THE APICULTURE. MAINTENANCE SYSTEMS OF HIVES IN ROMANIA

APICULTURA. SISTEME DE INTRETINERE A STUPILOR IN ROMANIA

A. BALOI[1], I. CSŐSZ[1], SIMONA CRISTINA MARTIN[1], OANA IANOŞEVICI[1]

[1]Banat's University of Agricultural Sciences and Veterinary Medicine Timişoara, Agricultural Management Faculty, Timisoara, Romania; angelbaloi@yahoo.com

Abstract: *Over time, the Romanian apiculture has registered outstanding success, due to the favorable pedoclimatic factors, as well as the existence of a great value technical framework. The aim of bee breeding results from the necessity of crop pollination, as well as getting increasingly higher honey, pollen, propolis (bee blue) or wax productions, necessary for the human consumption or their widespread use in the industry. This paper proposes, primarily, the presentation of beekeeping activity in Romania and secondly, the presentation of the main hives maintenance systems. The authors will also propose some perspectives about the apicultural activities: the establishment of the apicultural regional processing centers, marketing units for our apicultural products, the coordination of plumbing standards for apicultural products with the other products.*

Key words: *hive, grants, beekeeping system, methods, Warre, Layens*

INTRODUCTION

The apiculture in Romania (beekeeping) is one of the agricultural sectors with the oldest traditions. There are also many other historical sources, archaeological discoveries, folkloric sources which attests the continuity of beekeeping in the Carpatho-Danubian-Pontic area.

The apiculture, as a branch of agriculture is a beneficial activity by the fact that the bees have an important contribution to increase crops through pollination. In 2011, the honey production in Romania was 21.000 tons, while the pollen production amounted to 50-60 tons, and the propolis production was 25-30 tons. Of the total production, more than 60% was exported to countries such as Germany, Britain, Italy, France, Austria, but also to U.S., Canada, Japan or China.

European Commission approved the national programs for all 27 EU Member States to improve the production and marketing of apicultural products, increasing the annual support from 26 million in 2008-2010 to 32 million in 2011-2013. As the measure 141 can be accessed, the beekeeper must have registered all the 27 bee families in agricultural register, open a farm to the veterinarian that belongs (to be passed with number in farms record), have a stable hearth apiary (in ownership or rented - with contract) and have less than 35 years. For the 27 bee family, in the third year, the beekeeper has to reach 66 bee families and to increase the production with 20%.

The actions approved in the apicultural National Programme for 2011-2013 to grant financial aid are: printing and replication of best practices Guideline for apiculture and information materials; the acquisition of medications, biological products and nutritional supplements used to treat varroasis in conventional and ecological apiculture, queen bees acquisition, package bees, swarm on combs and bee families for the recovery of hives livestock, etc.

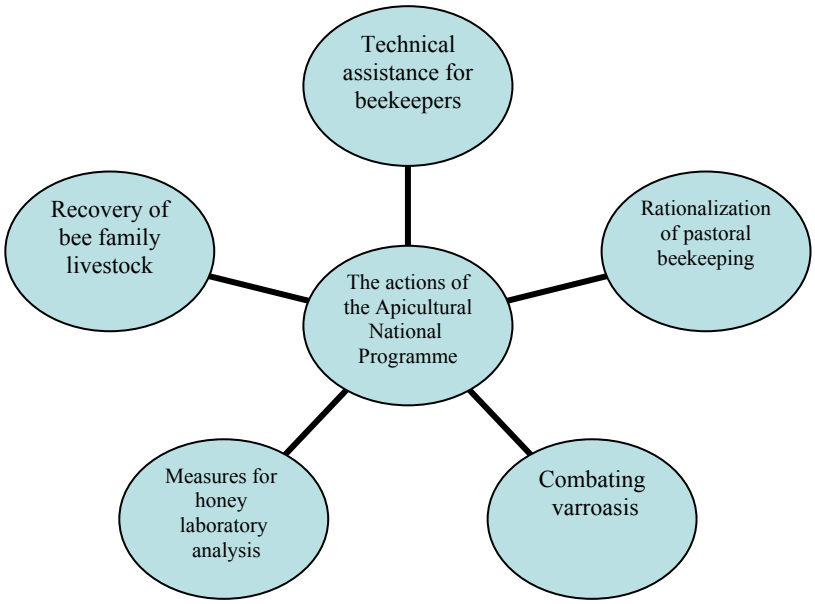


Figure 1. The actions covered by the Apicultural National Programme

The approved contributions are: for 2011: 3.473.395 euro - Community contribution and 14.701.144 lei - national contribution; for 2012: 3.462.218 euro – Community contribution and 14.653.837 lei - national contribution and for 2013 (3.446.343 euro Community contribution and 14.586.646 lei - national contribution.

