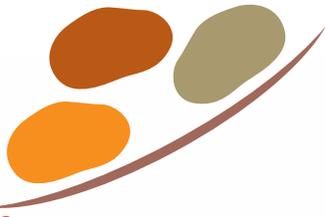


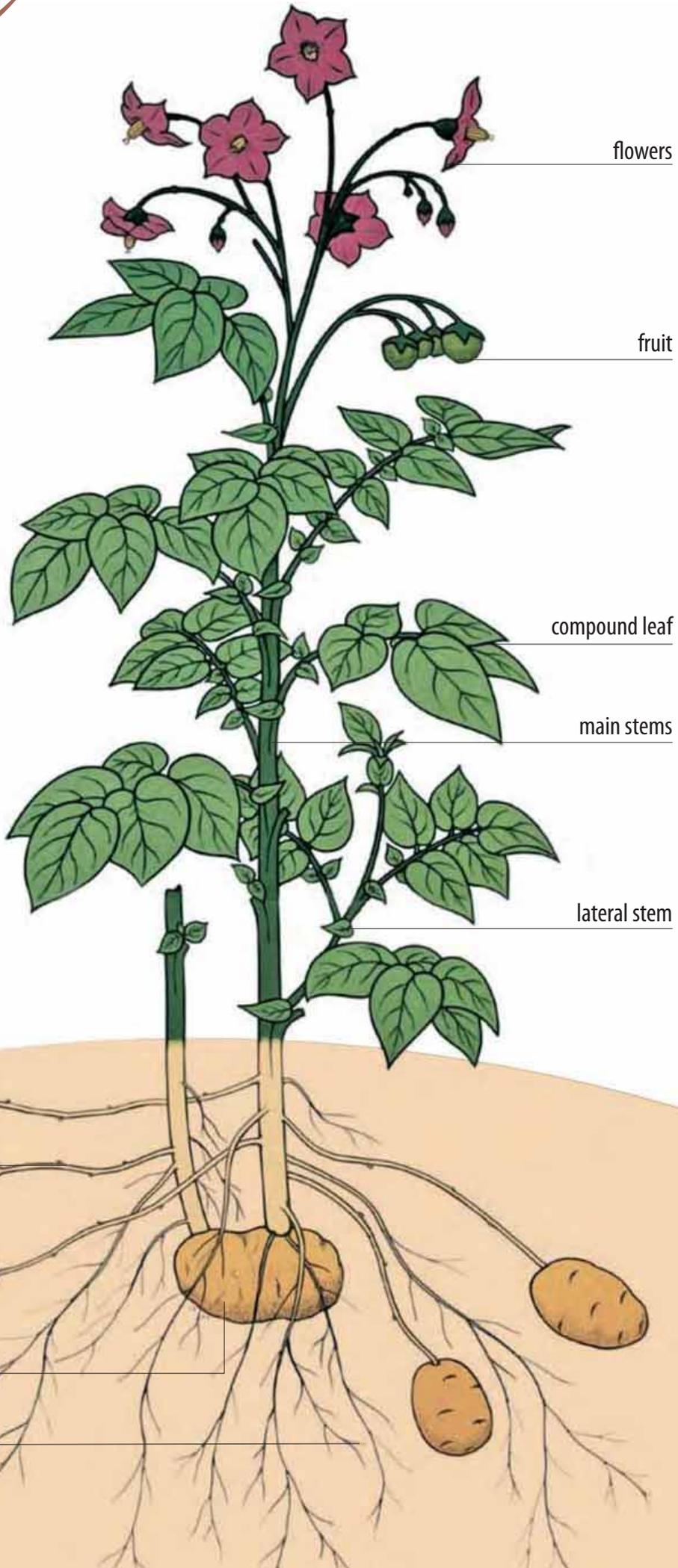
# The potato

*Introducing our special guest,  
Solanum tuberosum, the “humble tuber”  
that spread from its Andean birthplace  
across six continents, staving off hunger,  
fuelling economic development  
and changing the course of world history*





12 ✨ International Year  
of the Potato 2008  
*New light on a hidden  
treasure*



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## The plant

The potato (*Solanum tuberosum*) is a herbaceous annual that grows up to 100 cm tall and produces a tuber – also called potato – so rich in starch that it ranks as the world’s fourth most important food crop, after maize, wheat and rice. The potato belongs to the Solanaceae – or “nightshade” – family of flowering plants, and shares the genus *Solanum* with at least 1000 other species, including tomato and eggplant. Recent research indicates that *S. tuberosum* is divided into two, only slightly different, cultivar groups: Andigenum, which is adapted to short day conditions and is mainly grown in the Andes, and Chilotanum, the potato now cultivated around the world. Also known as the “European” potato, the Chilotanum group is believed to have developed from Andean cultivars introduced first into Chile and from there, during the 19th century, into Europe.

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## The tuber

As the potato plant grows, its compound leaves manufacture starch that is transferred to the ends of its underground stems (or stolons). The stems thicken to form a few or as many as 20 tubers close to the soil surface. The number of tubers that actually reach maturity depends on available moisture and soil nutrients. Tubers may vary in shape and size, and normally weigh up to 300 g each.

At the end of the growing season, the plant’s leaves and stems die down to the soil level and its new tubers detach from their stolons. The tubers then serve as a nutrient store that allows the plant to survive the cold, and later regrow and reproduce. Each tuber has from two to as many as 10 buds (or “eyes”), arranged in a spiral pattern around its surface. The buds generate shoots which grow into new plants when conditions become favourable once more.

