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PP Dave
Department of Entomology
ASPEE College of Horticulture and Forestry Navsari Agricultural University Navsari, Gujarat, India

HV Pandya
Department of Entomology
ASPEE College of Horticulture and Forestry Navsari Agricultural University Navsari, Gujarat, India

Correspondence
PP Dave
Department of Entomology
ASPEE College of Horticulture and Forestry Navsari Agricultural University Navsari, Gujarat, India

Screening of okra genotypes against *Earias vittella* (Fabricius) in Gujarat

PP Dave and HV Pandya

Abstract
Screening of various fourteen genotypes against shoot and fruit borer, *Earias vittella* (Fabricius) infesting okra was carried out under field condition during *kharif* season of 2015 and 2016 at Regional Horticultural Research Station, Navsari Agricultural University, Navsari, Gujarat. The results revealed that among all the genotypes of okra screened, Arka Anamika recorded lowest number of larvae (0.53 larvae/plant), lowest fruit damage (11.61%) and the highest fruit yield (67.61 q/ha). However, JOL-11-12 recorded lowest shoot damage (9.89%).

Keywords: *Earias vittella*, okra, fruit damage, varietal screening, okra, genotype, shoot and fruit borer

Introduction

Okra [*Abelmoschus esculentus* (L.) Moench] is an economically important vegetable crop grown in tropical and sub-tropical parts of the world. This crop is suitable for cultivation as a garden crop as well as on large commercial farms. The area under okra cultivation in India is 535.00 (000 ha) with production of 6478.97 (000 MT) and productivity of 12.10 MT/ha. In Gujarat, okra is grown throughout the year providing continuous and good source of income to the farmers. It is mainly grown in Vadodara, Surat, Junagadh, Banaskantha and Bhavnagar districts. It occupies an area of 65.41 thousand hectares with a production of 717.25 thousand metric tonnes having average productivity of 10.90 MT/ha (Anonymous, 2015) [1]. There are many factors affecting the low productivity of okra. One of them is the losses caused by insect pests. Information regarding screening of genotypes in a most preferable crop like okra is helpful to the farmers for managing the pest population.The crop is affected by number of insect pest, mites and nematodes during different growth stages. Of these pests, shoot and fruit borer, *E. vittella* (Fabricius) (Lepidoptera: Noctuidae) is a widely distributed insect pest causing economic loss to the crop at all the growth stages. Intensification of the vegetable cultivation has created tremendous pest problems; this has led to high pesticide use, often with no reduction in pests attack, making vegetable production more and more dependent on pesticides. Indiscriminate use of pesticides particularly at fruiting stage and non adoption of safe waiting period leads to accumulation of pesticide residues in consumable vegetables. The market samples of various vegetables showed 40-60 per cent contamination across the country (Handa, 1992) [3], among them up to 58 per cent was in okra (Awasthi, 1998) [2]. Due to the presence of pesticide residues in the final commodity, there is a risk of rejection of whole consignment during export. This is manifested in a strong demand for reduced use of pesticides from general public, government and in an increasing number of countries. There is also an increasing demand for healthy food which boosts organic production. So, any non-chemical strategy for managing shoot and fruit borer could be good approach which minimizes the use of chemical pesticides and the damage caused by the pest. To overcome these problems, varietal screening is an important component of Integrated Pest Management concept. Hence, it is the need of hour and can be used very effectively. Therefore, attempts have been made to have comprehensive information on screening of okra genotypes against *E. vittella* infestation with weather parameters for South Gujarat condition.

Materials and Methods

Investigations on morphological and biochemical basis of resistance against shoot and fruit borer, *Earias vittella* (Fabricius) infesting okra was carried out under field condition during *kharif* season of 2015 and 2016 at Regional Horticultural Research Station, Navsari Agricultural University, Navsari, Gujarat, India which geographically located at 20.9302^0 N latitude and 72.9127^0 E longitude at an elevation of 9 m above mean sea level. The experimental site was located 12 km in the east of the Arabian sea shore i.e. Dandi, the historical place of Mahatma Gandhiji. The climate of the region is typically tropical in nature, exhibiting fairly hot summer, mild cold winter. It remained humid and warm during monsoon months. Soils in the experimental site are mainly deep, moderately drained and clayey which are classified as "deep black soil" predominating with montmorilonite clay mineral. The details of the experiment as under:

Fourteen genotypes of okra were screened for their resistance against shoot and fruit borer under field condition at Regional Horticultural Research Station Farm during *kharif* 2015- and 2016. The experiment was laid out in randomized block design replicated thrice.

