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## Screening of mango varieties against shoot borer, *Chlumetia transversa* (Walker)

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#### Abstract

A field experiment was conducted at Horticulture Polytechnic, ASPEE College of Horticulture and Forestry, Navsari Agricultural University, Navsari (Gujarat) during 2016-17 to 2018-19. The result indicated that, infestation of mango shoot borer, *Chlumetia transversa* (Walker) was maximum in Kesar and Alphonso, whereas minimum infestation was recorded in Banarasi Langra, Dashehari, Amrapali, Neelphonso and Ratna varieties of mango.

**Keywords:** Screening, mango, shoot borer, *Chlumetia transversa*

#### Introduction

Mango is known as king of fruits not only in the Indian sub-continent but also the world over. According to the Indian mythology, it is considered to be a transformation of God's own creation. It has also been described as "Kalpa-Vriksha" i.e. wish granting tree in the Vedic literature. Botanically, mango belongs to the genus *Mangifera* which finds its origin in South-East Asia and Indo-Myanmar regions. Mango is a host of about 492 species of insects, 17 species of mites and 26 species of nematodes. Of these, over 188 species have been reported in India (Tandon and Verghese, 1985)<sup>[8]</sup> and hardly half a dozen are of major importance. Mango shoots are infested by several species of borers. They include *Chlumetia transversa* Walker, *C. alternans* Moore, *Gatesclarkeana erotias* Meyrick, *Anarsia melanoplecta* Meyrick, *A. lineatella* Zeller, *Chelaria spathota* Meyrick and *Dudua aprobola* (Meyrick). Of them, the *C. transversa* is the most widespread and causes extensive damage to young plants (Butani 1979; Srivastava 1997)<sup>[2, 7]</sup>. The full-grown caterpillar is pink with dirty white spots dorsally and is pale white ventrally. Adult moths are stout grayish brown in colour with wings having wavy lines and measure about 17.5 mm at expanded wings. Hind wings are light in colour. Female moths lay eggs on tender leaves, after hatching young larvae enter the midrib of leaves and then enter into young shoots through the growing points by tunneling downward, throwing their excreta resulting in dropping of leaves and wilting. Four overlapping generations of the pest are found in a year and it overwinters in pupal stage. Shoot borer is commonly seen in different varieties of mango. Host plant resistance is considered as one of the important component of IPM. To overcome the problem of insect pests, it is necessary to evaluate mango cultivars. Hence, the study was carried out to screen mango varieties against shoot borer.

#### Materials and Methods

A field experiment was conducted at Horticulture Polytechnic, Navsari Agricultural University, Navsari, Gujarat during 2016-17 to 2018-19 with three replications. Nine mango cultivars viz; Kesar, Alphonso, Totapuri, Banarasi-langra, Dashehari, Amrapali, Ratna Neelphonso and Sonpari were screened against shoot borer of mango. For recording observations, select nine experimental trees per replication (i.e. twenty seven experimental trees) and randomly selected five terminal twigs from four directions (North, East, West, and South) per tree at weekly interval (Standard week wise) and recording the numbers of infested shoots from each selected trees and percent shoot infestation were calculated. All the experimental trees were kept free from pesticidal spray during the course of investigation.

#### Results and Discussion

A significant difference was observed in shoot borer infestation among different varieties during 2016-17. The overall infestation ranged from 3.60 (Dashehari) to 6.78 percent (Alphonso).

The lower shoot borer infestation was observed in Dashehari (3.60%) which was at par with Banarasi Langra (3.80%), Amrapali (3.90%), Totapuri (4.70%) and Ratna (4.80%). While higher percent shoot borer infestation was observed in Alphonso (6.78%) which was at par with Kesar (6.34%) and Sonpari (6.28%). It is evident from the results that Dashehari registered least incidence whereas, Alphonso had maximum incidence of shoot borer infestation.

During 2017-18, the overall infestation of shoot borer ranged between 3.10 (Banarasi Langra) to 22.20 percent (Kesar). The lower shoot borer infestation was observed in Banarasi Langra (3.10%) which was at par with Dashehari (3.48%). While higher percent shoot borer infestation was observed in Kesar (22.20%) which was at par with Alphonso (19.68%). It can be seen from the results that Banarasi Langra and Kesar registered least and highest infestation, respectively.

