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## Studies on pests of forest nurseries in Jharkhand

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**Abstract :** Forest is very important natural resource for human being. It is always beneficial for us. There is a great demand of forest nurseries to fulfill the forestation work. For healthy nursery it is necessary to keep it away from pests and diseases. During the work on project it was found that almost all major pests attack the forest nurseries. A survey was made and about thirty insect pests were reported. All insects are mostly from Lepidopteran group. Some are from Coleopteran group.

Order Lepidoptera contained 11 family- Hesperidae ( 1 sp.), Noctuidsr(9), Geometridae(3), Arctidae(1), Pyralidae(4), Psychidae(1), Lycanidae(1), Gelechiidae(1), Lymantridae(4), Lyonetidae(1), Lasiocampidae(1). Order Coleoptera contained two families- Rutelinae (1), and Curculionidae (2).

**Keywords :** Pests, Nurseries, Lepidoptera, Coleoptera.

### INTRODUCTION

Biodiversity in the variety of life describing the numbers and variability in relation to ecosystems in which they occur Jharkhand has a rich biodiversity in its flora and fauna. It is full of forests and natures gift. During last three- four decades the deforestation has drawn attention towards reforestation. For the purpose nurseries are the precursors of theman made forest. In the nurseries both exotic and indigenous have been raised in different areas. *Eucalyptus*, *Gmelina arborea*, *Tectona grandis*, *Pongamia pinnata*, *Albizia lebbek*, *Dalbergia sissoo*, *Shorea robusta*, *Eutectona jambolana*, *Terminalia tomentosa*, *Terminalia arjuna*, *Syziom cumini* etc. are some of the tree species that has been raised in extensive plantation.

There is not much documentary evidence on the various factors that adversely affected the plantations of these species, but it is presumed that evidences of insect pests would definitely be one of the major reasons leading to seedling failure of these plantations.

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In Jharkhand extensive forest plantations of a variety of tree species of both exotic and indigenous have been raised in different areas. There is not much documentary evidence on the various factors that adversely affected the plantations of these species, but it is presumed that incidence of insect pest would definitely be one of the major reasons leading to failure of these plantations. The exotic species are now abandoned either due to severe pest attack or for ecological reasons.

Teak, despite attack by its specific insect pests *Hyblaeapuera* Cram. And *Eutectona machaeralis* Wlk. Continued to be the most acceptable trees species since damage by these insects did not seriously affected its survival. However, being a valuable hardwood species, teak was not a substitute for cheaper softwoods to meet the many industrial and domestic requirements. It was in this context that attempts were made to select appropriate native species that are suited to various end uses. The suitability of various native tree species for such purposes was evaluated after careful assessment of their productivity and susceptibility to pests and diseases under field conditions. Data generated on the nursery pest problems for these species are summarized in this paper.

**MATERIALS AND METHODS**

The insects were collected from forest nurseries of Birsa Agricultural University, Kanke, Ranchi, Forest nursery, Doranda, Mahilong and Deepatoli in Ranchi. Different stages of insects were collected randomly simply by hand picking and by light trap. Several species were reared in the laboratory to study their life cycle. The specimens were identified at Zoological Survey of India, Calcutta and Forest Research Institute, Dehradun.

**RESULTS AND DISCUSSIONS**

During the work on project it was found that almost

all major pests attack the forest nurseries. A survey was made and about thirty insect pests were reported. All insects are mostly from Lepidopteran group. Some are from Coleopteran group.

Order Lepidoptera contained 11 family- Hesperidae (1 sp.), Noctuidae(9), Geometridae(3), Arctidae(1), Pyralidae(4), Psychidae(1), Lycanidae(1), Gelechiidae(1), Lymantridae(4), Lyonetidae(1), Lasiocampidae(1). Order Coleoptera contained two families- Rutelinae (1), and Curculionidae (2).

Details of the pests associated with the various seedling species and their nature of damage are given below.

