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**Mitotic activity stimulation in apical root meristems of maize lines and hybrids under the influence of a low-frequency magnetic field**

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For various agricultural crops the effect of mitotic activity (MA) stimulation in apical root meristems of seedlings under the influence of a low-frequency magnetic field (MF) is established. It is shown, that for different species various levels of MA stimulation can be observed. We already marked a stimulating effect of a low-frequency MF with the certain parameters in maize apical root meristems (Belyachenko et al., MNL 84 (44), 2010).

Since different intraspecific units (including varieties and lines) are used in agricultural practice, comparison of intraspecific forms reactions to MF influence is necessary. The purpose of the given work consists in research of alternating MF action on maize lines and hybrids. Following parameters of MF were applied: frequency of 6 Hz, induction of 25 mT and 1 hour exposure.

Dry maize seeds were exposed to MF influence. Root tips 1-1,5 cm long were fixed for cytological analysis. Amounts of cells at different stages of a cellular cycle were estimated on temporary acetocarminic squash preparations. In each of three repeatabilities it has been analysed not less than 3000 cells and mitotic index values were calculated.

Various maize lines, and also hybrids from their reciprocal crossings were investigated (Figure). Used lines: MT (Mangelsdorf's tester), AT-3, SPEM (Saratov purple embryonic marker), HDL-1 (Haploid derivative line 1), PP<sub>f</sub> (Purple precocious fasciated), Kr 703 (Krasnodar 703), PP-16 (Purple precocious 16). In total 6 lines and 9 hybrids were explored.

It is shown, that lines can differ authentically among themselves on a level of MA stimulation under MF influence. It is possible to note, that most often for hybrids the lower level of stimulating effect, in comparison with initial lines, is characteristic. Hybrids from reciprocal crossings only in one of three compared cases authentically differed among themselves on a level of MA stimulation.

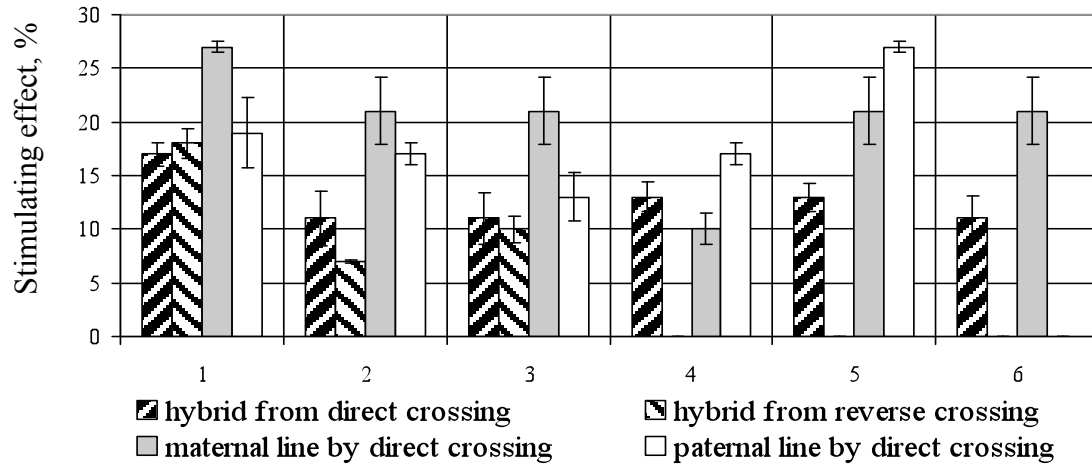


Figure – Stimulating effect of alternating MF on maize lines and hybrids MA in apical root meristems of seedlings (direct crossings: 1 – MT ×AT-3; 2 – SPEM ×HDL -1; 3 – SPEM × PP<sub>f</sub>; 4 – Kr 703 ×HDL-1; 5 – SPEM ×MT; 6 – SPEM×PP-16)

MA stimulation under MF influence inheres in all lines and hybrids, however its levels between parental lines and their hybrids can differ more than twofold. The variation of stimulation levels in plants with intraspecific genetic differences defines interest to more detailed comparison of plants with the distinct genetic constitution on their response to MF influence.