NATURAL ENEMY COMPLEX AT THE NURSERY STAGE OF *ALBIZIA PROCERA* (ROXB.) BENTH. AND *A. LEBBEK* (L.) BENTH. IN PUNJAB

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Introduction

The genus *Albizia* (Durazz) consists of over 100 species widely distributed in the tropical wet evergreen to tropical dry evergreen forests (Chapman and Seth, 1968). It consists of most valuable multi-purpose tree species planted extensively in wasteland areas, social forestry plantations, around agricultural fields and as roadside avenue. The potential tree species viz. *Albizia lebbek* and *A. procera* have a rich complex of insect fauna and natural enemies. The literature reveals that there is no published information on the natural enemies complex at nursery level on the seedlings of these important forest tree species. Work on biological control of various pests of forest trees species has been done by some workers (Beeson, 1941; Mishra, 1975; Burges, 1981; Verma and Mohnan, 1984). De Bach (1974), who tabulated and analysed the data on the extent of success of biological control under the 'Biological control importation' project, recorded 120 cases, with varying degree of success of biological control agents. De Bach data further revealed that in about 40 per cent cases, the need for further chemical control was nearly or completely eliminated. The present work therefore was undertaken with a view to find out natural enemies complex on the pests of *A. lebbek* and *A. procera* at nursery stage in Punjab.

Material and Methods

Field experiments were conducted during year 2003-2004 in nurseries at four locations in Punjab in forest divisions viz. Ludhiana (Baddowal), Fatehgarh Sahib (Sirhind), Patiala (Sanor) and Hoshiarpur Forest Research Circle, to record the occurrence of natural enemies of insects on *A. procera* and *A. lebbek*. Regular observations were conducted at weekly intervals and population was sampled by direct counting. Seedlings plots were having Randomized Block Design. Absolute population per seedling was recorded in case of predators like Coccinellid beetles, Pentatomid Bugs, Preying mantis and Spiders. Both adult and immature stages were taken into consideration. Immature stages of some of the natural enemies were recorded in captivity in laboratory to get the adults for identification purpose wherever required. Photographs of important stages including egg stage of some of the predators were also taken along with natural enemies.

Results and Discussion

The beetles belonging to Carabidae,

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Cicindelidae, Coccinellidae, Cleridae, Elateridae, Staphylinoidae; the bugs of Pentatomidae, Reduviidae, Capsidae; the fossorial wasps (Hymenoptera); the robber flies (Asilidae), the Mantidae, the dragonflies (Odonata) and the Chrysopidae, Myrmeleonidae and Ascalaphidae etc. are the chief carnivorous predacious insects (Beeson, 1941). In both *A. lebbek* and *A. procera* the natural enemies complex recorded was almost same except for the Pentatomid bug, *Canthecona furcellata* that is more common predator on *Spirama retorta* a

Figs. A-D

A. *Canthecona furcellata;* B. *Coccinella septumpunctata;* C. *Brumus suturalis;* D. *Creobrater pictipennis*

Table 1

The natural enemies recorded in the Albizia procera (Roxb.) Benth. and Albizia lebbek (L.) Benth. nursery ecosystem from March 2003-Feb.2004 at Punjab

Sr. No.	Common / Scientific Name	Family	Stage	Status	Locality
I.	Order Dictyoptera				
1.	Preying mantis, *Creobrater pictipennis* Walker	Mantidae	Eggs, nymphs, adults	Major	HSP
II.	Order Hemiptera				
1.	**Canthecona furcellata* Wolff.	Pentatomidae	Adult	Major	HSP, LDH, PAT, FGS
III.	Order Coleoptera				
1.	Lady bird beetle, *Coccinella septumpunctata* Linn.	Coccinellidae	Adult, grub	Major	HSP, LDH, PAT, FGS
2.	*Menochilus sexmaculatus* Fab.	-do-	Adult	Major	HSP, LDH, PAT, FGS
3.	*Brumus suturalis* Fabr.	-do-	Adult	Major	HSP, LDH, PAT, FGS
III.	Order Araneida: Spiders				
1.	Lynx spider, *Oxyopes pandae* Tikader	Oxyopidae	Adult	Major	HSP, LDH, PAT, FGS
2.	Orb spider, *Araneus nauticus* (Koch)	Argiopidae	Adult	Major	HSP, LDH, PAT, FGS
3.	**Jumping spider, *Zygoballus* sp.	Salticidae	Adult	Major	HSP, LDH, PAT, FGS

