[Template:Other uses](/wiki/Template:Other_uses" \o "Template:Other uses) [Template:Redirect](/wiki/Template:Redirect) [Template:Pp-vandalism](/wiki/Template:Pp-vandalism) [Template:Taxobox](/wiki/Template:Taxobox) The **potato** is a [starchy](/wiki/Starch), [tuberous](/wiki/Tuber) [crop](/wiki/Crop) from the [perennial](/wiki/Perennial_plant) [nightshade](/wiki/Solanaceae) [*Solanum*](/wiki/Solanum) *tuberosum* L. The word "potato" may refer either to the plant itself or to the edible tuber.[[1]](#cite_note-1) In the [Andes](/wiki/Andes), where the species is indigenous, there are some other closely related cultivated potato species. Potatoes were introduced outside the Andes region approximately four centuries ago,[[2]](#cite_note-2) and have since become an integral part of much of the world's food supply. It is the world's fourth-largest food crop, following [maize](/wiki/Maize), [wheat](/wiki/Wheat), and [rice](/wiki/Rice).<ref name=fao>[Template:Cite web](/wiki/Template:Cite_web)</ref> The green leaves and green skins of tubers exposed to the light are toxic.

Wild potato species can be found throughout [the Americas](/wiki/The_Americas) from the United States to southern [Chile](/wiki/Chile).[[3]](#cite_note-3) The potato was originally believed to have been domesticated independently in multiple locations,[[4]](#cite_note-4) but later genetic testing of the wide variety of [cultivars](/wiki/Cultivar) and wild species proved a single [origin](/wiki/Indigenous_(ecology)) for potatoes in the area of present-day southern [Peru](/wiki/Peru) and extreme northwestern [Bolivia](/wiki/Bolivia) (from a species in the [*Solanum brevicaule*](/wiki/Solanum_brevicaule) complex), where they were domesticated approximately 7,000–10,000 years ago.[[5]](#cite_note-5)[[6]](#cite_note-6)[[7]](#cite_note-7) Following centuries of [selective breeding](/wiki/Selective_breeding), there are now over a thousand different types of potatoes.[[6]](#cite_note-6) Over 99% of the presently cultivated potatoes worldwide descended from varieties that originated in the lowlands of south-central Chile, which have displaced formerly popular varieties from the [Andes](/wiki/Andes).[[8]](#cite_note-8)[[9]](#cite_note-9) However, the local importance of the potato is variable and changing rapidly. It remains an essential crop in Europe (especially eastern and central Europe), where per capita production is still the highest in the world, but the most rapid expansion over the past few decades has occurred in southern and eastern Asia. As of 2007 [China](/wiki/China) led the world in potato production, and nearly a third of the world's potatoes were harvested in China and [India](/wiki/India).<ref name=FAO2008/>

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## Etymology[[edit](/index.php?title=(none)&action=edit&section=1)]

The English word *potato* comes from Spanish *patata* (the name used in Spain). The [Spanish Royal Academy](/wiki/Spanish_Royal_Academy) says the Spanish word is a compound of the [Taíno](/wiki/Taíno_language) *batata* and the [Quechua](/wiki/Quechua_languages) *papa* (potato).[[10]](#cite_note-10) The name potato originally referred to a type of sweet potato although the two plants are not closely related; in many of the chronicles detailing agriculture and plants, no distinction is made between the two.[[11]](#cite_note-11) The 16th-century English herbalist [John Gerard](/wiki/John_Gerard) used the terms "bastard potatoes" and "Virginia potatoes" for this species, and referred to sweet potatoes as "common potatoes".<ref name=OED>[Template:Cite encyclopedia](/wiki/Template:Cite_encyclopedia)</ref> Potatoes are occasionally referred to as "Irish potatoes" or "white potatoes" in the United States, to distinguish them from [sweet potatoes](/wiki/Sweet_potato).<ref name=OED/>

The name **spud** for a small potato comes from the digging of soil (or a hole) prior to the planting of potatoes. The word has an unknown origin and was originally (c. 1440) used as a term for a short knife or dagger, probably related to Dutch *spyd* or the Latin "spad-" a word root meaning "sword"; cf. Spanish "espada", English "spade" and "spadroon". The word spud traces back to the 16th century. It subsequently transferred over to a variety of digging tools. Around 1845, the name transferred to the tuber itself.<ref name=Wilton94>David Wilton, Ivan Brunetti; p94 *Word myths: debunking linguistic urban legends;* Oxford University Press US; 2004; ISBN 0-19-517284-1</ref> The origin of the word "spud" has erroneously been attributed to a 19th-century activist group dedicated to keeping the potato out of [Britain](/wiki/United_Kingdom_of_Great_Britain_and_Ireland), calling itself The Society for the Prevention of an Unwholesome Diet (S.P.U.D.).<ref name=Wilton94/> It was [Mario Pei's](/wiki/Mario_Pei) 1949 *The Story of Language* that can be blamed for the word's [false origin](/wiki/False_etymology). Pei writes, "the potato, for its part, was in disrepute some centuries ago. Some Englishmen who did not fancy potatoes formed a Society for the Prevention of Unwholesome Diet. The initials of the main words in this title gave rise to spud." Like most other pre-20th century [acronymic](/wiki/Acronym) origins, this is false.<ref name=Wilton94/>

## Characteristics[[edit](/index.php?title=(none)&action=edit&section=2)]

[thumb|Flowers of a potato plant](/wiki/File:Potato_flowers.jpg) [thumb|Russet potatoes](/wiki/File:Russet_potato_cultivar_with_sprouts.jpg)

Potato plants are herbaceous [perennials](/wiki/Perennial) that grow about [Template:Convert](/wiki/Template:Convert) high, depending on variety, with the leaves [dying back](/wiki/Plant_senescence) after flowering, fruiting and tuber formation. They bear white, pink, red, blue, or purple flowers with yellow [stamens](/wiki/Stamen). In general, the tubers of varieties with white flowers have white skins, while those of varieties with colored flowers tend to have pinkish skins.[[12]](#cite_note-12) Potatoes are mostly [cross-pollinated](/wiki/Pollination) by insects such as [bumblebees](/wiki/Bumblebee), which carry pollen from other potato plants, though a substantial amount of self-fertilizing occurs as well. Tubers form in response to decreasing day length, although this tendency has been minimized in commercial varieties.[[13]](#cite_note-13)[thumb|Potato plants](/wiki/File:Potato_plants.jpg) After flowering, potato plants produce small green fruits that resemble green [cherry tomatoes](/wiki/Cherry_tomato), each containing about 300 [seeds](/wiki/Seed). Like all parts of the plant except the tubers, the fruit contain the toxic [alkaloid](/wiki/Alkaloid) [solanine](/wiki/Solanine) and are therefore unsuitable for consumption. All new potato varieties are grown from seeds, also called "true potato seed", "TPS" or "botanical seed" to distinguish it from seed tubers. New varieties grown from seed can be [propagated vegetatively](/wiki/Vegetative_propagation) by planting tubers, pieces of tubers cut to include at least one or two eyes, or cuttings, a practice used in greenhouses for the production of healthy seed tubers. Plants propagated from tubers are clones of the parent, whereas those propagated from seed produce a range of different varieties.

