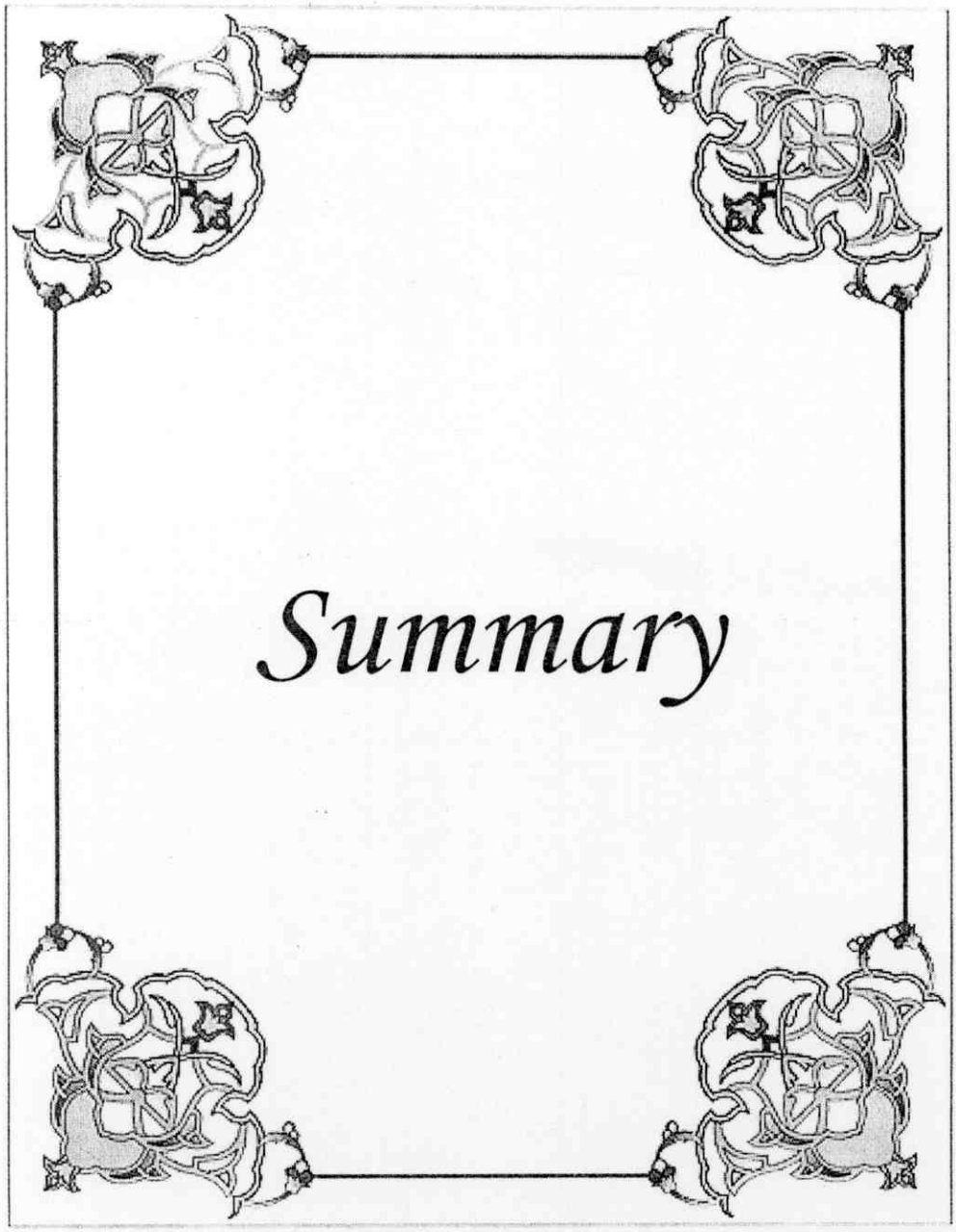

Summary

SUMMARY

The present work was carried out in the apiary of the Faculty of Agriculture, Moshtohor, Benha University on pollen grains which collected by honeybees (***Apis mellifera*** **L.**), during two seasons (2004&2005).

