

**Lectures 14–16**  
**Horticulture of Pre-Columbian America**



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**Great stone head of  
Olmec culture (800 BCE)**



**Yucatan (Mexico) native**

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**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.

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## Three Civilizations

**Aztec (Mexico)**  
**Maya (Central America)**  
**Inca (Peru)**

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**Jadeite figure of a seated rabbit**

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.

Source: von Hagen, 1961.



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**Aztec culture**

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

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**Aztec History**

William Prescott—History of the Conquest of Mexico



Hernando Cortés                      Montezuma

Source: von Hagen, 1961.

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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.



Source: von Hagen, 1961.

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### Heart Sacrifice on a Temple Pyramid



After Codex Magliabechiano

Source: Smith, The Aztecs, 1996.

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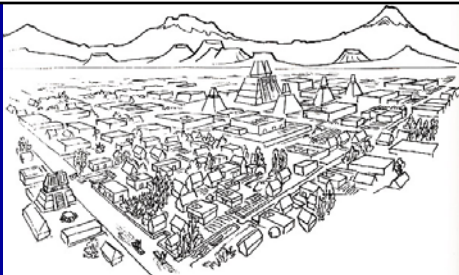
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Tenochtitlan as the Spaniards first saw it from  
the high road that crossed the volcanic ridges  
surrounding the plateau of Mexico.

Today a dry plain, it was a lake at that time.

Source: von Hagen, 1961.

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# History of Horticulture: Lecture 14–16



Activity at the tiacuí (market) covered all the phases of Aztec life, interest, and consumption.

Women are seen bargaining for food, men for luxuries.

Source: von Hagen, 1961.

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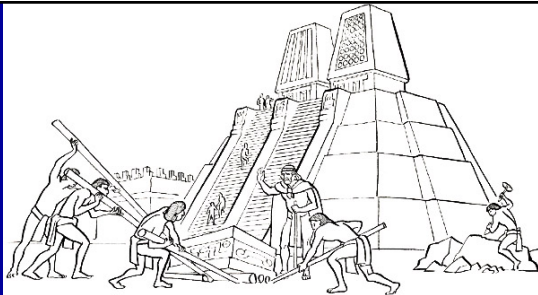
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The building of the principal Aztec pyramid temple, the teocalli, in Mexico-Tenochtitlan.

Reconstructed from early Spanish reports, illustrations.

Source: von Hagen, 1961.

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

Source: von Hagen, 1961.

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**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

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**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.

Source: von Hagen, 1961.



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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.



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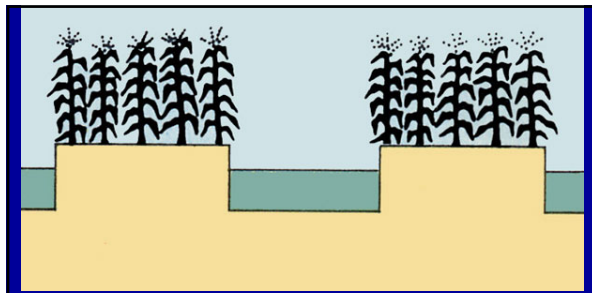
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A cross section of the raised, arable areas in the chinampa, each about 15 to 30 feet wide.  
Weeds, sediment and mud are piled on top of each “island,” and the roots of plants, maize in this case, and trees, help keep the mounds from crumbling.

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**Chinampas, the “floating gardens”  
Agriculture of the Mexican Lakes**

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.”  
Source: von Hagen, 1961.

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**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 corncakes on a stone mortar.** Note cumal, a baking device and baked cakes on the wall.

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# History of Horticulture: Lecture 14–16



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.

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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.



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## Aztec Cooking



In the upper left, camoti (sweet potatoes); to the right is the stone metal 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.

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**Cultivation of Maize**



**Maize, the basic grain of the Americas**

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**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

**Xochitecpac**—Walled garden

**Note:** Koch = flower

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**Mexican Medicinal Plants from an Aztec Herbal**



**Peyotlz**

**Elo-xochitl**

Source: von Hagen, 1961.

