

**A NEW APPROACH TO THE USE OF PROTEIN MARKERS IN THE
PROCESS OF CORN BREEDING FOR DROUGHT TOLERANCE**

Eugen ROTARI, Alexandru ROTARI, Galina COMAROVA
Institute of Crop Science "Porumbeni", UASM, Republic of Moldova

The problem of creating drought-resistant corn hybrids of the local breeding is becoming during the past decades particularly relevant, because the increasing frequency of dry vegetation periods in the Republic of Moldova. By the reason, the Crop Science Institute "Porumbeni" has been implementing an institutional project since 2015 the main goal of it is creation an algorithm for selecting drought-resistant corn genotypes by the physiological and biochemical diagnostics for the creation of drought-resistant corn hybrids.

The methodological basis of the project is an interdisciplinary research scheme that combines the specifically of the physiological-biochemical and selection-genetic methods. Eight lines were selected by means of the developed algorithm. It should be noted that the selection of the lines was carried out using both physiological and biochemical diagnostics for drought resistance and electrophoresis studies on zein profiles for biological purity determination. During the algorithm working out, had been proposed the electrophoresis method using to predict optimal combinations of corn lines for creation stable hybrids by the coefficient of interlinear differences in the quantitative of the molecular zein's forms composition. This coefficient is proposed to be used for calculating by means of the electrophoretic spectra of two lines of maize, as potential parent forms of the hybrid combination. This way was used in 2017 for the selected 8 lines of maize with high drought resistance values by physiological and biochemical diagnostic evaluations. Calculations showed a high variation of this coefficient between selected corn lines, and make a possibility to use the proposed coefficient as a prognostic tool for execution a dialelic scheme of crossing that corn lines.

The obtained field dates will become both the completion of the verification phase of the algorithm, and also the final test of the new approach effectiveness of the using electrophoresis method in the process of corn breeding for drought tolerance.