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THE EFFECT OF ARTIFICIAL INSEMINATION OF QUEEN BEES IN THE FERGANA VALLEY ON ITS OVULATION

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Annotation
The article provides information on the artificial insemination of queens, their period of puberty and their impact on daily egg laying, as well as the number of days after which queens lay eggs.
Keywords: mother bees, genitals, sperm, carbon dioxide, eggs, frame-net, loop, tube, instrumental, cage, nucleus, reproduction, yield.
Relevance of the topic: Today in Uzbekistan, as in other sectors of agriculture, a number of positive steps are being taken to develop beekeeping, which is its main branch. In particular, the Resolution of the President of the Republic of Uzbekistan dated October 16, 2017 No. 3327 "On measures to further develop the beekeeping industry in the Republic", which is the legal basis for sustainable development of beekeeping, is of great practical importance in this regard. [1]It is on the basis of this decision that the beekeeping industry began to develop rapidly, and by the end of 2021, the number of bee colonies exceeded 1.0 million. Family productivity is improving environmentally.
For this purpose, it is expedient to carry out large-scale breeding and artificial insemination of queen bees in Uzbekistan.In Europe, especially in Germany, beekeepers artificially fertilize up to 80% of queen bees. [2] As a result of the introduction of innovative technologies, regardless of weather and climate change, [3.4] have artificially inseminated queens, increasing their chances of obtaining honey several times. The daily laying of queen bees and the productivity of the family have increased several times [5]. As a result, the quality of queen bees can also meet the requirements of international standards. For the first time in Uzbekistan, artificial insemination of queen bees was carried out [5], queen bees were inseminated with the seeds of the purest and purebred male bees, the purity of the bee breed and its gene pool were preserved. As a result, an innovative technology for artificial insemination of queen bees has been developed in the country. Also, this technology was studied on the basis of scientific research on the impact of queen bees on daily laying, the growth and development of the bee family,

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their impact on family productivity. For Uzbek beekeepers, this innovative technology was based on the development of all-round advanced methods of production of insemination technology using instruments in artificial methods of queen bees.

The research method was to disinfect all parts of the artificial insemination apparatus in the first place to artificially inseminate the mother bees. Alcohol, dissolved water and distilled water were used to disinfect the artificial insemination apparatus. To prepare the solution, a dose of 2 mg of cefazalin was prepared by adding 250 ml of water. The artificial insemination apparatus was disinfected using a special brush in 1) alcohol, 2) soluble water, and 3) distilled water

Male bees were selected for sexually mature male bees in obtaining sperm fluid. The male bee squeezed the abdomen, its genitals and sperm sac were inverted and the sperm fluid was extracted using a special syringe.

For artificial insemination of queen bees, special tubes were selected according to the size of the queen bees. The queen bees were placed in an artificial insemination tube, which was anesthetized by the mother bees using carbon dioxide (SO2).

[1] Goals and objectives of the research

The purpose of the study: Development of technology for artificial insemination of queen bees in Uzbekistan.

Research tasks:

artificial beekeeping;

breeding of male bees for artificial insemination of queen bees.

To study the condition of artificially inseminated queen bees, the day they started laying eggs and the amount of eggs.

The results of the study In March 2020, the best productive bee families for male bee breeding were selected and each of them was given 2 bee frames with male bee stings. Because in order to fertilize the queen bees, tomorrow's male bees must be reared in advance. In late April 2020, the breeding of queen bees began.In May, however, a sufficient number of mother bees were bred artificially and they were cared for until puberty, maturity, 10-14 days of age, and prepared for artificial insemination. [2.4]

Figure 1.

The process of inserting the seeds of male bees into the genitals of mother bees.The genitals of the mother bees were opened using special loops and the male bees were fertilized with sperm. Inseminated queens were first kept in special cages, in warm rooms, and then released into small families (nucleus), while artificially inseminated queens are not well received by large bee families. So they were initially given to small bee families.The daily egg-laying rates of artificially inseminated queens are given in Table 1 below.

Table 1 The amount of artificially inseminated mother bees

Days	n	Lim	M±m	Cv, %
1 Day	83	60-98	83,0±15,1	22,4
2 Day	92	86-99	92,5±21,4	28,5
3 Day	92	72-112	92,0±19,8	26,1

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According to Table 1, in 2020, a total of 270 queen bees were prepared for artificial insemination. Of these, 3 mother bees were not fertilized due to their small size. A total of 267 queen bees were artificially inseminated on the first day, 92 on the second day and 92 on the third day.Then, artificially inseminated mother bees were examined for daily egg laying. Egg laying was not observed on the first day. On the second day of the study period, an average of 72.5 eggs were laid in 29 queens, 135.5 on the third day and 765.5 on the following days.

During the study period, 258 of the 267 queen bees were found to be well-fertilized, and 2 days later, they began laying eggs. 9 queen bees were destroyed due to poor quality and poor egg laying and they were not well fertilized. This is 3.4% of the total.

Figure 2. The process of artificial insemination of queen bees Of the 258 artificially inseminated queen bees, the first 2 days later, 29 of them, or 11.2%, began to lay eggs.After that, 58 or 22.3% started laying eggs on the third day and the remaining 171 on the fourth day. Initially, queens started laying 61-78 eggs a day, 120-150 on the third and fourth days and 581-950 on the fifth, sixth and last days, and their number of eggs increased day by day. Figure 3. The frame is an overview of the grid In order to study the daily egg laying of mother bees in the experimental and control groups, the number of eggs laid daily was measured and studied using a special frame-grid device. On the inside of the frame-net there is a wire of 5x5 cm, each cell of which can accommodate up to 100 worker bees. Data on this are given in Table 2 below.