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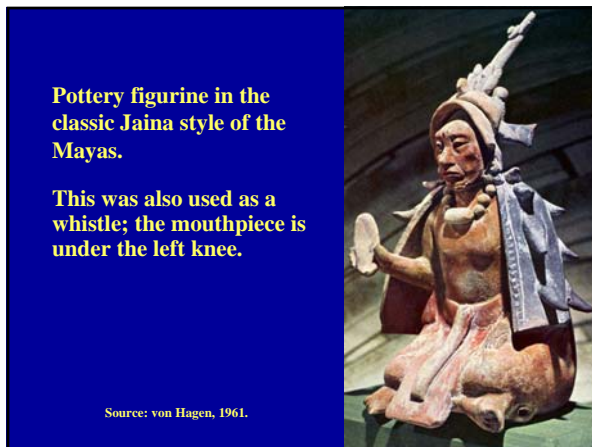
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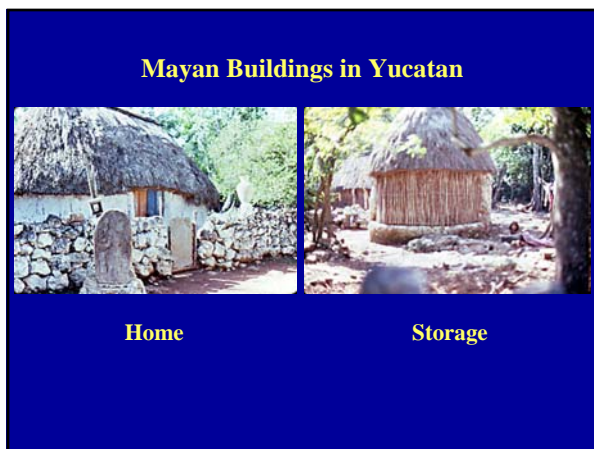
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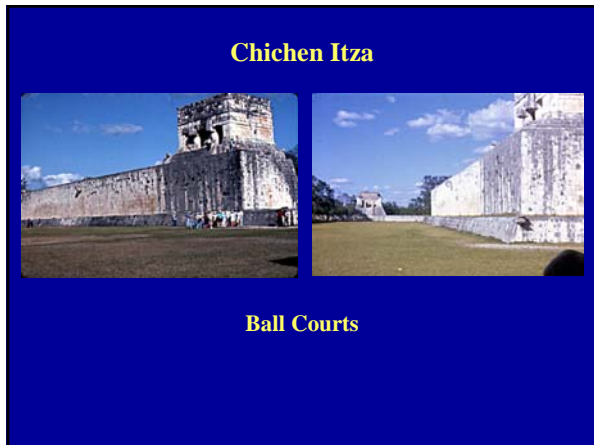
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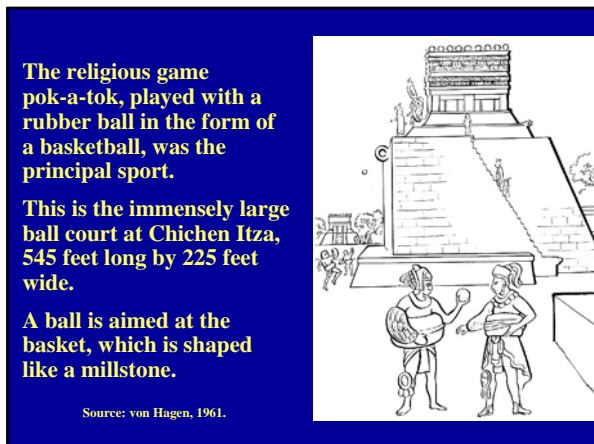
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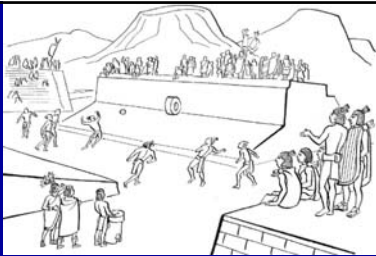
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History of Horticulture: Lecture 14–16



