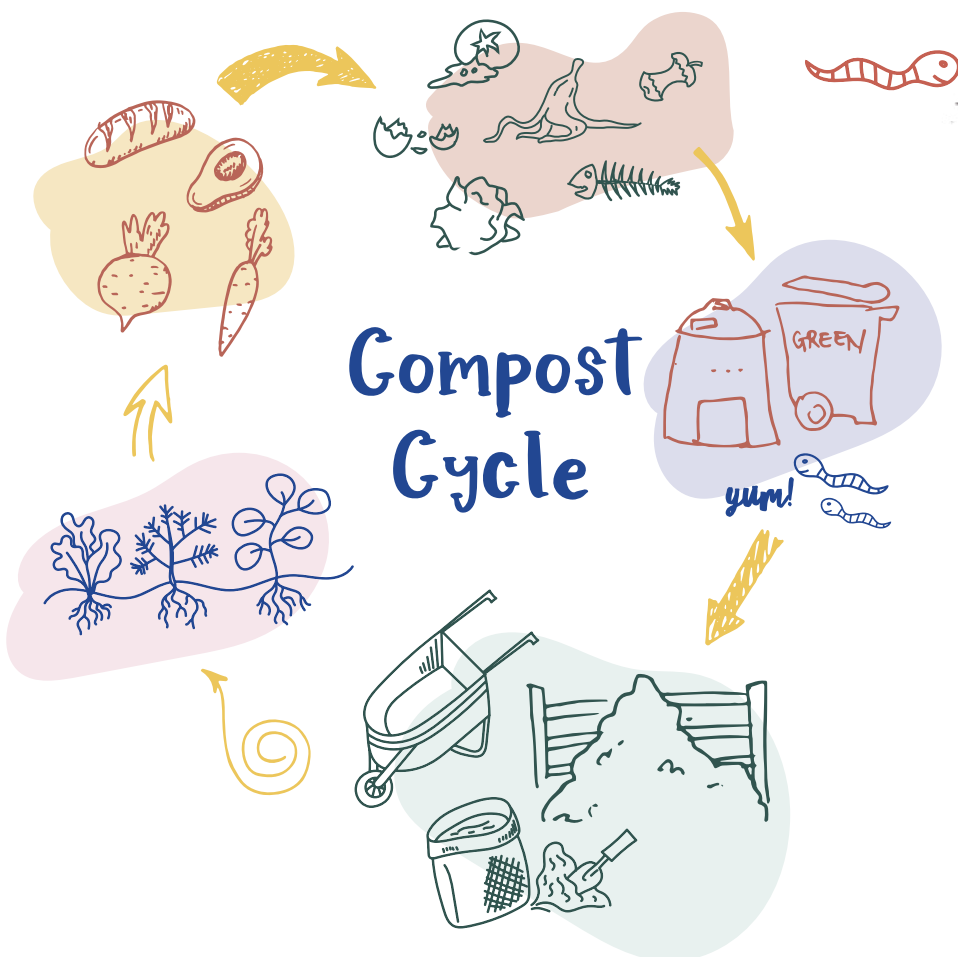
# Composting in your Community

**Get composting and keep food scraps out of the landfill**

Compost is so valuable that it is commonly referred to as black gold. But what is compost? Compost is organic material, such as food scraps and leaves, that has been broken down into a nutrient-rich soil. Humans have been intentionally composting food scraps since the Stone Age.



## Compost Cycle



## Build Your Own Composter

**Time: 1 day or less**

**CLAIM**

10 Systems Thinker points

Many municipalities collect organic waste in green bins and truck it away for large-scale composting or to turn it into electricity through *anaerobic digestion* (a process that transforms food waste into energy and other products). Others offer backyard composters. If that doesn't happen in your community, don't let it stop you. You can compost at school,<sup>78</sup> in your garden or in an empty lot. If you don't have access to an outdoor space, you can compost indoors using worms (see Activity #8).

