Original Research Article

Canopy management in guava with fertiliser is a boon for the farming community for its continued yield

ABSTRACT

Guava fruit is known for its delicacy having Balice acid-base relationship, rich in minerals, salt, and vitamins. In other words, it is a poor man's apple. Krishi Vigyan Kendra Sabour Bhagalpur has established a guava orchard of 1.5 Hectares of select and selected different varieties for trial in training and pruning of guava and its management in other parts of the year. As per recommendation, Guava, canopy management requires three training and pruning. In KVK trial we have gone through two training pruning with fertiliser and insect disease management, training and pruning were conducted in February-March. And September-October, with the recommended dose of fertiliser that is 100g urea + 75g DAP + 150g NOP + 2.5kg Compost @ 30 days of interval of 5 days of training pruning has shown the result and yield 25kg fruits/plants from four-year-old orchard with successive flowering that gives extra yield to the farmers at high remuneration.

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INTRODUCTION

Guava is a tropical and sub-tropical fruit grown all over India. It is known for its sweet and sour taste with the best acid-sugar combination, this fruit is a delicacy of the fruit basket, and In other words, this is a poor man's apple, rich in Vitamin C, Minerals and fibre. It is one of the most exquisite and nutritional valuable remunerative crops. It is used for both table and processing purposes. Guava is claimed to be the fourth most important tropical fruit crop after mango, banana and citrus. Id guava orchard is managed properly, using technical intervention, it is the most productive and adaptable crop among all fruit. It occupies an area of 262 hectares with an annual production of 24.8 lakh M.T. Major guava growing places in India are MP, Maharashtra, UP, Bihar, Gujarat, Orissa, Punjab, Karnataka, Tamil Nadu and West Bengal.

Guava enjoys its nature of successive flowering. Guava flowering occurs on current shoots. Blooming in guava varies between 25 to 45 days of observation regarding the yield of guava-on-guava initial fruit set is very i.e. approximately 80% of the flower became fruit. Only 34-56% of the fruits reached maturity during severe fruit drop.

Training and pruning in guava aren't an easy task. First of all,the grower should know the principles of canopy management, what practices to follow after training and pruning, How to develop proper geometry of the plant, harvest maximum sunlight with aeration, and make the intercultural processes easy, Training and pruning is not an easy task. It is a science, A grower should understand the science of training and pruning. A video that was released by the media centre of BAU Sabour has gained popularity among guava growers of India and is able to guide in the training and pruning of guava. This type of video that explains science should be released from time to time for guidance.

In traditional times, guava was planted 8 days * 8 nights and the plants attained huge structure. It was a period when there was no concept, abundance of lack, no organised orchards of guava. But, nowadays guava is an emerging choice for the grower. They prefer to plant guava orchards in place of litchi, jamun and other subtropical and tropical fruits. Guava is managed properly it can give significant income and fetch a high price depending on numerous factors.

Krishi Vigyan Sabour Bhagalpur has established high high-density orchard of guava on 1.5 hectares of land, it was a tough task to maintain it. Guava has the privilege that it flowers on the current shoot. Canopy management follows the following principles:-

1. Training and pruning in very early stages when we plant in June/ establish the orchard in June it goes through the first pruning in October
2. To harness maximum solar energy
3. Enhance per unit number of plants
4. Produce quantitative fruit with quality the utmost requirement of the present situation

Keeping because of management, products and markable fruits that earn high prices of orchard of KVK was developed as a demonstration plot. This type of orchard is helpful for those farmer who are visiting KVK Sabour farm. The high density of guava can provide a solution to climate change, During experimentation, it was found that it is the most climate-resilient technology on which farmers can rely. Our farmers from IT Sectors like Mr Jagdish from Karnataka, Mr Paresh Devani from Maharashtra, and Sri BalramPatidaar from MP who managed guava orchard and expected the guava fruits.

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MATERIAL AND METHOD

Guava is very important fruit of the tropical and subtropical regions. Due to population pressure in most of methodologies research-driven enthusiasm of the farmers started growing of high yield crops. Initially, it was started. Initially, it was started in Banana and pineapple and with time it was adapted to major fruit crops and vegetables. The response of guava in high density is marvellous because of its nature to flower or fruit on the current shoot. We have focused on the Allahabad Sadeda variety in the instructional farm of KVK Sabour. We have selected three rows of guava variety Allahabad Safeda on the east direction, three rows in the mid and three rows on the west side of the orchard. The reason for this selection was the complaint of farmers. Mr Balram Patidar from MP always asks questions about the fruiting of the plant that was lying in mid of the orchard. So, I have planted this research. Plants are planted at 2 meters * 3-meter distance, Plant to plant distance 2 meters and row to row distance of three meters. We have adopted two times training and pruning in guava. One adopted in February is hard pruning and second that is adopted in October is light pruning. After pruning apply CCC paste on the cut end followed by irrigation. After cutting, remove all leaves from branches and incorporate it into the soil. After cutting in glance the orchard.