**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.  
Source: von Hagen, 1961.

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**Chichen Itza**



**The Observatory**

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**Chichen Itza**



**Site of human sacrifices**

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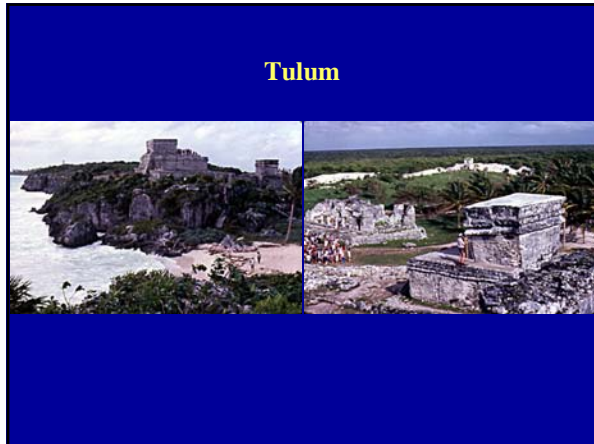
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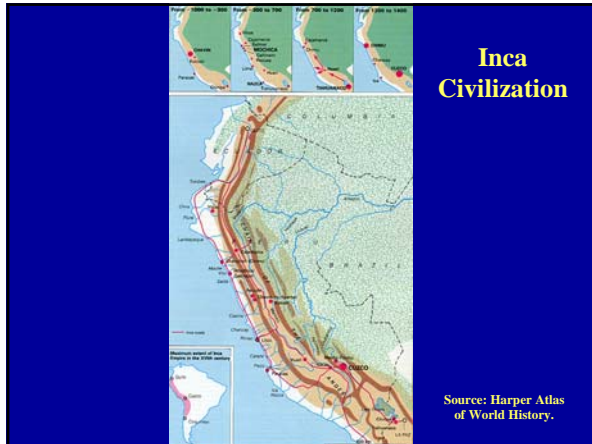
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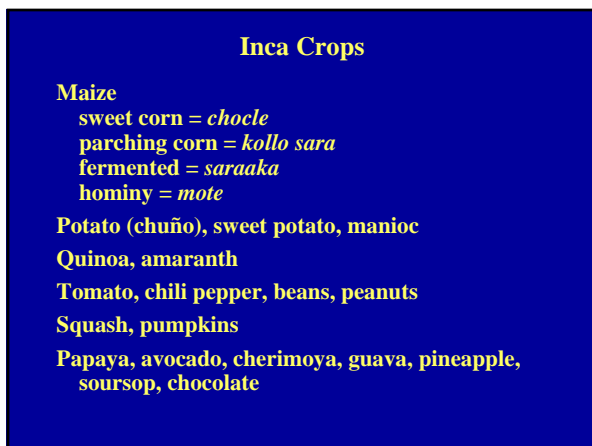
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Massive tumbaga (copper-gold alloy) pendant representing an anthropomorphic alligator god.

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.



Source: von Hagen, 1961.

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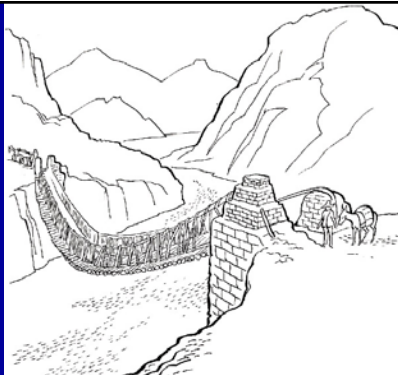
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Hanging bridge over the Rio Pampas

Source: von Hagen, 1961.

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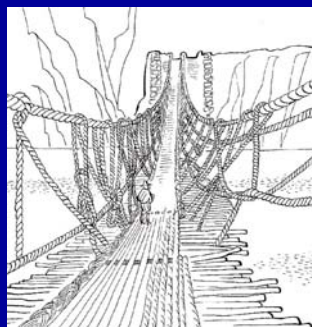
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The Apurimac chaca—the bridge that crossed the Apurimac River (The Bridge of San Luis Rey), one of the greatest engineering feats of the Incas.

Although the fiber cables had to be changed every two years, the bridge survived from 1350 until 1890.



Source: von Hagen, 1961.

