THE MELLIFEROUS POTENTIAL QUANTIFICATION

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The present research correspond the implementation of the project n^o 51-058/2007 called „The elaboration and implementation of bee-keeping exploitation models viable in the european economic context" (APIMODEL). After the preliminary calculations regarding the bee families herds for which the researched area can assure sufficient food resources and an adequate production (tab. 5.2.) it resulted a number of aprox. 73 thousands families in the East area and aprox. 29 thousands in the West area, but during the determination of the variations of the melliferous potential it results an efective with 19.4% smaller for the East area and 11.6% smaller in the West area of Romania, the total number reaching aprox. 93.1 thousands bee families. From the report between the number of potential families and the number of existent families it can be determined the degree of utilization of the melliferous given being the necessary correction it results a degree of utilization of the melliferous potential of 53.4% on the entire researched perimeter, 48.2% in the East area and 58.6% in the West area of Romania.

***Key words**: socio-economical research, melliferous potential, methodology*

The melliferous potential or the melliferous resource represents the capacity of an area to ensure the food necessary for the bee families in order to maintain themselves and to obtain apiculture products. It is composed from the pollen and nectar of flowers of the plants in the spontaneous or cultivated flora and the animal origin mana (some insects in the *Homoptera* order) and vegetal.

The particularities of the potential as a production factor are given by the fact that:

- It is being differentiated according to area, time and source species, age of plants, technology applied to cultivated plants, soil conditions etc.;
- It presents certain variability from one year to another depending on the structure on the categories of use of the agricultural land fund. For this reason, it is important the degree of variability determination of the melliferous potential as a report between the harvestable quantity of nectar from cultivated plants (with the exceptions of classic and semi-intensive fruit trees plantations) and the total quantity of harvestable nectar;
- It cannot be capitalized by man than through bees;
- It cannot be stored, but on the contrary – if it is harvested it determines the stimulation of the nectar secretion and otherwise this phenomenon is inhibited and

crystallization can occur (especially in low moisture conditions). It should be clearly understood to know that every day of harvesting lost lead to the irrecoverable lost of these riches. For example, an acacia plantation with a surface of 400 ha offers a 40 t a day quantity and a lime plantation of the same dimension – aprox. 32 t /day.

- It is strongly influenced by weather factors (temperature, humidity, air currents);
- It is difficult to obtain in pure assortments, disadvantage that on the other hand in counteracted by the fact that if offers particularity to each area depending on the share of different plants (the composition of honey is determined through the palinological analysis);
- It cannot be quantified at a zone level, micro zone or surface unit;
- It cannot be appreciated from a value point of view than through the productivity of the bee families;
- It is strongly influenced under a quantitative and qualitative aspect by pollution, bees being, for this reason, some of the most sensitive sensors regarding the environment's quality [1, 2].

MATERIAL AND METHOD

To know the level of usage of the melliferous resources in the researched area, it has taken action to determine the number of bee families which could be maintained in this area as a report between the harvestable honey quantity and the annual consumption of a bee family at a production of 30 kg of harvested honey which is of 121.2 kg/ family. Reporting the existing bee families' herd to the one that could be kept at a maximum load is being determined the level of usage of the melliferous resources [3].

RESULTS AND DISCUSSIONS

Given the particularities mentioned previously, this resource must be treated differentiated against the other resources under the quantity aspect, time and space exposure, structure and quality.

In bee keeping practice, the knowledge of this resource occupies a decisive place that directly influences the dimension and quality of the obtained production.

The determination of the melliferous potential has been realized through the increase of surfaces occupied by species considered of major importance and the average hectare potential and the determination of harvestable honey quantity consisted in reducing the previous results at 1/3 because this is the share of the bee families consumption from the total melliferous resource, the rest being consumed by other insects.

The quantity of honey that can be produced in a vegetation year *(tab.1),* without taking into account the previous considerations, in Romania is of 234522.48 t.