The key principles followed for cutting the guava plants are as listed below

1. First, clear the fifty centimetres from the ground level to make it half the standard
2. Second, select at least four or five branches in the outward direction so that the central part is clean and harnesses the maximum amount of sunlight
3. At last, cut all selected branches at half of its length and remove all the leaves.

Apply two point five kilograms of compost, two hundred and fifty grams of urea, twenty grams of DAP and thirty grams of MOP per plant after the assessment of the root level. Try to keep a weed-free plot. Apply It again after one month. Move it for the incidence of insects and pests. Again, cut it in September and October. Continue cutting and applying the fertiliser. Continue it for two years. So that it attains a circumference of 2m observations were recorded on vegetable growth, flowering and fruiting of Guava. Up to two years of vegetative character shoot length and diameter was also under consideration. First, data was collected at 30 days. Next was collected at 30 day intervals. At each thirty days interval data was recorded till harvesting. Five new emerged. Shoots were selected from eastward plant, middle plant and westside plants. Days recorded for initial flowering by visual. We have counted no. of fruits per plant in different location, how many flowers converted into fruit. Days of maturity was also counted yield per plant used to calculate the yield per hectare. Recorded data subjected for analysis prescribed by Pansa and Sukhatane

RESULT AND DISCUSSION

Guava is poor man's apple is a fruit can be grown round the year by proper management. The analysed data of two years showed the effect of proper canopy management, fertilisation (organic and inorganic manures) to harvest round the year guava variety Allahabad Safeda. Ram Awadh Ram eta;. 2007 and Virendra Singh et al. 2008 found the same reason in Sadabahar variety.

Growth Parameters

Maximum increase in plant height (0.44m) was with the application of 250g N. 100g P_2O 250g K_2O and 10 kg FYM inoculated with 250g Azotobacter followed by 0.35m with application of 250g N. 100g P_2O, 250g K_2O and 250g Azospirillum, which was significantly superior over control. Significant variation was not observed in stem girth but increase varied from 0.020.07m. Increase in plant

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spread was highest (0.34m) with 250g N. 100g P_2O, 250g K_2O, 10kg FYM inoculated with 250g Azotobacter followed by 250g N, 100g P_2Os, 250g K_2O and 5 kg neem cake and 250g N, 100g P2O5, 250g K_2O and 10 kg FYM (0.32m). Increase in plant spread (N-S) was 0.57m with 250g N. 100g P2O5, 250g K_2O, 10kg FYM inoculated with 250g Azotobacter followed by 0.45m with 250g N. 100g P_2O, 250g K_2O and sesbania as green manure, whereas in untreated plants, the increase was only 0.22m. Similar to present finding positive response of N, P and K on growth characters of guava was reported earlier too but not integrated with organic sources (Singh and Rajput, 1976). Leaves were found maximum in mid row was under consideration .Smallest size of leaves was found in eastward plants .this is due light . Mid row plants showed maximum shoot length ,large leave because these row receiving minimum sunlight only during day time

Yield Attributes

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Significant increase in number of flowers , fruit retainion fruit weight was recorded with application of different levels of organic and inorganic sources of nutrients . Fruit weight was maximum (0.26kg) with 250g N. 100g P2O5, and 250g K_2O and 5kg neem cake, 250g N. 100g P20 250g K_2O and sesbania as green manure and 250g N. 100g P2O5, 250g K_2O, 10kg FYM and 250g Azotobacter in comparison to only 0.17kg in untreated plants. Fruit diameter not varied significantly with various treatments but was higher (7.64 cm) with 250g N, 100g P2O5, 250g K_2O and 250g Azotobacter. There was difference in fruit length due to different treatment too. Number of fruitplant was differed significantly and maximum number of fruits (1200 fruit tree) were harvested from the trees treated with 250g N, 100g P2O5, 250g K_2O, 10kg FYM and 250g Azotobacter followed by 250g N, 100g P_2O 250g K_2O and 250g Azospirillum (985) in comparison to 560 in control. Yield was also more (150.25kg tree & 135.45kg) with above treatments. The yield was only 80.50kg plant in untreated trees. Similar to present finding application of 800g neem coated urea, 600g each of single super phosphate and muriate of potash in two split doses (July & September) proved effective in increasing the productivity of guava cv. Sardar (Ram et al., 1998). Use of different fertilizer and light pruning in september -october showed new flush and flowering . proper fertilization and training pruning is boon for guava cultivators .

