Student Edition

California Education and the Environment Initiative

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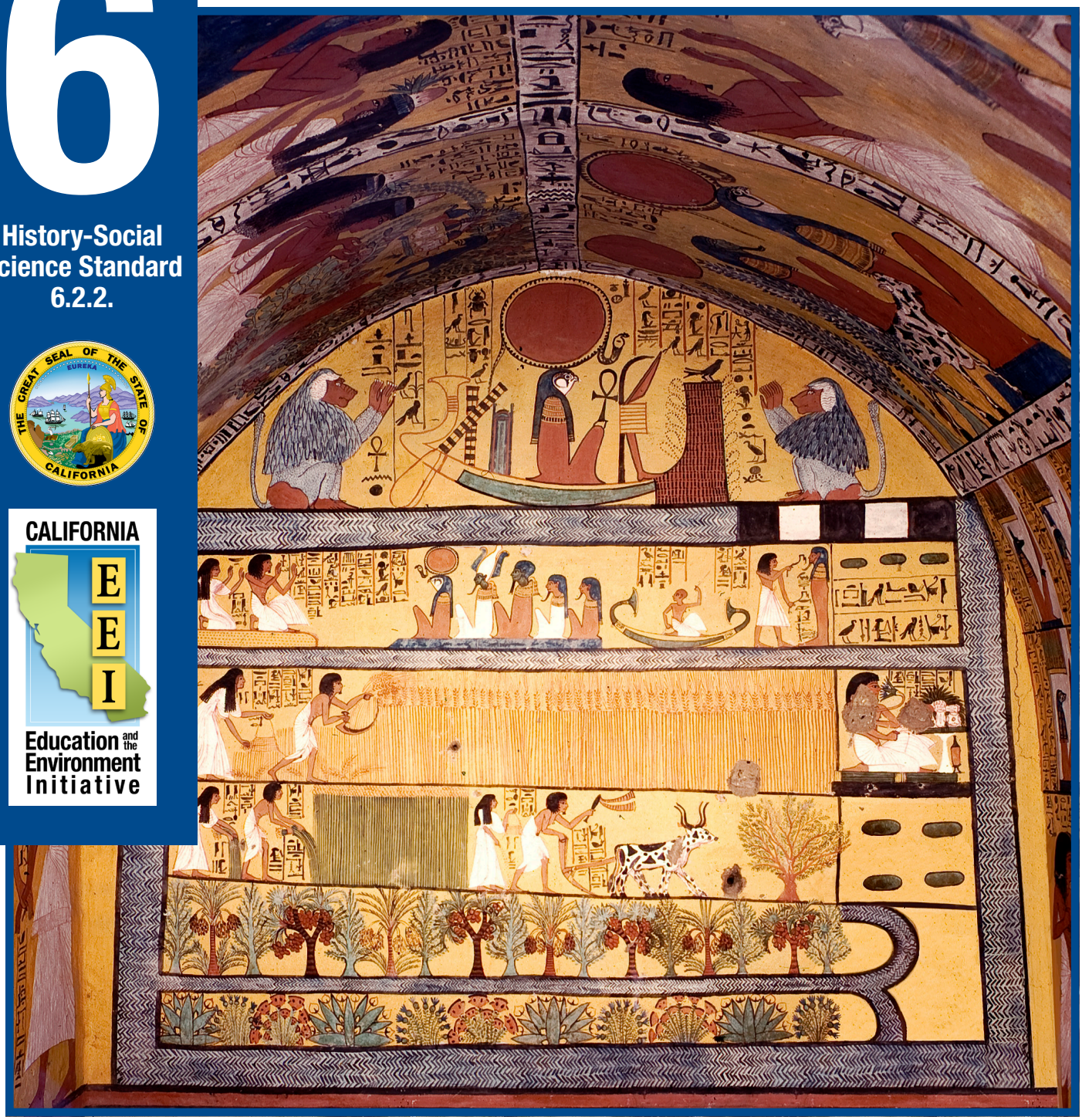
History-Social Science Standard 6.2.2.



Agricultural Advances in Ancient Civilizations

California Education and the Environment Initiative

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California Environmental Protection Agency
California Natural Resources Agency
Office of the Secretary of Education
California State Board of Education
California Department of Education
California Integrated Waste Management Board

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Key Partners:

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None required for this lesson.

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None required for this lesson.

The Great Central Valley's Rise to Power

Most people would describe California by its popular tourist attractions. The list might include Malibu, Hollywood, Yosemite, or the Golden Gate Bridge. Other people would name the Silicon Valley, where the personal computer was born.

