NATURA MONTENEGRINA, Podgorica, 10(2): 183-185

Short Communication

SEX ALLELES HOMOZYGOSITY PERCENT OF HONEY BEE COLONIES *(Apis mellifera meda*) (Hymenoptera: Apidae) IN KORDESTAN PROVINCE (WEST OF IRAN)

Ataollah RAHIMI[1], Mahdieh ASADI[2*] Keyvan NABATI[3]

1 Young Research Society, Shahid Bahonar University of Kerman, Kerman, Iran.
E-mail: rahimi.ata.1@gmail.com
2 Horticultural research institute, Shahid Bahonar University of Kerman, Kerman, Iran.
* Corresponding author. E-mail: m.asadi@mail.uk.ac.ir
3 Agriculture and Natural Resources research Center of Kordestan Province, Kordestan, Iran. E-mail: Nabatikayvan@yahoo.com

Key words:
Honeybees, inbreeding, homozygosity, Koredstan.

SYNOPSIS

This experiment was conducted to determine the homozygosity of sex alleles in apiaries of Kordestan province. Sampling was done from the late March to September 2009 in 27434 colonies from different apiaries in three cities of Kordestan province. From each apiary 10 percent, less than 10 percent and between 10-20 percentage of the colonies were selected randomly, brood combs were chosen to be sampled from both sides and the empty cell were counted. The average homozigosity of sex alleles is 14.12% in all honey bees Colonies.

INTRODUCTION

Today different factors in the honeybee's production industry decrease the population and the performance of honeybee hives. One of these factors is the homozygosity of sex alleles in the colonies of honey bees produced due to the high inbreeding. This study was conducted in three cities. The direct sampling was done randomly from the late March to the late September in 2009. Four combs contains pupa was extracted from every apiary and the number of empty cells was counted using the graded shablon in which one hundred worker cell can be contained (RUTNNER, 1998). The shablons were placed exactly in the place of pupa presence

and the cells which were deformed due to the wiring were not evaluated (Figs. 1 and 2).

Figure 1: Shablon used for counting empty cells in the pupa region.

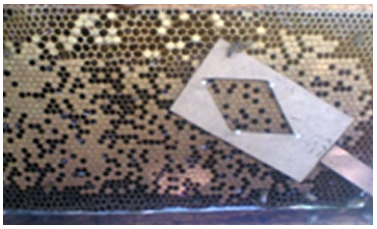

Figure 2: Counting the empty cells among the full cell.

RESULTS AND DISSCUTION

The obtained results indicated that the average homozigosity of sex alleles is 14.12% in all honey bees Colonies. Also, the frequency level of sex alleles homozygosity is between 10-20% in these regions in the levels higher than 20% and lesser than 10% (i.e. 7.57, 81.45 and 10.98 respectively). 7.57% of the bees have the homozygosity higher than 20%. 81.45% bees inside the design have the homozygosity between 10-20%. Also, 10.98% bees studied in the level lesser than 10%, have high homozygosity (Fig. 3). In fact their average homozygostiy (14.12%) is 9.12% more than the normal situation. The homozygosity level of sex alleles indicated in the Table 1.

Table 1: Homozygosity frequency of sex alles in Kordestan province.

Sampled hive (%)	S.D.	Mean	Total frequency
More than 20	2	23.11	7.57
Between 10-20	2.33	14.44	81.45
Less than 10	2.67	6.30	10.98
Total	2.33	14.61	100

It seems that the reason of low homozygosity level of honey bee's sex alleles in the studied region, was the presence of high honey bee populations (27434) and the entrance of immigrant beekeeper for using the forest plants. Despite that the homozygosity level seems to be lower than other provinces (SADEGHI, 1998; MOOSAVI, 1996) but with regards to the importance of apiaries in Kordestan province it will be necessary to manage breeding program, not to increase the inbreeding in this part of the country.

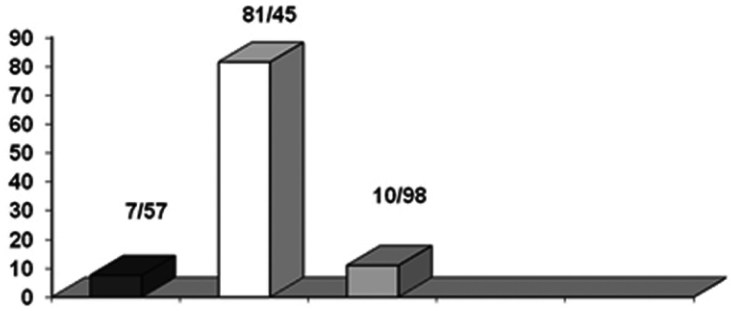

Figure 3:
The percentage of distribution in homozygosity frequency of sex allels.

REFERENCES:

MOOSAVI, R. 1996: Estimation of Inbreeding percent of honey beee (*Apis mellifera meda*) in Urmia and the causing and preventing factors. - *University of Urmia*, Iran, M.Sc. Thesis, 185 pp.

RUTNNER, F. 1998: Breeding techniques and selection for breeding of the honey bee. - Translated by Asheleigh and Eric Milner. - Published by the *British Isles Bee Breeder Association*, pp: 58-78.

SADEGHI, M. 1998: The investigation of relativeness of hone bees of Khoozestan Province. - *University of Urmia*, Iran, M.Sc. Thesis, 276 pp.

Received: 21 December 2010.