## You'll Need:

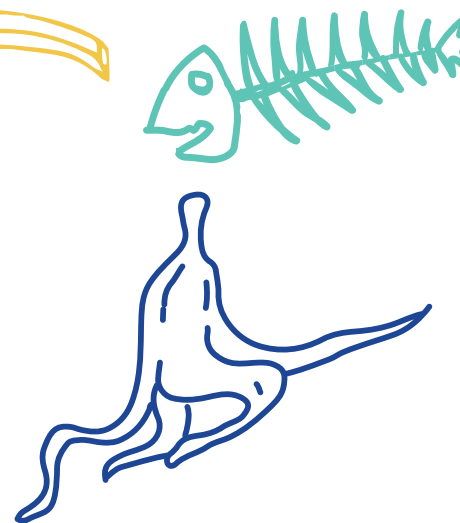
You can make a compost bin out of almost anything—a garbage bin with holes drilled in it, old tires, straw bales or wooden pallets and chicken wire.

*Find more do-it-yourself  
compost bin ideas.<sup>79</sup>*

## Making it Happen:

There are a few simple rules to keep in mind to maintain a healthy, earthy-smelling compost<sup>80</sup> and you will be able to process organic material into rich soil every year:

- Balance two parts dry, brown, fibrous plant material (dry leaves, straw or torn cardboard) to one-part greens (food scraps or plant trimmings).
- Keep it handy. Make sure your compost is easy to access so you'll use it and care for it regularly.
- Let it breathe. Make sure air can get in. Transfer it to a second bin or stir your compost with a shovel or pitchfork once a year.
- Don't dry it or drown it. Keep your compost moist.
- Keep the critters out using chicken wire or a lid, and avoid attracting animals by keeping fats, meats and dairy out of your compost.





## Want to do More?

### Start a community compost program:

Now that you know how to make healthy compost, you can apply this knowledge at a community scale, like the youth composting operation [BK Rot](#) in the United States, [WastenotFarms](#) vermicomposting business in Canada<sup>81</sup> or the [Oaxaca Worm Action Network](#) in Mexico.<sup>82</sup> Find an interested group of friends to join you in starting a community compost site.<sup>83</sup> Brainstorm these questions:



Youth from [BK Rot](#) community composting program. Young people in Brooklyn are creating jobs for themselves by composting over 4,500 kilograms of organic waste from residents and restaurants in their community garden every week, all transported by bike for a zero-carbon footprint solution.<sup>84</sup>

- **Where to put it?** Could you get permission to put a composter in your school or community center? Is there a farm or community garden that could house your composting program? Is this place easy to get to? Does it have access to water?
- **Who will feed it?** Ask local residents and restaurants. How much food waste do they create? Do they understand what is allowed in the compost and why?
- **How will you pick up?** Where will they leave organic waste for you to pick up? How often will you pick it up? How will you transport it?
- **What are the numbers?** How much compost will you transport each week? How much help will you need? Will you charge a fee for your service or finished compost?
- **Is it allowed?** Check into local regulations. Some regions have strict regulations around waste hauling. Do you need an operating license?



<sup>78</sup>Institute for Local Self-Reliance (2018). Guide to Composting Onsite at Schools. <<https://ilsr.org/ilsr-guide-to-composting-onsite-at-schools/>>

<sup>79</sup>Backyard Growers (2017). 23 Ingenious DIY Compost Bin Ideas. <<http://backyardgrowers.com/23-ingenious-diy-compost-bin-ideas/>>

<sup>80</sup>Grow Veg (2013). The Perfect Compost Recipe How to Get your Compost Heap Cooking. <<https://www.youtube.com/watch?v=M1klpCBD3UI>>

<sup>81</sup>Wastenot Farms. (2017). <<http://wastenotfarms.com/>>

<sup>82</sup>SiKanda Solidaridad Internacional Kanda A.C.(2015). Children, youth, and earthworms: a friendship built on the soil. <<https://www.si-kanda.org/ninos-ninas-jovenes-y-lombrices-una-amistad-hecha-en-la-tierra/>>

<sup>83</sup>Someday I'll learn blog. Starting a Community Compost Site. <<https://somedayilllearn.com/community-compost/>>