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Woman weaving at a backstrap loom.

This was the common type of loom throughout the Americas and is still used.

Source: von Hagen, 1961.



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### Peruvian Ceramic Jars



Peanut



Potato

Source: Leonard, First Farmers, 1973.



Squash



Cacao god

Source: Indianapolis Museum of Art



Source: Hyams, 1971



Cacao pod

Source: Smith, The Arzecs, 1996.

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### Maize, Moche Jars, Peru (500 CE)



Source: M. Eubanks

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**Maize**



Oaxaca, Mexico, 500 CE



Peruvian, 500 CE



Inca sheet gold 1200 CE

Source: M. Eubanks

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**A foot plow or tacla**



Source: Leonards, First Farmers, 1973

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**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.



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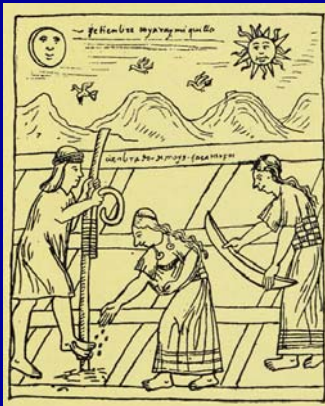
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### September

With an ornate digging stick, a farmer punches holes into which a woman scatters corn seeds.

The Incas believed women planters ensured successful crops.



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### 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.



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### 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.



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**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.



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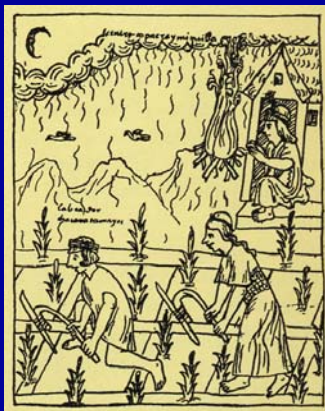
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**January**

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.



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**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.



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### 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.



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### 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.



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### 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.



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**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.



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**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.



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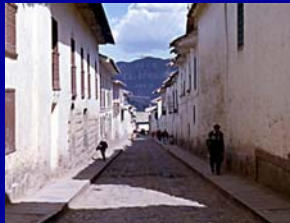
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**Inca Ruins, Cuzco**



**Inca Foundations**



**Inca Walls**

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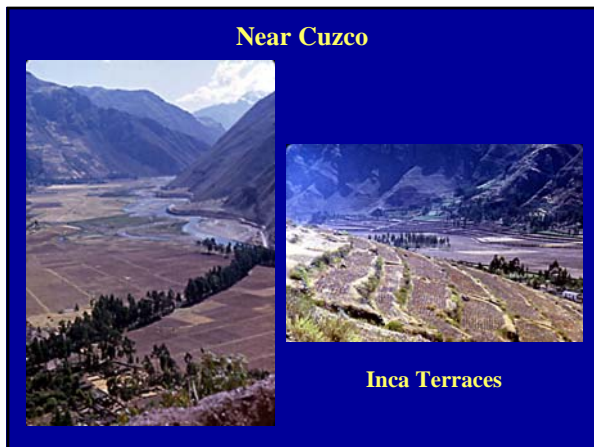
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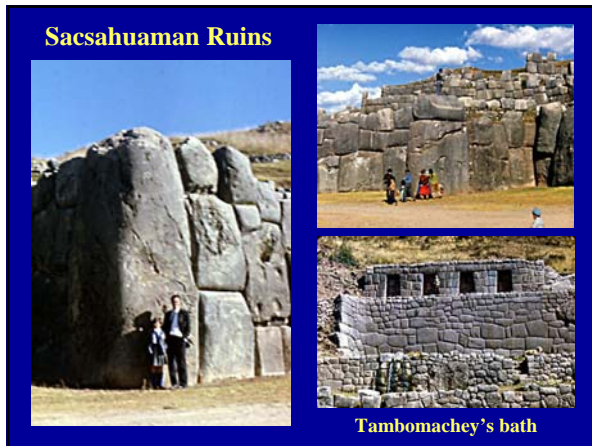
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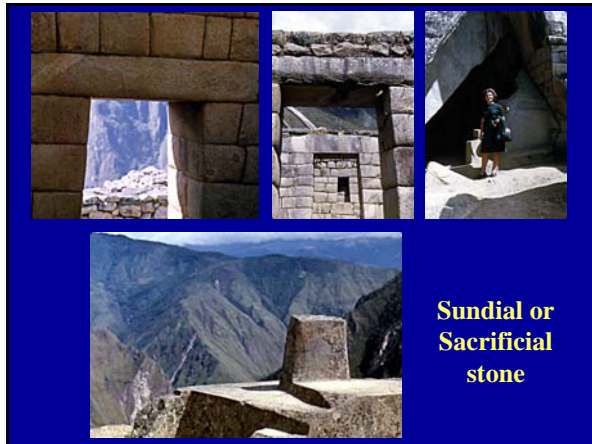
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# History of Horticulture: Lecture 14–16




