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"Screening of Various Provenances of Karanj, Pongamia Pinnata Against Hairy Caterpillar, Euproctis sp. (Lepidoptera: Lymantriidae) at Raipur (Chhatisgarh)"

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ABSTRACT: *Studies on the 'Screening of various provenances of karanj , Pongamia pinnata against hairy caterpillar, Euproctis sp. at Raipur (Chhatisgarh)', conducted Agro-forestry field, IGKV, Raipur revealed that Euproctis sp. is an important foliar pest of karanj which several damaged on the young leaves. This particular insect was found in the field from the month of December. Early instar larvae fed on the green part of the leaves and skeletonized them but later instar larvae completely ate the young leaves. The population of caterpillar was recorded maximum during the first fortnight of December (1.08 larvae/twig) and the insect population was affected by weather parameters. Screening of various provenance of karanj against hairy caterpillar showed that the maximum population of hairy caterpillars was observed in the provenance Nainpur which was recorded as 2.91 larvae/twig. The correlation analysis of the population of hairy caterpillar showed that the population was affected by weather parameters.*

Key words: *hairy caterpillar, Population, Screening, Provenances, Weather parameters.*

INTRODUCTION

Karanj, P. pinnata L. Pierre is a leguminous medium sized glabrous tree. It grows easily from seed. Historically, this plant has long been used as a source of traditional medicines, animal fodder, green manure, timber, fish poison, fuel and recently has been projected as an important source of biodiesel. P. pinnata has an added advantage of the nitrogen fixing ability and drought resistance due to its nodulation properties [1].

Various insect pests about 24 observed on karanj during investigation that includes like gall inducers, leaf miners, defoliators, shoot bores, sap suckers, flower feeders and fruit seed borers. Among various insect pest, hairy caterpillar, Euproctis sp. has major one that was observed during present investigation. They were several damaged on the young leaves of karanj. This pest is an important foliar pest of forest trees. It is extremely polyphagous and damages many different species of deciduous trees and shrubs. About 30 species of insect pests recorded to cause damage to Pongamia raised usually as avenue planting and strip plantations on marginal lands [2].

Euproctis sp. is a polyphagous pest that caused considerable damaged on karanj plantations. Similarly finding [3] and along with they studied the seasonal variation, percent infestation and effect of important weather factors viz. rainfall, relative humidity and temperature on the population dynamics of yellow tailed tussock moth Euproctis scintillans Walker (Somena scintillans Walker).

MATERIALS AND METHODS

The experiment was conducted in Randomized Block Design with 6 provenances. The objective of this study was to obtain information on seasonal incidence and screening of Euproctis sp. on karanj plantations. For taking observations, the whole experimental field of Agro-forestry system was divided into 6 blocks, each block consisting of 18 trees of karanj, P. pinnata and each replicated three times. Observations were recorded on the various types and number of insect pests and their related natural enemies at fortnightly intervals from each block on three randomly selected trees on two randomly selected branches. The data

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thus collected were correlated with the meterological parameters.

Agri-silvicultural Trial, Agroforestry field, IGKV, Raipur (Chhatisgarh)

01.	No.& Name of provenances	Six & namely: 1. Raipur, 2. Ambikapur, 3. Jabalpur, 4. Nainpur, 5. Zaheerabad, 6. Keesaragutta
02.	Design	Randomized Block Design
03.	Replication	3
04.	Tree spacing	6 × 6 meter
05.	Plot size	90 x 40 m^2
06.	Plantation	20.09.2009

RESULTS AND DISCUSSION

Nature of damage: Defoliation of host plants is usually very spectacular. The presence of egg masses, nests and individual caterpillars is easily detected. Early instar larvae of hairy caterpillar, Euproctis sp. fed on the green part of the leaves and skeletonized them but later instar larvae completely ate the leaves along with soft apical shoots of plants (Plate: 1). Regular surveys in the apple orchards, the leaves of apple plantations were found damaged heavily by the caterpillars of Euproctis scintillans Walker which are voracious feeders and in severe cases of infestation, the entire trees may be defoliated [3]. The Euproctis chrysorrhoea (L.) was also an important potential pest in oak forest of the region causing defoliation of trees [4]. Some authors has also reported that the larvae of this pest are polyphagous and infest a wide variety of trees [5, 6, 7, 8, 9].

Seasonal incidence: This particular insect was found in the field from the month of December. Maximum population of caterpillar was recorded during the first fortnight of December (0.40 larvae/twig) and the minimum population was recorded (0.03 larvae/twig) during second fortnight of January. (Table 1 & Fig. 1)

Plate 1: Adult of *Euproctis* sp.

Plate 2: Damage caused by *Euproctis* sp.

