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THE ECONOMIC IMPORTANCE OF THE SPONTANEOUS FLORA WITHIN OLTENIA PLAIN, ROMANIA

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Abstract

The present paper deals with the results of the research conducted over a long period of time (i.e. about 25 years), on the economic importance of the spontaneous flora in the Oltenia Plain. The study was mainly motivated by the gradual decrease in the number of people who resort to traditional practices and by the widespread use of synthetic products, which have rapid but unhealthy effects. The analysis of the employment of useful species in this part of Oltenia highlights a worrying aspect: the use of spontaneous plants is age-dependant and it declines at younger ages. The medicinal species are still of great importance and they are used in almost all settlements within Oltenia Plain, although their use is more significant in rural areas and less important in urban ones. Unlike the pre-2000 period, when tinctorial species were employed to a greater extent, they are now used only occasionally, by the elderly.

Key words**:** *Oltenia Plain, flora, economic importance, Romania*

INTRODUCTION

The use of plants in order to cure or prevent diseases emerged with the appearance of the human beings, that is, millennia ago.

The popular names given to the plant species by common people were diverse and suggestive, indicating their interest in the knowledge of the flora.

In addition to the scientific interest connected to the study of the flora and vegetation of a territory, it is of significance the practical, applicatory study related to the direct or indirect employment of plants that are useful for human needs and not only.

The vegetation specific to the plain area is xerophilous, being characteristic of the steppe, forest-steppe and nemoral areas. If we take into account the growing surfaces occupied by agricultural land, the spontaneous flora is characteristic on relatively limited surfaces within the plain area.

Worldwide cultivated and spontaneous plants are affected by different biotic and abiotic constrainers, limiting their yielding capacity and adaptability in the areas affected by climate change effects [23].

In this part of Oltenia, the landscape is often scattered with species that possess important therapeutic properties, some of them being the only source of botanical raw materials highly required by the pharmaceutical industry; other species are appreciated from an aromatic, culinary, fodder or melliferous point of view; all of these species are used in various industrial activities. The floristic studies carried out by Professor Ph.D. Al. Buia [8] demonstrate that there is no natural steppe in Oltenia Plain, but an artificial one resulted from anthropogenic activities. Nevertheless, this region possesses certain steppe elements (*Festuca valesiaca*, *Chrysopogon gryllus*, *Stipa capillata*, *Poa bulbosa*) that attest to the presence of some conditions similar to those of the steppe proper [29].

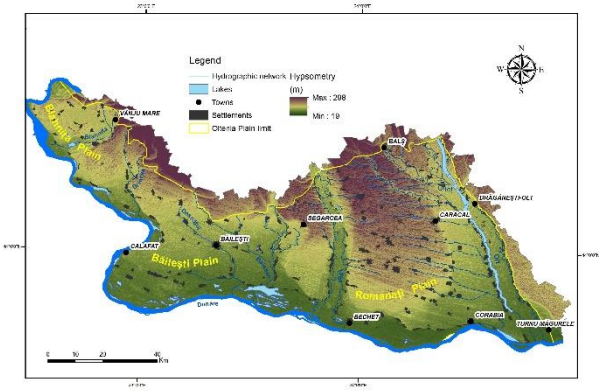
The alteration of the floristic composition characteristic of this part of Oltenia resulted from the influences of the zoo-anthropogenic factor (manifested through the expansion of areas occupied by agricultural land, the irrational grazing, the repeated mowing in certain areas, which leads to the elimination of late flowering plants, the pollution of surface and groundwater), combined with the climate changes occurred during recent years.

Information on the study of spontaneous flora within Oltenia Plain can be found in several specialized works that include floristic inventories from certain areas [2, 7, 10, 11, 12, 14, 16, 17, 31] or contributions to the knowledge of flora and vegetation [5, 6, 7, 9, 13, 15, 25, 24, 26]. The first data are characteristic for the end of the 19th century [3, 24, 30, 32] and the mentions continue until the present [20, 21, 22, 33, 34, 35, 36, 37, 38, 39, 40, 42]. Data regarding the general characterization and the geomorphology of Oltenia Plain have been published by different researchers [1, 19].

