

# *Solanum tuberosum*



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[https://en.wikipedia.org/wiki/Potato#/media/File:Papas\\_de\\_colores\\_de\\_Chiloe.jpg](https://en.wikipedia.org/wiki/Potato#/media/File:Papas_de_colores_de_Chiloe.jpg)

# Solanaceae-The Potato Family

- Potato belongs to the GENUS *Solanum*. *Solanum* is a large GENUS with 1500 to 2000 SPECIES. The Type Species is potato (see drawing to the right).
- The GENUS *Solanum* includes potato, tomato and eggplant. Most of the SPECIES of *Solanum* originated in the New World. A big exception is the type of eggplant we grow in our gardens, which is an Old World plant.

In the public domain



# The New World Solanaceae

Potato (*Solanum tuberosum*) finds its origins in the Andes Mountains in Peru and Bolivia, tomatoes (*Solanum lycopersicum*) originated in western South America, and the eggplant we know (*Solanum melongena*) comes from India.

Photo attribution #1.



# Where in the world is .....

- Find Peru, Bolivia, western South America and India on the map.

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# How the potato conquered the world.

- The mountain people of Peru and Bolivia were using wild potatoes 8,000 years ago.
- These people DOMESTICATED potatoes about 6,000 years ago.
- The Spanish discovered potatoes about 1532.
- Potatoes were probably introduced by the Spanish and other slave traders to Africa as a cheap food for slaves.
- In about 1570 the potato was introduced to Spain. Within 100 years, potatoes were grown all over Europe.
- It was introduced to India in 1610, to China in 1700, and Japan in 1766.
- In the early 1700's Scotch-Irish migrants took the potato to North America.

# Where in the world is .....?

- Find Peru, Spain, Africa, India, China and Japan on the map.

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# *Solanum tuberosum*

- Potatoes became more and more important all over the world as people realized that this crop could provide more calories at a lower cost than grain. (Photo USDA public domain).



# Who were the Inca?

Map attribution #2 at end of presentation.



The Inca of Peru were one of the great civilizations of the Americas, of the world. They were the largest empire in the New World before the arrival of Columbus. The Inca continued developing new breeds of potatoes that their predecessors had first DOMESTICATED. A single government controlled many different tribes. The empire lasted only 100 years, from 1438 to 1532. In 1532 the Spanish conquered the Inca, taking all their gold and silver. They left the highly developed civilization of the Inca in ruins.

# The Inca

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# Coricancha-The Golden Temple

- The Golden Temple was in Cusco, the capital of the Inca Empire. As the story goes, the walls were covered in gold. The courtyard next to the temple was filled with objects made of gold. Below is a digital reconstruction of what the room with all the gold may have looked like. Could the gold llama and corn have been in this room? You can see a digital reproduction of the room and some gold statues at <http://www.ancientpages.com/2018/04/23/coricancha-stunning-golden-garden-and-lost-treasures-of-the-inca/> For a scholarly work go to *Sun Temple* by Katrina Kroll at <https://u.osu.edu/kroll.35/andean-gallery-project-3/the-temple-2/>

# Potato and the Inca

Many scholars would say that the entire empire was based on the potato. The potato provided the “food” an entire civilization became based upon. Potatoes were so important the Inca people measured time in how long it took to cook a pot of potatoes. A papacancha or topo was the amount of land a family needed to grow enough potatoes to feed themselves. The word for potato comes from the Inca word for potato, ‘papa’

# Potato and the Inca

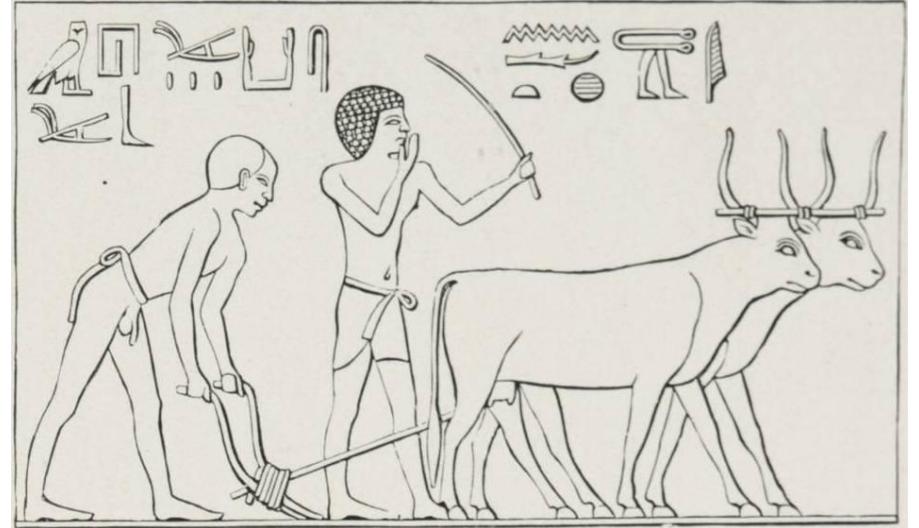
The Inca themselves placed the potato as the foundation of their society. Many artifacts can be found which use the potato as a model.

