Chapter 5: Food
Science, Ethics, Spirituality, Action

https://healingearth.ijep.net/food

Introduction

The Healing Earth team asks that when you use any aspect of this teacher guide or the lesson modules that you please send an email sharing: 1) how you used the resource, 2) how your students responded to the resource, activity, or lesson, and 3) what changes you would recommend for future versions of the guide. Please email Dr. Michael Schuck (mschuck@luc.edu) and Dr. Nancy Tuchman (ntuchma@luc.edu). The information that you share will help improve these resources for your and others’ use. We appreciate your feedback.

Overview

The goal of this chapter is to understand the science and historical development of food systems, and connect that with an ethical analysis, an environmental spirituality, and plans for action. Students connect closely with this chapter through the act of eating because we all require nutrition each day in order to complete bodily functions. Although students have a close relationship with food, they may not always have a direct relationship with food. This chapter polishes students’ scientific understanding of food webs, nutrient cycles, and soil formation, and asks students to reflect on the ethical challenges posed by modern methods of agriculture in order to deepen their sense of connection to the natural world. Students should be able to recognize agriculture techniques and identify their respective global environmental impacts. Students can apply their knowledge of the complex food system, evaluate
ethically, and further connect their spiritually to land by taking action in ways that are healthy for themselves, their communities and the Earth’s ecosystems.

**Learning Objectives**

1. Investigate a **case study** that raises issue of food science, ethics, spirituality and action.
2. Be able to place organisms into **trophic levels** and outline their **food web**.
3. Identify the five steps of the **food system**.
4. Explain why the **science of energy** is important in the basic understanding of **nutrient cycles**.
5. Differentiate **soil profiles** of various ecosystems across the globe and identify what type of **soil fertility** is suitable for growing food in **sustainable food systems**.
6. Explain some of the **ecological impacts** of **industrial** agriculture and discuss the benefits and drawbacks of the **Green Revolution**.
7. Be able to identify and describe methods in **sustainable agriculture** that minimize input, are less land-intensive, and help manage waste.
8. Analyze key **ethical challenges** that consumers and farmers face regarding agricultural practices, recognize similarities and differences, and understand the **moral principles, virtues and goals** that help guide decisions for each group.
9. Describe how **spirituality** has an impact on land use and how people choose to grow and interact with their food.
10. Discover rituals or beliefs that celebrate food from different **world religions**.
11. Identify **actions** that address food issues that the world faces today.

**Connections of this Chapter to Ignatian Pedagogy**

An integrated understanding of food engages students as **whole human beings**, inviting them to connect their scientific curiosity, their moral lives, their deepest convictions, and their energy to act. This follows the spirit of the Ignatian Pedagogy, the method at the heart of *Healing Earth*. In *HE*, you are first invited to “see scientifically” and relate what you see to your own experience. Next, you are asked to reflect on the values (“evaluate ethically”) and meaning (“reflect spiritually”) that emerge in the study of
environmental science. Finally, you are challenged to take the knowledge you have gained and act to heal the Earth (“act effectively”).

When we elaborate this Ignatian Pedagogy figure with the major topics covered in the Food Chapter, the following graph emerges (see graph on next page).
Environmental science taught through the method of Ignatian Pedagogy begins with science education. However, with this method, teachers must be sensitive to (and aware of) each student’s ‘entry point’ into the subject matter. A student may come to the subject as an environmental activist; they should be affirmed (and guided) in that activism, but also led to further knowledge of the science, ethics, and spirituality of environmental science. Or, a student may come to the subject with deep religious sympathy to the natural world; they should be affirmed (and guided) in that attachment, but also led to further knowledge of the science, ethics, and actions that are part of a thorough understanding of environmental science. The point to keep in mind is that the major topic areas in each HE chapter are movable; you can enter the chapter at any topic area and move along to the remaining topics in the order you find most helpful.

**Lesson Outline and Suggested Activities**

Keep in mind that while the activities below are presented in a linear outline form, HE emphasizes an integrated approach that encompasses science, ethics, spirituality, and action. It is important that
students do not see these as separate topics but as mutually reinforcing, interconnected dimensions of each subject, whether that be biodiversity, natural resources, energy, water, food, or global climate change.

