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PRODUCTIVITY INDICATORS OF BEE FAMILIES IN INTENSIVE ORCHARDS

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Abstract: The article presents data on the productivity of bee families in experimental groups during pollination of flowers on cherry and apple trees in intensive orchards, in the section of years.

Keywords: intensive, orchard, cherry, apple, bee, Gulshira, frame-net, offspring, larva.

Relevance of the topic

The role of intensive orchards in increasing bee family productivity is considered very important. To this end, pollination of fruit tree flowers in intensive orchards by bee families with the help of bees starting from early spring is of great importance. [4.6]

Based on the conducted experiments, we studied the role of cherry and apple blossom in intensive orchards located in Bulungur and Jomboy districts of Samarkand region in increasing the productivity of bee families with simultaneous pollination by bees and increasing fruit yield.[2.7]

As soon as the fruit (cherries, apples) in intensive orchards blossom, we aim to move the bee families elsewhere, to areas with lush blossom. Since the flowering of fruit trees in intensive orchards is seasonal, the season 13.3 aphids from flowering plants around the orchard will not be sufficient to produce bee families and honey product. For this purpose, bee families were moved to other areas, namely to bedazoras in Kokdala district of Kashkadarya province after their withdrawal from the orchard, then to yaktiktars in Chirakchi district and in the last months to cotton fields in Keseb district. The daily averages of the established control scale in bee families are given in Table 1 below.

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Table 5.1.1 Daily values of control weights placed on bee families under intensive horticultural conditions (2021-2023)

Years	Groups	INDICATIONS												
		Samarkand region (before moving to the garden)	The amount of offspring in the nest (frame)	Family power (kg)	The arrival of daily aphids, kg	Samarkand region (after relocation to the park)	Number of frames in the slot (PCs)	The amount of offspring in the nest (frame)	Family power (kg)	Daily aphids arrival, kg	In the kashkadarya region (in bedasor, yantakzor and cotton fields)	Number of frames per slot (units)	Количество потомства в гнезде (рамка)	Family power (kg)	Daily aphids arrival, kg
2021	Control		1,5±0,2	0,9±0,02	0,140±0,12		6±1,0	3,5±0,50	1,5±0,28	0,300±0,04		8±1,0	5±0,5	2,10±0,20	1,210±0,27
	I experimental group		1,5±0,1	0,85±0,03	0,140±0,12		8±2,0	6±0,75	2,18±0,40	0,855±0,05		11±2,0	8±0,75	2,90±0,50	1,450±0,38
	II experimental group		1,5±0,3	0,89±0,02	0,140±0,11		7±1,0	5,5±0,50	2,0±0,35	0,800±0,07		12±3,0	7,5±0,5	3,30±0,75	1,370±0,45
2022	Control		1,5±0,3	0,95±0,01	0,140±0,13		6±1,0	3±0,25	1,55±0,25	0,340±0,06		9±1,0	5,5±0,5	2,25±0,25	1,280±0,30
	I experimental group		1,5±0,2	1,0±0,01	0,145±0,15		8±2,0	7±0,75	2,25±0,75	0,900±0,05		14±3,0	9±0,5	3,80±0,85	1,530±0,90
	II experimental group		1,5±0,1	0,9±0,02	0,140±0,12		8±2,0	6,5±0,25	2,20±0,37	0,850±0,04		13±2,0	8,5±0,75	3,60±0,55	1,410±0,45
2023	Control		1,5±0,1	0,9±0,02	0,140±0,11		6±2,0	3,5±0,47	1,6±0,25	0,390±0,11		9±2,0	5,5±0,5	2,30±0,45	1,290±0,65
	I experimental group		1,5±0,2	1,10±0,03	0,150±0,15		8±1,0	7±0,50	2,30±0,50	0,970±0,06		14±3,0	9±1,0	3,85±0,90	1,500±0,70
	II experimental group		1,5±0,2	1,0±0,01	0,145±0,14		8±2,0	7±0,25	2,28±0,40	0,910±0,03		13±2,0	8,5±0,75	3,75±0,75	1,480±0,8
Medial	Control		**1,5**±0,2	**0,92**±0,03	**0,140**±0,12		**6**±1,0	**3,36**±0,4	**1,55**±0,26	**0,340**±0,07		**8,6**±1,0	**5,33**±0,8	**2,16**±0,3	**1,260**±0,4
	I experimental group		**1,5**±0,15	**0,98**±0,02	**0,145**±0,14		**8**±1,5	**6,66**±0,66	**2,18**±0,55	**0,910**±0,05		**13**±2,6	**8,6**±0,75	**3,52**±0,75	**1,493**±0,6
	II experimental group		**1,5**±0,2	**0,93**±0,01	**0,142**±0,12		**7,6**±1,5	**6,33**±0,3	**2,16**±0,37	**0,850**±0,04		**12,6**±2,6	**8,16**±1,0	**3,55**±1,02	**1,420**±0,85

