**Big Era Three**
**Farming and the Emergence of Complex Societies**
**10,000 - 1000 BCE**

**Landscape Teaching Unit 3.2**
**Farmers Around the World, 10,000 to 1500 BCE**

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World History for Us All
A project of San Diego State University
In collaboration with the
National Center for History in the Schools (UCLA)
http://worldhistoryforusall.sdsu.edu/

## Why this unit?

This landscape unit surveys regions where early human farming communities were located around the world between 10,000 and 1500 BCE. It invites students to explore the scientific and archaeological background of domestication of plants and animals and the variety of food crops that provided human nutrition. The lessons in this unit are a classroom tool for comparing various aspects of early farming communities around the world in terms of their location, latitude, type of climate, crops raised, time period, and other characteristics.

The lessons show how geography skills and knowledge can be integrated into the study of world history through a correlation activity involving several types of content maps and timelines. Students will acquire historical thinking skills by working with evidence from archaeological sites of early farming communities in Afroeurasia, the Americas, and Australia. The lesson activities take students from the global to the regional and local levels, then back to the global for comparison and analysis. The lessons lead students beyond the usual focus on Southwest Asia, offering a more global approach to the origins and spread of agriculture.

## Unit objectives

Upon completing this unit, students will be able to:

1. locate on a world map places where farming occurred between 10,000 and 1500 BCE.
2. describe the characteristics of physical environments where settled farming communities developed between 10,000 and 1500 BCE.
3. list plants and animals that were domesticated in different places around the world and relate them to specific locations.
4. describe how early farmers modified their environment.
5. give examples of archaeological evidence of farming from the Americas, Australia, and Afroeurasia.
6. trace the spread of agriculture in various locations across the globe.
7. describe some effects of farming on human societies.

## Time and materials

This lesson takes two class periods of 50 minutes each to complete.

Materials:

Classroom world atlases with climate, vegetation, and physical maps.

Student Handouts

## Authors

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## The historical context

The historical context of this teaching unit is the period from 10,000 to 1500 BCE when human beings in a variety of places around the world began to domesticate wild plants and animals for their use. This development led to humans' increased dependence upon these food sources for their caloric intake, and gradual replacement of hunting and gathering with herding and farming. The processes that were involved in this shift were both gradual and complex. Early farmers left no written records, and the evidence of agriculture is organic and perishable. Therefore, archaeologists realize that their conclusions are based on a changing body of evidence. Some early farmers were only seasonally or temporarily settled, and those settlements that existed were built mainly out of impermanent materials.

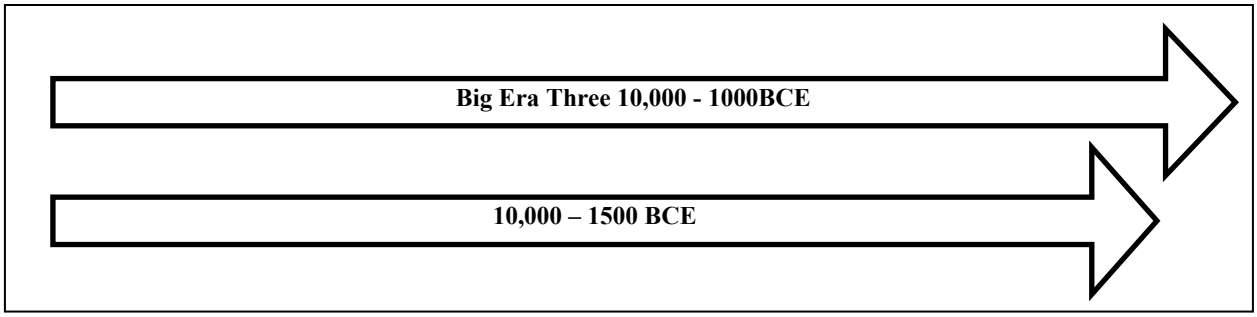
Evidence for the beginnings of agriculture comes from archaeological investigation of sites in various locations around the world. The discovery and choice of sites for investigation has depended on a number of factors:

- The ideas historians and archaeologists have about where sites might be found.
- Geographical conditions that might make discovery of a site likely.
- Available financial and human resources for excavation and study of evidence.
- Cultural preferences for studying sites in one part of the world rather than another.

Evaluating evidence of early farming sites involves a wide range of scientific disciplines, including sophisticated methods of dating organic materials and analysis of such objects as pollen grains, seeds, charred plant fragments, tools, and human or animal remains. Analysis of soil disturbance as evidence of dwellings, fields, or water channels involves sometimes controversial interpretation. Evidence of ancient climatic conditions and changes is gleaned from tree growth ring patterns, remains of local plant and animal life, human artifacts, and analysis of ice core samples, notably from Greenland.

It is important to remember, and to convey to students, that what we know is based on our current level of technology and the amount of time and money available to investigate sites. What we know now is certainly not the final word. More intensive investigation, newer technology, and sometimes even a willingness to look at old ideas in a new way can shed new light and change our interpretations.

## This unit in the Big Era time line



# *Lesson 1*
# *Map Correlations with Early Farming Regions and Chronology*

## Procedure

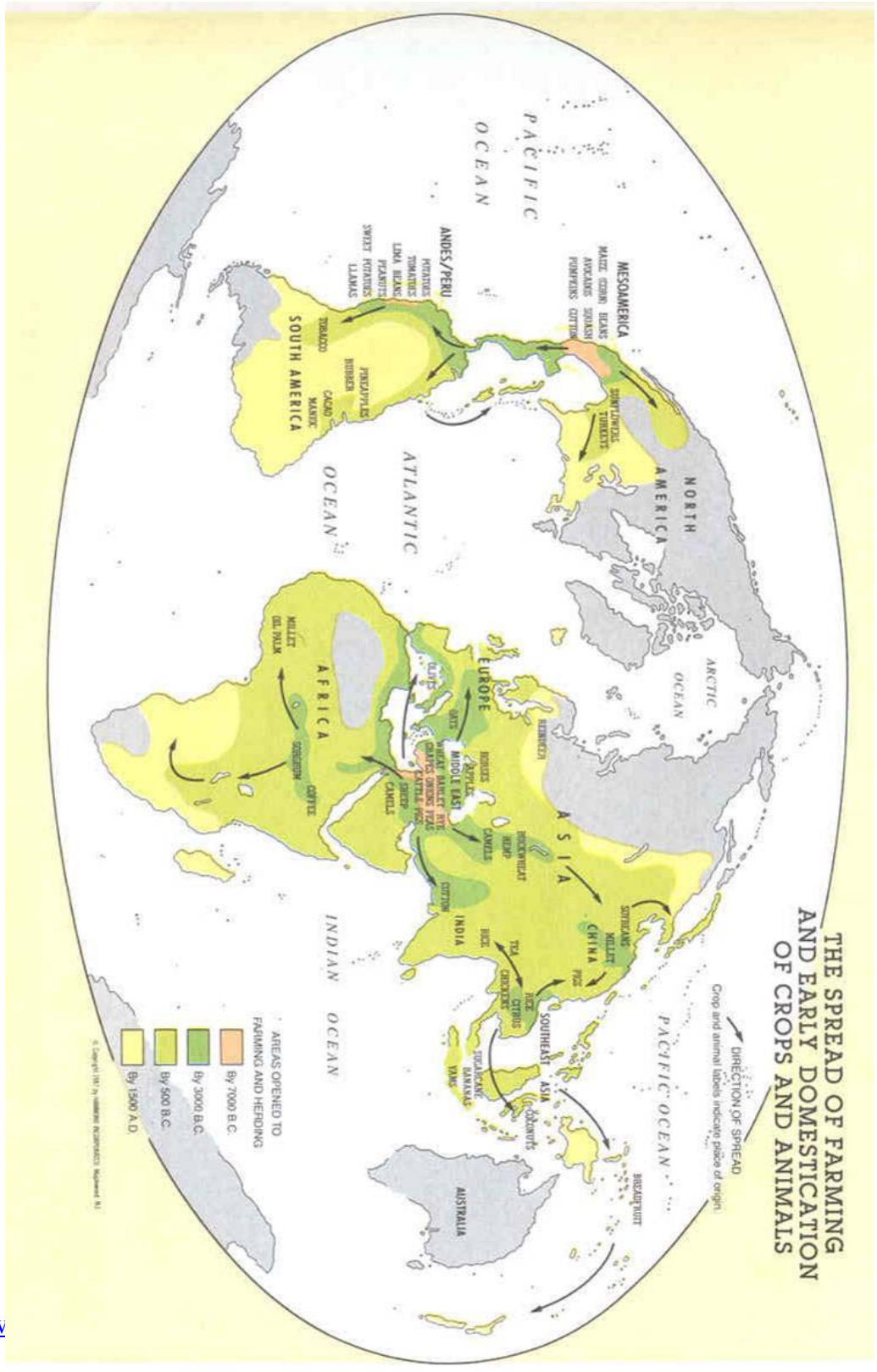
1. Introduce the lesson by discussing the beginnings of agriculture in multiple locations around the world. Start by developing a definition of "farming." Ask students to imagine how farming and herding might have developed among hunter-gatherers. This might be done by asking pairs of students to come up with a hypothesis about the steps involved in beginning farming or herding. In debriefing the groups, ask the class to critique the ideas presented and to come up with a plausible scenario. Which might have come first, domestication of plants or animals? Might the answer differ for different locations around the world? Discuss the meaning of "domestication" of plants and animals, reserving the details for the exploration of domesticated plant characteristics in Lesson 3.
2. Distribute copies of Student Handouts 1.1 and 1.2 to individuals or groups. Discuss the map in Student Handout 1.1, asking students what the map as a whole illustrates and what the colors represent.
3. Have students work in pairs or small groups. Assign each group to investigate one of the six world regions where farming is known to have been discovered and spread. Each group will fill in one region on the graphic organizer in Student Handouts 1.2. They will correlate the map of farming locations for the beginnings of farming in Student Handout 1.1 to a variety of maps showing rainfall, annual temperature ranges, topography, vegetation zones, access to water sources (rivers, lakes), landforms, and longitude/latitude. The information gleaned from the geographic exploration is to be entered on Student Handout 1.2.
4. Whole class debriefing activity: Tape large chart papers on the wall around the room, one for each category on the graphic organizer. Label the category in large letters. Each group will rotate around the room and write the name of its region and fill in results for that category on the chart paper. In turn, each group then makes an oral report of its findings on their location. After the reports, gather the charts and tape them at the front of the room (in the order that they appear on the graphic organizer). Use the charts to compare and contrast the environmental conditions for the spread of farming (10,000-1500 BCE), and to discover the range of physical conditions such as rainfall, latitude, vegetation region, and temperature under which early farming developed.
5. **NOTE:** Interesting conditions will arise, such as areas with very little rainfall today, giving rise to the question of climate change since the period described on the map. Try to pinpoint those regions where the climate must have changed most, and to characterize the change (more rainfall or less, colder or warmer, change in the course of rivers or other water sources.)

