

The Journal of Phytopharmacology

(Pharmacognosy and phytomedicine Research)

Research Article

ISSN 2320-480X

JPHYTO 2022; 11(1): 47-50

January- February

Received: 17-01-2022

Accepted: 20-02-2022

©2022, All rights reserved

doi: 10.31254/phyto.2022.11109

S. M. Choudhary

Post Graduate Institute, Mahatma Phule Krishi Vidyapeeth (MPKV), Rahuri-413722, Maharashtra, India

A. M. Musmade

Post Graduate Institute, Mahatma Phule Krishi Vidyapeeth (MPKV), Rahuri-413722, Maharashtra, India

R. V. Datkhile

Post Graduate Institute, Mahatma Phule Krishi Vidyapeeth (MPKV), Rahuri-413722, Maharashtra, India

V. A. Bodkhe

Post Graduate Institute, Mahatma Phule Krishi Vidyapeeth (MPKV), Rahuri-413722, Maharashtra, India

P. N. Guru

Post Graduate Institute, Mahatma Phule Krishi Vidyapeeth (MPKV), Rahuri-413722, Maharashtra, India

Correspondence:

Dr. Sanvar Mal Choudhary

Post Graduate Institute, Mahatma Phule Krishi Vidyapeeth (MPKV), Rahuri-413722, Maharashtra, India

Email:

sanvarchoudhary999@gmail.com

Effect of pruning time on fruit fly infestation in guava (*Psidium guajava* L.)

S. M. Choudhary*, A. M. Musmade, R. V. Datkhile, V. A. Bodkhe, P. N. Guru

ABSTRACT

The present investigations were conducted on five pruning time i.e. 15th May, 15th June, 15th July, 15th August, 15th Sept. and no pruning (control) with seven different genotypes such as RHR-Guv-58, RHR-Guv-60, RHR-Guv-14, RHR-Guv-16, RHR-Guv-3, RHR-Guv-6 and Sardar. The results revealed that the significantly minimum fruit fly infested fruits (9.94 %) was noted in P5 treatment (15th September pruning), which was at par with P4 (15th August pruning) treatment (11.87 %) and the maximum infestation (48.15 %) in P6 (Control) un-pruned treatment.

Keywords: Guava, Pruning time, Fruit fly infestation, Genotypes.

INTRODUCTION

Guava (*Psidium guajava* L.) is the most valuable cultivated species of the Myrtaceae family popularly known as “poor man’s fruit” or “apple of tropics” [1]. Guava fruit is commercially important in India, China, Indonesia, Florida, Hawaii, Egypt, South Africa, Yemen, Brazil, Mexico, Colombia, New Zealand, Philippines, West Indies, Cuba, Venezuela, Vietnam and Thailand and also has good level of the dietary minerals, potassium, magnesium, and generally a broad, low-calorie profile of essential nutrients [2]. The maximum production of guava obtains during the rainy season. The rainy season produced fruits are severely attacked by seasonal insect called fruit fly. Fruit flies infestation ranges from 20 to 46 per cent with crop loss of 16 to 40 per cent, which is matter of serious concern [3]. Fruits harvested in autumn winter have different developmental and postharvest characteristics than the spring summer fruits [4]. Pruning technique is used to minimize the disease and insect pest attack, mostly fruit fly infestation. Pruning is very important horticultural operation leads to regulate the crop with season. It increases the yield and quality of fruit it evades the flowering and fruiting of crop and gives the better canopy structure. The yield of winter season crop is less than rainy season crop. To overcome the problem of low yield during winter season pruning has been taken to regulate summer season flowering to minimize rainy season crop and increase that during the winter season [5]. Therefore, the major objective of the present research is to standardize the time of pruning and study the incidence of the fruit fly in guava.

MATERIALS AND METHODS

The experiment was conducted at the Instructional-cum-Research Farm, Department of Horticulture, Mahatma Phule Krishi Vidyapeeth, Rahuri during the year 2016 and 2017. The present investigations were conducted on five pruning time i.e. 15th May (P₁), 15th June (P₂), 15th July (P₃), 15th August (P₄), 15th Sept (P₅) and no pruning (control) (P₆). With seven different genotypes such as Sardar (G₁), RHR-Guv-58 (G₂), RHR-Guv-60 (G₃), RHR-Guv-14 (G₄), RHR-Guv-16 (G₅), RHR-Guv-3 (G₆) and RHR-Guv-6 (G₇). The genotypes were pruned 75 per cent of current season growth of guava plants at different times to understand influence on infestation of fruit fly, a major pest of guava. Nine years old guava plants with 6 x 6 spacing were selected in the experiment. The experiment was laid out in Factorial Randomized Block Design with forty-two treatments and was replicated two times. Numbers of fruits damaged by the fruit fly were counted in each treatment at the time of harvesting and percent incidence was worked out. The statistical analysis for the experiment data was done as per the standard procedure laid down by Panse and Sukhatme [6].