- (Photos courtesy of Jules Janick, Purdue University, with permission.)



# How the Inca grew potatoes.

- There were two big differences between agriculture in the Old World and in the Americas. In the Old World animals were DOMESTICATED widely. Some animals were used in farming, for example to plow. Most of the Native Americans did not have domesticated animals, none used them for help with plowing.



- Also, most Native Americans did not have iron. Farming tools were made from wood, shells, and animal bones. Sometimes copper was used.

Attribution # 3.

# How Did the Inca Work the Soil?

The fields would be plowed using a foot plow called a tacla. A tacla was a 5 to 6 foot wooden stick with two handles. The tip was either copper or hardened by fire. The farmer would use his weight to turn the heavy soil. Similar tools with

steel tips are used today. A stone-tipped club was used to bread up soil clods. There were also bronze-bladed hoes and digging sticks.



Attribution #4.

# How did the Inca deal with the mountains?

Agriculture was difficult for the Inca people. Much of their empire was mountainous with limited amounts of land that could be easily farmed. Water was also scarce.

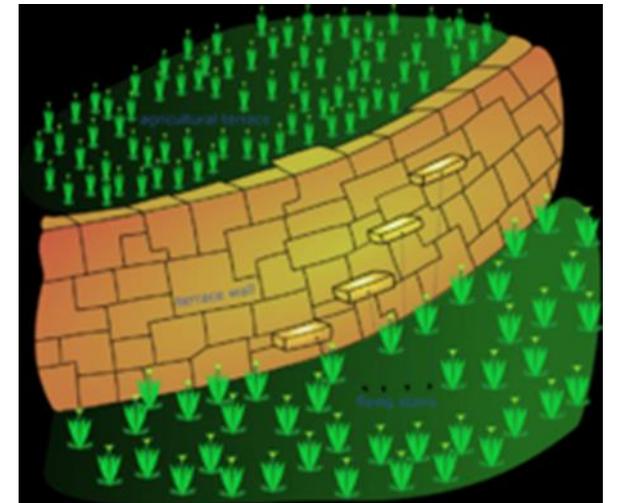
The Inca solved these problems by farming on terraces and building canals. Terrace agriculture had already been used by the pre-Inca people. The Inca improved on their ideas. Attribution # 5.



# Inca Terraces

Stone walls were built to make raised level fields. These fields formed “steps” on the sides of the hills which were too steep to plough or irrigate. Soil would be carried to the terraces. These terraces created more land to farm. The top soil would also not be washed away in heavy rains.

Photo attribution 6, drawing attribution 7.



# Inca Canals

Water was also a problem. It rains from December to May in the Andes. Some years there is hardly any rain at all. The Inca constructed canals that would bring water to the terraces and to other fields. The Inca system of aqueducts rivaled any found elsewhere in the world.



