

Some governments have done quite the opposite. For example, between 1997 and 2002, the government of Botswana (in southern Africa) carried out a relocation scheme affecting about 3,000 Basarwa San Bushmen (Moser 2006). The government forced these people to leave their ancestral territory, which became a wildlife reserve. After some of them sued, Botswana's High Court eventually ruled that the Basarwa had been wrongly evicted, and issued a court order allowing them to return, but under very restrictive conditions. Although 3,000 people had been relocated, only the 189 people who actually filed the lawsuit were granted an automatic right of return with their children. The many other Basarwa San who wanted to return to their ancestral territory would need to apply for special permits. Even the 189 favored people would be allowed to build only temporary structures and to use only enough water for subsistence needs. Water would be a major obstacle, because the government had shut down the main well. Furthermore, anyone wishing to hunt would have to apply for a permit. This case illustrates how contemporary governments can limit the independence of indigenous peoples and restrict their traditional lifestyle.

Correlates of Foraging

Typologies, such as Cohen's adaptive strategies, are useful because they suggest **correlations**—that is, associations or covariations between two or more variables. (Correlated variables are factors that are linked and interrelated, such as food intake and body weight. When one increases or decreases, the other changes as well.) Ethnographic studies in hundreds of societies have revealed many correlations between the economy and social life. Associated (correlated) with each adaptive strategy is a bundle of particular sociocultural features. Correlations, however, rarely are perfect. Some foragers lack cultural features usually associated with foraging, and some of those features are found in groups with other adaptive strategies.

What, then, are some correlates of foraging? People who subsisted by hunting and gathering often, but not always, lived in band-organized societies. Their basic social unit, the **band**, was a small group of fewer than a hundred people, all related by kinship or marriage. Among some foragers, band size stayed about the same year-round. In others, the band split up for part of the year. Families left to gather resources that were better exploited by just a few people. Later, they regrouped for cooperative work and ceremonies.

Typical characteristics of the foraging life are flexibility and mobility. In many San groups, as among the Mbuti of Congo, people shifted band membership several times in a lifetime. One could be born, for example, in a band in which one's mother had kin. Later, one's family could move to a band in which the father had relatives. Because bands were exogamous (people married outside their own bands), one's parents came from two different bands, and one's grandparents could have come from four. People could join any band to which they had kin or marital links. A couple could live in, or shift between, the husband's and the wife's bands.

Foraging societies tend to be *egalitarian*. That is, they make few status distinctions, and the ones they make are based mainly on age, gender, and personal qualities or achievements. For example, old people—elders—may receive respect as guardians of myths, legends, stories, and traditions. Younger people may value the elders' special knowledge of ritual and practical matters. A good hunter, an especially productive gatherer, or a

skilled midwife or shaman may be recognized as such. But foragers are known rather than bragging. Their status distinctions are not associated with difference and power, nor are they inherited. When considering issues of "human nature," remember that the egalitarian society associated with foraging was a basic form of social life for most of our history. Food production has existed less than 1 percent of the time *Homo* has spent on Earth. However, it has produced huge social differences, consider the main economic features of food-producing strategies.

Adaptive Strategies Based on Food Production

In Cohen's typology, the three adaptive strategies based on food production in tribal societies are horticulture, agriculture, and pastoralism. With horticulture and agriculture, plant cultivation is the mainstay of the economy, whereas with pastoralism herding is key. All three strategies originated in nonindustrial societies, although they may persist as ways of making a living even after some degree of industrialization reaches the nation-states that include them. In fully industrial societies, the United States and Canada, most cultivation has become large-scale, commercialized, agrochemical-dependent farming. Rather than simple pastoralism, societies use technologically sophisticated systems of ranch and livestock management. These industrial societies, and their global context, are the focus of the last two chapters of this book. This chapter's focus is on nonindustrial strategies of adaptation.

Food producers typically carry out a variety of economic activities. In horticulture, each adaptive strategy refers to the main economic activity. Pastoralists, for example, consume milk, blood, and meat from their animals as mainstay diet. However, they also add grain to their diet by doing some cultivating or bartering with neighbors.

Horticulture

The two types of plant cultivation found in nonindustrial societies are **horticulture** (nonintensive, shifting cultivation) and **agriculture** (intensive, continuous cultivation). Both differ from the commercially oriented farming systems of industrial nations. Horticulture uses large land areas and rely on machinery and agrochemicals.

When food production arose, both in the Middle East and in Mexico, the cultivators were rainfall-dependent horticulturalists. More recently, horticulture has been—and in many cases still is—the primary form of cultivation in parts of Southeast Asia, the Pacific islands, Mexico, Central America, and the South American tropical forest.

Horticulturalists use simple tools such as hoes and digging sticks to grow the crops. Horticulturalists typically rely on *slash-and-burn* techniques. Farmers clear land by cutting down (slashing) trees, saplings, and brush. Then they burn that vegetation. They set fire directly to grasses and weeds on their farm plots before planting. Slashing and burning not only gets rid of unwanted vegetation, but it also kills pests and provides ash to help fertilize the soil. The farmers then sow, tend, and harvest their crops on the same plot. They do not use that plot continuously; often they farm it for only a year or two

In slash-and-burn horticulture, the land is cleared by cutting down (slashing) and burning trees and brush, using simple technology, as is done here among mountain rice farmers in the hills of Thailand.