RESULTS AND DISCUSSION

The evaluation data regarding effect of pruning time was found significantly on fruit fly infestation. Fruit fly is the most devastating serious pest of guava particularly in rainy season, where significant attack of fruit fly on matured fruits is a common phenomenon. The significantly minimum fruit fly infested fruits (10.05 %) was noted in P₅ treatment (15th September pruning) during first season, which was at par with P₄ (15th August pruning) treatment (11.50 %) and the maximum infestation (48.70 %) in P₆ (Control)

un-pruned treatment. During second season also showed the similar results. Overall, the pooled results indicate the significantly minimum fruit fly infested fruits (9.94 %) was noted in P₅ treatment (15th September pruning), which was at par with P₄ (15th August pruning) treatment (11.87 %) and the maximum infestation (48.15 %) in P₆ (Control) un-pruned treatment. The genotypes effects and interactions between different time of pruning and genotypes were found to be non-significantly for infestation of fruit fly. However, the pooled result showed that, the minimum (26.96 %) infestation of fruit fly was noted in G₄ (RHR-Guv-14) genotype, which was followed by G₁ (Sardar) genotype (27.07 %) and the maximum (29.78 %) infestation in the G₇ (RHR-Guv-6) genotype of un-bagged fruits. The pooled results of interactions effect between different pruning time and genotypes were showed that, the minimum (8.79 %) incidence of fruit fly was reported in P₅G₁ (15th September pruning in Sardar) and the maximum (50.27 %) in P₆G₇ (No pruning in RHR-Guv-6) treatment combination. The present results revealed that the maximum fruit fly infestation was recorded in the un-pruned plants and minimum in 15th September pruning time (P₅). This is might be due to the change in the fruiting time and harvesting by pruning operation cause unfavorable conditions of emergence of fruit flies consequently less infestation of fruits.

Rainy season was recorded maximum infestations of fruit fly compared to winter season crop. While, incidence of fruit flies is too much less, when the pruning is done in Aug-Sept and fruit will be available in Feb-March. The rainy season fruit fly infestations fruit pupa hibernates in soil were occur favorable temperature and humidity to flies starts emerging with maximum population cause infestation in the un-pruned treatment. Pruning technique is used to minimize the disease and insect pest attack, mostly fruit fly infestation [7, 8, 9]. In mango and guava also reported that 37.5 per cent and 40 per cent infestation was observed due to attack of fruit fly, respectively [10, 11]. The incidence of fruit fly was found in guava during June to August but its incidence was highest in the month of June, while the lowest incidence of guava fruit fly was found in the month August [12]. Similarly, reported that the abundance of fruit fly was observed throughout the year, with two peaks. First in summer (May to August) and second in winter (November to January) coinciding with availability of guava fruits [13]. The maximum (18.59 %) fruit damage was recorded in August and second peak with 13.37 per cent damage in the month of July.

Table 1: Effect of pruning time and genotypes on fruit fly infestation (%) in fruits (Season 1)

Treats.	Guava genotypes							
Pruning time	G ₁	G ₂	G ₃	G ₄	G ₅	G ₆	G ₇	Mean
P ₁	43.58	45.89	47.52	43.12	48.20	44.52	47.09	45.70
P ₂	38.00	39.08	38.82	37.68	41.60	40.86	42.66	39.81
P ₃	14.04	16.78	16.45	14.89	17.69	14.81	17.62	16.04
P ₄	11.22	11.91	11.15	10.69	12.39	10.47	12.67	11.50
P ₅	9.47	10.82	9.05	9.65	10.71	10.32	10.36	10.05
P ₆ (Control)	47.30	50.09	47.25	47.14	50.30	47.95	50.86	48.70
Mean	27.27	29.10	28.37	27.19	30.15	28.15	30.21	28.63
Year 2016 & 2017		Pruning time		Guava genotypes		Interaction (P×G)		
SE(m) ±		0.84		0.91		2.22		
CD 5%		2.33		NS		NS		

Table 2: Effect of pruning time and genotypes on fruit fly infestation (%) in fruits (Season 2)