I. Case Study: Guatemalan Palm Oil: *Raises scientific, ethical and spiritual questions that will be further explored.*

This chapter opens with a case study about palm oil production in Guatemala to pique students’ interest in agriculture, food, and land use issues around the world. Topics that are introduced include but are not limited to:

- Commodification
- Deforestation
- Overconsumption
- Political and economic relationships
- Water pollution
- Land rights
- Cultural and religious differences related to land use

Use the following questions to guide the students’ thinking and reflection through the lens of the case study. These questions can be discussed in class or be incorporated as a free writing activity. Or, use an example of a case study in your region of the world to relate to the topics studied in this chapter:

- Discuss what foods and products students may use on a daily basis that contain palm oil. Are students aware? Were you aware? What are ways in which we can find more transparency in our food and food products? Is it important to have transparency?
- Describe the relationship between the economy, agriculture, public health and international policies. What has guided decision-making in this case study and what are some moral principles and moral virtues that can steer these decisions?
- Explain why land rights and land use is a paramount topic when it comes to agriculture, public health, and ecosystem nourishment.
- Do you think humans over-consume palm oil or do you think there are benefits? Explain what you think using what you’ve learned about environmental ethical foundations.
- What role do social justice organizations, indigenous populations, and other groups of people in solidarity have in a case study such as this?

Pay special attention to the questions provided at the end of the case study to accompany any class activity.
II. Food and Science: *Gains a strong scientific understanding of food systems, biogeochemical cycles, and healthy ecosystems to understand modern ways people obtain food.*

This section contains many major sections:

- The Ecology of Where Food Comes From
- Historical Development of Agriculture
- Ecological Impacts of Modern Agriculture
- Sustainable Agriculture

After this chapter, students should be able to demonstrate knowledge about methods of agriculture and relate this chapter to previous chapter topics. As you are going through the lessons, make sure to pay attention to the “Closer Look” and “Looking Ahead” boxes and expand on these as wanted. Make sure that students are continually reflecting back to the questions and objectives explained at the beginning of the chapter. Try and make connections to the students’ own communities and interests.

Assignments/Projects:

1. **How did that get into my lunchbox?:** Prepare students in groups and assign each group a fruit, vegetable, grain, or type of meat. Each group completes a research project tracing the steps that their assigned food item traveled in the food cycle from production, processing, distribution, consumption, and to its final disposal. Groups should be as specific as possible. Some topics to include are: country that the food was grown in, processed in, etc. type of industry food group is found (ex. CAFO vs grass-fed for cow meat), type of method of agriculture food was most likely grown in (industrial, sustainable, traditional), and anything else you can think of. Feel free to throw in some twists such as adding an organic or locally grown item in one of the groups. After this project is complete, facilitate a discussion around the findings of each group, and the ecological impacts each food item may have on the globe, and use it to relate to HE’s ethical guidelines, spiritual reflection, and action questions.

2. **Soil Type Lab:** Grow a food in your classroom paying attention to soil type. Split students into groups and assign them a different variable. Variables include, but are not limited to, compacted vs. undisturbed soil, nutrient levels, fertilizers, and mixing and matching soils (percentage of sand in soil).

3. **Documentary:** Some recommended documentaries related to food are as follows: King Corn (2007), Food Inc. (2008), More than Honey (2012), Empty Oceans, Empty Nets (2003), Farming the Seas (2004).

4. **Compost and Plant a Class Garden:** Practice sustainable gardening in the classroom. Use this website https://www.growing-gardens.org/wp-content/uploads/2013/03/Growing-Gardens-Youth-Grow-Lesson-Plan-Manual-Jan-2016.pdf to guide your class. Although it is intended for children, it has many tools that can be used in a high school setting. Obtain water from rain
barrels collected at the school, compost using lunch scraps, and have a party celebrating the fertility of the Earth and eat the food you’ve grown at the end of the year. Be creative with the recipes. Have lessons throughout the various stages of the plants’ life cycle. If you don’t have the ability to plant a full garden, perhaps plant something indoors and use the school year to take care of the plants.

III. Food and Ethics: Guide students in their navigation of the principles, goals, and virtues that will allow them to make more informed choices in healing our Earth.

It is important that you understand the logic that holds together the environmental ethic presented in HE. As explained in the Teacher Guide Introduction, the ethic is built on three foundations: the intrinsic value of nature, the instrumental value of nature, and the value of sustainability. The value of sustainability should shape how we use nature (instrumental value); by using nature in a way that neither exhausts nor degrades it, we honor the integrity of the natural world (intrinsic value).