Qualitative parameters

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TSS was highest (13.50°Brix) in freshly harvested fruits from the trees with 250g N. 100g P_2Os. 250g K_2O and 10 kg FYM inoculated with 250g Azotobacter followed by 500g N , 100g P_2Os, and 500g K_2O treated plants (13.0°Brix), which differed significantly over untreated control and other treatments. However, variation among other treatments was non-significant. Reducing sugars varied from 2.28 to 3.58 per cent in different treatments with maximum (3.58%) in 250g N, 100g P2O5, 250g K_2O, 10kg FYM and 250g Azotobacter (3.54%). It was minimal in control (2.28%). Ascorbic acid content was highest (340mg 100g fruit) with 250g N, 100g P2O5, 250g K_2O and 250g Azotobacter but variations were, non-significant. Acidity in freshly harvested fruit varied from 0.35 to 0.54 percent, which was maximum (0.54%) in fruits harvested from 250g N, 100g P2O5, 250g K_2O, 10kg FYM and 250g Azospirillum treated plants. Wagh and Mahajan (1985, 1987) recommended application of 25kg FYM with 600gN, 300g P and 600g K for better production of guava. Based on the different fertilizers

doses in different agro-climatic zones guava trees more than 6 years age should be fertilized with integration of FYM . fruits mature early in eastward plants colour development retention was more in mid rows

Inference : high density orcharding require care of the plants like training pruning , percolation of light is importqnt . The most important fertilize guava plants too like mango and banana so this continue its climate ressielience properties of round the year production

Discussion!

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References

1. Annonomous. All India area, production and productivity of horticulture crops, National Horticulture Board, Gurgaon, 2015, 4-7.

2. Dutta P, Maji SB, Das BC. Studies on the response of bio-fertilizer on growth and productivity of guava. Indian J Hort. 2009; 66 (1):39-42.

3. Dwivedi, Vandana, Santosh Agnihotri. Effect of Integrated Nutrient Management on Growth, Yield and Economics of Guava (Psidium guajava L.) cv. Allahabad Safeda. Int. J Curr. Microbiol. App. Sci. 2018; 7(6):3449-3453

4. Goswami AK, Shukla HS, Prabhat Kumar, Mishra DS. Effect of pre harvest Application of Micro Nutrients on quality of guava (Psidium guajava L.) cv. Sardar.

Hortiflora research spectrum. 2012; 1(1):60-63.

5. Jamwal, Sudhir, Saket Mishra, Sandeep Singh. Effect of integrated nutrient management on physical characteristics of Guava under Meadow Orcharding CV. Allahabad Safeda. Journal of Pharmacognosy and Phytochemistry. 2018; SP1:2076-2079.

6. Kumrawat D, Kanpure RN, Singh OP, Bhandari J, Kachouli B. Effect of integrated nutrient management on quality and yield parameters of guava (Psidium guajava L.) CV. 1-49. Journal of Pharmacognosy and Phytochemistry. 2018; 7(5):1668-1670

7. Maity PK, Das BC, Kundu S. Effect of different sources of nutrients on yield and quality of guava cv. L-49. Journal of Crop and Weed. 2006; 2(2):17-19.

8. Mamnindla S. Prasad VM, Mishra S. Effect of different sources of organic and inorganic plant nutrients on fruit growth, yield and quality of guava (Psidium guajava L.) cv. Allahabad safeda. Bioved. 2014; 25(2):159-164.

9. NeelamTiwaril, Dr. SS Singh, Dr. Rajesh Singh, Neeraj K Charmkar. Effect of organic-cum-inorganic sources of nutrients on Physico-chemical qualities of guava. World Journal of Pharmacy and Pharmaceutical Sciences. 2017; 7(2):913-921

10.RamAwadh ram ,R.k. Pathak .& S.R .Vhriguvanshi (2007)Integrated plant Nutrient management in guava (Psidiumgujava L) CV Sardar

11. Rubee Lata Dwivedi DH, Ram RB, Meena ML. Response of organic substrates on growth, yield and physiochemical characteristics of guava cv. red fleshed. Indian Journal of Ecology. 2011; 38(1):81-84.

12. Sahu PK, VedhikaSahu, OkeshChandrakar. Impact of organics and chemical fertilizers on growth, yield and soil nutrient status in guava. Trends in Biosciences. 2015; 8(8):2018-2022.

13. Sharma D.Pand SharmaSharma ,R.G.(1992)Effect of foliar application of NPK on growth and yield of guava (Psidium guajava L) advances in plant science

12. Singh G. High Density and Meadow orcharding of Guava, CISH Lucknow, Extension Bulletin. 2008; 35(2):11-20.

13. Surage H, Lekhi R, Jawed Md. Vasure N, Jatav R. Effect of Inorganic Nutrients and Combine Effect of Inorganic and Organic Sources of Nutrients On Quality of Guava (Psidium Guajava L.). International Journal ofAgricultural Science and Research. 2017; 7(2):239-242.

14. Virendrasingh ,L.K. dashora ,K. M .Karatha , T.R. Ahalawat and A.V.Barad (2008)Growth ,Flowering and Fruiting and yield of guava (Psidium guajava L) cv sardar Grown under high density planting system as influenced by various organic and inorganic sources