

Innovations and Revolutions
Agricultural Revolutions

After reading the article on pages 80A – 80B, answer the follow questions.

1. How many agricultural revolutions have there been in history?

2. What was the first Agricultural Revolution?

3. What was the second Agricultural Revolution?

4. What was the third Agricultural Revolution?

5. What was the fourth Agricultural Revolution?

6. How important was the use of fire to Native Americans?

7. How was the use of fire a beneficial to the soil?

8. What plant became the most important to the Plains Indians and why?

9. What other plants did the Plains Indians domesticate and why?

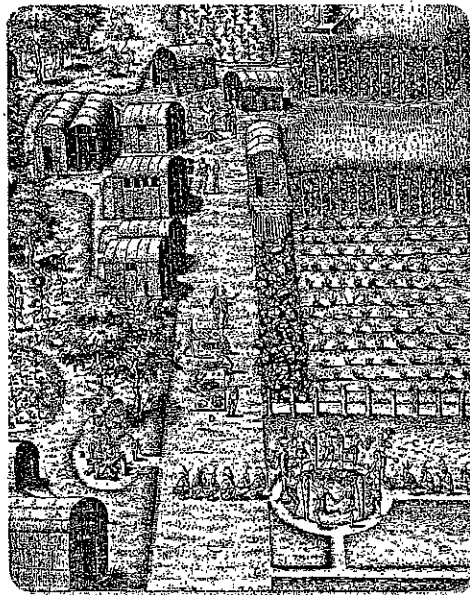
10. Why did it take longer for the Eastern Native American tribes to become more sedentary.

11. In what positive ways did the agricultural revolution bring about social changes among Native Americans ?

12. In what negative ways did the agricultural revolution bring about social changes among Native Americans ?

AGRICULTURAL REVOLUTIONS: How did the agricultural revolutions impact Native Americans?

Over the course of human history, four agricultural revolutions have occurred which have dramatically altered the human capacity to shape the natural environment. The Neolithic Age, from 8000 to 4000 B.C., witnessed two of these agricultural revolutions. First, humans altered the landscape with fire, clearing land for planting and improving land fertility. Next, humans domesticated plants as a regular food source. In more modern times, the third agricultural revolution saw the advent of machines and fertilizers to mass-produce crops for commercial sale. Recently, humans have discovered how to manipulate crop genetics in laboratories to improve harvests, the fourth agricultural revolution. Using the innovations of the first two agricultural revolutions, Native Americans reshaped their environment and their way of life.



▲ The domestication of plants during the second agricultural revolution allowed Native Americans to settle in one location and create permanent villages, such as this Algonquian village, located along the Pamlico River in Virginia.

Global Themes 80A

How did Native Americans change their environment?

The Use of Fire Early humans were nomadic, reacting to their environment by following migrating animal herds and gathering edible plants. This changed when the first two agricultural revolutions enabled humans to change their environment rather than react to it. The transformative effects of the first agricultural revolution were likely discovered by accident and observation. Lightning strikes and untended campfires might have spread into large wildfires. The aftermath of these large fires had positive results. Humans realized that controlled fires served several purposes that made food gathering easier. First, fire drove animals out into the open and also promoted new growth in the spring, which attracted game animals. Both of these results improved hunting. Burns also killed or drove away pests such as mosquitoes. Yearly burns removed dried vegetation, which could be fuel for destructive wildfires. On the Great Plains, where such vast fields of grasses grew every year, wildfires could be a serious problem. Learning to manage the environment proved valuable to early Native Americans.

When the same plants grow in the same area season after season, nutrients in the soil are depleted. Eventually Native Americans of the Plains realized that burning to clear land produced nitrogen-rich ash, a natural fertilizer. Adding this ash to the soil helped recharge the soil for another season, which increased the amount of plants that grew.