MATERIALS AND METHODS

The authors of this paper have completed three phases. In the first phase, it has been required a theoretical and bibliographical documentation concerning the apiculture in Romania; it has been defined the issue and formulation of the main hypotheses in order to constitute an explanatory and convincing model, inducing the importance and activity of the researched subject. The second phase – on the ground – has been one of most

important, concerning the identification of the main apicultural areas and the maintenance systems of beehives. The final phase has been drawn up and completed by the collected information. The drafting of this paper was made in laboratory, based on the notes from the ground, the existing material and consulted bibliography.

RESULTS AND DISCUSSIONS

The Romanian territory was divided into six specific apicultural areas called biapicultural areas. These areas are distinguished by relief form, altitude and longitude - decisive factor for volume and melliferous potential distribution. Thus, it will be able to get information about the differences of maintenance systems, obtained production, level of costs, their structure, etc. (Raus, 2007).

The maintenance systems of hives. The hive was most often a special field, of the inventiveness, just because the variability of bee ball size, in summer or winter, must be correlated with the volume size of hive.

The table 1 shows the main types of hives found in Romania, depending on depth, length, width and height.

Table 1. Types of hives in Romania

	Multistage (frame 3/4)	**Vertical (Frame 1/1)**	**Horizontal (frame 1/1)**	**Store (frame 1/2)**
Wall depth	20 mm	20 mm	20 mm	20 mm
Length (ext/int)	490 mm/450mm	490 mm/450mm		490 mm/450mm
Width (ext/int)	420 mm/380mm	420 mm/380mm		420 mm/380mm
Body heigth	245 mm	310 mm	310 mm	170 mm

The horizontal hive. The horizontal hive with 23 frames is one of the most common types of hives in our country. The horizontal hive has certain advantages, namely: it can be worked easier, because there is no

need to handle the heavy hive bodies, it is indicated for the movement of bee families to different harvest or for the pollination of entomophile agricultural crops. Also, in this type of hive, it can accommodate both a strong family with a single-queen and two families (supporting family, swarm or nucleus). The bee family's development is realized on horizontal line, the beekeeper adding combs family as the power of bee family increases or when it appears a main harvest. Everything can be compared a wagon system house without floor and where live many generations. The living space extending is done by adding new rooms, each equipped with utilities, though part of a whole.

The vertical hive. In the apicultural practice, in our country, the vertical hive with body and store is standardized. In this type of hive, bee family development is also done horizontally to the ground, as in the horizontal hive. The difference between them is that, in addition to frames of the nest, of 300 mm, where the bees grow juvenile, the vertical hive has small frames put into stores placed over body where the bees make exclusively honey. The advantage of this type of hive is, in this case, the clear differentiation between the nest and frames where the honey can be extracted; the ease to extract honey and the fact that the bee family is bothered barely at the extraction. The bottom of the hive is fixed. The vertical hive with store is suitable for the pastoral beekeeping because it allows to take the stores from body; their transport separately; so it is easier than the horizontal hive and this allows to obtain honey of quality; on the different types of flora.

The multistage hive. The multistage hive is conceived after Langstroth and Rooth hive type and belongs to the vertical hives category of high capacity. Basically, during a great picking, the volume of hive can be increased very much by overlapping two, three or more bodies. Although, it requires certain training in handling bodies, this type of hive is the most mobile, allowing the use of the newest and efficient methods for increasing and exploitation of the bee families. It is also recommended because it provides to the bees growing conditions similar to natural (hollow), the nest developing vertically from the ground. The main advantages of the multistage hive are: ensures a strong families development; respects their vertical development and by giving them enough space; the pieces are mobile and can be changed/cleaned/replaced easily; allows the handling to

the frame groups of frames with the entire body instead of handling each frame separately, such as the horizontal hive, reducing through this the beekeeper workload.