The studies conducted until the present show that the spontaneous plants from Oltenia Plain also include many taxa of economic importance. They are classified as useful plants. This category includes: medicinal, aromatic, honey, food, tinctorial, seasoning and fodder plants.

MATERIALS AND METHODS

Oltenia Plain is the oldest sector of the Romanian Plain, which appears as a dry land area above water level; it is closely linked to the Getic Plateau through the transitional relief forms on the northern side. Resembling a water belt, two rivers mark most of its boundaries, namely the Danube to the west and south and the Olt to the east [28] (Map 1).



Map 1. Oltenia Plain
Source: internet processing.

From a geological point of view, it can be stated that this relatively rigid platform region appears as a strongly sedimented depression.

The relief of this region is made up of plains, terraces and floodplains, while the soils are represented by chernozems, psamosols, alluvia and alluvial soils, marshy soils etc. The presence of sands within Oltenia Plain leads to the appearance of a dune relief in certain areas [14, 17, 42].

The climate is temperate-continental, with sub-Mediterranean influences characterized by autumn rains and mild winters.

The lacustrine origin of this unit places it into the category of tabular plains and it is connected to the appearance of terraces due to the horizontal migration and the deepening of the large rivers (the Jiu, the Olt, the Danube).

All these conditions related to physical geography of the area have led to the diversification of the vegetation cover.

Based on a long field experience, as well as on the published results concerning this part of the country [2, 5, 8, 14, 15, 17, 25, 27, 28, 29, 33, 34, 35, 36, 38, 42], in the present paper it is discussed about the plants with local economic importance, which are used by the inhabitants of the areas that neighbour the surfaces with natural or seminatural vegetation. The scientific name of the species is in accordance with that used in the specialized field guides in Romania [18, 41], while the abbreviations of the authors of the species presented in the paper originate in the work *Authors of plant names* [4].

The analysis of the economic importance of the spontaneous flora within Oltenia Plain was carried out after consulting a sample of 369 people of different ages, which were divided into the following age groups: up to 20 years; between 20 and 40 years old; between 40 and 50 years old and over 50 years. Both rural and urban environments were represented during the survey. A number of 123 persons reside in the urban areas of Calafat, Băilești, Bechet, Dăbuleni, and Corabia, while the remaining 246 persons are inhabitants of different rural settlements located within Oltenia Plain (e.g. Poiana Mare, Rastu Vechi, Negoi, Danube, Gighera, Ostroveni, Ianca, Grojdibodu etc.).

The research was carried out in order to capture useful qualitative information on the

use of spontaneous flora in the plain area of Oltenia.

The questions addressed to the people in the researched area were: Do you use plants from the spontaneous flora?; What are the most used plants in nature; Collect plants as .....; What category of plants do you collect? From what year do you collect plants from the spontaneous flora? Do you collect useful plants for your own use or do you sell them? Where do you manage to capitalize on the production obtained? What is the way to capitalize on production? How much do you estimate the revenue from spontaneous plant collection (RON)? Have you so far accessed European funds for the establishment/ development of crops with useful plants? In the next period, do you intend to access European funds for the development of your business?

The answers received confirmed what we also noticed in the area: the collection is done only for their own use, no income is obtained and very few have accessed European funds. If before 1990 there were useful plant collection centers in the area, now they are completely missing.

RESULTS AND DISCUSSIONS

Although the areas covered by spontaneous vegetation in the Oltenia Plain are very modest, their presence is highly important due to the phytodiversity and to the high sozological value of some taxa [29].

The research conducted during recent years in these areas has led to the selection of plant species of importance in the local economy.

A first group of spontaneous plants that are **highly significant for the economy** of the area comprises **the medicinal plants**.

Some of them are widely used: *Matricaria recutita* L. presented in Photo 1.

Photo 1. *Matricaria recutita* from Rastu Vechi locality(Dolj county)
Source: Original image.

Also, *Chelidonium majus* L., *Prunus spinosa* L., *Hypericum perforatum* L. (Photo 2), *Taraxacum officinale* Weber ex Wiggers, *Urtica dioica* L., *Sambucus nigra* L. (Photo 3), *Crataegus monogyna* Jacq., *Rosa canina* L., *Arctium lappa* L., *Artemisia absinthium* L., *Plantago major* L., *P. lanceolata* L., *Origanum vulgare* L. (Photo 4), *Agrimonia eupatoria* L.