Table 1

The melliferous potential distribution at territorial level

Nr. Crt.	Counties	Melliferous potențial (mii t)	Nr. Crt.	Counties	Melliferous potențial (mii t)
	Total	234522,48			
			21	Harghita	8034,4
1	Alba	6758,0	22	Hunedoara	9462,9
2	Arad	6493,0	23	Ialomița	2067,4
3	Argeş	7909,9	24	Iaşi	3934,1
4	Bacău	7442,6	25	Ilfov	862,0
5	Bihor	6503,3	26	Maramureş	8246,4
6	Bistrița-Năsăud	6014,9	27	Mehedinți	4262,3
7	Botoşani	2978,0	28	Mureş	6517,9
8	Braşov	6062,3	29	Neamț	6770,7
9	Brăila	2228,9	30	Olt	2272,6
10	Buzău	5421,2	31	Prahova	4575,3
11	Caraş-Severin	11240,5	32	Satu Mare	3093,1
12	Călăraşi	1869,5	33	Sălaj	3675,3
13	Cluj	6229,9	34	Sibiu	6242,4
14	Constanța	3002,0	35	Suceava	11256,6
15	Covasna	4475,5	36	Teleorman	1997,7
16	Dâmbovița	3577,4	37	Timiş	4817,7
17	Dolj	3316,9	38	Tulcea	3745,8
18	Galați	2345,7	39	Vâlcea	7554,8
19	Giurgiu	1554,7	40	Vaslui	3395,0
20	Gorj	7048,7	41	Vrancea	5231,2

This determination has been made for the year 2007, but there are differences from one year to another depending on the cultures structure (for cultivated species) and the weather factors, reason for which is imposed the determination of the degree of variability of this level because in underpins the establishment of cargo at an optimal level with bee families at the maximum level of production per bee family.

From the melliferous potential structure results that 4.2 and 0.5 percents are represented by sunflower cultures and, respectively, vegetables, cultures that can modify their surfaces year after year. The surface of this culture can be reduce to elimination depending on the socio-economical conjuncture, they determining an important short term variability (annual even) that can be determined as a report between the share that this potential holds in the total melliferous potential.

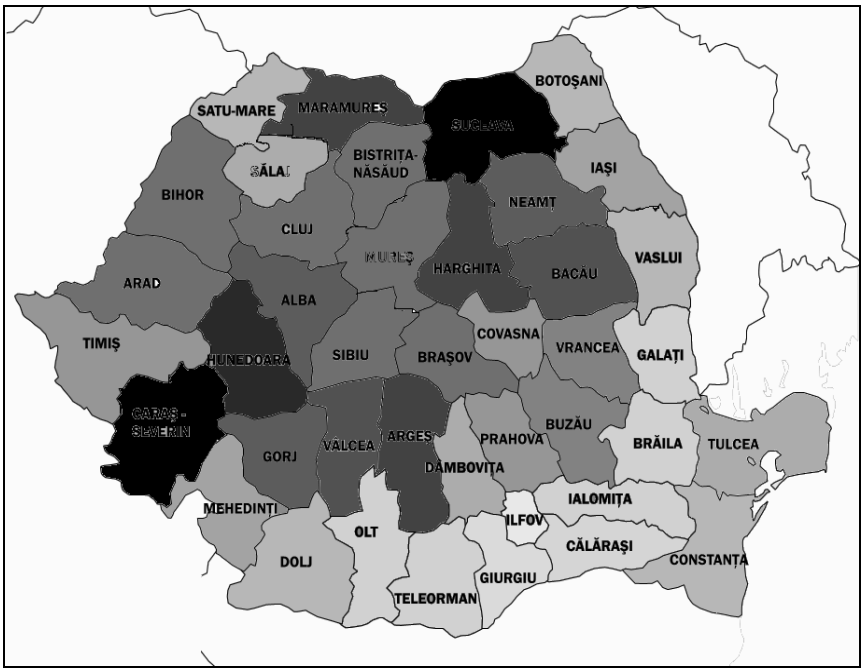

Figure 1 **The melliferous potential distribution at territorial level**

Thus, after this criteria, the short term variability of the East area is 5.1% and of the West area of 3.5% as a sum of the shares of annual cultures in the total potential. For the entire area, the annual variability of the volume of melliferous resources represents aprox. 4.7%, resulting a safety margin of 95.3%.

If, through the same process, is trying to determine the short term variability (2-10 years) results a reduction of the melliferous safety margin with 0.8% at the level of the total area.

It remains a big unknown – the one regarding the influence of climatic factors on the melliferous resources available in the bee hives coverage area in the apiculture farms, in which it's being decided the development of the production capacity (of the bee family herds) or starting new apiculture farms.