Assessment: At the conclusion of the activity, each student may write a paragraph or other form of summary describing the characteristics of regions where farming emerged, comparing and contrasting these characteristics, and accounting for possible climate change over time (extended proficiency). Note: This activity is the basis for hypotheses about farming conditions, which may become modified through the investigation of actual historical evidence.)

## Lesson 1

### *Student Handout 1.1—Farming Around the World*

The map shows regions where farming began, and the range of dates for each region. (Map from the *Hammond Historical World Atlas*, Hammond World Atlas Corporation, 2000, p. H-2)



## Lesson 1

### *Student Handout 1.2—Conditions for Early Farming Data Sheet*

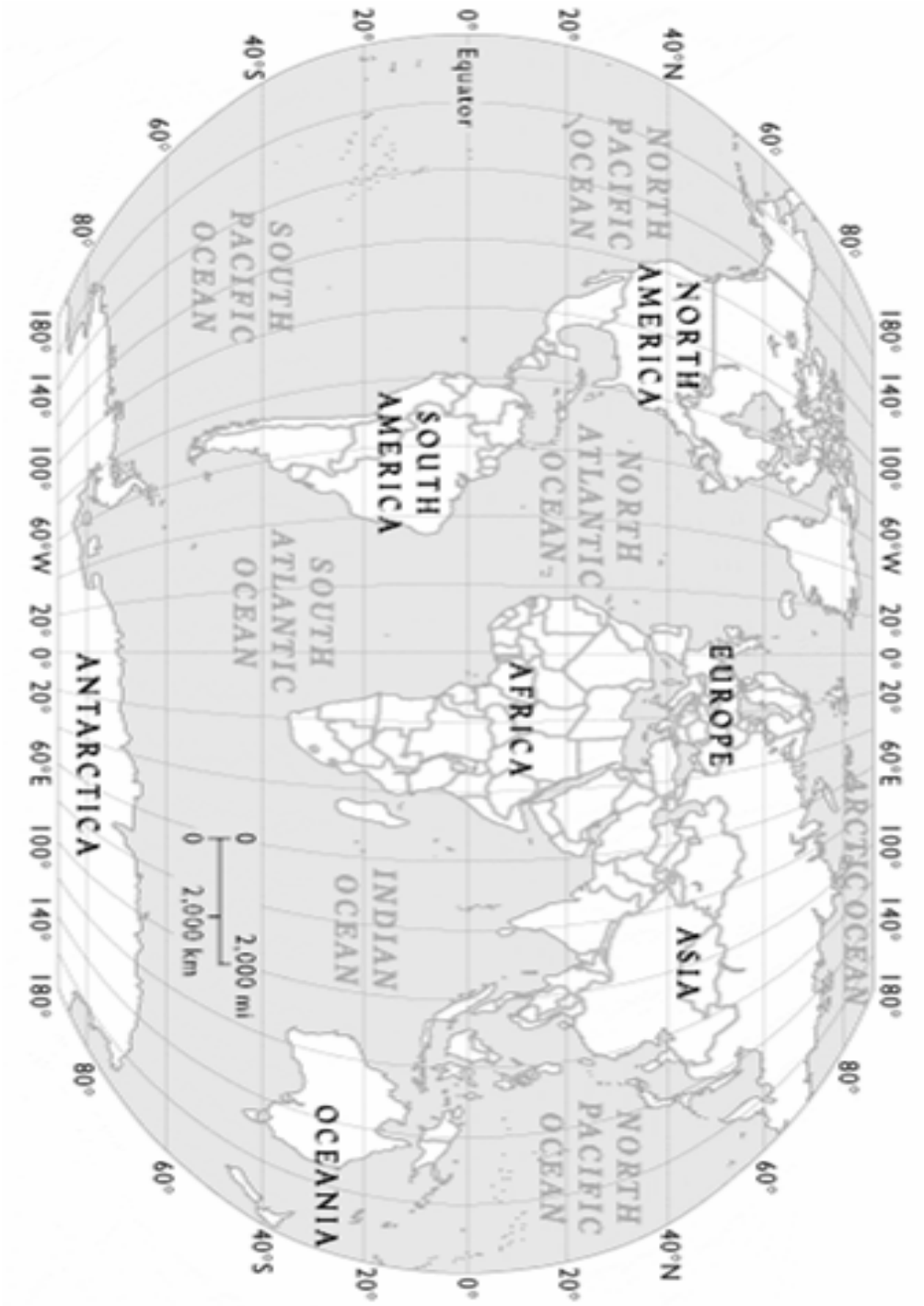
Using the world map in Student Handout 1.1 and a classroom world atlas, fill in the geographic information on the pink and green zones of the world, where farming began between 7000 and 3000 BCE.

| | Region 1 | Region 2 | Region 3 | Region 4 | Region 5 | Region 6 |
|---|---|---|---|---|---|---|
| Continent/region name | | | | | | |
| Time period for spread of farming | | | | | | |
| Latitude range | | | | | | |
| Vegetation zone | | | | | | |
| Annual rainfall amount | | | | | | |
| Annual temperature range | | | | | | |
| Physical features | | | | | | |
| Elevation | | | | | | |

## Lesson 1

### *Student Handout 1.3—Locating Archaeological Sites with Evidence of Early Farming and Herding*

Using the outline map below, locate the archaeological sites found in the descriptions in Student Handouts 2.1-2.9. Mark them on this outline map with colored dots. You may need an atlas to assist you.



# *Lesson 2*
# *Investigating Archeological Sites of Early Farming and Herding Around the World*

1. Distribute the Student Handout 1.3 map. Distribute Student Handouts 2.1-2.9, which provide summaries of the archaeological investigations that will guide student investigation of archaeological sites by showing them evidence of early farming and herding.
    a. Ask what evidence students think historians and other specialists might use to make conclusions about where and when farming began.
    b. Explain that ideas about where and when farming began in different locations around the world are based on careful investigation of the remains of human settlements from thousands of years ago. The evidence found at such places is often being updated with new finds and techniques.
2. Working in pairs or groups, have students use a large atlas and longitude/latitude coordinates to locate the eight archaeological sites on the Student Handout 1.3 map. The sites may be marked with different colored pencils, and students may underline the heading of the site description using the same color.
3. Then, working in eight pairs or groups, students will fill out the data sheets on corresponding copies of Student Handout 2.1 based on each reading and its illustrations. They will enter the various types of archaeological evidence of farming and herding, and other finds at the sites.
4. Intermediate assessment: Each group presents to the class its findings on the sites based on the categories and data it has entered on the Student Handout 2.1 map. The group should use the information to argue for or against the presence of human domestication of plants and/or animals at the site. The teacher may choose to introduce some or all of the questions given in number 5 below. Groups may use illustrations for their presentation. In many cases, additional information on these sites is available by doing an Internet search. (NOTE: ambitious teachers may wish to build a WebQuest document and post it on Internet-ready classroom computers or assign it for homework. Most of the archaeological sites can be fruitfully searched by name.)
5. In discussion, the class will compare and contrast these sites and try to account for the variety of experiences in different places. Discussion may include the following questions concerning each site, and the sites as a group:
    a. What methods of scientific examination of the remains were used?
    b. What evidence dates the site?
    c. What types of plant and/or animal remains were found at the sites? How did these give evidence of a balanced diet?
    d. What evidence of continued hunting and gathering was found at the site?
    e. What evidence of trade was found?
    f. What evidence of permanent or semi-permanent dwellings indicate settlement patterns? What types of building material and construction were used?

   g. What evidence of craft production, social organization, and communal life was found?
   h. How might archaeologists decide whether agriculture had developed independently at a given site, or whether domestication practices and skills had diffused, or spread there from a nearby or distant location?

6. Assessment/Extension: Students create an archaeological site based on their investigation of the selected sites, describing the time period, climate, surrounding physical features and vegetation, and tell how the inhabitants changed their environment,. They describe the crops and domesticated animals associated with their site, give other evidence of nutrition sources, and describe the dwellings, found artifacts, and settlement patterns. They also describe other aspects of the culture, including arts, trade, religion, and evidence of what happened to the people who settled the site. They should make a "menu" of the diet of the inhabitants and show that it was a nutritionally complete diet for healthy living.

