DOI: 10.52846/bhfe.26.2021.39

ANNALS OF THE
UNIVERSITY OF CRAIOVA

Series: ✓*Biology*
✓*Horticulture*
✓*Food products processing technology*
✓*Environmental engineering*

Vol. XXVI (LXII) - 2021

CHRYSANTHEMUM L. SPECIES PRESENT IN "ALEXANDRU BELDIE" HERBARIUM FROM "MARIN DRĂCEA" NATIONAL INSTITUTE FOR RESEARCH AND DEVELOPMENT IN FORESTRY

Ienășoiu Gruiță[1*], Dincă Lucian[1], Zaharia Alexandru[1], Răducu Răzvan[1]

** Correspondence author. E-mail: igruita@gmail.com*

***Keywords**: herbarium, samples, taxa, Chrysanthemum, botanists.*

ABSTRACT

Chrysanthemum L. Genus reunites approximately 200 taxa, annual or perennial species widespread in the northern hemisphere. The species from this genus are used in medicine and nutrition, processed biotechnologically for producing insecticides and have an additional undeniable ornamental value, (Cojocariu A., 2018). The present paper presents in a systematic form the Chrysanthemum L. species present in Al. Beldie Herbarium from „Marin Drăcea" National Institute for Research and Development in Forestry. This herbarium contains an important number of vouchers with plants of this genus, as well as information that refers to the plants' harvesting places and renowned specialists that have developed this collection. The paper starts with describing the herbarium, then presents the studied material, the methodology used for elaborating the paper as well as presenting the main conclusions.

INTRODUCTION

„Alexandru Beldie" Herbarium from Marin Drăcea National Institute for Research-Development in Silviculture (INCDS) from Bucharest is inscribed in INDEX HERBARIUM and contains approximately 60.000 vouchers with plants conserved in their original maps. Their value is exceptional, both from a scientific as well as historical perspective.

In this way, the herbarium can be considered a repository for scientific studies, from ecological investigations of national and natural parks up to DNA material that can be sampled for phylogenetic (Vasile et al., 2019; Dinca et al., 2018; Vechiu et al., 2019;) and botanic studies (Dinca et al., 2019; Scarlatescu et al., 2017; Dinca et al., 2020). The collection was structured in 30 modules with 20 drawers each, through the work realized by important personalities from the systematic domain.

The herbarium is mainly based on the collection of Alexandru Beldie, one of the most representative Romanian botanists who dedicated his work to studying the flora from Bucegi Mountains (Beldie 1967, Beldie 1972). Besides the numerous species collected from mountain areas, the herbarium contains also species from Bucegi (Crisan et al., 2020), Ilfov (Dinca et al., 2020), Vlasca (Ciontu et al., 2019), Buzau (Crisan et al., 2020) and even from Moldavia (Vasile et al., 2019) and the Balkans (Kachova et al., 2020). Furthermore, the herbarium is completed by different donated particular collections as well as from foreign collections obtained through exchanges.

The analysed Chrysanthemum L.Genus is represented in 197 vouchers with over 40 different taxa originating from Romania and abroad, especially Europe.

MATERIAL AND METHODS

The methodology used for this study is based on work methods specific to the research activity such as bibliographic documentation, analysis and synthesis.

The scientific documentation is based on bibliographic data regarding the collection, authors, taxa biotype and other elements that can be extracted from the labels and inscriptions present on the vouchers from Alexandru Beldie Herbarium.

The systematization and digitization of the vouchers materialized in a database (Figure 1) with complementary images and data regarding the harvesting year and place, the specialist who collected the sample and determined the taxa and the conservation degree.

Synthesizing the data has emphasized both the exceptional value of the Chrysanthemum L. Genus as well as the exceptional conservation ensured by „Marin Drăcea" National Institute for Research and Development in Forestry.

