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STUDY UPON THE MELLIFEROUS BASIS OF VURPĂR LOCALITY (SIBIU COUNTY)

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Abstract

The goals of our research were to identify the melliferous base of Vurpăr locality (Sibiu County), emphazing the important aspects, such as: the diversity of the melliferous species, the heating index of blooming (T^0 C), the average data of starting of blooming, the honey production (kg/ha), the apical balance. The applied research methods were as follows: observation in the field, the method of direct gathering of different plant species and their identification in the lab. As a result of our researches there was established the taxonomic structure of melliferous flora in the researched area, in this respect being identified 38 taxonomic groups belonging to herbs, bushes or trees, Besides these species of melliferous plants there were identified other 5 tree species without flowers (manna honey) in the area. As a conclusion there can be asserted that the territory of Vurpăr locality holds a valuable malliferous potential. The apiarists dealing with putting into value this territory need to know exactly this potential and also the weather conditions of the area.

***Key words*:** *the melliferous basis, vegetable*

INTRODUCTION

The From the insects, ones that have fascinated the imagination of man during his existence were, of course, the bees. Creation of Gods, the bees have always impressed through their organization, their behavior and especially through the result of their work, the honey. The bees' ethnology inspired beliefs, legends, literary works, material for studies and scientific researches, generating complex symbols, which found their expression through the texture with golden thread of tiny creatures even on an imperial mantle.

The present economic importance raises a high pedestal through the bees' products in the traditional folk medicine, in the allopathic medicine as well as in the cosmetic and pharmacy industry.

In the antiquity Plinius the Old allotted a great space in his encyclopedia, Naturalis Historia, to the bees and honey. The honey was considered a God's gift. "This substance, Plinius said, was coming from air, especially at the rising of constellations. It represented the sweat of the stars, the saliva of stars or a secretion of the air when it was purifying" [9]. The bees gathered it from the leaves of the trees and vegetation.

Controversies upon the origin of the manna there were and there still are. The idea that the honey came from the air persisted till the 18th century when there were drawn two theories: the idea of vegetal origin, which sustained that the manna was a secretion of the plant and the theory of animal origin, which gave priority to the aphids' dejections. Till nowadays, the fact that the honey could come from the fleas' dejections horripilate a lot of people.

The bees-plants binominal with their reciprocal existential conditioning is one of the most fascinating phenomena within the Mother Nature. The bees gather the nectar of the plants and, in change assure the perpetuation through pollinating. The plants' pollinating is a restrictive factor in cultivating the fruit trees, the cereals, vegetables, fodder plants, and so one... In this blessed binominal stand one in front of other the bees and the plants. There was appreciated that in Europe for an efficient pollinating of the cultures

there would be needed 13 millions beehives [13].

The melliferous plants, those plants producing the nectar and those supplying manna through the plant fleas are the second factor of importance in this binominal.

The study upon the plants on the Sibiu County territory was started in the 17th century. Till the 19th century there were collected 850 cormophit species and there were published 460 species [2]. In the list of professor J. C. Eder from "Observations of Natural History" (1786-1799) was mentioned for the first time Vurpăr locality, as being part from the list of 70 cormophite species in Sibiu [2]. A significant contribution in this field was also brought by Schullerus Pauline round 1916 [10] and 1920 [11], which came to complete this list. Nowadays the total of cormophite species on the territory of Sibiu County is of 2455 [2].

The melliferous potential of an area consists of the capacity of this zone to assure the food of the bees' families. The quantity of the nectar and of the pollen from the spontaneous flora and from the cultures as animal and vegetal manna is influenced by numerous factors depending directly on melliferous flora. Among these determinative factors there are: the species, the plants age, the blooming period, genetic factors as well as the size of the flowers, their position on the plant assuring the development as well as the easiness of approaching it by the bees and last but not least the sanitary stage of the area. At national level Sibiu County is situated on the 34th place among the counties of Romania, having a potential of 6242.4 tones honey [4].

The present study wants to bring a plus to the literature of specialty regarding the melliferous flora in Vurpăr locality, Sibiu County.

MATERIALS AND METHODS

The researches took place in Vurpăr locality during 2013.

