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Screening of different genotypes of spine gourd (*Momordica dioica* Roxb.) against fruit fly in northern hilly region of Chhattisgarh

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Abstract
Seventeen genotypes of spine gourd were screened against cucurbit fruit fly (*Bactrocera cucurbitae*) under natural field conditions with the collaboration of AICRP Potential Crop at Research-cum-Instructional Farm of IGKV, RMD College of Agriculture and Research Station Ambikapur in northern hilly region of Chhattisgarh during *kharif* 2017-18. Among the all, none of genotype was performed free from fruit fly infestation. Only the genotype Indira Kankoda (IK-1) was recorded as "resistant" showing of 16.30 and 17.43 percent fruit infestation (on fruit number and weight basis). However, the genotype RMF-7-P-1 was assigned as "susceptible" with 51.06 and 53.00 percent infestation respectively.

Keywords: Fruit fly, Indira Kankoda, resistant, spine gourd, susceptible

1. Introduction
Spine gourd (*Momordica dioica* Roxb.) is one of the important potential vegetable crops belonging to family cucurbitaceae (Trivedi and Roy, 1972) [14]. It is a wild perennial dioecious climber with tuberous root. Spine gourd is also known as wild bitter gourd or kankoda and it is less bitter than bitter gourd (*Momordica charantia* L). This popular vegetable has high demand in market because of its good nutritional value, medicinal property, high keeping quality ability to withstand long distance transportation, high market price and good export potential (Rasul, 2003) [7]. It was reported that one plant of spine gourd can give 20 to 25 kg of fruits (Roy and Biswas, 2014) [8], but it can be obtained 40-45q/ha with good crop practices. Initially the cultivation of spine gourd is limited in kitchen garden and small farmer's field but as the economic importance of the crop is increasing its cultivated area is also increasing. A number of constraints occur in spine gourd cultivation that causes substantial loss to the quantitative and quality of the final produce. Now a days, spine gourd has been subjected to affected with various insect pests *viz*., green stink bug, skin feeder, fruit borer, epilachna beetle, red pumpkin beetle, leaf miner and fruit fly etc that cause varying degrees of damage, limiting the production and productivity of the crop (Shaw *et al*. 1998, Deshmukh *et al*. 2012 and Sandilya *et al*. 2018) [10, 1, 9]. Among them, fruit fly (*Bactrocera cucurbitae*) (Palada and Chang, 2003) [4] and hadda/ epilachna beetle (*Epilachna vigintioctopunctata* Fab.) are the major destructive pest causing significant infestation may up to 80 percent of the host plants depending on host plant, locality and season (Rajagopal and Trivedi, 1989) [6]. The extent of damage caused by cucurbit fruit fly varies up to 30 to 100 percent, depending on the cucurbit species. Its infestation level increases, when the temperatures below 32 °C and the relative humidity (RH) range between 60 to 70 percent. (Singh *et al*. 2000) [12]. The population of fruit fly can be controlled through chemicals but they are moderately effective and also cause certain environmental pollution and health hazards. At present, use of resistant varieties is most desirable and proved to be effective but their use has been limited due to inadequate sources of resistance. Therefore screening of different genotypes of spine gourd was conducted against fruit fly to find adequate sources of resistance.

2. Material and Methods
2.1 Experimental Details
A sum of 17 genotypes (Table 1) of spine gourd was screened against fruit fly under natural condition with the collaboration of AICRP Potential Crop at Research-cum-Instructional Farm

of IGKV, RMD College of Agriculture and Research Station Ambikapur (C.G.) during *kharif* 2017-18. Each genotype of spine gourd was raised in polyethyne bags having one tuber in each bag. Sowing was done in *kharif* season on 11th June 2017. The thirty days old seedlings were transplanted on 11th July 2017 into main field in randomized block design (RBD) and three replications were maintained for each genotype. Each genotype was planted in three rows with planting geometry of 2 × 2 m and each row had three plants. For raising a healthy crop, all the recommended agronomic package of practices except plant protection was followed.