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**Fate of New World Crops**

| Type of Crops             | Major World Crop                                 | Lost Crop                               |
|---------------------------|--|---|
| Grains, pseudograins      | Maize  | Amaranth, quinoa                        |
| Vegetables—starchy        | Potato, sweet potato, cassava                    | Arracacha, oca, ulluco                  |
| Vegetables—fruits         | Tomato, sweet & hot peppers                      | Brazil nuts, chayote, pepino, tomatillo |
| Vegetables—pulses         | Peanut, beans ( <i>Phaseolus</i> ), Lima beans   | Tepary & jack bean, nuñas, pacay        |
| Fruits & nuts             | Pineapple, papaya, cashew, strawberry, blueberry | Passifloras, cherimoya                  |
| Spices                    | Vanilla, hot peppers                             |   |
| Beverage crops            | Chocolate  | Maté                                    |
| Fumitories, hallucinogens | Tobacco  | Coca                                    |

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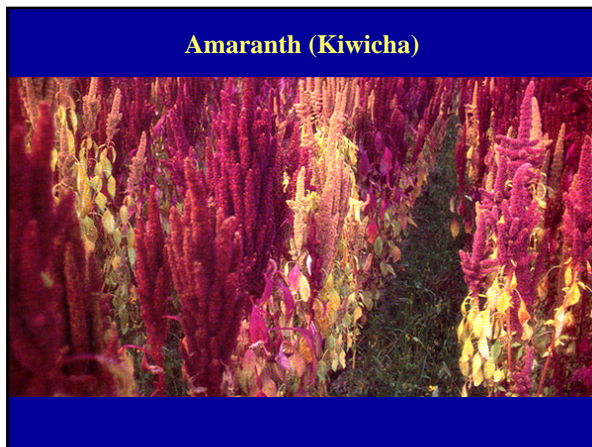
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Potatoes