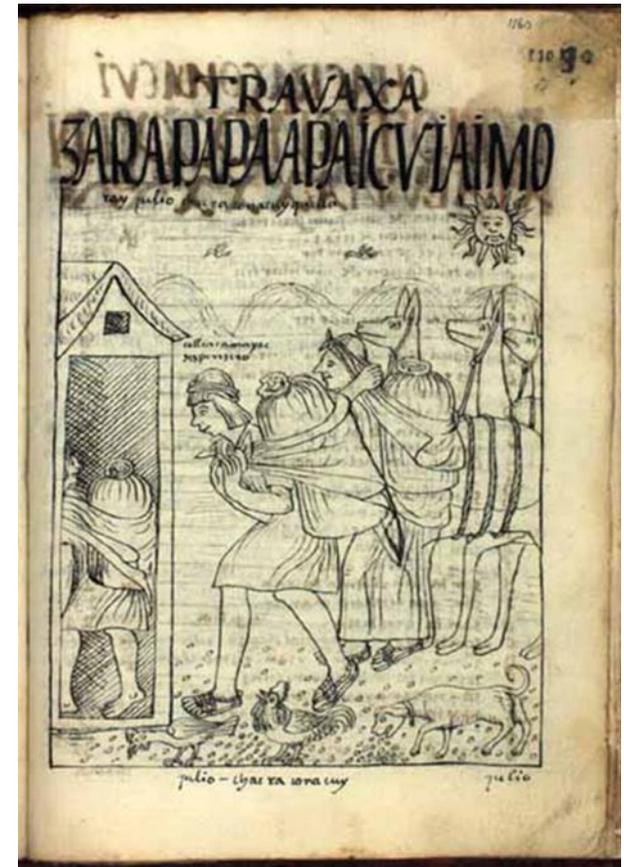
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# The “Experiment Station” at Cusco

The Inca had an extraordinarily sophisticated agriculture. Around the capital city, Cusco, experts developed new breeds of potatoes and other plants. They used different terrace levels to mimic the different climates of the empire. From this one “experiment station” the Inca developed plants for the entire empire. These experts would teach and advise the people on breeds, how to use new techniques for irrigating or draining land, and how best to terrace and plant.

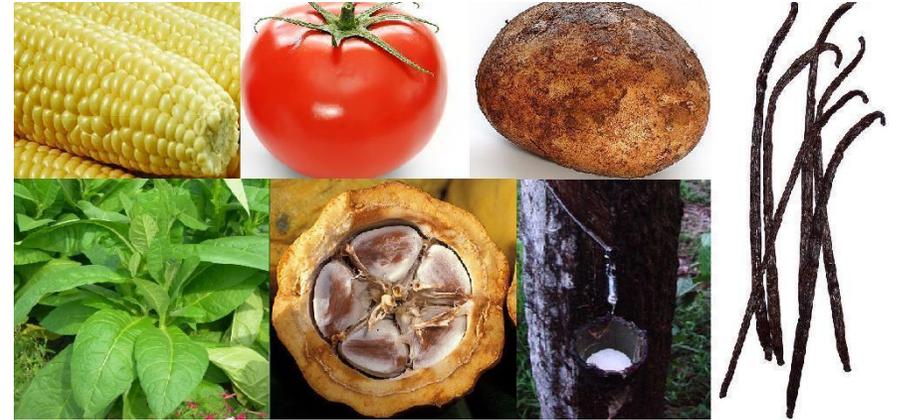
# Magnificent Inca Agriculture

The Spanish conquerors were amazed at the amount of food the Inca had stored in the government granaries. Some of the harvest went to support the ruler and government, but most of the harvest was kept in a central storage place to be given to the people as needed. Food was available even if crops failed. A granary is depicted in the drawing to the right. Attribution #9.



# Magnificent Inca Agriculture

When the Europeans arrived in the Americas, they found people practicing a sophisticated agriculture. agriculture in many parts of the New World was Superior to the agriculture practices in Europe.



It is important to remember that 9 of the 30 most important agriculture crops came from the Americas. These crops were already being used by the indigenous peoples of the Americas when the Europeans came. 60% of the daily diet eaten by people all over the world today came from crops which the Native Americans domesticated. It is estimated that over 1200 species of plants were used for food and drinks by the native peoples of the Americas. Native Americans had domesticated over 300 food crops. New seeds were traded actively between peoples. Attribution #8

## QUESTION

Can you name a drink  
We all love that came  
from the New World?



