The origin of our food: why do we care?

Lesson Core

The Guiding Questions:
- Why should we care about where our food comes from?
- In what ways might the impacts, production, and quality of food produced by small-scale local farms be different from the impacts, production, and quality of food produced far away?
- How can we make food choices that are positive for our health, other humans, animals, and the environment?

Engage:
Ask everyone to stand in a circle. Explain that this activity will help us discover our shared concerns about food and allow us to begin learning what we have in common when it comes to food. Tell students that you will ask a question. If the question is true for them they should take a few steps into the center of the circle. They should pay attention to how many people are in the center for a given question, as the class will discuss this later. After each question, ask students to return to their original places.

Tailor your questions to the level of the students. Start with 1 - 2, low-risk questions that students will feel comfortable answering. If you are asking sensitive questions, instead of asking about students directly, you can ask about people students know, e.g. “Who knows someone who….” Ask 5 - 10 questions in total. For example, you could ask students to step forward if they:
1. Bought lunch from the school cafeteria over the past week.
2. Ate some kind of local food over the past week.
3. Have ever gotten sick from food or know someone who has.
4. Have a food allergy.

1 Adapted from Food for thought and action, a food sovereignty curriculum
5. Have thought about the quality of life of people who grow the food they eat.
6. Have thought about the quality of life of the animals they eat.
7. Have experience growing food for their own consumption.
8. Regularly read the ingredients on their food labels.
9. Regularly read the labels that indicate where food comes from.
10. Make decision about buying or eating something based on the label for a reason other than allergies.

You might ask students to suggest 2 - 3 questions of their own. Stop when the energy is still high. After the last question, ask students to reflect on the number of people who ended up in the circle after certain questions. Ask follow-up questions, such as:

- What concerned you?
- What do you look for on food labels?
- What kind of food have you grown?
- Do you enjoy eating the food that you grow more or less than the same food from the grocery store? Why?

**Building on prior knowledge:**
Engage students in a discussion about where their food comes from, using questions like the following as an entry point:

- Where did the food you ate for lunch yesterday come from?
- Where did the food you ate for dinner yesterday come from?
- From what kind of store did you or your parents purchase the food you ate for dinner over the weekend? (e.g., farmers’ market, supermarket, corner store, gas station, convenience store, etc.)
- What does this tell us about how our food system is currently organized?

**Explore**

*Explain the following to students: We are going to explore why we care about where our food comes from, and why efforts to grow and buy more food locally have merit. Through the process of designing our school permaculture garden, we will be preparing a portfolio of information for the school principal, the school board, and other stakeholders that provides your inputs into the program’s design (school garden portfolio). As we work through these lessons, remember that what you learn and produce will be valuable to others! As an outcome of today’s lesson for the school garden portfolio, you will summarize your own thoughts about why our school can help to make a difference by producing and purchasing food locally. Take notes on the points that resonate with you the most. Tonight you will do a little more research on those points. By tomorrow, you will summarize the points that you wish to communicate to other members of the school community, and you will make your first entry into the portfolio, entitled: Why do we care? Reasons that producing and procuring our food locally can make a difference.*

- To start off, what are your current thoughts about why we should care where our food comes from? List these on the board, group similar ideas together.

We are going to explore several of these, including:
- Energy use / greenhouse gas emissions
- Human rights
- Animal rights
- Other environmental impacts
- Nutritional value of the food.

**Energy use**

- Out of the total U.S. energy consumption, how much do you think is attributed to the food system? *(Approximately 16 percent)*

Introduce the concept of food miles: The distance your food has gone from field to plate. The concept is not always a precise measure of sustainability. Nevertheless, it is an important consideration.

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2 Adapted from Food for thought and action a food sovereignty curriculum

3 Pirog 2000
The transport of our food over long distances is a recent phenomenon (Slide 2). Now most of our foods come from far away.

♦ Where do the grapes you buy at the grocery store come from? Apples?