**Table-1**

Name of the Insect Pests	Order	Family	Host Plant	Nature of damage
1 <i>Alexis sp.</i>	Lepidoptera	Hesperidae	<i>Pongamia pinnata</i>	Defoliator
2 <i>Anomala dalbergiae</i>	Coleoptera	Rutelinae	<i>Dalbergia sissoo</i>	Defoliator
3 <i>Apoderous sp.</i>	,,	Curculionidae	,,	Leaf roller
4 <i>Alcides gmelinae</i>	,,	Alcidinae	<i>Gmelina arborea</i>	Shoot borer
5 <i>Agrotis ypsilon</i>	Lepidoptera	Noctuidae	<i>Shorea robusta</i> <i>Tectona grandis</i> <i>Dalbergia sissoo</i>	Root cutter
6 <i>Chrysocraspeda olearia</i>	,,	Geometridae	<i>Eutectona jambolana</i>	Defoliator
7 <i>Cladobrostitis melitrichae</i>	,,	Arctidae	<i>Dalbergia sissoo</i>	Shoot borer
8 <i>Chalcidoptera straminealis</i>	,,	Pyralidae	<i>Shorear obusta</i>	Defoliator
9 <i>Clania crameri</i>	,,	Psychidae	<i>Dalbergia sissoo</i>	,,
10 <i>Curetis oesopus</i>	,,	Lycanidae	<i>Pongamia pinnata</i>	Leaf roller
11 <i>Dichomeris eridantis</i>	,,	Gelechiidae	<i>Dalbergia sissoo</i>	Defoliator
12 <i>Dasychira mendosa</i>	,,	Lymantridae	<i>Syzgium cumini</i>	,,
13 <i>Dasychira dalbergiae</i>	,,	,,	<i>Dalbergia sissoo</i>	,,
14 <i>Euproctis fraternata</i>	,,	,,	,,	,,
15 <i>Ericeia ptatura</i>	,,	Noctuidae	,,	,,
16 <i>Hyposidra successaria</i>	,,	Geometridae	,,	,,
17 <i>Hyblaea puera</i>	,,	Noctuidae	<i>Tectona grandis</i>	,,
18 <i>Hamodes aurantiaca</i>	,,	,,	<i>Shorea robusta</i>	,,
19 <i>Hapalia machaeralis</i>	,,	Pyralidae	<i>Tectona grandis</i>	Skeletonizer
20 <i>Hapsiferarugosella</i>	,,	Noctuidae	<i>Shorea robusta</i>	Defoliator
21 <i>Ingura subapicalis</i>	Lepidoptera	Noctuidae	<i>Shorea robusta</i>	Defoliator
22 <i>Lymantria ampla</i>	,,	Lymantridae	,,	,,
23 <i>Lamida carbonifera</i>	,,	Pyralidae	<i>Terminalia tomentosaleaf miner</i>	
24 <i>Leucoptera sphenographa</i>	,,	Lyonetidae	<i>Dalbergia sissoo</i>	,,
25 <i>Ozola microniaria</i>	,,	Geometridae	<i>Gemelina arboria</i>	Defoliator
26 <i>Plecoptera reflexa</i>	,,	Noctuidae	<i>Dalbergia sissoo</i>	,,
27 <i>Rhesala imparta</i>	,,	,,	<i>Albizzia lebbek</i>	,,
28 <i>Sylepta derogata</i>	,,	Pyralidae	<i>Shorear obusta</i>	Leaf roller
29 <i>Suana concolor</i>	,,	Lasiocampidae	,,	Defoliator
30 <i>Corea subtilis</i>	,,	Noctuidae	<i>Syzgium cumini</i>	,,

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Amongst these pests Lepidopterans are most common. They damage the nursery the most. Coleopterans also damage the nurseries.

Among the pests, there are few which cause minor damage, hence named as minor pests. The following minor pests were reported in the nurseries-

1. Sap-sucking insects
  - a) *Nazara* species ( Hemiptera)
  - b) *Tessaratomy* species (,,)
  - c) *Dalpada* species
  - d) *Carpocoris* sp.
  - e) Lace- bugs
  - f) *Leptocentrus* sp. (membracids)
  - g) Aphids
  - h) Scale insects

There has been report of several generations in a year.

2. Soil insects-
  - a) Termites (Isoptera)
  - b) White grubs (Scarabidae)

- c) Wire worms (Elateridae)

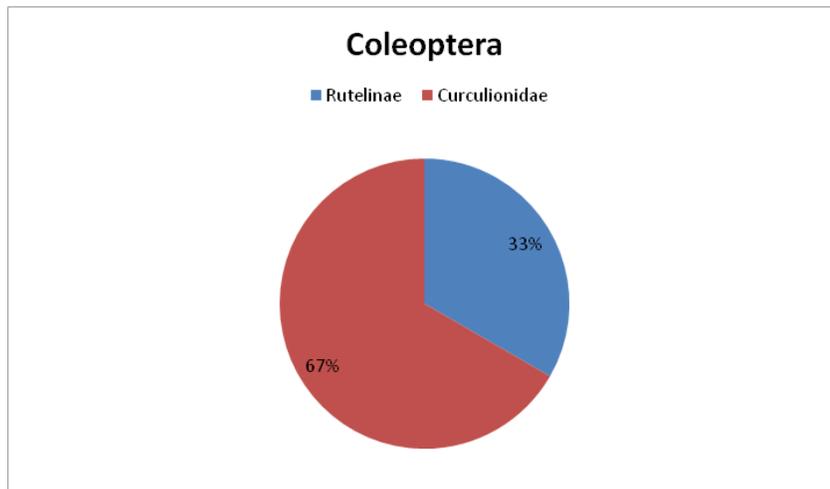
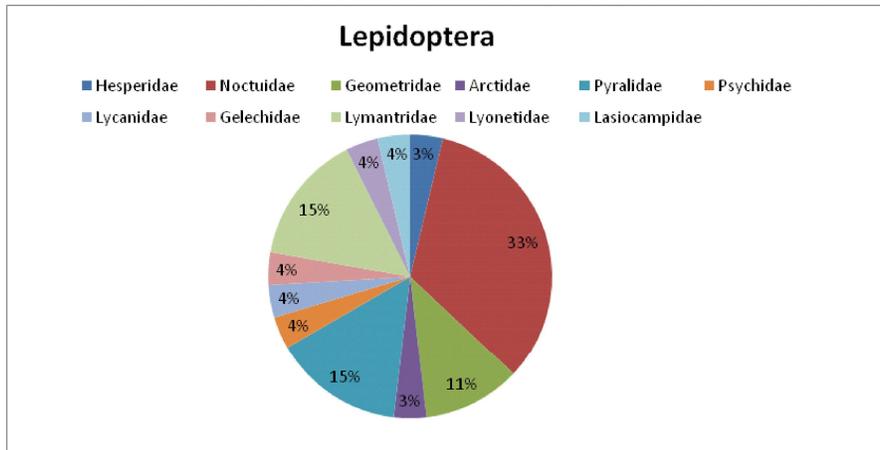
3. Gall Forming Insects-The leaves of young saplings of *Terminalia arjuna* were curled from the edges.