## Genetics[[edit](/index.php?title=(none)&action=edit&section=3)]

There are about 5,000 potato varieties worldwide. Three thousand of them are found in the Andes alone, mainly in Peru, Bolivia, Ecuador, Chile, and Colombia. They belong to eight or nine species, depending on the taxonomic school. Apart from the 5,000 cultivated varieties, there are about 200 wild species and subspecies, many of which can be cross-bred with cultivated varieties. Cross-breeding has been done repeatedly to transfer resistances to certain pests and diseases from the gene pool of wild species to the gene pool of cultivated potato species. [Genetically modified](/wiki/Genetically_modified_food) varieties have met public resistance in the United States and in the European Union.[[14]](#cite_note-14)[[15]](#cite_note-15) The major species grown worldwide is *Solanum tuberosum* (a [tetraploid](/wiki/Tetraploid) with 48 [chromosomes](/wiki/Chromosome)), and modern varieties of this species are the most widely cultivated. There are also four diploid species (with 24 chromosomes): *S. stenotomum*, *S. phureja*, *S. goniocalyx*, and *S. ajanhuiri*. There are two triploid species (with 36 chromosomes): *S. chaucha* and *S. juzepczukii*. There is one pentaploid cultivated species (with 60 chromosomes): *S. curtilobum*. There are two major subspecies of *Solanum tuberosum*: *andigena*, or Andean; and *tuberosum*, or Chilean.[[16]](#cite_note-16) The Andean potato is adapted to the short-day conditions prevalent in the mountainous equatorial and tropical regions where it originated; the Chilean potato, however, native to the [Chiloé Archipelago](/wiki/Chiloé_Archipelago), is adapted to the long-day conditions prevalent in the higher latitude region of southern Chile.[[17]](#cite_note-17) The [International Potato Center](/wiki/International_Potato_Center), based in [Lima, Peru](/wiki/Lima,_Peru), holds an [ISO](/wiki/International_Organization_for_Standardization)-accredited collection of potato [germplasm](/wiki/Germplasm).[[18]](#cite_note-18) The international Potato Genome Sequencing Consortium announced in 2009 that they had achieved a draft sequence of the potato genome.[[19]](#cite_note-19) The potato genome contains 12 chromosomes and 860 million base pairs, making it a medium-sized plant genome.[[20]](#cite_note-20) More than 99 percent of all current [varieties](/wiki/Variety_(botany)) of potatoes currently grown are direct descendants of a subspecies that once grew in the [lowlands](/wiki/Lowland) of south-central [Chile](/wiki/Chile).<ref name=sd>[Template:Cite web](/wiki/Template:Cite_web)</ref> Nonetheless, genetic testing of the wide variety of [cultivars](/wiki/Cultivar) and wild species affirms that all potato subspecies derive from a single [origin](/wiki/Indigenous_(ecology)) in the area of present-day southern [Peru](/wiki/Peru) and extreme northwestern [Bolivia](/wiki/Bolivia) (from a species in the *Solanum brevicaule* complex).[[5]](#cite_note-5)[[6]](#cite_note-6)[[7]](#cite_note-7) Most modern potatoes grown in North America arrived through European settlement and not independently from the South American sources; however, at least one wild potato species, *Solanum fendleri*, is found as far north as Texas and is used in breeding for resistance to a [nematode](/wiki/Nematode) species that attacks cultivated potatoes. A secondary center of genetic variability of the potato is Mexico, where important wild species that have been used extensively in modern breeding are found, such as the hexaploid *Solanum demissum*, as a source of resistance to the devastating late blight disease.[[21]](#cite_note-21) Another relative native to this region, [*Solanum bulbocastanum*](/wiki/Solanum_bulbocastanum), has been used to genetically engineer the potato to resist potato blight.[[22]](#cite_note-22) Potatoes yield abundantly with little effort, and adapt readily to diverse climates as long as the climate is cool and moist enough for the plants to gather sufficient water from the soil to form the starchy tubers. Potatoes do not keep very well in storage and are vulnerable to molds that feed on the stored tubers and quickly turn them rotten, however: crops such as grain can be stored for several years with a low risk of rot. The yield of Calories per acre (about 9.2 million) is higher than that of maize (7.5 million), rice (7.4 million), wheat (3 million), or [soybean](/wiki/Soybean) (2.8 million).[[23]](#cite_note-23)

## History[[edit](/index.php?title=(none)&action=edit&section=4)]

[Template:Main](/wiki/Template:Main) The potato was first domesticated in the region of modern-day southern [Peru](/wiki/Peru) and extreme northwestern [Bolivia](/wiki/Bolivia)[[5]](#cite_note-5) between 8000 and 5000 BC.[[6]](#cite_note-6) It has since spread around the world and become a [staple crop](/wiki/Staple_food) in many countries.

The earliest archaeologically verified potato tuber remains have been found at the coastal site of [Ancon](/wiki/Ancon_(archaeological_site)) (central [Peru](/wiki/Peru)), dating to 2500 BC.[[24]](#cite_note-24)[[25]](#cite_note-25) According to conservative estimates, the introduction of the potato was responsible for a quarter of the growth in [Old World](/wiki/Old_World) population and urbanization between 1700 and 1900.[[26]](#cite_note-26) Following the [Spanish conquest of the Inca Empire](/wiki/Spanish_conquest_of_the_Inca_Empire), the Spanish introduced the potato to Europe in the second half of the 16th century. The staple was subsequently conveyed by European mariners to territories and ports throughout the world. The potato was slow to be adopted by distrustful European farmers, but soon enough it became an important food staple and field crop that played a major role in the European 19th century population boom.[[7]](#cite_note-7) However, lack of genetic diversity, due to the very limited number of varieties initially introduced, left the crop vulnerable to disease. In 1845, a plant disease known as late blight, caused by the fungus-like [oomycete](/wiki/Oomycete) [*Phytophthora infestans*](/wiki/Phytophthora_infestans), spread rapidly through the poorer communities of western Ireland, resulting in the crop failures that led to the [Great Irish Famine](/wiki/Great_Irish_Famine).[[21]](#cite_note-21) Thousands of varieties still persist in the Andes however, where over 100 cultivars might be found in a single valley, and a dozen or more might be maintained by a single agricultural household.[[27]](#cite_note-27)

## Role in world food supply[[edit](/index.php?title=(none)&action=edit&section=5)]

[thumb|left|Potato](/wiki/Image:PotatoYield.png) [yield](/wiki/Crop_yield) in producing countries, 2000

[Template:Agricultural production box](/wiki/Template:Agricultural_production_box) The [Food and Agriculture Organization of the United Nations](/wiki/Food_and_Agriculture_Organization_of_the_United_Nations) reports that the world production of potatoes in 2013 was about 368 million tonnes.[[28]](#cite_note-28) Just over two thirds of the global production is eaten directly by humans with the rest being fed to animals or used to produce starch. This means that the annual diet of an average global citizen in the first decade of the 21st century included about 33 kg (or 73 lb) of potato.<ref name=fao/> However, the local importance of potato is extremely variable and rapidly changing. It remains an essential crop in Europe (especially eastern and central Europe), where per capita production is still the highest in the world, but the most rapid expansion over the past few decades has occurred in southern and eastern Asia. As of 2007, China led the world in potato production, and nearly a third of the world's potatoes were harvested in China and India.<ref name=FAO2008>[Template:Cite web](/wiki/Template:Cite_web)</ref> The geographic shift of potato production has been away from wealthier countries toward lower-income areas of the world, although the degree of this trend is ambiguous.[[29]](#cite_note-29) In 2008, several international organizations highlighted the potato's role in world food production, in the face of developing economic problems. They cited its potential derived from its status as a cheap and plentiful crop that grows in a wide variety of climates and locales.[[30]](#cite_note-30)

### International Year of the Potato[[edit](/index.php?title=(none)&action=edit&section=6)]

[Template:Main](/wiki/Template:Main) Due to perishability, only about 5% of the world's potato crop is traded internationally; its minimal presence in world financial markets contributed to its stable pricing during the [2007–2008 world food price crisis](/wiki/2007–2008_world_food_price_crisis).[[31]](#cite_note-31)[[32]](#cite_note-32) Thus, the United Nations officially declared 2008 as the [*International Year of the Potato*](/wiki/International_Year_of_the_Potato),[[33]](#cite_note-33) to raise its profile in developing nations, calling the crop a "hidden treasure".[[34]](#cite_note-34) This followed the International Rice Year in 2004.

## Nutrition[[edit](/index.php?title=(none)&action=edit&section=7)]

[Template:Nutritionalvalue](/wiki/Template:Nutritionalvalue)

The potato contains [vitamins](/wiki/Vitamin) and [minerals](/wiki/Dietary_mineral), as well as an assortment of [phytochemicals](/wiki/Phytochemical), such as [carotenoids](/wiki/Carotenoid) and natural phenols. [Chlorogenic acid](/wiki/Chlorogenic_acid) constitutes up to 90% of the potato tuber natural phenols. Others found in potatoes are 4-O-caffeoylquinic acid (crypto-chlorogenic acid), [5-O-caffeoylquinic](/wiki/5-O-caffeoylquinic_acid) (neo-chlorogenic acid), 3,4-dicaffeoylquinic and 3,5-dicaffeoylquinic acids.[[35]](#cite_note-35) A medium-size [Template:Convert](/wiki/Template:Convert) potato with the skin provides 27 mg of [vitamin C](/wiki/Vitamin_C) (45% of the Daily Value (DV)), 620 mg of [potassium](/wiki/Potassium) (18% of DV), 0.2 mg [vitamin B6](/wiki/Vitamin_B6) (10% of DV) and trace amounts of [thiamin](/wiki/Thiamin), [riboflavin](/wiki/Riboflavin), [folate](/wiki/Folate), [niacin](/wiki/Niacin), [magnesium](/wiki/Magnesium), [phosphorus](/wiki/Phosphorus), [iron](/wiki/Iron#Nutrition_and_dietary_sources), and [zinc](/wiki/Zinc_metabolism).