This work conducted at the Department of plant protection at the same faculty. The results of this work indicated the following points:

1- Survey on the pollen plants in Moshtohor plantation region:

Pollen foraging activity of honeybees (***Apis mellifera*** **L.**) in Moshtohor plantation was studied and indicated that about more than 50 flowering plants were sources for honeybee colonies in this area. The major pollen sources were Indian Corn (***Zea maize*** **L.**), Egyptian Clover (***Trifolium alcxandarinum*** **L.**), Citrus trees (***Citrus Spp.***), Broad bean (***Vicia faba*** **L.**), Wild mustard (***Brassika Kaber*** **Koch**), Orientals plants and weed grasses .

Pollen grains are examined and photographic for each types found in the earias of the honeybee colonies activities.

2- Pollen gathering activity:

2-1- Pollen gathering activity during the year 2004 and 2005:

Four F1 Carniolan colonies and four F1 Italian colonies used for this experiment. During the daily recorded of pollen traps on each colony per 3 days weekly were weighting the amounts of pollen trapped in two races. The mean amount of pollen trapped was 3412.5 g and 2049.59 g/ colony in case of F1 Carniolan and F1 Italian bees respectively during the year 2004. While during the

year 2005 it was 3059.5 and 4379.75 g/colony in case of F1 Carniolan and F1 Italian bees, respectively.

2-2-Trapping pollen collections to determine pollen flow periods during the Citrus trees blossoming:

Three F1 Carniolan Colonies and three F1 Italian colonies used for trapping pollen during the Citrus seasons 2004& 2005. The mean amounts of pollen trapped was 132.3 and 189.3 g/colony in case of two races, respectively during the Citrus season 2004. The mean amount of pollen trapped during the second season was 177.3 and 262.3 g/colony in case of F1 Carniolan and F1 Italian bees, respectively. This results indicated that was highly significant between the two races of honeybee colonies.

2-3-The amounts of pollen trapped during the clover blossoming of 2004& 2005:

Three F1 Carniolan and F1 Italian colonies were used for trapping pollen during the Clover season 2004& 2005. The mean amount of pollen trapped was 249 and 243 g/colony in case of F1 Carnelian and F1 Italian bees, respectively, during the Clover season 2004. While the amount was 232.66 and 389 g/colony in case of F1 Carniolan and F1 Italian bees, respectively during the second year (2005).

2-4-a. The activity of honeybee workers on the gathering of Corn pollen (*Zea maize* L.) during 2004 & 2005:

Pollen traps are placed on three colonies of F1 Carniolan bees and three colonies of F1 Italian bees.

In 2004 the mean amount of pollen trapped during the active season on corn was 396.0 and 640.0 g/colony in case of F1

Carniolan and F1 Italian bees, respectively. While it was 686.3 and 1157.6 g/colony in case of F1 Carniolan and F1 Italian bees, respectively, during the Corn pollen season 2005.

2-4-b. Temporal changes in total wet weight of pollen for 3 colonies during the tasseling periods (10 day in 2005):

The data showed that after the 6- day from the fitted of trap on the hives, the total wet weight of pollen trapped per day was decreased gradually until the 10- day, therefor the pollen traps used for 3 days weekly during pollen flow season

2-4-c. Comparative distribution of major pollen types in pollen traps at two seasons (2004 & 2005):

The average of percentage of pollen trapped during the two seasons (2004 & 2005) was 49.7% pollen of ***Citrus Spp***, while it was 88.5% pollen of Clover in case of Clover pollen flow season. This percentage was 97% pollen of Corn in corn flow seasons 2004 & 2005.

2-4-d. Comparative behaviour of pollen foragers during the tasselling period of Corn in (2004 & 2005):

In both races of honeybees the frequency of pollen trips decreased as the day progressed, but that of nectar trips increased.

2-4-e. Evaluation of Corn pollen production from plants by removed its from flowers during the tasselling periods:

Amounts of pollen harvested from Corn spikes during the tasselling periods on (2004 & 2005), was estimated .