For achieving the goal of researching and knowing the flora from the studied ecosystem there were taken into consideration specific methods, such as:

- the observation regarding the inventory of the flora within the area of Vurpar locality (Sibiu County), the 4th apical area in our country, identifying the melliferous species and their blooming period;
- the method of direct collecting of the plants, quantitative method, using the simple tools and materials: little metallic shovel used for taking out the underground part of herbs; little metallic box for caring the plants.
- the lab phase comprised operations of unwrapping of the botanical material and determination; for this operation there were also used bibliographic sources [1], [2], [3], [5], [6], [7], and [8].

RESULTS AND DISCUSSIONS

Vurpăr locality is situated in Hartibaciu plateau, in the centre of Sibiu County and is a part of those 90,000 hectares that were declared Sit Natura 2000. The relief of the locality is a hilly one with the height round 500 and 712 meters. In this area the agriculture is friendly with the environment, living together with a rich flora.

Figure 1. The localization of Vurpăr locality in Sibiu County
Source:http:/upload.Wikimedia.org/wikipedia/commons/5/59/Vurpar_jud_Sibiu.jpg

This area comprises: meadows 18%, hay field 20%, forest 38% and the rest of 24% being arable land. The hay fields with their wild flora have an economic importance both for the selection of fodder cultures as well as for the apiculture [15]. This melliferous base of

Vurpăr locality includes species of herbs, trees and bushes with variable apical balance (Table 1).

Table 1. The meliferous basis in Vurpăr locality (Sibiu County) in 2013

Nr	Species name	Heat index of blooming (T^0 C)	The average data of blooming	Honey production (kg/ha)	Apical balance
1.	2.	3.	4.	5.	6.
1	*Vaccinium myrtillus* L. (afin)	525-680	05-15.05	15-30	medium
2	*Aesculus hippocastanum* L. (castan sălbatic)	475-525	27.04.-07.05	50-100	medium
3	*Allium cepa* L. (ceapă seminceră)	1330-1540	20-30.06	120	medium-high
4	*Thymus vulgaris* L. (cimbru)	1230-1430	15-25.06	150	medium
5	*Cerasus avium* (L.) Moench(cireș)	220-330	10-20.04	30-40	medium
6	*Ribes nigrum* L. (coacăz negru)	275-395	14-24.04	20-50	medium
7	*Salvia verticilata* L. (urechea porcului)	1330-1540	20-30.06	400-600	medium
8	*Cucurbita pepo* L. (bostan, dovleac)	765-940	20-30.05	40-50	medium
9	*Fragaria vesca* L. (fragi de pădure)	689-765	15-20.05	40	medium
10	*Mentha aquatica* L. (izma broaștei)	1400-1575	22-30.06	220	high
11	*Menthe piperita* L. (izma bună)	1620-1870	05-15.07	100-200	medium
12	*Stachys recta* L. (jaleș sălbatic)	1130-1335	10-20.06	150-250	medium
13	*Medicago sativa* L. (lucernă)	680-850	15-25.05	25-250	medium
14	*Malus domestica* L. (măr)	350-450	20-30.04	30-42	medium
15	*Vicia pannonica* Crantz (măzăriche ungurească)	765-940	20-30.05	30-50	medium
16	*Vicia sativa* L. (măzăriche de primăvară)	850-960	25-31.05	10-30	medium
17	*Vicia villosa* Roth (măzăriche păroasă)	765-940	20-30.05	30-50	medium
18	*Rubus caesius* L. (mur)	798-960	22-31.05	30-50	medium
19	*Sinapis arvensis* L. (muștar sălbatic)	765-940	20-30.05	40	medium
20	*Taraxum officinale* L. (păpădie)	176-275	05-15.04	200	medium
21	*Prunus spinosa* L. (porumbar)	350-450	20-30.04	25-40	medium
22	*Prunus domestica* L. (prun)	300-350	15-25.04	20-30	medium
23	*Brassica napus* L. (rapiță)	220-330	10-20.04	40-50	high
24	*Robinia pseudoacacia* L. (salcâm)	600-765	10-20.05	1000	very high
25	*Salix alba* L. (salcia albă)	100-135	20-30.03	100-500	high
26	*Salvia pretensis* L. (salvie de camp)	798-960	22-31.05	280	medium
27	*Salvia nemorosa* L. (jaleș de camp)	1750-1980	10-20.07	300	medium
28	*Eryngium campestre* L. (scaiul darcului)	1750-1980	10.-30.07	100	medium
29	*Origanum vulgare* L. (sovârf)	1130-1335	10-20.06	70-80	medium
30	*Onobrychis viciifolia* Scop. (sparcetă)	1038-1235	05.05-06	120-300	high
31	*Melilotus Officinalis* Lam. (Sulfina Galbena)	990	01.06-09	300	high
32	*Tilia tomentosa* Moench (tei argintiu)	1400-1450	17-27.06	1000-1200	very high
33	*Tilia cordata* Miller (tei pucios)	1050-1100	02-12.06	600-1000	high
34	*Trifolium repens* L. (trifoi alb târâtor)	765-940	20-30.05	100-250	high
35	*Trifolium pretense* L. (trifoi roșu)	1230-1430	15-25.06	25-50	medium
36	*Lamium maculatum* L. (urzică moartă)	680-850	15-25.05	50-150	medium
37	*Lamium purpureum* L. (sugel puturos)	80-135	20-31.03	50-90	medium
38	*Rubus idaeus* L. (zmeur)	1038-1235	05-15.06	50-200	very high