The potato is best known for its [carbohydrate](/wiki/Carbohydrate) content (approximately 26 grams in a medium potato). The predominant form of this carbohydrate is [starch](/wiki/Starch). A small but significant portion of this starch is resistant to digestion by [enzymes](/wiki/Enzyme) in the [stomach](/wiki/Stomach) and [small intestine](/wiki/Small_intestine), and so reaches the [large intestine](/wiki/Large_intestine) essentially intact. This [resistant starch](/wiki/Resistant_starch) is considered to have similar physiological effects and health benefits as [fiber](/wiki/Dietary_fiber): It provides bulk, offers protection against [colon cancer](/wiki/Colon_cancer), improves [glucose](/wiki/Glucose) tolerance and insulin sensitivity, lowers plasma cholesterol and [triglyceride](/wiki/Triglyceride) concentrations, increases satiety, and possibly even reduces fat storage.[[36]](#cite_note-36)[[37]](#cite_note-37)[[38]](#cite_note-38) The amount of resistant starch in potatoes depends much on preparation methods. Cooking and then cooling potatoes significantly increases resistant starch. For example, cooked [potato starch](/wiki/Potato_starch) contains about 7% resistant starch, which increases to about 13% upon cooling.[[39]](#cite_note-39) The storage and cooking method used can significantly affect the nutrient availability of the potato.[[40]](#cite_note-40)[[41]](#cite_note-41) Potatoes are often broadly classified as high on the [glycemic index](/wiki/Glycemic_index) (GI) and so are often excluded from the diets of individuals trying to follow a [low-GI diet](/wiki/Low-glycemic_index_diet). In fact, the GI of potatoes can vary considerably depending on type (such as red, [russet](/wiki/Russet_Burbank_potato), white, or [King Edward](/wiki/King_Edward_potato)), origin (where it was grown), preparation methods (i.e., cooking method, whether it is eaten hot or cold, whether it is mashed or cubed or consumed whole, etc.), and with what it is consumed (i.e., the addition of various high-fat or high-protein toppings).[[42]](#cite_note-42) In the UK, potatoes are not considered by the [NHS](/wiki/National_Health_Service) as counting towards the recommended daily [five portions of fruit and vegetables](/wiki/5_A_Day).[[43]](#cite_note-43)

### Comparison to other major staple foods[[edit](/index.php?title=(none)&action=edit&section=8)]

The following table shows the nutrient content of potato and other major staple foods, each in respective raw form. Staple foods are not commonly eaten raw and are usually sprouted or cooked before eating. In sprouted and cooked form, the relative nutritional and anti-nutritional contents of each of these grains may be different from the values reported in this table. [Template:Comparison of major staple foods](/wiki/Template:Comparison_of_major_staple_foods)

### Toxicity[[edit](/index.php?title=(none)&action=edit&section=9)]

[thumb|Early Rose variety seed tuber with sprouts](/wiki/File:Potato_EarlyRose_sprouts.jpg) Potatoes contain toxic compounds known as [glycoalkaloids](/wiki/Glycoalkaloid), of which the most prevalent are [solanine](/wiki/Solanine) and [chaconine](/wiki/Chaconine). Solanine is also found in other plants in the family [Solanaceae](/wiki/Solanaceae), which includes such plants as the deadly nightshade ([*Atropa belladonna*](/wiki/Atropa_belladonna)), henbane ([*Hyoscyamus niger*](/wiki/Hyoscyamus_niger)), tobacco ([*Nicotiana*](/wiki/Nicotiana)), as well as eggplant and tomato.

These compounds, which protect the plant from its predators, are, in general, concentrated in its leaves, stems, sprouts, and fruits.[[44]](#cite_note-44) In a summary of several studies, the glycoalkaloid content was highest in flowers and sprouts and lowest in the tuber flesh (in order from highest to lowest content, generally: flowers, sprouts, leaves, skin, roots, berries, peel [skin plus outer cortex of tuber flesh], stems, and tuber flesh).<ref name=fried>[Template:Cite journal](/wiki/Template:Cite_journal)</ref> Exposure to light, physical damage, and age increase glycoalkaloid content within the tuber.[[45]](#cite_note-45) Cooking at high temperatures—over [Template:Convert](/wiki/Template:Convert)—partly destroys these. The concentration of glycoalkaloid in wild potatoes suffices to produce toxic effects in humans. Glycoalkaloids may cause headaches, [diarrhea](/wiki/Diarrhea), [cramps](/wiki/Cramps), and in severe cases coma and death; however, poisoning from potatoes occurs very rarely. Light exposure causes greening from [chlorophyll](/wiki/Chlorophyll) synthesis, thus giving a visual clue as to areas of the tuber that may have become more toxic; however, this does not provide a definitive guide, as greening and glycoalkaloid accumulation can occur independently of each other. Varieties contain different levels of glycoalkaloids. [Lenape](/wiki/Lenape_(potato)) was released in 1967 but was withdrawn in 1970 as it contained high levels of glycoalkaloids.<ref name=boing>[Template:Cite web](/wiki/Template:Cite_web)</ref> Since then breeders developing new varieties test for this, and sometimes have to discard an otherwise promising [cultivar](/wiki/Cultivar).

[thumb|The](/wiki/File:Potato_fruits.jpg) [toxic](/wiki/Toxic) fruits produced by mature potato plants

Breeders try to keep solanine levels below 200 mg/kg (200 ppmw). However, when these commercial varieties turn green, they can still approach concentrations of solanine of 1000 mg/kg (1000 ppmw). In normal potatoes, analysis has shown solanine levels may be as little as 3.5% of the breeders' maximum, with 7–187 mg/kg being found.[[46]](#cite_note-46) While a normal potato has 12–20 mg/kg of glycoalkaloid content, a green tuber contains 250–280 mg/kg, and green skin 1500–2200 mg/kg.[[47]](#cite_note-47) The U.S. National Toxicology Program suggests that the average American consume at most 12.5 mg/day of solanine from potatoes (the toxic dose is actually several times this, depending on body weight). Douglas L. Holt, the State Extension Specialist for Food Safety at the [University of Missouri](/wiki/University_of_Missouri), notes that no reported cases of potato-source solanine poisoning have occurred in the U.S. in the last 50 years, and most cases involved eating green potatoes or drinking potato-leaf tea.[Template:Citation needed](/wiki/Template:Citation_needed)

## Growth and cultivation[[edit](/index.php?title=(none)&action=edit&section=10)]

[thumb|Potato planting](/wiki/File:Potato_planting_machine.JPG) [thumb|Potato field in](/wiki/File:Tractors_in_Potato_Field.jpg) [Fort Fairfield, Maine](/wiki/Fort_Fairfield,_Maine) [thumb|Potatoes grown in a tall bag are common in gardens as they minimize the amount of digging required at harvest](/wiki/File:Potato_bag_cultivation.JPG)

Potatoes are generally grown from seed potatoes – these are tubers specifically grown to be disease free and provide consistent and healthy plants. To be disease free, the areas where seed potatoes are grown are selected with care. In the USA this restricts production of seed potatoes to only 15 states out of the 50 states that grow potatoes.[[48]](#cite_note-48) These locations are selected for their cold hard winters that kill pests and long sunshine hours in the summer for optimum growth. In the UK, most seed potatoes originate in [Scotland](/wiki/Scotland) in areas where westerly winds prevent aphid attack and thus prevent spread of potato virus [pathogens](/wiki/Pathogen).[[49]](#cite_note-49)Potato growth has been divided into five phases. During the first phase, sprouts emerge from the seed potatoes and root growth begins. During the second, [photosynthesis](/wiki/Photosynthesis) begins as the plant develops leaves and branches. In the third phase [stolons](/wiki/Stolon) develop from lower leaf [axils](/wiki/Axil) on the stem and grow downwards into the ground and on these stolons new tubers develop as swellings of the stolon. This phase is often (but not always) associated with flowering. Tuber formation halts when soil temperatures reach [Template:Convert](/wiki/Template:Convert); hence potatoes are considered a cool-season crop.<ref name=shampoo>[Template:Cite web](/wiki/Template:Cite_web)</ref> Tuber bulking occurs during the fourth phase, when the plant begins investing the majority of its resources in its newly formed tubers. At this stage, several factors are critical to yield: optimal soil moisture and temperature, soil nutrient availability and balance, and resistance to pest attacks. The final phase is maturation: The plant canopy dies back, the tuber skins harden, and their sugars convert to starches.<ref name=cornell1/>

