

## STUDYING THE BIOLOGICAL ROLE OF CORN

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**Abstract.** This article discusses the chemical composition of corn. Maize is one of the most cultivated cereals in the world, corresponding to up to 20% of the total calories consumed by humans. Maize is widely cultivated throughout the world, and the greater weight of maize is produced each year than any other grain. First cultivated by humans is today Mexico to adapt to a wide variety of conditions and still produce comparatively large amounts of grain, maize relies on humans for its propagation. It has become a staple food in many parts of the world, with the total production of maize surpassing that of wheat or rice. Sugar-rich varieties called sweet corn are usually grown for human consumption as kernels, while field corn varieties are used for animal feed, various corn-based human food uses, and as feedstocks for the chemical industry. Maize is also used in making ethanol and other biofuels.

**Keywords:** maize, corn, food, popcorn, a feed.

**Introduction.** Maize (*Zea mays* L.) is the world's leading crop and is widely cultivated as cereal grain that was domesticated in Central America. It is one of the most versatile emerging crops having wider adaptability. Globally, maize is known as queen of cereals because of its highest genetic yield potential. Maize is the only food cereal crop that can be grown in diverse seasons, ecologies and uses. Beside this maize have many types like normal yellow/ white grain, sweet corn, baby corn, popcorn, waxy corn, high amylase corn, high oil corn, quality protein maize, etc. Apart from this, maize is an important industrial raw material and provides large opportunity for value addition.

Corn was first domesticated by native peoples in southern Mexico about 10,000 years ago. Modern corn is believed to have been derived from the Balsas teosinte (*Zea mays parviglumis*), a wild grass. Its culture has spread as far north

as southern Maine by the time of European settlement of North America and Native Americans taught European colonists to grow the indigenous grains. Since its introduction into Europe by Christopher Columbus and other explorers and colonizers, corn has spread to all areas of the world suitable to its cultivation. It is grown from 58° N latitude in Canada and Russia to 40° S latitude in South America, with a corn crop maturing somewhere in the world nearly every month of the year. It is the most important crop in the United States and is a staple food in many places.

Head smut is a disease caused by a fungus that infects tassels, ears, and occasionally leaves. It can spread via wind and can survive for years in the soil. The fungus lives on the maize ear, causing black masses to form there. It penetrates and develops inside the plant, but does not appear until flowering or cob formation. The black masses contain spores, or fungal seeds, that contaminate other plants.

The maize stalk or stem borer is a widespread pest, found throughout tropical and sub-tropical areas of Africa, and is one of the major pests of maize. *Busseola fusca* larvae damage all plant parts of the crops they attack. If farmers do not use them infestations can cause yield losses as high as 50%.

In 2016, the Fall armyworm (*Spodoptera frugiperda*) was found in Africa for the first time. It is a lepidopteran pest native to the Americas that feeds in large numbers on leaves and stems of more than 80 plant species, causing major damage to maize, sorghum, sugarcane but also other vegetable crops, and cotton. The life cycle of the fall armyworm and its ability to spread and reproduce quickly makes it an incredibly successful invasive species.

Maize Lethal Necrosis Disease (MLND) can be devastating for farmers, causing low yields to total crop failure, and is an important food security issue. A combination of two viruses causes MLND, the Maize Chlorotic Mottle Virus (MCMoV) and any of the cereal viruses in the Potyviridae group, like the Sugarcane Mosaic Virus (SCMV), Wheat Streak Mosaic Virus (WSMV) or

Maize Dwarf Mosaic Virus (MDMV). The double infection of the two viruses gives rise to what is known as MLND, also referred to as Corn Lethal Necrosis (CLN).

Maize is mostly safe in medical doses. It can decrease potassium in the blood, causing weakness, muscle cramping, numbness, nausea, or heart palpitations. It may also cause skin rashes or itching in those who are sensitive to maize. Maize may interact with diuretic & corticosteroids, as well as with prescribed medications for: diabetics, high bp & atherosclerosis. Using maize as a supplement is not advisable for those with diabetics, high or low bp, low  $K^{+}$ , or corn allergies.

In conclusion, it is clear that maize is a very important crop in today's farming industry. Many different varieties, systems and techniques have been developed which makes the topic a very interesting one to research. The quality of the maize that is now being produced is clearly very high which makes its cultivation particularly attractive for farmers, as the returns are desirable, especially when maize is used as a feed supplement for dairy and beef herds. I thoroughly enjoyed writing this project as I feel that I learned many new things.

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