## Lesson 2

### *Student Handout 2.1— Investigating Archaeological Sites*

Make copies for each student or group investigating one of the eight sites.

| | |
|---|---|
| Name of site | |
| Location | |
| Size of site | |
| Dating of site (When was it inhabited?) | |
| Available natural resources | |
| What they grew (plant evidence) | |
| Evidence of animal domestication | |
| Dwellings and other buildings | |
| Technology (farming implements) | |
| Food storage | |
| Human skeleton evidence (health, burials) | |
| Evidence of continuing hunting & gathering | |
| Evidence of art | |

## Lesson 2

### *Student Handout 2.2—Investigating Archeological Sites*
### *Mehrgarh, South Asia*

The Kacchi Plain, between the hills of Baluchistan and the Indus Valley is one of the earliest farming settlements in South Asia. The site is located at latitude 24° 48′ N and longitude 66° 59′ E in today's Pakistan. The archaeological site, called Mehrgarh, is about 168 acres in size. Its layers have been dated to the period from the beginning of the seventh to the sixth millennium BCE. It belongs to the Neolithic period, or New Stone Age. Many archaeologists believed that farming began in Southwest Asia and spread elsewhere, but discovery of sites like these have led some to change their minds. The evidence points to independent development of farming.

The Mehrgarh settlement had many advantages. The highlands were suitable for summer grazing of domesticated animals. Streams that flowed throughout the year could be dammed to trap mineral-rich silt and provide water for crops. Many species of plants and animals that could be domesticated were native to the area. Wild varieties of wheat and barley grasses were found, and wild cattle, sheep, and goats lived in the hills and valleys. Other resources included flint stones found in deep rivers, and trees for building and fuel. Early trade routes to Inner Eurasia and the Indus Valley crossed near the area.

Archaeologists found the remains of a village of mud-brick houses that had been plastered with adobe. The house foundations were square or rectangular, with more than one room. They showed evidence of wood beam roofs with reed thatch supported by twigs. Upper layers of the excavation dated to the sixth millennium BCE showed that people built storehouses in the village. They were mud brick buildings with walled compartments where archeologists found grains, raw materials, tools, and items for trade.

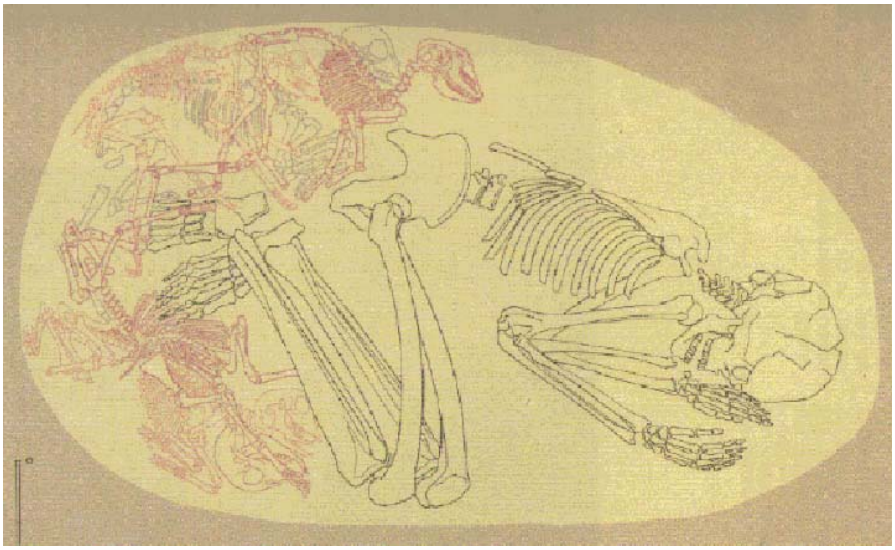
The diggers found many types of artifacts in different layers and areas of the site. People living there made and used blades, stone axes, chisels, and sharp-edged stone points called microliths. They also made small balls that might have been used for pounding things, hunting birds, or even playing games. They made stone sickles for cutting grain, and grinding stones to make flour from grain. Bone objects included needles and sharp-pointed tools. Later, levels of the village contained copper that had been made into spearheads and axes.

Lapis lazuli, marine shells, and turquoise artifacts must have come on trade routes from Persia and Inner Eurasia to make the luxury goods found at the site. Recently, evidence of cotton threads with the beads shows the earliest known use of cotton fiber, probably a wild variety. People also made terracotta figurines in the shape of seated women with exaggerated bodies, probably as fertility symbols; they were also decorated with jewelry. These figurines are found in several periods (layers) of the settlement. They made more than one type of pottery, either undecorated (probably used for cooking) or decorated with geometric patterns, stylized bird designs, and multi-colored containers. Early vessels seem to have been used for storage, but later people made plates and bowls with handles.

Farming tools and remains of wheat and 6-row barley show that these plants were farmed. Animal pens in the village and plentiful bones of sheep, goats, and cattle are evidence that these animals were domesticated. Tools and other types of animal bones showed that people continued to hunt to add to their diets but that successful farming led to population growth and gradually replaced hunting and gathering.

The site had many graves. People were buried in an open area within settlements. The graves also contained goods like decorations of bone, shell, and stone ornaments on the skeletons. Even some infants were buried with many grave goods. The number of objects varied among graves, showing that some individuals had more wealth or higher status. Ornaments for the head, chest, arms, waist, and ankles were found buried with the dead, with beads and pendants made of semi-precious stones such as turquoise, lapis lazuli, carnelian, and steatite. They included shells that may have come from as far away as the Arabian Gulf. Bangles made of copper were also found.

http://tyr.ioa.ucla.edu/Northridge/AsiaMisc/sld031.htm



http://tyr.ioa.ucla.edu/Northridge/AsiaMisc/sld032.htm
See also charts showing animal changes over time at http://tyr.ioa.ucla.edu/Northridge/AsiaMisc/sld033.htm.

## Lesson 2

### *Student Handout 2.3—Investigating Archaeological Sites*
### *Ban-po-ts'un, East Asia*

One of the earliest and best investigated early farming sites is Ban-po-ts'un in East Asia, also called Banpo [baan paw]. It is located in northern China near the famous medieval city of Xian, in Shanxi province. The site belongs to the Neolithic period, or New Stone Age, and was settled from 6000 years ago. It is located near the ancient city of Xian, at longitude 108 E by latitude 34 N, and 412 meters above sea level.

The site of this early farming village is 12.5 to 17.5 acres (5-7 hectares). It consisted of about 100 houses, both round and square in shape, surrounded by a defensive drainage ditch. The site was continuously occupied over a long period of time. One area of the village showed evidence of five house floors on top of each other, showing that it was continuously remodeled and rebuilt over time. Some of the houses had floors sunk about 1 meter below the ground. The circular houses were about 3-5m in diameter (10-16 ft). They had timber beams resting on stone bases, with steep thatched roofs. The floors and walls were plastered with clay and straw. Circular or pear-shaped fireplaces at the center of the houses were lined with clay. Among the houses, storage pits and animal pens were found at the center of the settlement. (Image on next page.)

Rich farming soils surrounded the village, where people grew millet for food and hemp for fiber. Pigs and dogs were domesticated, and bones of cattle, sheep, and goats have been found. A cut silkworm cocoon may be evidence of early silk cultivation.

At Banpo, people made farming tools like bone hoes from the shoulder blades of sheep and cattle, as well as polished stone adzes, axes, and knives. Archaeologists found many digging stick weights at the site. Stone spindle whorls (weights) and bone needles are evidence of clothing production. Fishhooks, stone net sinkers, and bone or quartz arrow points show that people added to their diet of grain by hunting and fishing. Bones of deer and remains of chestnuts, hazelnuts, and pine nuts are also evidence that hunting and gathering still made up part of their diet.

Among the most abundant artifacts found at Banpo were 500,000 pieces of pottery. Six kilns for firing pottery were located around the village. Most of the containers found were handmade vessels called red ware, made from red clay. Some of the pottery was plain and coarse and used for cooking. Craftspeople also made water vessels and food serving bowls from finer clay. They decorated the pottery vessels by pressing twisted cord, fingernails, baskets, or textiles into the clay into the wet clay. Some of the most beautiful pottery bowls and jars were painted black with geometric and animal designs called.

Adults were buried in a cemetery outside the ditch at the north end of the settlement. Corpses were placed in pits, 2 m (6.5 ft) deep in rows. Individuals were buried alone, in an extended position. Ceramic vessels were included with the body in most of the graves. Infants and small

children were most often buried in redware pottery jars near the houses. One child burial was in a wooden tomb with green jade pendant, string of 63 bone disk beads, four ceramic vessels, and three stone pellets.

Toward the end of the occupation of the village of Banpo, the inhabitants built a large rectangular structure on a manmade platform 20 x 12.5 m (65 x 41 ft) in the center of the village. It was ringed by a low wall that may have had posts in it to support walls that are no longer there. The earthen structure was plastered with a white limey substance hardened by baking. Archaeologists think it may have been a clan house or a communal assembly hall used for ceremonies or worship.

http://hilbertspaces.com/photos/china/xian/banpo/dscn1366.jpg

http://hilbertspaces.com/photos/china/xian/banpo/dscn1361.jpg

http://hilbertspaces.com/photos/china/xian/banpo/dscn1356.jpg

## Lesson 2

### *Student Handout 2.4—Investigating Archaeological Sites*
### *Tripolye, Eastern Europe*

Archaeologists had not found early farming sites in eastern Europe until they discovered a number of them between the Dnieper and Dneister Rivers, which they identified as the Cutcuteni-Tripolye Culture. The first of those was the village of Trypillia, 50 km south of Kiev, Ukraine. Trypillian sites have been dated from 6000 BCE to 3000 BCE. These settlements seem to have been occupied for 50-70 years each, after which they were abandoned. It is not known why Cutcuteni-Tripolye Culture vanished after 3000 BCE, or why the settlements were often abandoned. Evidence shows that Trypillya tribes cut down forests and enlarged the steppe. Turning the steppe into grazing land invited invasions by Indo-European animal herders. The lack of diversification may have been another reason, since the villages depended on land farming more than domesticated animals. The climate may have become colder over time, or the soil may have worn out. Some evidence exists that the village had been burned, and archaeologists have a theory that the people may have burned down their houses before leaving to frighten invaders and wild animals. They believe that when the inhabitants moved on, they harnessed bulls to sledges loaded with their possessions, since they had no wheels yet.