New tubers may arise at the soil surface. Since exposure to light leads to greening of the skins and the development of solanine, growers are interested in covering such tubers. Commercial growers usually address this problem by piling additional soil around the base of the plant as it grows ("hilling", or in British English "earthing up"). An alternative method used by home gardeners and smaller-scale growers involves covering the growing area with organic [mulches](/wiki/Mulch) such as straw or with plastic sheets.<ref name=cornell1>[Template:Cite web](/wiki/Template:Cite_web)</ref>

Correct potato husbandry can be an arduous task in some circumstances. Good ground preparation, [harrowing](/wiki/Harrowing), [plowing](/wiki/Plough), and rolling are always needed, along with a little grace from the weather and a good source of water. Three successive plowings, with associated harrowing and rolling, are desirable before planting. Eliminating all root-weeds is desirable in potato cultivation. In general, the potatoes themselves are grown from the eyes of another potato and not from seed. Home gardeners often plant a piece of potato with two or three eyes in a hill of mounded soil. Commercial growers plant potatoes as a row crop using seed tubers, young plants or microtubers and may mound the entire row. Seed potato crops are 'rogued' in some countries to eliminate diseased plants or those of a different variety from the seed crop.

Potatoes are sensitive to heavy [frosts](/wiki/Frost), which damage them in the ground. Even cold weather makes potatoes more susceptible to bruising and possibly later rotting, which can quickly ruin a large stored crop.

At harvest time, gardeners usually dig up potatoes with a long-handled, three-prong "grape" (or graip), i.e., a [spading fork](/wiki/Spading_fork), or a potato hook, which is similar to the graip but with tines at a 90[°](/wiki/Degree_(angle)) angle to the handle. In larger plots, the plow is the fastest implement for unearthing potatoes. Commercial harvesting is typically done with large [potato harvesters](/wiki/Potato_harvester), which scoop up the plant and surrounding earth. This is transported up an apron chain consisting of steel links several feet wide, which separates some of the dirt. The chain deposits into an area where further separation occurs. Different designs use different systems at this point. The most complex designs use vine choppers and shakers, along with a blower system to separate the potatoes from the plant. The result is then usually run past workers who continue to sort out plant material, stones, and rotten potatoes before the potatoes are continuously delivered to a wagon or truck. Further inspection and separation occurs when the potatoes are unloaded from the field vehicles and put into storage.

Immature potatoes may be sold as "new potatoes"[Template:Anchor](/wiki/Template:Anchor) and are particularly valued for taste. These are often harvested by the home gardener or farmer by "grabbling", i.e. pulling out the young tubers by hand while leaving the plant in place.

Potatoes are usually cured after harvest to improve skin-set. Skin-set is the process by which the skin of the potato becomes resistant to skinning damage. Potato tubers may be susceptible to skinning at harvest and suffer skinning damage during harvest and handling operations. Curing allows the skin to fully set and any wounds to heal. Wound-healing prevents infection and water-loss from the tubers during storage. Curing is normally done at relatively warm temperatures [Template:Convert](/wiki/Template:Convert) with high humidity and good gas-exchange if at all possible.[[50]](#cite_note-50)

### Storage[[edit](/index.php?title=(none)&action=edit&section=11)]

Storage facilities need to be carefully designed to keep the potatoes alive and slow the natural process of decomposition, which involves the breakdown of starch. It is crucial that the storage area is dark, well ventilated and for long-term storage maintained at temperatures near [Template:Convert](/wiki/Template:Convert). For short-term storage before cooking, temperatures of about [Template:Convert](/wiki/Template:Convert) are preferred.[[51]](#cite_note-51)[[52]](#cite_note-52) On the other hand, temperatures below [Template:Convert](/wiki/Template:Convert) convert potatoes' starch into sugar, which alters their taste and cooking qualities and leads to higher [acrylamide](/wiki/Acrylamide) levels in the cooked product, especially in deep-fried dishes[Template:Mdashthe](/wiki/Template:Mdash) discovery of acrylamides in starchy foods in 2002 has led to many international health concerns as they are believed to be possible carcinogens and their occurrence in cooked foods is currently under study as a possible influence in potential health problems.[Template:Efn](/wiki/Template:Efn)<ref name=tareke>[Template:Cite journal](/wiki/Template:Cite_journal)</ref>

Under optimum conditions possible in commercial warehouses, potatoes can be stored for up to ten to twelve months.[[51]](#cite_note-51) When stored in homes, the shelf life is usually only a few weeks.[[52]](#cite_note-52) If potatoes develop green areas or start to sprout, these areas should be trimmed before using.[[52]](#cite_note-52) Trimming or peeling green areas are inadequate to remove copresent toxins, and such potatoes are no longer suitable as animal food.[[53]](#cite_note-53)[[54]](#cite_note-54) Commercial storage of potatoes involves several phases: drying of surface moisture; a wound healing phase at 85% to 95% [relative humidity](/wiki/Relative_humidity) and temperatures below [Template:Convert](/wiki/Template:Convert); a staged cooling phase; a holding phase; and a reconditioning phase, during which the tubers are slowly warmed. Mechanical ventilation is used at various points during the process to prevent condensation and accumulation of [carbon dioxide](/wiki/Carbon_dioxide).[[51]](#cite_note-51)

### Yield[[edit](/index.php?title=(none)&action=edit&section=12)]

The world dedicated 18.6 million hectares in 2010 for potato cultivation. The average world farm yield for potato was 17.4 tonnes per hectare, in 2010. Potato farms in the United States were the most productive in 2010, with a nationwide average of 44.3 tonnes per hectare.<ref name=yield2010>[Template:Cite web](/wiki/Template:Cite_web)</ref> United Kingdom was a close second.

[New Zealand](/wiki/New_Zealand) farmers have demonstrated some of the best commercial yields in the world, ranging between 60 and 80 tonnes per hectare, some reporting yields of 88 tonnes potatoes per hectare.[[55]](#cite_note-55)[[56]](#cite_note-56)[[57]](#cite_note-57) There is a big gap among various countries between high and low yields, even with the same variety of potato. Average potato yields in developed economies ranges between 38–44 tonnes per hectare. China and India accounted for over a third of world's production in 2010, and had yields of 14.7 and 19.9 tonnes per hectare respectively.<ref name=yield2010/> The yield gap between farms in developing economies and developed economies represents an opportunity loss of over 400 million tonnes of potato, or an amount greater than 2010 world potato production. Potato crop yields are determined by factors such as the crop breed, seed age and quality, crop management practices and the plant environment. Improvements in one or more of these yield determinants, and a closure of the yield gap, can be a major boost to food supply and farmer incomes in the developing world.[[58]](#cite_note-58)[[59]](#cite_note-59)

### Varieties[[edit](/index.php?title=(none)&action=edit&section=13)]

[Template:Further](/wiki/Template:Further) [thumb|Bamberg potatoes](/wiki/File:Bamberger_Hoernle.jpg) [thumb|Organically grown Russet Burbanks](/wiki/File:Russet_potato.jpg)

While there are close to 4000 different varieties of potato,[[60]](#cite_note-60) it has been bred into many standard or well-known varieties, each of which has particular agricultural or culinary attributes. In general, varieties are categorized into a few main groups, such as russets, reds, whites, yellows (also called Yukons) and purples—based on common characteristics. Around 80 varieties are commercially available in the UK.[[61]](#cite_note-61) For culinary purposes, varieties are often differentiated by their waxiness. Floury, or mealy (baking) potatoes have more starch (20–22%) than waxy (boiling) potatoes (16–18%). The distinction may also arise from variation in the comparative ratio of two potato starch compounds: [amylose](/wiki/Amylose) and [amylopectin](/wiki/Amylopectin). Amylose, a long-chain molecule, diffuses from the starch granule when cooked in water, and lends itself to dishes where the potato is mashed. Varieties that contain a slightly higher amylopectin content, a highly branched molecule, help the potato retain its shape when boiled.[[62]](#cite_note-62) The [European Cultivated Potato Database](/wiki/European_Cultivated_Potato_Database) (ECPD) is an online collaborative database of potato variety descriptions, updated and maintained by the Scottish Agricultural Science Agency within the framework of the European Cooperative Programme for Crop Genetic Resources Networks (ECP/GR)—which is run by the International Plant Genetic Resources Institute (IPGRI).[[63]](#cite_note-63) Popular varieties ([cultivars](/wiki/Cultivar)) include: [Template:Col-begin](/wiki/Template:Col-begin) [Template:Col-break](/wiki/Template:Col-break)

