



What makes Agriculture “sustainable”?

Toward a Sustainable Agriculture, University of Wisconsin-Madison, Center for Agricultural Systems

Grade Level: Middle & High School

Projected Outcomes

After this segment, students will:

1. Be able to define the term “sustainable”
2. Distinguish between the goals and the practices used to achieve the goals of sustainable agriculture and food systems.
3. Demonstrate awareness of economic, environmental, and community impacts of agriculture.

Terms

Sustainable agriculture: an approach which is profitable, environmentally sound, and beneficial to family and community interaction

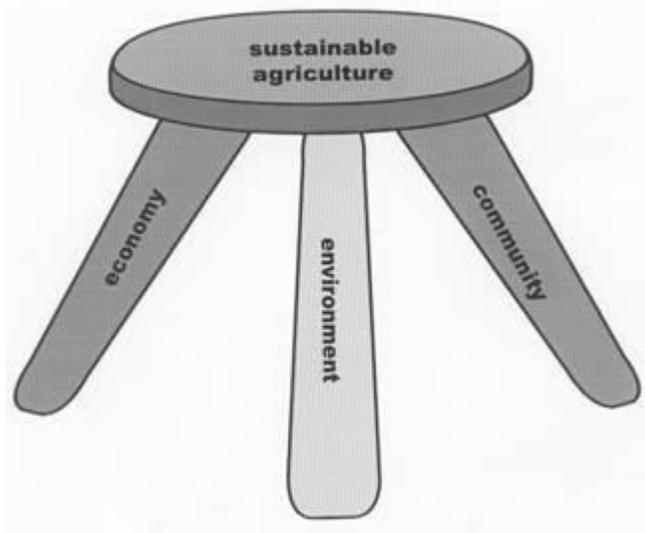
Goal: a desired end

Practice: an action to achieve a goal

Organic: a set of production practices that rely on minimal use of off-farm inputs and aim to restore, maintain, or enhance the ecological systems that can benefit agriculture.

Introduction what is Sustainable Agriculture?

In the words of an Iowa farmer, sustainable agriculture is a journey rather than a destination. The word “sustainable” comes from the word “sustain” which means to maintain, support, or to endure. People involved in sustainable agriculture are trying to identify and solve the problems in our current agricultural system in order to provide food and fiber in a healthy environment for people over the long term. At least for now no one has developed a fully sustainable agriculture, and for the foreseeable future there will always be room for improvements.



The Three Legs of Sustainability.

Imagine a 3 legged stool. What happens if one of the legs breaks, or one leg is missing entirely? The whole stool falls over. The 3-legged stool has become a metaphor for the need to consider the economic, environmental, and social impacts of agriculture (or any of our actions). If our agricultural system has unacceptable impacts in any one of these spheres, it can't support producers and contribute to the community over the long term.

In order to be sustainable, three areas must be addressed by our agriculture, food, and natural resource systems. These three areas are economics, environment, and community. A sustainable agriculture must provide a fair and reasonably secure living for farm families. It should minimize harm to the natural environment. It should maintain basic natural resources such as healthy soil, clean water, and clean air. And it should support viable rural communities and fair treatment of all people involved in the food system, from farm workers to consumers.

The 1990 Farm Bill defines sustainable agriculture as:

“an integrated system of plant and animal production practices having a site-specific application that will, over the long term:

- Satisfy human food and fiber needs
- Enhance environmental quality and the natural resource base upon which the agricultural economy depends
- Make the most efficient use of nonrenewable resources and on-farm resources and integrate, where appropriate, natural biological cycles and controls
- Sustain the economic viability of farm operations
- Enhance the quality of life for farmers and society as a whole.”



Let's take a look at each individual leg of the sustainability stool.

Sustainable agriculture is "economically sustainable." Agriculture should provide a secure living to farm families and others employed in food production and processing. An economically sustainable approach also provides access to good food for all people.

Sustainable agriculture is "environmentally sound." It preserves the quality of basic natural resources that the farms, businesses and the surrounding environment rely on, including soil, water, and air. Agriculture affects natural resources. Cooperating with natural resource systems instead of trying to overpower them can offer benefits to food production as well as the natural environment.

Sustainable agriculture is "good for families and communities." It promotes opportunities and cooperative relationships for family and community members. For example, a local food marketing system called community supported agriculture (CSA) offers opportunities for people to get into farming without major capital investment; provides work for family members, including children, on the farm; and creates direct partnerships with consumers in the community.

Goals versus Practices

Profitable economics, healthy environment, and vital communities are all goals. They are what we are trying to achieve. Practices are actions we take to achieve those goals. Why don't we define sustainable agriculture in terms of practices? There are two important reasons: First, we expect that our knowledge will increase in the future, so practices used now may not be considered the best practices ten years from now. Second, the effect of a practice can vary enormously depending on how and where it is performed. For example, plowing on a steep hillside is unsustainable because it causes too much soil erosion. However, occasional plowing on level ground can be a sustainable tool for some cropping systems.

In order to attain our goals, we need to take certain actions, that is, follow certain practices. So one of the things we'll explore in the next few days are examples of sustainable practices, such as crop rotation, riparian buffer strips, rotational grazing, and direct marketing. Keeping in mind, though, that these are not all the possible practices and if they don't help us achieve our goals, they are not sustainable, no matter what the practice.

Activity 1: Understanding Goals and Practices (see below)

Activity 2: Thing positively, thinking critically (see below)

The Organic Example

For many people, sustainable agriculture is closely identified with organic agriculture. Unlike sustainable agriculture, though, organic agriculture is officially defined by practices rather than goals.



