



## RESEARCH NOTE

### Incidence pattern of stem borer, *Batocera rubus* in Moringa

D. SRINIVASA REDDY<sup>1</sup>, C. MADHUMATI<sup>2</sup> and T. HEMADRI<sup>3</sup>

<sup>1,2</sup> Horticultural Research Station, Anantharajupeta-516105, Rly. Kodur, YSR District, Andhra Pradesh, India

<sup>3</sup>N. S. College of Horticultural Sciences, Markapuram, Andhra Pradesh, India

E-mail: dsr2020@gmail.com

**ABSTRACT:** A study was undertaken to understand the reaction of moringa varieties viz., PKM-1, PKM-2 and Bhagya to cerambycid stem borer, *Batocera rubus* and it was recorded that there was variation in the percent incidence among the varieties where maximum damage could be observed in Bhagya followed by PKM-2 and PKM-1. The damage level also varied in three years observational period i.e. in first year of planting there was no damage by borer but incidence started only in the second year ratoon crop (3.10-6.43%) and in subsequent third year of ratoon, higher damage (44.48-56.61) could be noted indicating that none of the varieties showed tolerance to the insect pest.

**Keywords:** *Batocera rubus*, *Moringa oleifera*, varietal preference

*Moringa oleifera* L. has tremendous nutritional and medicinal values. It has multifarious uses of that include alley cropping, leaves and seedcake as animal forage, leaves used for biogas production, leaves juice as foliar nutrient, green manure, honey (flower nectar), all plant parts used in medicine), etc (Fugile, 2000). There are a number of biotic stresses of *M. oleifera* in its native Indian range, which affects its production from both qualitative and quantitative aspects. Infestations by insect pests and mites have been placed among the main limiting factors where Butani and Verma (1981) reported twenty eight different insect species and two species of mites from India on various parts of drumstick trees. Among them major insect pests, bark-eating caterpillar, budworm, Leaf caterpillars, hairy caterpillars, fruit fly, and long horn beetles, *Batocera rubus*. The long horn beetle, is widely distributed all over India and Bangladesh having alternate hosts as Jack (Shivashankar *et al.*, 2016) and moringa (Jiji *et al.*, 2016); (Chakraborty, 2017) mango, fig, rubber, eucalyptus, mulberry etc. (Navarajan paul, 2007). The adults of *Batocera rubus* are medium sized beetles and yellowish brown with white spots on elytra where the eggs are laid singly in cracks or crevices in the bark of the tree. Pupation takes place within the tunnels. Egg, grub and pupal periods last for 1 to 2, 24 to 28 and 12 to 24 weeks respectively. There is only one generation in a year. The grubs damage by making zig-zag burrows beneath the bark, feed on internal tissues, reach sapwood and cause death of affected branch or stem whereas the adults feed on the bark of young twigs and petioles. In this regard, a study was initiated for observation of extent of damage of *Batocera rubus* on commercially cultivated moringa varieties.

Three varieties namely PKM-1, PKM-2 and Bhagya were used for the experiment. The seeds of PKM-1, PKM-2

were procured from TNAU, Coimbatore and Bhagya from UHS, Bagalkot. The seeds were sown in polybags containing red earth, vermicompost and FYM (2:1:1) in the month of June, 2014 and the seeds germinated after 6-7 days. The seedlings were transplanted in the mainfield after 20 days with a spacing of 6 x 6m in the month of July, 2014. All the necessary package of practices was implemented as per the recommendation. The plants of these varieties were allowed for natural infestation by stem borer, *Batocera rubus* in the main field and in subsequent years, the plants were assessed for percent stem borer infestation as and when the damage has been noticed maintaining five replications per treatment with 5 plants per replication.

