CZU: 633.15:631.526.32

METHODOLOGY FOR CREATING ELECTROPHORETIC PASSPORTS OF MAIZE HYBRIDS AND THEIR PARENTAL FORMS AT THE LEVEL OF PROTEIN MOLECULES

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One of the topical problems of seed production in the Republic of Moldova is the timely export of hybrid corn seeds and their quality assurance, especially varietal purity (% hybridity). The main goal of the work is to systematize the main stages of preparation and modeling of the electrophoretic passports of the reserve protein from the grain (zein) in the native corn hybrids in order to simplify the interpretation and efficiency of their use both for applied commercial purposes and in the research process.

The 65 maize hybrids and 108 maize parental lines were used as material for research according to hybrid categories and production use. Electrophoretic passporting was performed for 37 simple hybrids, 2 modified simple hybrids, 23 three-way hybrids, 2 double hybrids and one multilineal hybrid.

The initial electrophoretic spectra of zein for the parental lines of the selected hybrids were obtained by the electrophoresis method on polyacrylamide gels in acidic medium according to the national standard SM 233:2003. The obtained data were processed in the „FOREZ-2" program.

Thus, as a result, the criteria, principles and methods for creating and interpreting electrophoretic passports at the level of protein molecules were elaborated, selected and systematized: (1) The initial sample preparation procedure for the electrophoretic passporting of the analyzed maize hybrids was adapted and their parental lines for the beneficiaries-originators of hybrids homologated for the purpose of protecting copyright; (2) A new version of the FOREZ-2 computer program was created; (3) An algorithm for creating electrophoretic passports in digital format was developed and tested in practice; (4) Models of EF passports were developed for which the presentation of the results of computerized processing on 7 parameters was programmed, allowing to increase the accuracy and expand the possibility to express the objective evaluation of the varietal purity of the hybrid maize certified seed lots.

***Acknowledgments*:** This study was supported by the research project no. 20.80009.5107.21 within the State Program for the years 2020-2023, financed by the National Agency for Research and Development.

Keywords: maize, hybrids, electrophoretic passports, FOREZ-2 program, protein electrophoresis.