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Insect fauna associated with sesamum (*Sesamum indicum* L.) in Gajapati district of Odisha

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Abstract

Field experiments were conducted during Rabi, 2018-19 and Summer, 2019 at research field of Department of Entomology, MSSSoA, CUTM, Paralakhemundi, Odisha to record the insect fauna associated with Sesamum crop. Under agroclimatic conditions of Odisha, it attracted 24 species belonging to 17 families under 8 Orders. Species wise diversity of pests indicated that 4 species belonging to order Hemiptera, Lepidoptera, Orthoptera and Thysanoptera each contributing one species. Among other 17 species, 2 species belonging to one each from Coleoptera and Neuroptera were the common predators of pest of the Sesamum crops and 11 species belonging to four families viz., Apidae, Megachilidae, Vespidae and Halictidae under single order Hymenoptera.

Keywords: Insect fauna, sesamum, pest, predators and pollinators

Introduction

Sesamum, *Sesamum indicum* L. belongs to the family Pedaliaceae is an important oil seed crop of India which is commonly known as til. Sesamum seed is a rich source of edible oil with high oil content (46-64%) and a dietary energy of 559 K.cal/ 100g (Elleuch *et al.*, 2011) [2]. It is one of the important oil seed crops of Odisha too with an area of 0.23 lakh hectares and production and productivity of 0.05 lakh tonnes and 217 kg/ha which is considerably low compared to the National average productivity of 456 kg/ha (Status paper on Oil seeds, Dept. of agriculture and cooperation, 2013-14).

This crop was chosen to study the occurrence of pollinators on it under Gajapati districts of Odisha by the 4th year AELP students of M. S. Swaminathan School of Agriculture, Centurion University of Technology and Management, Paralakhemundi, Odisha. Along-with this above studies, additional investigation was also made to record the association of insect fauna complex with the Sesamum crop those play positive or negative role in the crop yield.

Materials and Methods

In order to record the insect fauna associated with Sesamum crop, studies were conducted during Rabi, 2018-19 and Summer, 2019 at research field of Department of Entomology, MSSSoA, CUTM, Paralakhemundi, Odisha. Prachi, a popular variety of Sesamum in Odisha was taken. The plot size was 5m × 5m and the inter and intra-row spacing were maintained at 30 cm × 10 cm. A recommended dose of N: P₂O₅: K₂O at 30:15:15 kg/ha was applied and a spray of urea was given at 45 days after planting. Observations on insect fauna associated with Sesamum in open pollination plot were made during the early flowering i.e. at 10 per cent flowering stage coinciding with 35-40 DAS till harvesting of the crop. The insects including pollinators occurring at flowering stage of the crops were recorded, collected and preserved following standard method and were identified.

Results and Discussion

The results of the present investigation revealed that Sesamum is a store house of insect fauna. It supported an array of insects, the commonly occurring insects belonging to 24 species, 17 families under 8 Orders (Table 1). Besides, many other butterflies, true flies, beetles and sucking insect made their stray visit to the crop at specific crop growth stages while pollinators occurred during flowering stages chiefly. The crop is not only important as a major oilseed crop but also played a vital role in ecosystem sustenance in various ways. Among the 7 species of pests associated with the crop 4 species belonging to order Hemiptera, Lepidoptera, Orthoptera and Thysanoptera each contributing one species occurred as pests

frequently on the crop. Thrips and some other sucking pests were occurred as major pests. Among other 17 species, 2 species belonging to one each from Coleoptera and Neuroptera were the common predators of pest of the Sesamum crops and 11 species belonging to four families viz., Apidae, Megachilidae, Vespidae and Halictidae under single

order Hymenoptera were associated as the pollinators on the crop. Among the pollinators, family Apidae (72.7 per cent share) was the most dominant followed by all other three families i.e. Megachilidae, Vespidae and Halictidae (each contributing around 9.1%) (Fig.1).