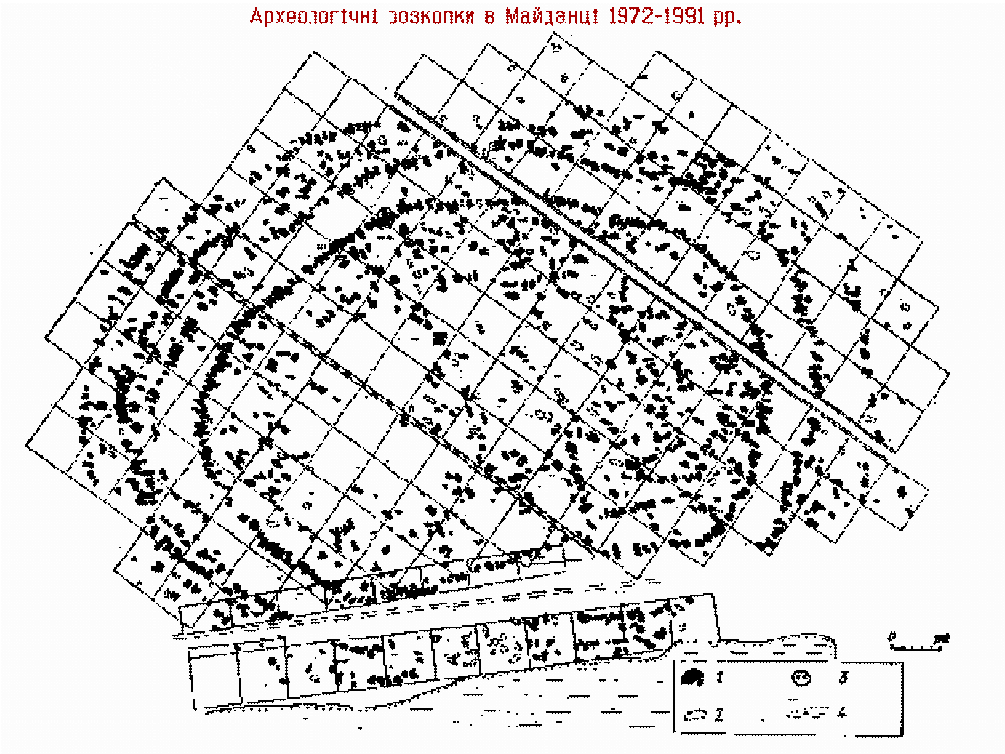
Ancient Trypillian farmers cultivated wheat, barley, peas, and legumes. According to paleobotanists, these crops were grown in fields that were used for long periods of time. Spore-pollen analysis shows that these plants were grown around settlements. Ravines were covered with rich motley grass, red mallow, white bindweed, and pinks. Cornflowers grew in the wheat fields. Willow, alder, oak, hornbeam, and nut-trees grew along woodland waterways. Bison, deer, wild boars, bears, wolves, foxes, and hares lived in the forests. Animal bones and artwork show that the Trypillian people raised cattle.

Having a rich supply of wood, inhabitants cut down many trees for their dwellings. At the beginning their settlements were small, from seven to fourteen buildings, but with time some grew into towns with thousands of buildings. Evidence of dwellings was found in floors of baked clay, which included both dwellings and barns. Houses show evidence of thatched roofs, earthen walls, and clay and bran coating on the walls. The floor space ranged from 50-160 square meters. The houses were complex, perhaps two-storied with walls of wooden stakes covered with clay. At some sites, houses were arranged in concentric circles. Larger houses—like longhouses—were occupied by families of several generations. Evidence of earthen storage benches and painted altars was found in some houses. The floors and the walls of some houses were painted in black, red, or white colors in geometrical ornamental patterns, which probably had a spiritual meaning. Communal houses of 200-300 square meters might have been shrines, with something like altars in them, which could accommodate a whole community gathered for a ritual.

The early settlement occupied half of a square kilometer, and Trypillya farmers tilled the land close to the settlement until it was exhausted, then moved on. Improvements to land cultivation and development of crafts led to increases in population. Some settlements began to grow into

towns divided into streets and blocks, with some two-storey houses, which were connected by bridges at the second floor. Some later settlements may have had 10,000 residents.

To clear fields for farming, Trypillian people used stone and copper axes. Sickles with silicon (flint) inserts were used to harvest crops. Clay or stone mortars for grinding harvested grain into flour were found in the houses. Evidence or crafts such as metallurgy and metal-working, pottery, and weaving was found. Copper tools and weapons, pottery bowls, flint arrowheads, and a variety of bone points, needles, and tools were also found around the site. Stone tools included axes, knives, and spindle whorls. Metal was used to produce weapons (axes and daggers), bracelets, rings, pendants, and amulets. Trypillians used molded and forged metal products. Most tools were produced from flint, stone, animal horns, and bones. Residents made vertical looms and a potter's furnace. Crude pottery with no decoration served for cooking. Archaeologists found fancier pottery jars and other vessels, and footed beakers that show painted decoration with intricate swirled and geometric designs. These designs may indicate worship of the sky, sun, and rain. Tree-of-life images on pottery, horned animals for handles on vessels, and brown and black painted designs on pale yellow background show reverence for nature, magic, and use of symbolism. Figurines in the form of seated women were very common at Trypillian sites. "Tokens," beads, or clay shapes incised with geometric designs might be a form of pictograph used for counting.




Magnetic map of a Trypillian settlement, showing rings of houses, which were burned when the inhabitants began a new settlement, thus leaving a magnetic fingerprint in the burnt clay of the buildings. http://www.trypillia.com

http://www.trypillia.com

## Lesson 2

### *Student Handout 2.5—Investigating Archaeological Sites*
### *Chilca, South America*

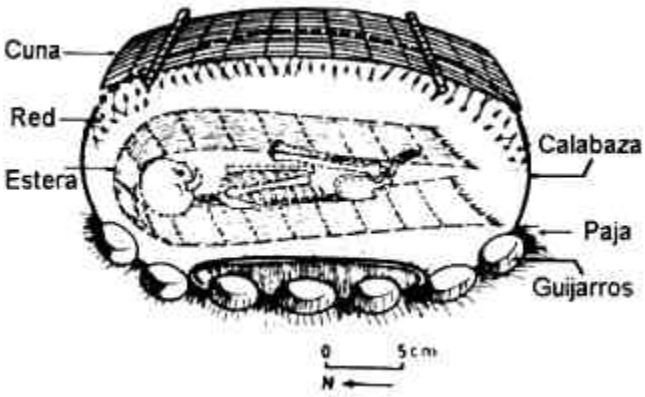
The Chilca Valley lies on the eastern coast of Peru, flanked on the east by the Andes Mountains and on the west by the Pacific Ocean. The area lies at an altitude of 4000 meters, about 70 kilometers south of Lima. It has served as an important traveling route for coastal inhabitants to access the highlands. Within the Chilca Valley, two major archaeological sites have been discovered, Tres Ventanas and Kiqche. Each includes about two acres of excavations. The area is believed to have been inhabited by hunter-gatherers from the Early Archaic Period through the Formative Period (8000-5000 BCE).

Around 5000 BCE people in the area began to cultivate seeds and tubers indigenous to the area – potatoes, gourds, and lima beans, followed by squashes, peanuts, and cotton. They may have done this owing to the increasing scarcity of deer and camelids, the indigenous animals that had been a source of protein.

Evidence of tools used by the people of the Chilca Valley, such as stone blades and knives, has been found. Archaeology has evidence of dwelling construction, garbage heaps, and burial sites, further demonstrating that the people of Chilca settled there for a long period. The dwellings found in the village were well built, using sophisticated architectural techniques. Construction of the huts included heavy branches and brush, with "carpets" of organic material, and ceilings held up with a center pole.

Three different types of burial rituals were evident at the Chilca site: individual graves, graves containing up to eight bodies, and graves with large numbers of bodies. In each of the grave types, bodies were wrapped in organic material, and sometimes even in woven cotton. Evidence of the special importance of children in the community can be inferred by extra care taken in their burial. After being wrapped in cotton, the deceased child was laid on a bed of stone or sand surrounded by straw. The jewelry and fine fabrics buried with children are additional signs of respect for the dead and for children.

The Chilca people acquired knowledge through trial and error, discovering that alternating crops allowed the minerals in the soil to rebuild, thus producing a greater yield. They domesticated such vegetables as potatoes, yams, and ullucos.




Burial of a Fetus
http://www.arqueologia.com.ar/peru/chilca.htm

## Lesson 2

### *Student Handout 2.6—Investigating Archaeological Sites*
### *Jericho, Southwest Asia*

Jericho is located four miles west of the Jordan River, twenty miles east of Jerusalem, and ten miles northwest of where the Jordan meets the Dead Sea. Jericho is one of the lowest cities in the world, at approximately 825 feet below sea level. Archaeologists date the site at Neolithic Jericho to approximately 9,000 BCE. The location of ancient Jericho, built on a "tell," or settlement mound, proved ideal for farming and trade. An underground spring, still flowing today at a rate of more than one thousand gallons per hour, is a major reason why people have been so successful in their farming endeavors, both in ancient times and today.