* [Adirondack Blue](/wiki/Adirondack_Blue_potato)
* [Adirondack Red](/wiki/Adirondack_Red_potato)
* [Agata](/wiki/Agata_potato)
* [Almond](/wiki/Almond_potato)
* Alpine Russet
* [Alturas](/wiki/Alturas_potato)
* [Amandine](/wiki/Amandine_potato)
* Annabelle
* [Anya](/wiki/Anya_potato)
* Arran Victory
* [Atlantic](/wiki/Atlantic_potato)
* [Austrian Crescent](/wiki/Austrian_Crescent_(potato))
* Avalanche
* [Bamberg](/wiki/Bamberg_potato)
* Bannock Russet
* [Belle de Fontenay](/wiki/Belle_de_Fontenay)
* BF-15
* Bildtstar
* [Bintje](/wiki/Bintje_potato)
* Blazer Russet
* Blue Congo
* Bonnotte
* [British Queen](/wiki/British_Queen_(potato))
* Cabritas
* Camota
* Canela Russet
* Cara
* Carola
* Chelina
* [Chiloé](/wiki/Chiloé_Archipelago#Potato)[[64]](#cite_note-64)\* Cielo

[Template:Col-break](/wiki/Template:Col-break)

* Clavela Blanca
* [Désirée](/wiki/Désirée_potato)
* Estima
* Fianna
* [Fingerling](/wiki/Fingerling_potato)
* Flava
* [French Fingerling](/wiki/French_Fingerling_(potato))
* German Butterball
* [Golden Wonder](/wiki/Golden_Wonder_potato)
* Goldrush
* [Home Guard](/wiki/Home_Guard_(potato))
* Innovator
* Irish Cobbler
* [Irish Lumper](/wiki/Irish_Lumper)
* [Jersey Royal](/wiki/Jersey_Royal_potato)
* [Kennebec](/wiki/Kennebec_(potato))
* [Kerr's Pink](/wiki/Kerr's_Pink)
* Kestrel
* Keuka Gold
* [King Edward](/wiki/King_Edward_potato)
* Kipfler
* Lady Balfour
* Langlade
* Linda potato
* [Marcy](/wiki/Marcy_(potato))
* [Marfona](/wiki/Marfona)
* Maris Piper
* Marquis
* [Megachip](/wiki/Megachip_potato)
* [Melody](/wiki/Melody_(potato))
* Monalisa
* Nicola

[Template:Col-break](/wiki/Template:Col-break)

* Norgold Russet[[65]](#cite_note-65)\* Pachacoña
* [Pike](/wiki/Pike_potato)
* Pink Eye
* [Pink Fir Apple](/wiki/Pink_Fir_Apple)
* Primura
* [Ranger Russet](/wiki/Ranger_Russet_(potato))
* [Ratte](/wiki/Ratte_potato)
* Record
* [Red La Soda](/wiki/Red_La_Soda_(potato))
* [Red Norland](/wiki/Red_Norland)
* [Red Pontiac](/wiki/Red_Pontiac_potato)
* [Rooster](/wiki/Rooster_potato)
* [Russet Burbank](/wiki/Russet_Burbank_potato)
* Russet Norkotah
* Selma
* Shepody
* Sieglinde
* Silverton Russet
* Sirco
* Snowden
* Spunta
* Up to date[[66]](#cite_note-66)\* [Stobrawa](/wiki/Stobrawa_(potato))
* [Superior](/wiki/Superior_potato)
* [Umatilla Russet](/wiki/Umatilla_Russet)
* [Villetta Rose](/wiki/Villetta_Rose_(potato))
* [Vivaldi](/wiki/Vivaldi_potato)
* [Vitelotte](/wiki/Vitelotte)
* [Yellow Finn](/wiki/Yellow_Finn_potato)
* [Yukon Gold](/wiki/Yukon_Gold_potato)

[Template:Col-end](/wiki/Template:Col-end)

#### Blue varieties[[edit](/index.php?title=(none)&action=edit&section=14)]

[thumb|alt=Two dark-skinned potatoes on a white plate. A further potato is cut into sections to show the variety's purple-blue flesh, placed at lower-right on the plate.|Potato variety "Blue Swede"](/wiki/Image:BlauerSchwede02.JPG)

The **blue** or **purple potato** originated in South America. It has purple skin and flesh, which becomes blue once cooked. It has a slight whitish scab that seems to be present in all samples. The variety, called "Cream of the Crop", has been introduced into [Ireland](/wiki/Ireland) and has proved popular.[[67]](#cite_note-67) To preserve the purple color best, microwaving is the best way to cook it; however, it can also be baked and steamed. The **purple** or **blue** **potato** tends to have a more nutty flavor than its relatives of other colors.[[68]](#cite_note-68) A mutation in the varieties' P locus causes production of the [antioxidant](/wiki/Antioxidant) [anthocyanin](/wiki/Anthocyanin).[[69]](#cite_note-69)

## Genetically modified potatoes[[edit](/index.php?title=(none)&action=edit&section=15)]

[Template:Main](/wiki/Template:Main) Genetic research has produced several [genetically modified](/wiki/Genetically_modified) varieties. 'New Leaf', owned by [Monsanto Company](/wiki/Monsanto_Company), incorporates genes from [*Bacillus thuringiensis*](/wiki/Bacillus_thuringiensis), which confers resistance to the [Colorado potato beetle](/wiki/Colorado_potato_beetle); 'New Leaf Plus' and 'New Leaf Y', approved by US regulatory agencies during the 1990s, also include resistance to viruses. [McDonald's](/wiki/McDonald's), [Burger King](/wiki/Burger_King), [Frito-Lay](/wiki/Frito-Lay), and [Procter & Gamble](/wiki/Procter_&_Gamble) announced they would not use genetically modified potatoes, and Monsanto published its intent to discontinue the line in March 2001.[[70]](#cite_note-70) [Waxy potato varieties](/wiki/Waxy_potato_starch) produce two main kinds of potato starch, [amylose](/wiki/Amylose) and [amylopectin](/wiki/Amylopectin), the latter of which is most industrially useful. The German chemical company [BASF](/wiki/BASF) created the [Amflora](/wiki/Amflora) potato, which has been modified to contain [antisense](/wiki/Antisense) against the enzyme that drives synthesis of amylose, namely [granule bound starch synthase](/wiki/NDP-glucose—starch_glucosyltransferase).[[71]](#cite_note-71) This resulting potato almost exclusively produces [amylopectin](/wiki/Amylopectin), and thus is more useful for the starch industry. In 2010, the European Commission cleared the way for 'Amflora' to be grown in the European Union for industrial purposes only—not for food. Nevertheless, under EU rules, individual countries have the right to decide whether they will allow this potato to be grown on their territory. Commercial planting of 'Amflora' was expected in the Czech Republic and Germany in the spring of 2010, and Sweden and the Netherlands in subsequent years.[[72]](#cite_note-72) Another GM potato variety developed by BASF is 'Fortuna' which was made resistant to [late blight](/wiki/Phytophthora_infestans) by adding two resistance genes, blb1 and blb2, which originate from the Mexican wild potato Solanum bulbocastanum.[[73]](#cite_note-73)[[74]](#cite_note-74) In October 2011 BASF requested cultivation and marketing approval as a feed and food from the EFSA. In 2012, GMO development in Europe was stopped by BASF.[[75]](#cite_note-75)[[76]](#cite_note-76) In November 2014, the USDA approved a genetically modified potato developed by [J.R. Simplot Company](/wiki/J.R._Simplot_Company), which contains genetic modifications that prevent bruising and produce less [acrylamide](/wiki/Acrylamide) when fried than conventional potatoes; the modifications do not cause new proteins to be made, but rather prevent proteins from being made via [RNA interference](/wiki/RNA_interference).[[77]](#cite_note-77)[[78]](#cite_note-78)[[79]](#cite_note-79)

## Pests[[edit](/index.php?title=(none)&action=edit&section=16)]

[Template:Main](/wiki/Template:Main) [thumb|A potato ruined by](/wiki/File:Phytophtora_infestans-effects.jpg) [late blight](/wiki/Late_blight)

The historically significant [*Phytophthora infestans*](/wiki/Phytophthora_infestans) (late blight) remains an ongoing problem in Europe[[21]](#cite_note-21)[[80]](#cite_note-80) and the United States.[[81]](#cite_note-81) Other potato diseases include [*Rhizoctonia*](/wiki/Rhizoctonia), [*Sclerotinia*](/wiki/Sclerotinia), [black leg](/wiki/Pectobacterium_carotovorum), [powdery mildew](/wiki/Powdery_mildew), [powdery scab](/wiki/Powdery_scab) and [leafroll virus](/wiki/Potato_leafroll_virus).