This chart shows average distances for various fruits and vegetables to reach a home in the U.S. (Slide 3). The USDA analyzed distances that food traveled to a Maryland market in 1997, and found that the average distance for fruits to be transported was 2,146 miles, while the average for vegetables was 1,596 miles. These calculated distances don’t include the distance consumers travel to shop for food or the distance that waste foods travel to be disposed of.

♦ If we were starting in the center of the country, about how far would we travel to reach 1,500 and 2,146 miles? (Slides 4 and 5).

♦ If this is an average figure, does it mean that all foods traveled this distance? (No, some travel much less and some much further.)

♦ Why should we care about how far food travels to reach us? (Greenhouse gas emissions from fossil fuel combustion, nutritional quality of food that has to maintain shelf life long enough to reach these distances, inability to determine whether the food is produced in a way that is good for the workers, the animals and the environment.)

In spite of these incredible shipping distances, we use even more energy in other aspects of food consumption!

♦ What are other ways that we use energy in the food system?

♦ Which of these do you think consume the most energy? (Slide 6. The biggest energy consumers are food processing, packaging, selling, and preparation.)

The daily per capita energy input to the US food system exceeds 17,000 calories before food reaches the home (Slide 7). This is more than eight times the average Caloric requirement for a healthy diet. In spite of those long distances that we saw fruits and vegetables travel, even more of this this energy is used in processing high-calorie foods!

Our energy uses in food are increasing. During 1997-2002, per capita energy use in the United States declined 1.8 percent, while per-capita food-related energy use in the United States increased by 16.4 percent (Slide 8).

♦ What might be reasons that we increased our energy use for food? (About half of the growth in food-related energy use between 1997 and 2002 is explained by a shift from human labor toward a greater reliance on energy services across nearly all food expenditure categories.)

The good news is that food is a topic we make decisions about every day, and that we have some control over. Collectively, our decisions can make a difference in the larger challenge of global energy use and greenhouse gas emissions – a challenge that impacts people, animals, and plants now and far into the future.

Wrapping up the topic of energy use:
Working in pairs, discuss the following question (5 minutes):

♦ Given what we have learned, what are some things we can do to reduce our energy use from food? (Example answers below for teacher’s reference)

• Eat minimally processed, packaged and marketed food. Generally speaking, the less processing and packaging you see, the less energy went into production and marketing.

• Learn what foods are in season in your area and try to build your diet around them.

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4 Pirog 2000

5 Canning et al., 2010. Energy use in the U.S. Food System. USDA.
http://www.ers.usda.gov/publications/err-economic-research-report/err94.aspx#.UWq5aMqNDCs

6 Canning et al., 2010
8 Canning et al., 2010
• Shop at a local farmers’ market or Community Supported Agriculture.
• Ask the manager or chef of your school cafeteria how much of the food on the menu is locally grown, and then encourage the school to source food locally.
• Limit the amount of meat you consume and when you do buy meat, look for organic or free-range meat produced on sustainable farms.
• Buy extra quantities of your favorite fruit or vegetables when they are in season and experiment with drying, canning, jamming, or otherwise preserving them for a later date.
• Plant a garden.9

Human rights
(Slide 9)
- Who grows and processes your food?
- What kind of working and living conditions do factory farm workers have?

Farm labor is one of the few occupations exempt from most federal and state minimum wages and work-hour limitations. Of the farmworkers who responded to a recent National Agricultural Workers’ Survey, about one-third earned less than $7.25 an hour, and only a quarter reported working more than nine months per calendar year.

The California Institute for Rural Studies found that in Fresno and Salinas—two of the most important agricultural regions in the state—one-fourth of farmworkers live below the federal poverty line, and between 45 and 66 percent are food insecure. (An individual or family is considered food insecure when members of a household lack access to enough food for an active, healthy life at all times, according to the USDA.)

