

Infection of Bees with the Nozema (Nosema Apis Z.) Parasites in the Nakhchivan Autonomous Republic Condition, Treatment of Bees by Scientific and Folk Medicine Methods

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Abstract:

The article studies the degree of infection of the bees with nosema in various beekeeping massifs. It is clear that the infection degree depends upon the height of the area where the beekeeping farms are located. It is shown that fruitfulness of the bees will be high thanks to the herbal-composition remedies.

Key words: nosematose, bee, honey, productivity, Nakhchivan.

Introduction

Microspores have spread in the nature widely and they are parasites that infect the animals. They are the parasites of invertebrate animals and mainly infect the insects. They dogreat economic damage to the silkworm breeding and bee-keeping [3]. The intestine parasites Microsporas spread in the narrow swarm of bees very quickly and causenosematose [1].

NozemaApis parasites have spread widely in the world and in our republic, which do great damage to the bee-keeping [2]. The stomachs of the infected bees swell, their wings shiver, their flying ability weaken, they move crawling and become

paralyzed [5]. In Folk Medicine it is called diarrhea. The beginning time, period and degree of the illness depends on the condition and geographical position where the bee-garden is located.

The investigation has been carried out by the aim to determine the infecting degree of the nosema parasites in the bee-gardens during the wintering and spring periods, and to determine the influence degree of carried out treatment-prophylactic measures in different regions of Nakhchivan AR.

Material and method

In 2007-2014 years we carried out investigations in 108 bee-gardens (In 20-30 bee gardens each year) by the aim to investigate the spreading degree of the *Nosemaapis Z* parasites along the Araz river plains, in the Mid-highlands and Zengezurhighland zones of Nakhchivan AR. To determine the infecting degree of the parasites we examined 1302 bee-gardens in 2009-2010 years, 1511 bee-gardens in 2010-2011 years and 1558 bee-gardens in 2011-2012 years (by 50 bees in each). To determine the nosema parasites we used individual and general microscopic methods. We took 50 bees of each bee-garden, cut off their stomachs and put them in a faience bowl, added 15-20 ml distilled water and mixed until we got homogeneous mixture. We examined the mixture by the microscope (MBI-1, objective-x40, ocular x-15). We used general method to determine the nosema parasites in a large scale. The infection degree has been determined according to the quantity of spores in the organism of each bee [4]. If there are about 50 spores on the microscope glass it is considered weak infection, 50-100 spores is considered mid-infection, but more than 100 is severe infection. In all the examined bee-gardens, there have been determined the number of the nosema infected bee-families, the infection degree, the number of died bee-families during the

wintering and spring periods and effectiveness of used herb-based medicines.

Discussion of the Investigation

During the investigation we determined that infection degree of bee-families by nosema parasites during the spring period was as following: along the Araz river plains 24,9 and 48,3%, in the Mid-highlands 29,8-63,2% and in the Zengezur highland area 58,2-87,0%. The number of nosema infected bee-families in the Zengezur highland area is more 1,8-2,3 times or 37,6-95,3% in comparing with the bee-families of Araz river plains and Mid-highland areas. At the results of the investigations we came to the conclusion that 22,5-35,3% bees out of each bee-family along the Araz river plains; 27,2-46,5% bees out of each bee-family in the Mid-highlands; 38,3-71,2% bees out of each bee-family in the Zengezur highland areas are infected by nosemas, depending upon the year.

In the Zengezur highland areas, the infection degree by nosemasin the samples taken from the bee-families is 60,6-101,7% and 33,4-56,5% more in comparing with the Araz river plains and Mid-highland areas.

After a long time investigations we come to conclusion that wintering period in the Zengezur highland areas is long and the bees do clearing flight later in comparing with The Araz river plains and Mid-highland areas. So their infection degree by nosemas is high. In the Zengezurhighlands the climate is cold and the wintering bees lose more energy. So in the highland areas the parasites infect the bees easily. In such condition the old bees can't do clearing flight and they are obliged to clear up their stomachs in the beeswarms. So the nosema infected excrement offer fertile condition for development of the nosema spores. In the favorable climate of the Araz river plains the old bees do clearing flight earlier. As they clear up their stomachs, the number of nosema spores in

their organisms become fewer. The bee-families begin to develop earlier and the old bees are replaced by the young bees. As the bee loss is much in the bee-families in the Zengezur highlands the dead bees become the infection source

Situation of nosema infected bee-families in the Nakhchivan AR areas in wintering and spring periods (average in a bee-family)

Areas	Experience groups	In wintering period (October 1-March 1)											
		Feeding stuff expenses, kg					Feeding stuff expenses for a kg of bees (kg)	Bees loss, kg					Bees loss in a kg(kg)
		M±m	%	δ	V%	t		M±m	%	δ	V%	t	
Araz river plains	Weak	6,3±0,3	61,2	0,6	9,52	1,0	5,04	0,45±0,04	36,0	0,08	17,8	3,1*	0,36
	Middle	7,5±0,6	58,1	1,2	16,0	1,0	4,54	0,42±0,05	25,4	0,10	23,8	3,3*	0,25
	Strong	6,8±0,4	38,8	0,8	11,7	-	3,02	0,70±0,07	31,1	0,14	20,0	-	0,31
	Average	6,87±0,4	50,5	1,5	21,8	-	3,39	0,53±0,05	30,8	0,19	35,8	-	0,31
Mid-highlands	Weak	5,4±0,4	48,6	0,8	14,8	1,0	4,15	0,40±0,04	30,8	0,08	20,1	2,4*	0,31
	Middle	4,2±0,4	33,3	0,8	19,0	3,4*	2,33	0,38±0,05	23,7	0,10	26,3	2,5*	0,21
	Strong	5,9±0,3	32,6	0,6	10,2	-	2,56	0,64±0,09	27,8	0,18	28,1	-	0,28
	Average	5,17±0,4	37,2	1,5	29,0	-	2,99	0,47±0,06	27,2	0,22	46,8	-	0,27
Zengezur highlands	Weak	6,2±0,4	57,5	0,8	12,9	0,2	4,59	0,60±0,06	44,4	0,12	20,0	2,8*	0,44
	Middle	5,0±0,4	40,6	0,8	16,0	2,0*	2,94	0,58±0,05	34,1	0,10	17,2	3,2*	0,34
	Strong	6,3±0,5	35,2	1,0	15,9	-	2,86	0,88±0,08	40,0	0,16	18,2	-	0,40
	Average	5,80±0,4	41,4	1,5	25,9	-	3,31	0,69±0,06	39,4	0,22	31,9	-	0,39