Domestication of Plants Plant domestication, the second agricultural revolution, further changed how Native Americans interacted with their environment. The Native Americans of North America mixed hunting and fishing with the gathering of nuts, berries, and seeds and added domesticated plants to round out their diet. The most important agricultural plant was maize. Maize was a large-seeded, wild grass called teosinte. Early farmers selected the teosinte plants with the largest cobs and seeds. Over time, the seeds of the largest grasses were planted, encouraging larger seeds in each generation of plant. In this way, teosinte was adapted into the modern corn plant. The domestication of maize spread from Mesoamerican civilizations into the North American southwest somewhere around A.D. 200.

The Four Agricultural Revolutions

Revolution	Time Span	Description	Example
Fire used to alter natural vegetation	First used during Neolithic Age (8000–4000 B.C.); still practiced in some areas of the world today	Promoted new growth for game animal grazing; ash used for fertilizer	Burning South American rain forests to create farmland
Domestication of plants	Begins during and is widespread by end of Neolithic Age; continues today	Human selection of plants according to beneficial characteristics	Developing corn hybrids that resist leaf diseases or drought conditions in southern United States
Industrialization and mechanization of agriculture with use of fertilizers, pesticides, and herbicides	Industrial harvesting machinery first sold in middle of nineteenth century; continues today	Mass production and cultivation of crops for sale to a national population	Spraying fields with pesticides to eliminate insect damage and increase harvest yield
Applied microscopical selective genetic manipulation	Cultivation of genetically modified foods began in 1995; continues today	Altering genetic characteristics of agricultural crops directly in laboratory prior to planting in field	Genetically modified rice is engineered to contain protein and increase nutritional value.

Native Americans in the American Southwest domesticated squash and beans but relied heavily on corn as a source of nutrition. These southwestern peoples also developed irrigation methods to improve harvests in the arid climate. They dug irrigation canals to channel water to their fields and also created terrace systems that controlled erosion in sloped areas. The Native Americans of the Eastern United States did not add maize to their diet until somewhere around A.D. 1000. It took these eastern farmers that long to adapt the southwest maize plant to the eastern climate's shorter growing season.

How did these revolutions impact Native Americans?

Societal Changes These agricultural revolutions also altered Native American society. First, the revolutions reduced the need for Native Americans to be nomadic. Domesticating plants required settling in one location to cultivate the land and tend the crops for harvest. Sedentary life allowed for community growth. Nomadic groups were small in size, making it easier to travel from place to place during the year. Stationary communities could increase in size, but rising population made reliable food production more critical. A growing community required more food than hunting and gathering alone could provide. Successful crop domestication resolved this problem, but it also introduced a new vulnerability. If the weather was bad or if insects destroyed a crop, the food supply might be inadequate for the increased community size. Combining the secondary benefit of fertilizer ash from landscape burns helped balance some of that concern. Finally, plant domestication demanded more manual labor than hunting and gathering. Successful farming required

a commitment to land cultivation, planting, tending, and harvesting, which meant constant work through each day of the growing and harvesting seasons. These seasons took up the majority of each calendar year. Hunting and gathering, by contrast, demanded less daily commitment and allowed for more time outside of the gathering of food. Farming, however, provided a more balanced and nutritious diet of food and supported a larger number of people.

Regional Changes The Native Americans of North America lived in a variety of climates and therefore formed a variety of cultural systems to respond to those climates. By altering the natural vegetation with fire, Native Americans prepared large amounts of land for improved cultivation. In addition, Native Americans across North America domesticated crops to suit their regional climate and improve their diet. Through their agricultural skills, they expanded from nomadic bands to settled groups of people with a complex way of life.

THINKING CRITICALLY

- Analyzing** Explain how Native Americans on the Great Plains used fire as a method of environmental control.
- Describing** Assess the importance of domesticating crops, such as corn, squash, and beans, to the Native Americans.
- Describing** How did the first and second agricultural revolutions cause lifestyle changes for Native Americans?