<sup>84</sup>Vocativ (2018). Meet the Teenage Bikers Composting in Brooklyn. <<https://www.youtube.com/watch?v=zT3f6nQWFAU>>

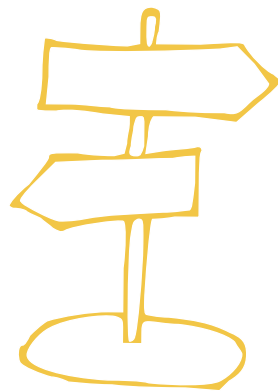


## Design systems to manage food scraps sustainably

A photograph of a blue recycling bin filled with shredded paper, surrounded by a green and white pattern of stylized leaves and circles. The bin is blue and has a perforated metal grate at the bottom. The background is white with a repeating pattern of green stylized leaves and circles. In the bottom left corner, there is a small logo for the CEC (California Energy Commission) featuring a butterfly and a globe.

# Mapping out your Local Waste System

Time: 3-5 days or more depending on complexity



## Making it Happen:

1. Take notes. How are food scraps and organic waste managed in your community? Are they separated from the other waste? Where do the different waste items go? To find out, observe waste collection, ask the waste collector on pick-up day, look on your municipality's website, call the local waste collection companies or ask a local environmental organization.
2. Get the scoop. Find out where various waste streams are taken, research how they are treated and the amount of food waste they treat.
3. Plot points. Using paper or [Google maps](#),<sup>85</sup> mark the location of facilities on the map, noting any places where organics or food scraps are taken. Large-scale facilities, backyard composting, or a company or store that uses food waste by-products—they all count! Use different sized points to show the size of the facilities. You may need to calculate estimates for how much food waste the smaller scale facilities treat or use.
4. What else would you recommend to help divert food scraps from landfills? Is there a perfect location for a community composting site?

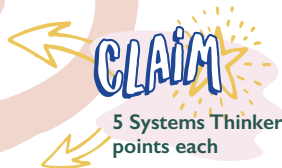
## Waste Stream Map





## Visualize the Data:

1. Do the math. How much organic waste gets diverted (or not) at each type of facility?
2. Create an infographic to help your community or municipality better understand what facilities are available, how waste gets managed and what is lacking. You can use free online software like [Canva](#)<sup>86</sup> to help.
3. Are there similar sized cities or towns that have found good solutions?



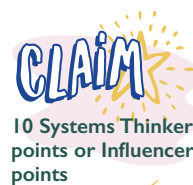
*Did you know?*

Organic waste in landfills creates methane, a greenhouse

gas that is 20–25 times more potent than carbon dioxide. Both of these gases are major contributors to climate change and across Canada, Mexico and the United States are the equivalent to 200 million metric tonnes of carbon dioxide combined. This has the same impact as driving 41 million cars non-stop all year!<sup>87</sup>

## Want to do More?

- How could organics be better managed in your community? Could you compost in local parks or have people bring compostable food scraps to community gardens or farmers markets? Would it be economical for your municipality to invest in a biodigester? Present your ideas to your local decision-makers.



- Zero Food Waste Challenge: Challenge others to participate in a week-long food waste challenge. Make a pledge and create a short video to document your process. Share it at #FoodMattersActionKit. These examples may inspire you:



- [I Value Food: Too Good To Waste Challenge](#)<sup>88</sup>
- [Zero Food Waste challenge](#)<sup>89</sup>
- [We Tried The Zero Waste Challenge For A Week](#)<sup>90</sup>

<sup>85</sup>My Maps (2018). <<https://www.google.com/maps/about/mymaps/>>

<sup>86</sup>Canva (2018). Bring Facts to Life with Canva's Free Infographic Maker. <<https://bit.ly/2PJQmQi>>

<sup>87</sup>CEC (2017). Characterization and Management of Organic Waste in North America—White Paper. Montreal, Canada: Commission for Environmental Cooperation. pp. 48. <<http://www3.cec.org/islandora/fr/item/11770-characterization-and-management-organic-waste-in-north-america-white-paper-en.pdf>>

<sup>88</sup>I Value Food (2019). Too Good To Waste: Take the Challenge. <<https://challenge.ivaluefood.com>>

