

VARROA DISEASE IN HONEY BEES*

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The International Symposium on Varroa Disease was organized by the Central Board of Apiculture of the Ministry of Agriculture and Food Industry of the Bulgarian People's Republic following the initiative of the International Federation of Beekeepers' Associations – APIMONDIA. It was attended by approximately 30 apiculturists and beekeepers of Bulgaria, Romania, USSR, and Yugoslavia.

In Bulgaria, Varroa disease had widely spread of late. Many of the localities with apiaries infested by Varroa disease are in the zone of the Bulgarian border with Greece, Romania, Turkey and Yugoslavia. The Romanian experts reported that no such mite has been found to exist in their country. In Yugoslavia, no investigation has been made in this respect. No literature exists either in Greece or Turkey reporting existence of the parasite there. In 1975 and 1976, Varroa disease was found in Argentina and Uruguay. There is a possibility of this disease to also exist in the northern region of Africa.

According to Bulgarian experts, *Varroa jacobsoni* was identified in Bulgaria in 1964-1965 or a little later. Most often, the bee and drone larvae on the lower part of combs are invaded by *Varroa jacobsoni*. In autumn, all brood is infested. This mass invasion of larvae and pupae causes their death. The death of unsealed brood reminds of the foulbrood infestation. When the invasion is strong, which usually occurs in autumn, bees would leave the hive, or, in December, the whole colony would die. This usually happens three or four years after the parasite has infested the colony, when the infestation rate exceeds 30%. The supply of great quantities of sugar syrup in autumn, the mixed invasions and infections, as well as other unfavourable factors foster the fast development of Varroa disease. Two biological characteristics specific to the parasite makes its control difficult: (1) it concomitantly infests the brood and adult bees, and (2) it multiplies very fast, twice and a half faster than the cycle of bees' development. In Bulgaria, Varroa disease is controlled by imported drugs such as chlorbenzol, Folbex, Milbex, Amilix, as well as phenothiazine, moth balls, etc. The most efficient and promising seems to be "Varroatin", (phenothiazine + paraformaldehyde), under the form of tablets, produced in Bulgaria. Each package containing 120 tablets includes special wicks; 1-3 tables – according to the strength of the colony, and wicks are introduced, fumigating, in the hive. In Bulgaria, the control of Varroa disease and of other bee diseases is made by the veterinary service in co-operation with the public control teams, beekeepers, agricultural experts, etc., who are paid for their inspection of each colony. All beekeepers' associations existing in Bulgaria make up the Central Council of Apiculture under the Ministry of Agriculture and Food Industry (Prof. S. NEDYALKOV). Prof. YURUKOV, Deputy Minister of Agriculture, is the Chairman of the Council.

At the Symposium, Dr. N. ZAKHARIEV, Chairman of the regional Council of Apiculture, read a report on the activity of the Council of Apiculture in Pleven county, dwelling on the stages of development of the disease. In the first stage, the number of parasites in the colony is small, with no real infestation possibilities. In the second stage, their number increases, the colony becomes weak because of the death of bees, and is robbed by stronger colonies. Both in the first and second stages, healing is possible whether "Varroatin" is used. In the third stage, the infestation is strong, 6-8 mites existing on each bee; now bees would leave the colony.

Dr. N. DIMITROV reported about the control of Varroa disease in Plovdiv county. In that region, 35,000 colonies exist, 10,000 belonging to the apicultural farm, the rest being handled by amateur beekeepers. The major methods of control of Varroa disease include: study by experts of the biology of the parasite, and the methods of controlling Varroa disease; minute inspections, and registration of all bee colonies; assessment of the stage of infestation, and quarantine measures; sanctioning of the beekeepers who did not supply the drug in due time; drafting of special directions for the use of Varroatin and phenothiazine, and talks in this respect with beekeepers. Special groups for the control of Varroa disease were instituted, following which the invasion is now minimum.

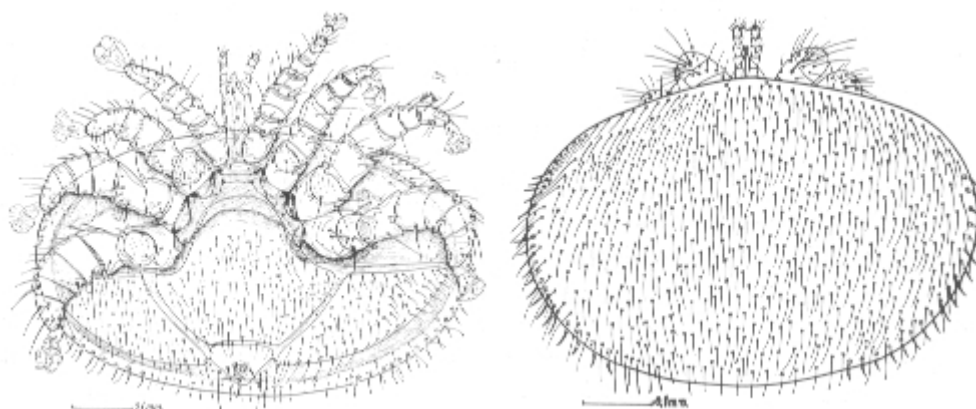
In the new directions for use of Varroatin, before introducing the fumigating tablets, it is recommended to smoke the colony – through the hive entrance –, so that bees should fill their sacks with honey. Tablets are then introduced. The hive entrance is closed for 20-30 minutes, with a wet cloth or paper. Into a weak colony (3-4 frames with bees) a tablet is introduced; into a medium strength colony (4-7 frames) – two tablets; and into a strong colony (7-10 frames) – three tablets. Treatment is made twice, both in spring and summer, and 4 times in autumn, every three days. The parasites fall and die in 2-3 days (Dr. D. IANEV).

