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## Benefit cost ratio (BCR) as influenced by different pruning and fertigation treatments on guava cv. Sardar during rainy season

**A Mahadevan, S Kumar, V Swaminathan, A Gurusamy and T Sivakumar**

**Abstract**

The investigation entitled "Benefit cost ratio (BCR) as influenced by different pruning and fertigation treatments on guava cv. Sardar during in rainy season" was carried out at Department of Horticulture, Agricultural College and Research Institute, Madurai, Tamil Nadu. The experiment was laid out in factorial randomized block design. In this experiments three pruning levels ( $P_0$  without pruning,  $P_1$ -15cm pruning,  $P_2$ - 30 cm pruning) and five fertigations ( $F_0$  – Soil application,  $F_1$  - 125 %,  $F_2$  - 100 %,  $F_3$  - 75 %,  $F_4$  - 50 %) with three replication. The highest Benefit cost ratio (BCR) was recorded in the treatment  $P_2$  and 125% in guava.

**Keywords:** *Guava, Benefit cost ratio, Pruning, Fertigation.* Rainy season

**Introduction**

*Psidium guajava* L. is one of the important fruit crops in India. Although it is native to tropical America its cultivation has expanded to all tropical countries and become especially important in India. It belongs to the natural order myrtal and family myrtaceae. The Guava is one of the most common and important fruit crop cultivated all over India. It is fourth most important fruit crop in area and production after mango, banana and citrus. It is classified under genus *Psidium* which contains 150 species, but only *Psidium guajava* exploited commercially. It is also called poor man apple and rich source of pectin and vitamins. Pilania *et al.* (2010) <sup>[1]</sup> reported that pruning of 75% previous season growth and 50:20:50g NPK resulted in maximum B: C ratio in guava cv. Lalit. Khot *et al.* (2012) <sup>[2]</sup> reported that drip irrigation 60% PE and 100% RDF fertilizer resulted in higher gross income, net income, B: C ratio, WUE as compared to the control in guava cv. Sardar. Ashoka Raja *et al.* (2013) <sup>[3]</sup> studied that combination of irrigation 60% PE and fertigation levels of 100% RDF through drip irrigation recorded the higher gross income, net income, B: C ratio and water saving in guava. To best of our knowledge no study has reported the combined effect of pruning and fertigation. Hence, the present study was formulated to study the combined effect of pruning and fertigation in guava.

**Materials and Methods**

The investigation was conducted at Department of Horticulture, Agricultural College and Research Institute, Madurai, Tamil Nadu, the experiment was laid out in factorial randomized block design (FRBD) with three replications and uniform 10-years- old 'Sardar' guava plants planted at the spacing of 6 × 6 m. The research experiment conducted in the Farmers Field at Dhavathana Patti village, Theni District, Tamil Nadu. The study aimed to standardize the pruning levels and fertigation schedules for guava, and also to understand crop regulation and fertigation in guava (*Psidium guajava* L.) cv. Sarader for growth, physiology, yield and quality. The treatment includes three levels of pruning ( $P_0$  without pruning,  $P_1$ -15cm pruning,  $P_2$ - 30 cm pruning) and five levels of fertigation ( $F_0$  – Soil application of RDF(1000: 1000: 1000 g NPK plant<sup>-1</sup> year<sup>-1</sup>),  $F_1$  – Drip fertigation of 125% RDF (1250: 1250: 1250 g NPK plant<sup>-1</sup> year<sup>-1</sup>),  $F_2$  - Drip fertigation of 100% RDF (1000: 1000: 1000 g NPK plant<sup>-1</sup> year<sup>-1</sup>),  $F_3$  - Drip fertigation of 75% RDF (750: 750: 750 g NPK plant<sup>-1</sup> year<sup>-1</sup>),  $F_4$  - Drip fertigation of 50% of RDF (500: 500: 500 g NPK plant<sup>-1</sup> year<sup>-1</sup>), with three replication. The soil application with drip irrigation was done in two split doses during June –July and October–November. Water Soluble Fertilizers (WSF) namely Urea, Polyfeed and White Potash were injected at weekly intervals in equal splits (52 weeks).

## Result and Discussion

### Effect of treatments on Benefit cost ratio of Guava

The data presented in the Table 1 recorded that there benefit cost ratio in pruning and fertigation. The trees subjected to three levels of pruning and five levels of fertigation any superior technology before recommendation has to be tested on the basis of economic viability from the growers point for adoption. Drip fertigation in vegetable requires higher capital investment particularly with the water soluble fertilizers. Hence, the economic viability of drip fertigation system was calculated considering the longer life span of the drip system, increased productivity and net extra income over conventional fertilization. However, due to higher uptake and nutrient use efficiency from these costly fertilizers, maximum gross income was achieved through significantly higher yields.

Thus, an extra expenditure towards water soluble fertilizer was well compensated through higher additional income.