Genotypes (Treatment) Details

T_1	Pusa Sawani	T_8	GJO-3
T_2	Arka Anamika	T_9	GAO-5
T_3	JOL-10-18	T_{10}	GO-2
T_4	KS-404	T_{11}	VRO-6
T_5	Parbhani Kranti	T_{12}	JOL-09-05
T_6	JOL-2k-19	T_{13}	JOL-12-09
T_7	JOL-11-12	T_{14}	JOL-12-05

The genotypes under test were kept unsprayed throughout the crop period and all other recommended agronomical practices were followed for raising the okra crop.

Methods of recording observation

The susceptibility of okra genotypes to *E. vittella* was evaluated on the basis of number of larvae per plant. The observations on fruit and shoot borer were recorded by counting number of healthy and damaged shoots as well as fruits per twenty plants. Per cent shoot as well as fruit damage was worked out. For recording observations on *E. vittella* larval population, twenty plants were selected randomly in each plot and observations on larval population were recorded at weekly interval in the morning hours from the same selected plants. The observations were started from first week after germination and were continued till the harvesting of the crop at the beginning of each standard meteorological week. Shoot damage was recorded by counting total and damaged shoots from the each plot at weekly interval starting from the one week after germination till the harvest of crop. The observations on fruit damage were made by counting total and damaged fruits from each plot at each picking. The fruit damage was assessed based on bore holes found on the fruit. Okra fruit yield was recorded at each peaking and the data of all the pickings were summed up, averaged out and then converted to hectare base. The whole experimental plot was kept free from spraying of any insecticides.

Statistical analysis of data

The periodical data on number of larvae per plant recorded at weekly interval was subjected to analysis of variance (ANOVA) after due square root transformation; whereas, the data on per cent shoot as well as fruit damage were subjected to ANOVA after due arc sin transformation.

Results and Discussion

The results recorded about varietal screening are presented in Table 1 to 5 and depicted in figure 1 to 4. The year wise result were discussed as under

Larval population

All the genotypes showed significant difference in larval population with each other during the first year i.e. 2015 (table 1 and Figure 1). The highest larval population was found in genotype JOL-12-05 (1.83 larvae/plant). However, minimum l population was found in variety Arka Anamika (0.51 larvae/plant). However, genotype JOL-10-18 (0.58 larvae/plant), KS-404 (0.53 larvae/plant) and GAO-5 (0.72 larvae/plant) did not differ from each other as they were at par with Arka Anamika (0.51 larvae/plant). It was followed by GO-2 (0.78 larvae/plant), JOL-11-12 (0.79 larvae/plant), GJO-3 (0.85 larvae/plant), JOL-2k-19 (0.92 larvae/plant), Parbhani Kranti (1.13 larvae/plant), Pusa Sawani (1.26 larvae/plant), VRO-6 (1.36 larvae/plant), JOL-12-09 (1.43 larvae/plant), JOL-09-05 (1.74 larvae/plant).

The highest number of larvae per plant was found in genotype JOL-12-05 (1.94) during the second year i.e. 2016. On the other side minimum larvae per plant was found in variety Arka Anamika (0.53). However, variety JOL-10-18 (0.56), KS-404 (0.64) and GAO-5 (0.72) did not differ from each other as they were at par with Arka Anamika (0.53). It was followed by JOL-11-12 (0.81), GO-2 (0.82), GJO-3 (0.83), JOL-2k-19 (0.88), Parbhani Kranti (1.14), Pusa Sawani (1.19), JOL-12-09 (1.34), VRO-6 (1.40), JOL-09-05 (1.60).

Overall, it can be concluded from the table 1 and figure 1 that the all the genotype of okra had significant difference in larval population and Arka Anamika recorded with minimum larvae per plant whereas highest fruit damage was recorded in genotype JOL-12-05 during both years.

On the basis of pooled date of both the years, there was a significant difference among the genotypes (Table 1 and Figure 1). The lowest number of larvae per plant was found in variety Arka Anamika. However, genotype JOL-10-18 (0.57) variety KS-404 (0.64) and GAO-5 (0.64) did not differ from each other as they were at par with Arka Anamika. On the other side highest number of larvae per plant was found in genotype JOL-12-05.