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Ulluco



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Oca



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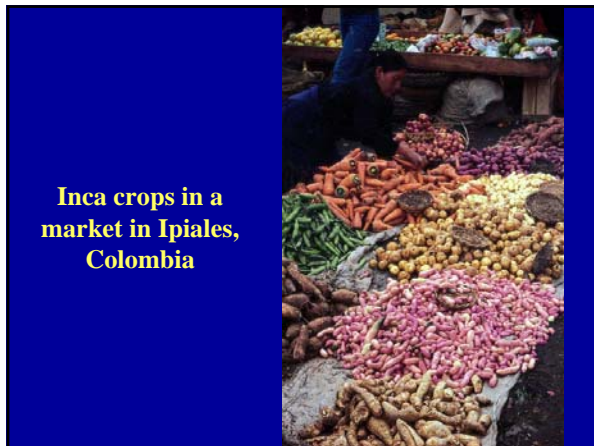
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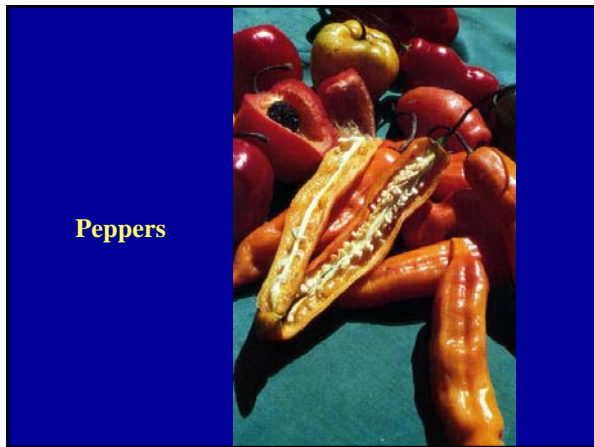
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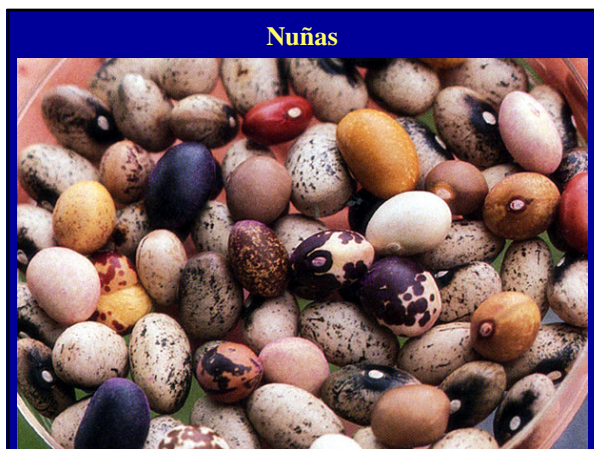
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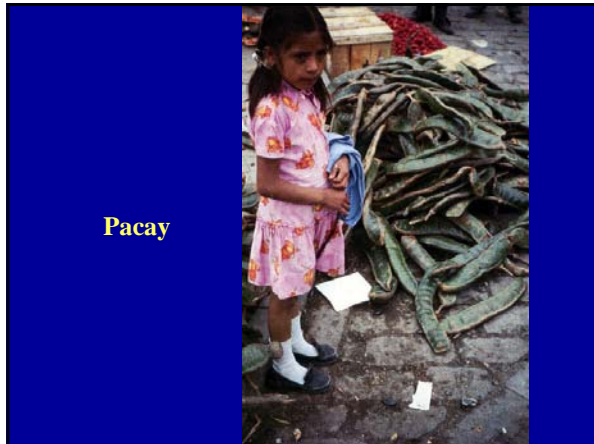
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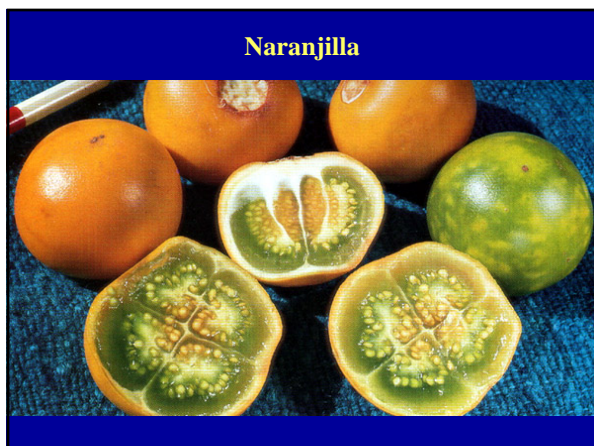
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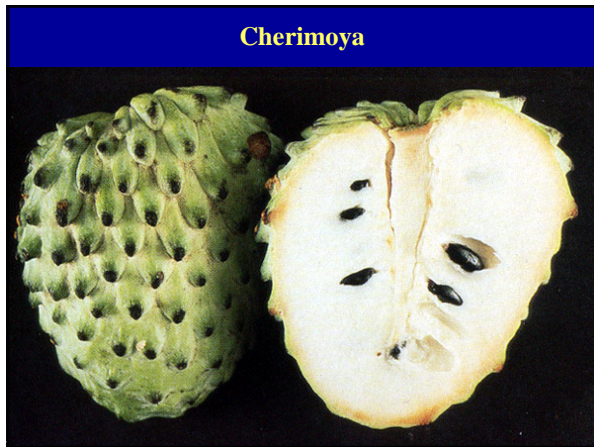
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