<sup>89</sup>Buzz Feed Video (2019). Tasty Producers Tried To Not Waste Any Food For A Week. <<https://www.youtube.com/watch?v=GuleZt5OOUY>>

<sup>90</sup>Michelle Khare (2018). We Tried the Zero Waste Lifestyle For A Week. <<https://www.youtube.com/watch?v=6tgptWcKkgc&t=214s>>



# Closing the Loop

Help local businesses design food waste solutions

A circular economy works like nature—everything has value and everything gets used. It is restorative and regenerative. To help envision our future circular economy, check out this great 4-minute video, [Rethinking progress](#).<sup>91</sup>

From waste to resources



Waste management



Circular Economy

Production



Consumption



## From Trash to Treasure

Time: 1-3 days

Your challenge is to find a company, institution or organization that handles or deals with food. For a university, this might be the cafeteria or for a hospital it might be the food services department. Your position as a business analyst is to carry out a SWOT analysis to evaluate the Strengths, Weaknesses, Opportunities and Threats around their food use. It is best to conduct this activity with a group or organization that is open to sharing information or an organization where you have already developed a relationship.



## Making it Happen:

- Identify the food company, institution or organization that may have food-related by-products going to waste. See the Environmental Protection Agency's [Excess Food Opportunities Map](#)<sup>92</sup> for inspiration.
- Meet or speak with a company representative and ask them to identify their waste. How much do they have? What is currently done with it? At what cost? What else could be done with it?
- Record your findings in the SWOT analysis template provided.
- Research ways to use the by-product. Explore the guide from Activity #10 to get started. What kind of space, skills or equipment are needed to take advantage of their by-product?
- Find information about other companies that might want the by-products.
- Present your findings back to the institution along with the SWOT table and a list of recommended solutions.
- Present your findings to your group or class. Explain how the goals of a circular economy can be achieved through your solutions.

SWOT means Strengths, Weaknesses, Opportunities and Threats. A SWOT analysis is a tool used by businesses to understand and improve their operations.



### Strengths

(positive factors that are internal to the organization)



Example: Staff are very knowledgeable about food and food issues

### Weaknesses

(negative factors that are internal to the organization)



Example: Staff members are busy and do not have much time

### Opportunities

(positive factors that are external to the organization)



Example: Co-op programs with universities/ colleges offer subsidized student wages to focus on food waste reduction

### Threats

(negative factors that are external to the organization)



Example: Waste management regulations and associated costs have made greener alternatives unattractive



## Want to do More?

- Feature a Food Hero: Conduct an interview with someone who currently makes something out of another food producer's by-product (for example, crackers made using pulp waste from the juicing industry). How did your food hero contribute to a circular economy? Is their approach based on traditional practices or a high-tech solution? Were they inspired by social or environmental concerns, or purely economical ones?
- Write a blog or showcase this Closed-loop Food Hero on your *Food Matters Action Kit* profile page.
- Recognize their innovation by hosting a first annual Closed-loop Food Hero awards ceremony. Find sponsors to donate a gift for your hero.



Want to learn more about food in the circular economy? Check out these great resources:

- The Los Angeles Area Food Recovery Guide—[Reducing Food Waste: Recovering Untapped Resources in our Food System](#)<sup>93</sup>
- Canada's National Zero Waste Council's [Food Loss and Waste Reduction Strategy](#)<sup>94</sup>

<sup>91</sup>Ellen MacArthur Foundation (2011). Re-thinking Progress: The Circular Economy. <<https://www.youtube.com/watch?v=zCRKvDyyHmI>>

<sup>92</sup>United States Environmental Protection Agency (2018). Excess Food Opportunities Map <<https://www.epa.gov/sustainable-management-food/excess-food-opportunities-map>>

<sup>93</sup>Los Angeles Food Policy Council (2017). Reducing Food Waste: Recovering Untapped Resources In Our Food System <<https://bit.ly/2GA7JnI>>

<sup>94</sup>National Zero Waste Council (2017). National Food Waste Reduction Strategy. <<http://www.nzwc.ca/focus/food/national-food-waste-strategy/Documents/NZWCFoodWasteStrategy-CallforCollaboration.pdf>>

# Top 10 Food Waste

## Prevention Tips

### 1. Plan your meals

Buy only what you'll eat. Cook, freeze or share extra food if your plans change.