* Account on the International Symposium on Varroa Disease

Mircea MARIN and E. MÂRZA (Romania) reported that for diagnosis and control of Varroa disease, the new drug – “Sineacar”, prepared and patented by the Bee Research Institute in Romania, is efficient. 40-150 g of this drug should be introduced, from the top of the hive into each colony, in between frames. The drug has a uniform effect, by contact, on bees, its efficiency lasting for 10-12 days. 2-3 treatments must be made in spring and autumn, the latter every 15-20 days. The drug is not toxic to bees. Treatments with doses of 200-350 g, reiterated every 3 days, do not cause any agitation in the colony. It was also ascertained that the drug is not toxic either to bees during wintering, or to people – when in honey. To control mycosis of bees, the Romanian experts use the original drug – “Micocidin”.

During the Symposium, at the apiary of the Apicultural Research Station close to Sofia, a comparative experiment was made with application of Varroatin and Sineacar. During the treatment, environmental temperature varied between -1°C and $+10^{\circ}\text{C}$. The two drugs were applied in colonies with similar degree of infestation. Varroatin was supplied to 5 colonies; in each of them the number of parasites decreased by 131 on an average. On the bottom of the hive, also 50-300 bees were found benumbed (“Varroatin” is not recommended to be used when temperature is lower than $+14^{\circ}\text{C}$). In the 6 colonies treated with Sineacar, about 351 parasites were found on the bottom of the hive, and only 15-30 bees. After the application of Varroatin, most bees recovered when introduced in a warm room.

The report presented by the Soviet delegate (O. F. GROBOV) dwelt on the present stage of investigation of Varroa disease, the problems calling for urgent solution, and development of efficient methods of controlling this disease.



Varroa jacobsoni female: ventral view (left), dorsal view (right)
Photo by M. Suci

Discussion focused mainly on veterinary assistance in beekeeping. The delegates of Bulgaria (Prof. S. NEDYALKOV), Romania (E. MÂRZA) and Yugoslavia (Dr. M. LOLIN) have pointed out that a close co-operation between veterinary services and the beekeepers' associations, to the benefit of beekeeping exists in their countries. The beekeepers' associations include all local associations and individual beekeepers, and draft special instructions for assistance to be given to beekeepers in taking samples necessary for diagnosis, and for practical application of the control measures. Special heed is being paid to extending the knowledge of beekeepers about the control of bee diseases.

Following the facts reported and discussions (Prof. G. KAMBUROV, Dr. M. SHABANOV, etc.) the participants in the Symposium laid stress on the stringent necessity of urgent measures to be taken for preventing Varroa disease from spreading in other countries too. For the countries where Varroa disease exists, a thoroughly efficient system of prophylaxis and control shall be organized, under the guidance of veterinary services, to be actively supported by the beekeepers' associations, their local branches, and beekeepers.

The scientific investigations shall be extended and intensified, just as the experimental testing of the drugs controlling acarine mites, in order to find which is the most efficient one, and to develop the most efficient and easily applicable methods.

Stress was laid on the fact that bi- and multilateral co-operation is most significant.

Following the information presented at this Symposium, we think it proper for the USSR to make comparative experiments with Sineacar and Varroatin.

In the instructions concerning the control of Varroa disease, a paragraph shall be included – forbidding supply of great amounts of sugar syrup to Varroa diseased colonies, in autumn. Also, for identifying Varroa disease in summer it is recommended to inspect the brood on the hindmost frames or the frames on both extremities. It is recommended to take into account the experience of the countries participating in the Symposium, concerning health assistance in beekeeping, and most of all to have beekeepers' associations established in all localities, counties, regions, and republics. To this end, the rules and regulations of all branch associations should include provisions stipulating observance of the zoo-sanitary requirements in the management of bee colonies, prophylactic and curative treatments of apiaries, and the responsibility of all members of the respective associations in case bee diseases are spreading. The responsible factors must be well informed and trained to know to identify the bee diseases, as well as how to apply the measures for preventing and eliminating such diseases.