Sertar nr.	Plansa nr.	Herbar/Colectie botanica/Institutie(de pe eticheta plansei de Herbar)	Numele speciei	Data colectarii	Locul colectarii	Colectat/Determinat de:	Gradul de conservare (1…4)	Numar inventar vechi
162	1	Herbarium E. Krummel.	Chrysanthemum myconis L.	1889.08.01.	Samen, Braunsburg botan garden	E. Krummel	1	9479
162	2	Herbarul Politehnicei Bucuresti Facultatea de Silvicultura Laboratorul de Botanica	Chrysanthemum leucanthemum L.	1945.07.25.	distr. Mures, com. Lunca	I. Horga	1	9478
162	3	ICEF Institutul de Cercetari si Experimentare Forestiera	Chrysanthemum leucanthemum L.	1934.10.23.	Valea Jgheabului		1	9475
162	4	Herbarul Institutului de Cercetari Silvice	Chrysanthemum leucanthemum L.	1943.06.23.	Ciunget	At.Haralamb	1	9480
162	5	Porta et Frigas it er III Hispanicum 1891	Pyrethrum leucanthemi-folium Porta & Rigo	1890.06.25.	Sierra de Alcazar 1900 m		1	9484
162	6	Erbario di Carlo Costa-Reghini	Leucanthemum	1988.06.03.			1	9489
162	7	ICEF Institutul de Cercetari si Experimentare Forestiera	Chrysanthemum leucanthemum L.	1934.09.10.	rezerv. Orjugoaia	A. Haralamb, J. Neuwirth	1	9485
162	8	Museum Botanicum Universitatis, Cluj / Flora Romaniae exsiccata	Chrysanthemum leucanthemum L.	1939.07.25.	distr. Brașov, Măgura, Bran 600 m M. Paucă		1	9516

Figure1. Chrysanthemum L. Inventory from Al. Beldie INCDS Bucharest Herbarium (excerpt)

RESULTS AND DISCUSSIONS

CHRYSANTHEMUM Linnaeus, Sp. Pl. 2: 887. 1753, nom. contra. [=Arctantem (Tzvelev) Tzvelev; Dendranthema (Candolle) Des Moulins; Dendranthema sectă. Arctantem Tzvelev; Piretru sectă. Dendranthema Candolle] contains 150-200 species, most of them native to Europe and the Mediterranean region, extending even to India. Two species originate from South Africa, 20 from Hymalaia and Tibet, China, Japan, approximately 12 species from the Canary Island and 7 species from North America (NYARADY, 1964). The flora from China mentions 37 Crizantema species, most of them widespread in Asia's temperate area, from which 13 species are endemic in China (LIN & al. 2011).

The genus's name was given by Carl Linnaeus and originates from Greek (with "crizos" meaning gold and "antos" flower), translating to "gold flower". This is an allusion to the spontaneous Chinese species that has yellow-white inflorescence.

Chrysanthemum leucanthemum L. is the most widespread species of the genus (Figure 2.). Synonymous with *Chrysanthemum.vulgare*, *Chrysanthemum. montanum*, *Leucanthemum ircutianum*, etc. the plant is also popularly known as *daisy.*

Figure 2. *Chrysanthemum leucanthemum* L.(photo Melania Ienășoiu)

Daisy (Figure 3) is a perennial plant with a herbal stem that can reach 10 – 80 (120) cm in height. The stem is not ramified and presents ridges on the transversal section. The leaves are serrated, lobated and narrow at the base. The average stem leaves have a larger width in the superior third and a little wider at the base. The plant presents achens with or without coronulle (an element that determines the subspecies). The petals are white and arranged on a single row. The flowers have an unpleasant smell, especially when they start to wither. The species is common, throughout meadows, forest thinnings, shrubberies, grassy cliffs and ruderal areas (Sârbu I. et al., 2013).

Alexandru Beldie Herbarium contains 66 vouchers dedicated to this species, namely 33% of the total number of vouchers belonging to Chrysanthemum L.

