Int.J.Curr.Microbiol.App.Sci (2020) Special Issue-11: 4027-4030

International Journal of Current Microbiology and Applied Sciences
ISSN: 2319-7706 **Special Issue-11 pp. 4027-4030**
Journal homepage: http://www.ijcmas.com

Original Research Article

Effect of different Levels of Pruning on Fruit Attributes and Quality of Guava (*Psidium guajava* L.) cv. Sardar

M. K. Shinde, R. M. Dheware and A. R. Jadhav*

Department of Horticulture, College of Agriculture, Latur, Vasantrao Naik Marathwada Krishi Vidyapeeth, Parbhani- 431 402, M.S., India
**Corresponding author*

A B S T R A C T

The field trial was conducted on a well-established guava orchard of ten years age, spaced at 6 x 6 m^2at the Instructional-Cum-Research Farm, Department of Horticulture, College of Agriculture, Latur during 2016-17, to study the effect of different levels of pruning on fruit attributes and quality of guava (*Psidium guajava* L.) cv. Sardar. The experiment was laid out in a Randomized Block Design with seven treatments *viz.*, T_1 (Without pruning-Control), T_2 (5 cm pruning), T_3(10 cm pruning), T_4 (15 cm pruning), T_5(20 cm pruning),T_6(25 cm pruning) and T_7 (30 cm pruning)with four replicationsafter harvesting of previous season fruits. The pruning was done in 1st week of May, 2017.The 20 cm pruning level (T_5) resulted, the highest TSS (11.63 %), reducing sugar (8.12 %), total sugar (9.65 %) and Sugar: acid ratio (22.97 %). Hence, it can be concluded that, the 20 cm pruning level were beneficial for enhancing quality of guava cv. Sardar as compared to other treatmentsunder Marathwada region of Maharashtra.

Keywords

Pruning, Fruit attributes, Quality, Guava

Introduction

Guava (*Psidium guajava* L.) is "Poor man's fruit" and "Apple of tropics". It is a popular fruit tree of tropical and subtropical climate and is native to Tropical America stretching from Mexico to Peru. It belongs to family Myrtaceae. The guava is classified under genus *Psidium* that contains 150 species but only *Psidium guajava* is exploited commercially.

The common guava is diploid (2n=22), but natural and artificial triploids (2n=33) and anuploid exists (Menzel, 1985). Triploids generally produce seedless fruit (Jaiswal and Amin, 1992). However most of them are shy bearer. Guava trees are hardy, prolific bearer, long lived drought tolerant and need comparatively less attention which makes its cultivation more remunerative.

Guava fruit is also good source of minerals like phosphorous 22.50-40.00 mg, calcium 10.00-30.00 mg and iron 0.60-1.39 mg. It is also good source of pectin 0.50-1.80 % (Adsule and Kadam, 1995).

The total area under cultivation of guava in India is 2,59,000 ha and production is 4,11,9000 MT (Anonymous, 2017).

Beneficial effects of pruning on yield and fruit quality of guava have been reported by

various workers (Jadhav *et al.,* 1998, Mishra and Pathak, 1998, Dhaliwal *et al.,* 2000, Singh and Singh, 2001, Jadhav *et al.,* 2002, Dhaliwal and Kaur, 2003, Dhaliwal and Singh, 2004). Properly pruned guava trees produce quality fruits.

Materials and Methods

An experiment on guava cv. Sardar was conducted at the Instructional-Cum-Research Farm, Department of Horticulture, College of Agriculture, Latur during 2016-17. The 10 years old trees grown at 6 x 6 m^2 spacing were used for the experiment.

The experiment was laid out in a Randomized Block Design with seven treatments *viz*., T_1 (Without pruning-Control), T_2 (5 cm pruning), T_3(10 cm pruning), T_4 (15 cm pruning), T_5(20 cm pruning), T_6(25 cm pruning) and T_7 (30 cm pruning)with four replications after harvesting of previous season fruits.

The pruning was done in 1st week of May, 2017.The statistical analysis of the data in respect of fruit attributes and quality was done according to the standard procedure given by Panse and Sukhatme (1984).

Results and Discussion

Effect of pruning on fruit attributes of guava

It is revealed from the data (Table 1), the highest volume of fruit (281.66 ml)observed in treatment T_7.Minimumnumber of seeds per fruit(263.93) and weight of seeds per fruit (3.35 g) observed in treatment T_1as compared to other treatments. This might be due to the pruning may increases absorption of water, mobilization of minerals in pruned area. The pruning leads to renewal of potential fruit bud and retention of more juvenile wood. Pruning encourages substantial new growth. There may be proper balance in vegetative growth and productive growth. These findings are in accordance with the results obtained by Rather (2006) in Red Delicious apple.

Effect of pruning on quality of guava

It is revealed from the data (Table 2), significantly the highest TSS (11.63 %), reducing sugar (8.12 %), total sugar (9.65 %) and Sugar: acid ratio (22.97 %) observed in treatment T_5.The lowestacidity (0.41 %)observed in treatment T_6 and the highestNon-reducing sugars (0.73 %)observed in treatment T_4.

Table.1 Effect of pruning on fruit attributes of guava.