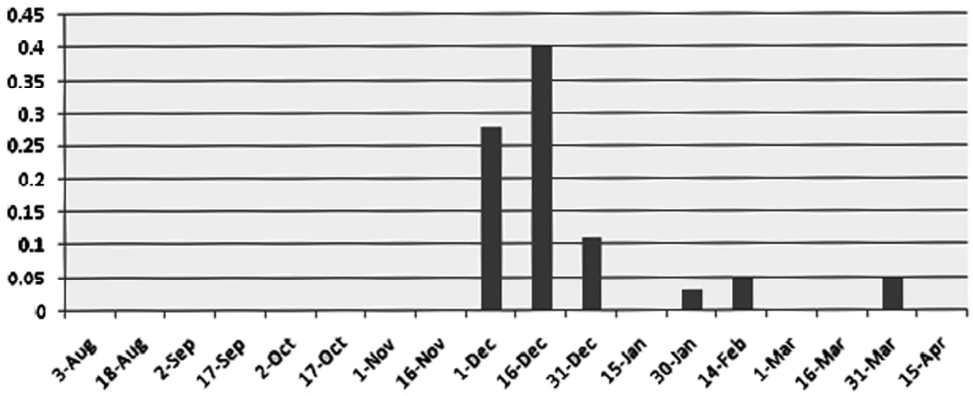

Figure 1: Seasonal incidence of hairy caterpillar, *Euproctis* sp. on *P. pinnata*

Table 1
Seasonal incidence of hairy caterpillar, Euproctis sp. on karanj, P. pinnata

Fortnightly mean population			*Weather Parameters*				
			Temperature (°C)			*Relative Humidity(%)*	
SMW	*Date*	*Leaf webber/twig*	*Max.*	*Min.*	*Rainfall (mm)*	*Morn.*	*Even.*
33	03 Aug	0.00	31.3	24.3	177	95	80
35	18 Aug	0.00	29.3	24.5	120.8	95	80
37	02 Sep	0.00	31.9	25.2	11.6	92	73
39	17 Sep	0.00	32.0	24.9	28.6	93	68
41	02 Oct	0.00	30.2	23.3	8.6	89	71
43	17 Oct	0.00	28.8	22.6	32.6	96	73
45	01 Nov	0.00	30.0	16.7	0.00	91	37
47	16 Nov	0.00	30.3	16.7	0.00	87	40
49	01 Dec	0.28	28.1	11.8	0.00	91	31
51	16 Dec	0.40	28.1	11.7	0.00	90	34
1	31 Dec	0.11	28.6	13.6	0.00	90	48
3	15 Jan	0.00	29.0	16.1	0.00	89	46
5	30 Jan	0.03	28.8	10.1	0.00	86	28
7	14 Feb	0.05	27.9	15.4	20.4	83	39
9	01 Mar	0.00	27.9	17.7	45.8	91	61
11	16 Mar	0.00	33.3	19.5	2.0	89	38
13	31 Mar	0.05	38.4	22.2	0.00	67	24
15	15 Apr	0.00	38.5	22.4	2.8	58	23

Table 2
Screeening of the hairy caterpillar, *Euproctis* sp. on various provenances of karanj, *P. pinnata*

S. N.	*Name of provenances*	*03-Aug*	*18-Aug*	*02-Sep*	*17-Sep*	*02-Oct*	*17-Oct*	*01-Nov*	*16-Nov*	*01-Dec*	*16-Dec*	*31-Dec*	*15-Jan*	*30-Jan*	*14-Feb*	*01-Mar*	*16-Mar*	*31-Mar*	*15-Apr*	*Total*	*Mean*
1	Raipur	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
2	Ambikapur	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.33	0.00	0.00	0.33	0.00	0.83	0.05
		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.08	1.14	1.00	1.00	1.14	1.00		
3	Jabalpur	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.75	1.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.83	0.10
		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.30	1.41	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
4	Nainpur	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.92	1.33	0.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.92	0.16
		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.38	1.52	1.28	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
5	Zaheerabad	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
6	Keesaragutta	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
	SEm±	–	–	–	–	–	–	–	–	0.07	0.10	0.06	–	0.03	0.06	–	–	–	–		
	CD(5%)	–	–	–	–	–	–	–	–	S	S	S	–	NS	NS	–	–	–	–		

Figure in parentheses of square root transformed value

The correlation analysis of hairy caterpillar showed that the insect population was affected by weather parameters. The insect population was found negatively highly significantly correlated with maximum temperature (– 0.193**), minimum temperature (– 0.452**), rainfall (– 0.206**), relative humidity-II (– 0.317**) but no significant negatively correlated with relative humidity-I (– 0.015).

The pest Euproctis Scintillans Walker (Lepidoptera: Lymantridae) remained active in the field of apple for six months from June to November during all three studied years. Peak infestation was recorded during September. Correlation analysis indicated that a significant positive correlation (p?0.05) with average temperature and minimum temperature. However, average rainfall did not show any significant effect on the population of E. scintillans [3].

Screening: Maximum population of hairy caterpillars was observed in the provenance Nainpur which was recorded as 2.91 larvae/twig. No insects were recorded from the provenances Zaheerabad & Keesaragutta in during the month of August to April. Hence, it can be concluded that Zaheerabad & Keesaragutta provenances tolerant or less prone to the attack of hairy caterpillar while Nainpur provenance was susceptible. (Table:2)

CONCLUSION

The incidence of hairy caterpillar, Euproctis sp. was found in the field from the month of December and screening of various provenances of karanj against this pest was revealed that Nainpur provenance was more susceptible but No insects were recorded from the provenances Zaheerabad & Keesaragutta to the attack of hairy caterpillar.

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