Figure 3. The morphologic description of daisy (https://commons.wikimedia.org/File:Illustration_*Chrysanthemum_leucanthemum*)

Other Chrysanthemum L. species collected and prepared in Alexandru Beldie Herbarium include *Chrysanthemum coryrmbosum* L., *Chrysanthemum tenuifolium* Kit., *Chrysanthemum rotundifolium* Waldst. & Kit, *Chrysanthemum macrophyllum* Waldst. & Kit., *Chrysanthemum serotinum* L., *Chrysanthemum myconis* L., *Chrysanthemum millefoliatum* L. *Leucanthemum heterophyllum* DC., *Leucanthemum minimum* Vill., *Pyrethrum niveum*, *Pyrethrum radians*, *Chrysanthemum palustre*, *Chrysanthemum uliginosum*, *Leucanthemum zawadskii* Herbich etc..

Chrysanthemum L. plants were harvested between 1831-1992. The first dated voucher belongs to a *Chrysanthemum atratum* sample, and even though it does not contain information about its harvesting, it has a well-preserved plant. Approximately 14% of the studied vouchers are not dated (Figure 4). Furthermore, 24% of the samples date to the XIX century, while approximately 76% were gathered

and prepared in the first half of the XX century. This coincides with Alexandru Beldie's intense activity.

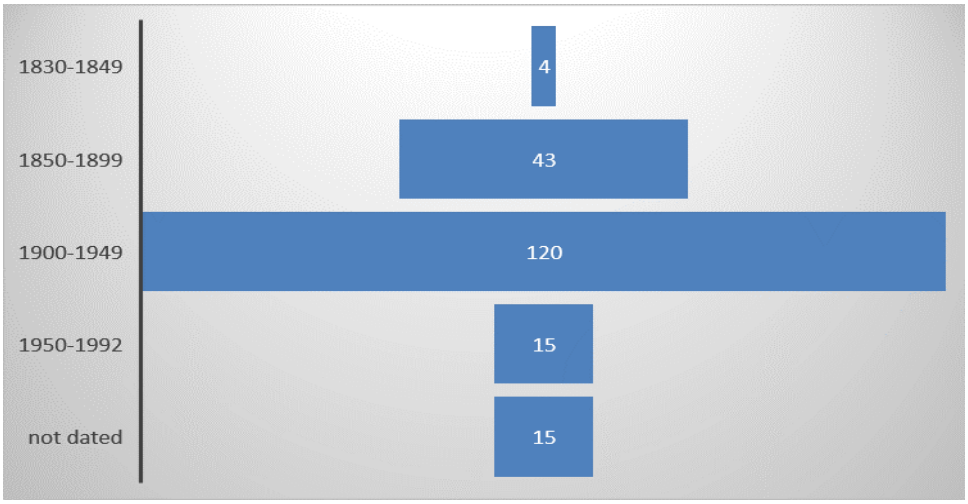

Figure 4. The temporal variation of samples containing Chrysanthemum L. species

The analysis and synthesis of systematized data has emphasized the fact that the majority of plants are well conserved, in their entirety and correctly attached to the voucher. Only 5,58% are detached from the vouchers, with present but detached parts, while only 1% present a reduced conservation degree with detached and missing parts.

Over 30% from the samples that refer to Chrysanthemum L., species, namely 60 vouchers, originate from abroad and were obtained through exchanges with other renowned herbariums such as Herbarium E. Krummel., Erbario di Carlo Costa-Reghini, Herbier H. Sudre, Herbier A. Autheman, Flora norvegica, Flora helvetica Dr. C. Baenitz, Herbarium Europaeum etc..

Amongst the operators who have collected, prepared and determined these samples we mention: A. Coman, A. Haralamb, J. Neuwirth, A. Vlădulescu, S. Pașcovschi, Al. Borza, At. Haralamb, M. Onică, P. Cretzoiu, C.C. Georgescu, E. Krummel, E.I. Nyarady, H. Groves, H.Sudre, I.Mezzo, J. Ullepitsch, W. Wagner Konigshutte and of course, Al. Beldie.

