

Today I Learned About What I Eat

Description:

Climate change affects food, but food also affects climate change. Students investigate causes of and solutions to food waste, plant-based recipes to get excited about, and the diversity and variety of heirloom foods.

Skills & Objectives

SWBAT

- Explain the link between food waste and climate change.
- Understand why some foods have a higher climate impact than others.
- Describe varieties of an heirloom food.

Skills

- Online research
- Communication

Students Should Already Know That

- There are many steps in the process that gets our food from where it is grown or raised to on our plates.

Standards Alignment:

HS-ETS1-2 Design a solution to a complex real-world problem by breaking it down into smaller problems that can be solved through engineering.

HS-LS2-7 Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity.

RST.11-12.9 Synthesize information from a range of sources into a coherent understanding of a process, phenomenon, or concept.

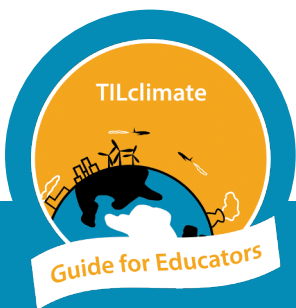
WHST.9-12.7 Conduct short as well as more sustained research projects to answer a question

Disciplinary Core Ideas:

ESS2.D Weather and Climate

ESS3.C Human Impacts on Earth Systems

ESS3.D Global Climate Change



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How To Use These Activities:



Pages with the circular “TILclimate Guide for Educators” logo and dark band across the top are intended for educators. Simpler pages without the dark band across the top are meant for students.

Each of the included activities is designed to be used as a standalone, in sequence, or integrated within other curriculum needs. A detailed table of contents, on the next page, explains what students will do in each activity.

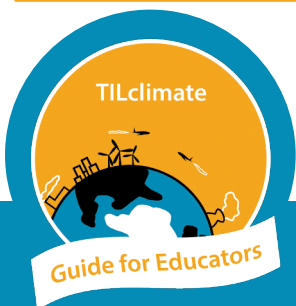
A Note About Printing/Materials

All student pages are designed to be printable in grayscale.

The worksheets do not leave space for students to answer questions. Students may answer these questions in whatever form is the norm for your classroom – a notebook, online form, or something else. This allows you, the teacher, to define what you consider a complete answer.

Podcasts in the Classroom: Throughout these Guides for Educators, we invite students to think about how they would share their learning with family and friends. One way to do this is to encourage your students to create their own podcasts - they're shareable, creative, and have multiple options for embedded assessment. We would love to hear any podcasts or see any other projects you or your students create! Email us at tilclimate@mit.edu, Tweet us @tilclimate, or tag us on Facebook @climateMIT.

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Social-Emotional Learning

Food is extremely personal. When talking about the intersection of food and climate, consider the differential needs of students who:

- may experience food insecurity, poverty, eating disorders, and/or a lack of control over what they eat at home. Discussions of food choice and food waste may impact these students differently than those from food secure households.
- come from families that grow food (especially beef cattle). These students may react to information about the climate impact of beef.
- have chosen to become vegan or vegetarian for climate-related reasons. They may require support to have constructive conversations with students who have not made these changes.
- are from Indigenous, enslaved, and/or immigrant backgrounds. These communities are often separated from their traditional and ancestral foodways.

The activities in this guide are designed to allow educators to differentiate and support students as they explore food waste, plant-based eating, and crop varieties. One way to do this is to allow students to choose which of these three topics they engage with.

Differentiation

The three activities in this Guide can take similar amounts of time, depending on the requirements for *Food and Climate* and *Heirloom Foods*. Educators may have student groups choose which of the three topics – food waste, food and climate, and heirloom foods – they engage with. To balance time if students are doing these activities *simultaneously*:

Remove USDA Data from *Food Waste*: Page 2 is a data activity that can slow students down. Include the page, but do not require students to graph the data.

Bonus Activity for *Food and Climate*: Climate change affects food production, too. Read about ways that farms are adapting to drought, flooding, and/or heat.

