

Utilisation of Maize Genetic Resources for Agro-Biodiversity Enhancement

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Summary

Maize Research Institute „Zemun Polje“ gene bank preserves *ex-situ* an active collection (5806 accessions). Local landraces are the most significant, since they were created by natural selection and adapted to local growth conditions. In the last 15 years, in MRIZP gene bank was conducted identification of superior genotypes for specific traits and drought tolerant and improved grain quality core collections were established. Moreover, exchange of inbred lines from MRIZP gene bank and Agricultural Institute Osijek working collections, genotyping and phenotyping of inbreds, and statistical analysis of molecular and agronomic data, is conducted through ongoing Project “Harmonization of methods for phenotyping, genotyping and management of genetic resources in maize”. Although the accessions conserved in gene banks are valuable sources for breeding varieties more nutritious, productive and resilient to pests, diseases and climatic changes, there is a limited information of their agronomic characteristics. To overcome this, the European Evaluation Network (EVA) was established in 2019 by the European Cooperative Programme for Plant Genetic Resources (ECPGR). All activities within the EVA networks are intended at the pre-breeding stage, to increase the knowledge about publicly available crop germplasm, with aim to introducing these into breeding programmes. Through crop-specific public–private partnerships, maize EVA is generating standardized evaluation data (both the phenotypic and the genotypic) for numerous accessions and landraces available in European gene banks. During the project, a total of 95 MRIZP accessions will be genotyped and evaluated in multilocation experiments for further use by breeding companies.

Key words: core collection, EVA, gene bank, pre-breeding, *Zea mays* L.