Treats.	Guava genotypes							
Pruning time	G ₁	G ₂	G ₃	G ₄	G ₅	G ₆	G ₇	Mean
P ₁	42.87	44.84	44.98	43.44	45.73	43.61	45.14	44.37
P ₂	36.61	40.75	40.35	37.26	40.55	38.42	41.17	39.30
P ₃	14.46	14.50	14.39	14.94	16.78	15.75	15.52	15.19
P ₄	11.64	13.83	11.61	10.36	12.98	11.74	13.48	12.24
P ₅	8.12	10.03	10.01	9.13	9.78	10.54	11.15	9.82
P ₆ (Control)	47.48	48.35	45.28	45.17	49.43	47.77	49.69	47.60
Mean	27.07	28.91	28.07	26.96	29.68	28.06	29.78	28.36
Year 2016 & 2017		Pruning time		Guava genotypes		Interaction (P×G)		
SE(m) ±		0.77		0.83		2.03		
CD 5%		2.13		NS		NS		

Table 3: Effect of pruning time and genotypes on fruit fly infestation (%) in fruits (Pooled)

Treats.	Guava genotypes							
Pruning time	G ₁	G ₂	G ₃	G ₄	G ₅	G ₆	G ₇	Mean
P ₁	43.23	45.37	46.25	43.28	46.96	44.07	46.11	45.04
P ₂	37.31	39.91	39.59	37.47	41.08	39.64	41.91	39.56
P ₃	14.25	15.64	15.42	14.91	17.24	15.28	16.57	15.62
P ₄	11.43	12.87	11.38	10.52	12.69	11.11	13.07	11.87
P ₅	8.79	10.42	9.53	9.39	10.25	10.43	10.75	9.94
P ₆ (Control)	47.39	49.22	46.26	46.16	49.87	47.86	50.27	48.15
Mean	27.07	28.91	28.07	26.96	29.68	28.06	29.78	28.36
Year 2016 & 2017		Pruning time		Guava genotypes		Interaction (P×G)		
SE(m) ±		0.80		0.87		2.13		
CD 5%		2.23		NS		NS		

