Insect visitors of inflorescence of black pepper(*Piper nigrum* L.) and their role in pollination

Pooja, S.[1], Sreekala,G.S.[2] and Prathapan,K.D[3]
Department of Plantation Crops and Spices, CoA, Vellayani
Department of Plantation Crops and Spices, CoA, Vellayani
Department of Agricultural Entomology, CoA, Vellayani

INTRODUCTION

The genus *Piper* is an important component of tropical forests. Ecosystem services such as pollination and soil biodiversity are closely related to human livelihoods. Biodiversity in an ecosystem is important and many insects are dependent on specific crops and the diversity is sustained by various interrelationships. An investigation of insects visiting black pepper (*Piper nigrum* L.) was undertaken to understand the role of insects

MATERIALS AND METHODS

The experiment was carried out in fifty inflorscence (twenty five inflorescence each in field grown and pot grown) of black pepper variety Panniyur 1, maintained in the Instructional Farm, College of Agriculture, Vellayani during 2018-19. Visitation rates of insects during the anthesis period were determined by counting the number of visits made by insects to an inflorescence during 10 minutes at an interval of 2 h between 06.00 h - 20.00 h and again twice at 24.00 h midnight and at 04.00 h. The behavior of insect species was monitored by field observations and the presence of pollen on the body was checked under stereobinocular microscope.

RESULTS

Three different floral visitors noticed on the spikes of black pepper were yellow crazy ant (*Anoplolepis gracilipes*c Smith), black ant (*Componotus compressus* (Fabricius)) and *pollu* beetle (*Lanka ramakrishnae).* All the three species were observed during day and night. The behaviour of ant species were monitored by field observations. However, no pollen was observed adhering to the mouth parts, external body surface or legs of the insects collected. Hence it may be safely assumed that insects have no role in pollination of black pepper. However, collection of nectar was noticed by the ants during day and night. The visitation rates of the three different floral visitors on the black pepper spike were yellow crazy ant (1.79), black ant (1.41) and *pollu* beetle (0.45). Semple (1974) found that in Costa Rica several species of *Trigona* bees were are the most common visitors of fourteen Piperaceae species at two sites covered by semi deciduous forest in South Eastern Brazil. In a study conducted on *Piper* species in Central America, seven species were wind pollinated and three (*Piper amalago, P. Crassinervium* and *P. Glabratum)* were exclusively insect-pollinated (Figueiredo and Sazima,2000). A diverse assemblage of insects visited *P. dilatatum*. Peak activity occurred between 10.00h and 11.00h, most visitations took place from 08.00h to 14.00h . The visitors consisted of Hymenoptera and Diptera, particularly bees of the genus *Megachile* (Megachilidae), stingless bees (Apidae) and syrphid flies, all documented as *Piper* pollinators (Figueiredo and Sazima 2000, Fleming 1985, Semple 1974).

TABLE 1:Visitation rates of pollinators and insect in *Piper nigrum* L.

Sl.no	Time	*Anoplolepis gracilipes* (visits per inflorescence)	*Componotus compressus* (visits per inflorescence)	Pollu beetle (*Lanka ramakrishnai)*
1	6-00-8.00h	6	5	2
2	8.00-10.00h	5	5	4
3	10.00-12.00h	3	4	2
4	12.00-14.00h	5	3	2
5	14.00-16.00h	3	3	1
6	16.00-18.00h	6	3	0
7	18.00-20.00h	4	4	0
8	20.00-22.00h	3	2	0
9	22.00-24.00h	4	2	0
10	0.00h	2	1	0
11	04 .00	2	2	0
12	Visitation rate	1.79	1.41	0.45

FIGURE 1: Three different floral visitors noticed on the spikes of black pepper L.

Black ant (*Componotus compressus*)

Yellow crazy ant (*Anoplolepis gracilipes*)

Pollu beetle (*Lanka ramakrishnai)*

REFERENCES

Figueiredo, R. and Sazima, M.2000. Pollination biology of Piperaceae species in southeastern Brazil. *Annals of Botany* 85:455–460.

Fleming, T. H. 1985. Coexistence of five sympatric Piper (Piperaceae) species in a tropical dry forest. *Ecology* 66:688–700.

Semple, K.1974. Pollination in Piperaceae. *Annals of the Missouri Botanical Gardens* 61:868–871.