

CZU: 582.657(478)

MOBILIZATION OF PLANT RESOURCES (FODDER, HONEY CROPS) IN THE COLLECTION OF "AL. CIUBOTARU" NATIONAL BOTANICAL GARDEN (INSTITUTE) BY SEED EXCHANGE

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Abstract. *The mobilization of fodder and honey plant resources in the collection of the "Al. Ciubotaru" National Botanical Garden (Institute) in 2020 and 2021 by Index Seminum has made it possible to obtain 67 new taxa of annual and perennial plants from different botanical families, from 41 research institutions and botanical gardens. The research steps necessary for obtaining seedlings, acclimatization and subsequent maintenance of plants and their introduction into the collection have been followed.*

Keywords: *mobilization, gene pool, Index Seminum, fodder plants, honey plants.*

MOBILIZAREA RESURSELOR VEGETALE (FURAJERE, MELIFERE) DIN COLECȚIA GRĂDINII BOTANICE NAȚIONALE (INSTITUT) „A. CIUBOTARU” PRIN SCHIMB DE SEMINȚE

Rezumat. *Mobilizarea resurselor vegetale furajere și melifere din colecția Grădinii Botanice Naționale (Institut) „Al. Ciubotaru” în anii 2020 și 2021 prin Index Seminum a permis obținerea a 67 de taxoni noi din diferite familii botanice, plante anuale și perene din 41 de instituții de profil și grădini botanice. Sunt urmate etapele de cercetare necesare pentru obținerea plantulelor, aclimatizarea și întreținerea ulterioară a plantelor, introducerea lor în colecție.*

Cuvinte cheie: *mobilizare, genofond, Index Seminum, plante furajere, plante melifere*

Introduction

Currently, the "Alexandru Ciubotaru" National Botanical Garden (Institute) (NBGI) hosts a rich gene pool of native and non-native plants. The collections of NBGI include about 7,000 taxa of spontaneous, ornamental, aromatic, medicinal, spicy, fodder and energy plants [1]. Over 1000 institutions, in 48 countries, publish the catalog of seeds of cultivated plants or from the spontaneous flora – "*Index Seminum*", for a free and fair exchange of seeds [2]. The International Plant Exchange Network (IPEN) was founded in 1998 as a system for botanical gardens, which would facilitate the exchange of plant material and it has been used for research, conservation and enhancement of plant diversity [3].

About 50 seed catalogs offered by international research institutions, botanical gardens, gene banks etc. are annually received by NBGI through *Index Seminum*, the seeds being used for scientific purposes only. This collaboration has contributed

significantly to the enrichment of the plant gene pool of the Botanical Garden, with about 550-600 seed samples annually received from various regions of the world [4].

Results and discussions

One of the basic objectives in the conservation and mobilization of the collection of fodder and honey plants is to expand the range of valuable plants by introducing new taxa from other geographical areas, acclimatizing them to the conditions of the Republic of Moldova and including them in the collections of the Garden. Initially, plant species with honey and fodder potential are identified while studying the scientific literature, and later, these species, if available, are ordered from the seed catalogs obtained by *Index Seminum*. In this direction, NBGI also collaborates with national research institutions.

When ordering seeds, in 2020 and 2021, a special emphasis was placed on representatives of the families Asteraceae, Fabaceae, Hydrophyllaceae, Malvaceae, Poaceae and Amaranthaceae (Tab. 1), annual and perennial plants. These families include species generally recognized as valuable fodder plants and potential honey plants. Fifty-seven catalogs from 15 countries were analyzed (France, Russia, Germany, Romania, Italy, Poland, Bulgaria, Scotland, Latvia, Slovakia, United Kingdom, USA, Austria, Hungary, Czech Republic). As a result, seed samples were received (Figure 1) from 41 institutions and thus the collection was enriched with 67 new taxa, obtained by international seed exchange.

Table 1. Seed samples ordered and received by international exchange

N	Family	Ordered (taxa)	Received (taxa)
1	Fam. <i>Asteraceae</i>	8	8
2	Fam. <i>Fabaceae</i>	52	26
3	Fam. <i>Hydrophyllaceae</i>	14	8
4	Fam. <i>Malvaceae</i>	3	2
5	Fam. <i>Poaceae</i>	24	15
6	Fam. <i>Brassicaceae</i>	2	2
7	Fam. <i>Amaranthaceae</i>	7	6
	Total	110	67



Fig. 1. Seed samples received by *Index Seminum*

The received seed samples were tested under laboratory conditions to determine the germination capacity. For propagation, the most practiced method was producing seedlings indoors, then transferring them to the experimental field of the collection of fodder and honey plants. It is necessary to study in detail the plants in open ground, to

research their biological features, the ontogenetic periods and stages, carrying out the plant care procedures and irrigation as needed. After the end of the growing season, obtaining viable seeds is a crucial step in acclimatizing a species. However, not all the seeds received by *Index Seminum* are able to produce specimens that can reach maturity. The cause can be: a low germination capacity, unfavorable weather conditions for seedlings, or a long growing season that does not allow the seeds to mature before the cold season begins.

Conclusions

Fodder and honey plants are important sources of plant-derived raw material for various branches of the national economy. Annually, the Laboratories of "Al. Ciubotaru" National Botanical Garden (Institute) cooperate with various Botanical Gardens and research institutes through the *Index Seminum* program, to enrich the gene pool of valuable plants. In 2020 and 2021, 67 new taxa of promising fodder and honey plants were received from 41 research institutions. All the necessary maintenance and acclimatization procedures have been carried out to obtain mature plants with viable seeds and to keep them in the collections of the Botanical Garden.

The study has been carried out in the framework of the project: 20.80009.5107.02 "Mobilization of Plant Genetic Resources, Plant Breeding and as Forage, Melliferous and Energy Crop in Bioeconomy"

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