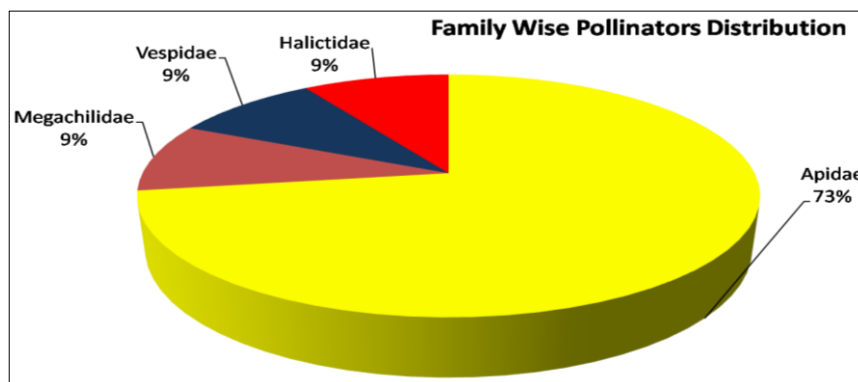


Fig 1: Family wise composition of diverse pollinators on Sesamum (Rabi, 2018-19 and Summer, 2019)

Garapati (2017) [4] has reported 12 numbers of pollinators in her studies from the single order Hymenoptera. Patil and Viraktamath (2000) reported occurrence of 13 different species of pollinators frequently, most of them belonging to Hymenoptera while few species were represented from family Lepidoptera and Diptera. Similarly Sanganna Sajjanar and Eshwarappa (2015) [5] reported 14 different species of insects

visiting the Sesamum belonging to Hymenoptera and Diptera. Sesamum crop is visited by three species of honeybees i.e. *Apis dorsata* Fab., *Apis cerana indica* Fab. And *Tetragonula iridipennis* Smith. Along with the bee species viz., *Megachile lanata* Fab., *Xylocopa latipes* Drury, *Xylocopa aestuans* Lin. and *Megachile bicolor* Fab. which were most frequent visitors.

Table 1: Diverse species of insects and pollinators occurring on Sesamum

Common Name	Scientific Name	Family: Order	Status
Splendid grasshopper	<i>Heteracris littoralis</i> (Ramb.)	Orthoptera: Acrididae	Pest
Green stink bug	<i>Nezara viridula</i> L.	Hemiptera: Pentatomidae	Pest
Capsid bugs/ Mirid bugs	<i>Creontiades</i> sp.	Hemiptera: Miridae	Pest
Whitefly	<i>Bemesia tabaci</i> (Gennadius)	Hemiptera: Aleyrodidae	Pest
Aphid	(Sulzer) <i>Myzus persicae</i>	Hemiptera: Aphididae	Pest
Thrips	<i>Thrips palmi</i>	Thysanoptera: Thripidae	Pest
Gingelly Hawk moth	<i>Acherontia styx</i>	Lepidoptera: Sphingidae	
Seven spotted ladybird	<i>Coccinella undecimpunctata</i> l.	Coleoptera: Coccinellidae	Predator
Green lace wing	<i>Chrysoperla carnea</i> (Stephens)	Neuroptera: Chrysopidae	Predator
Indian hive bee	<i>Apis cerana indica</i> Fab.	Hymenoptera: Apidae	Pollinator
Rock bee	<i>Apis dorsata</i> Fab.	Hymenoptera: Apidae	Pollinator
Stingless bee	<i>Tetragonula iridipennis</i> Smith	Hymenoptera: Apidae	Pollinator
Tropical carpenter bee	<i>Xylocopa latipes</i> Drury	Hymenoptera: Apidae	Pollinator
Carpenter bee	<i>Xylocopa aestuans</i> L.	Hymenoptera: Apidae	Pollinator
Emerald Armoured-Small carpenter.	<i>Ceratina smaragdula</i> (Fabricius)	Hymenoptera: Apidae	Pollinator
Woolly wall bee	<i>Megachile lanata</i>	Hymenoptera: Megachilidae	Pollinator
Cuckoo bee	<i>Thyreus ramosus</i> (Lepeltier)	Hymenoptera: Apidae	Pollinator
Digger bee	<i>Amegilla (Zonamegilla) zonata</i> L	Hymenoptera: Apidae	Pollinator
Potters wasp	<i>Eumenus</i> spp	Hymenoptera: Vespidae	Pollinator
Sweat bee	<i>Lasioglossum</i> sp.	Hymenoptera: Halictidae	Pollinator
Cabbage White Butterfly	<i>Pieris rapae</i> L.	Lepidoptera: Pieridae	Pollinator
Plain Tiger	<i>Danaus chrysippus</i> L.	Lepidoptera: Nymphalidae	Pollinator
Blue butterfly	<i>Lampides boeticus</i> L.	Lepidoptera: Lycaenidae	Pollinator
Housefly	<i>Musca domestica</i> L.	Diptera: Muscidae	Pollinator

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