Photo 2. *Hypericum perforatum* from Plenița locality (Dolj county)
Source: Original image.

Photo 3. *Sambucus nigra* from Bistreț locality (Dolj county)
Source: Original image.

Photo 4. *Origanum vulgare* from Perișor locality (Dolj county)
Source: Original image.

Others are only occasionally employed: *Padus avium* Mill., *Centaurea cyanus* L., *Consolida regalis* S.F. Gray, *Cichorium intybus* L., *Symphytum officinale* L., *Capsella bursa-pastoris* (L.) Medik., *Tussilago farfara*, *Eqiusetum arvense* L., *Anchusa officinalis* L., *Humulus lupulus* L., *Convolvulus arvensis* L., *Alliaria officinalis* L., *Salvia sclarea* L., *Leonurus cardiaca* L., *Marrubrium vulgare* L., *Lythrum salicaria* L., *Malva sylvestris* L., *Fraxinus excelsior* L., *F. ornus* L., *Polygonum aviculare* L., *Adonis vernalis* L., *Geum urbanum* L., *Salix alba* L., *Verbascum phlomoides* L., *Hyoscyamus niger* L., *Fumaria officinalis* L., *Gypsophila paniculata* L., *Helichrysum arenarium* (L.) Moench, *Abutilon theophrasti* Medik., *Aristolochia clematitis* L., *Carduus acanthoides* L., *Heracleum sphondyllium* L., *Linaria vulgaris* L., *Salvia nemorosa* L., *Teucrium chamaedrys* L., *Tribulus terrestris* L., *Malus sylvestris* (L.) Mill., *Pyrus pyraster* (L.) Burgds., *Armoracia rusticana* P. Gaertn.

The spontaneous honey plants within Oltenia Plain are of low importance in the framework of the entire surface, because of the large areas covered by agricultural land and by black locust plantations. The grassland vegetation comprises more honey species as compared to the forest vegetation (*Tilia tomentosa* Moench, *T. platyphyllos* Scop.).

Commonly used food plants include *Rumex crispus* L. (during spring) (Photo 5), *Fragaria viridis* (Duchesne) Weston, *Rubus candicans* Weihe ex Rchb and *Rumex acetosella* L.(during May and June).

Photo 5. *Rumex crispus* from Cârna locality (Dolj county)
Source: Original image.

The aromatic plants have a low representation in terms of number of species, but compensate through the significant populations in the field. Of this category, few species are used by the population living in the plain area of Oltenia: *Artemisia absinthium* L., *A. vulgaris* L., *Portulacca oleracea* L., *Origanum vulgare* L., *Mentha pulegium* L.

The plant species used for seasoning are found only in xeric meadows. The particular taste characteristics related to the spontaneous plants that grow in the plain area of Oltenia are due to the chemical composition of their vegetative organs, especially to the essential oils and terpene hydrocarbons, which have a high concentration. Among the species that are frequently used in the area, there are to be mentioned: *Thymus glabrescens* Willd., *Th. pannonicus* All. (Photo 6).

Photo 6. *Thymus pannonicus* from Radovan locality (Dolj county)
Source: Original image.

Tinctorial plants In 1866, the agronomist Ion Ionescu de la Brad was the first to speak about the Romanian folk chromatics as a branch of the household industry, connecting it with the agricultural life of the Romanian people and, thus, giving an economic significance to it. In the work titled *Agricultura României* (Eng. *Agriculture in Romania*), he stated:" They (the women) go to pick the tinctorial plants from the field and then they paint the wool with these plants, giving it all kinds of colours". The agronomist drew attention to the importance of plant dyes and to the value of vegetable-dyed fabrics, while pointing out the danger associated to the regression of this folk art, as a consequence of the penetration of urban civilization into the traditional rural environment.