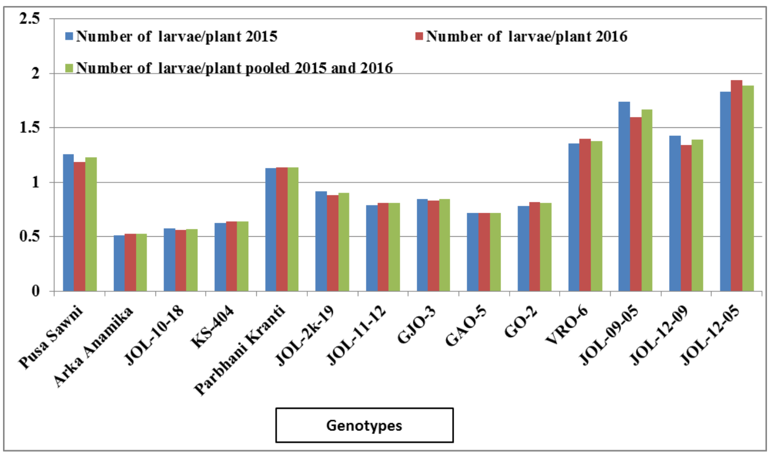

Fig 1: Mean and pooled data of *E. vittella* larval population present okra genotypes during 2015 and 2016

Shoot damage

According to the data presented in the table 2 and depicted in figure 2 during the first year showed that the highest shoot damage was found in genotype JOL-12-05 (33.90%). On the other side minimum shoot damage was found in variety GAO-5 (9.80%). However, variety JOL-11-12 (10.02%), GJO-3 (10.52%), GO-2 (11.84%) and JOL-2k-19 (13.00%) did not differ from each other as they were at par with GAO-5 (9.80%). It was followed by Parbhani Kranti (18.95%), Arka Anamika (20.38%), JOL-10-18 (22.32%), KS-404 (24.00%), Pusa Sawani (26.29%), VRO-6 (28.20%), JOL-12-09 (29.24%) and JOL-09-05 (32.20%).

There was a significant difference among the genotypes during the second year i.e. 2016. The highest shoot damage was found in genotype JOL-12-05 (33.07). However, minimum shoot damage was found in variety JOL-11-12 (9.76%). However, variety GAO-5 (10.31%), GJO-3 (10.33%), GO-2 (11.55%) and JOL-2k-19 (13.58%) did not differ from each other as they were at par with JOL-11-12 (9.76%). It was followed by Parbhani Kranti (19.06%), Arka Anamika (19.16%), JOL-10-18 (22.41%), KS-404 (24.13%), Pusa Sawani (24.71%), VRO-6 (29.68%), JOL-12-09 (29.83%) and JOL-09-05 (32.30%).

Overall, it can be concluded from the table and figure that the variety GAO-5 and JOL-11-12 reported minimum fruit damage during both years respectively, whereas highest fruit damage was recorded in genotype JOL-12-05 during both years.

On the basis of pooled analysis of data of two years on shoot damage (Table 2 and Figure 2), minimum per cent shoot damage was found in variety JOL-11-12 (9.89%). However, genotype GAO-5 (10.05%), GJO-3 (10.43%), GO-2 (11.70%) and JOL-2k-19 (13.29%) did not differ from each other as they were at par with JOL-11-12 (9.89%). On the other side highest per cent shoot damage was found in genotype JOL-12-05 (33.48%).

Overall, it can be concluded from the table and figure that the genotype JOL-11-12 had minimum shoot damage whereas highest shoot damage was recorded in genotype JOL-12-05.