Few people would think of the farms of the Great Central Valley. Yet, over half of the people in the United States eat its food every day. People worldwide buy fruit, grains, and meat grown and raised in the soil of this natural wonder. The farms of the Central Valley generate fifty-five percent of the crops produced by California. It is considered one of the Earth's most valuable agricultural regions. In fact, if California were its own country, it would be one of the richest countries in the world—and much of that wealth comes from what is grown on our farms.

Lettuce field

More than 350 crops are raised here. Fruits and nuts are the largest crops produced, followed by vegetables, livestock, field crops (such as rice and cotton), and dairy products. Although dairy products are the fifth-largest crop in the state, California dairy ranks first in the nation. Similarly, California cotton ranks fourth in the United States.

Agriculture in California supports many families and communities. One out of every ten jobs here is tied to agriculture. For example, grocery stores, restaurants, and the building and selling of farming equipment all provide jobs for Californians. Every year, farmers in the state earn about 20 billion dollars. Since 1947, California has been first

California's San Joaquin Valley

in the nation for agriculture, and our farms feed more people than any other state. It is no surprise that of the top 10 U.S. farming counties, nine are in the Great Central Valley.

The Right Balance

Central Valley farmers have the perfect blend of natural resources. California's mild weather brings a long growing season. Rich, fertile soil lines the valley floor. Rivers flow down from the mountain ranges in the north and east. Dams and canals on these rivers provide a steady water supply to farms in the Central Valley.

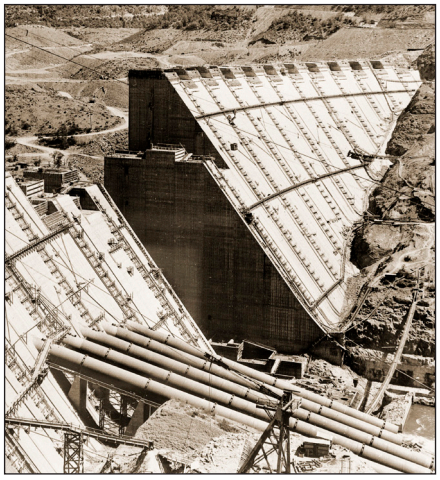
But it was not always this way. Although the natural resources of the Central Valley were used for thousands of years by Paleolithic peoples, American Indians, Spanish missionaries, early Mexican and U.S. settlers, and Gold Rush immigrants, when it came time to create the modern farms of the Central Valley, there were a few problems.

For example, consider the 430-mile stretch of fertile farmland found in the Central Valley. The southern end did not always have enough water for its crops. But at the northern end, rivers often flooded the towns and fields when the snows melted in the mountains. The flooding problem in the north was solved as levees and dams were built to control the floodwaters. Farming boomed! In 1900, the Central Valley had 73,000 farms. Thirty-five years later, 150,000 farms dotted the valley.

Over time, new problems arose. Some of the levees broke during the floods. Drought hit other parts of the Central Valley. Crops began to wither and die. Though many people became discouraged, not everyone gave up. Some people believed answers could be found. They kept asking the right questions and finding solutions.

Marshall's Plan

Robert Marshall believed that the farming and flooding problems in the Central Valley could be solved. Marshall traveled throughout California in the early 1900s. He surveyed much of the land and the natural resources. He studied the rivers and where they flooded. He also analyzed the drier, southern part of the Central Valley. Over many years, Marshall figured out how to permanently protect the Central Valley from floods by sending the extra water from the northern end of the Central Valley to the dry southern areas. With this plan, new farms could be created in the southern end of the Central Valley. However, Marshall's plan would cost a lot of money—close to $800 million. In the 1920s, this price was outrageous to most people. Because of this, his plan was forgotten.



Shasta Dam under construction

Doubt, Drought and the Great Depression

By 1930, life in California was changing rapidly. Drought gripped the Central Valley. It continued for six years. Further, the United States was in an economic depression. Many people had lost their jobs.

People all over the nation were very discouraged. The government looked for ways to help people find jobs and to support industries. Government workers turned their attention to California's Central Valley. They studied Marshall's plan and started asking important questions: What if water was captured and sent to the dry, dusty San Joaquin Valley for irrigation? What if some of it was pumped to cities in the south? What if new dams were constructed to capture water and also to generate electricity? With all of these problems solved, what could the Central Valley become?

Edward Hyatt was California's State Engineer at the time. Hyatt designed a plan very much like Marshall's. His plan was less expensive, too. The Central Valley would have a steady supply of water. River flooding in the north would be stopped. Many people would have jobs—they would be hired to build the new canals and dams.

Taking the Plan to the People

However, if Hyatt's ideas were to become reality, a couple of steps had to be taken.

