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New record of *Cryptophlebia ombrodelta* (Tortricidae: lepidoptera) on Tamarind, *Tamarindus indica* in Bastar Plateau Zone of Chhattisgarh India

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Abstract **– The present investigation entitled "New record of *Cryptophlebia ombrodelta* (Tortricidae: Lepidoptera) on Tamarind, *Tamarindus indica* in Bastar plateau Zne of Chhattisgarh India" was conducted at Shaheed Gundadhoor College of Agriculture and Research Station, Jagdalpur during kharif- rabi 2015 – 16. In this study, six species of different insect pests *viz.* fruit borer, mealy bug, scale insect, plant hopper, tree hopper and hairy caterpillar were recorded, among these some were found damaging the tree while others were only visitors presented in very few numbers. Fruit borer, *Cryptophlebia ombrodelta* was categorized as major pest of tamarind. It was the first record of fruit borer, *C. ombrodelta* of tamarind crop from Bastar Plateau Zone of Chhattisgarh. Its occurrence in the field was noticed throughout the green fruiting period. Maximum fruit borer infestation of 19.91 infested pods / unit area was recorded during second week of October with seasonal mean of 9.70 fruit borer infested pods / unit area.**

Keywords **– Fruit Borer, Cryptophlebia Ombrodelta, Losses, Tamarind, Tamarindus Indica.**

I. INTRODUCTION

Tamarind (*Tamarindus indica*) is an important tree of semi arid tropical conditions. part of the plant is used for different purpose. The fruit pulp, sweetish in taste, is used for serving curries, chutneys, sauces and soups because of its anti ascorbic properties, pulp is used by sailers in place of lime or lemon. Tamarind kernel powder (TKP) is used as a sizing material in textile and leather industries. Seeds are used as source of carbohydrates for paper and jute products. Seed yield fatty oil which is used in paints and varnishes (Anonymous, 2013). In India, the tree is found abundantly in Chhattisgarh, Madhya Pradesh, Telangana, parts of Maharashtra, Tamil Nadu, Orissa, Bihar and Bengal. Bastar division is southern part of Chhattisgarh. Poor peoples of Bastar collect fruits of tamarind in the month of January to April and engaged in related work up to June. Jagdalpur Krishi Upaj Mandi is the largest auction centre of tamarind in Asia. According to an estimate of Forest Department of Bastar, average production of tamarind fruit is 21,430 metric tons which values about Rs. 10.35 crores. These productions generate employment of 24,000 man days in the month of January to April. Besides this about 5660 tons of tamarind seed worth about 3.02 crore rupees @ 550/- quintal is transported from Jagdalpur (Anonymous,2015). Among various factors responsible for low yield, losses due to insect-pests attack are of prime importance. Tamarind tree is attacked by more than 40 species of insect pests, although only few of them are economic importance (Joseph and Oommen, 1960). Among the insect pests damaging the crop at different stages of crop growth, fruit borer insect pest is of major importance because of long fruit bearing habit of the plant resulting plenty of food materials being available for long time. Secondarily, borer feeds on pulp internally and leaves behind its excreta which deteriorate the quality and market value of the fruits. Hence, studies on tamarind fruit borer and their losses are essential as these provide information on the status of insect pest and also help in identifying the vulnerable stage of the crop. This information will help in developing an efficient management model for the insect pest attacking various growth stages of the crop.

II. MATERIALS AND METHODS

present investigation was conducted at two blocks of Bastar district of Chhattisgarh state namely Jagdalpur and Tokapal during k*harif-rabi*, 2015-16. In each blocks, five villages were selected where, eight trees per village were tagged randomly for the observation of tamarind fruit borer. Infested pods with tiny larva were collected and kept in petridishes for their growth and development. After emergence of adult, they were kept in insect collection box carefully. Specimen of fruit borer was sent to NBAIR, Banglore for identification species. To estimate the losses caused by tamarind fruit borer, fruit borer infestation was recorded from one square meter area in all four directions of tagged trees randomly in selected villages of two blocks by counting the total number of fruits as well as fruit borer infested fruits at green and mature stages of the pod to see the vulnerable stages of fruits towards the infestation caused by borer. The damaging symptom of fruit borer was clearly identified by the presence of excreta with larva. Fruit borer infestation was statistically converted into per cent fruit borer infestation.