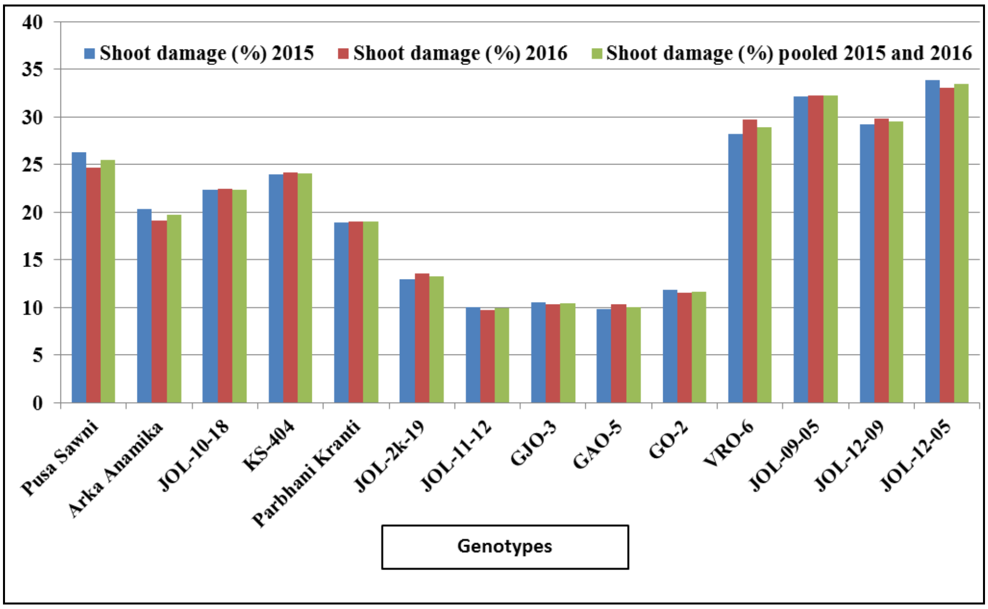

Fig 2: Mean and pooled data of *E. vittella* shoot damage found on okra genotypes during 2015 and 2016

Fruit damage

So far fruit damage during the first year is concerned (Table 3 and Figure 3), the highest fruit damage was found in genotype JOL-12-05 (24.33%). On the other side highest yield was found in variety Arka Anamika (11.78%). However, variety GAO-5 (11.82%), JOL-10-18 (12.28%), KS-404 (14.05%), JOL-11-12 (15.79%) and GJO-3 (16.02%) did not differ from each other as they were at par with Arka Anamika (11.78%). It was followed by GO-2 (17.63%), Pusa Sawani (18.40%), VRO-6 (19.16%), Parbhani Kranti (19.73%), JOL-2k-19 (19.85%), JOL-12-09 (20.28%), JOL-09-05 (23.67%).

According to the data recorded during the second year (Table 3 and Figure 3), the highest fruit damage was found in genotype JOL-12-05 (23.91%). On the other side highest yield was found in variety Arka Anamika (11.44%). However, variety GAO-5 (12.04%), JOL-10-18 (12.74%) and KS-404 (13.90%) did not differ from each other as they were at par with Arka Anamika (11.44%). It was followed by GJO-3 (16.48%), JOL-11-12 (16.65%), GO-2 (16.89%), JOL-12-09 (18.90%), VRO-6 (19.12%), Pusa Sawani (19.44%), Parbhani Kranti (19.21%), JOL-2k-19 (21.32%), JOL-09-05 (23.31%).

Overall, it can be concluded from the table and figure that the variety Arka Anamika has minimum fruit damage whereas highest fruit damage was recorded in genotype JOL-12-05 during both years.

The significant difference was observed among the genotypes in pooled analysis of two years data (Table 3 and Figure 3). The minimum fruit damage was found in variety Arka Anamika (11.61%). However, GAO-5 (11.93%), JOL-10-18 (12.51%) and KS-404(13.98%) did not differ from each other as they were at par with Arka Anamika (11.61%). On the other side highest per cent fruit damage was found in genotype JOL-12-05 (24.12%).

Overall, it can be concluded from the table and figure that the genotype Arka Anamika has minimum fruit damage whereas highest fruit damage was recorded in genotype JOL-12-05.