Table 1: List of genotypes of spine gourd taken for experiment

S. N.	Name of Genotypes	Sources
1	Indira Kankoda-1	IGKV, RMDCARS, Ambikapur
2	PK-35	Local collection from Surguja district
3	PK-34	Local collection from Surguja district
4	PK-26	Local collection from Surguja district
5	PK-9	Local collection from Surguja district
6	PK-5	Local collection from Surguja district
7	RMF-27	MPKV, Rahuri
8	RMF-17	MPKV, Rahuri
9	RMF-1	MPKV, Rahuri
10	PK-49	MPKV, Rahuri
11	Krishnapur	Surguja District
12	PK-46	Local collection from Surguja district
13	NDM-1	NDAU, Faizabad
14	Phule MD 5-2	MPKV, Rahuri
15	Phule MD 5-1	MPKV, Rahuri
16	RMF 7-P-1	MPKV, Rahuri
17	RMF-P-4	MPKV, Rahuri

2.2 Method of Observation

Observation from each harvest, the infested fruit and healthy fruit from three randomly selected plants of each genotype were counted at natural field condition and calculated the fruit infestation percentage on fruit number and weight basis by using the following formulae. The fruit infestation percentage was recorded based on the symptoms of oviposition punctures, brownish pinhole size pseudo-punctures (without eggs) and exit hole made by maggot, and healthy fruits from each genotypes of spine gourd. Thereafter these genotypes were classified into different groups by implying rating system given by Nath (1966) [3].

$$\text{Percent fruit infestation (No. basis)} = \frac{\text{No. of infested fruits}}{\text{Total no. of fruits}} \times 100$$

$$\text{Percent fruit infestation (Wt. basis)} = \frac{\text{Wt. of infested fruits}}{\text{Total wt. of fruits}} \times 100$$

Scores	Percent fruit damage	Rating (reaction)
0	No damage	Immune
1	1-10% fruit damage	Highly resistant
3	11-20% fruit damage	Resistant
5	21-50% fruit damage	Moderately resistant
7	51-75% fruit damage	Susceptible
9	76-100% fruit damage	Highly susceptible

3. Results and Discussions

3.1 Fruit Infestation on Number Basis

The result revealed that the fruit infestation percentage (on fruit number basis) by fruit fly was recorded as significant differences among the seventeen genotypes of spine gourd are depicted in Table 2.

1st picking

At 1st picking of fruits, the fruit infestation percentage was observed as ranges from 11.24 to 21.60 percent in various genotypes of spine gourd. Among the genotypes, lowest fruit infestation was recorded in the genotype of Indira Kankoda-1 with 11.24 percent, whereas the highest infestation of 21.60 percent observed in the genotype of RMF7-P-1. The average fruit infestation of 18.64 percent caused by cucurbit fruit fly was observed during 1st picking of fruits.

2nd picking

The spine gourd fruit infestation percentage was observed as various from 14.27 to 47.39 percent during 2nd picking of fruits, among the genotypes, the least percentage of fruit damage was obtained from the genotype Indira Kankoda-1 with 14.27 percent, whereas the highest infestation was in RMF7-P-1 genotype with 47.39 percent. Mean percent of fruit infestation was increased and recorded as 25.97 percent in 2nd picking of fruits.

3rd picking

During 3rd picking of fruits, the maximum fruit infestation was recorded from the genotype RMF7-P-1 with 56.32 percent, while minimum of 17.28 percent infestation was in the genotype Indira Kankoda-1. In 3rd picking of fruits, mean percentage of fruit infestation was observed as 30.49 percent.

4th picking

Among the tested genotypes of spine gourd, the fruit infestation percentage by fruit fly was recorded as various ranges from 20.38 to 60.11 percent during 4th picking of fruits. The genotype Indira Kankoda-1 was again recorded as lowest fruit damage of 20.38 percent, whereas the maximum of 60.11 percent fruit damage observed in the genotype RMF7-P-1 during the period. The mean percentage of fruit infestation was observed as 36.12 percent in 4th picking of fruits.

5th picking

Although, 5th picking of fruits, the damage percent of fruit on spine gourd varies from 23.33 to 72.41 percent. The genotype Indira Kankoda-1 was again maintained superiority with the least fruit infestation of 23.33 percent, whereas the maximum infestation 72.41 percent was observed in the genotype of RMF7-P-1. At the 5th picking of fruits, mean damage percent of fruit was observed as 39.99 percent.

6th picking

At last picking of fruits, fruit infestation percentage varies from 11.31 to 48.54 percent recorded. Among the genotypes, only Indira Kankoda-1 genotype was observed as minimum level of fruit damaged with 11.31 percent, while highest level of fruit infestation was in the genotype of RMF7-P-1 with 48.54 percent. The mean percent of fruit infestation observed as 31.21 percent, which was moderately low level as compared to 4th and 5th picking of fruit, respectively.