By 4028mdk09 - Own work, CC BY-SA 3.0, <https://commons.wikimedia.org/w/index.php?curid=8030815>

# The true treasure of the Andes, the potato, not the gold.

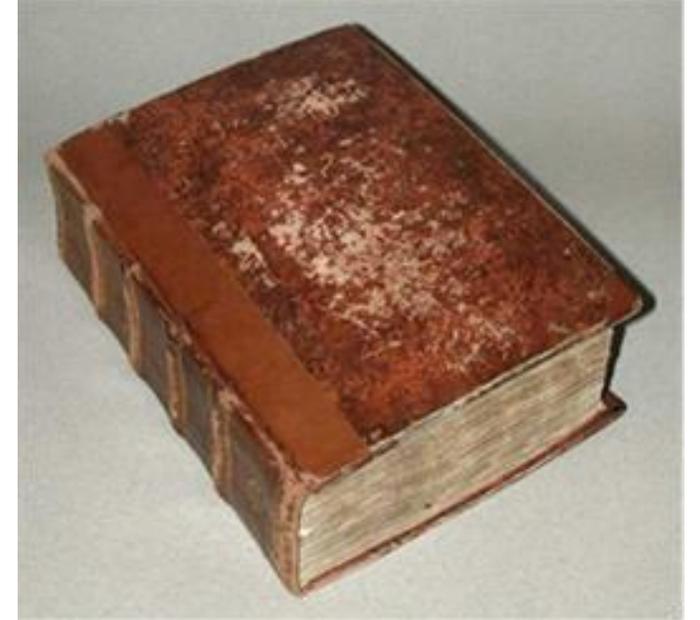
- “The Spanish conquistadors first encountered the potato when they arrived in Peru in 1532 in search of gold ... At the time the Spaniards failed to realize that the potato represented a far more important treasure than either silver or gold ...” from *The Impact of the Potato* by Jeff Chapman

Photo attribution #1.

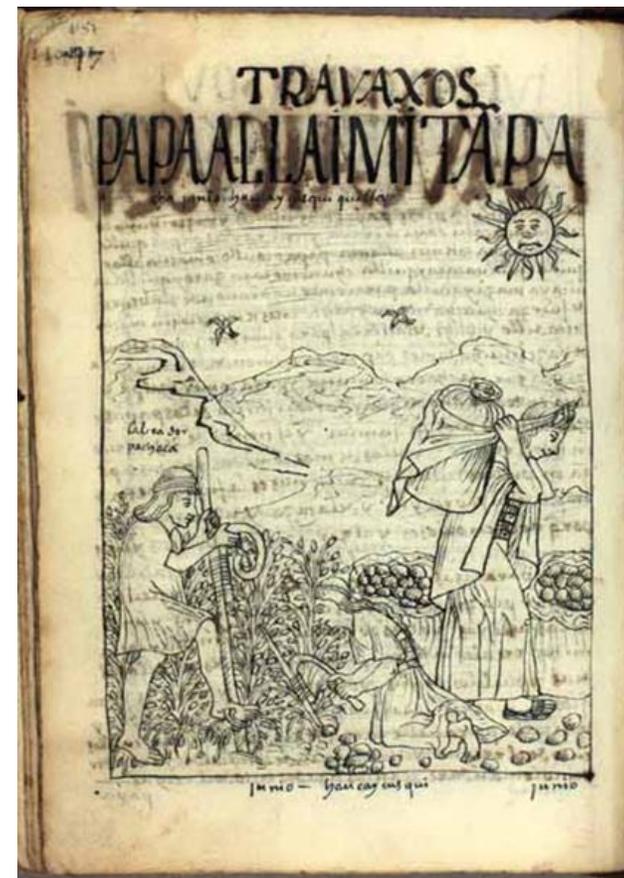


# How do we know so much about the Inca?

Felipe Guaman Poma de Ayala wrote *Primer nueva coronica y buen gobierno* (*The First New Chronicle and Good Government*) around 1615 (less than 100 years after the Spanish got to Peru). It is 800 pages long with about 400 drawings written mostly in Spanish. In the early 1660s, the Danish Royal Library received a copy. It was lost on a shelf until 1908 when Richard Pietschmann found it. It is an extraordinary chronical of the life of the Inca. Photo attribution #9.



Felipe Guaman Poma de Ayala drawings about Potato-what are the people doing?  
Photo attribution #9.



# Make a quipu.

How did the Inca keep track of everything in the granaries? Quipus were used.

One of your tasks is to make a quipu. See the directions Mr. L. wrote for you at <http://lafavre.us/plantmasters/> Look for Appendix A.



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#9 All the drawings from Felipe Guaman Poma de Ayala's Primer nueva coronica y buen gobierno, Photo courtesy of the Digital Research Center of the Royal Library, Copenhagen, Denmark.