STUDY REGARDING THE APPRAISAL OF HONEY POTENTIAL FROM THE AREA OF VICTORIA COMMUNE, IAŞI COUNTY

STUDIU PRIVIND ESTIMAREA POTENȚIALULUI MELIFER DIN AREALUL COMUNEI VICTORIA, JUDEȚUL IAŞI

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Abstract. *The current paper represents a study accomplished on the territory of Victoria commune, in Iaşi County, to estimate the honey potential of the area. The results showed that here lives a spontaneous, diversified and cultivated flora, among which exist also species of honey interest (acacia, linden, rapeseed, sunflower etc.); they can provide up to 333 tons of honey, which would ensure conditions for the maintenance of 2797 stationary bee families. The area can also assure good conditions for capitalizing on the honey potential by pastoral beekeeping, especially for acacia harvesting, where could be moved up to 15200 hives.*
Key words: potential, honey, hives, bees, plants

Rezumat. *Prezenta lucrare reprezintă un studiu efectuat pe teritoriul comunei Victoria, din județul Iaşi, cu scopul estimării potențialului melifer din zonă. Rezultatele au arătat faptul că în acest areal se găseşte o floră spontană, diversificată şi cultivată, în cadrul căreia există specii de interes melifer (salcâm, tei, rapiță, floarea soarelui etc.); acestea pot furniza până la 333 tone de miere, ceea ce ar oferi condiții pentru întreținerea unui număr de până la 2797 familii de albine staționare. De asemenea, zona poate oferi condiții bune pentru valorificarea potențialului melifer prin stupărit pastoral, în special pentru culesul de la salcâm, unde ar putea fi deplasați până la 15200 de stupi.*
Cuvinte cheie: potențial, melifer, stupi, albine, plante

INTRODUCTION

Romania benefits of an enviable honey potential, respectively a very varied honey flora, represented by species, which bloom from March to October and which ensure both maintenance and production harvests.

To capitalize on these harvests, beekeepers need detailed information about honey sources in different parts of the country, to apply the most convenient options. Thus, depending on many factors to consider (number and strength of bee families, an estimated amount of honey to be obtained, the distance of transport and cost of fuel, etc.), many beekeepers consider it profitable to move

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beekeepers in pastoral to some massive in the country, while for others it's more profitable to capitalize on the local harvest.

Knowledge of the honey base in a given area, including the exact flowering period of plant species of apicultural interest, as well as harvesting gaps, is a very important element for the application of intensive, cost-effective beekeeping, which is why this topic made and still does, the object of studies and research. (Balana *et al.*, 1983; Cîrnu and Hociotă, 1973; Cîrnu, 1980; Doliş *et al.*, 2013; Lazăr and Doliş, 1999; Lazăr *et al.*, 2006; Mănior and Hociotă, 1978; Şonea *et al.*, 2016).

MATERIAL AND METHOD

The researches were carried out in the area of Victoria commune, Iaşi County, which proved to be a suitable place, because it presents numerous species of honey interest, both spontaneous, at the level of meadows and forests, as well as cultivated, within agricultural lands.

The forest-steppe vegetation is characteristic of the northern area of the forest-steppe from the Moldavian Plateau, where species such as elm, hornbeam, linden, oak, cherry trees predominate, and also meadows formed by fescue associations.

The steppe vegetation is a continuation of the forest-steppe vegetation towards the lower altitudes, respectively along the valleys of the Jijia and Prut rivers.

The natural forest-steppe landscape has changed recently, as many areas of land have been introduced in the arable circuit, and the forest patches have undergone changes in terms of spontaneous vegetation (tab. 1).

Table 1

The categories of land use from Victoria commune, Iaşi County

Land use	Area (hectares)	% from the entire area
Arable land	3347	51.30
Pastures and hayfields	865	13.20
Vineyard	65	1.00
Forests	1274	19.60
Others	965	14.80
TOTAL	6516	100%

Source: County Department of Statistics, Iaşi

The 1274 ha of forest are under the administration of the National Forests Authority - ROMSILVA, respectively of the Iaşi Forest District, representing two production units, respectively PU V Medeleni and PU II Jijia. In turn, the production units (PU) consist of several development units (DU). Thus PU II Jijia is composed of 40 DUs, of which only 9 are of honey interest (DU 30-39), and PU V Medeleni consists of 50 DUs, of which only 18 are of honey interest (DU 22-34, 41, 42, 48, 51). DU 22, 41, 48, 42, 51 are declared nature reserves, in which there are many secular trees and different species of plants and flowers, unique in our country. To identify the species of honey interest, the plot and pedestrian descriptions are taken after the Development of the Iaşi Forest District and the data provided by the Agricultural Department within the Victoria Local Council were used, to which are added the data collected from field trips.

Knowing the areas occupied by the species of honey interest and the honey potential of each species (from the data presented by the literature), by multiplication,

it was possible to calculate the potential honey production of the studied area, of which only one third is conventionally taken into account, knowing that during a beekeeping season, bees can't capitalize more, due to unfavourable weather and competition from other insects. (Bura *et al.*, 2005; Lazăr, 2002; Lazăr and Doliş, 2004; Mărghitaş, 1997; Pătruică, 2013).