The first step was to create a state law. Most legislators believed the plan was good for California, but they had to have the citizens' approval. Many people did not want the new water system. They worried that northern California would lose too much water. However, most Californians approved of Hyatt's plan and voted to build the dams and canals.

The second step was to find the money to carry out the plan. The state could not afford to pay for such an expensive water movement system. What if they asked the federal government for the money? What if they presented the plan to

Cotton production in California's Central Valley ranks second in the nation

President Roosevelt? Maybe he would help California. California's leaders traveled east to Washington D.C. and talked to the president.

President Roosevelt signed a bill in 1935 to help California carry out Hyatt's plan. The construction plans were soon finished, and workers from all over the United States were hired to work on the Central Valley Project (CVP).

In 1937, workers started building the Contra Costa Canal, which began delivering water in 1940. Friant Dam, the first dam to be part of the CVP, was ready in 1944. A year later, Shasta Dam, located on the Sacramento River, was finished. Shasta Dam would become the most important dam in the Central Valley Project. By 1945, it controlled flooding in the northern Central Valley. In 1951, it began delivering water to the Central Valley. The water from Shasta was used to irrigate over 300,000 acres of farmland. Other water went to cities and towns, wildlife refuges, and industries in central California.

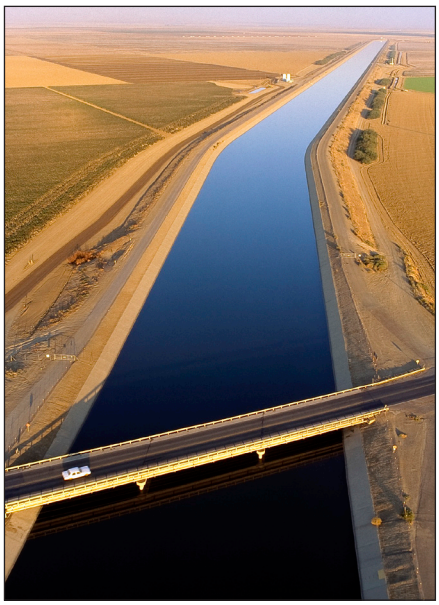
Today, the CVP is one of the world's largest water control and delivery systems. Twenty dams and lakes are connected by five hundred miles of canals that deliver water from the northern part of the state to the southern part of the Central Valley. Eighty percent of this water is used for agriculture.

The World's Greatest Garden

With the new water system, farmland in the Central Valley tripled. Before the dams and canals of the CVP were completed, one million acres in the Central Valley were farmed. Afterwards, three million acres were used to grow crops and raise animals! Because of the CVP, the Central Valley became the "Great Central Valley."

The Great Central Valley is now home to six and one-half million people. Its largest cities are Fresno and Sacramento, our state capital. The cities of Stockton and Bakersfield are two of the busiest shipping centers in the world, moving agricultural goods from the Great Central Valley around and out of the state by ship, truck, and train.

What may be the world's greatest garden is also one of the most changed areas on Earth. Some of these changes are threatening the future of agriculture in the Valley. Tough decisions about how we use the resources of the Great Central Valley lay ahead as we continue to depend on its natural systems for food and wealth.



Central Valley canal

Mesopotamia

Euphrates River in northern Mesopotamia

Mesopotamia

In what is now called the Middle East, there is a strip of fertile land that lies between two great rivers. This land was once known as Mesopotamia. The Tigris and Euphrates rivers flowed through the land, forming the shape of a crescent moon. When the rivers flooded in the spring, they brought rich nutrients to the soil. For this reason, the land was also known as the Fertile Crescent. Thousands of years ago, it gave birth to a new civilization. Many things that human beings still do and use were first invented in Mesopotamia. People farmed there for the first time, invented writing, and used the wheel for transportation.

Land and Natural Processes of the Fertile Crescent

The Tigris and Euphrates rivers begin their journey in the mountains of what is now Turkey. The rivers flow southeast into the Persian Gulf. Long ago, the land between the rivers was flat and covered with small scrubby plants. The southern part of Mesopotamia was very dry; it rained less than 10 inches each year. Some rain and snow fell in the northern mountains. When the snow melted in the spring, the rivers flooded their banks, spreading fine silt over the land. This silt was full of minerals and other rich nutrients.

Farmers never knew exactly when the rivers would flood. The flooding could happen in April, May, or June. The timing depended on how much rain and snow had fallen in the mountains during the winter and how warm the spring was. The Tigris usually reached its peak flows between mid-March and the end of April. Peak flows of the Euphrates came between the end of March and the beginning of May.