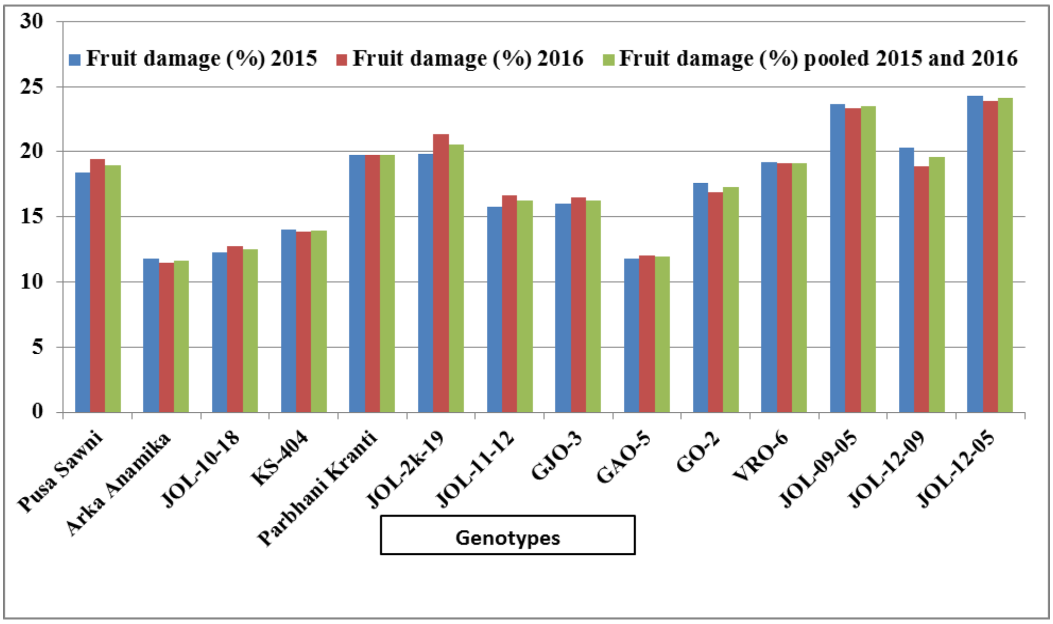

Fig 3: Mean and pooled data of *Earias vittella* fruit damage found on okra genotypes 2015 and 2016

Yield

In case of yield the data recorded during 2015 (Table 4 and Figure 4), the minimum fruit yield was found in genotype JOL-12-05 (42.77). On the other side highest yield was found in variety JOL-10-18 (67.99). However, variety KS-404 (65.35), Arka Anamika (65.24).and VRO-6 (60.82) did not differ from each other as they were at par with JOL-10-18 (67.99). It was followed by GO-2 (59.10), JOL-11-12 (58.97), GJO-3 (55.21), GAO-5 (54.76), JOL-2k-19 (54.35), Pusa Sawani (54.21), Parbhani Kranti (49.83), JOL-09-05 (47.13) and JOL-12-09 (47.39).

As per the data of okra fruit yield recorded during second year (Table 4 and Figure 4), minimum per fruit yield was found in genotype JOL-12-05(42.33). On the other side highest yield was found in Arka Anamika (65.24). However, variety KS-404 (65.92), VRO-6 (65.46), JOL-10-18 (64.52) and GO-2 (63.97) did not differ from each other as they were at par with Anamika (65.24). It was followed by JOL-11-12 (58.31), Parbhani Kranti (55.48), GAO-5 (54.47), Pusa Sawani (53.30), JOL-2k-19 (52.70), GJO-3 (51.76), JOL-09-05 (46.57), JOL-12-09 (44.42). There was a significant difference in the yield among all the okra genotype.

Overall, from the data of both years it can be concluded that the genotype JOL-10-18 and variety Arka Anamika shows better result in maximum fruit yield. However, minimum fruit yield was recorded in genotype JOL-12-05 during both the year. Further the pooled of both years was calculated for the better result and understanding.

As far as okra fruit yield in pooled analysis of two years is concerned (Table 4 and Figure 4) minimum yield was found in genotype JOL-12-05. There was a significant difference among all the okra genotype. On the other side highest yield was found in variety Arka Anamika. However, variety JOL-10-18 (66.25), KS-404 (66.25), VRO-6 (63.14) and GO-2 (61.63) did not differ from each other as they were at par with Arka Anamika. Whereas genotype JOL-11-12 (58.64), GAO-5 (54.76), Pusa Sawani (53.75), JOL-2k-19 (53.52), GJO-3 (53.49), Parbhani Kranti (52.66), JOL-09-05 (46.85), JOL-12-09 (46.00).

Overall, it can be concluded from the table 4 and figure 4 that the variety Arka Anamika recorded highest whereas lowest yield was recorded in genotype JOL-12-05.