3.2 Overall Mean Percent of Infestation (on Fruit Number Basis)

Finally, calculated the overall mean percent of fruit infestation and categorized the reaction level at all the picking of fruits, in which the infestation percentage of spine gourd genotypes were found in varied ranges from 16.30 to 51.06 percent (Table 4). Among all tested genotypes, none of the genotype of spine gourd was observed as zero percentage of

infestation. Only one genotype *i.e.*, Indira Kankoda-1 was found least of 16.30 percent of fruit damage (on number basis), which was categorized as "resistant" that showing the infestation ranges in between 11-20 percent recorded. Rest of the 15 genotypes *i.e.*, PK-35, PK-46, PK-26, PK-9, Phule MD-1, PK-49, RMF-17, NDM-1, Phule MD-2, PK-5, PK-34, Krishnapur, RMF-1, RMFP-4 and RMF-27 were observed as moderately damaged of 23.73, 25.33, 25.40, 27.31, 27.50, 28.37, 29.16, 29.79, 30.60, 30.67, 31.35, 33.13, 34.94, 36.01 and 36.25 percent respectively, except RMF-7-P-1 genotype, which reaction was categorized as "moderately resistant" that showing the infestation ranged in between 21-50 percent. The highest infestation percentage of fruits with ranges of 51.06 percent was observed in RMF-7-P-1, which reaction was categorized as "susceptible" that showing the infestation ranged in between 51-75 percent.

Table 2: Fruit infestation percent of different genotypes on spine gourd caused by cucurbit fruit fly during *kharif*2017-18

S. N.	Genotypes	Fruit infestation percent (on number basis) at different interval						Overall mean	Reaction
		1st Picking	2nd Picking	3rd Picking	4th Picking	5th Picking	6th Picking		
1	PK-5	19.86 (26.43)	27.24 (31.44)	29.54 (32.89)	36.58 (37.20)	38.95 (38.60)	31.87 (34.32)	30.67 (33.48)	MR
2	PK-9	19.96 (26.50)	23.98 (29.26)	25.92 (30.54)	31.55 (34.14)	33.86 (35.55)	28.59 (32.26)	27.31 (31.37)	MR
3	PK-26	15.27 (22.96)	21.61 (27.68)	25.05 (30.01)	30.55 (33.52)	32.22 (34.53)	27.72 (31.73)	25.40 (30.07)	MR
4	PK-34	21.27 (27.45)	29.21 (32.70)	33.62 (35.41)	38.18 (38.15)	40.22 (39.33)	25.65 (30.41)	31.35 (33.90)	MR
5	PK-35	16.57 (23.99)	18.33 (25.68)	23.38 (28.89)	25.38 (30.22)	32.42 (34.66)	26.26 (30.74)	23.73 (29.03)	MR
6	PK-46	17.59 (24.76)	20.27 (26.72)	22.74 (28.46)	30.61 (33.54)	33.26 (35.18)	27.54 (31.61)	25.33 (30.04)	MR
7	Krishnapur	21.24 (27.41)	27.57 (31.64)	32.24 (34.54)	39.05 (38.65)	42.24 (40.50)	36.48 (37.10)	33.13 (34.97)	MR
8	PK-49	17.84 (24.97)	24.71 (29.77)	26.29 (30.81)	33.38 (35.25)	37.31 (37.62)	30.71 (33.63)	28.37 (32.00)	MR
9	RMF-1	18.22 (25.24)	29.57 (32.90)	35.98 (36.57)	40.18 (39.31)	46.42 (42.92)	39.31 (38.81)	34.94 (35.95)	MR
10	RMF-27	20.26 (26.72)	28.39 (32.17)	37.45 (37.71)	44.51 (41.33)	47.31 (43.44)	39.58 (38.96)	36.25 (36.72)	MR
11	RMF-17	18.21 (25.20)	25.05 (30.00)	26.31 (30.82)	35.71 (36.67)	38.85 (38.54)	30.84 (33.67)	29.16 (32.43)	MR
12	RMF P-4	20.31 (26.76)	28.42 (32.19)	37.31 (37.62)	44.19 (41.64)	46.31 (42.86)	39.54 (38.94)	36.01 (36.66)	MR
13	RMF 7-P-1	21.60 (27.66)	47.39 (43.48)	56.32 (48.61)	60.11 (50.84)	72.41 (58.29)	48.54 (44.14)	51.06 (45.50)	S
14	Phule MD-2	20.15 (26.63)	24.89 (29.91)	29.71 (32.97)	35.38 (36.48)	40.27 (39.35)	33.22 (35.15)	30.60 (33.41)	MR
15	Phule MD-1	18.12 (25.14)	22.41 (28.24)	27.81 (31.78)	32.19 (34.52)	36.25 (37.00)	28.26 (32.08)	27.50 (31.46)	MR
16	NDM-1	19.18 (25.96)	28.26 (32.06)	31.54 (34.12)	36.25 (37.00)	38.22 (38.17)	25.30 (30.18)	29.79 (32.91)	MR
17	IK-1	11.24 (19.63)	14.27 (22.14)	17.28 (24.36)	20.38 (28.12)	23.33 (32.15)	11.31 (19.54)	16.30 (24.32)	R
Mean		**18.64**	**25.97**	**30.49**	**36.12**	**39.99**	**31.21**	**30.40**	
SE(m±)		**0.76**	**0.83**	**1.12**	**1.00**	**1.02**	**1.28**		
CD (5%)		**2.21**	**2.42**	**3.25**	**2.90**	**2.97**	**3.70**		

