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## Major Beneficial Insect Found In Taranagar Region of Churu District (Rajasthan)

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**Abstract-** Insects are a highly diverse and biologically successful group of animals. On a broad level, these are categorized into two categories – Pest and Beneficial insects. In agricultural land, many insects are found which are not hazard to crops and plants but beneficial for them in different ways such as-pollinators, scavengers, decomposers, predators, weed killer, soil builders, natural enemies, biological controllers, etc. This study gives special knowledge about beneficial insects of the Taranagar region which is situated in the Churu district of northwest of Rajasthan (India). In this study, 11 types of beneficial insects are observed by the researcher that is – bees, flies, wasps, butterflies, moths, dragonflies, termites, aphids, praying mantis, beetles, and ants.

**Keywords** – Benefits, Insects, pest control, Taranagar region, Churu, Rajasthan.

**Introduction-** There is different types of organisms found in the Earth's ecosystem which have advantages and disadvantages. In the Animal kingdom, insects are belonging to the class Insecta of the Arthropoda phylum. Insects are unique arthropods that are found in almost all types of natural habitats such as desert, aquatic, aerial, terrestrial, Polar Regions, etc.

Approximately 1.5 million of all known species are classified as insects. This study is based on major beneficial insects of the Taranagar region. Insect species that perform valuable services and provide beneficial products or materials in favor of humans and other animals are called beneficial insects. In a natural ecosystem, beneficial insects provide their services in different ways such as - soil formation, pollination, biological control of pests and nutrient recycling, etc.

Beneficial insects play a major role in pollinating food crops and flowering plants. Insects are natural pollinators present in the environment, especially in gardens and agricultural fields. Ground dwelling insects play a vital role in soil formation or soil fertilization by the breakdown of dung particles, by decomposition of dead leaves and organic material, etc. Some insects play their role as an agent of disease and help to reduce weeds.

This study aims at increasing the existing knowledge and information on beneficial insects in the study area.

#### **Objectives of the study-**

1. Raising public awareness about beneficial insects.
2. Creating awareness for the conservation of beneficial insects.
3. To identify the current status of beneficial insects present in the study area.
4. To enhance the knowledge about beneficial insects.
5. To spread the knowledge of insects for the economy.
6. Efforts to make farmers aware of beneficial insects.

**Study area** - “Rajasthan – A Land of Rajputana” is the largest state in northern India. It is mostly comprised of the Thar Desert. The present study is carried out in the Taranagar region of Churu district in the Indian state of Rajasthan located at 28°68’N 75°03’E. This area is completely a part of the Thar Desert and has an arid and hot climate. Sand dunes, dry and hot winds (known as “loo”), scarcity of water and food, and seasonal temperature variation are the salient feature of this area. There is very low rainfall noticed in this area. There is no river and lake. The people and other fauna found in this area are completely dependent on agriculture and most of the agricultural activities are dependent on rainfall.

However, now irrigation facility has also started in some places. Sahwa lift canal is a branch of the IGNP canal that provides water to the Taranagar region for irrigation, drinking and other purposes. The researcher covers the complete area of the Taranagar region and most of the villages present nearby Taranagar for the study of beneficial insects.

**Methodology:** The author used the following research methods and materials for this research work.

**Materials** - During the study of beneficial insect's entomological forceps, insect collection net, insect preservation box, killing bottle, hand lens, camera, mobile, microscopes, etc. types of equipments are used by the researcher.

**Methods** – For this study data are collected by visiting the Taranagar and nearby areas of the study area. Field work, direct observation method, survey method, and photography of insects, hand-picking method, and talk with farmers, etc. methods are used by the researcher.

**Result and discussion-** In this study, 11 types of beneficial insects are observed by the researcher that is – bees, flies, wasps, butterflies, moths, dragonflies, termites, aphids, praying mantis, beetles, and ants.

These are mentioned as follow-

- 1. Bees** – Bees are good and major pollinators of plants and crops that help us to provide fruit, nuts, flowers, seeds, etc. These are the major part of the earth's ecosystem. Bees are used for scientific research also. This helps in cross-pollination. Because bees have social organization so they teach us cooperation, living together with each other, symbolism, etc. In the study area, some types of bees are found for example – honey bee, carpenter bee, leafcutter bee, bumble bee, etc.

Honey bee provides the most valuable economic products such as – honey, bee wax, royal jelly, etc. these products are much nutritious and used for medicinal purposes, care products, furniture polish, candles, in laboratories, etc. Beekeeping or bee farming is a major source of employment also.

Carpenter bees are known for pollination purposes mainly.