### 2. Shop from your kitchen

Check what you already have before buying more.

### 3. Never throw food waste in the garbage

Fight climate change by keeping food waste out of the landfill.

### 4. Compost food scraps

You can compost in a bin in your kitchen with the help of worms, in your backyard and (with permission) even at school, your community center or in an empty lot.

### 5. Keep organized

Storing food properly where you can see it will make sure it doesn't get forgotten.

### 6. Share food

Extra food is a great excuse for a party! Make salvaged-food dinners together and share leftovers with friends and neighbours.

### 7. Use your freezer

Freeze food waste in its tracks right up until its best before date and it will be ready eat when you are ready to enjoy it.

### 8. Learn creative cooking

Learning to make versatile meals, like soups or wraps, will help you find infinite delicious ways refresh wilted veggies and to use up leftovers.

### 9. Rescue food

Try out food rescue apps like [OLIO](#), [Means Database](#) or [Food Rescue](#).

Speak with your local grocer or baker to see what they do with unsold goods at the end of the day.

### 10. Spread the word

Help prevent food waste everywhere!



Notes:



# Food Matters Action Kit Activity Guide

The *Food Matters Action Kit* contains **over 70 activities** to engage youth in preventing food waste.

Activities can be done individually or in a series, in any order that suits learning themes for your class or organization.

There are two sets of activities: for *kids* (ages 5-13) and *youth* (ages 14-25) organized together by theme.






















Many activities are relevant for either age group, so feel free to explore them all!

**Earn badges!** Get recognition for every action you take! Earn points and badges by simply uploading a photo or description of your actions on your profile page. Click the *Join the youth movement* tab to register at:

[www.cec.org/FoodMattersActionKit](http://www.cec.org/FoodMattersActionKit)

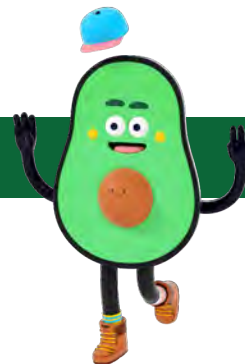


# 1 From Seed to Table

Activities	Duration (30 mins to 1 day or Multi-day)	Designed For ages: (kids, youth, all ages)	Art	Language	Social studies, history & geography	Math	Science & technology	Health	Environment	Claim this many points	Counts towards any of these badges:
Sprout a seed							Understand plant growth		Learn to value food by growing it	5	
Grow food							Understand biology of a seed and plant growth		Learn to grow organic food	10	
Visit a farm					Understand what it is like to grow food for a living		Understand nutrient cycling, plant care and animal husbandry		Learn about our food system	10	
Volunteer at a community garden		All ages			Learn about providing access to fresh, healthy, affordable produce		Learn about plant growth and nutrient cycling	Learn how to grow fresh, healthy produce	Learn to value food by growing it	10	
Start a food garden		All ages			Learn to seek permission, get organized, influence decision-makers	Calculate quantities, growing times, prepare care schedules	Learn to care for soil and of the life cycles of various plant species	Learn how to grow fresh, healthy produce	Learn to grow organic food	20	
Companion planting		All ages			Learn the cultural and historical significance of companion planting		Understand the biological benefits of companion planting		Learn to grow organic food	5	
Track you plants' growth		All ages				Measure and track plant growth	Study plant growth		Learn to grow organic food	5	
Harvest your food		All ages						Learn how to grow fresh, healthy produce		10	
Go gleaning		All ages						Learn about food	Keep food from going to waste	10	