Insects that commonly transmit potato diseases or damage the plants include the [Colorado potato beetle](/wiki/Colorado_potato_beetle), the [potato tuber moth](/wiki/Potato_tuber_moth), the green peach aphid ([*Myzus persicae*](/wiki/Myzus_persicae)), the [potato aphid](/wiki/Potato_aphid), [beet leafhoppers](/wiki/Beet_leafhopper), [thrips](/wiki/Thrips), and [mites](/wiki/Mites). The [potato cyst nematode](/wiki/Potato_cyst_nematode) is a microscopic worm that thrives on the roots, thus causing the potato plants to wilt. Since its eggs can survive in the soil for several years, [crop rotation](/wiki/Crop_rotation) is recommended.

### Pesticides[[edit](/index.php?title=(none)&action=edit&section=17)]

During the crop year 2008, many of the [certified organic](/wiki/Certified_organic_food) potatoes produced in the United Kingdom and certified by the [Soil Association](/wiki/Soil_Association) as organic were sprayed with a [copper pesticide](/wiki/Copper_pesticide)[[82]](#cite_note-82) to control potato blight (*Phytophthora infestans*).[[83]](#cite_note-83) According to the Soil Association, the total copper that can be applied to organic land is 6 kg/[ha](/wiki/Hectare)/year.[[84]](#cite_note-84) According to an [Environmental Working Group](/wiki/Environmental_Working_Group) analysis of USDA and FDA pesticide residue tests performed from 2000 through 2008, 84% of the 2,216 tested potato samples contained detectable traces of at least one pesticide. A total of 36 unique pesticides were detected on potatoes over the 2,216 samples, though no individual sample contained more than 6 unique pesticide traces, and the average was 1.29 detectable unique pesticide traces per sample. The average quantity of all pesticide traces found in the 2,216 samples was 1.602 [ppm](/wiki/Parts_per_million). While this was a very low value of pesticide residue, it was the highest amongst the 50 vegetables analyzed.[[85]](#cite_note-85)

## Uses[[edit](/index.php?title=(none)&action=edit&section=18)]

* Potatoes are used to brew alcoholic beverages such as [vodka](/wiki/Vodka), [potcheen](/wiki/Potcheen), or [akvavit](/wiki/Akvavit).
* They are also used as food for domestic animals.
* [Potato starch](/wiki/Potato_starch) is used in the food industry as, for example, thickeners and binders of soups and sauces, in the textile industry, as adhesives, and for the manufacturing of papers and boards.[[86]](#cite_note-86)[[87]](#cite_note-87)\*[Maine](/wiki/Maine) companies are exploring the possibilities of using waste potatoes to obtain [polylactic acid](/wiki/Polylactic_acid) for use in plastic products; other research projects seek ways to use the starch as a base for [biodegradable](/wiki/Biodegradable) packaging.[[87]](#cite_note-87)[[88]](#cite_note-88)\*Potato skins, along with honey, are a folk remedy for burns in India. Burn centers in India have experimented with the use of the thin outer skin layer to protect burns while healing.[[89]](#cite_note-89)[[90]](#cite_note-90)\* Potatoes (mainly Russets) are commonly used in plant research. The consistent parenchyma tissue, the clonal nature of the plant and the low metabolic activity provide a very nice "model tissue" for experimentation. Wound-response studies are often done on potato tuber tissue, as are electron transport experiments. In this respect, potato tuber tissue is similar to *Drosophila melanogaster*, *Caenorhabditis elegans* and *Escherichia coli*: they are all "standard" research organisms.

### Culinary uses[[edit](/index.php?title=(none)&action=edit&section=19)]

[upright|thumb|Various potato dishes](/wiki/File:PreparedPotatoes.jpg) [Template:See also](/wiki/Template:See_also) Potatoes are prepared in many ways: skin-on or peeled, whole or cut up, with seasonings or without. The only requirement involves cooking to swell the starch granules. Most potato dishes are served hot, but some are first cooked, then served cold, notably [potato salad](/wiki/Potato_salad) and [potato chips/crisps](/wiki/Potato_chip).

Common dishes are: [mashed potatoes](/wiki/Mashed_potato), which are first boiled (usually peeled), and then mashed with milk or [yogurt](/wiki/Yogurt) and butter; whole [baked potatoes](/wiki/Baked_potato); [boiled](/wiki/Boiling) or [steamed](/wiki/Steaming) potatoes; [French-fried potatoes or chips](/wiki/French_fries); cut into cubes and [roasted](/wiki/Roasting); [scalloped](/wiki/Scalloped_potatoes), diced, or sliced and fried ([home fries](/wiki/Home_fries)); grated into small thin strips and fried ([hash browns](/wiki/Hash_browns)); grated and formed into [dumplings](/wiki/Dumpling), [Rösti](/wiki/Rösti) or [potato pancakes](/wiki/Potato_pancake). Unlike many foods, potatoes can also be easily cooked in a [microwave oven](/wiki/Microwave_oven) and still retain nearly all of their nutritional value, provided they are covered in ventilated [plastic wrap](/wiki/Plastic_wrap) to prevent moisture from escaping; this method produces a meal very similar to a steamed potato, while retaining the appearance of a conventionally baked potato. Potato chunks also commonly appear as a [stew](/wiki/Stew) ingredient.

Potatoes are boiled between 10 and 25[[91]](#cite_note-91) minutes, depending on size and type, to become soft.

#### Grading[[edit](/index.php?title=(none)&action=edit&section=20)]

In the U.S., potato grading for [Idaho](/wiki/Idaho) potatoes is performed in which No. 1 potatoes are the highest quality and No. 2 are rated as lower in quality due to their appearance (e.g. blemishes or bruises, pointy ends).[[92]](#cite_note-92) Potato density assessment can be performed by floating them in brines.<ref name=Sivasankar>Sivasankar, B. (2002). [Processing and Preservation''](https://books.google.com/books?id=tbxGHBUY0BcC&pg=PA175''Food). PHI Learning Pvt. Ltd. pp. 175-177. ISBN 8120320867</ref> High-density potatoes are desirable in the production of dehydrated mashed potatoes, potato crisps and french fries.<ref name=Sivasankar/>

[Template:Anchor](/wiki/Template:Anchor)

#### Latin America[[edit](/index.php?title=(none)&action=edit&section=21)]

[thumb|](/wiki/File:Peru_PapasRellenas2.jpg)[Papa rellena](/wiki/Papa_rellena)

[Peruvian cuisine](/wiki/Peruvian_cuisine) naturally contains the potato as a primary ingredient in many dishes, as around 3,000 varieties of this tuber are grown there.[[93]](#cite_note-93)Some of the more notable dishes include boiled potato as a base for several dishes or with [ají](/wiki/Ají_(sauce))-based sauces like in [Papa a la Huancaína](/wiki/Papa_a_la_Huancaína) or ocopa, diced potato for its use in soups like in cau cau, or in [Carapulca](/wiki/Carapulca) with dried potato (papa seca). Smashed condimented potato is used in causa Limeña and [papa rellena](/wiki/Papa_rellena). French-fried potatoes are a typical ingredient in Peruvian stir-fries, including the classic dish [lomo saltado](/wiki/Lomo_saltado).

[Chuño](/wiki/Chuño) is a [freeze-dried](/wiki/Freeze-drying) potato product traditionally made by [Quechua](/wiki/Quechuas) and [Aymara](/wiki/Aymara_people) communities of [Peru](/wiki/Peru) and [Bolivia](/wiki/Bolivia),[[94]](#cite_note-94) and is known in various countries of South America, including [Peru](/wiki/Peru), Bolivia, [Argentina](/wiki/Argentina), and [Chile](/wiki/Chile). In Chile's [Chiloé Archipelago](/wiki/Chiloé_Archipelago), potatoes are the main ingredient of many dishes, including milcaos, chapaleles, [curanto](/wiki/Curanto) and chochoca. In [Ecuador](/wiki/Ecuador), the potato, as well as being a staple with most dishes, is featured in the hearty *locro de papas*, a thick soup of potato, squash, and cheese.