Economics of guava cultivation under the influence of different treatments of pruning and RDF through fertigation was also studied. The results showed that, the highest net returns was recorded in P<sub>2</sub>F<sub>1</sub> which received moderate pruning (30 cm) and 125 per cent RDF through fertigation in rainy (Rs. 5,10,789.61 ha<sup>-1</sup>) seasons. The lowest net return was registered with control (P<sub>0</sub>F<sub>0</sub>) in rainy (Rs. 19,383.33 ha<sup>-1</sup>) seasons. Similarly for cost benefit ratio, the highest benefit: cost ratio was registered P<sub>2</sub>F<sub>1</sub> in the seasons (rainy: 4.82) compared to control. The increase in gross and net returns in the treatment P<sub>2</sub>F<sub>1</sub> were mainly due to the increase in yield. These results are in close conformity with the findings of Khot *et al.*, (2012)<sup>[2]</sup> and Dhokane *et al.*, (2012)<sup>[4]</sup> in guava.

**Table 1:** Effect of different pruning and fertigation treatments on Benefit Cost Ratio of Guava cv. Sardar during Rainy Season

Treatments	Fruit yield /tree (Kg)	Fruit yield/ha (Kg)	Gross Income (Rs h <sup>-1</sup> )	Cost of cultivation (Rs h <sup>-1</sup> )	Net Income (Rs h <sup>-1</sup> )	BCR
P <sub>0</sub> F <sub>0</sub>	13.45	3725.65	74513.00	55129.67	19383.33	1.35
P <sub>0</sub> F <sub>1</sub>	35.68	9883.36	197667.20	120533.19	77134.01	1.64
P <sub>0</sub> F <sub>2</sub>	29.36	8132.72	162654.40	102466.69	60187.71	1.59
P <sub>0</sub> F <sub>3</sub>	23.65	6551.05	131021.00	84399.04	46621.96	1.55
P <sub>0</sub> F <sub>4</sub>	18.36	5085.72	101714.40	66332.54	35381.86	1.53
P <sub>1</sub> F <sub>0</sub>	16.89	4678.53	93570.60	68219.67	25350.93	1.37
P <sub>1</sub> F <sub>1</sub>	66.32	18370.64	367412.80	133623.19	233789.61	2.75
P <sub>1</sub> F <sub>2</sub>	56.37	15614.49	312289.80	115556.69	196733.11	2.70
P <sub>1</sub> F <sub>3</sub>	45.23	12528.71	250574.20	97489.04	153085.16	2.57
P <sub>1</sub> F <sub>4</sub>	36.21	10030.17	200603.40	79422.54	121180.86	2.53
P <sub>2</sub> F <sub>0</sub>	17.25	4778.25	95565.00	68219.67	27345.33	1.40
P <sub>2</sub> F <sub>1</sub>	116.32	32220.64	644412.80	133623.19	510789.61	4.82
P <sub>2</sub> F <sub>2</sub>	99.23	27486.71	549734.20	115556.69	434177.51	4.76
P <sub>2</sub> F <sub>3</sub>	83.25	23060.25	461205.00	97489.04	363715.96	4.73
P <sub>2</sub> F <sub>4</sub>	67.2	18614.40	372288.00	79422.54	292865.46	4.69

Pruning (P<sub>0</sub> Without pruning, P<sub>1</sub>-15 cm pruning, P<sub>2</sub>- 30 cm pruning)

Fertigation (F<sub>0</sub> – Soil application of RDF (1000: 1000: 1000 g NPK plant<sup>-1</sup> year<sup>-1</sup>)

F<sub>1</sub> – Drip fertigation of 125% RDF (1250: 1250: 1250 g NPK plant<sup>-1</sup> year<sup>-1</sup>)

F<sub>2</sub> - Drip fertigation of 100% RDF (1000: 1000: 1000 g NPK plant<sup>-1</sup> year<sup>-1</sup>)

F<sub>3</sub> - Drip fertigation of 75% RDF (750: 750: 750 g NPK plant<sup>-1</sup> year<sup>-1</sup>)

F<sub>4</sub> - Drip fertigation of 50% of RDF (500: 500: 500 g NPK plant<sup>-1</sup> year<sup>-1</sup>)

## Conclusions

The investigation of pruning and fertigation is cost benefit ratio in the P<sub>2</sub>F<sub>1</sub> (moderate pruning (30 cm) and 125 per cent RDF through fertigation) treatments.

## References

- Pilania S, Shukla AK, Mahawer LN, Sharma R, Bairwa HL. Standardization of pruning intensity and integrated nutrient management in meadow orcharding of guava (*Psidium guajava* L.). Indian J Agri. Sci. 2010; 80(8):9-14.
- Khot AB, Mudakavi DH, Ashoka P, Rajkumar S, Neelakanth JK, Gundlur SS. Performance of early growth period of guava (*Psidium guajava* L.) to drip method of irrigation and fertigation in Vertisols. Green Farming. 2012; 3(6):698-700.
- Asokaraja N, Khoth AB, Dasar GV. Effect of irrigation and fertigation levels on yield of guava. National Ground Water Conference. 2013, 75.
- Dhokane PA, Kadam AS, Lakade SK, Gharge VR. Effect of different sources of nitrogen on yield and quality of guava (*Psidium guajava* L.) cv. Sardar. Green Farming. 2012; 3(1):97-98.