Digitalization and valorization of crop diversity in Bulgaria and Slovakia

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Plant diversity is essential for food security, sustainable agriculture, and environmental protection. The relevant documents on the genetic resources, adopted by international bodies, underline the need of crop conservation for the future of humanity, and guarantee open access to its diversity. Last decades, more and more landraces have been replaced by modern varieties. Under these circumstances, a holistic approach for biodiversity conservation by using elements of two strategies: *in situ/on farm* and *ex situ* preservation, represents a research priority. International collaboration between genebanks has become crucial in ensuring the global conservation and sustainable use of genetic resources in the framework of maintaining compatibility and interoperability in the European area. The Green Deal promotes ecological practices that have positive impact on protection of bioresources. The applied purpose of the study is to improve visibility of the National genebanks of Bulgaria and Slovakia due qualitatively exchange of experience and establishing joint research plan based on their long-standing mission of storage of plant diversity. The hypothesis is that it helps valorization through better access to local plant diversity for meeting the climate challenges and farmers' needs. By sharing good practices in genebank documentation, collecting landraces through expeditions and germplasm exchange using Standard Material Transfer Agreement, the study increase the diversity of the National collections following the priorities of EU Biodiversity 2030 Strategy. The interdisciplinary approach integrates agricultural sciences and information technologies, that facilitating modernisation of documentation systems and supports practical use of the achievements. In the era of digitalization, the results improve the data management quality and sharing new knowledge through local plant genetic resources cataloguing by FAO/Bioversity descriptors and addressing the Nagoya Protocol, which emphasizes the importance of public awareness of genebanks. Results include the development of optimised databases and web-based tools for public access to the gene pool and equitable sharing of benefits from the use of genetic resources under the International Treaty on Plant Genetic Resources for Food and Agriculture. The data is part from the GeneBank System in Bulgaria (https://genbank.uni-plovdiv.net) and Genetic Resources Information System of Slovakia (http://griss.vurv.sk). Both collections are published with open access in the European catalogue EURISCO (http://eurisco.ecpgr.org). They are presented with valuable seed duplicates in the Svalbard Global Seed Vault. The study has an impact beyond academia, as it contributes to sustainable and diverse food production through valorization of traditional and old varieties facilitating their reintroduction into home gardens and farms. It corresponds landraces and crop wild relatives preservation through inventoring the diversity and exploring the environmental conditions in rural and mountain areas in line with the National conservation programs of Bulgaria and Slovakia. The solutions, achieved by the interdisciplinary team, prove the hypothesis and find their application in the overall process of preserving the biodiversity and nature, increasing the crop resilience in dynamic environmental conditions, and guarantee the production of clean and high-quality food.

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