#### European cuisine[[edit](/index.php?title=(none)&action=edit&section=22)]

[thumb|left|](/wiki/File:Fish_and_chips.jpg)[Fish and chips](/wiki/Fish_and_chips) [left|thumb|A baked potato served with butter](/wiki/File:BakedPotatoWithButter.jpg)

In the UK, potatoes form part of the traditional staple [fish and chips](/wiki/Fish_and_chips). Roast potatoes are commonly served with a [Sunday roast](/wiki/Sunday_roast), and mashed potatoes form a major component of several other traditional dishes such as [shepherd's pie](/wiki/Shepherd's_pie), [bubble and squeak](/wiki/Bubble_and_squeak), and [bangers and mash](/wiki/Bangers_and_mash). New potatoes are often cooked with [mint](/wiki/Mentha) and served with a little melted butter.

The [Tattie scone](/wiki/Tattie_scone) is a popular Scottish dish containing potatoes. [Colcannon](/wiki/Colcannon) is a traditional Irish food made with mashed potato, shredded [kale](/wiki/Kale) or cabbage, and onion; [champ](/wiki/Champ_(food)) is a similar dish. [Boxty](/wiki/Boxty) pancakes are eaten throughout Ireland, although associated especially with the north, and in Irish diaspora communities; they are traditionally made with grated potatoes, soaked to loosen the starch and mixed with flour, buttermilk and baking powder. A variant eaten and sold in [Lancashire](/wiki/Lancashire), especially [Liverpool](/wiki/Liverpool), is made with cooked and mashed potatoes.

[*Bryndzové halušky*](/wiki/Bryndzové_halušky) is the [Slovakian](/wiki/Slovakia) national dish, made of a batter of flour and finely grated potatoes that is boiled to form dumplings. These are then mixed with regionally varying ingredients.<ref name=sinkovec2004>[Template:Cite book](/wiki/Template:Cite_book)</ref>

In [Northern](/wiki/Northern_Europe) and Eastern Europe, especially in [Scandinavian countries](/wiki/Scandinavia), Poland, Russia, [Belarus](/wiki/Belarus) and [Ukraine](/wiki/Ukraine), newly harvested, early ripening varieties are considered a special delicacy. Boiled whole and served un-peeled with [dill](/wiki/Dill), these "new potatoes" are traditionally consumed with [Baltic herring](/wiki/Pickled_herring). Puddings made from grated potatoes ([kugel](/wiki/Kugel), [kugelis](/wiki/Kugelis), and [potato babka](/wiki/Potato_babka)) are popular items of [Ashkenazi](/wiki/Ashkenazi_cuisine), [Lithuanian](/wiki/Lithuanian_cuisine), and [Belarusian](/wiki/Belarusian_cuisine) cuisine.[[95]](#cite_note-95) [thumb|](/wiki/File:Cepelinai_2,_Vilnius,_Lithuania_-_Diliff.jpg)[Cepelinai](/wiki/Cepelinai)

[Cepelinai](/wiki/Cepelinai) is [Lithuanian](/wiki/Lithuania) national dish. They are a type of [dumpling](/wiki/Dumpling) made from riced potatoes (see [Potato ricer](/wiki/Potato_ricer)) and usually stuffed with [minced meat](/wiki/Ground_meat), although sometimes dry cottage cheese ([curd](/wiki/Curd)) or mushrooms are used instead.[[96]](#cite_note-96)In Western Europe, especially in Belgium, sliced potatoes are fried to create *frieten*, the original [French fried potatoes](/wiki/French_fried_potatoes). [*Stamppot*](/wiki/Stamppot), a traditional Dutch meal, is based on mashed potatoes mixed with vegetables.

In France, the most notable potato dish is the [*Hachis Parmentier*](/wiki/Hachis_Parmentier), named after [Antoine-Augustin Parmentier](/wiki/Antoine-Augustin_Parmentier), a French pharmacist, nutritionist, and agronomist who, in the late 18th century, was instrumental in the acceptance of the potato as an edible crop in the country. The [*pâté aux pommes de terre*](/wiki/Pâté_aux_pommes_de_terre) is a regional potato dish from the central [Allier](/wiki/Allier) and [Limousin](/wiki/Limousin_(region)) regions.

In the north of Italy, in particular, in the [Friuli](/wiki/Friuli) region of the northeast, potatoes serve to make a type of pasta called [gnocchi](/wiki/Gnocchi).[[97]](#cite_note-97) Similarly, cooked and mashed potatoes or [potato flour](/wiki/Potato_flour) can be used in the [Knödel](/wiki/Knödel) or [dumpling](/wiki/Dumpling) eaten with or added to meat dishes all over central and Eastern Europe, but especially in [Bavaria](/wiki/Bavaria) and [Luxembourg](/wiki/Luxembourg). Potatoes form one of the main ingredients in many soups such as the [vichyssoise](/wiki/Vichyssoise) and Albanian potato and cabbage soup. In western Norway, [komle](/wiki/Komle) is popular.

A traditional [Canary Islands](/wiki/Canary_Islands) dish is [Canarian wrinkly potatoes](/wiki/Canarian_wrinkly_potatoes) or *papas arrugadas*. [*Tortilla de patatas*](/wiki/Tortilla_de_patatas) (potato omelete) and [*patatas bravas*](/wiki/Patatas_bravas) (a dish of fried potatoes in a spicy tomato sauce) are near-universal constituent of Spanish [tapas](/wiki/Tapas).

#### North America[[edit](/index.php?title=(none)&action=edit&section=23)]

[thumb|](/wiki/File:Burger_and_fries_(1).jpg)[French fries](/wiki/French_fries) served with a hamburger [thumb|Poutine: Fried potatoes, cheese curds, and gravy](/wiki/File:OriginalPoutineLaBanquise.jpg)

In the United States, potatoes have become one of the most widely consumed crops and thus have a variety of preparation methods and condiments. [French fries](/wiki/French_fries) and often [hash browns](/wiki/Hash_browns) are commonly found in typical American fast-food burger joints and cafeterias. One popular favorite involves a baked potato with cheddar cheese (or sour cream and [chives](/wiki/Chives)) on top, and in [New England](/wiki/New_England) "smashed potatoes" (a chunkier variation on mashed potatoes, retaining the peel) have great popularity. Potato flakes are popular as an instant variety of mashed potatoes, which reconstitute into mashed potatoes by adding water, with butter or oil and salt to taste. A regional dish of [Central New York](/wiki/Central_New_York), [salt potatoes](/wiki/Salt_potatoes) are bite-size new potatoes boiled in water saturated with salt then served with melted butter. At more formal dinners, a common practice includes taking small red potatoes, slicing them, and roasting them in an iron skillet. Among [American Jews](/wiki/American_Jews), the practice of eating [latkes](/wiki/Latkes) (fried potato pancakes) is common during the festival of [Hanukkah](/wiki/Hanukkah).

A traditional [Acadian](/wiki/Acadian) dish from [New Brunswick](/wiki/New_Brunswick) is known as *poutine râpée*. The Acadian poutine is a ball of grated and [mashed potato](/wiki/Mashed_potato), salted, sometimes filled with pork in the center, and boiled. The result is a moist ball about the size of a [baseball](/wiki/Baseball_(ball)). It is commonly eaten with salt and pepper or [brown sugar](/wiki/Brown_sugar). It is believed to have originated from the German [*Klöße*](/wiki/Klöße), prepared by early German settlers who lived among the Acadians.

[*Poutine*](/wiki/Poutine), by contrast, is a hearty serving of French fries, fresh [cheese curds](/wiki/Cheese_curd) and hot gravy. Tracing its origins to [Quebec](/wiki/Quebec) in the 1950s, it has become a widespread and popular dish throughout Canada.

#### South Asia[[edit](/index.php?title=(none)&action=edit&section=24)]

In [South Asia](/wiki/South_Asia), Potato is very popular traditional staple. In India, the most popular potato dishes are *aloo ki sabzi*, [batata vada](/wiki/Batata_vada), and [samosa](/wiki/Samosa), which is spicy mashed potato mixed with a small amount of vegetable stuffed in conical dough, and deep fried. Potatoes are also a major ingredient as fast food items, such as aloo chaat, where they are deep fried and served with chutney. In Northern India, alu dum and alu paratha are a favorite part of the diet; the first is a spicy curry of boiled potato, the second is a type of stuffed chapati.