III. RESULTS AND DISCUSSIONS

During the course of study, six insect pests species were noticed causing damage at various stages of tamarind, namely fruit borer, mealy bug, plant hoper, tree hopper, semilooper and scale insect. For the observation of tamarind fruit borer, infested pods with tiny larva were collected and kept in petridishes for their growth and development and few preliminary observations of tiny larvae were recorded. After emergence of adult, they were

kept in insect collection box carefully. The damage of fruit borer was initiated at tender fruit stage and remained almost till the green fruiting stage. After that, the activity of insect declined gradually during mature fruit stage of tamarind. The damage of fruit borer was recorded from forty trees of each block. The female lays egg on peduncles and surface of fruit. Larva having biting and chewing type mouth part feeds on pulp along with immature seeds. Pupation takes place inside the fruit and adult emerges from exit hole making by the larva before pupation. After the emergence of adult, pupae attach with exit hole on the fruit surface. Early instars larvae are yellowish in colour which turns to yellowish brown in colour in full grown stage. Adults are brown to reddish brown in colour Dark brown spot presented at posterior end of the fore wing in female which is more prominent at resting condition. However, this spot is absent in male. Adults of fruit borer specimens were sent to National Bureau of Agricultural Insect Resources (NBAIR), Bangalore for correct identification. Specimen is identified as *Cryptophlebia ombrodelta* ((Tortricidae: Lepidoptera) species of tamarind fruit borer. It is a new record of *C. Ombrodelta* from Bastar Plateau Zone of Chhattisgarh, India. Usman and Puttarudriah (1955) found *Cryptophalebia illepida* Butler (Lepidoptera: Tortricidae) as a polyphagous species boring into the fruits of tamarind. *C. Ombrodelta* is reported from India, Srilanka, Nepal, Indonesia, , China, Tiawan, Vietnam, Western Malaysia, Japan, Australia, and Hawaii. It is considered as pest of legumes. It has been reported to be an important pest of macadamia, litchi and logan fruit (Jones,1995). Singh (2014) reported the damage of *C. Ombrodelta* in bael and tamarind at Central Horticultural Experiment Station, IIHR located at Bhubaneswar in the coastal region of Odisha State.

The damage incidence of fruit borer is presented in Table 1. On the basis of mean fruit infestation of two blocks, at green stage of tamarind pod, two peak activities of fruit borer were recorded during fourth week of September and November with 22.85 per cent and 20.02 per cent fruit borer infestation, respectively. It may be possible due to tenderness of the whole pod. While, the level of infestation was gradually declined during the entire maturity period of tamarind pod and reached to minimum infestation of 1.59 per cent during second week of March. It might be possible because of hardness of pods and difficult to bore it resulting less infestation occurred. No supporting literature is available of this pest on tamarind from this region and therefore, it may be the first record of this pest form Bastar plateau zone of Chhattisgarh, India.

IV. Conclusion

In the present studies, fruit borer, *Cryptophlebia ombrodelta* was categorized as major pest of tamarind. It was the first record of fruit borer, *C. ombrodelta* of tamarind crop from Bastar Plateau Zone of Chhattisgarh. Maximum fruit borer infestation was recorded during September and November months. Studies on losses caused by tamarind fruit borer concluded that green stage of the tamarind pod was more susceptible to receive maximum losses.

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Table 1: Fruit borer infestation in tamarind at Jagdalpur and Tokapal blocks of Bastar District during kharif – rabi, 2015-16.

SMW	Date of observation	Stage of tamarind pod	Mean fruit borer infestation (%) at Jagdalpur block (Mean of five villages)	Mean fruit borer infestation (%) at Tokapal block (Mean of five villages)	Overall mean fruit borer infestation (%)
28	09/07/2015	Green stage	2.38	2.75	2.56
30	23/07/2015		4.01	2.95	3.48
32	09/08/2015		7.87	3.86	5.86
34	23/08/2015		14.83	9.96	12.40
36	09/09/2015		20.56	11.89	16.22
38	23/09/2015		24.93	20.78	22.85
40	09/10/2015		24.49	15.71	20.10
42	23/10/2015		22.24	17.60	19.92
44	09/11/2015		23.47	15.38	19.42
46	23/11/2015		21.46	18.58	20.02
48	09/12/2015		17.67	13.10	15.39
50	23/12/2015		12.16	10.28	11.22
2	09/01/2016	Mature stage	8.24	5.99	7.11
4	23/01/2016		4.56	4.92	4.74
6	09/02/2016		3.33	3.13	3.23
8	23/02/2016		2.33	1.91	2.12
10	09/03/2016		1.80	1.38	1.59
	Mean		12.73	9.42	11.07

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AUTHOR'S PROFILE:

Dr. Avinash Kumar Gupta born on 08/07/1974 in Jagdalpur, District Bastar (Chhattisgarh)-494001, India. My major field of M. Sc Thesis Research was biology and food consumption of *Spilosoma bliqua* Walker on different host plants and its chemical control and Ph.D. Thesis Research was basis of resistance in linseed (*Linum usitatissimum* Linn) against linseed bud fly *(Dasyneura lini* Barnes)". Earlier, I was working as scientist in All India Co-ordinated Research Project on Linseed (2005-10) at College of Agriculture, IGKV, Raipur. Presently, I am working as scientist in All India Co-ordinated Rice Improvement Programme at SG College of Agriculture and Research Station, Kumhrawand, Jagdalpur, Chhattisgarh.

View of Tamarind tree in village

Female and male fruit borer adult insect

Tamarind infested by fruit borer, *Cryptophlebia ombrodelta*