* mean recorded only on *Albizia procera* and ** mean recorded only on *A. lebbek*
LDH= Ludhiana; HSP= Hoshiarpur; FGS= Fatehgarh Sahib; PAT= Patiala

key pest of *A. procera* (Table 1). Adults of *C. furcellata* were found feeding on fourth to fifth instar larvae of *S. retorta* especially in the months of August-September (Fig A). Beeson (1941) reported its carnivorous feeding on caterpillars and pupae of Lepidoptera, notably *Hyblaea puera* (Hyblaidae), *Hapalia machaeralis, Margaronia laticostalis, Nephoteryx rhodobasalis* (Pyralidae), *Plecoptera reflexa* and *Prodenia litura* (Noctuiidae) and also on the larvae of *Calopepta leayana* (Chrysomelidae). The adult is long lived (to 70 days) and feeds at the rate of approximately one caterpillar per day. When attacking prey stronger than itself it usually approaches from behind in order to stab the prey with its beak and allows itself to be dragged about by the struggling caterpillar until the latter succumbs to the paralyzing effect of the saliva that is injected in the wound.

Occurrence of Coccinellids and Spiders was found throughout the year. Adults and nymphs were found predating upon soft-bodied insects like aphids, jassids, mealy bugs, coccids and psyllids. Three species of Coccinellids viz. *Coccinella septumpunctata* (Fig. B), *Brumus suturalis* (Fig. C) and *Menochilus sexmaculatus* and two species of Spiders viz. *Oxyopes pandae* and *Araneus nauticus* were common on both the *Albizia* seedlings. Spider *Zygoballus* sp. was common predator found among seedlings of *A. lebbek* only. Nymphs and adults of Preying mantis, *Creobrater pictipennis* were found predating upon defoliating larvae of *Ascotis imparata* and soft bodied sucking insects viz. aphids and jassids. White oval egg masses (ootheca) of *C. pictipennis* were found constructed around twigs of seedlings. Hundreds of nymphs hatch from these eggs (Fig. D) and start predation in nurseries of *A. lebbek* and *A. procera.* Beeson (1941) reported their feeding on caterpillars and moths of *Hapalia machaeralis, Hyblaea puera, Plecoptera reflexa*, also on flies of *Trioza fletchri minor* (Psyllidae).

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SUMMARY

It was explored that Coccinellids viz. *Coccinella septumpunctata, Menochilus sexmaculatus* and Spiders viz. *Oxyopes pandae, Araneus nauticus* and *Zygoballus* sp. and Preying mantis *Creobrator pictipennis* constitutes major natural enemies on insect pests of *A. lebbek* and *A. procera*. Predation by Pentatomid , *Canthecona furcellata* was more common among seedlings of *A. procera*.

पंजाब में *एल्बिजिया प्रोसेरा* (राक्स०) बेन्थम और *ए० लेब्बेक* (लि०) बेन्थम के रोपणी अवस्था में प्राकृतिक शत्रुगण

वाई०एस० पांधा, एम०एस० सैनी व जे०एस० दरगन

सारांश

पता यह लगाया गया है कि इन्द्रगोपवंश के कीड़े *कॉक्सिनेल्ला सेप्टुमपंक्टेटा, मेनोचिलस सेक्समैकुलटस*

और मकड़े अर्थात *ऑक्सिओपेस पैण्डी, ऐरानेउस नौटिकस* और *जायगोबाल्लुस* की जाति तथा शिकार करते बद्धहस्त कीट (मैंटिस) *क्रेओब्रेटर पिक्टिपेन्निस* रोपणी में *एल्बिजिया लेब्बेक* और *ए० प्रोसेरा* पर लगने वाले नाशि कीडों के मुख्य प्राकृतिक शत्रुओं में आते हैं। पंचधाकीटवंश कीड़ों *कैन्थेकोना फुर्सेल्लाटा, ए० प्रोसेरा* के पौधों, अधिक आमतौर से लगता पाया गया।

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