

The Effect of Supplementary Feeding of Honeybees, *Apis mellifera* L. on Brood, Honey and Royal Jelly

Thesis

Submitted in partial fulfillment of
the requirements for the degree of

Master of Science
in Agricultural Science
(Economic Entomology)

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Date of examination: ٢٢/٥/١٩٩٦

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ABSTRACT

Feeding honeybees, *Apis mellifera* L. on sunflower seed meal, agwa, and dry medical yeast as pollen supplements, compared to sugar syrup, resulted in a significant increase in worker brood areas and royal jelly quantity, but no significant increase in honey quantity was observed. The best time to apply these supplements is autumn and winter (from September to March). The highest quantity of royal jelly was collected in spring and the least in winter and this quantity decreased gradually by frequent graftings. Thus, the first three graftings are enough, each remains for three days.

Physical and chemical analysis showed variations in honey produced in such feeding (TSS, moisture, O.D., viscosity, EC, ash, acidity, amino acids, total sugars, protein, lipid and minerals) and in royal jelly, sugars, protein, lipid and minerals were in variable amounts.

Honeys and royal jell produced showed different antibacterial actions on tested bacteria; *Escherichia coli*, *Bacillus subtilis* and *Staphylococcus aureus*.

Cadmium was found (range; 0,23-0,42 ppm) in all honeys tested, but clover honey only contained 0,046 ppm of cobalt. Relative levels of lead from 4,03 ppm in cotton honey to 10,77 ppm in clover honey were found, but royal jelly tested was free from cobalt and contained small amounts of cadmium. Lead ranged from 4,17 to 10,00 ppm. The presence of these heavy metals is very much important in indicating environmental pollution and symbolizing hazardous problem in public health.

Key Words: Honeybees, pollen supplements, brood rearing, honey, royal jelly, physico-chemical analysis and antibacterial activity.