Treatments	Volume of fruit(ml)	Number of seeds per fruit	Weight of seeds per fruit (g)
T_1	191.13	263.93	3.35
T_2	203.79	276.05	3.45
T_3	222.21	280.70	3.54
T_4	251.49	286.90	3.59
T_5	262.28	291.07	3.62
T_6	279.11	298.55	3.92
T_7	281.66	306.68	4.01
S.E.±	**9.90**	**6.52**	**0.158**
C.D at 5%	**29.44**	**19.39**	**NS**

Table.2 Effect of pruning on quality of guava.

Treatments	TSS (%)	Acidity (%)	Reducing sugars (%)	Non-reducing sugars (%)	Total sugars (%)	Sugar: acid ratio
T_1	9.23	0.44	5.44	1.27	6.71	15.25
T_2	9.43	0.45	5.74	1.37	7.11	15.80
T_3	9.53	0.43	6.51	1.47	7.98	18.55
T_4	11.24	0.42	7.35	1.73	9.08	21.61
T_5	11.63	0.42	8.12	1.53	9.65	22.97
T_6	10.45	0.41	7.48	1.63	9.11	22.21
T_7	9.72	0.43	6.88	1.60	8.48	19.72
S.E.±	**0.471**	**0.007**	**0.276**	**0.257**	**0.407**	**0.820**
C.D at 5%	**1.400**	**NS**	**0.821**	**NS**	**1.209**	**2.436**

This may be due to Pruning improve physiology of leaves, thereby causing better translocation of vital components in fruit and assimilation of photosynthesis by developing fruit. Similarly it may increase activity of enzymes such as amylose which hydrolyze complex polysaccharides into simple sugars which accelerates the translocation of metabolites towards developing fruits. These results are supported by Rather (2006) in Red Delicious apple, Lakhpati *et al.,* (2013) in guava and Kumar *et al.,* (2014) in ber.

The pruning of guava trees in the first week of May with 20 cm pruning level were found beneficial for fruit attributes and quality of guava cv. Sardar under Marathwada region of Maharashtra.

References

Adsule, R. N. and Kadam, S. S., 1995. Handbook of fruit science and technology, production composition, storage and processing. New York: Marcel Dekker, page: 419-433.

Anonymous, 2017. Area and Production of Horticulture Crops in India. Indian Horticulture Database, National Horticulture Board.

Dhaliwal, G. S. and Kaur, R., 2003. Effect of time and pruning intensity on the age of bearing shoot and fruit quality of Sardar guava. *Haryana Journal of Horticulture Sci*ence,32(1/2): 21-24.

Dhaliwal, G. S. and Singh, G., 2004. Effect of different pruning levels on vegetative growth, flowering and fruiting in Sardar guava. *Haryana Journal of Horticultural Sci*ence, 33(3/4): 175-177.

Dhaliwal, G. S., Rattanpal, H. S. and Gill, H.S., 2000. Effect of time and severity of pruning on cropping and physico-chemical properties of Sardar guava. *Haryana Journal of Horticulture Sci*ence, 29(1/2): 17-20.

Jadhav, B. J., Damke, M. M., Mahorkar, V. K., Dod, V. N. and Wagh, A. P., 1998. Studies on effect of time and severity of pruning on growth and yield of guava (*Psidium guajava* L.) cv. Sardar. *Journal of Soils and crops*8(2): 139-141.

Jadhav, B. J., Mahurkar, V. K. and Kale, V. S., 2002. Effect of time and severity of pruning on growth and yield of guava *(Psidium guajava* L.) cv. Sardar. *Orrisa Journal of Horticulture*, 30(2): 83-86.

Jaiswal, V. S. and Amin, M. N., 1992. Biotechnology of fruit crops, Biotechnology in Agriculture, Wallingford, UK, page: 421-423.

Kumar, H., Katiyar, P. N., Singh, K. A. and Rajkumar, B.V., 2014. Effects of different pruning severity on physicochemical properties of ber (*Zizyphusmauritiana* lamk.) cv. banarasi karaka. *International Riannual Journal of Enviromental Science,* 8(3-4): 203-206.

Lakpathi, G., Rajkumar, M. and Chandrasekhar, R., 2013. Effect of pruning intensities and fruit load on growth, yield and quality of guava (*Psidium guajava* L.) cv. Allahabad Safeda under high density planting. *International Journal of Current Research,* 5(12): 4083-4090.

Menzel, C. M., 1985. Guava: An exotic fruit with potential in Queensland. *Queensland Agriculture Journal,*111(2): 93-98.

Mishra, H. K. and Pathak, R. A., 1998. Effect of shoot pruning on crop regulation in guava (*Psidium guajava* L.) cv. Sardar. *Progressive Horticulture,*30(1/2): 78-81.

Panse, V. S. and Sukhatme, P. V. 1984. Statistical Methods for Agricultural Workers, ICAR, New Delhi.

Rather, G. H., 2006. Combined influence of pruning regimes and fertilizer application on production and quality of apple (Malus x domestica Borkh.) cv. Red Delicious. Ph.D. Thesis submitted to Sher Kashmir University of Agricultural Sciences and Technology of Kashmir, Srinagar, India.

Singh, A. K. and Singh, G., 2001. Influence of pruning date on fruit quality of guava (*Psidium guajava* L.). *Journal of Applied Horticulture,*3(2): 100-102.