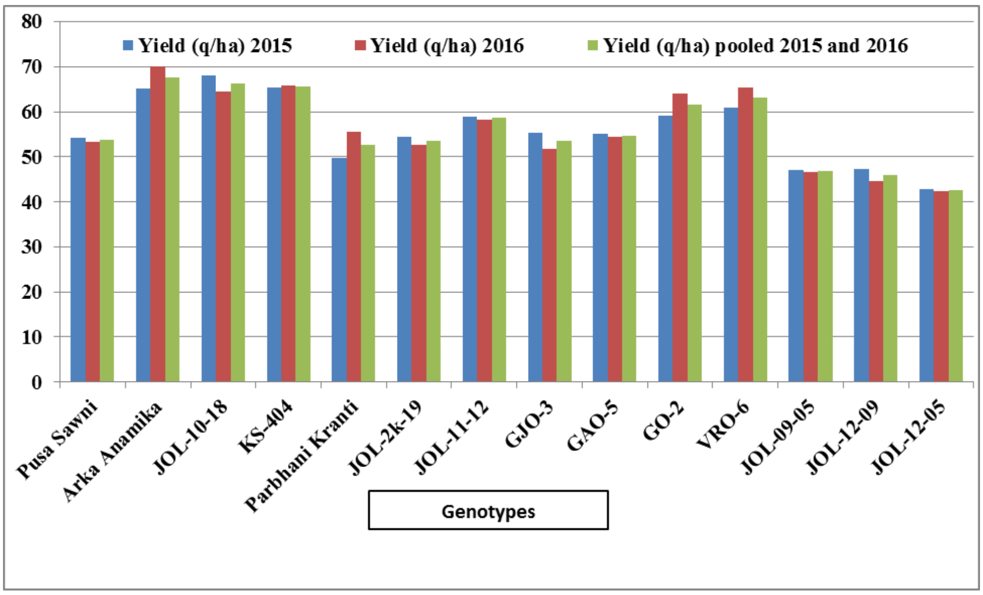

Fig 4: Mean and pooled data of yield recorded from okra genotypes during 2015 and 2016

Table 1: Mean and pooled data of *E. vittella* larval population present on okra genotypes during 2015 and 2016

Genotypes	Number of larvae/plant 2015	Number of larvae/plant 2016	Number of larvae/plant 2015 and 2016
	Mean	Mean	Pooled
Pusa Sawani	1.32 (1.26)	1.3 (1.19)	1.31 (1.23)
Arka Anamika	1.00 (0.52)	1.01 (0.54)	1.01 (0.53)
JOL-10-18	1.03 (0.58)	1.03 (0.56)	1.03 (0.57)
KS-404	1.06 (0.63)	1.06 (0.64)	1.06 (0.64)
Parbhani Kranti	1.27 (1.13)	1.28 (1.14)	1.28 (1.14)
JOL-2k-19	1.19 (0.92)	1.17 (0.88)	1.18 (0.90)
JOL-11-12	1.13 (0.80)	1.14 (0.82)	1.14 (0.81)
GJO-3	1.16 (0.86)	1.15 (0.84)	1.16 (0.85)
GAO-5	1.10 (0.72)	1.10 (0.72)	1.10 (0.72)
GO-2	1.13 (0.79)	1.15 (0.83)	1.14 (0.81)
VRO-6	1.36 (1.36)	1.38 (1.40)	1.37 (1.38)
JOL-09-05	1.50 (1.74)	1.45 (1.60)	1.47 (1.67)
JOL-12-09	1.39 (1.43)	1.36 (1.34)	1.37 (1.39)
JOL-12-05	1.53 (1.83)	1.56 (1.94)	1.54 (1.89)
S. Em (T)	0.07	0.06	0.07
CD (T)	0.21	0.19	0.20
S. Em (Y × T)	-	-	0.02
CD (Y × T)	-	-	NS
CV%	10.06	9.18	9.62

Note: Figure in parentheses are retransformed values, those outside parentheses are square root transformed values

Table 2: Mean and pooled data of *E. vittella* shoot damage found on okra genotypes during 2015 and 2016

