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RESEARCH NOTE

Relative susceptibility of guava genotypes against fruit borer, *Deudorix isocrates* F. (Lepidoptera: Lycaenidae)

GUNDAPPA, B. M. MURALIDHARA, G. L. VEENA and S. RAJAN

ICAR-Central Institute for Subtropical Horticulture, Rehmankhera, PO Kakori, Lucknow - 226 101, India
E-mail: gundappacish@gmail.com

ABSTRACT: Nineteen guava genotypes were evaluated against the fruit borer, *Deudorix isiocrates* F. infestation under field conditions to identify the less susceptible germplasm. The significant variation was observed in the level of fruit borer infestation among the screened guava genotypes during both (2015 and 2016) the years. The pooled analysis of two year data also showed significant variation among the guava genotypes with respect to fruit borer infestation ($F_{18, 117}$ = 3.069**; P<0.00). Based on the level of infestation genotype Florida Seedling was categorized as less susceptible whereas Hong Kong White and CISH-G1 were categorized as highly susceptible germplasm. This study mainly helped tocategorize genotypes into less, moderately and highlysusceptiblegenotypes against fruit borer infestation.

Keywords: *Deudorix isocrates,* fruit borer, guava genotype

Guava fruit borer or Pomegranate butterfly, *Deudorix isocrates* is a polyphagous pest having a very wide range of host plants, including, aonla, apple, ber, beal, citrus, guava, litchi, loquat, mulberry, peach, pear, plum, pomegranate, sapota and tamarind (Haseeb, 2005). It is widely distributed all over India and the incidence of this pest coincides with the main fruiting season (winter crop) in guava. Fruits at all stages of development are attacked but peak incidence was observed in September month. Females lay eggs singly on flowers and tender fruits. The egg hatches out within 7 - 10 days. Larval period is varies 14 - 45 days. Pupal period varies from a week to more than a month. The total life-cycle may take 1 - 2 months depending upon the weather conditions. Its life cycle on guava generally completes in 34 to 42 days during July to December (Anonymous, 2001). On hatching, the caterpillars bore inside the developing fruits and are usually found feeding on pulp and seeds just below the rind. The conspicuous symptoms of damage are offensive smell and excreta of the caterpillars coming out of entry holes the excreta are found stuck around the holes. Sometimes the holes may also be seen plugged with the anal end of a caterpillar. The affected fruits ultimately fall down. Average fruit loss varies from 20.69 to 21.38 per cent (Anonymous, 2003). Host plant resistance is important component of insect pest management. In this study 19 guava genotypes were evaluated against the fruit borer infestation under field conditions to identify the less and moderately susceptible germplasm.

The present investigations were carried out during 2015 and 2016 at ICAR-Central Institute for Subtropical Horticulture, Locknow, India. The level of infestation was recorded during the peak infestation period of the pest in winter crop on 19 genotypes. The observations were recorded by counting 50 fruits in each side/direction (East, West, South and North) and also in center of the plant canopy for borer infested and healthy fruits. Number of damaged fruits per tree was visually counted and percent damage was computed.

The results revealed that there was significant variation in the level of infestation among the guava genotypes screened during the year 2015 ($F_{18,65}$=2.553**; p<0.003). During the first year of screening (2015) the lower incidence of fruit borer was recorded in Dharwar and HPSI-35 with 4.04 and 5.01 per cent infestation respectively. Whereas highest incidence of the fruit borer was observed in genotype CISH G1 and Hong Kong White with 51.05 and 38.68 per cent infestation respectively. During the second year of the screening (2016) also there was significant difference was observed among the germplasm against the fruit borer infestation ($F_{18, 32}$ = 5.037**; p<0.00). The lowest infestation during

Table 1. Response of guava genotypes against the Fruit borer (*V. isocrates*) infestation