P ≥ 0.95

As seen in the table, during the wintering period, the bees loss of the nosema infected strong bee-families was 27,8 – 40,0%; middle power bee-families’ bees loss was 25,4 – 34,1%; weak bee-families’ bees loss was 30,8- 44,4%. While comparing the strong, middle and weak bee-families, the existing differences are biometrically reliable in all of the investigated groups.

According to the carried out investigations, in the Araz river plains, the nosema infected bee-families’ bees loss was 30,8%; in Mid-highland areas it was 27,2%; in Zengezur highlands it was 39,4% during the wintering

period. During the wintering period, in Mid-highland areas the bee-families bear less loss comparing with the bee-families of the Araz river plains and the Zengezur highlands areas.

At the result of the investigations we determined that, in the nosema infected strong bee-families' bees loss was 0,28-0,40 kg for each 1kg, in middle and weak bee-families it was about 0,21-0,34kg and 0,31-0,44 for each 1kg during the wintering period. As it is seen above, though the bees loss in the strong bee-families is little in comparing with other groups. But the difference is not so much. In the bee-families which winter in the Mid-highlands, though the bees loss was little, but there are also some differences in comparing with other groups.

During the wintering period (October1 – March1), the bee-families' feeding stuff expenses and bees loss number differences are very few, in comparing the different areas with one another. There has not been determined great varieties between the average-square propensity and difference factors while comparing the strength of the bee-families.

In Mid-highland areas (during the wintering period) the feeding stuff expenses was 12,2% less and nosema infection degree was 27,1% less in comparing with the Zengezur areas bee-families. In comparing with the Araz river plains this point was average 32,8%.

It has been determined that the illness in the bee-families is seen much more in February-June. The nosema infection degree is higher in the bee-families after wintering period. It is because the bee-families have low-quality food and get weaker in the wintering period. In order to prevent the nosema tose in the NakhchivanAR we

must keep strong families for wintering and feed them with qualitative food. Also the sick families have to be treated in spring. In the past there was used the mixture of different herbs. There was prepared the herbal-composition remedy that leaves no residue in the bee products. Its ingredients are garlic, bitter pepper and onion and prepared as shown below.

1. 150 gr mashed garlic
2. 50 gr dried and crumbled bitter pepper
3. 59 gr mashed onion

The alcohol mixture and the sweet mixture of these plants are prepared and used. To prepare the alcohol composition mixture we take the vegetables in amount as shown above, mix them with alcohol and keep the mixture in a dark place for 10 days. 1ml remedy is mixed with 200ml sherbet (water mixed with sugar) and feed the bee-families after wintering, in early spring. It is given for 250 ml to each bee-family 5 times after each 2 days (correlation 1 to 1).

To prepare the sweet mixture we take the fresh juice of the plants shown above (the same amount). 10-15 ml juice is mixed with 1L sherbet (water mixed with sugar) and used for the treatment of the bees. The mixture is given to the bee-family in 3 days after prepared, 250 gr for 5 times after each 2 days, after wintering, in early spring (correlation 1 to 1).

The herbal-composition remedies are used both as treating and prophylactic remedies, are cheaper, got easily, economically useful and used widely in bee-keeping. The remedy must be used while the bee-family has not reached to 60% infection degree.

Results

At the result of the carried out investigations there has been determined that the infection degree of the bee-families by niosemas in the Nakhchivan AR condition, change depending on the areas where they are located.

We have studied that, it is possible to treat 30% of the nosema infected bee-families with herbal composition remedies within 21 days. It is advisable to treat the bee-families in early February in the Araz river plains, in the middle of February in the Mid-highlands and in late February or early in March in the Zengezur highlands.

REFERENCES

1. Huseynov H.T. 2003. Epizootological situation of infection of bees with nozematozes in Nakhchivan AR. Materials of the Azerbaijan Zoologists Organization I congress. Baki. Elm. p. 182-188.
2. Sultanov R.I. 1993. Biological peculiarities if bees in Azerbaijan. II part, Baki; Irshad. 144 p.
3. Efimenko T.M. 2001. Life time peculiarities of microsporids. *Nosema apis* of the bees in wintering and spring generations. Pasika, N3, p. 20-21.
4. Mourizio A. 1974. Pollenernalring und zebensvogangebei der Honigbiene *Apis mellifera* L. "Landwirtsch. Jahrb. Seh Weir.", No 68, p. 115-182.
5. Steinhous E.A. 1947. Insect Microbiology. New-York: Somsfak, p.16-22.