بسم الله الرحمن الرحيم

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EVALUATING EFFICIENCY OF SOME HONEYBEE RACES IN POLLEN COLLECTION IN QALYUBYIA GOVERNORATE

By

EMAN HAMDY MOHAMED ABD-ELSALAM
B.Sc. Agric. Sc., (Plant Protection), Fac. of Agric. Moshtohor, Benha Univ., 2011
M.Sc. Agric. Sc., (Plant Protection), Fac. of Agric. Moshtohor, Benha Univ., 2016

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Approval Sheet

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This Thesis for Ph. D. degree has been approved by:

Dr. Soliman Mohamed Kamel **.....**
Prof. Emeritus of Economic Entomology and Apiculture, Faculty of Agriculture, Suez Canal University.

Dr. Adel Mohamed Elbassiouny **.....**
Prof. Emeritus of Economic Entomology and Apiculture, Faculty of Agriculture, Ain Shams University.

Dr. Naglaa Alahmady Ghzala **.....**
Head Research Emeritus of Apiculture, Plant Protection Research Institute, Agricultural Research Center.

Dr. Mahmoud Abd-Al Samie Mohamed Ali **.....**
Pro. of Economic Entomology and Apiculture, Faculty of Agriculture, Ain-Shams University.

Date of Examination: / / 2022

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Under the supervision of:

Dr. Mahmoud Abd-Al Samie Mohamed Ali
Professor of Economic Entomology and Apiculture, Department of Plant Protection, Faculty of Agriculture, Ain Shams University. (Principal supervisor)

Dr. Naglaa Alahmady Ghzala
Head Research Emeritus of Apiculture, Department of Bee Research, Plant Protection Research Institute, Agricultural Research Center.

ABSTRACT

Eman Hamdy Mohamed Abd Elsalam: Evaluating Efficiency of some honeybee races in pollen collection in Qalyubyia Governorate. Unpublished Ph.D. Thesis, Department of Plant Protection, Faculty of Agriculture, Ain Shams University, 2022.

To evaluate the efficiency of some honey bee strains in collecting bee pollen and other factors affecting pollen production, the current study were carried out in the apiary of the Bee Research Institute- Qanater al-Khairiya branch and in the private sector of the apiary located in Namol Village, Toukh District, Qalyubia Governorate, Egypt. Results summarized that beekeepers can produce bee pollen all the year round in this experimental area and they can use the pure Italian and Carniolan strains and their hybrids, but the most suitable race in pollen production is hybrid race (F1) and the most appropriate season in bee pollen production is summer and spring season. It can be concluded that Bottom Pollen Traps (Type, 2) had the highest values of pollen production followed by Front Drawer Pollen traps (Type, 1) while, the Plastic Slide Traps (Type, 3) had the lowest values of bee pollen production. The results also summarized that absence of bee pollen in honey bee colonies affected negatively the colony strength, where honey bee colonies which left without bee pollen traps on their entrances as control (group 3) significantly surpassed the two other groups in colony strength: honey bee colonies with bee pollen traps hanged in their entrance during the experiment period extended three months (group 1) and honey bee colonies with bee pollen traps hanged in their entrance for trapping bee pollen for one week and removed one week, respectively for the same aforementioned period (group 2). Thirteen plants as a pollen sources for foraging honey bees during spring season was identified in study areas during spring season, six of them was identified in Namoul region, they were ranged descending as preferring of foraging honey bee as: (Citrus, *Citrus sp*. L.) (Clover, *Trifolium alexandrium* L.) (Maize, *Zea mays* L.) (Dill, *Anethum graveolens*) (Cabbage, *Brassica oleracea var. capitata*) and (Sunflower,

Helianthus annus L.) (Snow thistle, *Sonchus oleraceus* L.). Seven plant species were identified in Al-kanater region; they ranged descending as preferring of honey bee as: (Clover, *Trifolium alexandrium* L.) (cabbag, *Brassica oleracea var. capitata*) (Dill, *Anethum graveolens*) (Maize, *Zea mays* L.) (Sunflower, *Helianthus annus* L.) (Snow thistle, *Sonchus oleraceus* L.) (Date palm, *phoenix doctylifera* L.) and (cotton tree, *Bombax ceiba*). Detection of some elements in bee pollen and bee bread collected from study areas in Qalyubia governorate, Egypt revealed that, the detection of high levels of (Fe) during autumn (644.8ppm) and winter season came next in this respect (598.7ppm). In addition, (Mn) came next to (Fe) in monitored levels, especially in summer and winter. Zinc (Zn) was found in considerable levels in spring and summer. It is interesting to notice that all samples collected during spring were found free from Co, Cr, Cd, Sn, Hg and Sb and the same was found with samples collected during summer/maize.

Keywords: Honey bees, *Apis mellifera*, Italian bees (*Apis mellifera ligustica*), Carniolan bees (*Apis mellifera carnica*), bee pollen, pollen traps, colony strength, pollen supplements, brood rearing, pollen load, bee flora, bee pollen identification and heavy metals.

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