## 2 More Than Just Food



Kid's Action Kit



















Youth Action Kit

Activities	Duration (30 mins to 1 day or Multi-day)	Designed For ages: (kids, youth, all ages)	Art	Language	Social studies, history & geography	Math	Science & technology	Health	Environment	Claim this many points	Counts towards any of these badges:
Corn husk creation		All ages	Get creative		Recognize historical use of local materials		Encourage engineering thinking		Creative reuse	5	
Experiment with corn husks		All ages	Get creative		Recognize historical use of local materials		Encourage engineering thinking		Creative reuse	5	
Share your creations publicly or through social media		All ages		Use creative language to articulate the impact of your use of food waste					Raise awareness	5	
Sharing Stories, Preserving Food (Interview an elder)				Use stories to share knowledge	Research historical practices through interviews					10	  
Compile a cookbook of zero food waste family recipes			Use drawings photos and design to make your cookbook attractive	Capture recipes, techniques and stories in the cookbook	Share intergenerational knowledge				Share zero-waste cooking recipes and techniques	10	  
Edit your audio recording and get it broadcast			Make an impact with creative use of music and audio effects	Prepare, write and edit interview material for maximum impact			Use audio equipment and editing technology to prepare final podcast			20	
Cook together with an elder					Explore inter-generational knowledge-sharing			Learn healthy cooking techniques	Learn food waste prevention techniques	10	 






















### 3 Celebrating "Ugly" Food



Activities	Duration (30 mins to 1 day or Multi-day)	Designed For ages: (kids, youth, all ages)	Art	Language	Social studies, history & geography	Math	Science & technology	Health	Environment	Claim this many points	Counts towards any of these badges:
Design an "ugly" food superhero poster		All ages	Encourage cre- ativity, drawing and design skills	Use language to share an important message					Raise awareness about the environmental impact of wasting food	5	
Create a comic strip story		All ages	Encourage cre- ativity, drawing and design skills	Encourage story telling and use of dialogue	Address social issues associated with judgment based on appearance		Address environmental impacts of food waste	Address the importance of eating fruits and vegetables		10	
"Ugly" food taste test		All ages					Experiment using senses			5	 
Comic Competition		All ages	Celebrates cre- ativity	Requires preparation of messaging for promotion and presentation						10	
Prepare an "Ugly" food meal		All ages						Learn to cook with fresh produce	Learn how to keep food from getting wasted in the kitchen	10	 
"Ugly" food heroes media project			Use comic strip, animation, or film-making to tell a compelling story	Prepare impactful language to accompany the chosen media	Use your chosen media to address social and environmental issues				Raise awareness about the environmental impact of wasting food	10	
Host a film screening of your work			Design promotional materials	Prepare messaging, promotions and MC notes					Raise awareness about the environmental impact of wasting food	20	

## 4 Mission Possible: Stop Food Waste at its Source

### Kids' Action Kit




























Activities	Duration (30 mins to 1 day or Multi-day)	Designed For ages: (kids, youth, all ages)	Art	Language	Social studies, history & geography	Math	Science & technology	Health	Environment	Claim this many points	Counts towards any of these badges:
Food waste detectives inventory and meal plan		All ages			Study human behavior to get to the root of a problem	Calculate money spent on wasted food	Use charts to record observations		Study household behavior to reduce food waste	5	 
Prepare a rescued food meal		All ages						Learn to cook with fresh produce	Learn to cook to prevent food waste	10	 
Share your salvaged meal ideas		All ages	Use drawing or photography to share before and after images of the food you salvaged	Write a description or recipe for your meal and share how you prevented food waste					Promote your food waste prevention creations	5	
Your Mission: Getting to the Root of Food Waste	 				Study human behavior to understand root causes of issues and develop solutions		Uses detailed observation, recording and analysis to make conclusions		Study household behavior to reduce food waste	5	 
Food Waste Manifesto	 			Use pointed language to influence behavior	Understand the impact of language on behavior				Promote action on food waste prevention	5	
Before and After Waste Audit	 					Use measurement to weigh and categorize food waste	Use analysis and comparison to understand causation		Measure discards to understand how food waste can be prevented	10	 

