NEW RECORD OF MISTLETOE AS A POTENTIAL EXOTIC WEED: SERIOUS THREAT TO SAPOTA CULTIVATION IN CHHATTISGARH

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Abstract : *Dendrophthoe falcata* (L.f) Ettingsh commonly called "Banda" is a serious and very common angiospermic parasitic plant in Chhattisgarh it is being reported for the first time from sapota, *Achras sapota*. Our findings report that it was observed with an average plant population of 2.18 plants/trees and more number of the parasitic plant were observed on North and West direction, 2.60 and 2.40, respectively. *D. falcata* is the serious serious threat to sapota cultivation in Chhattisgarh. Insect pest associated with *D. falcate* were also recoded viz., *Celypha woodiana* (Barrett), *Pseudaulacaspis cockerelli* (Cooley), *Aleurodicus disperses* (Russell), *Delias hyparete metarete* (Linnaeus), *Euthalia adonia pinwilli, Papilio cresphontes, Frankliniella sp.*, Unidentified Chrysomelid along with natural enemies viz., *Oecophylla smaragdina* (Fabricius) *Cotesia flevipes*, *Oxyopes macilentus* (Linnaeus).

Keywords : Exotic weed, Cultivation, New record, Chhattisgarh

INTRODUCTION

Sapota, *Achras sapota* L. is one of the prominent fruits and belongs to family sapotaceae. Sapota is a delicious fruit crop of tropical and subtropical countries which are a good source of sugar, carbohydrates, protein, fat, calcium, phosphorus, iron and ascorbic acid. They are used for making jams, jellies, osmodehydrated slices and squash. Sapota orchards cover approximately 160,000 hectares area all over the country. In Chhattisgarh, it covers about 220 hactare areas under cultivation and yielding 748.5 metric tons of fruits, as reported by the National Horticulture Board (Anonymous, 2012). Various factors their which affect the yield of Sapota, among them insect pests and parasitic plants are important.

Parasitic plant was first reported on sapota in 2014 at Horticultural orchard, T. C. B. College of Agriculture and Research Station, Sarkanda, Bilaspur, (Chhattisgarh). It was identified as *Dendrophthoe falcata* (L.f) Ettingsh as one of the hemiparasitic plants that belong to the *Loranthaceae* family of mistletoes on sapota tree. It is commonly known as Banda, Banda Patha, Vrksadani and Bemdram. It is the most common of all the mistletoes that occur in India. At present reports say that it has around 401 host plants. *Dendrophthoe falcata* represents the only known mistletoe with the largest global host range (Calvin and Wilson, 2009). It is unwanted and emerges out from branch of sapota remaining active throughout the year. It gets attached to the cambium of sapota plant. Leaves of mistletoe are broad, leathery, waxy and light green in colour. Seed dispersal and pollination is usually mediated by the birds (Hambali, 1977). They attach themselves to the branch of sapota with the help of galls present at the base. Due to infestation of this plant, there is reduction in number of buds, flowers and fruits. Infested plants can be easily recognized due to the presence of red flowers conspicuous from a distance (Plate 1). It is one of the major constraints of establishment of sapota orchards in Chhattisgarh.

MATERIAL AND METHOD

The present studies on the parasitic plant, *D. falcata* (L.f) Ettingsh were conducted at the Horticultural orchard of TCB College of Agriculture and Research Station, Bilaspur, Chhattisgarh, India, during 2013-14. Observations were recorded on the number of parasitic plants at four directions viz. North, South, East and West on randomly selected ten trees of sapota (*cv* kalipatti). Each plant was also examined to record the live stages of insects and their nature of damages along with different natural enemies. The immature stages of the insects recorded on the parasitic plants were collected and reared to adult stage in the laboratory of Department of Entomology. The species were later on got identified from different sources.

RESULT AND DISCUSSION

Association of mistletoe, *Dendrophthoe falcata* (L.f) Ettingsh with sapota

From the data presented in Table 1 it was observed that on an average plant population of 2.18 plants/trees was recorded and more number of the parasitic plant were observed on North and West direction, 2.60 and 2.40, respectively. Observations, on the incidence of parasitic on sapota, revealed that the maximum plants of sapota are affected with various number of mistletoe in sapota agro-ecosystem. The results indicate that the *D. falcata* is the serious problem of sapota in Chhattisgarh.

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Record of insect pests and their natural enemies on mistletoe, *Dendrophthoe falcate*

During the experiment eight insects were recorded on parasitic plants viz. Marble moth, *Celypha woodiana* (Barrett), False oleanderscale, *Pseudaulacaspis cockerelli* (Cooley), Spiralling whitefly, *Aleurodicus disperses* (Russell), Painted Jezebel butterfly, *Delias hyparete metarete* (Linnaeus), Green Baron, *Euthalia adonia pinwilli*, Giant swallowtail caterpillar, *Papilio cresphontes*, Thrips, *Frankliniella sp.*, Unidentified Chrysomelid and few natural enemies were also observed associated with above mentioned insect pests viz., Red ant, *Oecophylla smaragdina* (Fabricius), Apenteles, *Cotesia flevipes* and Lynx Spider, *Oxyopes macilentus* (Linnaeus).