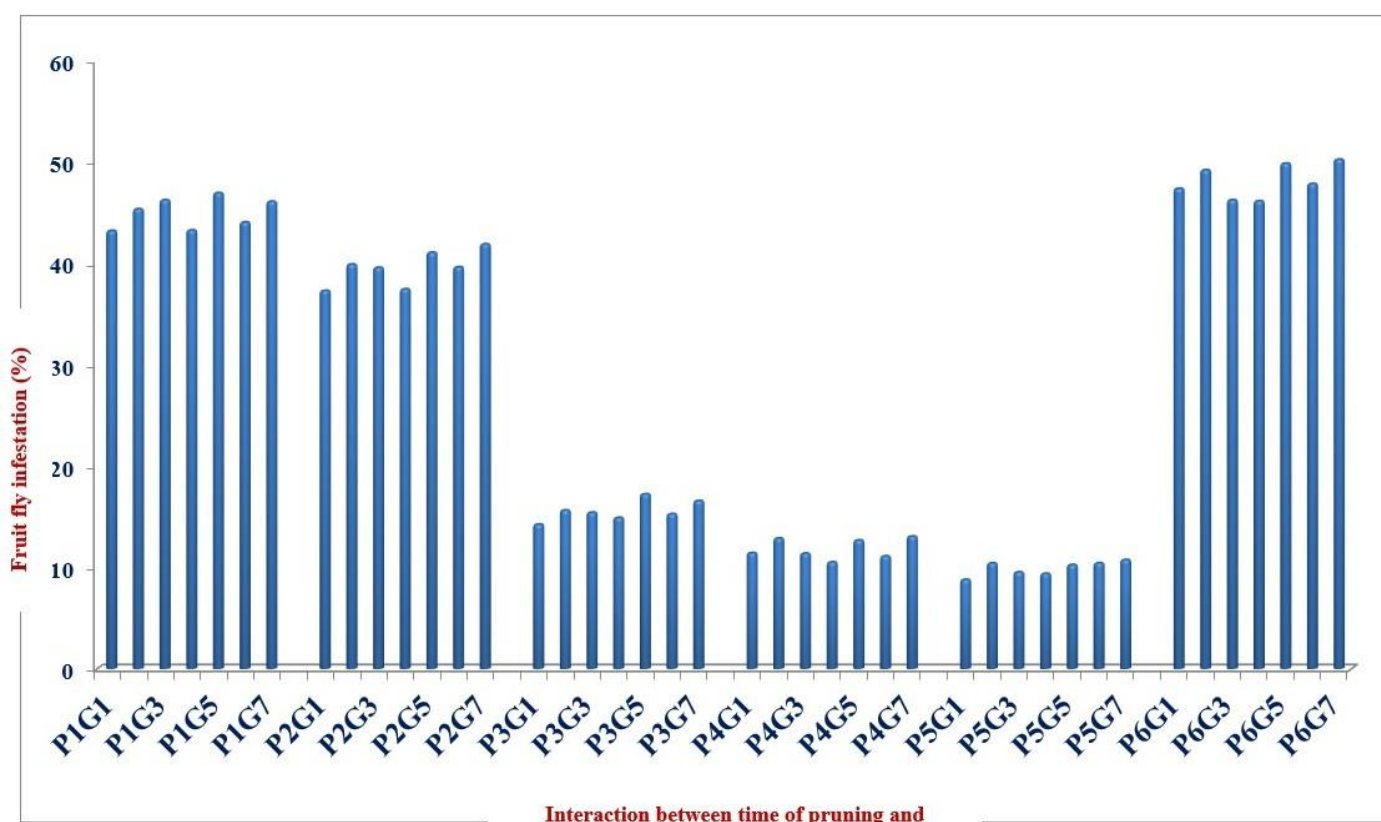


Figure 1: Effect of pruning time and genotypes on fruit fly infestation (%) in fruits

CONCLUSION

In Conclusion, pruning is very important horticultural operation leads to regulate the crop with season and increases the yield and quality of fruit it evades the flowering and fruiting of crop and gives the better canopy structure. The results of present investigation, it can be concluded that 15th Sept. pruning time was found to be better in escape of fruit fly infestation.

Conflict of Interest

None declared.

Financial Support

None declared.

REFERENCES

1. Singh D. Morphological and molecular characterization of guava (*Psidium guajava* L.) germplasm and F1 hybrids. Ph.D. dissertation. Punjab Agricultural University, Ludhiana, India. 2013.
2. Nimisha S, Kherwar D, Ajay KM, Singh B, Usha K. Molecular breeding to improve guava (*Psidium guajava* L.): Current status and future prospective. Scientia Horticulturae. 2013; 164, 578–588.
3. Haseeb M. Current status of insect pest production in guava. Acta Horti. (ISHS) 2007; 735, 453-467.
4. Silva EM, Baustista PB, Velasco MA. Fruit development, harvest index and ripening changes of guava produced in Central Mexico. Postharvest Biology and Technology. 1998; 13, 143-150.
5. Dubey AK, Singh DB, Barche A, Meenakshi D. Deblossoming in summer season flowering in guava. Indian Horti. 2002; 47(1), 35-36.
6. Panse VG, Sukhatme PV. Statistical Methods of Agriculture Workers, 4th Ed. ICAR, New Delhi Publication, 1985; 347.

7. Hoque MA. Effect of pruning and fruit fly control on the yield of guava. Thai National AGRIS Centre (<http://thaiagris.lib.ku.ac.th/eng>) 1996.
8. Nikumbhe PH, Musmade AM, Mali DS, Patil RS. Impact of pruning time on shoot initiation, shoot sprouting, fruit yield and fruit fly incidence in guava. International J. of Pure & Applied Bioscience. 2017; 5(2), 513-518.
9. Shirsath HK. Studies on agro-techniques in guava (*Psidium guajava* L.) cv. Sardar I. High density planting and II. Rejuvenation of old orchard. Ph.D. Thesis, Mahatma Phule Krishi Vidyapeeth, Rahuri, Ahmednagar, India. 2013.
10. Kumar R. Studies on fruit fly in mango and guava orchards with special reference to their management through mass trapping. M.Sc. Thesis, Department of Agricultural Entomology, University of Agricultural sciences, Dharwad 2005.
11. Rahman MH. Studies on integrated management practices for control of mango hopper and fruit fly. Ph.D. Thesis. Department of Horticulture, BAU, Mymensingh. 2005.
12. Kirtania B. Control of guava fruit fly through horticultural management practices. M.Sc. Thesis, Department of Horticulture, Bangladesh Agricultural University Mymensingh 2012.
13. Muhammad S, Muhammad H, Muhammad Y, Mureed H. Monitoring of population dynamics and fruits infestation of tephritid fruit flies in guava (*Psidium guajava* L.) Orchard. Res. and Rev.: J. of Agri. and Alli. Sci. 2014; 3(2), 36-40.

HOW TO CITE THIS ARTICLE

Paul S, Dey A. A survey on ethnomedicinal plants of Nayagram Block of Jhargram District, West Bengal, India. J Phytopharmacol 2022; 11(1):47-50. doi: 10.31254/phyto.2022.11109

Creative Commons (CC) License-

This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY 4.0) license. This license permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited. (<http://creativecommons.org/licenses/by/4.0/>).