In reality, however, farmworker conditions are even worse than those numbers suggest. Much of the research concerning farm labor is based on information gained from formal systems of employment, such as labor contractors. That leaves the majority of farm laborers who work informally, such as daily workers, unaccounted for.10

Farmers and farm workers suffer from increased rates of respiratory diseases, noise-induced hearing loss, skin disorders, certain cancers, chemical toxicity, and heat-related illnesses.11

For example, Iowa studies revealed that children living next to CAFOs (Confined Animal Feeding Operations) have higher rates of asthma than do other farm children.12 Studies have compared CAFO workers to workers involved in jobs that do not bring them in contact with livestock. The studies show significantly higher incidences of chronic bronchitis, asthma, flu-like symptoms, and lower respiratory tract inflammation in CAFO workers than in other workers. Ammonia, toxins, and dust are the biggest health threats. CAFO workers have been found to have higher incidences of infection with and illness from salmonella, leptospirosis, and hepatitis E than non-CAFO workers.13

Case study: Tomatoes
As a brief case study, we can consider tomatoes. Tomatoes are important to consider, because they make up nearly ¼ of all U.S. vegetable consumption!14
- How much do you pay for a pound of tomatoes in the grocery store?

Tomato pickers in Florida are paid less than two pennies for each pound of tomatoes they pick!

Over the last decade, over 1,200 victims of human trafficking were found picking produce in Florida. They were kept in cramped and dirty trailers, constantly monitored, and had wages garnished to pay a debt invented by the trafficker.15

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9 http://kirikiva.com/PDF/Foodmiles.pdf
10 http://www.yesmagazine.org/people-power/care-about-your-food-rural-farmworkers
11 www.osha.gov/SLTC/youth/agriculture/workers.html
12 Food for thought and action Factsheet 4
14 http://chge.med.harvard.edu/sites/default/files/resources/local_nutrition.pdf
Organizations working on this, from whom you can learn more:
- Student/Farmworker Alliance
  http://www.sfalliance.org/about.html
- Fair Trade
  http://www.fairtradeusa.org/what-is-fair-trade
- Campaign for Fair Food
  http://www.ciw-online.org/101.html

Wrapping up the topic of human rights:
Students have a debrief discussion (5 minutes) in pairs to answer the following questions:
- What aspect of what we learned about human rights was most interesting or surprising to me?
- What is one thing about human rights in food production that I would like to learn more about?
- What is one thing that we can do to support human rights in our food choices?

Animal Rights
- How many of you have pets at home?
- What rights do your pets have?
- Are there any rights that all animals should have?
- Do these rights apply to all animals?
- If not, why?
- How do you think farm animals should be treated?

Nowhere do our daily choices affect the quality of animals’ lives more than in the food we choose to eat. Farm animals can have a good quality of life. However not all farm animals do. A report released in 1998 by the USDA found that 80% of the meat industry is controlled by only four firms. These firms raise animals and process meat in concentrated, factory-like conditions.

For example, chickens today are often raised in metal buildings with no access to light or fresh air, confined together with thousands of birds in one building, and made to grow so quickly that often their bones cannot keep up and they can lose their ability to walk.

In this factory farming model, a single corporation may own or control all aspects of the chicken production process, from animal rearing and feed production to slaughter, packaging, and distribution. A corporation may also contract farmers in an arrangement where the corporation determines all aspects of raising the animals, while the farmer is responsible for the capital expenditures, the waste disposal, and much of the risk.

Let us watch a video clip to have a visual sense of this.
http://www.youtube.com/watch?v=enwU5jXSIU

- How do your ideas about animal rights compare to what you saw in the video?
- A representative of the National Chicken Council in the film Food, Inc. said: “In a way, we’re not producing chickens, we’re producing food.” What does this statement mean? Do you agree or disagree with it? How might this perspective affect the way that chickens are raised?
- As consumers, do we have the right to know how the chickens we eat are being raised? Do we want to know?
- How can we make choices about the meat we buy if we want the animals to have a good quality of life while they are alive?
- Would buying meat from small local farms improve the chances that the animals are not raised in factory conditions?
- Could you visit a small local farm if you were interested in doing so?

