

THE POTENTIAL OF ROMANIAN BEEKEEPING

BĂLOI ANGEL CRISTIAN¹, IOAN CSÖSZ¹, MARTIN SIMONA CRISTINA¹, ANGELA BOGLUȚ²

¹ *University of Agricultural Sciences and Veterinary Medicine of Banat Timișoara,
Faculty of Agricultural Management, angelbaloi@yahoo.com*

² *Psychological individual Cabinet Angela Bogluț, Timisoara, Romania*

Abstract: *The Flora is rich and varied, encompassing over 300 nectaro-bee species. The most important share of rapeseed species (especially in recent years when the cultivated areas have increased significantly, and this is due to the production of biodiesel fuels, what has made this the rape picked to become a senior, picked when in addition to the development of the bee families, and an important marketable honey production), Acacia, lime, sunflower, forage, pasture and meadows. Of particular importance in achieving constant yields of honey-a harvest of Manna sources have, coming from the secretions of plants. Honeydew honey is rich in mineral salts, popular among consumers, but it is harmful to bees embedded in the their winter reserves.*

Romania has more than 11 million hectares of multifarious flora, half of which is agricultural and half is logging. However 80% of marketed production of honey in the country is provided by the varieties and hybrids of sunflower seeds, Acacia and Linden forests. Producing quality honey is a matter of prestige, the main criterion for classifying apiculture products shall become just the quality of the products delivered, the presentation, selection and varieties.

Key words: *nectaro-pest species; honey; apiculture products; matrix potential.*

INTRODUCTION

Beekeeping in Romania and is one of the sectors of agriculture with the oldest traditions. Thracians and Dacians, ancestors of the Romanian people were involved from which it obtains bee honey, wax and other bee products.

Honey is a very pleasant food, nutritious, with high biological value and calorific value (3150 kcal). Therefore, honey was used by Greek athletes before entering the Olympic arena, and today it is recommended to climbers, athletes, and also entering recipes of astronauts. Honey is an easily digestible product as bees, the biochemical process invert sucrose turned two of its components, into glucose and fructose, so it is basically digested. Due to the presence or of real honey has an antibacterial property. It was used by the Romans to preserve game raw, and the embalming. And today is used in lung, heart, stomach, liver, skin, eye, treatment of neuroses, etc. The basis of our country's honey bee sums up a total surface of over 5 million hectares, of which 3 million acres it can harness the bee by picking up maintenance and production. From the area of 3 million hectares, most, ~ 60% is represented by forest species and ~ 40% of cultivated plants and wild species. As the structure and size, the honey suffers permanent changes.

MATERIALS AND METHODS

The main methods used were analysis and synthesis. We analyzed the potential of honey and bee resources of Romania after studying the areas with the greatest potential and the main honey plants in Romania.

RESULTS OF THE RESEARCH

Stub or resource potential is the ability of a honey-bee areas to provide necessary food for the bee families for maintenance and production of bee products. It is composed of the pollen and nectar of flowers from plants of cultivated or spontaneous flora and animal hand (some insects in the order Homoptera) and plant. Characteristics of the

potential as a factor of production is given by the fact that: differentiated according to area, time and source species, plant age, technology applied to plants grown, soil conditions, etc; presents a certain variability from one year to the next depending on the structure by category of use of the Land Fund. For this reason it is important to determine the degree of variability of the potential stub, as the ratio between the quantity of harvestable nectar, derived from cultivated plants (except classical tree plantations and the semi-intensive) and total quantity of harvestable nectar; cannot be utilized by humans than by honey bees; cannot be saved but on the contrary-if harvested nectar secretion stimulation causes and otherwise is inhibited this phenomenon and even the crystallization may occur (especially in low humidity conditions). Must be well understood to know that every day lost to picking an unrecoverable loss of wealth. For example, a Locust Grove with an area of 400 ha offers a quantity of 40t per day and one lime similar in size — about 32t/day. Is strongly influenced by climatic factors (temperature, humidity, air currents); it is heavily influenced by climatic factors (temperature, humidity, air currents); it is difficult to obtain pure disadvantage assortment which on the other hand is countered by the fact that it has the peculiarity of each zone depending on the share of certain plants (the composition of honey is determined by analyzing the palynology); cannot be precisely quantified at the level of the area, micro-area or surface unit; they can be appreciated in value terms than through productivity bee families.

There are numerous Springs, archaeological, folkloric sources which prove the continuity of beekeeping in the Carpatian-Danubian-Pontic space. Beekeeping as a branch of agriculture is beneficial in that the bees have an important contribution to raising yields through pollination.