Note: Figures in parentheses are in angular transformed value. **(**R = Resistant, S = Susceptible, MR = Moderately resistant)

The above results are in agreement with Yadav *et al*. (2003) [15] who screened seven varieties of bitter gourd for their resistance against fruit fly at Jabalpur. They reported the fruit flies were appeared throughout the crop period of July-October and their lowest of 12.08 percent and 13.39 percent infestation was recorded from PBIG-123 and Pusa Do Mausami whereas highest of 41.49 percent was in JMC-4. Our findings are supported by Sandilya *et al*. (2018) [9] who screened 21 different crosses of spine gourd. They revealed that none of the cross showed immune reaction against fruit fly. Whereas, two crosses *i.e.* Ambika13-5 x IK-1 and Ambika13-6 x IK-1 were found highly resistance with less than 10 percent infestation, and three crosses of RMDSG-4 x IK-1, Ambika13-6 x AJSG-2 and NDM-2 x IK-1 were showed resistance but seven crosses with 76-100 percent infestations were found as highly susceptible towards fruit fly. In yet another study by Nath and Bhushan (2006) [2] screened thirteen cucurbits against melon fruit fly and reported that the maximum of 46.8 percent infestation was found in bitter gourd during rainy season and none of the genotypes were free from the fruit fly attack.

3.3 Fruit Infestation Percentage on Fruit Weight Basis

The result showed that the percent fruit infestation (on weight basis) caused by fruit fly were recorded as significant differences among the seventeen genotypes of spine gourd at all pickings (Table 3).

1st picking

The spine gourd fruit infestation percentage was recorded in various genotypes with ranges of 11.31 to 23.51 percent during 1st picking of fruits. The data showed that the least infestation of fruit was observed in the genotype Indira Kankoda-1 as 11.31 percent, which at par with rest of the

genotypes. The highest fruit damage was observed on RMF7-P-1 genotype with ranged of 23.51 percent. The average fruit infestation of 17.57 percent caused by cucurbit fruit fly was observed during 1st picking of fruits.

2nd picking

Data obtained during 2nd picking of fruits showed that the damage ranges of 14.25 to 47.21 percent, whereas lowest fruit infestation was observed in genotype of Indira Kankoda-1 with 14.25 percent and highest infestation was in RMF7-P-1 genotype as 47.21 percent. Rests of the genotypes were moderately damaged. Mean percent of fruit infestation was increased and recorded as 26.25 percent in 2nd picking of fruits.

3rd picking

In 3rd picking of fruits, the fruit infestation percent caused by fruit fly was observed as various ranges from 17.19 to 58.54 percent in all tested genotypes of spine gourd. The genotype Indira Kankoda-1 was again recorded as lowest damage with 17.19 percent, whereas highest damage of 58.54 percent was observed in RMF7-P-1 genotype. In 3rd picking of fruits, mean percentage of fruit infestation was observed as 31.04 percent.

4th picking

Percent fruit infestation on various genotypes of spine gourd was noted from 22.25 to 62.39 percent during 4th picking of fruits. Among all the genotypes, the minimum infestation of fruit was noticed but increase in order in the genotype of Indira Kankoda-1 with 22.25 percent and highest damage of 62.39 percent was found in the genotype of RMF7-P-1. Rest of the genotypes was recorded as at par to Indira Kankoda-1. The mean percentage of fruit infestation was observed as 36.54 percent in 4th picking of fruits.

