

SOALU LEAF DAMAGE CAUSED BY LEAF ROLLER, *PLEUROPTYA SCINISALIS* WALKER

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(Accepted 11 May 2016)

ABSTRACT : The experiment of soalu leaf damaged by *Pleuroptya scinialis* Walker (Lepidoptera; Pyralidae) was carried out during the year 2013-2014 in Assam Agricultural University, Jorhat, Assam. From the experiment, it was observed that the apical portion of the plants were predominant feeding spots of early instar and they fed by scrapping chlorophyll content, however, in their later stages they actively fed on tender, medium and matured leaves with the help of their biting and chewing type of mouth parts. The total larval duration ranged from 14-15 days during summer and 91-95 days during winter months. A single 1st to 3rd early instar larvae could damage upto 0.62 to 4.82 cm² area, but 4th and 5th instar upto 12.13 to 16.41 cm² area of a single soalu leaf under laboratory condition.

Key words : Leaf roller (*Pleuroptya scinialis* Walker), larval instar, leaf area damage.

INTRODUCTION

Muga silkworm (*Antheraea assama* Ww.) is multivoltine in nature and has 5-6 generations in a year. It is semi-domesticated and reared primarily on som (*Persea bombycina*) and soalu (*Litsaea polyantha* Juss.) for production of commercial and seed crops respectively (Thangavelu *et al*, 1988). Host plants have a significant impact on production and productivity of silk. Due to the attack of various pests the growth, vigour and vitality of these plants are disturbed which not only affect the yield of quality leaves but ultimately influence the production and productivity of silk (Gosh *et al*, 2000). More than twenty four species of insect pests have been reported to infest the two primary host plants of muga silkworm i.e. Som and Soalu such as gall insects, stem borer, leaf defoliating beetle, leaf roller, scale insect, aphid, leaf miner etc. (Negi and Sengupta, 1993). Among these the lepidopteran leaf roller insect (*Pleuroptya scinialis* Walker) of the family Pyralidae is a severe pest of soalu causing extensive damage to seedlings and also full grown trees rendering the leaves unsuitable for muga culture. The larvae secrete gummy substance and roll the adjacent leaves forming roll of leaves as if stitched to each other and then soiling them with litters inside the rolls (Thangavelu *et al*, 1988 and Das, 2014). Since literature on this pest is very much scanty, the present investigation has been undertaken to gather information about quantity and types of feeding by the pest.

MATERIALS AND METHODS

The nature of damage of the pest was observed and recorded carefully on 10 randomly selected soalu plants in daily routine. The plant parts damaged by the insect, type of feeding, defoliation of leaves etc. were recorded. Total leaf area damage caused by a single larva of the pest through different instars was recorded under laboratory condition. First instar larvae of leaf rollers were collected and reared on tender fresh soalu leaves (one larva per leaf) at normal laboratory condition in separate transparent jars covered with muslin cloth. Fresh soalu leaves were supplied every day replacing the old leaf. As the larvae developed, more matured leaves were supplied to them. The roll leaves were harvested with petioles intact. The petioles were covered by wet foam and tied with rubber band at their bases to maintain freshness of the leaf. Rolls were opened everyday and damaged area was measured by using Laser Leaf Area Meter. The uninfested healthy leaf area was also determined before feeding for comparison. The mean of three replications had been taken for statistical analysis.

RESULTS AND DISCUSSION

The results revealed that the apical portion of the plants were predominant feeding spots of early instar and they fed by scrapping chlorophyll content, however, in their later stages they actively fed on tender, medium and matured leaves with the help of their biting and chewing type of mouth parts. The early instar larvae of the insect damaged the soalu plant by rolling the apical

Leaf roll by 1st instar larvaLeaf roll by 4th and 5th instar larvae

Scraping of chlorophyll (early instar)



Soiling with litters (late instar)

leaves and in their later stages they actively fed on leaves, soiling them with their litters and ultimately skeletonising the shoots with only veins left. The web was formed by binding the leaflets together with their silky secretion that facilitated the larvae to settle inside comfortably and to devour the leaf content leading to adverse impact on quality leaf production. The larvae formed leaf rolls individually and also in groups collaboratively giving rise to large ugly rolls. The leaf roller larva kept adding newer leaves to the roll almost every day during 4th and 5th instars and maximum 7 numbers of leaves could be found in one roll in the present study. Similar findings also reported by Saikia (2000) Winks (2008)

The soalu leaf roller larvae were found to have 5 larval instars in their life cycle. The total larval duration were also recorded and ranged from 14-15 days during summer and 91-95 days during winter months as the larvae passed through a diapausing stage extending over a period of 77-80 days. From the observation it was

found that, leaf area damage caused by early instar larva (1st to 3rd) averaged 0.62 to 4.82 cm² area, but grown up larva (4th and 5th) damaged larger portion of a leaf (12.13 to 16.41 cm² area) under laboratory condition. The feeding from 1st to 5th instar increased by 26.46 times. Similar result was also reported by Borgohain *et al* (2015)

Table 1 : Soalu Leaf area (cm²) damage by leaf roller (per leaf one insect).

Larval instar	Leaf area before feeding (cm ²)	Leaf area after feeding (cm ²)	Total leaf area damaged (cm ²)
First instar	84.39	83.77	0.62
Second instar	92.09	90.98	1.11
Third instar	131.61	126.79	4.82
Fourth instar	142.56	130.43	12.13
Fifth instar	144.54	128.13	16.41
S.Ed(±)	1.30	1.36	0.09

Data are mean of 3 replications.

working with *G. pyralis* causing leaf damage of mulberry plant.

From the study, it is evident that soalu leaf roller (*P. scinialis*) cause considerable damage to the soalu leaves and made them unsuitable for rearing of muga silkworm by rolling the leaves, tying them with silken threads and feeding within the nest with their litters. Hence, further study would necessary be taken to make out the extent of damage caused by the pest and appropriate control measure could be worked out.

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