



Abgrallaspis narainus (Homoptera: Coccoidae) an emerging pest of *Dalbergia sissoo* its seasonal variation and biology

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Abstract

Abgralaspis narianus is a major pest of *Dalbergia sissoo* throughout India. An investigation was carried out the D. sissoo, plant infestation, population intensity of armored scale seasonal variation in population. The material was collected from the host plant *Dalbergia sissoo* from there bark, twigs, leaves, fruits and stems.

Abgrallaspis narianus is polyphagous and it infest on various economical and commercial trees. It have been observed that the infestation is maximum during the month of January and February, where as minimum in during month of March and April. Seasonal variation has been observed in population of *A. narainus* both in rural and urban area. These shows great variation, the minimum population has been observed during leaf fall season. While maximum population has been observed during winter season.

Keywords: scale insect, armored, infestation, homoptera, infestation

1. Introduction

Dalbergia sissoo is one of the most important timber species of India. It is deciduous tree also known as Shisham mainly distributed in northern and central states of India. The first time *Abgralaspis* by Homoptera: coccoidae study was done from India.

Datta & Singh (1990) [6] described the new species *Abgrallaspis narainus* collected from district Firozabad. Zahradnik (1990) reported the forest conifer in Rosen D. armoured scale insects there biology; natural enemies and control.

Material and Method

Method of collection

This experiment was carried out at the University of Agra from period July 2016 to May 2017 on numerous specimens of selected species of *Abgrallaspis narainus* (Dutta & Singh) of the Family diaspididae.

The material was collected from the host plants *Musa paradisiaca* and *Dalbergia sissoo*, *Carica papaya*, from their bark, twigs, leaves, fruits and stems with help of a sharp horticulture budding knife & shears. The collected material was kept in tight closed cellophane bags or ignition tubes to minimize desiccation.

The material included individuals of both sexes adults specimens were preserved in dry or 70% ethyl alcohol.

The permanent slide have been prepared by the method Williams & Kosztarab (1970).

Experimental Design

For the research purpose 5 branches of the infested host plants were removed from different directions with the help of a

sharp horticulture knife. Branches were examined microscopically

In minute way and the total number of dead & living individuals of each stage & sex were counted in 50 cms area.

Finally means of population density per sq cm of the host was calculated with the help of following formula.

$$M = \sum fx / N$$

Population studies were performed by sampling method describe by Mc clure (1977) [9]

Infestation

To find out plant infestation a detail survey of 25 plants species were done. In this study plants of farmers field road side plantation made by government department were equally considered.

Plant infestation by *Abgrallaspis narainus* in Agra (India)

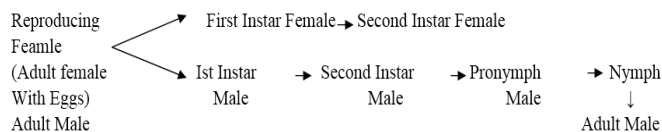
Table 1

Common Name	Botanical Name	Family	Infesttion
Rose	<i>Rosa indica</i>	Rosaceae	*
Bannana	<i>Musa paradisiaca</i>	Musaceae	**
Papaya	<i>Carica papaya</i>	Caricaceae	**
Sheesham	<i>Dalbergia sissoo</i>	Fabaceae	****

Statistical analysis

All data were subjected to statistical analysis system – version 9 (SAS) one way Anova were conducted correlation and regression between weather parameters and population of *Abgrallaspis narainus* were carried out.

Biology



The adult armored scale insect *Abgrallaspis narainus* is ovoviviparous. Eggs are oval or rounded. The eggs are indistinct and covered by waxy substance which secreted from privulvar glands. The post embryonic development consists of two instars in female and five instars in Male.

First instars larva is flattened and oval in shaped about 0.244mm & width 0.156mm. It has a pair of 5 segmented antennae.

Second instar female larva is 0.394mm. It has no eyes & legs but it has a pair of 3 segmented reduced antennae pygidium has 3 lobes.

Second instars larva is prolonged and oval shaped in structure its length is 0.474mm & width 0.278mm.

Pronymph is oval shaped its length and width about 0.490mm and 0.252mm respectively. Head has reduced eyes, mouth parts and 4 pair of spines.

Nymph is morphologically similar to pronymph and its length 0.580mm and width 0.256mm. Nymph consist one pair antennae and three pair's legs. Eyes are distinct. The abdomen is long and tapering genital sheath.

Result

The infection of *Abgrallaspis narainus* was found maximum during the month of January and February whereas it is minimum during the month of March and April.

Great seasonal variation has been observed in the population of the present species. The infestation primarily occurs in leaves on shoots. Feeding causes development of chlorotic spots in the form of yellowish-white patches around the development stages of the insect in dorsal side of the infested leaf. Great seasonal variation have been observed in population of the present species in urban and rural area. The severity of the injury to the leaf blade is proportional to the number of insects feeding on it.

Table 2: Season wise population of *Abgrallaspis narainus*

S. No	Season	Population		Total Population
		Male	Female	
1	Summer (May-June) 2Months	1600	2790	4390
2	Rainy (July- October) 4Months	3950	7540	11490
3	Winter(Nov-February) 4 Months	4980	12200	17180
4	Leaf Fall(March- April)2 Months	1500	1900	2480
Grand Total		12030	22530	35540

As indicated in the table that the maximum population stands during the winter season, which may be accounted for most suitable climate conditions. In leaf fall season leaves begin to fall which resulted into fall in population during summer and rainy season again in the population increases. This gradually increasing population can be correlated with gradual appearance of new leaves and stems.

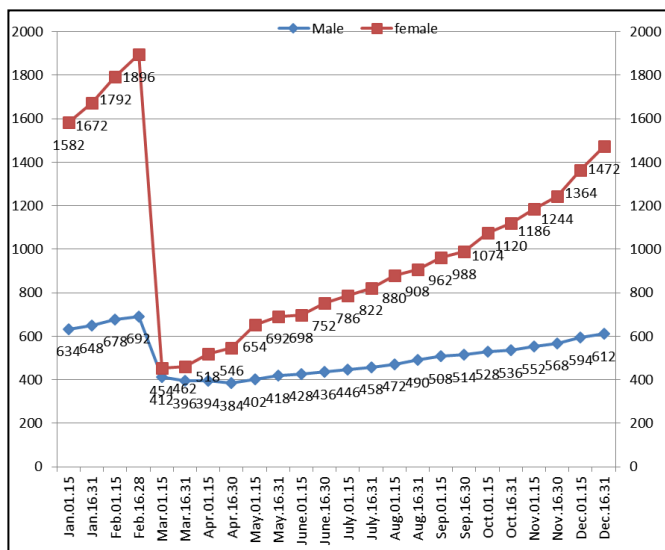


Fig 1: Total Population of *Abgrallaspis narainus* during different months of year

Conclusion

The infestation primary occurs in leaves of *Dalbergia sissoo* but during leaf fall it also infests on shoots. Feeding causes development of chlorotic spots in form of yellowish – white patches around the development stages of the insect in dorsal side of the infested leaf. The severity of the injury to the leaf blade is proportional to the number of the insects feeding on it.

Leaf damage and loss of chlorophyll results into loss of plant productivity and deteriorations in the quality of the plant products.

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