

Grain

A **grain** is a small, hard, dry seed, with or without an attached hull or fruit layer, harvested for human or animal consumption.^[1] A **grain crop** is a grain-producing plant. The two main types of commercial grain crops are cereals and legumes.

After being harvested, dry grains are more durable than other staple foods, such as starchy fruits (plantains, breadfruit, etc.) and tubers (sweet potatoes, cassava, and more). This durability has made grains well suited to industrial agriculture, since they can be mechanically harvested, transported by rail or ship, stored for long periods in silos, and milled for flour or pressed for oil. Thus, major global commodity markets exist for canola, maize, rice, soybeans, wheat, and other grains but not for tubers, vegetables, or other crops.



Food grains at a market

Contents

Grains and cereals

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Grains and cereals

Grains and cereals are synonymous with caryopses, the fruits of the grass family. In agronomy and commerce, seeds or fruits from other plant families are called grains if they resemble caryopses. For example, amaranth is sold as "grain amaranth", and amaranth products may be described as "whole grains". The pre-Hispanic civilizations of the Andes had grain-based food systems but, at the higher elevations, none of the grains was acereal. All three grains native to the Andes (kaniwa, kiwicha, and quinoa) are broad-leafed plants rather than grasses such as corn, rice, and wheat.^[2]

Classification

Cereal grains

All cereal crops are members of the grass family (Poaceae).^[3] Cereal grains contain a substantial amount of starch,^[4] a carbohydrate that provides dietary energy.

Warm-season cereals

- finger millet
- fonio
- foxtail millet
- Japanese millet
- Job's tears
- kodo millet
- maize (corn)
- millet
- pearl millet
- proso millet
- sorghum



Cereal grain seeds from left to right: wheat, spelt, barley, oat.

Cool-season cereals

- barley
- oats
- rice
- rye
- spelt
- teff
- triticale
- wheat
- wild rice



Barley

Pseudocereal grains

Starchy grains from broadleaf (dicot) plant families:

- amaranth (Amaranth family)
- buckwheat (Smartweed family)
- chia (Mint family)
- quinoa (Amaranth family, formerly classified as Goosefoot family)
- kañiwa
- kiwicha



Rye grains

Pulses

Pulses or grain legumes, members of the pea family, have a higher protein content than most other plant foods, at around 20%, while soybeans have as much as 35%. As is the case with all other whole plant foods, pulses also contain carbohydrate and fat. Common pulses include:

- chickpeas
- common beans
- common peas (garden peas)
- fava beans
- lentils
- lima beans
- lupins
- mung beans



Rice grains by the IRRI

- [peanuts](#)
- [pigeon peas](#)
- [runner beans](#)
- [soybeans](#)

Oilseeds

Oilseed grains are grown primarily for the extraction of their [edible oil](#). Vegetable oils provide dietary energy and some [essential fatty acids](#)^[5] They are also used as fuel and lubricants.^[6]

Mustard family

- [black mustard](#)
- [India mustard](#)
- [rapeseed](#) (including [canola](#))

Aster family

- [safflower](#)
- [sunflower seed](#)

Other families

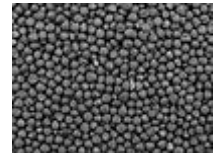
- [flax seed](#) (Flax family)
- [hemp seed](#) (Hemp family)
- [poppy seed](#) (Poppy family)



Buckwheat



Lentil



Rapeseed



Sunflower seeds

Historical impact of grain agriculture

Because grains are small, hard and dry, they can be stored, measured, and transported more readily than can other kinds of food crops such as fresh fruits, roots and tubers. The development of grain agriculture allowed excess food to be produced and stored easily which could have led to the creation of the first permanent settlements and the division of society into classes.^[7]

Occupational safety and health

Those who handle grain at grain facilities may encounter numerous [occupational hazards and exposures](#). Risks include [grain entrapment](#), where workers are submerged in the grain and unable to remove themselves;^[8] [explosions](#) caused by fine particles of [grain dust](#),^[9] and [falls](#).

See also

- [Ancient grains](#)
- [Cereals](#)
- [Domestication](#)
- [Grain drying](#)
- [Legume](#)
- [List of dried foods](#)
- [Mycoestrogen](#)
- [Perennial grain](#)
- [Staple foods](#)
- [Vegetable fats and oils](#)

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This page was last edited on 10 March 2018, at 00:48.

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