Ancient Jericho probably began as a camp of hunter-gatherers who took advantage of the abundant fresh water from the underground spring. Archaeologists have discovered evidence to suggest this, including abandoned tools and the remnants of wild plants and animals. The overlying layers illustrate the dramatic changes that followed.

Remnants of round houses, often in clusters, and connected by adobe walls (probably to keep livestock out of the inner yards) have been found. These houses were constructed of mud bricks, with inclined walls and domed roofs, and nearby cultivated fields. This was the beginning of agriculture and a reliable and renewable food source. Grains grown were wheat, rice, rye, oats, millet, and barley. Food could be raised in abundance and stored for the future. Ancient Jericho prospered with cultivated crops of barley and wheat, as well as domesticated sheep and goats. The organized society that developed can be seen in the variety of objects, including plastered human skulls used in rituals, tools replete with decorative carvings, and jewelry. Many of the knives found have a gloss on the blade, known to result from the cutting of grasses and cereal grains.

The people of ancient Jericho constructed a wall, for both fortification and flood control, 6.5 feet thick and up to 20 feet high, encompassing an area of approximately six acres. The total area of the city was about nine acres. It is believed, based on the archaeologist's rule of thumb of 200 persons per acre, that up to 1,200 people might have lived in ancient Jericho at its peak. One of the most amazing discoveries has been a circular stone tower with an internal stairway. The purpose of the tower is not known.

Evidence of trade is seen in the minerals and shells not found locally, such as obsidian and various green stones indigenous to Anatolia, turquoise from Sinai, and cowry shells possibly from the Red Sea. Jericho could have exported resources such as salt and bitumen (a tar-like material used to stick things together).

The excavation of some artifacts, such as greenstone amulets, hint at religious rituals. Burial rituals and ideas about death can be surmised from location and position of skeletons found.

Some bodies wee buried below the floors of the houses, sometimes with the head removed. Skulls have been found in groupings inside some of the walls, as well as underneath houses. In one instance, the skulls were been arranged in a circle, all looking inward. Infants have been found in groupings as well, some with bodies intact, others with the head removed.

http://schools.brunnet.net/internetucation/neolithic_revolution/society/society.html

http://carlos.emory.edu/COLLECTION/NEAREAST/neareast05.html

## Lesson 2

### *Student Handout 2.7—Investigating Archaeological Sites*
### *Guilá Naquitz Cave Group, Oaxaca, Mexico*

Adaptations to farming in Mesoamerica as a way of life took place over thousands of years, much more gradually than in other places in the world. It appears that the hunter-gatherers of this area began cultivating plants while still living a semi-nomadic life. The location of one extensive dry cave excavation in Mesoamerica is Guilá Naquitz.

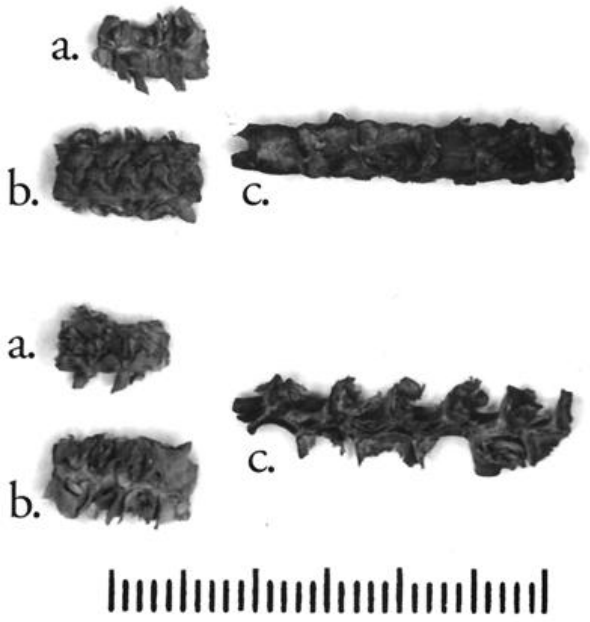
Naquitz is a cave 1926 meters above sea level (16º57' N and 96º22' W), overlooking the Oaxaca Valley of Mexico, in South America. Two rivers, the upper Rio Atoyac and the Rio Salado, flow through the valley.

Although this early date had been contested, archaeologists now feel confident that they have evidence that the people of Guilá Naquitz cultivated squash 9,000 years ago. Using current knowledge of the history of domesticated plants in Mexico, combined with data gleaned through radio carbon dating, scholars believe that these gourds, *Cucurbita pepo*, were cultivated for their protein-rich seeds. The squash is the same species as the modern pumpkin and the summer squash. While it seems that the seeds provided nourishment, the skin of this gourd served as a container. Remnants of other plants, such as corn and beans, discovered in the area have proved to be about 5,000 years old.

The excavation of Guilá Naquitz has provided evidence of periodic inhabitation, between the months of August and December, over a span of about 2,000 years. These were the months when edible, native vegetation was ripening. Evidence shows that there were six distinct periods of time when people took shelter in the cave. Archaeological excavations provide evidence of areas where butchering, food processing, cooking, and tool making took place. We may also infer, based on the changing layout over time, that gender roles became more distinct over the 2000 years the cave was used.

The people of Guilá Naquitz learned over time to forage for different plants, according to the season. The unpredictable rainfall necessitated experimenting and sharing new knowledge of plant adaptability. Evidence of their success is the seeds that have been found in the cave. Some seeds germinate in wetter conditions, while some grow better in drier soil. Understanding and planning for variations in rainfall would allow crops to be harvested every season, ensuring food production and survival. Dependable harvests allowed them to rely more heavily on the maize, beans, and squash they were able to produce. When the harvest was in excess of the people's needs, they stored food by digging pits in the ground at the back of the caves.

Squash seed from the Guilá Naquitz cave
http://www.archaeology.org/9707/newsbriefs/squash.html




Carbonized maize cobs from the Guilá Naquitz cave
http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=29389

## Lesson 2

### *Student Handout 2.8—Investigating Archaeological Sites*
### *Gunditjmara, Australia and Papua New Guinea*

Farming in aboriginal Australia took place in a different manner. Hunter-gatherers societies burned vegetation to encourage the growth of preferred plants. Until recently, it was commonly believed that all aboriginal people in Australia lived a mobile lifestyle. Recently, researchers surveyed one site in particular, and determined that the aboriginal people of Gunditjmara were not settled.

After studying the findings, archaeologist Heather Builth set out to research the area for herself. Her interdisciplinary investigation showed something quite different about the site, the home of the Gunditjmara, in the Lake Condah region (142°0'E x 38°5'S) in southeastern Australia. Using core samples, radio carbon dating, and ethnographic and historical eyewitness evidence, she was able to discover and relate a detailed picture of a sophisticated society run by the Gunditjmara. She discovered that around 8,000 years ago, the hunter-gatherers from the Lake Condah region cultivated approximately 100 square kilometers (more than 24,000 acres), not with plants, but eels. They created artificial ponds from the natural wetlands which were connected by channels, and they built stone fish traps to take advantage of the migration cycles of the eels. Recent findings show that the aboriginal people of Gunditjmara would have been able to feed more than 10,000 people with the eels they farmed and traded.

While ancient aboriginal people lived in small, mobile communal bands, where wealth and power were shared, the people of Gunditjmara built stone huts, evidence that they were a sedentary people. Previous experts had dismissed rock formations as being random. Builth used careful measurement and statistical analysis to show that the rocks formations were not natural, that they were, in fact, the foundations for stone huts.

Eel trap from Lake Condah area
http://www.aboriginalartonline.com/newsletter-december-2003.html

Burnt, hollowed-out trees, frequently located right next to the eel traps, served as smoke houses to persevere the freshly caught eel for later consumption. This method of preserving the huge numbers of eels believed to have been farmed also led Builth to believe that the people of Gunditjmara were involved in trade. The story of the eel farms of Gunditjmara is proof positive that there is much for us to learn.

**Bananas in Papua New Guinea**

Another archaeological site near Australia may reveal early cultivation of an important crop. At a site called Kuk in the highlands of New Guinea, a series of channels dated to about 10,000 years

ago seems to show evidence of being made by humans to server as a canal irrigating or draining crop land. In addition, studies of ancient grains of pollen show that at about the same time, the forests of Kuk began to change to grasslands. The investigators said this may have been evidence of clearing the forests to grow crops.

Further investigations found fragments of banana plants called phytoliths dated to between 6,440 and 6,950 years ago. Phytoliths are built of silica crystals that gather in certain parts of a plant while it is alive. After the plant dies and decomposes, the phytoliths can show what plants thrived in a certain area at a particular time. The number of banana phytoliths found at the level of the Kuk site dated to 7,000 years ago was more than a typical grassland would contain. The large number of banana phytoliths could show that people at Kuk were probably planting fields of bananas. These banana fragments belonged to a subspecies that later led to the domesticated bananas that we know today. Evidence of farming other crops in the New Guinea highlands includes the starchy root crop called taro, found in a valley in New Guinea's mountainous interior. The big island now joins a select few places in the world as a location where agriculture began. Investigators believe that this site reveals that bananas were first cultivated in New Guinea and spread from there.

The combination of evidence from pollen and the channeled formations show that the people living at Kuk made major adaptations of the local environment at a very early period. Kuk was a swampy area, which would seem to many scientists to be a poor place to start farming. Now they say that being on the boundary between wet and dry regions would allow many different types of plants to grow there. People might have visited the place often because of the variety of food-bearing plants.