A raw potato tuber is rich in micro-nutrients – the vitamins and minerals that

### Chemical composition of the potato tuber

**water** 72-75%

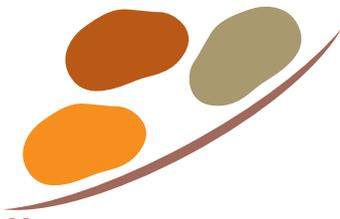
**starch** 16-20%

**protein** 2-2.5%

**fibre** 1-1.8%

**fatty acids** 0.15%





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are essential to health. A medium-size potato contains high levels of potassium and nearly half the daily adult requirement of vitamin C. It is also a good source of B vitamins, and minerals such as phosphorus and magnesium.



### Micronutrients

(one raw potato, including skin, 213 g)

#### Minerals

potassium	897 mg
phosphorus	121 mg
magnesium	49 mg
iron	1.66 mg

#### Vitamins

vitamin C	42 mg
niacin	2.2 mg
vitamin B6	0.62 mg
thiamine	0.17 mg

Source: United States National Nutrient Database

## Andean heritage

The story of the potato begins about 8 000 years ago near Lake Titicaca, which sits at 3 800 m above sea level in the Andes mountain range of South America, on the border between Bolivia and Peru. There, research indicates, communities of hunters and gatherers who had first entered the South American continent at least 7 000 years before, began domesticating wild potato plants that grew around the lake in abundance.

Some 200 species of wild potatoes are found in the Americas. But it was in the Central Andes that farmers succeeded in selecting and improving the first of what was to become, over the following millennia, a staggering range of tuber crops. In fact, what we know as “the potato” (*Solanum* species *tuberosum*) contains just a fragment of the genetic diversity found in the four recognized potato species and 5 000 potato varieties still grown in the Andes.

Although Andean farmers cultivated many food crops – including tomatoes, beans and maize – their potato varieties proved particularly suited to the *quechua* or “valley” zone, which extends at altitudes of from 3 100 to 3 500 m along the slopes of the Central Andes (among Andean peoples, the *quechua* was known as the zone of “civilization”). But farmers also developed a frost-resistant potato species that survives on the alpine tundra of the puna zone at 4 300 m.

The food security provided by maize and potato – consolidated by the development of



Lake Titicaca,  
a centre of Andean  
civilization

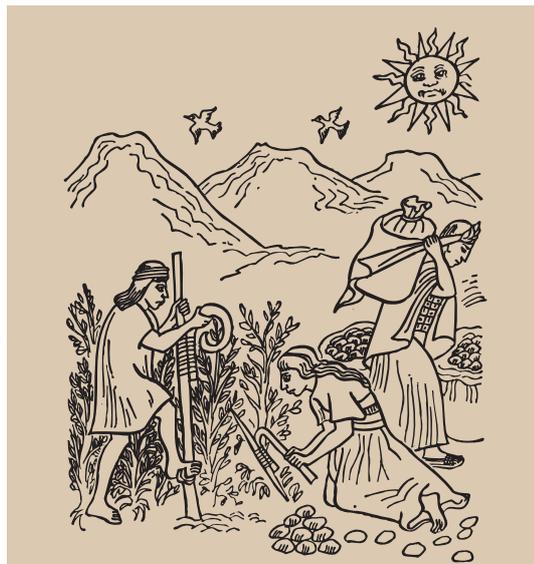
irrigation and terracing – allowed for the emergence around 500 AD of the Huari civilization in the highland Ayacucho basin. Around the same time, the city state of Tiahuanacu rose near Lake Titicaca, thanks largely to its sophisticated “raised field” technology – elevated soil beds lined with water canals – which produced potato yields estimated at 10 tonnes per hectare. At its height, around 800 AD, Tiahuanacu and neighbouring valleys are believed to have sustained a population of 500 000 or more.

**Meteoric rise.** The collapse of Huari and Tiahuanacu between 1000 and 1200 led to a period of turmoil that ended with the meteoric rise of the Incas in the Cusco valley around 1400. In less than 100 years, they created the largest state in pre-Columbian America, extending from present-day Argentina to Colombia.

The Incas adopted and improved the agricultural advances of previous highland cultures, and gave special

importance to maize production. But the potato was fundamental to the food security of their empire: in the Incas’ vast network of state storehouses, potato – especially a freeze-dried potato product called *chuño* – was one of the main food items, used to feed officials, soldiers and corvée labourers, and as an emergency stock after crop failures.

The Spanish invasion, in 1532, brought an end to the Incas – but not to the cultivation of potatoes. For, throughout Andean history, the potato – in all its forms – was profoundly a “people’s food”, playing a central role the Andean vision of the world (time, for example, was measured by how long it took to cook a pot of potatoes).



### The dawn of agriculture

Incan myths relate that the Creator, Viracocha, caused the sun, moon and stars to emerge from Lake Titicaca. He also created agriculture when he sent his two sons to the human realm to study and classify the plants that grew there. They taught the people to sow crops and how to use them so that they would never lack food.

Farmers in some parts of the high Andes still measure land in *topo*, the area a family needs to grow their potato supply – a *topo* is larger at higher altitudes, where plots need to lie fallow for longer. They classify potatoes not only by species and variety, but by the ecological niche where the tubers grow best, and it is not unusual to find four species cultivated on a single, small plot of land.

Planting tubers remains the most important activity of the farming year near Lake Titicaca, where the potato is known as *Mama Jatha*, or mother of growth. The potato remains the seed of Andean society.