5th picking

In 5th picking of fruits, similarly result found that among all tested genotypes of spine gourd, the genotypes Indira Kankoda-1 was least damage of 28.35 percent was recorded, which followed by rest of the genotypes. The maximum fruit infestation was recorded on genotypes RMF7-P-1 with 76.14 percent. At the 5th picking of fruits, mean damage percent of fruit was observed as 40.86 percent.

6th picking

Last picking of fruits, the fruit infestation ranges was recorded with 11.26 to 50.72 percent in various genotypes of spine gourd. Among all the genotypes, continuously minimum fruit infestation was recorded on genotypes Indira Kankoda-1 with 11.26 percent and maximum fruit infestation was on genotypes RMF7-P-1 as 50.72 percent. The mean percent of fruit infestation observed as 28.06 percent, which was moderately low level as compared to 4th and 5th picking of fruit, respectively.

3.4 Overall Mean Percent of Infestation (on Fruit Weight Basis)

The overall mean percent of fruit infestations were observed as ranges from 17.43 to 53.00 percent in different genotypes of spine gourd during all picking of fruits. The results of fruit infestation on weight basis showed that out of seventeen genotypes, none of the one genotype was found immune or highly resistance as free from infestation by fruit. Among the genotypes, the lowest fruit infestation of 17.43 percent was observed from the genotype Indira Kankoda-1 which was considered as "resistant" in between the damage level of 11-20 percent. Rest of the genotypes *viz*. PK-26, PK-35, PK-46, PK-9, Phule MD-5-2, NDM-1, PK-49, PK-34, Phule MD-5-1, PK-5, RMF-27, RMF-P-4, RMF-1, Krishnapur, and RMF-17 were observed as moderately damage with 23.94, 24.34, 26.35, 26.62, 27.52, 27.81, 28.27, 29.19, 29.98, 30.19, 32.00, 32.18, 32.50, 32.60 and 36.28 percent respectively, which were showing the infestation ranged in between 21-50 percent and assigned as "moderately resistant". The higher fruit infestation of 53.00 percent was observed in genotype of RMF-7-P-1 and assigned as ''susceptible'' with damage level of 51-75 percent (Table 4).

These findings are accordance with Singh *et al*. (2010) [13] who evaluated forty eight cultivars of bitter gourd against melon fruit fly and revealed that none of the genotypes were found to be free from attack of the pest. Sheikh (2011) [11] also reported that none of the genotype of cucumber was rated as immune and highly resistant to fruit infestation by fruit flies. Similarly, Pareek and Kavadia (1994) [5] also reported that none of the varieties of musk melon were found to be immune against fruit fly. During the present studies, the genotypes spine gourd were screened and categorized as resistant, moderately resistant and susceptible corresponding to fruit infestation of 11-20, 21-50 and 51-75 percent. This is in agreement with the percentage categories developed by Nath (1966) [3]. The present studies revealed a wide range of variation in resistance/susceptibility among various genotypes of spine gourd against *B. cucurbitae*.

Table 3: Fruit infestation percent of different genotypes on spine gourd caused by cucurbit fruit fly during *kharif*2017-18

S. N.	Genotypes	Fruit infestation percent (on weight basis)						Overall mean	Reaction
		1st Picking	2nd Picking	3rd Picking	4th Picking	5th Picking	6th Picking		
1	PK-5	17.29 (24.52)	25.69 (30.43)	30.25 (33.35)	38.25 (38.18)	39.38 (38.85)	30.31 (33.38)	30.19 (33.11)	MR
2	PK-9	14.65 (22.44)	24.49 (29.63)	27.27 (31.46)	33.33 (35.23)	37.72 (37.87)	22.26 (28.08)	26.62 (30.78)	MR
3	PK-26	13.43 (21.47)	19.76 (26.35)	24.22 (29.44)	29.81 (33.07)	36.46 (37.12)	20.00 (26.52)	23.94 (28.99)	MR
4	PK-34	19.86 (26.42)	26.29 (30.79)	29.62 (32.93)	33.34 (35.23)	35.85 (36.76)	30.21 (33.32)	29.19 (32.57))	MR
5	PK-35	15.29 (22.98)	19.35 (26.04)	28.47 (32.19)	30.22 (33.32)	34.18 (35.75)	18.55 (25.48)	24.34 (29.29))	MR
6	PK-46	16.39 (23.86)	20.52 (26.90)	27.38 (31.52)	36.22 (36.98)	38.42 (38.29)	19.18 (25.92)	26.35 (30.57)	MR
7	Krishnapur	18.31 (25.29)	29.42 (32.78)	35.74 (36.69)	38.47 (38.37)	42.42 (40.62)	31.24 (33.94)	32.60 (34.61)	MR