Paleosurface at Kuk, carbon dated to around 6950 to 6440 years ago.
Photo by Jack Golson at http://news.nationalgeographic.com/news/2003/06/0623_030623_kukagriculture.html

Although a swamp may sound like a bad place to farm, the Kuk region actually would have been a good place to start domesticating plants. It lay on the boundary between wet and dry ecological regions, allowing many different types of plants to flourish that could have been exploited by humans. Two of these crops were bananas and taro, and scientists are speculating that sugar cane may have gotten its start in the same region.

The canal formations may or may not be the work of human hands, but the attempt to drain away or concentrate water at this place may be related to farming at the site.

## Lesson 2

### *Student Handout 2.9—Investigating Archaeological Sites*
### *Dhar Tichitt, West Africa*

The archaeological surface site located at Dhar Tichitt appears to lie on what was a 50 meter stretch of ancient beach on the edge of a dry lake bed. It was found in Mauritania at latitude 18° 26' N, longitude 9° 5' W. The site has been dated to the late Holocene, about 7000 BC.

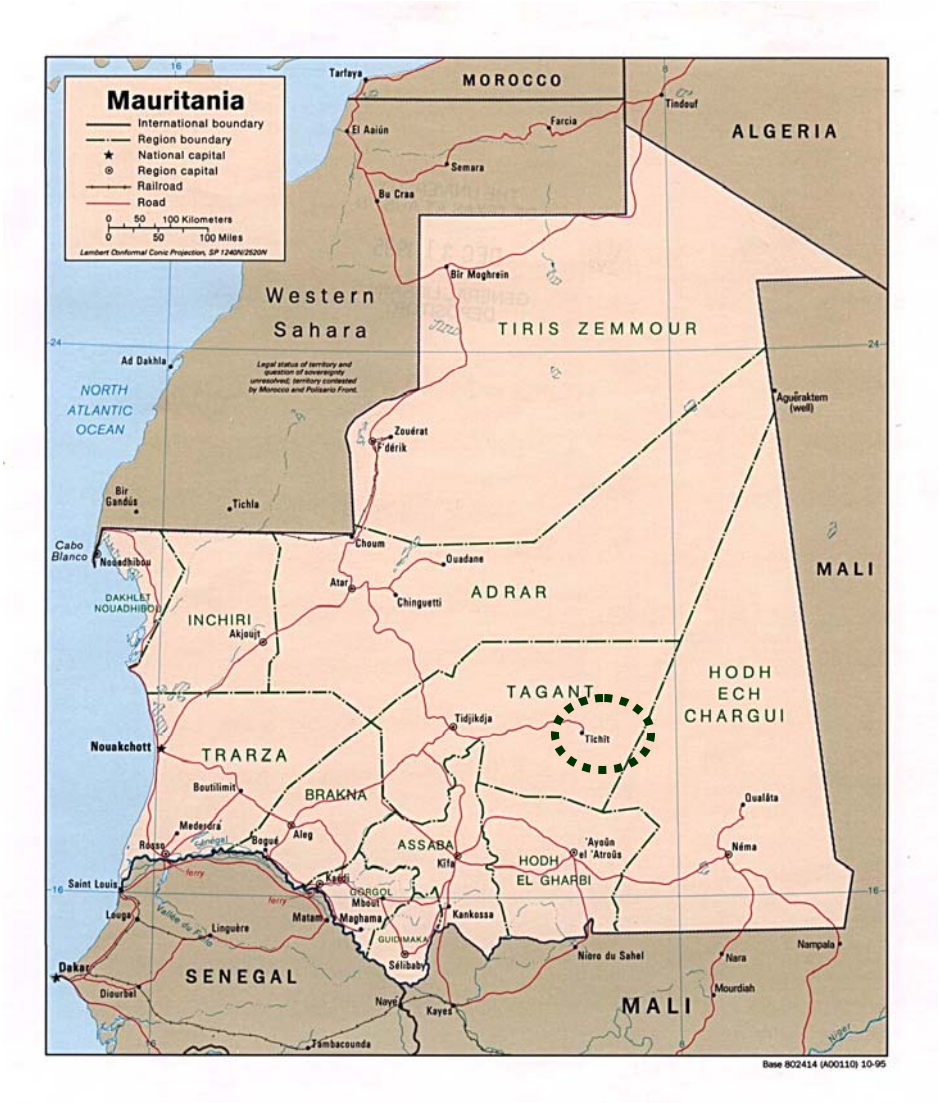
For archaeologists, a problem of identifying early African agriculture is that there does not appear to be one center, nor did one crop dominate and then diffuse to other locations. Early theories about the beginnings of agriculture in Africa centered on the Nile Valley and on the Niger delta area in West Africa. Little archaeological evidence of that theory has been found, however. Patrick Munson, the archaeologist who investigated the Dhar Tichitt site, believes that evidence of the beginnings of farming would be found farther north of the Niger river, in marginal areas. The reason for seeking this evidence in the desert is that the area covering the Sahara is known to have been much wetter during late pre-historic times. Rock art found in the driest areas of desert shows rich animal life, including giraffes, crocodiles, and rhinoceros, in grasslands and wetlands. Cattle remains at lower levels are evidence that herders began to settle Dar Tichitt between 5000 and 3500 years ago.

The site at Dhar Tichitt is near an area where wild grasses are related to domesticated varieties of seed crops such as sorghum. Earlier archaeologists had already found Neolithic village remains in the area. Finally, the area is not far from the upper Niger River valley, which was a center of the early West African civilization of Ghana.

Dhar Tichitt in southern Mauritania showed a cultural response to a drying climate. Digging revealed eight phases, from hunting animals (2000 BC) to the beginnings of herding (1500-1100). In later periods, people began to rely more on grains, based on the presence of millstones. The plant remains found include cramcram, a spiny famine food, as well as millet and sorghum in the later phases. Identification of the species found showed that people living at Dhar Tichitt, first gathered wild grasses, then planted them. This development took about 100 years. This is very rapid development unmatched by other sites. The investigators theorized that the people at Dhar Tichitt mist have been somewhat familiar with the idea of farming and migrated from another area. People seem to have begun herding and planting as the climate grew drier at the site.

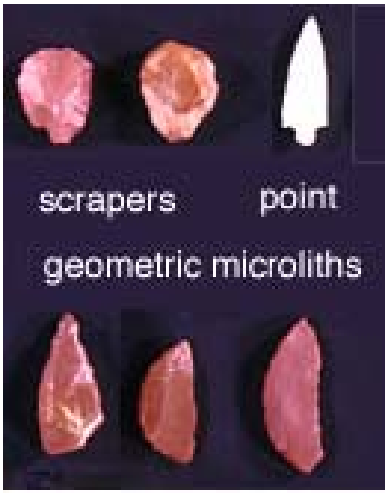
Artifacts from the site included chipped stone points, scrapers, knives, awls, choppers, and blades made from quartz, chert, and slate. Ground stone tools included axes and grinders made of dark, hard stone. Mortars for grinding grain were also found at the site. Bone tools had been made into awls, scrapers and beads, though not many bone tools were found. At a nearby site, a harpoon-like bone tool was found that hunters probably used to hunt in the area of the lake. Many stone bracelets were found at different levels of the site. Animal remains include crocodile and hippo bones and shellfish.

Many pieces of ceramic pots and bowls were found, most of them being either undecorated or with simple corded decoration at the top, or with woven patterns and comb decorations. An important find related to the millstones was millet grain seeds impressed into the pottery, showing evidence of agriculture, since the types of seed were identified with cultivated rather than wild types.




U. S. Government, Central Intelligence Agency
http://www.lib.utexas.edu/maps/africa/mauritania_pol95.jpg






http://timeweb.wisdomtools.com

All photos by Patrick Munson

# *Lesson 3*
# *Understanding Domestication of Wild Plant Species*

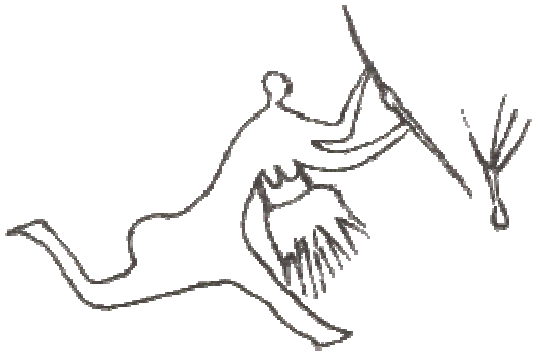
## Procedure

1. Bruce D. Smith states, "Domestication is the human creation of a new form of plant or animal—one that is identifiably different from its wild ancestors and extant wild relatives." Using the definition of domestication in Smith, *The Emergence of Agriculture* (New York: Scientific American Library, 1998), discuss the idea of plants becoming dependent on humans, and humans dependent on plants. Discuss what types of plants people have domesticated over time (e.g. grains from grasses, nuts from trees, tubers and other root crops, annual vegetables, fruit trees, herbs for medicinal and culinary purposes, flowers for gardens).
2. Ask students what methods archaeologists and paleobotanists might use to identify the remains of prehistoric or ancient plants that are associated with human settlements or sites of occupation by hunter-gatherers. (Answer: morphological clues such as seed shape, stem shapes, grains, impressions of plant parts in clay pots, hearths or earthen floors, charred plant remains such as corn-cobs, and pollen). Some students may do a mini-research project to find out about recent plant DNA studies as ways to relate and distinguish wild and domesticated plants.
3. Students will use Student Handout 3.1 to investigate the different qualities of plants that distinguish wild, self-propagating versus domesticated, human-propagated plants. Students will also consider how people gradually altered wild plants by selecting four characteristics they found favorable. Students will be able to describe, by analyzing the cartoon drawings and answering the accompanying questions, the characteristics that were valued as advantageous by early gatherers and farmers, and explain how these characteristics were often the opposite of those necessary for plants to propagate in the wild. By preferring these qualities, plants that possessed them were favored by humans. Therefore these species survived and continued to change based on human cultivation.
4. Assessment: Students will write a paragraph, make a visual presentation or orally summarize their findings about early human domestication of plants.
5. Extension: Using the Internet, books, or specialized periodicals, have students research a domesticated plant of their choice and present in written and/or graphic form how its wild ancestor differs from its cultivated offspring. Alternatively, students can research current genetic modification of wild and domesticated species through traditional cross-breeding as well as new techniques such as gene splicing. Their research product should include information about what qualities agricultural scientists are attempting to achieve in modifying these plants (i.e. disease resistance, increased yields, long shelf life).