<https://www.climatehubs.usda.gov/hubs/topic/adaptation-resources-agriculture-case-studies-using-adaptation-workbook>

Bonus Activity for *Heirloom Foods*: Many of the crops you might investigate are originally from another continent. Find out the name of the Indigenous people whose traditional lands you live on and research their foods and stories. <https://native-land.ca/>



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Detailed Table of Contents

Page	Title	Description	Time (min)
	Podcast Episode	Students listen to TILclimate: TIL about What I Eat, either as pre-class work at home or in the classroom. https://climate.mit.edu/podcasts/til-about-what-i-eat	10-15
1-5	Food Waste	Students investigate the causes and impacts of food waste, and then invent a solution.	30-45*
6	Food and Climate (internet required)	Students research a plant-based recipe that they could introduce to their family or friends.	20-30*
7-8	Heirloom Foods (internet required)	Students research heirloom varieties of a chosen food crop, to see the diversity of foods available.	20-30*

*See *Differentiation*, previous page



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Food, Food Waste, and Climate

This Educator Guide includes three investigation activities. Educators may pick and choose among the pieces of the Guide, as suits their class needs.

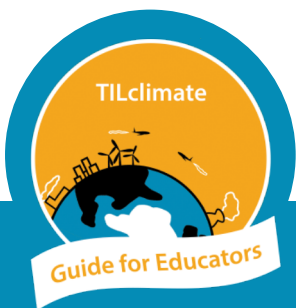
Parts of this Guide may align with the following topics:

- Physical science: Production of heat-trapping gases such as methane and nitrous oxide.
- Engineering: Challenge to develop a solution to food waste.
- Life/environmental science: Impacts on ecosystems from agriculture, agricultural practices.
- History/social science: History of food, colonial impacts on Indigenous foodways
- ELA/literature: Connections to stories about farming, farms, and foodways.

MIT Resources

We recommend the following as resources for your own better understanding of climate change or as depth for student investigations. Specific sections are listed below:

- Climate Science, Risk & Solutions, an interactive introduction to the basics of climate change. <https://climateprimer.mit.edu/>
 - Chapter 02 The greenhouse effect and us
 - Chapter 06 Predicting climate
 - Chapter 08 What are the risks?
 - Chapter 10 What can we do?
- MIT Climate Portal Explainers are one-page articles describing a variety of climate topics. New Explainers are posted monthly. <https://climate.mit.edu/explainers>
 - Food Systems and Agriculture
 - Fertilizer and Climate Change
 - Soil-based Carbon Sequestration



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Wrap-Up Discussion Questions

- What are some technologies, laws, or practices that can reduce food waste and loss? Explain the relationship between food waste and climate change.
- Why do some foods have a larger climate impact than others? How does eating more plants generally have a lower impact?
- Looking at where crops were before European colonization – which ones surprised you?
- How many varieties of your chosen food did you find? Did that surprise you? What were some of the best names you found?
- In the podcast, Dr. Rosenzweig talks about the importance of healthy food being “available, affordable, nutritious, reliable”. What programs and practices have you seen that make the variety and choice we’ve been talking about accessible to people experiencing food insecurity? (Think about programs that give extra food assistance for people shopping at farmers’ markets, etc.)

Climate Solutions

Climate solutions can be thought of as falling into four categories outlined below. Across all categories, solutions at the community, state or federal level are generally more impactful than individual actions. For example, policies that increase the nuclear, solar and wind mix in the electric grid are generally more effective at reducing climate pollution than asking homeowners to install solar panels. For more on talking about climate change in the classroom, see “How to Use This Guide”.

• Energy Shift

How do decision-makers make the switch from carbon-producing energy to carbon-neutral and carbon-negative energy?

• Energy Efficiency

What products and technologies exist to increase energy efficiency, especially in heating and cooling buildings?

• Adaptation

How can cities and towns adapt to the impacts of climate change?

• Talk About It

Talking about climate change with friends and family can feel overwhelming. What is one thing you have learned that you could share to start a conversation?

What solutions are the most exciting in your classes? We would love to hear from you or your students! Images, video, or audio of student projects or questions are always welcome. Email us at tilclimate@mit.edu, Tweet us @tilclimate, or tag us on Facebook @climateMIT.