The results from the Table 1 revealed that after first year planting, there was no damage observed of *B. rubus* in neither of the three moringa varieties (PKM-1, PKM-2 and Bhagya) cultivated. The damage of moringa by *Batocera rubus* grubs was noted after heading back trees was noted only in second year. Whereas at second year after planting in ratoon crop, stem borer damage was lowest in case of PKM-1 i.e. 3.10% and maximum damage was noted in Bhagya cultivar with 6.43% and the other variety, PKM-2 showed an intermediate damage of 5.33%. Similarly the damage by stem borer increased abruptly in the third year of planting again in ratoon crop where the damage ranged from 44.48% to 56.61% with highest percent incidence in

Bhagya moringa cultivar (56.61%), followed by PKM-2 (52.92%) and least in PKM-1 with 44.48%. The observations also showed that the *B. rubus* incidence in case of PKM-1 increased 15 times (44.48%) more as compared to previous incidence of only 3.10% but in PKM-2 (52.92%) and Bhagya (56.61%), 10 times higher

**Table 1. Infestation of moringa varieties by *B. rubus* in a three year study period (2014-2016)**

Variety	Replication	No. of plants	No. of stem borer infested plants			Percent Incidence		
			1 year after planting	2 year after planting	3 year after planting	1 year after planting	2 year after planting	3 year after planting
PKM-1	R1	19	0	1	9	-	5.26	47.37
	R2	18	0	0	7	-	-	38.90
	R3	19	0	1	9	-	5.26	47.37
	R4	16	0	0	7	-	-	43.75
	R5	20	0	1	9	-	5.00	45.00
						-	<b>3.10</b>	<b>44.48</b>
PKM-2	R1	19	0	0	11	-	-	57.89
	R2	20	0	1	11	-	5.00	55.00
	R3	19	0	1	4	-	5.26	21.05
	R4	17	0	1	7	-	5.88	41.18
	R5	19	0	2	17	-	10.52	89.47
						-	<b>5.33</b>	<b>52.92</b>
Bhagya	R1	19	0	2	8	-	10.52	42.10
	R2	19	0	0	9	-	-	47.37
	R3	18	0	2	14	-	11.11	77.78
	R4	19	0	1	12	-	5.26	63.16
	R5	19	0	1	10	-	5.26	52.63
						-	<b>6.43</b>	<b>56.61</b>

damage was noted at third year as compared to second year incidence. The findings also shows that though PKM-1 had no damage during first year of planting may be due to not enough growth girth of stem for oviposition of adult during first year but in subsequent years i.e. the ratoon crop the damage has been manifold. In support of our findings, earlier Pasupathy (2000) also observed an increase in the incidence of *Plocaederus ferrugineus* in moringa especially in ratoon crop after cutting back the trees. Our findings prove that none of the moringa varieties showed tolerance to *Batocera rubus* under natural infestation conditions.

## REFERENCES

- Butani, D.K. and Verma, S. 1981. Insect pests of vegetables and their control- drumsticks. *Pesticides*, **15**(10): 29-32.
- Chakraborty, D. 2017, Seasonal incidence of insect pests on jackfruit, *Artocarpus heterophyllus* Lamarck. *International Journal of Advanced Biological Research*, **7**(3): 474-476.
- Jiji, T., Anitha, N., Asokan, A. and Akhila, G. V., 2016. Diversity of long horned beetle (Coleoptera: Cerambycidae) pests in southern Kerala. *Pest Management in Horticultural Ecosystems*, **22**(1): 40-44.
- Navarajan Paul, A. V. 2007. Insect Pests and their Management, 45 p. <http://nsdl.niscair.res.in/jspui/bitstream/123456789/493/1/revised%20insect%20pest%20and%20their%20management.pdf>.
- Pasupathy, S. 2000. Moringa stem borer, The Hindu online edition: Science and technology section. <http://www.thehindu.com/2000/11/09/stories/08090421.htm>.
- Shivashankar, T., Sidde Gowda, D. K., Hemadri, T. 2016. Pests of Jackfruit (*Artocarpus heterophyllus* Lam.) and their management: In National Seminar on Management of jack under adverse climatic conditions, value addition and marketing; Organized by UHS, Bagalkot and; ICAR & NHM, 153pp.

MS Received : 25 December 2017

MS Accepted : 29 March 2018