

Biosafety Clearing-House (BCH)

ORGANISM (ORGA)

BCH-ORGA-SCBD-246-6

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Organism information

Scientific name

Zea mays

Taxonomic Classification

Kingdom Plantae
Phylum Magnoliophyta
Class Liliopsida
Order Cyperales
Family Poaceae
Genus Zea
Species Zea mays

Common name(s)

Maize

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Corn

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MAIZE

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Type of organism

Crops

Domestication

Domesticated

Characteristics related to biosafety

Centre(s) of genetic diversity

The Meso-American region located within middle South Mexico and Central America is recognised as one of the main centres of origin and development of agriculture as well as centre of origin and diversification of more than one hundred crops. At the present time, there is no agreement about where exactly maize was domesticated and there are several proposals in this regard. Based on the findings of archaeological materials from the maize plant (pollen, cobs, husks, and other remnants) in the United States and Mexico, which are

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older than those found in South America, Randolph (1959) proposed that maize was domesticated, independently, in the southwestern United States, Mexico, and Central America.

Common use(s)

Biofuel
Feed
Food

Additional Information

Maize, or corn, is a cereal grain, the kernel of which is largely refined into products used in a wide range of food, medical, and industrial goods.

Maize is a member of the Maydeae tribe of the grass family, Poaceae. It is a robust monoecious annual plant, which requires the help of man to disperse its seeds for propagation and survival. Corn is the most efficient plant for capturing the energy of the sun and converting it into food, it has a great plasticity adapting to extreme and different conditions of humidity, sunlight, altitude, and temperature. It can only be crossed experimentally with the genus *Tripsacum*, however member species of its own genus (teosinte) easily hybridise with it under natural conditions.

Zea mays is an allogamous plant that propagates through seed produced predominantly by cross-pollination and depends mainly on wind borne cross-fertilisation. The interaction between domesticated plants and their wild relatives can lead to hybridisation and in many cases to gene flow of new alleles from a novel crop into the wild population. Some teosinte species can produce fertile hybrids with maize and it has been documented that maize and teosinte often interact, particularly with *Zea mays* ssp. *mexicana*. Also, the known distribution of teosintes, together with high likelihood of the presence of land races in the maize production areas of Mexico indicates that there exist high probabilities of genetic exchange between conventional maize, land races and teosinte. Out-crossing of maize with *Tripsacum* species is not known to occur in the wild.

Another factor to take into account regarding gene flow is the exchange of seed and traditional maize improvement practised by peasant communities and small farmers. Rural communities are open systems where "...there is a constant flow of genetic material among communities over large areas." therefore, as in the case of Mexico, "...a land race variety, an improved variety, or a transgenic variety of maize, can reach any zone of the country, even the most isolated ones, such as those where teosinte grows." The human factor together with the changes in policy and strategies in maize production may increase several fold the chance of gene flow between improved maize, teosinte and landraces.

Human consumption of corn and cornmeal constitutes a staple food in many regions of the world. However, only a small amount of whole maize kernel is consumed by humans. Maize is widely cultivated throughout the world, and many forms of maize are used for food, including Flour corn (subsp. *mays* Amylacea Group), Popcorn (subsp. *mays* Everta Group), Dent corn (subsp. *mays* Indentata Group), Flint corn (subsp. *mays* Indurata Group), Sweetcorn (subsp. *mays* Saccharata Group), Waxy corn (ceratina Kuleshov) and Pod corn

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(var. tunicata Larrañaga ex A. St. Hil).

The grain also has many industrial uses, including transformation into plastics and fabrics. Some is hydrolyzed and enzymatically treated to produce sweeteners (such as high fructose corn syrup), and some is fermented and distilled to produce grain alcohol, including ethanol. Refined maize products, sweeteners, starch, and oil are abundant in processed foods such as breakfast cereals, dairy goods, and chewing gum.

Other relevant website addresses and/or attached documents

? [Wikipedia - Maize](#) (*English*)

? [Consensus Document on Compositional Considerations for New Varieties of Maize \(Zea Mays\) Key Food and Feed Nutrients, Anti-nutrients and Secondary Plant Metabolites.pdf](#) (*English*)

? [Consensus Document on the Biology of Zea mays subsp. mays \(Maize\).pdf](#) (*English*)

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Further Information

Questions about the Cartagena Protocol on Biosafety or the operation of the Biosafety Clearing-House may be directed to the Secretariat of the Convention on Biological Diversity.

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on Biological Diversity**

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