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Variability Of Maize Endospermic Mutants On The Content Of Oleic Acid Glycerides In Oil

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Abstract

High-oleic oils are not found in the most cultivated crops, which need in genetic improvement for increasing oleate content. One of the most effective methods to solve this problem is to use the effect of endosperm mutations. Our research was aimed to establish the variability of oleate content in maize depending on the genotype and growing climatic conditions.

We have examined the unrelated maize inbreds carrying *o2*, *sh1*, *sh2*, *su1*, *se*, *sh2*, *su2*, *ae* and *wx* endosperm mutations (10 inbreds of each type) compared to 10 inbreds of wild - type maize for three years. Analysis of the oleate content was carried out by gas - liquid chromatography method.

The oleate content in the maize mutants was established to be mainly regulated by loci of chromosomes 3, 4, 6 and 5, linked to the *su1*, *su2*, *sh2*, and *ae* loci, and their effect is modified by polygenic complexes. However, linkage between the oleate -coding loci and the loci of endosperm structure is likely to be not close, because the oleate content in the different inbreds – carriers of each mutant gene varied within fairly wide limits.

A higher oleate content was registered under higher growing temperature. At the same time, the mutant inbreds with narrow range of response to growing conditions were identified and they fairly stable reproduced the oleate content year by year.

It was revealed that the effective method of increasing oleate content is to use the non – allelic interactions between the mutant genes of the endosperm structure.

Keywords: maize, endospermic mutants, oleate content