



OCCURRENCE OF TERMITE IN MULBERRY CULTIVATION AT SHEESHAMBARA, DEHRADUN, UTTARAKHAND

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ABSTRACT

Termite belongs to the order Isoptera of class Insecta are commonly called 'White Ants'. They are social insects and some of them are known to cause damage to mulberry. Most of the mulberry insect pests are seasonal specific and generally appear with leaf sprouting to complete their life cycle with its maturation. Whereas the presence of termites appears round the year. Termites in particular have posed a major problem to mulberry nurseries and plantations. The subterranean termites move to and from the underground colonies through their galleries and damage the young plant, bark and root of the standing mulberry trees resulting breakdown the system of food supply of the plant and thereby reduce quality and quantity of leaves which are not fit for healthy silkworm rearing. Termite is polyphagous in nature but prefers mulberry plant as compare to other trees observed at Basic Seed Farm, Sheeshambara, Dehradun. Though very rare but whenever and wherever they have assumed pest status, they have caused havoc and have incurred serious losses. The paper discusses, in detail, the occurrence of termite causing damage to mulberry cultivation.

KEY WORDS: Occurrence, Termite, Mulberry, Infestation, Sericulture.

INTRODUCTION

Mulberry, the sole food plant of mulberry silkworm, *Bombyx mori* L. is prone to attack by number of pests comprising insects and non-insect species. Among insects, termites are the most important, causing substantial damage to mulberry cultivation. Mulberry is one of the major components of sericulture since the quality and quantity of the leaf produced per unit area have a directly affecting on cocoon harvest and silk quality (Yogananda Murthy *et al.*, 2013). So far more than 300 species of insect and non-insect species are reported to infest one or the other part of the mulberry plant (Khan *et al.*, 2004; Bania *et al.*, 2006). Severe termite infestation on mulberry and other trees were also reported from different states of India (Vishnoi, 1960, 1962; Arora, 1961; Srivastava *et al.*, 1962, Bindra, 1961; Roonwal and Chhotani, 1971; Sidde gowda *et al.*, 1995; Singh *et al.*, 2000; Desneux, 1904; Imms, 1919; Chaterjee and Thakur, 1967; Sharma and Sharma, 1978; Verma, 1984; Sakthival *et al.*, 2019). Due to its polyphagous nature, termite is reported as serious pest in North India (Kanta, 2013). The colonies of subterranean termites are partly located under the soil surface. They build nests consisting of small chambers connected with narrow passages and make superficial tunnels on the ground which attack growing plants and in case of severe attack causes hollowness in the large trees.

MATERIAL AND METHODS

The present investigation was carried out at CSB-P2, Basic Seed Farm, Sheeshambara, Dehradun during 2021-2023. The farm is situated geographical position at north latitude 30°20'12'' and east longitude 77°53'31'' with an average annual rainfall 1485 mm (last five-year data). The study was conducted in 3000 mulberry plants of different varieties viz. S-146, S-1635, V1, K2 and Mandalay of 20 years old planted. Regular observations were made on termite infestation at root and stem zone, above ground stem level caused to plants and percentage infestation were recorded (Table). In addition to above the observations were also made on post effect on plant after termite infestation and variety choice. The paper discusses, in detail, the occurrence of termite causing damage to mulberry cultivation.

RESULTS AND DISCUSSION

The occurrence of termite in almost all the existing mulberry varieties in the farm and the attack are found on the plants externally and internally on stem and bark. The infestation is also recorded on the ground of roots (Sharma & Sharma, 1978). Heavy damage recorded in S146 followed by S1635, V1 and K2 and less in Mandalay (Table). Termites attack found more on tree rather than bush plantation. The attack and damage were noticed in the ground specially on main (primary) root closure to stem which fully consumed / hollowed out and termites entered the hard wood of stem. No any serious attack is found on secondary and others newly initiated roots in uprooted plants

which seems to be healthy as well as non-productive. The main root was completely eaten and termites observed to be moved and damage stem continuously in upward direction internally which hollowed it and reached top of the plant. Mortality was also recorded in some plants but re-initiate the roots after attack in the ground, from the damage portion of the stem above the ground & internal portion of the stem and somehow survives (Kanta, 2016). Due to attack in the primary root system, it breaks down the system of food supply of the plant and thereby reducing the leaf yield by qualitative and quantitatively, which is not fit for silkworm feed. Hundreds of termites were existing in the ground portion of uprooted plant. The attack was also recorded externally on the stem bark and under the bark with formation of earthen galleries (Fig. 1, 2, 3 & 4). In some cases, they bore the stem from inner side on any portion of the stem and came out on the stem and form the earthen tubes and move in upward direction up to crown. The subterranean termites made the nest underground in the mulberry garden and not easy to trace out their colonies.

The biological activities of termite spurt after the rains and severely attack the mulberry plants. These do not have any specific choice for a particular mulberry variety. As recorded termite prefers mulberry plant in comparison to other tree crops observed in this farm specially. Because no severe infestation is noticed on other existing plants in the CSB-P2, Basic Seed Farm, Sheeshambara, farm. This pest was not found in association with any disease and the attack observed primary in nature. Termite was recorded throughout the year either internally / externally on the stem or in the ground in mulberry cultivation / farming.



Table: Percentage incidence of termite attack on mulberry.

Mulberry Variety	No. of Plants Observed	No. Of Plants Infested	% Incidence
S146	600	564	94
S1635	600	528	88
V1	600	372	62
K2	600	330	55
Mandalay	600	306	51
Total	3000	2100	70

CONCLUSION

Termite infestations on mulberry trees can affect leaf productivity and indirectly impact raw silk production in the sericulture industry. Infestation of termites recorded throughout the year in mulberry cultivation either directly or indirectly. However, temperature is the key factor, which influences the termite population and another side rain plays a negative role. Extensive research has to be carried out about the inter-relations between the termite and its natural enemies, population dynamics and future course of action to protect silk industry from termite menace.

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