### Youth Action Kit

# 5 Garbology

Kids' Action Kit

Youth Action Kit

Activities	Duration (30 mins to 1 day or Multi-day)	Designed For ages: (kids, youth, all ages)	Art	Language	Social studies, history & geography	Math	Science & technology	Health	Environment	Claim this many points	Counts towards any of these badges:
Simple food waste audit		All ages				Use weighing and sorting to measure food waste	Use simple scientific methods to understand a problem		Understand what is getting wasted and why	10	 
Food waste prevention posters		All ages	Use creativity to express an important concept	Use language to influence behavior					Raise awareness about food waste	5	 
Brainstorm food waste prevention ideas		All ages			Uses creative thinking to shift human behavior				Find solutions to food waste	5	 
Second waste audit		All ages			Study impact of posters on human behavior	Use weighing and sorting to measure food waste	Use simple scientific methods to measure the impact of a solution		Study impact of posters on human behavior	10	 
Share your results		All ages	Find creative ways to share information	Use language to encourage behavior change		Express mathematical results clearly and with impact	Explain scientific results clearly and with impact		Raise awareness about solutions	5	 
Categorized Food Waste Audit		All ages				Use measurement and categorization to understand an issue			Understand what is getting wasted and why	10	 
Make posters and share results		All ages	Use creative techniques to raise awareness	Use language to influence behavior					Raise awareness about food waste	5	
Make new bins and labels		All ages	Use carefully thought out design to shift behavior	Use language to influence behavior	Study human behavior to understand an issue				Help others to prevent food waste	10	
Second waste audit		All ages				Use weighing and sorting to measure food waste	Use simple scientific methods to measure impact		Study impact of posters on human behavior	10	 
Measure your greenhouse gas reductions		All ages				Use calculations to measure impact			Calculate your impact on reducing climate change	5	





## 6 Food Innovators

Activities	Duration (30 mins to 1 day or Multi-day)	Designed For ages: (kids, youth, all ages)	Art	Language	Social studies, history & geography	Math	Science & technology	Health	Environment	Claim this many points	Counts towards any of these badges:
Food Waste- Fighting Popsicles								Learn to prepare healthy snacks	Prevent waste by rescuing food	5	
Promote your earth-saving flavor			Use creativity to share an important message	Use language to share an important message					Promote food waste prevention	5	
Sell your Popsicles as a fundraiser					Support a social cause					5	
Rescue food in another way								Learn to prepare healthy meals	Practice food rescue	5	
Food Preservation Exploration					Research historic means of preserving food				Rescue and preserve food	5	
Make Watermelon Rind Pickle						Practice using recipes, measurement and timing	Learn about the role of acidity in food preservation		Rescue and preserve food	5	
Create a cookbook of food preserva- tion techniques and recipes			Use drawing, photography and design to make the cookbook appealing	Include stories, histories and carefully worded instructions with recipes	Use research to discover historic and common preservation techniques	Use math to test recipes and convert measurements			Share knowledge to promote food waste prevention	10	
Build a solar dehydrator						Use measurements and calculations to prepare and assemble building materials			Use renewable energy to prevent food waste	20	



# 7 Food Rescue & Sharing

Activities	Duration (30 mins to 1 day or Multi-day)	Designed For ages: (kids, youth, all ages)	Art	Language	Social studies, history & geography	Math	Science & technology	Health	Environment	Claim this many points	Counts towards any of these badges:
Present food sharing celebrations			Creatively present what you learned	Learn to research and present	Learn about other cultures traditions around food sharing					5	
Make stone soup								Learn to make healthy soup	Rescue food	5	
Attend a harvest festival					Learn about cultural relationships to harvest and food preparation					5	
Start a soup making club		All ages			Learn about supporting other community members through food rescue	Learn to use measurements to cook for large groups		Learn to make healthy soup	Make a habit of rescuing food	10	
Mini Disco Soup Party		All ages						Learn to make healthy soup	Rescue food to eat	5	
Mega Disco Soup Party			Use art, photography and design to promote your event	Prepare a media release		Estimate attendance, measure rescued food, cook for quantities		Learn to make healthy soup	Rescue food and promote food waste prevention	20	