Beekeeping as a branch of livestock, has as main objectives the increase number of bee families and making larger and always works. To achieve these objectives, in addition to the application of new technologies and the growth of modern bees, a decisive role is ensuring an efficient use of all the resources of honey. The basis of our country has a total surface of over 5 million hectares, of which 3 million acres it can harness the bee by picking on the maintenance and production.

In the area of 3 hectares, the most million ~ 60% is forest and species represented ~ 40% of agricultural plant species cultivated and spontaneous. The structure and surface of the nectareous area suffering from permanent changes.

In terms of climate and flora of our country differentiates 6 types of picking predominantly, whom they correspond to 6 Bio-Bee areas, namely:

1. THE ROMANIAN PLAIN AND DOBRUDJA. This area is characterized by continental climate with an annual average temperature above + 10 ° c and annual precipitation between 400-600 mm. Flora is typical of steppe and forest-steppe. Acacia plantations predominate ~ 60,000 ha in Olt and Dolj county forms the massive national interest, then lime, in thunderstorms forest, the best known being those of Northern Dobrogea-20,000 hectares, sunflowers, which, at the national level in recent years oscillates around the figure of 1 million ha, vegetation, especially Mint, in the DANUBE DELTA and FLOODPLAIN areas and small natural grasslands (Sagethyme, white clover, vetch, and Oak).

2. THE MOLDAVIAN PLATEAU. Climate similar to the above, by 1-2° C lower and with annual precipitation of 500-600. A multifarious Flora is represented, firstly, the massive lime in the surface occupies approximately 22000 hectares, then picking the main Acacia (South) and sunflower (to the North).

3. THE AREA - WESTERN PLAINS. The climate in this area is characterized by annual average temperatures of 8 to 11 ° C, and precipitation of 500-700. Picking from this area is similar to that of the first.

4. THE AREA – TRANSYLVANIA. The average temperature is 8-9 ° C and the precipitation of 600-700 mm. is a mixed area, cereal, fruit and pasture and meadow. Picking is moderate, but continuous, highlighting the main picking supplied during the summer pasture and meadow.

5. MOUNTAIN AREA. Comprises the Carpathian Mountains and the Subcarpathian Hills high. The average temperature is 4-8 ° C and precipitation 700-1100 mm. multifarious Flora consists of fruit plantations, and the flying raspberries. 2 main pickings manifests itself most strongly, i.e. raspberry, flying and manna (underutilized at present).

6. CARPATHIAN SLOPES. Picking the leading in trees, pasture and meadow throughout the period.

Since bees feed based solely on products of plant origin, their life is in constant connection with plants. Thus, the demand for hydrocarbon substances (sugary), bees collect nectar and honeydew, and to meet the needs of proteins, minerals, fats and vitamins they pollen flowers. In the case of plants which are characterized by a high productivity of pollen, can include: pledge (*salix cinerea*), willow (*salix caprea*), cherry (*prunus avium*), Apple (*malus domestica*), autumn rapeseed (*brassica napus*), dandelions, the local maple, white mustard, rapeseed, sparceta, raspberries (*rubus idaeus*), corn, pumpkin, sorghum.

Nectar is a complex product, secreted by glands in the form of a nectareous sugar, sweet liquid. As regards the amount of nectar that can secrete a flower in a single day, it can vary greatly: from mint 0.04-0.08 mg good\fl and can reach 8 mg\fl at pumpkin. The intensity with which the bees visit flowers is closely related to the concentration of sugar in the nectar and is optimal between 40-50%. The limits of variation are between 7-75%; If it is diluted as the lower limit, the bees do not collect as well, if it's too concentrated.

Characterization of potential stub

Stub or resource potential is the ability of a honey bee areas to provide necessary food for the bee families for maintenance and production of bee products. It is composed of the pollen and nectar of flowers from plants of cultivated or spontaneous flora and animal hand (some insects in the order Homoptera) and plant.

Characteristics of the potential as a factor of production is given by the fact that:

- differentiates according to area, time and source species, plant age, technology applied to plants grown, soil conditions, etc;

- presenting a certain variability from one year to the next depending on the structure by category of use of the Land Fund. For this reason it is important to determine the degree of variability of the potential stub, as the ratio between the quantity of harvested nectar, derived from cultivated plants (except classical tree plantations and the semi-intensive) and the total quantity of collected nectar;

- may not be utilized by humans than by honey bees;

- can't be saved but on the contrary-if harvested nectar secretion stimulation causes and otherwise is inhibited this phenomenon and even the crystallization may occur (especially in low humidity conditions). Must be well understood to know that every day lost to picking an unrecoverable loss of wealth. For example, a Locust Grove with an area of 400 ha offers a quantity of 40t per day and one lime similar in size — about 32t/day.