Table 2 Daily laying of artificially inseminated mother bees

Groups	***Days***	***Lim***	***X±S$_x$***	***CV, %***
Control	2-day	98-129	113,5±0,44	22,5
Experience	2-day	67-78	72,5±0,51	29,4
Control	3-day	186-231	208,5±0,64	23,5
Experience	3-day	120-150	135,0±0,51	21,4
Control	5-day	590-682	636,1±0,81	29,8
Experience	5-day	581-960	765±0,37	32,4
Control	6-day	848-888	866,0±0,84	30,6
Experience	6-day	930-985	957,5±0,39	33,3

Artificially inseminated queen bees were quickly and well received by young bee families consisting of 1-2 frames, as they received fertilized queen bees so quickly when they were without a mother for 1-2 days and fully realized their orphanhood. Bee families of 4-5 frames received mother bees badly. That is why such families were not given other mother bees.

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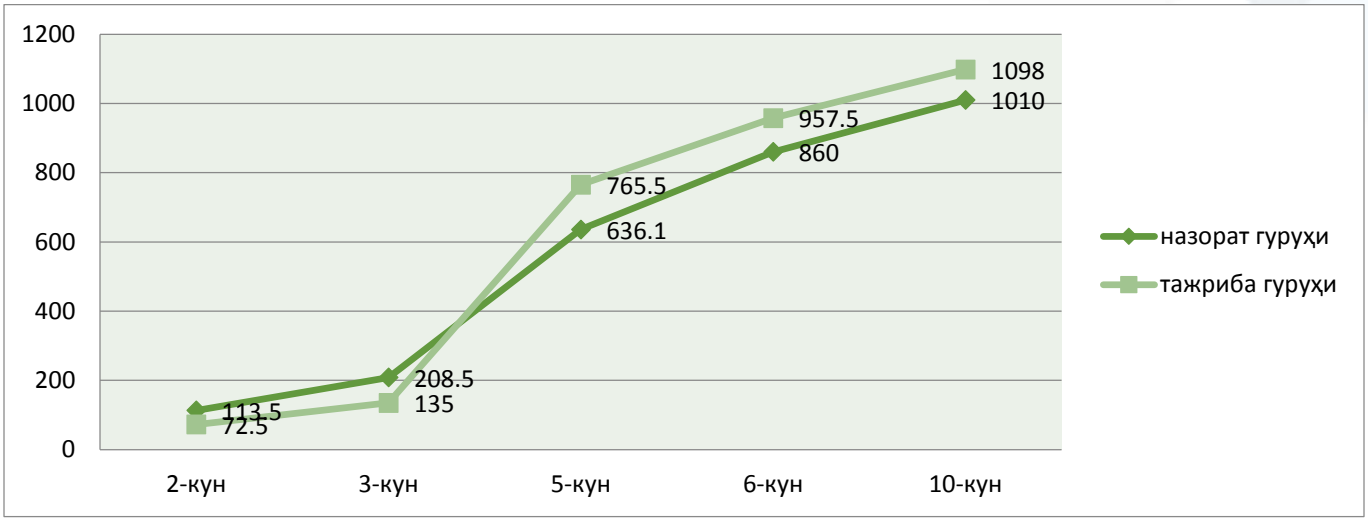

Our research is the first attempt at beekeeping in the Fergana Valley, where they have mastered the technology of artificial insemination of queen bees.

For this purpose, the sperm fluid of 2610 male bees was obtained for artificial insemination of 267 queen bees. Particular attention was also paid to the age of male bees and its appearance.

Table 3. The weight of worker bees hatched from the eggs of artificially inseminated mother bees and the period of their maturation

Groups	**n**	**Maturation of worker bees**		**The weight of a day worker bees(мг)**	
		lim	**$X \pm S_x$**	**lim**	**$X \pm S_x$**
Control	40	13,5±14,9	14,2±0,05	98,4-103,3	103±0,18
Experience	40	12,5±13,6	13,7±0,03	109,5-113,5	111,5±0,22

Economic efficiency of the research - In order to increase the productivity of bee families in Uzbekistan, from early spring, it is planned to organize a large number of artificial bee breeding and artificial insemination.

The bee farm of Trans Nam Bad Servis LLC in Namangan has more than 800,000 bee families, which have been growing a large number of queen bees and beehives since early spring and selling them to Russia and Kazakhstan. We raised more than 1,000 queen bees in our research in 2020-2021. Of these, 427 queen bees were artificially inseminated in two years.

In order to replace the old queen bees for their own domestic needs, the beekeeping farm left 212 of the artificially inseminated queens in their beehives and sold 215 to other farms in the region. The cost of new artificially inseminated queen bees was estimated at 35,000 soums, which brought the farm a net profit of 14.9 million soums.

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From the proceeds from the sale of artificially bred bees, the cost of relocating the bee family was 1.5 million soums, 2.7 thousand soums for sugar, 500 thousand soums for medicines, 5.0 million soums for monthly salary, SO2 gas. A total of 103 million soums were spent for 600,000 soums.
The beekeeping farm earned 14.9 million soums from the sale of queen bees. Expenditures during the year amounted to 10.3 million soums. Net profit amounted to 4.6 million soums, the rate of return was 69.1%.

Conclusions and Recommendations

When artificially inseminating queens, at the age of 14-15 days, they are fertilized with quality, and such fertilized queens have the ability to lay a large number of quality eggs.
Artificially inseminated queen bees were found to be highly oviparous, laying eggs after the second day (72.5) and then constantly increasing the daily number of eggs laid and multiplied by 765 on the fifth day, or 1055.2% more than on the second day.For the purpose of artificial insemination of queens, it is recommended to use sexually mature 14-15-day-old queens and keep them in separate nuclei for 1-2 days after fertilization and feed them with protein feeds.

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