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As can be seen from the data in Table 5.1.1, in Samarkand oblast, the daily number of aphids was the same in almost all 30 families allocated for research before transplanting to intensive gardens. However, after the experimental group moved their families to intensive gardens, the gap with the control group increased significantly. To determine these indicators, we examined the number of frames in bee families before moving bee families to the garden and after removing them from the garden, the number of offspring in them, family vigour and daily aphid arrival rates. In particular, in intensive orchards of Samarkand region bee families on average brought 0.910 kg of sakura flowers per day in the I experimental group and 0.850 kg of apple blossoms in the II experimental group, while bee families of the control group, which received artificial feeds and flowers of different plants under economic conditions during the same period, brought 0.340 kg of flowers, i.e. 0.570 vs. experimental group I kg. ga, 0.520 vs. experimental group II kg.ga shows that there was little.

In the experimental groups receiving intensive care in the gardens, there was an increase in gulshire yield, as well as in the number of hives of the family and the number of offspring. In particular, in the I experimental group, compared to the families before transplanting to the garden, the number of frames in the nest after removal from the garden increased by 4 and the number of offspring by 5.16 frames, whereas in the II experimental group these indicators were 3.66 and 4.83, respectively. During this period in the control group families under farm conditions, these indicators decreased respectively 2 times compared to the I experimental group, 2.77 times compared to the I experimental group (n>0.999), 1.83 times compared to the II experimental group and 2.97 times compared to the III experimental group (n>0.999). The growth of indicators in experimental groups was caused by abundant flowering of fruit trees in intensive orchards.

After resettlement of bee families of control and experimental groups to Kashkadarya province in 2021, the number of frames in the hive was 8 in the control group, 11 in the experimental group I and 12 in the experimental group II (P>0.99). In 2022, the number of offspring in the hive was 9 frames in experimental group I and 8.5 frames in experimental group II, which were 3.5 and 3 frames more than the control group, respectively (P>0.999). 2023 family strength in hives in experimental group I averaged 3.85 kg and in experimental group II-3.75 kg. kg.ni organised. This index was 67.4% and 63% higher than in the control group. In 2021-2023, the average daily gain of aphid bees in Bedazor, tickle and cotton fields of Kashkadarya province was 1.493 kg in I experimental group and 1.420 kg in II experimental group kg.ni organised. This indicator is 0.233 in the control group compared to the I experimental group kg.ga, and compared to the II experimental group 0.16 kg.ga became less. Higher indexes of families in experimental groups after resettlement of bee families to Kashkadarya region were caused by intensive use of fruit orchards rich in gulshir and pollen in the period after their exit from wintering.

Family productivity, i.e. honey production, after resettlement of bee families to Kashkadarya province was also studied. This is summarised in Table 5.1.2 below.