From these foundations a set of moral principles, goals, and virtues are derived that aid us in thinking through moral challenges that surface as human beings interact with the natural world. The foundations, principles, goals, and virtues used in HE are rooted in Roman Catholic social thought. You can see how these are presented and employed in such texts as Pope Francis’ encyclical Laudato Si’ (2015), Pope John Paul II’s message The Ecological Crisis: A Common Responsibility (1990), the Southern African Catholic Bishops Conference’s Pastoral Statement on the Environmental Crisis (1999), the Australian Catholic Bishops' statement A New Earth: The Environmental Challenge (2002), or the United States Conference of Catholic Bishops’ pastoral statement Renewing the Earth: An Invitation to Reflection and Action on Environment in Light of Catholic Social Teaching (1991). All these texts are available on the internet at the provided hyperlinks.

Understanding the background logic to HE’s environmental ethics is not, in the first instance, for the purpose of teaching it to your students. Rather, the purpose is to help you feel more comfortable taking a single foundation or norm and exploring it in depth with your students. You may, for example, wish to lead a class discussion on what the intrinsic value of nature means and what bearing this might have on the issue of species extinction. In other words, consider approaching the Ethics Section with an emphasis on depth rather than coverage. Your students may eventually develop a sense of what it means to have a coherent environmental ethic, but a better place to start is often with a specific ethical idea in relation to a specific moral problem.

There are many ways to conduct an informative exploration of environmental ethics as it pertains to food. You may wish to facilitate small and large group discussion, a class debate, or a case study analysis.

Small and Large Group Discussion
The following articles were gathered from three major regions of the world discussing themes related to food and agriculture. Introduce the articles with students and facilitate a discussion that addresses the
moral principles and moral virtues that are discussed in each article. Some questions that you can consider are as follows:

- Subsidiarity seems to be a major theme in each of these examples. Why is it important that decisions are made at the appropriate level? Give some examples of the consequences that can occur when decisions are made at inappropriate levels.

- Is the moral principle preferential option for the poor demonstrated in these examples? Why or why not? If not, how can this moral principle become a priority? Which actors are involved?

- Identify the groups of people working to encourage universal destination of goods. Explain what is happening in each of these cases and how universal destination of goods is being encouraged.

- Name a prominent moral virtue in each of these case studies. Give an example and explain.

- What moral problems come to mind when reading about the issues depicted in the articles? What moral virtues come to mind that can help cultivate a healthier community and Earth?

North America: Food security is sometimes thought of as an issue exclusive to developing countries. Here is some interesting information on Canada's national food security plan. Focus on pages 8 - 18 to answer some of the questions above.

South America: Rural women in Peru are playing a key role in reducing hunger and improving food security, but they remain invisible and vulnerable. Read about Aymara women here to learn more about their struggles and achievements.

South Asia: An invasive pest from the Americas is threatening India's food security. Read about it here.

Class Debates
The following regional reports discuss the influence that technology and innovation have on solving some of the world’s greatest threats to feeding a growing population and environmental destruction. Split students into groups and have them come up with a list of pros and cons on the uses of technology based on the articles below, knowledge acquired through HE, and extra research on innovation techniques related to food. Refer to other chapters to think about both the benefits and drawbacks of technological uses. How will natural resources be affected if we relied solely on technology? What lessons can be learned from the Green Revolution and innovations in industrial agriculture, sustainable agriculture? What are ways to encourage innovation and creativity while ensuring all voices are being accounted for? How can we feed a growing population? Discuss the social, environmental, cultural, ethical, and economic implications. Facilitate a debate between groups after they have determined a stance on the ethics of technology.

Asia Pacific: It is estimated that the food wasted in China each year could feed 100 million people. In the Asia Pacific region, food waste and food loss along the supply chain has been recognized as a major problem. Can there be a 'technology fix' to this problem? Read this report.
Europe: Some people believe European innovation will lead the 21st century food system. Read this article from FoodTank.

Case Study Analysis
It can be a challenge for students to extrapolate all the pertinent information when reading a case study for the first time. Sometimes it can be difficult to discern moral values because the actors involved tend to stand on different ethical foundations from one another. Below you can find a case study about genetically modified soy, its effects on the native region’s people, land, and economy, and an article about the soy industry. Read the following case study and the article on genetically modified soy and decide if the ethical foundations discussed in HE is being recognized when making decisions in these two examples. Then, write down what moral principles and moral virtues are being practiced by each of the actors involved in the examples. Encourage students to research other case studies about soy to help them reflect on their own values regarding monocultures and food, nature and society, and the global market.

North America: Mayan beekeepers of Mexico are running into trouble when Monsanto, a United States agrochemical and agricultural biotechnology corporation, is given permission to plant genetically modified soy. Read about this case here.

Learn about Monsanto and the soy industry here. Use this article to think about the food industry and search other related case studies.

