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On

Applied Zoology, Profitable Animal Production, and Health: Current Status and Future
Progress (NSAZ-2022) 23rd & 24th September- 2022

Recent Trends in Applied Zoology

Dr.D.S.Rathod
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Dr. K.S.Raut
Mr.Datta Nalle

National Edited Book

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Recent Trends in Applied Zoology

Edited by: Dr.D.S.Rathod

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Survey of bee species, life cycle and Honey purification process at Chakur Dist. Latur

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Abstract:- Beekeeping is the thousands of years old entrepreneurship practice which was firstly started in Spain. This was found in different countries like Assyria, Babylon, India, Ejipt, Greece, Roam etc., The family like –Apidae is found to be more familiar bee species in India and Asia or European countries. The Apis genus includes many species like *melifera*, *dorsata*, *carana*, *indica* etc. In the present study bee species were surveyed from Chakur region, the bees were collected from different places of Chakur captivity. The lifecycle of *Apis mellifera* was also studied and it was noted that there are four stages like egg, caterpillar, pupa and Adult.

Key words:- *Beekeeping, Bee species, Life cycle, honey purification process, and Chakur Dist. Latur*

I] Introduction:-

Beekeeping is an art and a mesmerizing art, science and technique. In India beekeeping is thousand years old practice and now mostly practiced as a full-time occupation and an engrossing hobby to produce handsome income and table honey. Honeybees are special gift to mankind because beekeeping can be done for both their main pollinating crops. We can also get other products like honey, beeswax, propolis, bee venom, etc. These products have their widespread use in different small and large scale industries in India.

The only bitter part of beekeeping is the bee sting. Beekeeping also known as apiculture is an interesting hobby and an ideal agro-based subsidiary enterprise, providing supplementary and sometimes major income to the people in the rural areas. Honey is nature's miraculous food. The nutritional composition of honey is closer to fruit than it is to table sugar or any other sweetener. Honey bees are not only important for the honey and other products they provide but they are also vital as pollinators of agricultural and horticultural crops. Before taking up beekeeping as a profession, one must know the basic aspects of beekeeping such as different bee species, their biology, rearing and management methods, bee enemy and diseases, bee forage, role of honey bees in crop pollination and causes for pollinator decline and mitigation. Scientists, students, farmers, honey traders and all the stakeholders in the honey industry will benefit by the knowledge of beekeeping techniques.

History of Apiculture.

It seems that Man has taken honey bees since in the first set food on Earth. The oldest records of this are in cave paintings, a notable number which are found in Spain. It is estimated that the Apiculture or bee keeping is around 15000 years old. Honey firstly became an important commodity in Assyria, Babylon, India, Ejipt, Greece, Roam etc. Ancient Germany was another Honey country. *Apis mellifera* honey bees were brought from old world to the new Spanish.

Classification of Honey Bee

Phylum-	Arthropoda
Class-	Insecta
Order-	Hymenoptera[Memberane wings]
Family	Apidae
Genus-	Apis
Species-	dorosta,florea,indica,mellifera , cerana

Egg-Larva-Pupa –Adult [Life cycle Stages of *Apis mellifera*]

Material and methods.

The present study was undertaken under taken to study the Species diversity in Apiculture at Chakur Industrial area, here a good percentage of Honey is produced every year. Among the Apiculture species there are different species but on large extent he *Apis mellifera* is cultured. The life cycle stages of *Apis mellifera* includes four stages as

- 1] Egg
- 2] Larva
- 3] Pupa
- 4] Adult

Here in Chakur there are some other species also which are cultured in small percentage these are

- 1] Apis Dorosta:-** Rock-Wild bees-not domesticated. Lives at high altitudes at height of 1000m.
 - 2] A. Florea –** Garden bee /little bee, built small ,isolated combsto trees, walls and ceilings. Honey is stored in top cells.
 - 3] A.Indica,-** Indian bee domesticated
 - 4] A.Mellifera-** European bee-Domesticated bee.
- Apis mellifera* is similar to *A.indica* .In the present investigation this bee was found on large extent at chakur MIDC.
- 5] A. Cerana –** Domesticated bee:- This bee is distribute in China, Japan and India.