In the United States, the practices that are required and the practices that are prohibited in organic agriculture have been set forth in federal law since 2001. Anyone can use these practices in their garden or field, but for products to be labeled and sold as “organic” they must be certified by an independent third-party certifier. In a nutshell, organic farmers must:

- Rotate crops to maintain soil quality and manage pests,
- Keep records of their operation that will be examined by the certifier,
- Minimize use of off-farm inputs,
- Refrain from using synthetic fertilizers or pesticides, and
- Refrain from using genetically modified organisms.

An organic producer must:

- Keep organic products separate from non-certified products, and
- Keep synthetic pesticides, preservatives, and other unapproved substances away from organic products.

Visit the U.S. organic standards to get a sense of some of the complexity of the requirements and the questions surrounding this relatively new program. For additional information, see the National Organic Program’s web page.

Is organic agriculture sustainable?

Many farmers and consumers feel that organic agriculture is sustainable. On the whole, organic practices do a good job of protecting the natural environment and may be better for the health of both producers and consumers. Farmers also like the facts that organic products often bring higher prices in the marketplace, which means they contribute to economic sustainability.

Other farmers and consumers note that organic agriculture does not really address economic and social sustainability. When most organic producers and processors were small-scale idealists, organic agriculture may also have addressed social and economic needs in rural communities. However, as the organic market has grown, the organic food system has come to look more like the conventional food system, with large-scale producers and processors and shrinking margins for farmers.

Suggested discussion or essay question: Which is better—a general goal-oriented definition like that for sustainable agriculture or a more specific practice-based definition like that for organic agriculture? What are the advantages and disadvantages of each? Provide specific examples.

Homework Activity: Looking at change in agriculture, food systems, and the environment.



Activity 1: Understanding Goals and Practices

10 minute version: Divide the class into small groups of three or four students. Ask each student individually to write down a goal they have and list the steps they can take to reach it. Next, assign one person to take notes for the group and be the reporter. Then have each person share their answers in the small group. Talk about how everyone's tools and steps are unique to their goal. Have each small group report their findings back to the whole class.

5 minute version: Have each student write down a goal they have and list the steps they can take or tools they can use to reach it. Then have each student turn to their neighbor and discuss how the steps and tools are unique to each person's goal. Invite a few students to share their examples with the whole group.

Activity 2: Thing positively, thinking critically

In order to move towards a board goal, such as those for sustainable agriculture, a first step is to figure out where we are on the road toward the goal. Have the students brainstorm both successes and problems associated with agriculture, food, and natural resources today. Give each student a pad of post-it notes. Have them list problems and successes on the notes, one per note. Have them place their notes on a large flip chart sheet or chalkboard with the categories ECONOMICS, ENVIRONMENT, and COMMUNITY written out. As each student adds a note, have them read it aloud to the class and explain which category they are placing it in. Save this chart for Day 2 (see Activity 2 on Day 2).

Examples of successes in today's agriculture include:

- Abundant food supply in the developed world
- Fresh fruits and vegetables available year-round
- Cheap food
- Luxury foods such as coffee, tea, chocolate, and spices easily available around the world
- Effective food preservation technologies (refrigeration, freezing, canning, packaging)
- Convenience foods
- Mechanization produces high labor efficiency
- Improvements in soil conservation
- Availability of agricultural inputs for quick solutions to productions problems

Examples of problems include:

- Continuing soil loss

The logo features the text "IT TAKES AN IOWAN" in a bold, white, sans-serif font. "IT TAKES AN" is on the top line, and "IOWAN" is on the bottom line, both centered. A small globe icon is positioned above the letter "I" in "IOWAN". The text is set against a blue background with a pattern of small, white, semi-transparent icons related to agriculture and food.

- Food safety (mad cow disease, food poisoning outbreaks, antibiotic resistance, toxins and pesticides)
- Water pollution
- Habitat loss
- Continuing hunger
- Ugly countryside
- Air pollution; odors
- Failing farms
- Declining communities
- Farm accidents
- Water depletion
- Energy use
- Obesity
- Global warming
- Chronic diseases linked to agricultural chemicals
- Farmland loss to development
- Difficulty of starting in farming

Activity 3: Looking at change in agriculture, food systems, and the environment

-A short homework activity.

Ask students to interview two people in their family or community. Interview one person who is 70 or older about the years around 1950. Also interview one person who is in their 40s, 50s, or 60s about the years around 1980. Ask each of these people to describe three things: What did farms look like at that time? What did main street look like and where did people get their food? How was the quality of the environment? As students to answer these same three questions themselves about the local community now and record all three answers.

Activity 4: Menus and Maps- Where does your food come from?

Purpose: Students will begin to think about all the steps in the food system between the farm and their plates. Students will begin to realize the global nature of the food system.

Advance preparation: Assemble materials: paper plates and blank maps

Estimated time: 20 minutes

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IT TAKES AN IOWAN

- “Set the table” by placing a white paper plate and a piece of paper (as a placemat) at each student’s seat.
- Have the students draw what they had for lunch (or supper) on their plate.
- Then, on their placemat, have the students “map” where they think the food in their meal came from. To make things easier for the students you may have the “placemat” show a blank map of the US or the world.
- Students should try to trace each part of their specific lunch as it moved through the food system from the farms where food was grown, through processing and distribution, to where the waste went.
- Discuss what students found out from this exercise
- Possible discussion points:
 - We get our food from a global market- much of it comes from very far away.
 - We don’t usually know exactly where our food came from, or how it was grown or processed or transported.
 - We rely heavily on government regulation, business responsibility, and the judicial system to ensure the safety of our food, because consumers usually don’t have any knowledge of the specifics.
 - The global food system relies a lot on energy from fossil fuels and produces a lot of waste.