Sometimes the floods would ruin the spring crops. The rushing water washed all the plants away, leaving farmers with nothing left to harvest. In other years, there was very little flooding, and the land was too dry to plant crops. Since farming required water in winter, as well as summer, the people looked to the two great rivers for an answer. They searched for ways to control the water's flow so their crops would have enough water throughout the year.

The Tigris and Euphrates rivers were very different. The Tigris River was fast flowing and rough, with steep banks and deep water. Its wild currents made the river a bad choice for irrigation systems. The Euphrates, however, was a gentle flowing and shallow river. Some canals were built to drain water from fields in the spring; others brought water to growing crops in the hot, dry summer.

The Seeds of Agriculture Grow

What crops did these early farmers grow? Research shows that fig trees may have been cultivated in Mesopotamia as early as 9400 BCE (Before the Common Era). People grew wild plants for food beginning in 8500 BCE. They planted and grew barley and two kinds of wheat.

People tamed animals for use on their farms around 8000 BCE. Archaeologists have found evidence of goats, sheep, cattle, and an extinct type of ox called an *auroch*. Farmers used oxen and cattle in the fields to help them work the land. They also used them for meat, leather, and later for milk. By 4000 BCE, wild horses had been domesticated. They were also used for food, milk, and for pulling plows and other farming tools through the fields.

Soon, farming villages were common in southern Mesopotamia. By 4000 BCE, farmers were growing more than enough food for their families. This was an important moment in history. For the first time, farmers could load boats with their extra food, milk, and meat. They traveled down the rivers and traded their goods for other things they needed, like stone, wood, and metal.

Granary in Kashan, Iran

Ancient Egypt

Egypt along the Nile

Ancient Egypt

The first people to arrive in ancient Egypt and Kush moved from central Africa to the Mediterranean Sea along the Nile River. The Egyptians settled in the north, and the Kushites in the south. They built their towns along the banks of the river. The Nile flooded each year, just like the Tigris and Euphrates rivers. The people called it "the black land" because the floods deposited a strip of dark, rich, fertile silt on the banks of the river. The yearly flood was called the "gift of the Nile."

Land and Natural Processes of the Nile River Valley and Delta

The Nile River has two branches, or tributaries. The Blue Nile begins in the mountains of what is now Ethiopia. The White Nile begins at Lake Victoria in the mountains of present-day Uganda. They join together to form the Nile River in the country that is now Sudan. This great river crosses the desert, depositing rich sediment as it moves along. It fans out in the shape of a triangle before reaching the Mediterranean Sea. This triangle is known as the Nile River Delta. The word delta is taken from the Greek letter delta (Δ), which is a triangular shape.

Thousands of years ago, the Nile River flooded in late summer and early fall. Heavy rains drenched the tropical highlands of Ethiopia, and the river overflowed. Different parts of the river flooded at different times. Land closest to the mountains flooded before the delta did. The river was usually at its lowest between March and May every year.

The climate in ancient Egypt and Kush was very hot and dry. Even today, it rains only one inch per year in Egypt. It is easy to imagine why the Nile River was, and still is, very important for the people living near its banks. The ancient Egyptians and Kushites depended on the river for their survival. Without the Nile, these ancient civilizations would not have existed or thrived as they did.

Ancient people paid attention to the natural processes and cycles of their world. They used clues from the environment to become successful farmers. An example of this was the way they watched the flight of the ibis, a long legged bird that migrated from the mountains to the delta each year. When the ibises flew over their farms, the people knew that the annual floods would soon follow.

Blue Nile Falls, Ethiopia

Agriculture Flourishes

When did people begin to farm along the Nile River? Most archaeologists believe it was around 6000 BCE. This was about 2000 years after people began farming in Mesopotamia. Cattle, goats, and sheep were used for farm work, for milk, and for food. Egyptians also kept cats as pets. They were most likely wild animals that chased rats out of food storage silos. When the people noticed what good hunters they were, they brought them into their homes to chase mice and rats. Some cats were even wrapped like mummies and buried with their owners.

Philae Temple, Aswan, Egypt

The ancient Egyptians planted many crops. They grew barley and many kinds of wheat. They were the first to grind wheat into flour. They knew how to mix it with yeast to make bread, which they ate often. The people also grew grapes, lettuce, radishes, asparagus, cucumbers, dates, figs, and watermelons. Sometimes they planted these fruits and vegetables in gardens next to their homes.

The ancient Egyptians grew more than food crops. They were the first to grow flax plants and use their fiber to weave linen that was then used to make clothing. Since there were no trees in Egypt, the people traded grain for wood to make buildings and tools. These products were important because they could trade them with others. As Egyptian agriculture grew, so did Egypt's influence as a center of culture and power in the world.

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