## Lesson 3

### *Student Handout 3.1— From Wild Grass to Wonder Bread*

Scientists studying ancient plant remains at archaeological sites try to find out what plants or animals ancient humans ate and whether these foods were wild or domesticated. For example, by studying animal bones and remains of ancient livestock enclosures, they can tell whether the people were merely bringing hunted catch to the site (if the bones represent mostly adult animals with signs of weapons used for the kill), or whether there were larger numbers of younger animal bones or female specimens (indicating that the animals were herded and kept for milk or slaughter). Evidence of permanent settlements rather than migratory camps can help determine whether and what type of farming was practiced at the site. Discoveries of tools used for cultivating, harvesting, storing, and preparing plant foods help archaeologists build a case for the type of settlement and its activities. Dating the site using organic remains is also important.

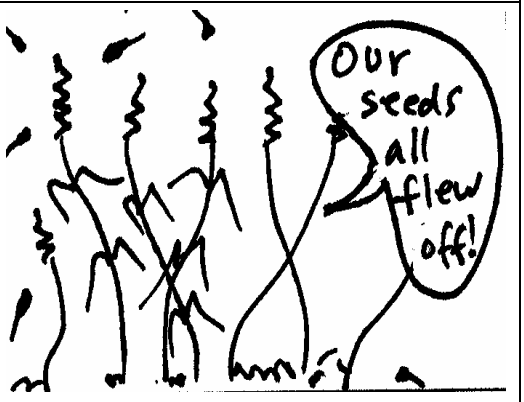
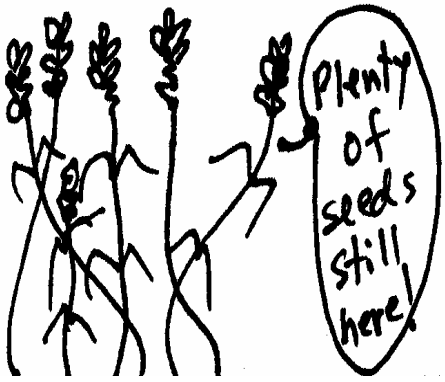
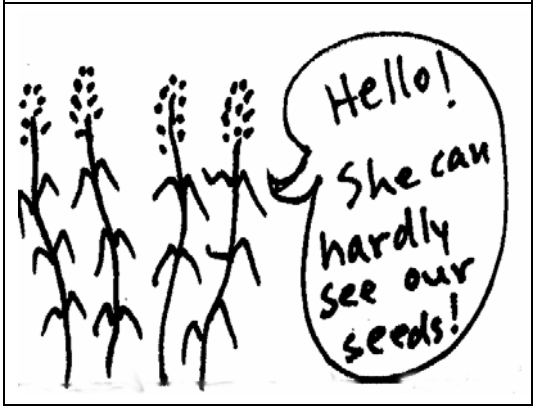


By finding remains of plants such as ancient seeds, stalks, cobs, seed casings, and nutshells preserved in layers of earth associated with different periods of human settlement, scientists can study the biological features of individual plants such as the size and structure of the stalks, the attachment points of seeds, the seed husks or seed heads. Study of pollen has become useful with the development of advanced microscopes and DNA (the cell's hereditary blueprint).

Using these techniques, paleo-botanists have been able to discover which plant species were domesticated early in human history, and how these plants changed as people chose foods because of certain biological characteristics. By this method, people helped to develop new varieties of wild plants, eventually creating plants that could no longer survive or reproduce without human effort, but which produced more food per plant than the wild varieties. Thus, farming was born.

Using the following cartoon and graphic organizer, discover what qualities humans "encouraged" in wild plants that resulted in domesticated varieties, and helped them to reproduce and pass on their new biological traits.

(*Top image: North American rock art, detail of a woman gathering plant. Bottom image: An African rock art drawing of a woman gathering wild yams with a stick and placing them in a fringed bag around her neck.*

| wild wheat grass | | domesticated wheat |
| --- | --- | --- |
|  |  |  |
|  |  |  |
|  |  |  |

World History for Us All
A project of San Diego State University
In collaboration with the
National Center for History in the Schools (UCLA)
http://worldhistoryforusall.sdsu.edu/


Well, 10 seeds isn't bad...
Which one to pick?
Well, lookie here! A double row!
-POUND-
OUCH! You'll never get our hulls off!
Which one to pick?
PTOOEY! Out the way, seeds coming!

Summarize what you learned: List the qualities of winners and losers in Ms. Gatherer's food basket on the chart below. Which wheat plant traits are needed in the wild? Why? Which traits are most desirable for human gatherers and farmers? What other traits might be desirable for domesticated wheat?

| Wheatgrass trait | Losers to the wild side | Winners to domesticated bliss |
|---|---|---|
| Stalk strength | | |
| Seed attachment & dispersal | | |
| Seed size | | |
| Number & arrangement of seeds | | |
| Hull adhesion to kernel | | |

# *Lesson 4*
# *Three Sisters—Complete Nutrition From One Field*

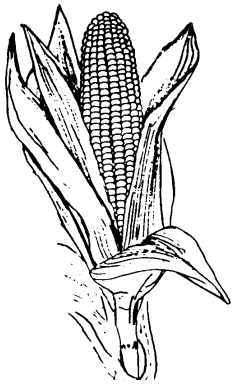
## Procedure

1. Distribute Student Handout 4.1 as a reading. Discuss the concept of "combination planting" and review the characteristics of each plant in the "Three Sisters" combination.
2. Discuss the nutritional importance of carbohydrates, proteins, and vitamins in the combination. Selected students may do additional research on this.
3. Extension:
    a. Use the Internet to find out what groups in North America use the Three Sisters combination planting and what legends are attached to it.
    b. Use the instructions to try planting the Three Sisters in a container or garden. Students report on the results. It is best to use a combination of varieties suitable for the planting, and such heirloom seed packets available from specialty mail order suppliers online.
    c. Research other combination plantings being investigated by agricultural laboratories today to solve problems of world hunger and increase yields and nutrition. Especially, look for evidence for the origin of some of these ideas in traditional agriculture of indigenous peoples around the world.

## Lesson 4

### *Student Handout 4.1— Three Sisters Feed Many People*

In today's hungry and intensely populated world, scientists are always looking for ways to get the maximum nutrition out of the earth. Hundreds and maybe thousands of years ago, people living in North America found a way to do that. They developed a system of companion planting that helped the plants and provided excellent nutrition. They called this combination of plants "The Three Sisters." Many different Native American groups know and claim the three sisters. It may have been developed in the Southwestern desert. The Three Sisters were corn, beans, and squash. Planting these three food crops together increased productivity and nutrition.



**Why do the three sisters grow well together, and what makes them such a healthy combination?**

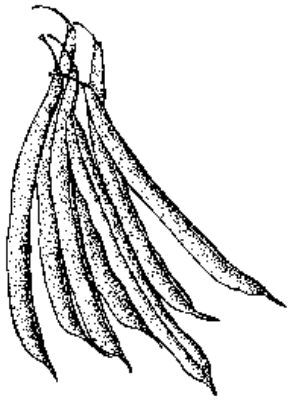
Corn provides a lot of calories from fat, starch, and sugar. Beans provide important proteins for building muscle tissue. Squash provides vitamins and fiber, and its seeds have both oil and protein.

**Each of the Three Sisters plays an important role in solving a problem. Think about how each plant grows.**

1. Growing corn in rows takes up a lot of land and water. They have to be planted about a foot apart to grow well, and they need fertilizer.
2. Beans are a climbing vine that need something to hold them up.
3. Squash, with its large leaves, takes up a lot of room. It creeps along the ground. Squash needs fertilizer to grow well.

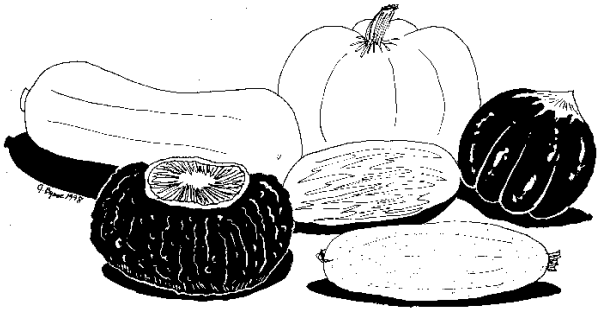
**Here is how the Three Sisters crops work together:**

1. Corn is planted first in a mound.
2. After the corn grows a foot tall or so, beans are planted around it. The beans climb up the cornstalk as they grow.
3. Then, squash is planted around the mound of corn and beans. The squash crawls on the soil as it grows and its large leaves cover the ground, shading the soil to prevent weeds and trap moisture in the soil for all three sisters.
4. As the corn and squash grow, they pull nitrogen out of the soil. The beans use nitrogen-fixing bacteria to put nitrogen back into the soil. Beans also add other nutrients to the soil that are used as the plants grow.