The analysis of the data in table 1 emphasizes the diversity of plant species having the blooming period between March (20th March 2013 at *Salix alba* L.) and ending in September (*Melilotus officinalis* Lam.). The maximum of favorability of harvesting is in May (14 species) and June (12 species). The long interval of blooming till March to September covers the entire season of harvesting for the bees, the obtained "poly flower" honey being a quality honey. In the same time the long period of blooming assured favorable conditions for the bees' families, meaning less manipulations and transports for these.

Our study in the area of Vurpăr locality showed that the territory is isolated from the pollution agents so that the melliferous flora assuring nectar and pollen without polluting agents, the obtain honey being considered an ecologic product.

From the point of view of apical balance the melliferous base of Vurpăr locality is relatively high. From the total of 38 species, which constitutes the melliferous flora 27 species, representing 71.05% have a medium apical balance, 6 species (18.42%) have a high apical balance and 3 species (7.89%) have a very high apical balance and only one species frames in the medium-high category (2.64%).

The highest production of honey (kilograms/ha) in 2013 was obtained from the species *Tilia tomentosa* Moench (1000-1200 kg/ha) and *Tilia cordata* Miller (600-1000 kg/ha).

Table 2. Species of bushes without flowers (manna honey) on Vurpăr area (Sibiu County) in 2013

Nr crt	Species name	Heat index of blooming (T^0 C)	The average data of blooming	Honey production (kg/ha)	Apical balance
1.	2.	3.	4.	5.	6.
1	*Corylus avellana* L. (alun)	10-35	05-15.05	20	medium
2	*Abies alba* Miller (brad)	1335-1625	20.06-05.07	40	high
3	*Fagus sylvatica* L. (fag)	680-850	15-25.05	20	medium
4	*Picea abies* (L.) Karsten (molid)	1330-1540	20-30.06	50	high
5	*Querqus robur* L. (stejar)	350-450	20-30.04	20	medium

The manna production is provided in the researched area by other 5 species of bushes.

The apical balance for these species is a high one, being comprised between the values: middle (3 species) and high (2 species) (Table 2).

CONCLUSIONS

The study underlines the important aspects regarding the melliferous base of Vurpăr locality (Sibiu County) such as: the biodiversity of melliferous species, the heating index of blooming (T^0 C), the average data of blooming start , honey production (kg/ha), apical balance.

The methods and techniques used for research in doing this study were: analysis of the bibliographic material, the direct observation in the field, collecting the biologic material and the determination of the material in the lab.

In the melliferous base of Vurpăr locality (Sibiu County) during 2013 there were identified 38 species of mellifers belonging to herbs, bushes and trees.

The blooming period of the plants from the researched melliferous is comprised during March-September, with the maximum of favorability of collecting during May-June.

There were identified 5 bushes species without flowers (manna honey) in this area (*Corylus avellana* L., *Abies alba* Miller, *Fagus sylvatica* L., *Picea abies* (L.) Karsten, *Querqus robur* L.).

There can be established that the area of Vurpar locality (Sibiu County) has a valuable meliferous potential.

Taking into consideration the profitability of the apical activity there can be imposed that each and every apiarist to know this potential as well as the specific weather conditions of the area, conditions that can be determinative for placing the apiaries. In this respect, the blooming data of the melliferous plants can also be very useful.

Regarding the forest ecosystems on the territory of Vurpar locality there is recommended that the placing of apiaries to be done nearby in the clearing areas, lacking the powerful air draughts and in the proximity of the acacia trees.

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