Table 1. Number of misteltoe/plants of Sapota, *Achras sapota* L.

S.No.	North	South	East	West	Mean
1	3	0	3	1	**1.75**
2	4	2	0	0	**1.50**
3	2	1	3	2	**2.0**
4	1	0	4	1	**1.50**
5	3	0	1	5	**2.25**
6	0	4	5	1	**2.50**
7	5	2	1	4	**3.0**
8	2	1	0	2	**1.25**
9	0	5	0	6	**2.75**
10	6	3	2	2	**3.25**
Mean	**2.60**	**1.80**	**1.90**	**2.40**	**2.18**

Table 2. Record of insect pests of mistletoe, *Dendrophthoe falcate*

S.N.	Insect pests	Scientific Name	Order	Family
1	Marble moth	*Celypha woodiana* Barrett	Lepidoptera	Tortricidae
2	False oleanderscale	*Pseudaulacaspis cockerelli Cooley*	Hemiptera	Diaspididae
3	Spiralling whitefly	*Aleurodicus disperses* Russell	Hemiptera	Aleyrodidae
4	Painted Jezebel butterfly	*Delias hyparete metarete* Linnaeus	Lepidoptera	Pieridae
5	Green Baron	*Euthalia adonia pinwilli*	Lepidoptera	Nymphalidae
6	Giant swallowtail caterpillar	*Papilio cresphontes*	Lepidoptera	Papilionidae
7	Thrips	*Frankliniella sp.*	Thysenoptera	Thripidae
8	Chrysomelid beetle	Unidentified	Coleoptera	Chrysomelidae
Natural enemies :				
1	Red ant	*Oecophylla smaragdina* Fabricius	Hymenoptera	Formicidae
2	Apenteles	*Cotesia flevipes*	Hymenoptera	Braconidea
3	Lynx Spider	*Oxyopes macilentus* L.	Araneae	Araneidae

Plate 1. Mistletoe, *Dendrophthoe falcate* along with flowers associated with sapota

Plate 2. Cluster of mistletoe fruits

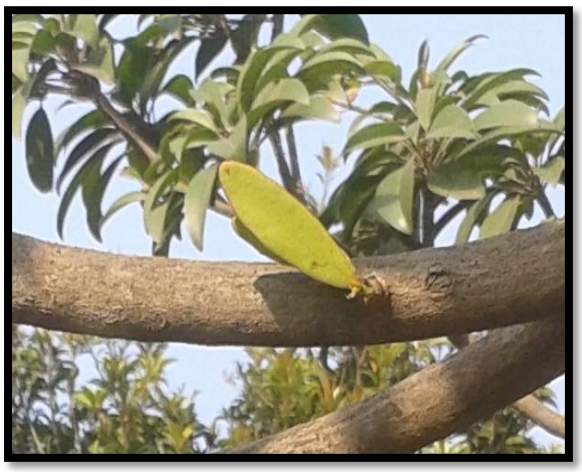

Plate 3. Initial stage of mistletoe on sapota

Plate 4. *Aleurodicus dispersus* on mistletoe leaves

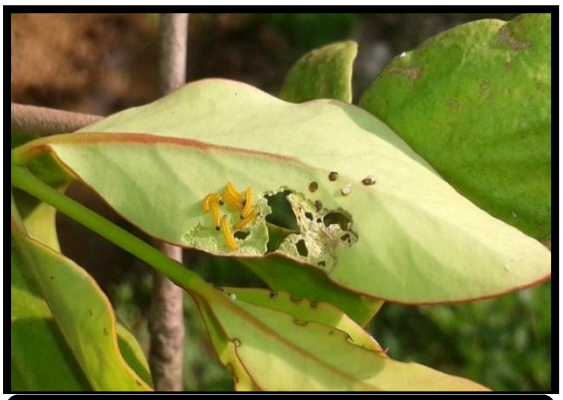

Plate 5. *Delias hyparete metarete* feed on mistletoe

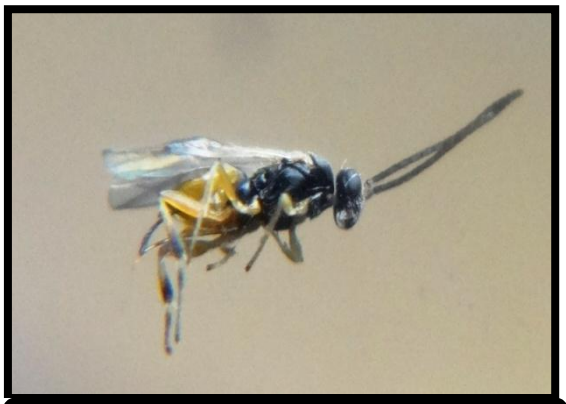

Plate 6. *Cotesia flevipes* a larval parasitoid of *Celypha*

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