Biological Forum – An International Journal **15(11): 208-209(2023)**

ISSN No. (Print): 0975-1130
ISSN No. (Online): 2249-3239

First Report of Mole Cricket, *Gryllotalpa Gorkhana* Ingrisch (Gryllotalpidae: Orthoptera) in Gujarat, India

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(Received: 08 September 2023; Revised: 09 October 2023; Accepted: 19 October 2023; Published: 15 November 2023)
(Published by Research Trend)

ABSTRACT: The mole cricket *Gryllotalpa* is an evolutionarily, medicinal, and agriculturally significant insect that inhabits underground environments and is distributed globally. The objective of the study was to look at the potato pests that are significant commercially in Northern Gujarat's main potato-growing districts. A new insect pest, the mole cricket (*Gryllotalpa gorkhana*), was discovered to be destroying the potato crop among the other pests that were seen. Damage to foliage, roots, tubers, and stem tissue can be inflicted by both adults and nymphs. Girdling the stems on the soil's surface and tunneling on the soil's surface are two prevalent infestation forms in seedling plants that have the potential to uproot the seedlings. Adults have forelimbs resembling shovels and measure around 20 mm in length. Its pronotum is big and oblong in nature, and its short antennae are filiform in kind. The small, rounded fore wings are followed by longer, membranous hind wings that extend upward.

Keywords: *Gryllotalpa gorkhana*, infestation, mole cricket and potato.

INTRODUCTION

The potato (*Solanum tuberosum* L.) belongs to the solanaceae family is one of the major food crops in terms of world production. It is relatively the emerging tuber crop globally which contributed significantly into food and nutritional security, particularly in the developing countries. Due to its higher nutritional content, it is an important staple food in many countries. In India, potato is being cultivated of around 1.5 million hectares with an overall production of about 508.57 lakh tonnes during the year 2019-2020. West Bengal, Uttar Pradesh, Gujarat, Bihar, Madhya Pradesh, Assam, Punjab, Jharkhand, Chattisgarh and Haryana are the main growing states of potato in India. In Gujarat, potato is being cultivated of around 1, 24, 646 ha with the production of 37.08 lakh tonnes during 2018-2019 (Anonymous, 2019).

A total of 29,000 species comprises the Orthoptera, which is divided into two suborders: Ensifera (crickets, katydids, and weta) and Caelifera (grasshoppers and locusts). Mole crickets (Ensifera: Gryllotalpidae) are a small monophyletic group within the Gryllidea clade that consists of more than 100 species in six genera across the globe. Gryllotalpids are pest insects adapted to living underground and characterized by unique morphological characteristics digging foreleg, tumescent pronotum, short antennae, and hind legs that are incapable of jumping (Kuo Sun *at el.*, 2023).

Which are soil-dwelling insects and strong fliers but are rarely seen because they live in soil and are active at night (Townsend, 1983). The mole crickets usually infest the seedlings by feeding belowground on roots and tubers and also above surface on stem tissue or foliage. Due to its habit of underground tunnelling or basal portion of stem, makes it critical for distribution, damage and infestation prediction. It is necessary to gain knowledge about the occurrence time and life cycle of mole cricket, which provides the strategy for controlling the pest in effective manner.

MATERIALS AND METHODS

The current investigation was carried out during the month of November to February, 2019-20 at major potato growing district locations of Banaskantha, Sabarkantha, Gandhinagar, Aravalli, Mehsana and Patan, Gujarat, India. The collection of mole crickets was done with two sampling methods *viz.* pit fall trapping and hand picking. The samples collected were killed and properly pinned on the thoracic region. The morphological characteristics of the collected specimens were examined under the stereo-microscope in the entomological laboratory. The specimens collected were also sent to MPUAT (Maharana Pratap University of Agriculture and Technology), Udaipur, Rajasthan (India) for the species identification of mole cricket.

RESULTS AND DISCUSSION

During the period of observations, the infestation of mole cricket was noticed on potato crop in the month of November to February, 2019-2020. The peak period of activity and infestation of mole cricket was observed during January and February month.

A. Nature of damage

The nymphs and adults of mole cricket, usually damage seedlings by feeding above ground on stem tissue or foliage and belowground on tubers and roots of potato. In seedling plants, stem girdling at the soil surface is a

common infestation form, also in some cases the young plants were severely injured and pulled belowground for consumption. Additionally, infestation to young seedlings is caused by tunnelling in the soil surface, which may dislodge the potato seedlings or leads to desiccate (Fig. 1).

B. Morphological characters

Adults are cylindrical-bodied, around 20 mm length, with small eyes and shovel-like fore limbs (Fig. 2). They are plump, yellowish-brown in color and paler beneath. It has a short antenna with filiform type and pronotum with oblong and larger in nature. The wings are projecting slightly from beneath the fore wings. The fore wings are rounded, short and the membranous hind wings which exceed or reach to the abdominal tip.

There was no earlier report regarding infestation of *Gryllotalpa gorkhana* on potato crop from Gujarat. Therefore, the current investigation of this mole cricket species was identified for the first time on potato crop from this region.

Fig. 1. Soil tunnelling and potato tuber infestation.

Fig. 2. Mole cricket, *Gryllotalpa gorkhana* adults: Dorsal and ventral view.

CONCLUSIONS

The paper deal with one species, *Gryllotalpa gorkhana* (Gryllotalpidae) recorded from different district locations of Banaskantha, Sabarkantha, Gandhinagar, Aravalli, Mehsana and Patan under jurisdiction S. D. Agricultural University, Sardarkrushinagar. Therefore, new record of Gryllotalpidae distribution in northern Gujarat has been identified.

Acknowledgement. The authors are greatly thankful to Dr. Ashok Kumar Meena and Dr. Swaminathan Iyer, MPUAT (Maharana Pratap University of Agriculture and Technology), Udaipur, Rajasthan (India) for identification of mole cricket species as *Gryllotalpa gorkhana*.

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How to cite this article: Barad C. S., Rabari P. H., Gothi H. R., Thakar P. K. and Patel P. S. (2023). First Report of Mole Cricket, *Gryllotalpa Gorkhana* Ingrisch (Gryllotalpidae: Orthoptera) in Gujarat, India . *Biological Forum – An International Journal, 15*(11): 208-209.