Lectures 14–16
Horticulture of Pre-Columbian America

Great stone head of Olmec culture (800 BCE)

Yucatan (Mexico) native

European Encounter with the New World

Division of influence between Portugal and Spain by the Treaty of Tordesillas 1494 and 1506 which recognized Spanish influence in the Americas and Portuguese influence in the Far East. Miscalculating the precise location of South America resulted in the establishment of Portugal into Brazil in 1521.
Three Civilizations
Aztec (Mexico)
Maya (Central America)
Inca (Peru)
It wears a broad belt adorned with skulls and crossbones; attached to the front of the belt is a warrior’s head in an eagle helmet. The eyes were once inlaid.


Aztec culture

*Azteca* Sp.
*Aztlán* (white land)
*Tenocha* (patriarch)
*Tenochtitlan* = Mexico city
  (stone rising in the water)
*Island in lake Texcoco = Mexica*

Aztec History

William Prescott—History of the Conquest of Mexico

Hernando Cortés
Montezuma

Moctezuma Xocoyotzin—Moctezuma II, the Younger (reigned 1503–1520)

As Chief Speaker he ruled Mexico when it reached its apogee. Although the materials of his clothes were finer, basically they were the same style as his subjects: cloak, breechclout, and sandals. The headgear is his crown.


Heart Sacrifice on a Temple Pyramid

After Codex Magliabechiano


Tenochtitlan as the Spaniards first saw it from the high road that crossed the volcanic ridges surrounding the plateau of Mexico. Today a dry plain, it was a lake at that time.

Women are seen bargaining for food, men for luxuries. Activity at the tiaquiz (market) covered all the phases of Aztec life, interest, and consumption.


The building of the principal Aztec pyramid temple, the teocalli, in Mexico-Tenochtitlan. Reconstructed from early Spanish reports, illustrations.


The Aztec warrior-farmer, called macehualli, the base of Aztec society (Codex Mendoza)

Agricultural Systems
Milpa = Maize production
Chinampas = “Floating gardens”

Crops
Maize and beans (complementary crops)
lysine deficient in maize; S-containing AA
(methionine and cysteine) deficient in beans
maize supports bean vines; beans fix N.
Eaten together, tortilla and bean.
Sweet potato, tomato, chili pepper, amaranth
Pineapple, avocado, chicle-zapote
Chocolate, vanilla

The valley of Anahuac and the lakes of Mexico
Although they have five names, the lakes were actually a continuous body of water.
Since there was no outlet, the water was mostly saline except in the southern parts (lakes Chalco and Xochimilco) which received fresh streams of water from the snow-topped volcanoes.
The system of dikes and causeways was later developed by the Aztec so as to control the salinity of the lakes.

An Aztec plan of a small portion of the gigantic chinampa system, the artificial “island” gardens (“floating gardens”) built 2000 years ago in the area of Mexico we now call Mexico City.
The major canals, were large enough to be navigated in flat-bottomed boats.
Areas with footprints are paths.
The portrait profiles stand for the homes of the farm owners with names in hieroglyphics, some translated into Roman letters by a Spanish scribe.
Weeds, sediment and mud are piled on top of each "island," and the roots of plants, maize in this case, and trees, help keep the mounds from crumbling.

A cross section of the raised, arable areas in the chinampa, each about 15 to 30 feet wide.

The Aztec put earth into immense reed baskets, then planted trees, anchoring the "floating garden" with staves. Mexico City grew out of these "floating gardens."


The Aztec corn bins. A woman stores corn grains in a large ceramic urn; another holds the tamale, still a popular food after 3,000 years.

An Aztec mother instructs her daughter to grind corn cakes on a stone mortar. Note cumal, a baking device and baked cakes on the wall.
Weaving was the woman’s art. At the left, she uses the typical backstrap loom; to the right, carded cotton is spun into thread on a spindle whorl which rests in a ceramic bowl. Source: von Hagen, 1961.

Girls being taught by their mothers to spin and weave cotton. Top a young girl learns to spin; bottom, a teenager learns to weave with a backstrap loom. Source: Smith, The Aztecs, 1996.

Aztec Cooking

In the upper left, camoti (sweet potatoes); to the right is the stone metatl on which corn is ground. The woman cooks red peppers on a cumal, and in the lower right hand corner newly baked corncakes are covered to retain freshness. Source: von Hagen, 1961.
History of Horticulture: Lecture 14–16

Cultivation of Maize

Maize, the basic grain of the Americas

Horticultural Deities and Garden Terms

Xilonon—Goddess of red corn. Festival coincided with ripening harvest of grain.
Centeotl—yellow corn God, worshipped by special priests, old men vowed to silence
Xochizuetzal—Goddess of fertility and flowers
Xochipilli—God of flowers
Xochitla—Flower place
Xochichevancalli—Humble garden
Xochitepec—Walled garden
Note: Xoch = flower

Mexican Medicinal Plants from an Aztec Herbal

Peyotl
Elo-xochitl

Aztec—Pyramid, Mexico

Mayan Civilization

Pottery figurine in the classic Jaina style of the Mayas.
This was also used as a whistle; the mouthpiece is under the left knee.

