



Feeding Behaviour Of Grasshopper (Caelifera) In Desert Region Of Dheerwas Bara Village, Teshil Taranagar, Churu (Rajasthan)

Saroj Godara (NET, RJ SET)

ABSTRACT:- This paper presents the feeding behaviour of grasshopper in Dheerwas Bara Village of Churu District In Thar Desert of Rajasthan state. This research provides general information about the feeding behaviour of grasshopper. This research is conducted in rural area.

During research a total of 10 species of grasshopper belonging to two families were recorded. During this research the damage caused to crops by grasshoppers has been measured.

KEYWORDS:- Grasshopper, Feeding behaviour, Dheerwas Bara, Desert, Rajasthan , Churu.

INTRODUCTION:- In this world various organism are present in their natural habitat. They have unique beauty and features in their phylogeny. Insect is one of them organism witch found abundant on it. Insects are beautiful creatures with a large diversity among them they are most important organism and play important functional role like pollination, decomposition etc.

Grasshopper belong to the order Orthopatera of the Phylum Orthopoda and the class Insecta. The main character of the insecta class the three pairs of legs is also present in the Grasshopper. The body of the Grasshopper is divided into three parts. (Head, Thorax and Abdomen) head witch bears the sensory structures such as eyes, antennae and mouth parts. The grasshopper has mandibulate mouth parts. That are directed an downward for biting and chewing the leaves of a host plant. Grasshopper are mainly herbivores feeding on plant material such as grass and leaves. The mandibles in these Grasshoppers are sharp, rigid, and strong and they are used to capture, tear and chew food. They have to maxillae, one to hold the food and a second to bring the chewed food into their mouths. Acridid Grasshoppers usually are large insects their antennae are relatively short, usually less than half the length of their body. Wings and legs were attached to the thorax portion of the Grasshopper. Acridids may be winged or wingless but if winged they have four wings. Most adult Grasshoppers are strong flyers but some species have short flightless wings. The forewings or first pairs of wings are somewhat thickened and pigmented. They are called tagmina. The hind wings are not thickened and may range from unpigmented to brightly coloured hind wings to startle would be predators as the adults fly away. Both adults and nymphs have strong hind legs that allow them jump distance. The abdomen, which bears the digestive and reproductive structure present. Grasshopper Hemimetabolous insects. They under goes incomplete metamorphosis, the nymph look very much similar the adults but have wing pads instead of developed wings. They hatch from an egg into a nymph which undergoes five moults. Female Grasshopper lay pods of eggs in the soil near the end of summer.

These eggs are the overwintering stage and nymphs emerge as temperatures warm the following year. Young nymphs feed on tender plants and as they mature migrate to other areas and feed on a large variety of plants. Nymphs reach the adult stage in about 1.5 to 2 months. There is usually one generation per year.

OBJECTIVES:-

1. To study about the Grasshoppers.
2. To know about feeding behavior of Grasshoppers.
3. To collect information for scientific knowledge, public awareness about Grasshoppers.
4. To study different types of behavior in Grasshopper.
5. To know about habitat of Grasshopper in desert region.
6. To know that a grasshopper behaves like a pest.

To study was conducted to find out whether Grasshopper causes damage to crops.

STUDY AREA:- Study Area Rajasthan is the largest state of India. It is located in the northwest of India. Its geographical location is 23.3 to 30.12 north latitude and 69.30 to 78.17 east longitude. It covers 3,42,239 sq. km of the total geographical area of India. Rajasthan shares its border with another country Pakistan. It also shares its border with 5 other states of India. Its major features include the ruins of the Indus Valley Civilization at Kalibanga and Balathal. It includes most of the vast and inaccessible Thar Desert. The Thar Desert is also known as the Great Indian Desert. Rajasthan covers 60% of the Thar Desert. This desert is spread in the north-western part of Rajasthan. This region includes many districts of Rajasthan. Such as Barmer, Bikaner, Churu, Jaisalmer, Jalore etc. Churu district includes a part of the Great Indian Desert. Churu is the north-easternmost in Rajasthan. Churu district shares its border with another state Haryana. It is believed that it was a village of Jaats known as Khalera ka Bas. There is a fort in Churu called Churu Durg. This fort is also known as the fort that shoots silver bullets. Churu is spread over an area of 13,858 square km in India. Tal Chhapar Sanctuary is located in Churu district which is famous for black deer. This area records temperatures ranging from below freezing point in winter to more than 50 degrees in the afternoon of summer. There are total 8 tehsils in this district like Taranagar, Sujangarh, Ratangarh, Sardarshahar, Rajgarh, Bidarsar and Sidhmukh etc.

Taranagar is a town and block in Churu district. It is located at 28.41'N to 75.3'E. Taranagar was earlier known as Reni after the name of the lady Rankali. It was named by Maharaja Ganga Singh in honour of Raja Tara Singh. Taranagar town is surrounded by a large number of villages on all sides. At present there are 124 villages in which mostly small to medium size land holders and farmers live. Farmers grow two main crops here Rabi and Kharif.

This study was conducted in Dheerwas Bara area which is 30 km away from Taranagar. And 95 km away from the headquarters of Churu district. This village is a large village in Taranagar Tehsil. Where most of the people are engaged in farming. It is an arid area of the Thar Desert.

Where about 1000 households live. A part of the desert, it experiences extremes of climate both in summer and winter, which is however considered good for building immunity for general health. There people dependent on farming for food and income. And annual precipitation is 812 mm. This area received water from IGNP canal for agriculture purpose. Since few years farmer grow peanut in Kharif crop. The crop production in this area is very good due to the proper irrigation system.