The overall infestation ranged from 4.10 (Banarasi Langra) to 31.34 percent (Kesar). The lowest shoot borer infestation was noticed in Banarasi Langra (4.10%) which was at par with Dashehari (4.70%) while higher percent shoot borer infestation was observed in Kesar (31.34%). Further, the results revealed that the shoot borer infestation was least (4.10%) on Banarasi Langra, whereas highest shoot borer

infestation (31.40%) was noticed on Kesar during 2018-19.

The pooled data of three years presented in Table 1 revealed that the lowest shoot borer infestation was observed in Banarasi Langra (3.67%) which was at par with Dashehari (3.93%) and Amrapali (5.63%). On the other hand, maximum number of shoot borer infestation was observed in Kesar (19.96%) and it was found at par with Alphonso (17.04%). Interaction (Y x T) found non-significant indicating consistent performance of different treatment over the years. Singh and Thakur (1996) [6] reported to cause 43.3 to 57.7 percent infestation in young grafted plants and 42.3 to 50 percent among different aged plants in Himachal Pradesh. In Bangalore, Karnataka showed peak percent infestation in September and November during 1996 and 1997, respectively (Verghese and Devi, 1998) [9]. Bhatia and Sharma (1999) [11] reported causing average incidence of 66-100 percent in different cultivars with minimum incidence of 45 percent in Totapuri. *Chlumetia transversa* is reported to attack all the cultivars of mango with maximum infestation on Amrapali during the peak activity in September at Hisar, Haryana (Handa 2006) [5]. It is also reported to be a major pest of mango in China out of ninety four total insect pests as reported by Chen *et al.* (2010) [4].

**Table 1:** Screening of mango varieties against shoot borer, *Chlumetia transversa* (Walker)

Sr. No.	Name of varieties	Shoot infestation (%)			
		2016-17	2017-18	2018-19	Pooled
1	Kesar	14.51 (6.34) <sup>ab</sup>	28.10 (22.20) <sup>a</sup>	34.03 (31.34) <sup>a</sup>	25.55 (19.96) <sup>a</sup>
2	Alphonso	15.09 (6.78) <sup>a</sup>	26.32 (19.68) <sup>a</sup>	29.76 (24.66) <sup>b</sup>	23.72 (17.04) <sup>a</sup>
3	Totapuri	12.52 (4.70) <sup>cd</sup>	15.64 (7.30) <sup>cd</sup>	17.71 (9.30) <sup>d</sup>	15.29 (7.10) <sup>c</sup>
4	Banarasi Langra	11.15 (3.80) <sup>d</sup>	9.98 (3.10) <sup>e</sup>	11.55 (4.10) <sup>f</sup>	10.89 (3.67) <sup>d</sup>
5	Dashehari	10.93 (3.60) <sup>d</sup>	10.74 (3.48) <sup>e</sup>	12.50 (4.70) <sup>ef</sup>	11.39 (3.93) <sup>d</sup>
6	Amrapali	11.38 (3.90) <sup>cd</sup>	14.26 (6.12) <sup>d</sup>	15.16 (6.88) <sup>de</sup>	13.60 (5.63) <sup>cd</sup>
7	Ratna	12.65 (4.80) <sup>cd</sup>	17.94 (9.50) <sup>bc</sup>	18.21 (9.80) <sup>d</sup>	16.27 (8.03) <sup>bc</sup>
8	Neelphonso	13.10 (5.14) <sup>bc</sup>	16.99 (8.58) <sup>cd</sup>	17.35 (8.90) <sup>d</sup>	15.81 (7.54) <sup>bc</sup>
9	Sonpari	14.51 (6.28) <sup>ab</sup>	20.45 (12.24) <sup>b</sup>	23.11 (15.48) <sup>c</sup>	19.36 (11.33) <sup>b</sup>
	S.Em + (T)	0.565	0.882	0.962	1.914
	YXT				0.821
	C.D. at 5%	1.692	2.644	2.884	5.738
	Y X T				NS
	C.V. (%)	7.60	8.57	8.36	8.43

\*Figures in the parenthesis are original value, whereas those outside are Arcsine transformed values.

\*In a column, means followed by a common letter(s) are not significantly different by DNMRT (P=0.05)

## Conclusion

The infestation of mango shoot borer, *Chlumetia transversa* (Walker) was maximum in Kesar and Alphonso, whereas minimum infestation was recorded in Banarasi Langra, Dashehari, Amrapali, Neelphonso and Ratna varieties of mango.

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