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STUDY ON THE DISTRIBUTION OF BEE TRACHEA ACARAPIS WOODI TICKS IN BEE YARD OF KASHKADARYA REGION

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ANNOTATION
Beekeeping (apiculture) is one of the main branches of agriculture and plays an important role in increasing the productivity of bees by increasing the number of bees for honey production and pollination of agricultural crops. Along with the development of beekeeping in the world economy, various invasive and infectious diseases of bees are also widespread. The parasitic mites Acarapis woodi (called an acarapidosis by the name of the causative agent) parasitize in the first pair of bee's chest tracheas. The life cycle of the tracheal tick Acarapis woodi completely passes on to an adult bee and causes a serious illness - called acaripidosis. Bees infested with Acarapis woodi canes die without being able to fly, and bee families are weakened and productivity is reduced. Compared to a family of healthy bees in one season, bee families infected with acaripidosis produce 50-70% less honey.The study of bioecology and the spread of Acarapis woodi ticks is one of the essential tasks of theoretical and practical importance.

Keywords: agriculture, apiculture, bee,disease, ticks, Acarapis woodi,acarapidoz, trachea; financial loss; acaricide; prevention;

INTRODUCTION

Beekeeping is one of the main sectors of agriculture and is vital in carrying out large-scale donations to strengthen the environmental security of a farm, along with the relocation of bees for honey production. Along with the development of beekeeping in the world economy, various investments of bees and information diseases are also widespread. Among them is acarapidosis, a disease caused by Acarapiswoodi ticks, which parasitize the respiratory tract of bees. The bioecology of the ticks that cause this disease in the world, the study of its spread and the implementation of preventive measures to better control it remains a pressing issue.

The mass extinction of bees from the unknown disease was observed in 1904 on the British island of White. This is stated by the British professor August Imms (Augustus Daniel Imms, 1880-1949) in his book "Diseases of the White Island." Within 2 years of this disease, a large proportion of White Island bees die. This is later the case in Scotland and Ireland. In 1920, John Renin, a professor at the University of Aberdeen in Scotland, found a microscopic mite in the trachea of a sick bee and named it Acarapis woodi in 1921 in honor of the English entomologist Wood. The name Acarapis family was later suggested ("acar" - mite and "apis" - bees). The name of the disease they cause, the term "acarapidosis", appeared in 1940 after the disease was recorded throughout Europe.Today, Acarapis woodi ticks are widespread in almost all over the world: Europe, Asia, North America, South America and Africa. However, they cannot be found in Australia and New Zealand. It was first identified in the United States in 1984. It was first recorded in Russia in the Voronezh region in 1926, and later spread to other regions of the former USSR: Chernigov region of Ukraine (1937), Estonia (1959), Georgia (1971). It was recorded in the 80s and 90s of the last century in Kazakhstan and the Central Asian republics, including Uzbekistan.

Bees infested with Acarapiswoodi ticks die without being able to fly, and bee families are weakened and productivity is reduced. Compared to a family of healthy bees in one season, bee families with acarapidosis produce 50-70% less honey.

THE AIM OF THE WORK

Acarapiswooditicks parasitize the respiratory organ - the first pair of thoracic tracheas of bees. The disease they cause is called in veterinary medicine - acarapidosis. The mite and its larvae pierce the wall of the trachea and feed on the hemolymph.

To study the distribution, morphology, biology and ecology of Acarapiswoodi ticks in Kashkadarya region, to determine the causes of bee acarapidosis in beekeeping farms and private homes, to recommend the most advanced, modern, environmentally safe, highly effective measures against bee acarapidosis is aims of the work.

MATERIAL AND METHODS

Collection of material on the distribution of Acarapiswoodi ticks in Kashkadarya region, detection and diagnosis of acarapidosis in bees was carried out in accordance with the METHODICAL INSTRUCTION "Diagnosis of bee exoacarapidosis and acarapidosis" approved by the Veterinary Department on June 13, 2002.

In a laboratory samples taken from bees suspected of acarapidosis are washed in a Petri dish or test tube immersed in water, and if the bee's body is infected with acarapidosis, it is released into the water and can be observed under a microscope in a darkened field of view. It is also possible to examine sick bees using MBS-1 or MBS-2 binocular magnifiers and collect canals in the body using fine preporaval needles. When examining bees individually, ticks are also removed from inside the tracheal tubes by splitting the body. After that, the type and systematics of the collected ticks are determined and a morphological description is given.

Bee tick or acarapis wood (lat. Acarapiswoodi) parasite thrombidiformProstigmata subfamily of Trombidiidae ticks, a species belonging to the family Tarsonemidae, is a dangerous parasite of bee trachea. They are the object of quarantine, causing the weakening and extinction of the bee family.