- is strongly influenced by climatic factors (temperature, humidity, air currents);

- it is difficult to obtain pure disadvantage assortment which on the other hand is countered by the fact that it has the peculiarity of each zone depending on the share of certain plants (the composition of honey is determined by analyzing the palynology);

- it cannot be precisely quantified at the level of the area, micro-area or surface unit;
- there can be appreciated in value terms than through productivity bee families.

Is strongly influenced quantitatively and qualitatively by pollution, being some of the most sensitive sensors in terms of environmental quality.

Quantification of potential stub

Given the peculiarities mentioned above, this resource should be treated distinctly from other resources in terms of quantity, time and space arrangement, structure and quality (table 1). In beekeeping practice, knowledge of resource it is employed — because it directly influences the size and quality of the production.

Determination of potential stub was done by multiplying the area occupied by the species considered to be of major importance and environmental potential per hectare and the determination of the amount of honey harvested consisted in reducing the previous result at 1/3 since this is the share of consumption of bee families from Western resources, the rest being consumed by other insects (1,7). The quantity of honey that can occur in one year, without taking into account the previous considerations, in Romania it is 234522,48 t.

This determination has been made for 2005 but there are differences from one year to the next depending on the structure of cultures (cultivated species) and climatic factors, which is why it is necessary to establish the degree of variability of this level because it is the basis for determining the optimum load with families of bees and the maximum levels of production per family.

The result is that potential stub structure 4.2 and 0.5 percentage points are represented by the sunflower crops and vegetables, crops that can alter the surface every year. The surface of these cultures can be reduced to remove depending on the socio-economic situation, causing a significant variability in the short term (annual) which can be determined as the ratio between the share that you hold this potential of the total potential stub.

Table 1

Stub potential nationally and on counties

Nr. crt.	Counties	Stub potential (t)	Nr. crt.	Counties	Stub potential (t)
		Total 234.522,5	21	Harghita	8.034,4
1	Alba	6.758,0	22	Hunedoara	9.462,9
2	Arad	6.493,0	23	Ialomița	2.067,4
3	Argeș	7.909,9	24	Iași	3.934,1
4	Bacău	7.442,6	25	Ilfov	862,0
5	Bihor	6.503,3	26	Maramureș	8.246,4
6	Bistrița-Năsăud	6.014,9	27	Mehedinți	4.262,3
7	Botoșani	2.978,0	28	Mureș	6.517,9
8	Brașov	6.062,3	29	Neamț	6.770,7
9	Brăila	2.228,9	30	Olt	2.272,6
10	Buzău	5.421,2	31	Prahova	4.575,3
11	Caraș-Severin	11.240,5	32	Satu Mare	3.093,1
12	Călărași	1.869,5	33	Sălaj	3.675,3
13	Cluj	6.229,9	34	Sibiu	6.242,4
14	Constanța	3.002,0	35	Suceava	11.256,6
15	Covasna	4.475,5	36	Teleorman	1.997,7
16	Dâmbovița	3.577,4	37	Timiș	4.817,7
17	Dolj	3.316,9	38	Tulcea	3.745,8
18	Galați	2.345,7	39	Vâlcea	7.554,8
19	Giurgiu	1.554,7	40	Vaslui	3.395,0
20	Gorj	7.048,7	41	Vrancea	5.231,2

The main bee plants in Romania

The Flora is rich and varied, encompassing over 300 nectaro-bee species. The most important share of rapeseed species (especially in recent years when the cultivated areas have increased significantly, and this is due to the production of biodiesel fuels, what has made this the rape picked to become a senior, picked when in addition to the development of the bee families, and an important marketable honey production), Acacia, lime, sunflower, forage, pasture and meadows.

Of particular importance in achieving constant yields of honey-a harvest of Manna sources have, coming from the secretions of plants. Honeydew honey is rich in mineral salts, popular among consumers, but it is harmful to bees embedded in the their winter reserves.

Romania has more than 11 million hectares of multifarious flora, half of which is agricultural and half is logging. However 80% of marketed production of honey in the country is provided by the varieties and hybrids of sunflower seeds, Acacia and Linden forests.

A multifarious Flora of Romania, has a potential of over 200 thousand tons of honey, can provide good conditions to more than 1.7 million families and can achieve a yield of 35 thousand tons of cargo per year.