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Table 5.1.2

Productivity indicators of bee families in the fields of plants rich in gulshira of the kashkadarya region

Years	Groups	Honey productivity, kg											
		In the blueberry district, alfalfa plant, may	lim	X±Sx	Cv, %	In the chirochi district, yantoq, June-July	lim	X±Sx	Cv, %	In the district of Kasbi, Bede-cotton, July-September	lim	X±Sx	Cv, %
2021	Control		4,9-5,74	5,32±0,2	3,41		12,1-12,9	12,54±0,95	4,12		18,9-19,78	19,34±0,48	5,15
	I experimental group		5,95-6,91	6,43±0,25	3,80		13,9-14,3	14,11±1,25	6,54		21,1-22,06	21,58±2,43	7,54
	II experimental group		5,82-6,42	6,12±0,28	3,90		12,9-14,0	13,48±1,36	5,42		20,4-21,5	20,95±1,68	6,42
2022	Control		5,89-7,23	6,56±0,71	3,70		12,8-13,6	13,2±1,14	4,32		20,9-22,0	21,45±1,33	5,38
	I experimental group		6,27-7,63	6,95±0,67	3,41		13,7-14,6	14,15±0,6	6,15		22,8-24,54	23,67±2,16	7,15
	II experimental group		6,3-7,16	6,73±0,45	3,61		13,8-14,4	14,1±1,09	6,10		21,5-23,22	22,36±1,33	7,13
2023	Control		6,3-7,32	6,81±0,40	3,64		12,0-15,1	13,56±0,49	4,98		21,3-24,4	22,87±0,4	5,98
	I experimental group		6,2-7,54	7,14±1,0	3,55		14,1-15,5	14,82±0,66	6,43		23,8-25,2	24,5±1,85	7,46
	II experimental group		6,23-7,69	6,96±0,77	4,23		13,9-14,5	14,27±1,19	6,12		21,6-26,3	23,95±2,12	7,12
Medial	**Control**		**5,69-6,76**	**6,23±0,44**	**3,58**		**12,3-13,8**	**13,1±0,86**	**4,47**		**20,4-22,0**	**21,22±0,74**	**5,50**
	I experimental group		**6,14-7,36**	**6,84±0,44**	**3,59**		**13,9-14,8**	**14,3±0,83**	**6,37**		**22,56-23,94**	**23,25±2,15**	**7,38**
	II experimental group		**6,12-7,09**	**6,57±0,5**	**3,91**		**13,6-14,3**	**13,95±1,21**	**5,88**		**21,2-23,64**	**22,42±1,7**	**6,89**

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From the data in Table 5.1.2, it can be seen that after relocation of bee families to the vast dormitory areas of Kokdala district, the control scale figures in 2021 in the control group averaged 5.32 kg.ni, in experimental group I 6.43 kg.ni and in experimental group II 6.12 kg of honey was collected. These figures were higher in 2022 compared to 2021 by 23.3%, 8.08% and 9.97% respectively. It was 28 %, 11 % and 13.7 % higher in 2023 than 2021 respectively.

At carrying out similar control weights on alkaline meadows of Chirakchi district in average for 3 years of honey collection in the control group 13,1 kg of honey was received, in I experimental group - 14,36 kg, and in II experimental group - 13,95 kg. These indicators compared with honey production from Bedazor of Kokdala district in the control group 8.12 kg, in the I experimental group 8.89 kg and in the II experimental group 8.47 kg. The main reason why the production of honey from alfalfa is higher than the yield of alfalfa is that the flowering duration of alfalfa plant is shorter than that of alfalfa flower and alfalfa plant excretes aphids not only from the flower but also from the stem.

All three bee families were relocated to cotton plantations in the area of occupation when the cotton flowering period began. Next to the cotton fields where the bee families were placed, there were alfalfa fields and during this period the families collected both cotton and alfalfa flowers. The performance of the control weights showed that the control group collected 19.34 kg of honey in 2021, 21.45 kg in 2022 and 22.87 kg in 2023. These figures in experimental group I are 21.58; 23.67 and 24.5 kg.ni organised. However, in experimental group II, 20.95 respectively; 22.36 and 23.9 kg.ni organised. In addition, our study calculated the honey yields accumulated by the families at different periods in terms of flower collection, feed consumed and season of the year. The amount of forage consumed by bee families was theoretically converted into honey product based on literature data, and the amount obtained was determined by subtracting all honey produced (Table 5.3.1).

Conclusion

In order to increase the productivity of the bee family, particularly to strengthen them, it is recommended to use intensive gardens rich in hyacinths and pollen during the last days of winter.

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