The amounts of pollen produced per a Corn tassele was 0.379 g in 2004, while it was 0.414 g in 2005.

3- Amounts of pollen stored in the honeybee colonies through the year (2004 & 2005) , in square inches:

Pollen storage activity was measured in 12 colonies (6 colonies of F1 Carniolan and 6 colonies of F1 Italian bees). The results indicated that the mean total of bee bread was 518.5 and 549.49 in^2 /colony in case of F1 Carniolan and F1 Italian bees, respectively, during the year 2004 while it was 493.16 and 835.67 in^2/colony in case of F1 Carniolan and F1 Italian bees, respectively, in the second year.

Te results indicated also that the highest month of pollen storage was July and the lowest month was January in both two seasons 2004 & 2005 and both races.

4- The amounts of pollen storage in the hive as bee-bread during the pollen flow seasons (2004 & 2005):

The data illustrate that there are 3 main pollen flow seasons (Citrus, Clover and Corn) and the amounts of stored pollen were different in these seasons. The mean amounts of bee bread was 473.2 and 488.4 g/colony in case of F1 Carnelian and F1 Italian bees, respectively, during the year 2004, while it was 424.4 and 462.4 g/colony in the second year.

5- Brood rearing activity of honeybee through a year 2004 & 2005:

The data indicated that there were three main periods for brood rearing. The highly months of brood rearing were March, August and June during the season 2004 & 2005.

The main total amount of worker sealed brood during the year 2004 was 524.8 and 682.4 in^2/colony in case of F1 Carnelian

and F1 Italian bees, respectively. While it was 537.0 and 677.8 in^2 /colony in case of the second year.

6- Identification of honey sources and types by pollen analysis of honeys from some apiaries and markets during different seasons:

An investigation was carried out on 16 samples obtained from 13 locations. It could be concluded that the main sources of pollen in Egypt were correlated with the nectar flows seasons (Citrus nectar & pollen flow season, Clover nectar or pollen flow season and Cotton nectar or Corn pollen flow season), our experments indicated that, the number and species of pollen found in honeys under the microscopic exam.

7-Considerations on pollens of Royal Jelly and its geographical origin:

The amounts of pollen observed in the samples of royal jelly harvested during the different active seasons and also samples of Chinese Royal Jelly. The results indicated that the geographical origin of royal jelly a polynological research was carried out in order to verify the possibility of establishing the geographical origin of royal jelly by means of pollen Spectrum study.

8- Pollen grains in propolis of honeybee colonies at different sources:

Four propolis sampels were collected from different apiaries and from different seasons. From the extraction of these samples we found that the percentage of pollen grains was 5.8%. These pollen grains are examened and photographic.

9-The effect of feeding honeybee colonies on the amounts of pollen collected during pollen flow season :

For studying the effect of feeding pollen to honeybee colonies show the decrease in pollen collection, while feeding with sugar syrup fortified with fruit syrup increased the amounts of pollen gathered by honeybee colonies .

10- Wax secretion activity during pollen flow in the hive of honeybee colonies, (2004&2005) :

For estimating the activity of honeybee workers on wax secretion during the pollen flow seasons, three empty frames added to each colony for natural comb building. The builder combs was weighed in the end of expermental season (Citrus, Clover and Corn pollen flow season).

11- The relationship between pollen stored in the hives honeybee colonies and other products during the nectar flow:

From the experments results it could be concluded that the increase of stored pollen in the hive gave the increase in the other hive products of honeybee, the main seasons in the activity of honey bee was started from March till the end of August yearly at the our location. Therfore, the programe of artificial feeding for honeybee colonies during September, October and November annualy .

12- Pollen traps as a method of Varroa mites control:

This experiment indicated that the using of pollen traps for Varroa mites control was about 55.6% of mites falling while in case

of using Varroazal only it was 86% for mite control. But in using pollen traps and Varroazal together it was 93% for mite control. The untreated colonies was averaged of 12.8% mites fall. This method for Varroa mites control can be used for IPM in the program of the honeybee colonies protect from Varroa mites .