Wrapping up the topic of animal rights
- Write a brief statement (~1-3 sentences) that articulates your vision for the minimal rights all animals deserve.

Other impacts to the environment (water case study) (Day 2)
- In what ways might our food choices affect the environment (beyond energy consumption which we’ve already discussed)?

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16 http://kirikiva.com/PDF/Foodmiles.pdf

17 Adapted from: http://www.ecoliteracy.org/sites/default/files/uploads/foodinc_discussion_guide.pdf
We will consider impacts to water resources now, using two examples - one related to meat and one related to produce.

Meat (Slide 15):
In the industrial model of livestock production, animals are housed in close quarters inside massive climate-controlled buildings or on feedlots. Each confined animal feeding operation, or CAFO, may house tens or even hundreds of thousands of animals. CAFOs store the waste these animals generate in massive lagoons on the property and sometimes spread or spray the manure on available land. The EPA reported in 1998 that Concentrated Animal Feeding Operations were a contributing source of water pollution in 20% of impaired water sources in the United States.

Grapes (Slide 16):
Prior to the late 1960s, most Americans ate table grapes when the local and California markets could supply them – roughly from June through December. Since then, Americans nearly tripled their table grape consumption from 2.52 pounds per person in the 1972/73-market year to 8.21 pounds per person during the 1999/2000-market year. A major reason for this increase in consumption was the increase in the amount of imported grapes from Southern Hemisphere countries during winter and early spring, when California grapes are not available. The amount of imported grapes during this period (as a percentage of total consumed) rose from 4 to 45 percent, while exports of California grapes remained fairly steady. The significant increase in imported grapes implies an increase in the average distance that table grapes travel to reach the U.S. consumer.

Mexico is among the countries exporting grapes to the U.S. In a study of a Mexican aquifer used for irrigating grapes exported to the U.S., the Mexican government found the ground water being depleted at an astonishing rate. Each year, the aquifer is being reduced by 23,200 Olympic-sized swimming pools. Most of these grapes are produced by powerful wealthy farm owners who can lobby government for continued access to the aquifer water. The local community and ecosystem bear the consequences.

This extreme increase in imported food has taken place even for products that we can grow in large areas of the United States. For example in 1870, 100% of the apples consumed in Iowa were produced in Iowa. By 1999, Iowa farmers grew only 15% of the apples consumed in the state.

During your grandparents’ generation, which was before this era of food imports, did people in the United States eat healthy food?

Is it possible for us to increase the amount of healthy food grown in this region and/or consumed from this region?

Note for classes in Northern climates: The top 5 states for local food access are in the Northern U.S. According to one Index, they are Vermont (first), Maine, New Hampshire, North Dakota and Iowa. The bottom five are Texas (last), Florida, Louisiana, Arizona and Nevada.

Wrapping up the topic of other environmental impacts (water case study)
Choose either fruit or protein as a focus topic, and write 2-3 sentences explaining ways in which you can make choices about this food type to reduce your negative impact on water systems.

18 http://www.nffc.net/Learn/Fact%20Sheets/AALEnvironmental&HealthLivestock.pdf
22 http://kirikiva.com/PDF/Foodmiles.pdf
23 http://www.strollingoftheheifers.com/locavore-index-2013/
Human health

- In what ways might the nutritional value or safety of our food be affected by where it is produced?  (Slide 21)

We will again consider just two of many examples. To consider nutrition, we will revisit products that we considered earlier: tomatoes and factory-farm meat.

- Nutritional value is generally lower for produce that has been shipped a long distance. For example, total Vitamin C content for red peppers, tomatoes, apricots, peaches, and papayas is higher when picked ripe from the plant, rather than when picked before ripe for shipping purposes. Vitamin C content will increase with artificial ripening, but not to the levels reached when the fruits are ripened on the vine. Since tomatoes make up nearly ¼ of all U.S. vegetable consumption, practices that maximize nutritional content are important to American public health,24

- As we discussed earlier, the USDA determined that about 80% of the U.S. meat industry is in the hands of 4 firms (Slide 24). When animals are raised and slaughtered in factory conditions, many livestock companies require their growers to feed animals antibiotics in order to prevent disease.