The traditional Romanian chromatic is confirmed by the works of art kept in museums: carpets and other heavy fabrics, clothing. There was a small number of old colours: white, black, brown, yellow, and red. Later on, blue and green colours appeared. These were cold, serious colours. The dyes were said to be so durable that the fabric could tear and still the colour would not fade. The process of plant colouring relies on 3 groups of dyes: flavones (which give yellow colours), carotenoids (which give red colours) and anthocyanins (which give blue colour).

Because of the competition with the synthetic dyes discovered during the past century, the artistic craft of vegetable painting underwent a strong regression in the plain region of Oltenia.

Among the spontaneous tinctorial species used by the inhabitants of the study area, there are to be mentioned: *Quercus robur* L., *Galium verum* L., *Alkanna tinctoria* Tausch (Photo 7), *Hypericum perforatum* L., *Origanum vulgare* L., *Anchusa officinalis* L., *Cynoglossum officinale* L., *Anthemis tinctoria* L., *Crataegus monogyna* Jacq., *Malus sylvestris* (L.) Mill., *Rosa canina* L., *Euphorbia cyparissias* L., *Cornus sanguinea* L., *Viola hirta* L., *Viola tricolor* L., *Salix fragilis* L., *Cruciata glabra* (L.) Ehrend, *Symphytum tuberosum* L., *Achillea millefolium* L., *Matricaria recutita* L.

A brief presentation regarding the usefulness of some tinctorial plants, as resulted from the discussions with the local people, includes the following aspects: *Quercus robur* (tinctorial value – the bark is harvested from old trees from October to February and used fresh to obtain black and ochre colours); *Hypericum perforatum* (tinctorial value - the aerial part, in fresh and dry state, is used to obtain beige, green and brown colours); *Origanum vulgare* (the whole plant has tinctorial value; fresh or dried flowers harvested in July serve to paint in cherry red, while the whole plant harvested during the maximum flowering period (June-July) gives a reddish-brown colour); *Euphorbia cyparissias* (tinctorial value - the aerial part harvested during May-June is used to obtain the yellow colour, while harvested during July-August, it gives a dark brownish red).

Photo 7. *Alkanna tinctoria* from the protected area ”Ciuperceni-Desa” (Dolj county)
Source: Original image.

The fodder plants from the Oltenia Plain are strongly affected by the drought in the soil, which determines the reduction of the bioproductive function. Among the fodder species found in the field, there are to be mentioned: *Lathyrus sphaericus* Retz., *Hordeum bulbosum* L., *Lolium perenne* L., species of certain genera, such as Medicago (*M. minima*, *M. orbicularis* (L.) Bartal., *M. falcata* L., *M. arabica* (L.) Huds., *M. polymorpha* L., etc.), Trifolium (*T. repens* L., *T. pratense* L., *T. campestre* Schreber; *T. arvense* L., *T. subterraneum* L., *T. ornithopodioides* Sm., *T. incarnatum* L. subsp. *molinerii* (Balbis ex Hornem) Cesati, *T. strictum* L.), Vicia (*V. grandiflora* Scop., *V. angustifolia* L., *V. lathyroides* L.), Festuca (*F. pratensis* Huds., *F. rupicola* Heuff., *F. valesiaca* Schleicher ex Gaudin, Poa (*P.*

angustifolia L., *P. pratensis* L., *P. sylvicola* Guss.) and more.

Based on the information collected from the inhabitants of the area (by different age categories), the author conducted an analysis of the economic importance of the spontaneous flora within the plain area of Oltenia, which underlines the high importance assigned to these plants by the population older than 50 years (Fig. 1).

In relation to the economic importance assigned to the spontaneous flora, the low proportion of persons in the 20-40 age group (i.e. 12% of the total) is partly explained by the small number of people living in rural areas, as well as by the growing number of pharmacies that facilitate the rapid purchase of products, without sustained effort.

The 2nd place is held by people falling in the 40-50 age group (i.e. 32%) and the last place belongs to young people, up to 20 years (by about 7%), who are increasingly attracted to the modern aspects, leaving the traditional ones in second place.