Genotype	Fruit borer (*V. isocrates*) infestation (%)		
	2015	2016	Pooled
Chittidar	19.23 ± 4.97^{ab}	14.45 ± 6.48^{ab}	17.64 ± 3.80^{a}
Dharwar	4.04 ± 3.43^{a}	10.15 ± 1.79^{ab}	6.33 ± 2.41^{a}
Guinee	15.79 ± 1.49^{ab}	20.36 ± 3.37^{bc}	17.32 ± 1.57^{ab}
HPSI-35	5.01 ± 1.76^{a}	6.70 ± 1.40^{ab}	5.74 ± 1.14^{a}
HPSI-26	20.52 ± 5.62^{ab}	1.69 ± 0.43a	13.46 ± 4.81^{ab}
Florida Seedling	7.18 ± 0.51^{a}	0.63 ± 0.63a	3.91 ± 1.92^{ab}
White flesh	16.9 ± 2.03^{ab}	9.02 ± 0.56^{ab}	14.27 ± 1.87^{ab}
Red flesh	9.67 ± 3.22^{a}	14.68 ± 1.60^{ab}	12.68 ± 1.82^{ab}
Allahabad Safeda	15.21 ± 5.11^{ab}	13.87 ± 2.76^{ab}	14.77 ± 3.40^{ab}
HPSI-46	15.79 ± 3.11^{ab}	11.07 ± 5.21^{ab}	14.02 ± 2.67^{ab}
Nasik	19.62 ± 2.57^{ab}	5.74 ± 0.92^{ab}	11.97 ± 3.21^{ab}
Superior Sour Lucidium	6.66 ± 3.33^{a}	5.07 ± 3.03^{ab}	5.87 ± 1.90^{a}
Rani Pasand	19.09 ± 7.23^{ab}	8.18 ± 2.92^{ab}	14.73 ± 4.87^{ab}
Hong Kong White	38.68 ± 16.11^{ab}	29.31 ± 4.25^{c}	35.56 ± 10.59^{b}
BilasPasand	9.72 ± 0.80^{a}	5.26 ± 0.0^{ab}	8.23 ± 1.07^{a}
Shweta	17.58 ± 5.92^{ab}	7.78 ± 2.92^{ab}	14.32 ± 4.25^{ab}
Lalit	7.14 ± 3.03^{a}	4.80 ± 0.45^{ab}	6.36 ± 2.00^{a}
CISH- G2	23.14 ± 6.48^{ab}	13.51 ± 4.13^{ab}	19.29 ± 4.46^{ab}
CISH -G1	51.05 ± 9.30^{ab}	6.68 ± 1.42^{ab}	33.30 ± 12.01^{b}
ANOVA	$F_{18, 65}$ = 2.553**	$F_{18, 32}$ = 5.037**	$F_{18, 117}$ = 3.069**

Table 2. Classification of guava genotypes based on the level of infestation by fruit borer

Class	Category	Germplasm
I	Less susceptible	Florida Seedling
II	Moderately susceptible	Dharwar, HPSI-35, Superior Sour Lucidium, Bilas Pasand, Lalit, HPSI-26, White flesh, Red flesh, Allahabad Safeda, HPSI-46, Rani Pasand, Shweta, Chittidar, Guinee and CISH- G2
III	Highly susceptible	Hong Kong White and CISH - G1

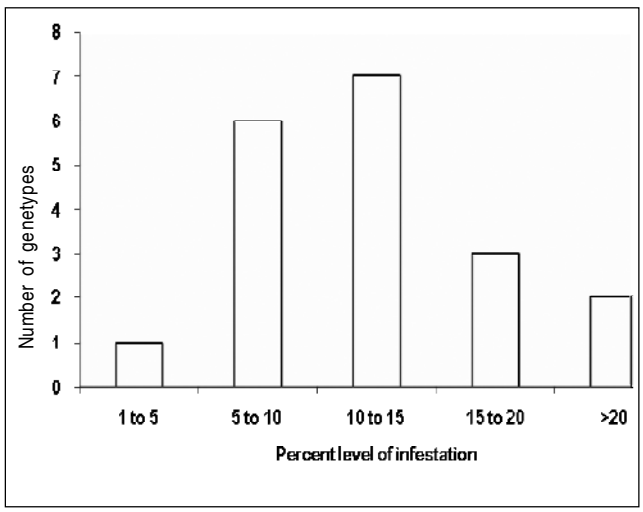

Fig. 1. Frequency distribution of genotypes susceptibility against guava fruit borer

the second year of screening was recorded in the genotype Florida Seedling and Superior Sour Lucidium with 0.63 and 5.07 per cent respectively. The highest incidence was observed in genotype Hong Kong White and Guinee with 29.31 and 20.36 percent infestation. In pooled analysis of the both year data (2015 and 2016) revealed that fruit borer infestation level was varied among the genotypes screened ($F_{18, 117}$ = 3.069**; P<0.00). The lowest level of fruit borer infestation was recorded in the genotype Florida Seedling with 3.9 percent and highest infestation was observed in genotype Hong Kong White with 35.56 per cent (Table 1). Gupta and Arora, (2001) reported that among the germplasm screened against the fruit borer germplasm Allahabad Safeda was found to be less susceptible. In another study out of 16 cultivars of guava screened at CISH, Lucknow, *cvs* Nasik and Superior showed lowest (0.91 – 6.8. & 5.17%) incidence fruit borer (Anonymous, 2003).

The frequency distribution of germplasm in respect to fruit borer infestation was, only one genotype showed less than 5 percent level of infestation, six germplasm showed the level of infestation between 5 to 10 percent infestation, seven germplasm showed the level of infestation between 10 to 15 percent infestation, three germplasm showed the level of infestation between 15 to 20 percent infestation and two germplasm showed the level of infestation >20 percent infestation (Fig. 1). Based on the level of infestation genotypes were classified as less susceptible (<5 per cent), moderately susceptible (5-20 percent) and highly susceptible (>20 per cent). According to this classification Florida Seedling was categorized as less susceptible genotype, Hong Kong White and CISH G1 were categorized as highly susceptible genotypes and the rest of genotypes were considered as moderately susceptible (Table 2). The study entails that less susceptible germplasm could be used in breeding programme to develop varieties / hybrids with relatively resistant to fruit borer.

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