The body of Acarapiswooditicks is so small that they can only be seen with the help of magnifying instruments (magnifying glass, microscope, etc.). They are oval in shape, 125-174 mms in size, pale transparent, white. When cane bees multiply in large numbers in the tracheal tube, they block the airway and cause death. The life cycle of the ticks takes place in the complete trachea of bees. Ticks are not found in bee larvae. But it can harm young bees from birth.

The females of the acarapiswoodi enter the first pair of thoracic tracheas of bees through the respiratory stigmas and lay 5–7 eggs. The eggs hatch in 3–4 days. The six-legged larva emerges from the egg, the male mite matures at 11-12 days from the mushroom stage, and the female mite at 14-15 days. Fertilization channels take place in the trachea of developed bees. After fertilization, the female mite leaves the trachea through the respiratory stigmas and attaches itself to the hairs that cover its body. Infected bees in this way spread the ticks as they mix with other healthy bees. Repeating the process in this order will harm the entire bee family. Infected bees fly away and infect other family bees as well. In this way it spreads to other families and other bee applicants (pasekas). In addition, beekeepers themselves are responsible for the spread of acarapidosis due to non-compliance with the rules of zoohygiene.

More young bees (at least 4 days old) are affected by acarapidosis because the physiological condition of the trachea of adult bees is a key factor in their self-protection from their ticks. The ticks pass very easily from one bee to another, and the vibrations of their wings help the canes find the stigmas of the thoracic trachea at the base of the wing.

RESULTS AND ARGUMENTS

Acarapiswoodi ticks are also found in bees in Uzbekistan. But in our dramatic temperate climate, their bioecological properties are almost unexplored.

The general appearance of bees infected with acarapidosis is mainly due to the fact that they crawl in front of the hive, around which bees can not fly weakly on the ground. This disease can be caused by other diseases of bees (bacterial, viral and other diseases). Therefore, to make a definitive diagnosis of acarapidosis, the head of bees suspected of being infected is cut off using a scalpel. The thoracic portion is divided transversely and the thoracic trachea is observed under a microscope. Black or brown spots appear

on the trachea of bees infected with acarapidosis. Bees are not infected with acarapidosis, if they are healthy, their trachea will be clear, transparent in color, and mites or their larvae will not be visible.

In order to study the infestation of bees with acarapidosis in the conditions of Kashkadarya region, we conducted research in bee applications (pasekas) belonging to the state forestry of Kashkadarya region. To do this, in early spring (March 2019) we collected fragile bees, which do not fly, crawling in front of bee families. We kept them in a closed Petri dish under laboratory conditions and performed acaralogic examinations using generally accepted methods of diagnosing acarapidosis.

In doing so, we cut the head of the bees with a scalpel, they opened the first pair of tracheas of the thoracic part and observed under a microscope. We collected 83 sick bees that were crawling in front of 52 hives of the bee applicant, where 202 bee families were sampled for testing, and all the bees underwent acarological examination. Of the 83 bees we examined, 27 (32.5%) found Acarapiswoodi canals in the trachea (table).

Distribution of Acarapiswooditicks in bee trachea in Kashkadarya region

Region	The number of bee families present in the applicants	Number of sick bees examined	Number of bees Acarapis woodi ticks were found in the trachea	Sickness (%)
a state forestry in Kashkadarya region	2019year			
	Spring			
	202	83	27	32,5
	Autumn			
	263	23	2	8,1

In this way, these applicant bees were found to be infected with acarapidosis, from which live and dead ticks were found. All beehives of the applicant were then treated with acaric acid against acarapidosis. During the spring, summer and early fall, bee families were cared for under normal conditions and they were harvested. In the same application, which we conducted in the spring, we conducted another acrological examination in late autumn (November). An autumn survey found that 8.1% of sick bees were infested with Acarapiswoodi canes.

CONCLUSION

Acarapidosis is a very dangerous infectious disease that cannot be cured by treating infected bee families alone. The method of treatment can be considered as an adjunct to the measures taken to get rid of acarapidosis. A once treatment cannot ensure complete recovery of the bee family from acarapidosis. In this case, the bee families are partially cured of the disease. Therefore, treatment is chronic and needs to be repeated every year. In addition, it is required to take measures to prevent it and comprehensive control.

Organizing timely diagnosis of bees infested with Acarapiswoodi canes in their applicants and using preventive measures against it will prevent the development of acarapidosis and limit its spread. As a result, bee colonies are healthier and more productive.

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