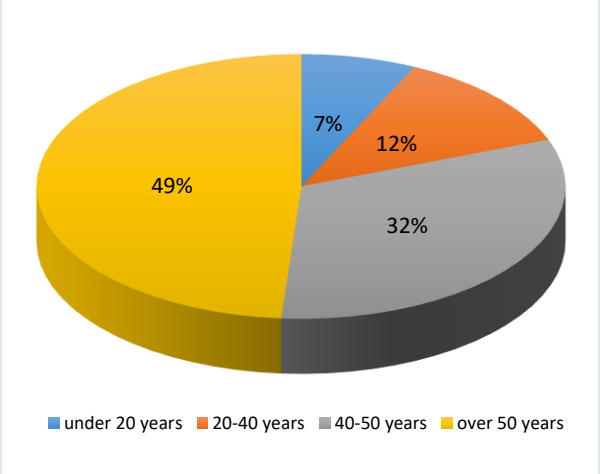


Fig. 1. Distribution of the economic importance assigned to spontaneous flora by age group (%)
Source: Own calculation.

Practically, the economic importance of the spontaneous flora from the Oltenia Plain is age-dependent and it declines in relation with the decrease of age of questioned persons.

The analysis of the different plant categories, according to their usage, highlights the predominance of medicinal species (33%). They are closely followed by melliferous and **fodder species** (Fig. 2).

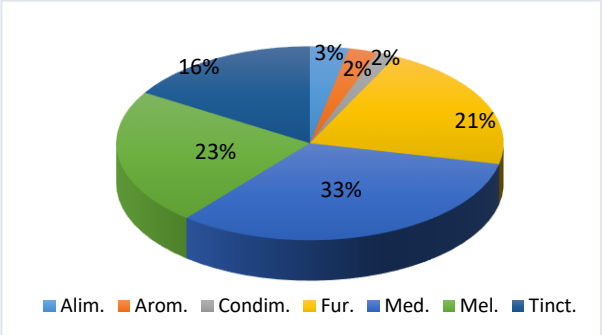


Fig. 2. Structure of different plant categories based on their use
Source: Own calculation.

Tinctorial species, which were widely used in the past, also have a good representation. Unfortunately, nowadays they are used less frequently and only by the village elders.

The analysis of the importance held by the spontaneous flora in the local economy, as assigned by the respondents residing in the rural and urban settlements located in Oltenia Plain, highlights a higher percentage in the case of the inhabitants of villages (with over 80%), while the values characteristic to the urban environment do not exceed 40% (Fig. 3).

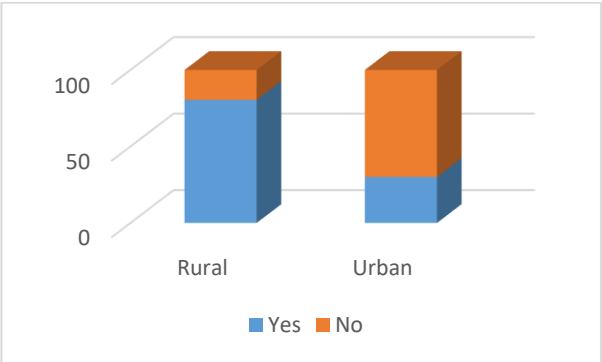


Fig. 3. The importance assigned to spontaneous flora in selected rural and urban areas of Oltenia Plain (%)
Source: Own calculation.

The surface occupied by the spontaneous flora from the Oltenia Plain is very small due to the extension of the agricultural lands (about 20%). The largest share is held by the meadows.

Following the discussions with the inhabitants of the area, it was found that the use of spontaneous plants is done only for domestic use. At the level of the Oltenia Plain there are no spontaneous plant collection centers and no processing companies.

CONCLUSIONS

The analysis of the economic importance of the spontaneous flora within Oltenia Plain underlines its continuous decline during the recent period. In order to increase its future importance for the residents of the area, we recommend the implementation of awareness actions that would help informing about the advantages of the prudent use of spontaneous flora (such as a healthier life, very low costs as compared to synthetic products, long-term efficiency is much greater by rationally using the products provided by nature) and more.
Finally, we can conclude that if no measures are taken in order to make local people aware of the need to preserve biodiversity and the local traditions, then the relatively near future will witness the replacement of the traditional culture by modern habits, while customs and traditions will be found only in museums.

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