MATERIALS AND METHOD:-The present study was carried out in the Dheerwas Bara Village in Churu district Of rajasthan state. The study was conducted in the month of march – june in 2024. The other collected Grasshopper from the area around the village and took his photo with the phone. The author went to the field and directly observed the feeding behavior of the Grasshopper. The author also visited the fields & observed the damage caused by grasshopper.

RESULT AND DISCUSSION:- A total of 10 species of Grasshopper belonging to 2 families were recorded during this research.



Figure 1&2 Showing common field Grasshopper (Chorthippus brunneus)

The Grasshopper is polyphagous in nature and consumes several different kinds of foods but they mainly eat plants. Grasshopper are mainly herbivores. It prefers to eat plant materials particularly grass and cereal plants. But sometimes it also exhibits omnivorous behavior and consumes animal tissues and wastes. Grasshoppers are found occasionally feeding on dead insect. Upon molting, some of the Grasshopper have also been observed of cannibalism.

Grasshopper do not drink water directly and fulfill their water needs from the grass they feed on. There are 18,000 different Grasshopper species around the world. All the species do not exhibit the same behaviour toward diet.

Grasshopper have a typical insect digestive system they nibble food in small chunks using their mandibles and then chew it with their jaws. The most favourite food of Grasshoppers are clover, wheat, cotton, rye, corn, oats, barley and alfalfa. They also like to eat grass, shrubbery, flowers, leaves barks of some plants, weeds and seeds. Some Grasshopper occasionally consume toxic vegetation and store the toxins in order to keep the predators away.



Fig. 3 showing Common Green Grasshopper, Omocestus viridulus (Linnaeus, 1758)

Grasshoppers found in the desert are omnivores, which eat a wide majority of plant species. Insects and even other Grasshoppers in captivity. Grasshoppers are mostly feed on fresh grasses, Fresh leaves of corn and wheat,

alfalfa, barley leaves, lettuce and other vegetable plants. Grasshoppers are one of the largest and most diverse insect groups. They are functionally important, being the dominant aerial invertebrates in natural grasslands. Some Grasshoppers cause significant damage to tree seedlings and agricultural crops. They are also important components of the food chain of some vertebrates and thus resource management practices that alter the dynamics of the Grasshoppers populations will affect various trophic levels in the food chain.

CONCLUSION:- The author found that Grasshopper act as a major pest. Grasshoppers eat trees, plants and crops, causing financial loss to farmers, so it has become necessary to control them. Farmers should be informed about the measures to control Grasshoppers so that major losses can be avoided.

ACKNOWLEDGMENT:- The author express his gratitude to the Manohar Godara (NET, JRF) Guest Faculty, Department of Zoology, M.J.D. College Taranagar (Churu) for this research work.

REFERENCES:-

- Joern, A. (1979). Feeding patterns in grasshoppers (Orthoptera: Acrididae): factors influencing diet specialization. *Oecologia*, 38, 325-347.
- Harrison, J. F., & Fewell, J. H. (1995). Thermal effects on feeding behavior and net energy intake in a grasshopper experiencing large diurnal fluctuations in body temperature. *Physiological Zoology*, 68(3), 453-473.
- Harley, K. L. S., & Thorsteinson, A. J. (1967). The influence of plant chemicals on the feeding behavior, development, and survival of the two-striped grasshopper, *Melanoplus bivittatus* (Say), Acrididae: Orthoptera. *Canadian Journal of Zoology*, 45(3), 305-319.
- O'Neill, K. M., Streett, D., & O'Neill, R. P. (1994). Scavenging behavior of grasshoppers (Orthoptera: Acrididae): feeding and thermal responses to newly available resources. *Environmental Entomology*, 23(5), 1260-1268.
- Ren, J. L., Kang, W. J., Li, J. X., Jin, X., Li, K. X., & Zhao, L. (2024). Food-plant choice of seven dominant grasshopper species in the Xinjiang grasslands. *Journal of Orthoptera Research*, 33(1), 157-168.
- Liu, S., Chen, M., Li, P., Baoyin, T., Hou, X., & Yin, G. (2024). Impacts of Livestock Production on Grassland Grasshopper Disasters. *Agronomy*, 14(4), 820.
- OKATSU, Y., NAGAHATA, Y., & TSUTSUMI, T. (2024). Population ecology of the red wing grasshopper, *Celes skalozubovi akitanus* (Orthoptera, Acrididae) in Japan.
- Tanaka, S. (2023). Biology of *Patanga japonica* (Orthoptera, Acrididae): Nymphal growth, host plants, reproductive activity, hatching behavior, and adult morphology. *Journal of Orthoptera Research*, 32(1), 93-108.
- Sasaki, T. (2017). Neural and molecular mechanisms involved in controlling the quality of feeding behavior: diet selection and feeding patterns. *Nutrients*, 9(10), 1151.
- Lewis, A. C., & Bernays, E. A. (1985). Feeding behavior: selection of both wet and dry food for increased growth in *Schistocerca gregaria* nymphs. *Entomologia experimentalis et applicata*, 37(2), 105-112.
- Cigliano, M. M., De Wysiecki, M. L., & Lange, C. E. (2000). Grasshopper (Orthoptera: Acridoidea) species diversity in the Pampas, Argentina. *Diversity and distributions*, 6(2), 81-91.
- Pfadt, R. E. (1994). Field guide to common western grasshoppers (Vol. 912). Wyoming Agricultural Experiment Station.