©Universal Images Group
via Getty Images



Horticulture also is known as *shifting cultivation*, because farmers shift back and forth between plots, rather than using any one of those plots continuously. With shifting cultivation, horticulturalists farm a plot for a year or two, then abandon it, clear another plot, cultivate it for a year or two, then abandon it, and so on. After the original plot lies fallow for several years (the duration varies in different societies), it can be farmed again.

Shifting cultivation doesn't mean that whole villages must move when plots are abandoned. Horticulture can support large, permanent villages. Among the Kuikuru of the South American tropical forest, for example, one village of 150 people remained in the same place for 90 years (Carneiro 1956). Kuikuru houses are large and well made. Because the work involved in building them is great, the Kuikuru preferred to walk farther to their fields, rather than construct a new village. They chose to shift their plots rather than their villages. By contrast, other horticulturalists in the montaña (Andean foothills) of Peru maintained small villages of about 30 people (Carneiro 1961/1968). Their houses were small, simple, and easy to rebuild. They would stay a few years in one place, then move on to a different site near their fields where they would build new homes. They preferred rebuilding to walking even a half-mile to their fields.

Agriculture

The greater labor demands associated with agriculture, as compared with horticulture, reflect the former's use of domesticated animals, irrigation, or terracing.

Domesticated Animals

Many agriculturists use animals as means of production—for transport, as cultivating machines, and for their manure. Asian farmers typically incorporate cattle and/or water buffalo into their agricultural economies. Those rice farmers may use cattle to trample pre-tilled flooded fields, thus mixing soil and water, before transplanting. Many agriculturists attach animals to plows and harrows for field preparation before planting or transplanting. Also, agriculturists typically collect manure from their animals, using it to fertilize their plots, thus increasing yields. Animals are attached to carts for transport and to implements of cultivation.

Irrigation

Whereas horticulturalists must await the rainy season, agriculturists can start planting in advance because they control water. Like other irrigation experts in Ippines, the Ifugao water their fields with canals from rivers, streams, ponds. Irrigation makes it possible to cultivate a plot year after year. Irrigation the soil because the irrigated field is a unique ecosystem with several species and animals, many of them minute organisms, whose wastes fertilize the land.

An irrigated field is a capital investment that usually increases in value. For a field to start yielding, it reaches full productivity only after several years of cultivation. The Ifugao, like other irrigators, have farmed the same fields for generations. Some agricultural areas, including the Middle East, however, salts can accumulate in irrigation water can make fields unusable after 50 or 60 years.

Terracing

Terracing is another agricultural technique the Ifugao have mastered. The hills have small valleys separated by steep hillsides. Because the population is dense, there is a need to farm the hills. However, if they simply planted on the steep hillsides, and crops would be washed away during the rainy season. To prevent this, they built terraces into the hillside and build stage after stage of terraced fields rising above the floor. Springs located above the terraces supply their irrigation water.



Agriculture requires longer work hours than horticulture does and uses land intensively and continuously. Labor demands associated with agriculture reflect its use of domesticated animals, irrigation, and terracing. Shown here, rice terraces surround a farming village in Longgss, Guangxi province, China. ©KingWu/Stockphoto.com RF

necessary to build and maintain a system of terraces is great. Terrace walls crumble each year and must be partially rebuilt. The canals that bring water down through the terraces also demand attention.

Costs and Benefits of Agriculture

Agriculture requires human labor to build and maintain irrigation systems, terraces, and other works. People must feed, water, and care for their animals. But agricultural land can yield one or two crops annually for years, or even generations. An agricultural field does not necessarily produce a higher single-year yield than does a horticultural plot. The first crop grown by horticulturalists on long-idle land may be larger than that from an agricultural plot of the same size. Furthermore, because agriculturists have to work more hours than horticulturalists do, agriculture's yield relative to the labor time invested also is lower. Agriculture's main advantage is that the long-term yield per area is far greater and more dependable. Because a single field sustains its owners year after year, there is no need to maintain a reserve of uncultivated land as horticulturalists do. This is why agricultural societies tend to be more densely populated than horticultural ones.

The Cultivation Continuum

Because some nonindustrial economies have features of both horticulture and agriculture, it is useful to discuss cultivators as being arranged along a **cultivation continuum**. Horticultural systems stand at one end—the “low-labor, shifting-plot” end. Agriculturists are at the other—the “labor-intensive, permanent-plot” end.

We speak of a continuum because there are intermediate economies, which combine horticultural and agricultural features. In such economies, cultivation is more intensive than with annually shifting horticulture, but less so than with permanent agriculture. The South American *Kuikuru*, for example, grow two or three crops of manioc, or cassava—an edible tuber—before abandoning their plots. Cultivation is even more intensive in certain densely populated areas of Papua New Guinea, where plots are planted for two or three years, allowed to rest for three to five, and then recultivated. After several of these cycles, the plots are abandoned for a longer fallow period. These intermediate economies, which support denser populations than does simple horticulture, also are found in parts of West Africa and in the highlands of Mexico, Peru, and Bolivia.

The one key difference between horticulture and agriculture is that *horticulture always has a fallow period*, whereas agriculture does not.

Agricultural Intensification: People and the Environment

The range of environments available for cultivation has widened as people have increased their control over nature. Agriculturists have been able to colonize many areas that are too arid for nonirrigators or too hilly for nonterrancers. Agriculture's increased labor intensity and permanent land use have major demographic, social, political, and environmental consequences.

How, specifically, does agriculture affect society and the environment? Because of their permanent fields, agriculturists tend to be sedentary. People live in larger and more permanent communities located closer to other settlements. Growth in population size and density increases contact between individuals and groups. There is more need to