Corn has been grown by indigenous peoples in Mexico for about 6000 years. Cultivation of corn spread from one group to another until people all over North America grew it. Beans came from Central and South America, and there are more than four thousand types of beans. People in

Mexico began to plant beans more than 2000 years ago. Squash also came from Central America and was used for thousands of years for seeds, for the fruit, and for utensils (bowls, ladles and spoons).



**How to Plant the Three Sisters**

Plant corn in the middle of a small mound of soil in mid-May. Thin out the young plants leaving four well-spaced ones. Allow the plants to reach six inches in height.. Then sow beans around the corn, and sow squash around the mound. When those plants appear, thin to four bean and two squash plants. If you lack space, try planting the Three Sisters in a bushel basket, half barrel, or any available large container. Use lightweight soil, well mixed with compost and place in a sunny location.

> Try planting the Three Sisters in a bushel basket, half barrel or any available large container. Use light weight soil, well mixed with compost and place in a sunny location. Plant corn in mid-May and thin to four(4) well spaced plants and allow the plants to reach six(6) inches. Then sow beans and squash and thin to four(4) beans and two(2) squash plants. Experiment with different numbers of seeds. To ensure adequate corn pollination remove the male flower or tassel, and shake it vigorously over the female silks. This is done when the male flower first tassels out. If you notice the dust-like pollen grains adhering to the silks, then you know your efforts were effective.
>
> From the Evergreen Learning Grounds program at http://www.evergreen.ca/en/lg/h-corn.html

Not just any kind of corn, beans and squash will work. Heirloom varieties are most like the ones planted long ago, and none of them overpowers the others. You can get seed packets online by looking up Three Sisters seeds (for example, http://www.littlepinecrafts.com). That packet includes varieties called Six Nations Calico Corn, Seneca Scarlet Runner Bean, and Acorn Squash.

**Resources on the Three Sisters**

Ken Grabach, Brill Science Library at
http://www.users.muohio.edu/goodejm/diversity/3sisters.html

Dr. Dann Brown, Professor of Botany, Eastern New Mexico University at
http://horizon.nmsu.edu/ddl/3sisresources.html

Rozin, Elizabeth, *Blue Corn and Chocolate* (Knopf, 1992), “Corn”, pp. 3-5, and “Beans, Pumpkins, and Squashes”, pp. 139-142.

Lawrence Kaplan and Lucille N. Kaplan (1992), “Beans of the Americas”, pp. 61-79, and Walton C. Galinat, “Maize: Gift from America’s First Peoples”, pp. 47-60, in *Chilies to Chocolate: Food the Americas Gave the World*, Nelson Foster & Linda S. Cordell, eds. (Tucson: University of Arizona Press, 1992).

## This unit and the Three Essential Questions

| | |
|---|---|
|  | What environmental conditions were suited to early farmers' experimentation with domesticating plants and animals? What biological mutations and adaptations occurred in the domestication process. What factors facilitated human selection of particular plants or animals? |
|  | How did domestication of plants and animals affect how human beings lived together? Which changes might have been favorable and which unfavorable? For example, why would people want to live together in a crowded village if they could roam the land in a hunting-gathering band? |
|  | If the human species and its hominid ancestors lived for millions of years hunting and foraging for food, why did humans turn to farming at all? Was it inevitable that this happened? Might humans have been somehow "trapped" into becoming farmers, even though they did not consciously want to? |

## This unit and the seven Key Themes

This unit emphasizes:

Key Theme 2. Economic Networks and Exchange
Key Theme 7. Science, Technology, and the Environment.

## This unit and the Standards in Historical Thinking

Historical Thinking Standard 1: Chronological Thinking

The student is able to (E) interpret data presented in time lines and create time lines by designating appropriate equidistant intervals of time and recording events according to the temporal order in which they occurred.

Historical Thinking Standard 2: Historical Comprehension

The student is able to (I) draw upon visual, literary, and musical sources including: (a) photographs, paintings, cartoons, and architectural drawings; (b) novels, poetry, and plays; and, (c) folk, popular and classical music, to clarify, illustrate, or elaborate upon information presented in the historical narrative.

Historical Thinking Standard 3: Historical Analysis and Interpretation

The student is able to (J) hypothesize the influence of the past, including both the limitations and the opportunities made possible by past decisions.

Historical Thinking Standard 4: Historical Research Capabilities

The student is able to (A) formulate historical questions from encounters with historical documents, eye witness accounts, letters, diaries, artifacts, photos, historical sites, art, architecture, and other records from the past.

## Resources

### *Instructional resources for teachers*

Barber, Elizabeth W. *Women's Work: The First 20,000 Years*. New York: W. W. Norton, 1994.

Bellwood, Peter S. *First Farmers: Origins of Agricultural Societies* (Oxford: Blackwell, 2004).

Diamond, Jared. *Guns, Germs, and Steel: The Fates of Human Societies*. New York: W.W. Norton, 1998.

Munson, Patrick J. *The Tichitt Tradition: A Late Prehistoric Occupation of the Southwestern Sahara*. University of Illinois at Urbana, Ph.D. Thesis, UMI Dissertation Services, 1971.

Renfrew, Jane M. ed. *New Light on Early Farming: Recent Developments in Palaeothnobotany*. Edinburgh : Edinburgh University Press, 1991.

Scarre, Christopher, ed. *Past Worlds: The Times Atlas of Archaeology*. London: Times Books, 1988.

Smith, Bruce D. *The Emergence of Agriculture.* New York: Scientific American Library, 1998.

### *Instructional resources for students*

Linda Symcox, *The Neolithic Revolution: The First Farmers and Shepherds* (Los Angeles: National Center for History in the Schools). Children study archaeological illustrations to learn about this great leap forward in the history of humankind: the domestication of plants and animals and the resulting cultural changes.

## Correlations to National and State Standards and to Textbooks

### *National Standards for History*

Era 1: The beginnings of Human Society. 2A: The student understands how and why humans established settled communities and experimented with agriculture. 2B: The student understands how agricultural societies developed around the world.

### *California: History-Social Science Content Standards*

Grade Six, 6.1 Students describe what is known through archaeological studies of the early physical and cultural development of mankind from the Paleolithic Era to the agricultural

revolution.

## *Illinois Standards for Social Studies*

16.E.2a (W): Describe how people in hunting and gathering and early pastoral societies adapted to their respective environments. 18.C.2: Describe how changes in production (e.g., hunting and gathering, agricultural, industrial) and population caused changes in social systems.

## *New York State Learning Standards for Social Studies*

Unit One: Ancient World – Civilizations and Religion (4000 BC – 500 AD). A.2. Hunters and gatherers-nomadic groups. A.4. Migration of early human populations out of Africa.

## *Texas Essential Knowledge and Skills for Social Studies*

113.33 World History Studies. (1) History. B) identify changes that resulted from important turning points in world history such as the development of farming.

## *Virginia Standards of Learning*

World History and Geography to 1500 AD. Era I: Human Origins and Early Civilizations, Prehistory to 1000 B.C. WHI.2. The student will demonstrate knowledge of early development of humankind from the Paleolithic Era to the agricultural revolution by c) describing technological and social advancements that gave rise to stable communities; d) explaining how archaeological discoveries are changing present-day knowledge of early peoples.

## *Geography for Life: National Geography Standards*

**Standard 9**--The characteristics, distribution, and migration of human populations on Earth's surface. **Standard 10**--The characteristics, distribution, and complexity of Earth's cultural mosaics. Knowledge Statement 1--The spatial distribution of culture at different scales (local to global). Knowledge Statement 2--How to read elements of the landscape as a mirror of culture. Knowledge Statement 3--The processes of cultural diffusion. **Standard 15**--How physical systems affect human systems. Knowledge Statement 1--Human responses to variations in physical systems. Knowledge Statement 2--How the characteristics of different physical environments provide opportunities for or place constraints on human activities.

## *Textbooks*

*A Message of Ancient Days* (Houghton Mifflin). Chapter 5: Development of Societies. Lesson 1: Learning to Farm, Lesson 2: Living in an Early Farming Town.

*Ancient World: Adventures in Time and Place* (Macmillan/McGraw-Hill). Chapter 3: Early Cultures. Lesson 2: Agriculture Changes the World.

*World History: Patterns of Interaction* (McDougal Littell). Chapter 1: The Peopling of the World: Prehistory to 2500 B.C. Lesson 2: Humans Try to Control Nature.

*World History: The Human Experience* (Glencoe McGraw-Hill). Chapter 1: Human Beginnings. Section 2: The Appearance of Homo Sapiens, Section 3: Emergence of Civilization.

*World History: Connections to Today* (Prentice Hall). Chapter 1: Toward Civilization. Lesson 2: The Dawn of History, Lesson 3: Beginnings of Civilization.

## Conceptual links to other teaching units

As this Landscape Teaching Unit has shown, humans began to experiment with plant and animal domestication about 12,000 years ago. In some parts of the world, people took up farming and settled in villages to be near their fields and herds. For about 6,000 years farmers lived in settlement ranging from hamlets to very large villages. That way of life might conceivably have continued—right down to the present day. About 6,000 years ago, however, a new and revolutionary development began to occur. In certain parts of the world, humans began to form much bigger, much more concentrated centers of population and to build cities. Why did this happen? Did it have to have happened? Why did it happen first in certain river valleys in Afroeurasia? Today, more than half the population of the world lives in cities, but no cities existed at all just 6,000 years ago. Why has such a drastic change taken place? Landscape Teaching Unit 3.3 (River Valleys and the Development of Complex Societies in Afroeurasia, 4000-1500 BCE) will stimulate interest in these big questions.