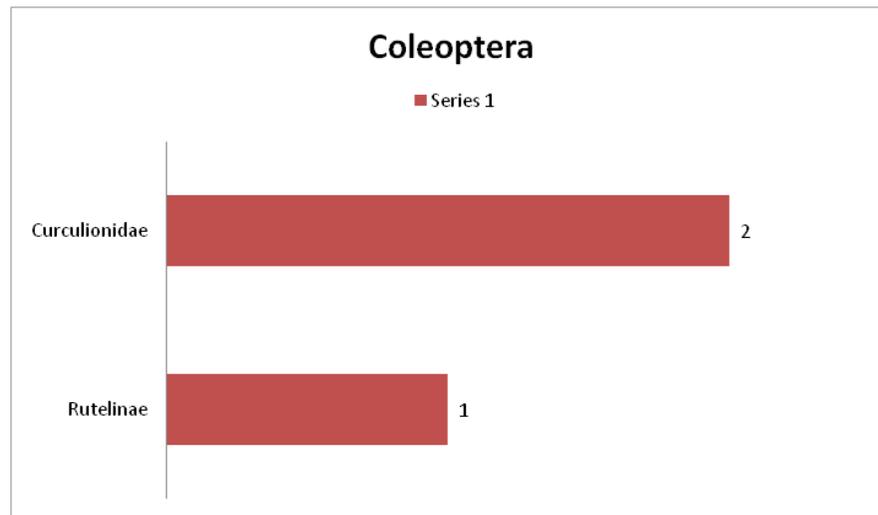
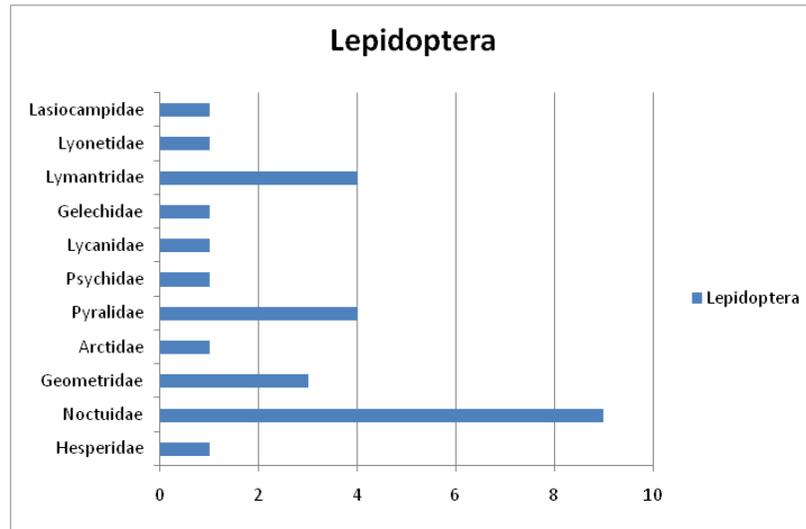
**CONCLUSIONS**

The sap - sucking insects and defoliators are the major groups of the nursery pests noticed. Of these, infestation by plant bugs may become serious problem with the nursery plants if their number increases. An aphid bug could develop into a potential pest.

Among defoliating insects the caterpillars and curculionid beetles were important seedling pests. The bag-worms have the potentials to develop into a serious pest and because it is polyphagous, it can spread to other species as well.

Another aspect that needs to be considered in species trials is the possibility of nursery pests becoming a problem in plantations. The pests which attack saplings are also the pests of trees.





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