Both for the overall diagnosis realization on extended areas, as well as for establishing the degree of coverage for the necessary nectar of bee hives belonging to various beekeepers, is necessary to know the degree in which is influenced the nectar resource by factors such as air humidity, precipitations, air temperature, etc.[3] .

The decedents of bee keeping exploitations must be able to appreciate the influence of climatic factors of average productions registered in previous years, the amplitude of these variations representing in fact the degree of uncertainty that the melliferous resource holds in that area.

The average multi annual variation of productions reported to their average assures, in fact, an image of the degree of unaccomplishment of apiculture

production and, in consequence, of the quantitative safety of the melliferous potential.

From the natural factors influence point of view, the beekeepers in the East area must take into consideration in the multi annual analysis a production variation of 13.5% and those in the West area of 3.2%. The average of this phenomenon is 16.7%, representing the variation at the level of the researched area. This indicator does not represent the simple arithmetic average of variations on counties, but the average multi annual variation of the productions of the two areas reported to the average of their productions*(fig.1)*.

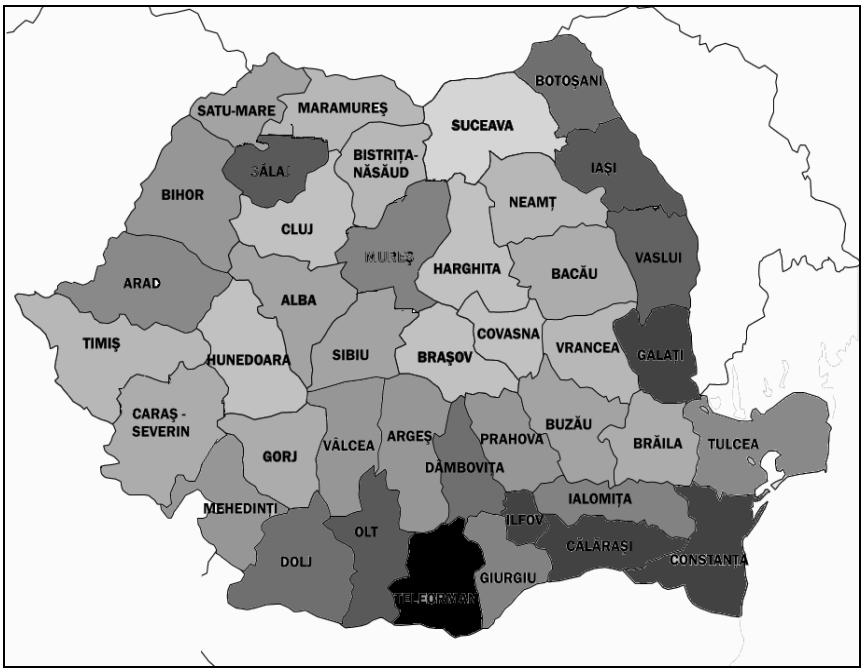

Figure 2 **The degree of coverage with bee families**

Through the aggregation of this variability levels results that melliferous potential specific to the eastern area, after the quantification of the evolution of resources offered by the species of plants and groups of species analyzed in this research can vary in the East area with 19.4% and in the West area with 11.6% resulting a safety level of the melliferous resource of 80.6, respectively of 88.4. Sure that this safety level can be considered satisfactory, representing an average level for the researched area and the average of researched years.

After preliminary calculations regarding the bees families herds for which the researched area can ensure sufficient food resources and an adequate production *(fig.2),* resulted a number of aprox. 73 thousands families in the East area and aprox. 29 thousands in the West area, but during the determination of the melliferous potential variations results a herd with 19.4% smaller in the East area and with 11.6% smaller in the West area of Romania, the total number reaching aprox. 93.1 thousands bee families.

From the report between the potential families number and the existent bee families number the melliferous potential degree of usage can be determined; given being the necessary correction results a melliferous potential degree of usage of 53.4% on the entire researched perimeter, 48.2% in the East area and 58.6 in the West area of Romania.

CONCLUSIONS

In the East area, the bees' families herd can grow opposite to the present herd with 157.5%, i.e. aprox. 45 thousands bees families and in the West area with 70.6% representing aprox. 12 thousands bees' families. On the entire researched area, in the condition in which in has been appreciated, the potentials` variability to the cultures structure and to the natural factors can support aprox. 57 thousands bees' families representing 125.4% of the present herd.

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