Layens hive. The hive bearing the name of inventor (Georges Layens) resembles to standard horizontal hive in Romania. A major difference makes it the size and the positioning of the frame. This method of maintenance is specially designed for beekeepers that don't have much time to take care of bees. The method is suitable to be applied when it is used the horizontal hives with 16 frames. To spend the winter in a satisfactory way, in autumn, the nest shrinks and packs. If we want to multiply the bee family, we divide the hive with a seal diaphragm. The agricultural framework, expressed by organization of an apicultural farm with this hive system, provides a maximum efficiency of bee family development, and the longevity of the biological material is less dependent on environmental factors. The apicultural farm location with this hive system is not restricted by weather conditions. It is the hive system that fits perfectly with the biological requirements of the honey

Warre hive, recently introduced in our country, but having many similarities with the traditional beekeeping in baskets, is actually a curiosity and an attraction for those who want to get involved in beekeeping for pleasure, to live near the bees and to create them such an environment as close as possible to the natural. This hive model was developed in France by abbot Émile Warre. It develops vertically from the ground and borrows many elements of a wild bee swarm development from a hollow tree. Working methods are developed so as to interfere as little as possible or almost never in the bee family nest. In this sense, when the family needs new combs we must add an empty storey (with top bars with starters) under the last storey of the hive. Feeling the lack of space for the Queen (the nectar is stored in the superior storeys and the family descends downward with the development), the bees work in the empty storey building the combs.

CONCLUSIONS

The study anticipates and stimulates, in the bee farm, the achievement of objectives with their own means highlighting the basic

components of human activities such as: the issue of ideas, actions, human factors, their effectiveness in the apicultural practice

By increasing and maintaining the bee families in different types of hives, the beekeepers have always intended to ensure the optimal conditions for the development of the bee colony, in order to obtain high yields of honey, wax and other apicultural products, and implicitly, an appropriate economic income. The bee colony management development and its exploitation are differently done depending on the type of hive where it is maintained.

In the maintenance of bees, it must be chosen the most advantageous beekeeping system that can be practiced by beekeepers, according to the development degree of apicultural farm, production objectives, genetic material quality from the apiary, climatic conditions and picking specific to the area where the beekeeper practices this age-old profession.

If these major goals would be achieved it would provide a decent living or even evolutionary, would retain the employment on native places, would raise the level of population's health through the consumption of natural products, would reduce health expenditure, would increase the population immunity.

The following lines will propose few perspectives about the apicultural activities coming up in addition to the reasons presented above: establishment of regional apicultural processing centers; establishment of representative offices, marketing units for apicultural products; coordination of health rules for bee products with other products, in order to eliminate the current existing discrepancies.

REFERENCES

1. **BÂRCĂ Gh., ROSENTHAL C., ROŞCA O**., 1968, *Piscicultura, Apicultura, Sericicultura*, Editura Didactică şi Pedagogică, Bucureşti.
2. **BURA M., PĂTRUICĂ S,** 2004, *Elemente practice de tehnologie apicolă*, Editura de Vest,Timişoara

3. **ISTRATIE D**., 2010, *Studii privind întreținerea familiilor de albine în stupii orizontali Layens şi Dadant*, Buletinul AGIR nr. 2-3/2010, aprilie-septembrie
4. **KOVÁCS Á.,** 2006, *Apicultura în Euroregiunea DKMT, « Cămara Euroregiunii »,* Conferință de specialitate, Editura DKMT Kht. Szeged.
5. **PAVALIUC P.P., CONDRATIUC Ş. GH**., 2006, Efectele produselor apicole. Apicultura ecologică şi sănătatea omului, Ed. „Tipografia Centrală", Chişinău.
6. **RAUS L.,** 2007, *PNCDI II, Contract PC, nr. 51-058/2007: Elaborarea si implementarea unor modele de exploatatii apicole viabile in contextul economic european*. Cercetator/Specialist. Raport de cercetare I, alegerea metodei de cercetare si procurarea de materiale si echipamente
7. *** http://www.apia.org.ro
8. *** http://www.piataagricola.eu
9. *** http://www.madr.ro