IV. Food and Spirituality: Help students identify core convictions about the meaning and value of food and the historical basis of these core convictions.

It is very important, here, that you have a clear understanding of the approach taken toward spirituality in HE. Spirituality will undoubtedly be the most challenging part of HE for teachers and students to accept as related to environmental science. It will be tempting to move through the topic quickly, or not at all. This would, however, degrade the very purpose of HE, which is to educate the whole person in environmental science. And spirituality is part of what makes up a whole person.

The difficulty is that most people immediately associate spirituality with either religion or some kind of mystical activity. The association of spirituality with religion is a problem for many people due to the history of some religions denying the results of science or intruding into the work of scientists. The association of spirituality with mystical activity is a problem for many people because, again, this activity seems completely unrelated or dismissive of science.

It is important that you help your students understand that spirituality is--in the first instance--a constitutive feature of every human life. Students need to understand that all people have a spirituality—that they have a spirituality. As stated in the Teacher Guide Introduction, HE begins with the view that spirituality is "the energy and content of beliefs that lie at the core of [every] human being's personal identity." This is why every Ethics Section in HE invites students to probe their fundamental thoughts and feelings about the natural world. This is an invitation to explore their 'inner spirit', or spirituality.

A second dimension of spirituality that HE discusses is the sense of 'awe' that people often experience when encountering the beauty, complexity, or power of the natural world. When our senses are affected
in a lasting way by these intrinsic features of the natural world, we are coming near to what is truly 'set apart' or sacred in an element of nature. By calling something in nature ‘sacred’, we are saying that it has an inner quality that communicates power, or ‘wholeness’, beyond common human measurement. Experiences of awe and sacredness in nature can be life changing.

Finally, *HE* relates spirituality to the beliefs and rituals of the world's religions as they pertain to the natural world. In addition to their teachings, every religion in the world incorporates elements of the natural world into its rituals and practices. In our ever-expanding global village, it is important for our students to learn about the world’s religions.

With this in mind, the Spirituality Section of the Food chapter invites students to explore what food means to them, how people experience food as sacred, and how the world's religions treat food in their beliefs and rituals. The spirituality of food is deeply historical and connected with many students’ experiences. The material in this section can provide a breadth of information to connect with how students understand food both scientifically and spiritually. The following activities can help to support these connections.

**Food and Personal Spirituality**

For homework or as an outside activity, ask students to pick a mealtime and to bring their undivided attention to the act of experiencing food. Did they cook their meal? Did they buy their meal? How does the food taste? Was this food shared with you? Did you share the food with others? What senses are activated as you eat? What did you eat? Can you focus solely on the act of eating and experiencing food? What thoughts and/or feelings crossed your mind? Do you feel different after eating versus before? Note any changes in the body and/or mind. Have students write a reflection after having a mindful experience with their energy source and any thoughts or reflections that came up during the experience. How does an everyday act turn into something important and mindful?

**Food and Sacred Experience**

Ask students to think of an ‘awesome’ experience they have had with food, such as a memorable meal or a dish that they love. Ask them, too, to discuss any traditions related to food that either they practice in their family or have partaken in. This can vary from student to student based on ethnicity, region, culture, and religion. It can be as common as a holiday celebrated each year, or something unique to their immediate family values. Have students think creatively and then share their experience either in groups or with partners. Embrace the diversity that students bring to the conversation and facilitate a class discussion about how food is perceived in these traditions and sacred in the experience.

**Food in the World’s Religions**

Ask students to research a food ritual in a religion, tradition, or culture that they do not share. How are the qualities and connection with food related to your own life? Are there any similarities? What qualities do the people practice in the ritual with food? How do the various traditions treat food, food celebrations, and/or consumption? Some religions have days and even weeks of fasting, reflect on this practice.

**Food Examen**

If your students are Catholic Christians, you may want to lead them in the following Jesuit Examen that focuses on Food.
Ask your students to quiet themselves, close their eyes, and breathe deeply and calmly. Remind them that they are in the presence of God. Invite the students to take a moment in the silence of their hearts to ask the Holy Spirit to be with them in this Examen.

Ask them the following questions and pause for 30 seconds in between each:

Review the events of today from the moment you woke up. Have you eaten today? What did you eat? What will you eat later?

Do you ever feel grateful to God for the gift of food? Why or why not?

Have you done any damage to the Earth’s land today? Ask for forgiveness from God for your shortcomings.

How could you better appreciate and support land and food in the future? Ask for the strength and knowledge to support our sources of food in ways that praise, reverence, and glorify God above all else.