Kid's Action Kit















Youth Action Kit



# 8 Get Composting!

Kid's Action Kit

Youth Action Kit

Activities	Duration (30 mins to 1 day or Multi-day)	Designed For ages: (kids, youth, all ages)	Art	Language	Social studies, history & geography	Math	Science & technology	Health	Environment	Claim this many points	Counts towards any of these badges:
Understand- ing edible and unavoidable food waste							Understand compost and organic material		Understand compost and organic material	5	
Start a worm composter							Understand the role of worms in breaking down plant material		Compost organic waste instead of sending it to landfill	10	
Build an out- door composter		All ages					Learn about decomposition and the nutrient cycle in nature		Compost all your organic waste	10	
Build your own composter		All ages					Learn about decomposition and the nutrient cycle in nature		Compost all your organic waste	10	
Start a community compost program				Develop plans to gain permission and promotional materials to clearly define how your program works	Research local regulations around community composting	Calculate estimates for numbers of participants, food waste to be processed, employee work hours, and fees charged for your services	Understand the biology behind maintaining healthy compost		Grow composting in your community	20	 





# 9 Where does it all go?



## Kids' Action Kit

Activities	Duration (30 mins to 1 day or Multi-day)	Designed For ages: (kids, youth, all ages)	Art	Language	Social studies, history & geography	Math	Science & technology	Health	Environment	Claim this many points	Counts towards any of these badges:
Study existing bins		All ages	Share results creatively	Use language to articulate findings	Study human behavior to solve a problem		Use observation to study a problem			5	
Design your own green bins and labels		All ages	Use creativity to design a better bin				Translate findings into workable solutions		Help improve diversion	5	
Conduct before-and- after waste audits		All ages				Measure and sort waste	Study waste to understand behavior and impact of design		Test your impact	10	
Share this activity with a pen pal		All ages	Use photography or drawings to share designs	Write with pen pals, possibly in another language	Explore other places, discover different in designs		Learn how design influences behavior			5	
Share your bin designs on social media		All ages	Use photography or drawings to share designs	Use language to articulate your design thinking and impact					Promote good environmental design	5	

## Youth Action Kit














Map out your local waste system					Develop research, interview, and mapping skills					10	
Do the math						Research, calculate, and estimate quantities of waste managed in various facilities				5	
Create an infographic			Use art and design to express systems in a clear and impactful way						Promote understanding of local waste systems	5	
Develop system improvements and present recommendations					Use research, design, and presentation skills, influence decision- makers				Improve sustainability in your local waste system	10	
Zero waste challenge		All ages			Use self- reflection and analysis				Grow sustainable habits	10	

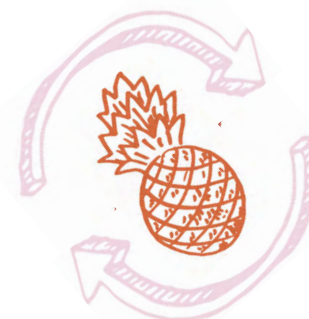


# 10 Closing the Loop: Towards a just and sustainable food system

Kids' Action Kit

Youth Action Kit

Activities	Duration (30 mins to 1 day or Multi-day)	Designed For ages: (kids, youth, all ages)	Art	Language	Social studies, history & geography	Math	Science & technology	Health	Environment	Claim this many points	Counts towards any of these badges:
Play the Race to the Heart of the Circular Economy Game		All ages			Use creative thinking to find uses for everyday food waste materials	Counting	Use creative thinking to find uses for all types of food waste materials		Learn about circular systems thinking	5	
Invite a food entrepreneur to play		All ages			Use creative thinking to find uses for everyday food waste materials and learn to influence a public figure				Explore circular systems thinking with a local business	10	
Trash to Treasure - Support a local business in seeking food waste solutions					Combine your skills to learn about a business and help them seek effective food waste solutions	Combine your skills to learn about a business and help them seek effective food waste solutions			Explore circular economy thinking with a local business	10	
Feature a Food Waste Hero in a blog				Share the story of a successful food waste innovator					Promote circular systems thinking	10	
Feature a Food Waste Hero with an awards event				Combine your skills to organize an impactful event					Promote circular systems thinking	10	



For more information:

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