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FEATURES OF THE GENETICS OF SWEET CORN

Sweet corn, which in other words can also be called pole corn or sugar corn, is a variety of field corn which is purposely grown for the consumption of human with a high sugar content. Sweet corn occurs as a result of a spontaneous mutation in the genes of field corn, which converts sugar into starch in the endosperm of the kernel. The process of maturity of sweet corn includes the conversion of sugar into starch, because of this sweet corn stores poorly, and must be eaten in fresh, canned and frozen form to prevent the kernels from becoming hard and starchy.

The higher levels of sugar in the sweet corn kernels results in a lower osmotic potential, causing greater water uptake into the kernels. Sweet corn comes in white, yellow and bi-color, and because of its sugar conversion to starch, sweet corn is harvested at the immature milky stage. Sweet corn is specifically consumed by human beings as a vegetable, either directly from the corn cob, or by removing the sweet kernels from the cob.

There are diverse genetic mutations that are accountable for the various types of sweet corn. The early varieties that came into existence were the mutant su1 (sugary-1) allele. Standard su1 varieties contain about 5-10% of sugar. The recessive sugary (su1) genotype that is found in sweet corn has the tendency to retard the normal conversion of sugar into starch during the endosperm maturity, which preferably results in a sweet taste, rather than in a starchy taste.

The second gene mutation is the se1 (sugary enhanced-1) allele, which is included in the genome of Everlasting Heritage varieties. Normal sweet corn varieties which has the se1 alleles have a much longer storage period, and contain from about 12% to about 20% sugar content, which is higher as compared to the normal su1 varieties.

Varieties of sweet corn that carry the shrunken-2(sh-2) gene generates higher sugar content that the normal levels of sugar and also have longer shelf life, as compared to the normal sweet corn and are often referred to as supersweet varieties. One particular gene in sweet corn, the shrunken-2(sh-2) gene, causes the mature corn kernel to dry and shrink as it matures throughout the milky stage.

The sweet corn global market has expanded tremendously, and this has brought huge competition among sweet corn breeding companies to produce sweet corn with very high sugar contents and also with a longer storage period. The number one sweet corn breeding company in Ukraine is the Ukrainian Scientific Institute of Plant Breeding (VNIS). Through modern breeding methods, this company has been able to create many sweet corn hybrids for the Ukrainian sweet corn market and global sweet corn market at large. Examples of the hybrids are `Vege`, `Larus`, `Vicentia`, `Andrivski` and others.

In conclusion, as sweet corn has proven to be a very prominent vegetable with various usefulness and the global adoption by consumption. This has made sweet corn production very promising, and with the introduction of modern plant breeding methods such, the use DNA markers and proper genetic modification methods, sweet corn breeders will be able to create sweet corn hybrids with higher sugar contents, longer shelf life and also early sweet corn hybrids which are enriched with nutrients for human consumption.

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EFFECT ON THE PLANT GERMINATION AND GROWTH IN INNOVATIVE ORGANIC FERTILIZER OF CHICKEN MANURE WITH A HIGH CONTENT OF HUMIC ACIDS*

One of the most important fractions of soil organic matter which has significant environmental and agricultural importance is humus. The effectiveness of the natural formation of active humic substances during composting processes depends on the chemical composition the chicken manure of organic residues and on the environmental conditions influencing the development and activity of native microorganisms. The organic compounds contained in the compost or formed as decomposition products of other compounds are subject to the resynthesis process thanks to the thermophilic microorganisms, creating humus, which is the main component of the soil. In the fertilizer obtained after 7 days of composting with the use of KOMPRE, the total content of active humic substances is up to 45%, of which 16 to19% are fulvic acids and 21 to 26% humic acids. It is an easily