Genotypes	Shoot damage (%) 2015	Shoot damage (%) 2016	Shoot damage (%) 2015 and 2016
	Mean	Mean	Pooled
Pusa Sawani	31.47 (26.29)	30.42 (24.71)	30.95 (25.5)
Arka Anamika	27.50 (20.38)	26.60 (19.16)	27.05 (19.77)
JOL-10-18	28.84 (22.32)	28.88 (22.41)	28.86 (22.36)
KS-404	29.97 (24.00)	30.03 (24.13)	30.00 (24.06)
Parbhani Kranti	26.48 (18.95)	26.53 (19.06)	26.51 (19.00)
JOL-2k-19	21.89 (13.00)	22.32 (13.58)	22.11 (13.29)
JOL-11-12	19.25 (10.02)	18.89 (9.76)	19.08 (9.89)
GJO-3	19.71 (10.52)	19.44 (10.33)	19.58 (10.43)
GAO-5	19.06 (9.80)	19.46 (10.31)	19.26 (10.05)
GO-2	20.89 (11.84)	20.55 (11.55)	20.73 (11.70)
VRO-6	32.69 (28.20)	33.60 (29.68)	33.15 (28.94)
JOL-09-05	35.17 (32.20)	35.22 (32.3)	35.19 (32.25)
JOL-12-09	33.34 (29.24)	33.69 (29.83)	33.52 (29.53)
JOL-12-05	36.20 (33.90)	35.69 (33.07)	35.94 (33.48)
S. Em (T)	1.38	1.80	1.59
CD (T)	4.00	5.25	4.62
S. Em (Y × T)	-	-	0.40
CD (Y × T)	-	-	NS
CV%	8.72	11.48	10.08

Note: Figure in parentheses are retransformed values, those outside parentheses are arc sine transformed values

Table 3: Mean and pooled data of *E. vittella* fruit damage found on okra genotypes during 2015 and 2016

Genotypes	Fruit damage (%) 2015	Fruit damage (%) 2016	Fruit damage (%) 2015 and 2016
	Mean	Mean	Pooled
Pusa Sawani	26.07 (18.40)	26.84 (19.44)	26.46 (18.92)
Arka Anamika	20.81 (11.78)	20.54 (11.44)	20.68 (11.61)
JOL-10-18	21.26 (12.28)	21.68 (12.74)	21.47 (12.51)
KS-404	22.74 (14.05)	22.64 (13.90)	22.69 (13.98)
Parbhani Kranti	27.03 (19.73)	27.04 (19.72)	27.04 (19.73)
JOL-2k-19	27.12 (19.85)	28.16 (21.32)	27.64 (20.59)
JOL-11-12	24.11 (15.79)	24.78 (16.65)	24.45 (16.22)
GJO-3	24.28 (16.02)	24.65 (16.48)	24.47 (16.25)
GAO-5	20.86 (11.82)	21.08 (12.04)	20.98 (11.93)
GO-2	25.50 (17.63)	24.96 (16.89)	25.23 (17.26)
VRO-6	26.63 (19.16)	26.61 (19.12)	26.62 (19.14)
JOL-09-05	29.74 (23.67)	29.51 (23.31)	29.63 (23.49)
JOL-12-09	27.42 (20.28)	26.45 (18.90)	26.94 (19.59)
JOL-12-05	30.18 (24.33)	29.91 (23.91)	30.05 (24.12)
S. Em(V)	1.49	1.30	1.40
CD(V)	4.34	3.78	4.06
S. Em(Y x V)	-	-	0.35
CD(Y x V)	-	-	NS
CV%	10.23	8.89	9.55

Note: Figure in parentheses are retransformed values, those outside parentheses are arc sine transformed values

Table 4: Mean and pooled data of yield recorded from okra genotypes during 2015 and 2016

Genotypes	Yield (q/ha) 2015	Yield (q/ha) 2016	Yield (q/ha) 2015 and 2016
	Mean	Mean	Pooled
Pusa Sawani	54.21	53.30	53.75
Arka Anamika	65.24	69.97	67.61
JOL-10-18	67.99	64.52	66.25
KS-404	65.35	65.92	65.63
Parbhani Kranti	49.83	55.48	52.66
JOL-2k-19	54.35	52.70	53`.52
JOL-11-12	58.97	58.31	58.64
GJO-3	55.21	51.76	53.49
GAO-5	55.05	54.47	54.76
GO-2	59.10	63.97	61.53
VRO-6	60.82	65.46	63.14
JOL-09-05	47.13	46.57	46.85
JOL-12-09	47.39	44.62	46.00
JOL-12-05	42.77	42.33	42.55
S. Em (T)	2.98	3.19	3.08
CD (T)	8.65	9.26	8.96
S. Em (Y × T)	-	-	0.77
CD (Y × T)	-	-	NS
CV%	9.21	9.79	9.50