History of Horticulture: Lecture 14–16

The warrior Tecun Uman, Guatemala city

Mayan Calendar

Yum Kax, Mayan Maize God

Mayan Buildings in Yucatan

Home

Storage
Underground granaries called chultunes

Chichen Itza

Ball Courts

The religious game pok-a-tok, played with a rubber ball in the form of a basketball, was the principal sport.

This is the immensely large ball court at Chichen Itza, 545 feet long by 225 feet wide.

A ball is aimed at the basket, which is shaped like a millstone.

Tlachtli was the first basketball game. Popular as well as ritualistic, it was played in a rectangular court with stone “baskets” placed vertically. The ball was of hard rubber. The game was known and played from Honduras to Arizona.

Inca Crops

Maize
sweet corn = chocle
parching corn = kollo sara
fermented = saraaka
hominy = mote

Potato (chuño), sweet potato, manioc
Quinoa, amaranth
Tomato, chili pepper, beans, peanuts
Squash, pumpkins
Papaya, avocado, cherimoya, guava, pineapple, soursop, chocolate

Massive tumbaga (copper-gold alloy) pendant representing an anthropomorphic alligator god. The upper part of the face apparently is a mask with a diamond-shaped plaque over the nose and two bird torsos over the eyes.


Hanging bridge over the Rio Pampas


The Apurimac chaca—the bridge that crossed the Apurimac River (The Bridge of San Luis Rey), one of the greatest engineering feats of the Incas. Although the fiber cables had to be changed every two years, the bridge survived from 1350 until 1890.

Woman weaving at a backstrap loom.
This was the common type of loom throughout the Americas and is still used.


Peanut Potato Squash

Cacao pod
Source: Indianapolis Museum of Art

Peruvian Ceramic Jars

Cacao god
Source: Indianapolis Museum of Art

Maize, Moche Jars, Peru (500 CE)

Source: M. Eubanks
Maize

Oaxaca, Mexico, 500 CE

Peruvian, 500 CE

Inca sheet gold 1200 CE

Source: M. Eubanks

A foot plow or taclla

Source: Leonards, First Farmers, 1973

August

In a symbolic ceremony, the Inca emperor and noblemen turn over the first earth in a sacred field, while three women bow and the empress offers corn beer.
September
With an ornate digging stick, a farmer punches holes into which a woman scatters corn seeds. The Incas believed women planters ensured successful crops.

October
Wearing a wolfskin to look more formidable, and carrying a sling and a noisemaker, a boy tries to scare birds and a skunk from the sprouting fields.

November
A woman irrigates fields with water from a small reservoir. The Incas depended on irrigation in this month of little rain when the rivers often dried up.
December
To plant potatoes, one woman inserts the tubers into a hole in the earth made by the man, while another stands by to smooth the soil with a cultivating tool.

January
Wielding primitive hoes, a couple cultivates its fields in the rain. Another farmer sits before a fire and keeps a sharp eye out for crop robbers.

February
To keep hungry foxes, deer and birds from eating up the swelling ears of corn, a woman creates a frightening din by beating incessantly on her drum.
March
As the harvest ripens, birds attack the corn with renewed appetite, but the young boy, with his sling and stick, is once again on hand to scare them away.

April
A thief skulking along the rows of ripened corn can do even more damage than a hungry llama; the farmer at watch before the fire remains oblivious of his presence.

May
Harvest time brings a division of labor. While a man cuts stalks, his female helper carries bundles of them on her back to the field where she lets them dry.
June
With the aid of a digging stick and a hoe, a man and woman root potatoes from the ground. Another woman transports them in heavy sacks to a storage place.

July
At the end of the harvest, potatoes are brought by llama to a state warehouse and placed there. The emperor could distribute surplus food in time of need.

Inca Ruins, Cuzco
Inca Foundations  Inca Walls
History of Horticulture: Lecture 14–16

Sundial or Sacrificial stone

Fate of New World Crops

<table>
<thead>
<tr>
<th>Type of Crops</th>
<th>Major World Crop</th>
<th>Lost Crop</th>
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<tbody>
<tr>
<td>Grains, pseudograins</td>
<td>Maize</td>
<td>Amaranth, quinoa</td>
</tr>
<tr>
<td>Vegetables—starchy</td>
<td>Potato, sweet potato, cassava</td>
<td>Arracacha, oca, ulluco</td>
</tr>
<tr>
<td>Vegetables—fruits</td>
<td>Tomato, sweet &amp; hot peppers</td>
<td>Brazil nuts, chayote, pepino, tomatillo</td>
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<tr>
<td>Vegetables—pulses</td>
<td>Peanut, beans (<em>Phaseolus</em>), Lima beans</td>
<td>Tepary &amp; jack bean, nudas, pacy</td>
</tr>
<tr>
<td>Fruits &amp; nuts</td>
<td>Pineapple, papaya, cashew strawberry, blueberry</td>
<td>Passifloras, cherimoya</td>
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<tr>
<td>Spices</td>
<td>Vanilla, hot peppers</td>
<td></td>
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<tr>
<td>Beverage crops</td>
<td>Chocolate</td>
<td>Maté</td>
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<tr>
<td>Fumitories, hallucinogens</td>
<td>Tobacco</td>
<td>Coca</td>
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Amaranth (Kiwicha)
Inca crops in a market in Ipiales, Colombia

Peppers

Nuñas