Close by reciting the following Ignatian prayer of generosity: “Lord, teach me to be generous. Teach me to serve you as you deserve. To give and not to count the costs. To fight and not to heed the wounds. To toil and not to seek for rest. To labor and not to ask for reward, save that of knowing that I do your will. St. Ignatius, pray for us.”

**V. Food and Action:** Guide students in identifying personal actions to restore, protect, and preserve Earth’s water resources in their own community, region, and nation.

How can we use our scientific, ethical, and spiritual knowledge to act in ways that heal the planet? What is currently happening in various parts of the world to address global and local food issues? Are there actions taking place in the students’ communities that bear on the topic of food and agriculture? Are there actions that we take in our personal lives that help heal the Earth? These are the questions addressed in the Action Section.

**Actions in the World**
Locate ‘Food and the World’s Religions’ activity which can be found in the Food and Spirituality section. Based on the students answers and responses to a food ritual, tradition or culture, host a classroom food-sharing, culture-sharing day. Ask students to make something at home that either relates to their own family traditions, or a tradition that they are not part of, and bring it into school to be shared. Talk about the variety of food, recipes, and places in which the food is grown. Make this day a day of sharing, learning about care, compassion, openness, and reflecting on the ethical foundations, principles, and virtues. How can food and sharing contribute to help nurture a place of peace towards others and towards the earth?

**Actions in the Community**
Is there a grocery store in the area that throws away its food if it doesn’t get bought fast enough? Is there a shelter in the area that could utilize some of this food that would be normally be wasted? Create a partnership with a local grocery store/bakery/restaurant and a homeless or community shelter! Rather than putting all the food in the trash, a grocery store/bakery/restaurant can utilize the food to give to
those who need it most. Have students come up with a list of reasons to support this initiative and create a petition in their community if they are met with hesitation from companies. How can this create a more peaceful, just, and compassionate world? How is this healthy for the environment? Think about the ethical foundations, principles, and virtues when answering these questions and kickstarting this community project!

**Personal Habits**
Ask students to think about one food that they eat regularly. Have them trace the food item from production to consumption. What are the environmental and social impacts? Is there a healthier way to eat this food that doesn’t harm the environment as much? Have students write and research about this food item. Allow this writing activity to inspire students to plant one vegetable either outside or in a pot for their home and think about starting to shop at a local food cooperation or farmers market. Provide seeds to students and encourage them to care for the plant and nourish it until it can be eaten! Bring these actions back to the *HE* pedagogy.

**VI. Reflection:** *Have students analyze their role in the food crisis, their responsibility to encourage sustainability related to food, and be aware of how countries around the world are dealing with the food crisis.*

This is a chance to tie everything back together – science, ethics, spirituality, and action. By drawing all four of these aspects of the curriculum students should begin to understand the role they play in the planet Earth and why it is important for them to know all these aspects of the curriculum. Have them look back over all the work they have done and tie the different aspects together. This is where the concluding reflection questions should be brought in and students should be able to identify personal actions to alleviate issues related to food.

Ask students to think about a specific time that they witnessed food being wasted, either by them self or by someone else. Have them spend 5-10 minutes journaling about what they would say to this person (or them self) about this using ideas from each section of *HE*: science, ethics, spirituality, and action.

**Inspired Person**
Dr. Vandana Shiva is an Indian physicist and environmental activist who opposes the idea that nature has only instrumental value, as in the development of genetically modified organisms (GMO’s). Have students do some research on Dr. Vandana Shiva and her contributions. Check out this quick video and consider showing the movie *The Seeds of Vandana Shiva* to your class.

**Conclusion**

By the end of this chapter, students should have a deep scientific, ethical, and spiritual understanding of food by going through case studies, regional reports, identifying personal actions, and studying the food system as it exists on Earth. Important questions that students should be able to reflect on and answer by the end of this lesson are:
1. Why is it important to know the trophic levels of a food web?

2. What is the distinction between a soil profile and soil properties?

3. Looking at the five steps of a food system, which step would you say has undergone the most change since the Green Revolution?

4. What do you see as the advantages and disadvantages of diversified farming?

5. What ethical principle do you see expressed in the efforts of the Fair Trade Movement?

6. In what way would you say that the virtue of courage is important in efforts to build a more sustainable food system?

7. In the Food and Spirituality section there were several references to the role of art in expressing our inner relationship with food. Which of the art examples did you find most interesting? Why?

8. Why do you think food is so often used in religious rituals around the world?