- 2. Butterflies** – Butterflies show the mutual relationship with flowering plants. These are major pollinators. These visits from one flower to another for collecting and eating nectar. When they visit on flower, pollen grains are stuck with their legs and transferred to other flowers. These are the major indicators of our healthier ecosystem. Butterflies have a fun factor also. Because these are colorful and attractive so they make us happy and are good for our mental health. Eggs and caterpillars of butterflies give nourish other animals such as – reptiles, ants, fowls, scorpions, etc. in the study area many different types of butterflies can be seen for example – plain tiger butterfly, swallowtail butterfly, yellow grass butterfly, common emigrant butterfly, etc.
- 3. Moths** – Moths are important pollinators specifically in the dark because at night almost animals have settled down and moths are active during or after dark. They also help in seed production when feeding on flower nectar. Moths and their caterpillars are important food for various animals such – lizards, other insects, frogs, spiders, birds, mammals, toads, etc. so they play a vital role in food webs.
- 4. Beetles**– Beetles are known for the colorful marking present on their body. They eat caterpillars, maggots, aphids, mealy bugs, thrips, leafhoppers, mites, etc. and help in pest management. There are different types of beetles are present in the study area for example – ladybird beetle, ground beetle, rolling dung beetle, jewel beetle, darkling beetle, pulse beetle, click beetle, longhorn beetle, etc. Aphids and mites which feed on various plants and are damaged to them are infested by the adult and larva of the ladybird beetle. Ground beetle consumes the seed of weed so they help to reduce weed and insects in the field. Rolling dung beetles provide many important benefits to both natural and human-modified ecosystems such as- seed dispersal, promoting plant growth to provide them nutrients present in dung, reducing parasites of livestock, etc.
- 5. Flies** – Flies act as decomposers and scavengers because they consume rotting organic material. Their major benefits can be seen as pollinators so they are found mostly feeding on flowers. They also control the number of soft-bodied insects such as thrips, caterpillars, aphids, mealy bugs, etc. Hoverfly, ber fruit fly, house fly and fruit fly (*Drosophila*), etc. are found in the study area. The larvae of hoverflies can control 60%-80% population of aphids. *Drosophila* plays a vital role in the study of genetics and development biology.

**6. Praying mantis** – It works as an exterminator when other insects are being problematic and destroying crops or gardens. In the field and garden, mantises eat moths, caterpillars, grasshoppers, aphids, flies, cockroaches, mosquitoes, etc. So they control the population of pests and help farmers and gardeners. They naturally keep down the bug population and are also an excellent garden friend.

It also has fun facts such as rotation of the head at 180° and praying position for waiting to capture the prey.

**7. Wasps** – wasp helps in pollination. They also do predation and prey on many insects such as flies, ants, whiteflies, crickets, caterpillars, spiders, aphids, etc. So that they play a major to control the insect pest population as a biological controller.

**8. Dragonflies** – dragonflies are attractive, colorful, harmless and more beneficial insects. The presence of dragonflies indicates a healthy ecosystem because they lay their eggs on clean water bodies. Mostly these feed on mosquitoes so they do excellent work in reducing the mosquito population present around watery places and helps in decreasing the disease spread by mosquito.

The flight of dragonflies inspires engineers for making robots that fly like dragonflies.

**9. Ants**- Ants have the salient feature of decomposition. They can feed on a wide variety of organic waste and decompose them. Ants collect seeds for food so that they also help in seed dispersal. On our planet, these are popular for their number, soil fertilization and ecological balance. An interesting fact about ants is that they can carry more than twenty times of their own body. Ants create stabilization in our ecosystem by recycling organic material, dead animals, and decaying matter and putting nutrients back into the soil.

**10. Termites** – Termites are works as scavengers and decomposers. They eat dead and decaying material of animals and plants. They decompose the tough plant fibers and recycle them into fertile soil. These improve the health of the soil and deposit nutrients back into the soil.

**11. Aphids** – In the garden aphids play a major role as the base of many food chains. Any different predators feed on such as birds, other large insects, mammals, etc. So that they stabilized the natural food chain and food web.

**Conclusion-** Conclusively this study provides special information about beneficial insects that are found in the study area. A total of 11 types of beneficial insects are explained by the researcher such as – bees, beetles, flies, wasps, ants, mantis, aphids, butterflies, moths, dragonflies and termites. Insects are the agents of biological control. They regulate the number of pests in different circumstances. Insects can cause direct pest mortality or can interfere in the feeding activities of pests and reduce their number. Insects provide an economic product like – honey, bee wax, royal jelly, etc. These are also a source of employment for the unemployed.

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### References-

1. Van Emden, H. F. (1964). The role of uncultivated land in the biology of crop pests and beneficial insects. *Scientific Horticulture*, 17, 121-136.
2. Zotti, M. J., & Smagghe, G. (2015). RNAi technology for insect management and protection of beneficial insects from diseases: lessons, challenges and risk assessments. *Neotropical Entomology*, 44(3), 197-213.
3. Singh, P. (1982). The rearing of beneficial insects. *New Zealand Entomologist*, 7(3), 304-310.
4. Siviter, H., & Muth, F. (2020). Do novel insecticides pose a threat to beneficial insects?. *Proceedings of the Royal Society B*, 287(1935), 20201265.
5. Getanjaly, V. L. R., Sharma, P., & Kushwaha, R. (2015). Beneficial insects and their value to agriculture. *Research Journal of Agriculture and Forestry Sciences ISSN*, 2320, 6063.
6. Hogg, B. N., Bugg, R. L., & Daane, K. M. (2011). Attractiveness of common insectary and harvestable floral resources to beneficial insects. *Biological Control*, 56(1), 76-84.
7. Long, R., Corbett, A., Lamb, C., Reberg-Horton, C., Chandler, J., & Stimmann, M. (1998). Beneficial insects move from flowering plants to nearby crops. *California Agriculture*, 52(5), 23-26.



8. James, D. G. (2003). Synthetic herbivore-induced plant volatiles as field attractants for beneficial insects. *Environmental entomology*, 32(5), 977-982.
9. Pontin, D. R., Wade, M. R., Kehrl, P., & Wratten, S. D. (2006). Attractiveness of single and multiple species flower patches to beneficial insects in agroecosystems. *Annals of Applied Biology*, 148(1), 39-47.
10. Arnold, S. E., Elisante, F., Mkenda, P. A., Tembo, Y. L., Ndakidemi, P. A., Gurr, G. M., ... & Stevenson, P. C. (2021). Beneficial insects are associated with botanically rich margins with trees on small farms. *Scientific reports*, 11(1), 1-11.