Apiculture is also known as Bee keeping. In Latur district at different places the Apiculture is practiced by Apiarists .In Latur district nearly more than 45 Apiculturists are involved in Honey and other bi-products. By keeping in view in the Covid 19 pandemic situation this study was undertaken, Apiculture centre located in MIDC at Chakur Tq.Chakur District Latur . This place is 34 kms away from Latur city .Its geographical location is North Latitude –18⁰.30,0” and East longitude is 76⁰.53’0”.It is under Chakur Thasil Office.

Present work was undertaken for three months, March 2021 to May 2021.During this period 3 times the site was visited for investigations. Every time photographs and details

were collected for this work. Here all the four stages of Honey bee were found as per the references as its life cycle was completed within 24 days for drone, 21 days for workers and 16 days for queen . It was found that this insect is very socialorganism and shows best example of its organization where in one hive 15000-20000 honey bees are found among these 100-150 are Drones, Single Queen and rest of all are workers more than 15850 and requires less intensive care in Apiculture.

Table no.1-Life cycle stages and days required to completion in Queen, Drone and workers.

Forms	Egg	Larva	Pupa	Total
Queen	3	5.5	7.5	16
Worker	3	6	12	21
Drone	3	6.5	14.5	24

Lifecycle and caste developmental period in *Apis mellifera*.

Result and discussion.

In this Chakur village mainly three Apiculture projects are under going for Honey production on commercial basis. The present study was undertaken to study the Life cycle stages of honey bee and species diversity Apis genus. This study was undertaken in the month of March 2021. During the study the it was found the life cycle is completed in four above mentioned stages .The life cycle of Drone was completed within 24 days for drone, 21 days for workers and 16 days for queen.

The first stage arrived when the female moth laid the eggs after fertilization with male moth in the month of march on 22 March 2021.After 10 days eggs were hatched in tiny larva on 27 March ,this larva grown fully on 2nd April 2021 . Larva's were fed by workers by honey mostly and these were developed into worker bees the infertile female –2n, Worker bees sterile female-2n-with nonfunctional ovaries involved in all sorts of duties in Honey Hive. Healthy larva can be fed with royal jelly a substance secreted by head gland of worker bees which helps that larva to be metamorphosed in Queen. The unfertilized eggs developed in to Drones-n- fertile males. In this centre there are nearly 1000 artificial hives. These hives are playing vital role in crop pollination by increasing the crop production by 30-80% yield incensement. During this investigation .These artificial hives/bee boxes are kept in crop fields of Sunflower, mustard, Mellons, broccoli,Apples, Almonds, Cherry, Cranberries in different states like Rajasthan, Punjab Maharashtra, Himachal Pradesh etc.

For one hector crop field pollination in Monsoon season 5 to 6 boxes can be kept on the borders of that farm and like this according to the increased area of farm no. of bee boxes are increased.

Honey Collection:-

After this the bee boxes are collected from the farms when pollination is complete. These bee boxes are transported during night, it is easy for bees, as they don't attack during night time. These boxes are brought at MIDC area, then taken out, on the bee hive plate, the larva bearing cells are closed, then the honey stored cells can easily be identified, these cells are superficially given a cut by Knife and are transferred to the honey extractor for honey collection. Honey extractors are manual or electrical where the hive plates are loaded, and manually operated by hand due to this a centrifugal force gives out the honey out which is collected, purified, tested and packed in bottles for selling.

The bee boxes are also provided on hire for the farmers to increase the pollination in Horticulture. The required environmental conditions were maintained at the silk house, like the optimum temperature for best mulberry growth is 23.9 to 26.6⁰C, The sunshine in this region is 7-8 hours found good for the growth of Mulberry During study period temperature ranged between 24 to 32⁰C. Rain fall in Ambajogai taluka is 770mm which found to be useful for growth of mulberry plantation.

Conclusion

- Four species of honey bees found in India are...Apis dorsata, Apis florea, Apis cerana indica, Apis mellifera.
- There is need for deploying about 150 million Bee colonies for pollinating major agricultural crops in the country.
- Beekeeping employs 2, 50,000 people in India and provide employment opportunities.
- Beekeeping is excellent and multiple source of income by providing part time occupation.
- So there is a great potential and scope of beekeeping in the country

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