A dish called [masala dosa](/wiki/Masala_dosa) from South India is very notable all over India. It is a thin pancake of rice and [pulse](/wiki/Legume) paste rolled over spicy smashed potato and eaten with sambhar and chutney. Poori in south India in particular in Tamil Nadu is almost always taken with smashed potato masal. Other favorite dishes are alu tikki and pakoda items.

[Vada pav](/wiki/Vada_pav) is a popular vegetarian fast food dish in Mumbai and other regions in the Maharashtra in India.

Aloo posto (a curry with potatoes and poppy seeds) is immensely popular in East India, especially Bengal. Although potatoes are not native to India, it has become a vital part of food all over the country especially North Indian food preparations. In Tamil Nadu this tuber acquired a name based on its appearance 'urulai-k-kizhangu' (உருளைக் கிழங்கு) meaning cylindrical tuber.

The [Aloo gosht](/wiki/Aloo_gosht), Potato and meat [curry](/wiki/Curry), is one of the popular dishes in [South Asia](/wiki/South_Asia), especially in [Pakistan](/wiki/Pakistan).

#### East Asia[[edit](/index.php?title=(none)&action=edit&section=25)]

In East Asia, particularly Southeast Asia, rice is by far the predominant starch crop, with potatoes a secondary crop, especially in China and Japan. However, it is used in northern China where rice is not easily grown, with a popular dish being 青椒土豆丝 (qīng jiāo tǔ dòu sī), made with green pepper, vinegar and thin slices of potato. In the winter, roadside sellers in northern China will also sell roasted potatoes. It is also occasionally seen in Korean and Thai cuisines.<ref name=Solomon>[Template:Cite book](/wiki/Template:Cite_book)</ref>

## Art[[edit](/index.php?title=(none)&action=edit&section=26)]

[thumb|](/wiki/File:Jean-François_Millet_-_The_Potato_Harvest_-_Walters_37115.jpg)[*The Potato Harvest*](/wiki/The_Potato_Harvest) by [Jean-François Millet](/wiki/Jean-François_Millet), 1855 ([Walters Art Museum](/wiki/Walters_Art_Museum))

The potato has been an essential crop in the [Andes](/wiki/Andes) since the [pre-Columbian](/wiki/Pre-Columbian) Era. The [Moche](/wiki/Moche_(culture)) culture from Northern [Peru](/wiki/Peru) made ceramics from earth, water, and fire. This pottery was a sacred substance, formed in significant shapes and used to represent important themes. Potatoes are represented anthropomorphically as well as naturally.[[98]](#cite_note-98) During the late 19th century, numerous images of potato harvesting appeared in European art, including the works of [Willem Witsen](/wiki/Willem_Witsen) and [Anton Mauve](/wiki/Anton_Mauve).[[99]](#cite_note-99) [Van Gogh's](/wiki/Van_Gogh) 1885 painting [*The Potato Eaters*](/wiki/The_Potato_Eaters) portrays a family eating potatoes.[[100]](#cite_note-100) [thumb|](/wiki/File:Van-willem-vincent-gogh-die-kartoffelesser-03850.jpg)[*The Potato Eaters*](/wiki/The_Potato_Eaters) by [Van Gogh](/wiki/Van_Gogh), 1885 ([Van Gogh Museum](/wiki/Van_Gogh_Museum))

Invented in 1949 and marketed and sold commercially by [Hasbro](/wiki/Hasbro) in 1952, [Mr. Potato Head](/wiki/Mr._Potato_Head) is an American toy that consists of a plastic potato and attachable plastic parts such as ears and eyes to make a face. It was the first toy ever advertised on television.[[101]](#cite_note-101)

## See also[[edit](/index.php?title=(none)&action=edit&section=27)]

* [List of potato museums](/wiki/List_of_potato_museums)
* [Loy](/wiki/Loy_(spade)), a form of early spade used in Ireland for the cultivation of potatoes.
* [New World crops](/wiki/New_World_crops)
* [Potato battery](/wiki/Potato_battery)
* [Potatoes of Chiloé](/wiki/Potatoes_of_Chiloé)
* [Irish potato candy](/wiki/Irish_potato_candy)
* [Sweet Potato](/wiki/Sweet_Potato)

## Notes[[edit](/index.php?title=(none)&action=edit&section=28)]

[Template:Notelist](/wiki/Template:Notelist)

## References[[edit](/index.php?title=(none)&action=edit&section=29)]

[Template:Reflist](/wiki/Template:Reflist)

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[Template:Refend](/wiki/Template:Refend)

## Further reading[[edit](/index.php?title=(none)&action=edit&section=31)]

* [Template:Cite book](/wiki/Template:Cite_book)
* [Template:Cite news](/wiki/Template:Cite_news)
* [Template:Cite journal](/wiki/Template:Cite_journal)
* The World Potato Atlas at [Cgiar.org](http://research.cip.cgiar.org/confluence/display/wpa/), released by the International Potato Center in 2006 and regularly updated. Includes current chapters of 15 countries:
  + South America: (English and Spanish): Bolivia, Colombia, Ecuador, Peru
  + Africa: Cameroon, Ethiopia, Kenya
  + Eurasia: Armenia, Bangladesh, China, India, Myanmar, Nepal, Pakistan, Tajikistan
  + 38 others as brief "archive" chapters
  + Further information links at [Cgiar.org](http://research.cip.cgiar.org/confluence/display/wpa/Potato+Info+Links).
* World Geography of the Potato at [UGA.edu](http://www.lanra.uga.edu/potato/), released in 1993.
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## External links[[edit](/index.php?title=(none)&action=edit&section=32)]

[Template:Cookbook](/wiki/Template:Cookbook) [Template:Wiktionary](/wiki/Template:Wiktionary) [Template:Commons](/wiki/Template:Commons)

* [GLKS Potato Database](http://glks.ipk-gatersleben.de/home.php)
* [Centro Internacional de la Papa](http://www.cipotato.org/): CIP (International Potato Center)
* [World Potato Congress](http://www.potatocongress.org/)
* [British Potato Council](http://www.potato.org.uk/)
* [Online Potato Pedigree Database for cultivated varieties](http://www.plantbreeding.wur.nl/potatopedigree/)
* [Potato Information & Exchange](http://www.potatoes.wsu.edu/)
* [GMO Safety: Genetic engineering on potatoes](http://www.gmo-safety.eu/topic/122) Biological safety research projects and results
* [International Year of the Potato 2008](http://www.potato2008.org/)
* [Solanum tuberosum (potato, papas): life cycle, tuber anatomy at GeoChemBio](http://www.geochembio.com/biology/organisms/potato/)
* [Potato Genome Sequencing Consortium](http://potatogenome.net)
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* [Potato, in Cyclopedia of American Agriculture](http://www.tumbledownfarm.com/drupal/Cyclopedia_of_American_Agriculture/Crops/Potato)

[Template:Agriculture country lists](/wiki/Template:Agriculture_country_lists) [Template:Use dmy dates](/wiki/Template:Use_dmy_dates) [Template:Potato cultivars](/wiki/Template:Potato_cultivars) [Template:Bioenergy](/wiki/Template:Bioenergy)

[Template:Authority control](/wiki/Template:Authority_control)

[Category:Potatoes](/wiki/Category:Potatoes) [Category:Crops originating from the Americas](/wiki/Category:Crops_originating_from_the_Americas) [Category:Crops originating from Bolivia](/wiki/Category:Crops_originating_from_Bolivia) [Category:Crops originating from Peru](/wiki/Category:Crops_originating_from_Peru) [Category:Cuisine of Northern Ireland](/wiki/Category:Cuisine_of_Northern_Ireland) [Category:Plants described in 1753](/wiki/Category:Plants_described_in_1753) [Category:Root vegetables](/wiki/Category:Root_vegetables) [Category:Spanish words and phrases](/wiki/Category:Spanish_words_and_phrases) [Category:Staple foods](/wiki/Category:Staple_foods) [Category:Tubers](/wiki/Category:Tubers) [Category:Solanum](/wiki/Category:Solanum) [Category:Stoloniferous plants](/wiki/Category:Stoloniferous_plants)

[sco:Tattie](/wiki/Sco:Tattie)