8	PK-49	14.60 (22.40)	27.55 (31.62)	29.22 (32.66)	33.33 (35.23)	39.28 (38.79)	25.65 (30.41)	28.27 (31.85)	MR
9	RMF-1	18.38 (25.36)	29.24 (32.69)	30.32 (33.39)	40.38 (39.43)	44.24 (41.66)	32.43 (34.66)	32.50 (34.53)	MR
10	RMF-27	21.35 (27.49)	30.61 (33.56)	33.55 (35.36)	36.55 (37.18)	39.24 (38.81)	30.66 (33.60)	32.00 (34.33)	MR
11	RMF-17	20.21 (26.69)	32.21 (34.55)	37.68 (37.84)	44.71 (41.94)	47.24 (43.40)	35.61 (36.61)	36.28 (36.83)	MR
12	RMF-P4	18.32 (25.29)	26.39 (30.87)	30.51 (33.51)	39.11 (38.69)	43.24 (41.09)	35.51 (36.55)	32.18 (34.33)	MR
13	RMF-7-P-1	23.51 (28.96)	47.21 (43.38)	58.54 (49.84)	62.39 (52.18)	76.14 (60.74)	50.22 (45.10)	53.00 (46.70)	S
14	Phule MD-2	16.53 (23.96)	23.41 (28.91)	29.77 (33.01)	32.46 (34.68)	36.73 (37.28)	26.25 (30.76)	27.52 (31.43)	MR
15	Phule MD-1	20.06 (26.58)	27.62 (31.67)	32.83 (34.93)	36.61 (37.31)	39.38 (38.85)	23.38 (28.90)	29.98 (33.04)	MR
16	NDM-1	19.26 (25.99)	22.38 (28.20)	25.25 (30.05)	33.75 (35.49)	36.50 (37.15)	29.71 (33.00)	27.81 (31.64))	MR
17	IK-1	11.31 (19.53)	14.25 (22.15)	17.19 (24.53)	22.25 (26.80)	28.35 (28.85)	11.26 (19.58)	17.43 (23.57)	R
Mean		**17.57**	**26.25**	**31.04**	**36.54**	**40.86**	**28.06**	**30.01**	
SE(m±)		**0.36**	**0.48**	**0.64**	**0.53**	**0.83**	**0.66**		
CD (5%)		**1.05**	**1.39**	**1.87**	**1.54**	**2.42**	**1.91**		

Note: Figures in parentheses are in angular transformed value. **(**R = Resistant, S = Susceptible, MR = Moderately resistant)

Table 4. Damage rating of spine gourd genotypes on the basis of percent fruit infestation caused by cucurbit fruit fly

Scores	Fruit Infestation (%)	Name of genotypes	Rating (reaction)
0	No damage	Nil	Immune
1	1-10% fruit damage	Nil	Highly resistant
3	11-20% fruit damage	Indira Kankoda-1 (IK-1)	Resistant
5	21-50% fruit damage	PK-5, PK-9, PK-26, PK-34, PK-35, PK-46, Krishnapur, PK-49, RMF-1, RMF-17, RMF-27, RMF P-4, Phule MD5-1, Phule MD5-2, NDM-1	Moderately resistant
7	51-75% fruit damage	RMF 7-P-1	Susceptible
9	76-100% fruit damage	Nil	Highly susceptible

4. Conclusion

Seventeen genotypes of spine gourd were screened against cucurbit fruit fly (*Bactrocera cucurbitae*) under natural field conditions. The result revealed that on the percentage fruit infestation, none of genotype was found free from cucurbit fruit fly infestation. Only one genotype *i.e.* Indira Kankoda (IK-1) recorded as "resistant" showing fruit infestation in ranges of 11-20 percent. However, the genotype RMF-7-P-1 was assigned as "susceptible" with ranges of 51-75 percent infestation. Rests of the genotypes were performed as "moderately resistant" with fruit infestations in the range of 21-50 percent. This resistant genotype may be used for the development of resistant varieties for fruit flies.

5. References

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