Turnip



Turnip (*Brassica napus* ssp L DC) is a plant native to the Mediterranean, with a wide use in the Middle Ages in Central and Northern European countries, because of oil from seeds, used in food and for lighting.

Canadian experts consider current oilseed rape by plant breeders genetically invented by conventional methods and to distinguish it from traditional rapeseed and canola were given names (Canadian oil law erucic acid). The high content of rapeseed oil - between 43 and 52% in the cultivation of "00" and hybrids - as well as the protein content of 21-24%, the turnip in oleo-protein plants. Therefore, turnip enjoys attention in the European Union, which recommends increasing the area occupied by this plant, but not at the expense of food crops. Turnip honey is harvested in May, if it comes from autumn sowings. Coloration is very weak, not exceeding 35 mm Pfund scale (graduated from 0 to 140mm). Specific smell is reminiscent of cabbage. However, the taste is very pleasant, not so sweet. The water content is quite high, 18%, due to the rush to harvest honey combs rape can crystallize even becoming impossible to extract. The pH value is relatively high and relatively weak acid - (ph = 4, the total acidity of the order of 15 meq./Kg). Very low electrical conductivity indicates a low mineral content.

Acacia white



Acacia (*Robinia pseudacacia*), was introduced in our country in the late eighteenth century. currently occupies 120 000 hectares, is located in the lowland and being compact bodies.

It is a drought-resistant tree and loving light, less pretentious than sol, abundant and handle flourishes each year. In atmospheric favorable conditions to the average length of blooming is 12-14 days, with a particularly large nectareous capacity, 1000-1200 kg/hectare. Honeymoon. The thriving from Locust outbreak occurs on or around May 15, and will be extended until the end of June, depending on altitude and conditions connected to each zone.

With strong families, practicing pastoral beekeeping, were often produced 25 kg acacia honey-bee family.

The most famous Acacia forests in the country at picking early are in the counties of:

- DOLJ: Cerbu, Ciuperceni, Maglavit, Cioace, Dervaica, Tunari, Apele Vii, Mârşani, Rudari.
- MEHEDINȚI: Balta Verde; Jianu Mare; Crivina, Cureaua Lungă; Pătule, Gârla Mare; Vrața.
- GALAȚI: Hanul Conachi; Lieşti, Buceşti, Bălăbăneşti, Târgu Bujor.
- BRĂILA: Tătaru, Râmnicelul, Însurăţei, Cioara.
- BUZĂU: Ruşetu, Largu.
- IALOMIȚA: Groasa, Ileana, Tămădău, Pasărea, Moldoveni, Dridu.
- ILFOV: Râioasa, Săbăreni, Valea Mocanului.
- TELEORMAN: Cervenia, Bârseşti, Brânceni, N.Bălcescu.
- DÂMBOVIȚA: Mătăsaru.
- CONSTANȚA: Cernavodă, Vişoara, Cobadin, Cumpăna, Dumbrăveni, Ciocârlia, Vadu.
- BIHOR: Valea lui Mihai, Săcuieni, Simian.
- SATU MARE: Careii Mari, Sanislau.
- TIMIȘ: Alioş, Remetea Mică.
- The most famous Acacia forests in the country at picking (blooms later than 10 days) are in the counties of:
- MEHEDINȚI: Ilovăţ, Siseşti, Vodiţă, Colibaşi, Balata
- OLT: Leleasca, Sâmbureşti, Dobroteasa, Spieni, Aluniş.
- VÂLCEA: Sirineasa, Brânceşti, Mihăieşti, Bălceşti, Livezeni, Zetreni, Stroeşti, Muereasca, Călimaneşti, Olăneşti, Cheia, Brezoiu, Voineasa, Horezu.
- ARGEŞ: Vedeia, Samara, Albota, Cerbu, Moşoaia, Băiculeşti, Drăganu.
- PRAHOVA: Izvoarele, Vălenii de Munte, Predealu-Sărari, Cărbuneşti, Teişani, Homorociu.
- ALBA: Vânt, Măhăceni, Meteşti.

LindenTree



Lime in our forests comprises three species: the big leaf Linden (*Tilia phyllos*); the small leaf Linden (*Tilia cordate*) and lime (*Tilia tomentosa*). Flowering period and nectareous capacity is different in the three species of lime.

Linden leafy large blooms at the beginning Monday of June and produce 800 kilos\hectare. Honey-moon the linden tree with small leaf blooms later than 10-14 days and 100 kg of honey\ha. White or silver Linden Tree blooms around the time of June 25 and has the highest honey bee, respectively 1200 capacity kg\ha. There are years when the massive, producing linden tree 20-30 kg of honey\bee family.