Table 5: Pooled data of varietal screening against *E. vittella,* infesting okra genotypes with their yield during 2015 and 2016

Genotypes	Number of larvae per Plant Pooled **	Shoot damage (%) **	Fruit damage (%) **	Yield (q/ha)
Pusa Sawani	1.31 (1.23)	30.95 (25.50)	26.46 (18.92)	53.75
Arka Anamika	1.01 (0.53)	27.05 (19.77)	20.68 (11.61)	67.61
JOL-10-18	1.03 (0.57)	28.86 (22.36)	21.47 (12.51)	66.25
KS-404	1.06 (0.64)	30.00 (24.06)	22.69 (13.98)	65.63
Parbhani Kranti	1.28 (1.14)	26.51 (19.00)	27.04 (19.73)	52.66
JOL-2k-19	1.18 (0.90)	22.11 (13.29)	27.64 (20.59)	53.52
JOL-11-12	1.14 (0.81)	19.08 (9.89)	24.45 (16.22)	58.64
GJO-3	1.16 (0.85)	19.58 (10.43)	24.47 (16.25)	53.49
GAO-5	1.1 (0.72)	19.26 (10.05)	20.98 (11.93)	54.76
GO-2	1.14 (0.81)	20.73 (11.70)	25.23 (17.26)	61.53
VRO-6	1.37 (1.38)	33.15 (28.94)	26.62 (19.14)	63.14
JOL-09-05	1.47 (1.67)	35.19 (32.25)	29.63 (23.49)	46.85
JOL-12-09	1.37 (1.39)	33.52 (29.53)	26.94 (19.59)	46.00
JOL-12-05	1.54 (1.89)	35.94 (33.48)	30.05 (24.12)	42.55
S. Em	0.07	1.59	1.40	3.08
CD	0.20	4.62	4.06	8.96
CV%	9.62	10.08	9.55	9.50

Note: *Figure in parentheses are retransformed values, those outside parentheses are square root transformed values
** Figure in parentheses are retransformed values, those outside parentheses are arc sine transformed values

In past, Vyas and Patel (1991) [7], Shukla *et al.* (1998) [2], Srinivasa and Sugeetha (2001) [6], Papal and Bharpoda (2009) and Sharma and Jat (2009) [4] recorded the higher shoot and fruit damage due to okra shoot and fruit borer in Parbhani Kranti. The results of present investigation are more or less in confirmation with past reports.

Hence, investigation was undertaken on varietal screening of the okra genotypes against *E. vittella.* From the result of this experiment it was concluded that the number of larvae per plant, among all the genotypes of okra, variety Arka Anamika recorded lowest number of larvae (0.53 larvae/plant) and it was statistically at par with other okra genotype *viz*., JOL-10-18 (0.57 larvae/plant), KS-404 (0.64 larvae/plant), GAO-5 (0.72 larvae/plant). The highest number of larvae was found on genotype JOL-12-05 (1.89 larvae/plant). However, genotype JOL-11-12 recorded lowest shoot damage (9.89%) and it was statistically at par with other okra genotype *viz*., GAO-5 (10.05%), GJO-3 (10.43%), GO-2 (11.70%), JOL-2k-19 (13.29). The highest shoot damage was found on genotype JOL-12-05 (33.48). In case of fruit damage variety Arka Anamika recorded lowest fruit damage (11.61%) and it was statistically at par with other okra genotypes *viz*., GAO-5 (11.93%), JOL-10-18 (12.51%), KS-404 (13.98%). The highest fruit damage was found on genotype JOL-12-05 (24.12%). While in case of fruit yield, among all the genotypes of okra, genotype Arka Anamika recorded highest fruit yield (67.61 q/ha) and it was statistically at par with other okra genotype *viz*., JOL-10-18 (66.25 q/ha), KS-404 (66.25 q/ha), VRO-6 (63.14 q/ha), GO-2 (61.63 q/ha). The lowest fruit yield was found on genotype JOL-12-05 (42.55 q/ha).

From overall results it was revealed that out of fourteen genotypes screened, variety Arka Anamika has lowest number of larvae, minimum fruit damage and highest yield, where as minimum shoot damage was found in genotype JOL-11-12. So from the above result it can be concluded that they were highly promising against *E. vittella* infestation.

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