To determine the need for bee families to make the best use of the honey potential in the area, in conditions of stationary beekeeping, the determined harvestable potential must be divided by the amount of honey harvested by each bee family within one year. In this sense, it is known that an average family accumulates about 120-130 kg of honey, of which, for own consumption, approx. 90 kg, for the development of swarms 9-12 kg, and the remaining 20-30 kg is honey for human consumption.

In a pastoral beekeeping system, for the optimal use of the entire honey potential, depending on the local conditions, rules are established for each honey species, regarding a load of hives per hectare (Doliş *et al.*, 2013).

RESULTS AND DISCUSSIONS

Using the documentation provided by the Iaşi Forest District, as well as the data collected from field trips, it was possible to estimate the honey potential of the two production units, respectively PU II Jijia and PU V Medeleni (tab. 2 and tab. 3).

The forest area of Victoria commune offers a harvestable honey potential of approximately 310.76 tons, of which 283 tons (91%) can be obtained only from acacia. Thus acacia is the most important species of honey interest in the area, having both the highest honey potential (1 t/ha), but also the highest share in the forest structure (86.6% in PU II Jijia and 30% within PU V Medeleni).

The rest of the forest species are of less importance, both in terms of weight, honey potential, but also because that's more a source of manna than nectar.

Table 2

Honey potential establishment of PU II Jijia

Species	Forest structure (%)	Area (ha)	Mean production per hectare (kg)	Potential production (kg)	Harvestable production	
					kg	%
Linden	2.8	23.3	800	18640	6213	2.52
Locust	86.6	714.3	1000	714300	238100	96.71
Field maple	0.6	5.2	300	1560	520	0.21
Maple tree	1.9	15.2	150	2280	760	0.31
Cherry tree	0.1	0.7	30	21	7	0.00
Willow	0.7	5.5	100	550	183.3	0.07
Beech	3.5	28.7	20	574	191.3	0.08
Oak tree	2.7	22.6	20	452	150.7	0.06
Hardwood	1.1	10	20	200	66.7	0.03
TOTAL	100%	825.5	-	738577	246192	100

Table 3

Honey potential establishment of PU V Medeleni

Species	Forest structure (%)	Area (ha)	Mean production/ hectare (kg)	Potential production (kg)	Harvestable production	
					kg	%
Linden	9.2	41.1	800	32880	10960	16.97
Locust	30.0	134.8	1000	134800	44933	69.59
Field maple	9.5	42.7	300	12810	4270	6.61
Maple tree	4.3	19.3	150	2895	965	1.49
Cherry tree	0.5	2.3	30	69	23	0.04
Willow	17.0	76.2	100	7620	2540	3.93
Beech	8.1	36.3	20	726	242	0.37
Oak tree	19.3	86.5	20	1730	576	0.89
Hardwood	2.1	9.3	20	186	62	0.10
TOTAL	100	448.5	-	193716	64572	100

Based on the data provided by the Agricultural Department within the Victoria Local Council and those collected from field trips, it was possible to estimate the honey potential of the agricultural area in Victoria commune (approx. 22 tons). The calculations used average values of the areas occupied by different crops over the last 10 years and also included the area related to the village's surface (tab. 4).

Table 4

Honey potential establishment of PU II Jijia

Species	Area (ha)	Mean production/ hectare (kg)	Potential production (kg)	Harvestable production	
				kg	%
Sunflower	290	60	17400	5800	26.19
Pastures and hayfields	865	30	25950	8650	39.06
Rape	304	50	15200	5066.7	22.88
Vineyard	65	5	325	108.3	0.49
Village hearth, other lands and crops	756	10	7560	2520	11.38
TOTAL	2280	-	66435	22145	100

Thus, at the level of the entire studied area (3554 ha) the estimated harvestable honey potential is about 333 tons, of which 94% is provided by the forested area.

In the conditions of practicing a stationary hive, admitting a multiplication rate of bee families of 20% and a honey production of 20 kg, in the studied area could be maintained in optimal conditions about 2797 bee families.

Under the conditions of practicing a pastoral hive, the area could provide conditions for moving hives for acacia harvesting, in particular, but also harvesting linden, sunflower, and rapeseed (tab. 5).

Table 5

The optimal number of hives for the pastoral capitalization of the honey potential of Victoria commune

Species	Area (hectares)	Hives norm/hectare	Honey bee families	
			Min.	Max.
Rapeseed	304	2-3	608	912
Sunflower	290	1-2	290	580
Acacia	849.1	14-18	11887	15283
Linden	64.4	6-11	386	708

Obviously, the number of hives moved for pastoral care in the area will depend on the weather conditions and the number of bee families reared in a stationary system in the commune.

CONCLUSIONS

In the area of Victoria commune there are valuable honey species, such as acacia (849.1 ha), linden (64.4 hectares), rapeseed (304 hectares), and sunflower (290 hectares). The estimated harvestable honey potential in Victoria commune is approx. 332.909 kg. In conditions of stationary beekeeping, at a commodity production of 20 kg/family, the area allows the growth in optimal conditions up to 2.797 bee families.

In conditions of pastoral beekeeping, for the optimal capitalization of the honey potential, up to 15.283 hives for acacia harvesting (283.033 kg), 708 hives for lime harvesting (17.173 kg), 912 hives for rapeseed harvesting (5.066 kg), and 580 hives for sunflower harvesting (5.800 kg) can be brought to the area.

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