The most important massive lime are:

- TULCEA (17000 ha): Cetățuia, Niculițel, Luncavița, Babadag, Ciucurova, Topolog.
- IAȘI (15000 ha): Bârsani, Grajduri, Ciurea, Mironeasa, Poieni,.
- CARAȘ SEVERIN (5700 ha): Rama, Bocșa Montană, Bocșa Română, Bozovici, Bergeasca, Băile Herculane, Valea Smârdei.
- ILFOV + GIURGIU (5500 ha): Lipia, Bojdani, Snagov, Cioflăceni, Scroviștea, Mihai Bravu, Călugăreni, Vânători Mici, Căscioarele, Malu Spart, Pustnicu, Cernica, etc.

Picking at the linden tree does not show the degree of intensity of the Acacia, however can be carried out in favorable weather conditions, daily increases between 1 and 8 kg honey\bee family.

Sunflower

Sunflower (*Helianthus annuus*), is of particular importance for apiculture, is characterized by a high potential nectareous. In our country are grown annually around 900 0000 ha, is in second place in Europe after France.

The main sunflower growing counties are: Ialomița, Călărași, Ilfov, Constanța, Teleorman, Giurgiu, Brăila, Timiș, Arad, Romania, Buzău, Galați.

Sunflower blooms in the second half of June and early July, with a duration of thriving 2-3 weeks. From a hectare of sunflower seeds are obtained 34 – 130 kg of honey.

40% of the Romanian honey is obtained from the harvesting of nectar from sunflower seeds.

In crops of sunflowers in the Danube Plain get 15-30 kg of honey bee family\cargo.

It was determined that the optimum temperature for the abundant nectar secretion at this plant is 28-32°C. Nectar secretion is influenced by the ability of nectareous and of the variety grown.

Other nectareous plants which give high yields of honey are: the California Bluebell (300-1000 kg\ha); Maple (300-600 kg\ha); coriander (100-500 kg\ha); White melilot (200-500 kg\ha); sparceta (120-300 kg\ha); etc.

From the multitude of ways of improving the bee should be chosen the most judicious, appropriate goals or major interest of the beekeeper (special production, pollination of crops and etc.).

In close dependency on this problematic is the restoration potential of nectareous of the country, seriously affected due to malfunctions manifested after 1990, especially through the uncontrolled deforestation and reforestation in mismatch.

Forest species with potentially high nectareous (*Acacia*, lime and others) must be in a greater extent, to the attention of the sectors concerned, which can mean switching to facts in the sense of increasing the area replanted with trees and shrubs or nectareous areas with the spontaneous flora. Some studies could be undertaken in order to increase the sources of natural resins production source for forest species propolis. The establishment of experimental plantations for locations with lots of unusual species: *Sophora japonica*, *Euodia hupehensis*, *Gleditschia triacanthos*, *Paulownia tomentosa*, and others, could

provide data specific to new areas of interest for beekeeping (flowering period, its duration, determine the potential of nectareous, etc.).

Increase potential stub of forests, an efficient use of the capacity of their honey are objectives pursued by the foresters, but mostly holders of hives, the resultant increase in the quantity of safe products and derivatives of beekeeping.

CONCLUSIONS

Increasing consumer preferences for honey products stimulates the expansion of the range and variety of food honey. Moreover, honey contains antioxidants, minerals, vitamins and proteins, that features an attractive ingredient argue that compared to artificial sweeteners.

Beekeepers have failed after 2007 to introduce new technologies in the process of raising bees, and the new European rules on bee treatments resulted in an improvement in the quality of honey.

Sustaining and reviving Romanian beekeeping sector is necessary as concerns and downstream sector by employment what makes and processing apiculture products intended to ensure the manufacture of preparations based on these products, as well as consumer and commercial network that undoing these products.

REFERENCES

1. **FISHPOOL, K., GULLIFORD R.**, *Making a Business Plan for a Commercial Apiary*, Apiacta 2, 2002
2. **MĂRGHITAȘ, L.**, *Albinele și produsele lor*, Ed. Ceres, București, 2005
3. **PETRUȘ, V., OPRIȘAN, I.**, *Apicultura și baza meliferă*, Ed. Agro-Silvică, București, 1965
4. **STANCIU S. M., TABĂRĂ AMÂNAR C.G.**, Heritage silvic theft according to the Forestry Code, Law 46/2008, Journal of Horticulture, Forestry and Biotechnology, vol 15, (4), ISSN: 2066-1797, USAMVB Timisoara, 2011
5. *** - *Colecția Revistei România apicolă*, București