CONCLUSIONS

In its 161 years (1831-1992) of collecting, preparing, determining and conserving taxa from Chrysanthemum L., Genus, embodied in over 40 taxa and 197 vouchers, Alexandru Beldie Herbarium represents an important database. This includes both national and international coverage and represents a valuable scientific material for the study of phytocoenosis.

REFERENCES

Beldie A. 1967. Flora și vegetația Munților Bucegi. Edit. Academiei R.S.R., București, 578 p.

Beldie A. 1972. Plantele din Munții Bucegi. Determinator. Edit. Academiei R.S.R., București. 409 p.

Ciontu C.I., Dincă L. 2019. Plants from former Vlașca County that are present in "Alexandru Beldie" Herbarium. Research Journal of Agricultural Science, 51 (4): 254-261.

Cojocariu A. Tanase C. 2018. Colecţia de crizanteme (Chrysanthemum s.l.) - Grădina Botanică „Anastasie Fătu" din Iaşi, Natura,Biologie, seria III, Vol. 61 Nr. 1 (ianuarie-iunie), Arad, pag 47-70.

Crisan V., Dincă L., Deca S. 2020. Plants from Jepi Mountains, Bucegi, present in "Alexandru Beldie" Herbarium. Current Trends in Natural Sciences, 9(17): 160-167.

Crișan V., Dincă L., Deca S. 2020. Plants from Buzau County present in "Alexandru Beldie" and W.U. herbariums. Research Journal of Agricultural Science, 52 (2): 24-31.

Dincă L.C., Crișan V., Dincă M. 2020. Plants from Ilfov County present in "Alexandru Beldie" herbarium. Analele Universitatii din Craiova, seria Agricultura-Montanologie-Cadastru, 50(2): 93-98.

Dincă L., Vasile D., Dincă M, Blaga T. 2018. Rubus species present in Alexandru Beldie Herbarium. Lucrări Științifice, Seria Horticultură, 61(1): 61-70.

Dincă L., Peticilă A. 2019. How many alder species (Alnus sp.) exist? A statistic based on herbarium vouchers. Scientific papers, Series B, Horticulture, 63(1): 613-619.

Dincă L., Vechiu E. 2020. A statistic of Campanula species based on vouchers from different herbarium. Annals of West University of Timişoara, ser. Biology, 23 (1): 29-38.

Kachova V., Dincă L. Căntar I., Vechiu E., 2020. Plant species in Alexandru Beldie herbarium collected from the Balkan area. Nauka za Gorata, 56(1): 55-64.

Lin, Y. R. & Shi, Z. & Humphries, C. J. & Gilbert M. G. 2011. Anthemideae. pp. 653-773, In: Wu Z. Y., Raven P. H. & Hong D. Y. (eds.) Flora of China, Volume 20-21 (Asteraceae).

Nyarady, E. I. 1964. Flora Republicii Populare Romîne, vol. IX, Edit. Academiei Romîne, Bucureşti. pag. 417-458.

Sârbu I., Ștefan N.,Oprea A. 2013, Plante vasculare din Romania, Ed. VictorBVictor, 808 p.

Scărlătescu V.,Vasile D., Dincă L. 2017: The importance of Vaccinium species collection. Research Journal of Agricultural Science, 50 (1), pag.194-201.

Vasile D., Dincă L. 2019: Algae from the "Cryptogamae Germaniae, Austriae and Helvetiae Exsiccatae Fasc" collection gathered by W. Migula. Journal of Horticulture, Forestry and Biotechnology, 23(3), pag. 107-112.

Vasile D., Dincă L. 2019. Specii de plante din Republica Moldova păstrate în colecția ierbarului "Alexandru Beldie". Buletin Ştiinţific. Revista de Etnografie, Ştiinţele Naturii şi Muzeologie (Serie Nouă), 43(30): 6-16.

Vechiu E., Dincă L. 2019. Characterization of Cornus plant present in "Al. Beldie" herbarium. Research Journal of Agricultural Science, 51(3): 169-175.

https://commons.wikimedia.org