Watch the video clips:
- Cattle and e-coli (52 seconds)
  http://www.youtube.com/watch?v=Rmvreklbe-0&list=PL11AEDB04DA38251D
- Hamburger processing to remove bacteria
  http://www.youtube.com/watch?v=MIO2SnGFwMA&list=PL11AEDB04DA38251D

- Were cows naturally designed to live in conditions like those of concentrated feed lots?
- What do cows naturally eat?
- How does changing the food and conditions of cattle affect the nutrition and safety of their meat for human consumption?
- In what ways could cows be raised so that their meat is safer for human health?

Anticipated Student Misconceptions, Problems and Challenges

- Are any farms raising cows this way? If so, how can we access their products?

Wrapping up the topic of human health
(5 minutes) With a partner, discuss two small ways you would like to improve your food choices, so that these choices are better for your health and for other people and the environment. What types of food would you like to address? What better choices would you like to make? (5 minutes)

A movement is underway!
An increasing number of people are recognizing the value of local foods, and are supporting this with their actions.

- The number of farmers markets in the United States quadrupled between 1997 and 2011  (Slide 26).
- Community Supported Agriculture typically costs less than half of the cost of the same produce purchased in a grocery store.
- Local food availability is not limited to warm climates – in fact, the states with the best access to local foods in 2012 are all in the north!
- People in cities around the world have been collaborating on open-source designs for window farming.
- Groups of people are increasingly growing food on rooftops, vertically along walls, in yards, and in schools!
- Through food, each of us can help to be part of the solution to many social, environmental, and economic challenges of the world!

24 http://chge.med.harvard.edu/sites/default/files/resources/local_nutrition.pdf
is something that we can all participate in (final slides). We can create the conditions for a better future, and food is a powerful place to focus because each person votes with their food choices many times each day!

Elaborate
Invite the students to close their eyes. Then, have them reflect on what is important to them about what they have learned. After about five minutes, say a key word or phrase that relates to the main ideas that have been covered, and ask students to reflect on that for a couple of minutes. Repeat one or two more key words/phrases, leaving a couple of minutes for reflection each time. Then gather the group into a circle.

Valuable Lessons Learned Ball Toss
Ask students to form a circle. When a student catches the ball, he or she is to state the lesson or concept he or she learned that most resonated with him or her. He or she then throws the ball to another participant. The participant states the most valuable or important lesson / concept he or she learned that day and throws to another student and so on until all students have expressed their valuable lessons/concepts learned.

Selection of focus topic
Students each select a topic amongst those discussed in the classroom, which they will further investigate for homework. Prior to selecting topics, encourage students to consider:

- Of all we discussed, what subjects or points stand out for you the most?
- What aspect of this topic would you like to know more about?
- What aspect of this topic is important for other people in the school community to know?

Evaluate

- For homework, each student investigates their topic, and types 1-3 points providing facts that he or she feels is important for others to be aware of. They may include information presented by the teacher during class, but must also include new insights that the students discovered. Information sources must be based on verifiable research, and must be noted.

- Students send these typed points to the teacher by the following morning.

- Prior to the next day’s class, the teacher organizes all of the students’ submissions into one file.

- In class the next day, students present their findings. One student serves as secretary, editing submissions for the file Why do we care? Reasons that producing and procuring our food locally can make a difference. Excerpts of these will also be used in a presentation that the students give at the end of the lesson Permaculture at our school: Mimicking ecosystems for sustainable production.

Supporting students during evaluation
- Why do you think that other students or teachers at the school might care about this topic?
- What is one thing that we can do in our personal lives to reduce our contribution to this problem?
- What are some concrete suggestions that you would offer to the school’s cafeteria in order to reduce our food footprint?
- Envision the ideal future as it relates to our systems of food production. What does it look like? What steps can we take now to move us closer to that vision?

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