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SOME QUALITATIVE & QUANTITATIVE ANALYSIS OF GUAVA (PSIDIUM GUAJAVA L.) OF TEKARI ORCHARD, GAYA (BIHAR) IN DIFFERENT SEASONS

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ABSTRACT

Present communication reveals on the qualitative and quantitative fruit production of *Psidium guajava* L. Three major seasonal impacts on the shape, size, weight and total productivity per tree of five different orchards of mix cultivation on Allahabad safeda, Chittidar, Allahabad surkha and L-49 breeds of guava. Study shows among all the three different seasons (July-Sep., Nov.-Jan., and Feb.-Apr.), month Nov-Jan is highly significant as compared to the two other different seasons in term of fruit shape, size, sweetness and overall production in kg. Although other than Nov.-Jan. production is pretty poor which impair the economic value to the farmers of Tekari, Gaya.

KEYWORDS: *Psidium guajava* L., Allahabad Safeda, Allahabad Surkha, Chittidar, L-49.

INTRODUCTION

Guava (*Psidium guajava* L.) is one of the most popular fruit in tropical, sub-tropical and some parts of arid regions of India. The fruit belongs to the *Myrtaceae* family. It is one of the most common and major fruits of India and is considered as apple of poor strata. It is a very healthy resource of Vit.-C, Niacin Panthotenic acid, Thiamine, Riboflavin and Vit.-A (Mitra and Bose, 2001). This fruit is also used for the preparation of processed products like jams, jellies juice as well as nectar. The puree jelly of guava is very popular for its attractive purplish-red colour, delicious taste and aroma. Further the puree can be used in different media like; juice, ice-cream, jam, jelly, cakes, puddings and sauces. Fruits can be preserved by canning as halves or quarters. Proper cultivation with the proper planning will give better

result in term of healthy fruits with good economic value. According to the "National Agriculture Board" as it tolerates high temperatures and drought conditions prevalent in north India in summers. Bengali *et.al.* (1993); Bal, J.S. *et.al.*(1982); Balakrishnan, K. (2000) and Balakrishnan, K. (2001) reported that by the use of foliar spray of zinc, iron, boron and magnesium can increase the rate of new budding and productivity of fruits, subsequently application of trichlorophonoxy acetic acid on fruit drop also increases fruit size and quality.

The overall guava production has better quality fruits with sweeter in taste. Generally, guava plants provide higher yield when the fruits are ripened in different seasons, although the fruits are insipid, watery, poor in taste with poor keeping quality, and fetches low market prices (Anonymous, 1995). Previous reports suggested that fruit thinning is advisable in order to have a winter harvest (Bakry. 2007; Singh *et.al.*, 2018). Mamun *et.al.* (2013) found that flower thinning in guava during summer, increase yield and improve quality of fruits during next winter. Thinning of guava fruits in the early stage of their development includes help to harvest desirable size of fruits, to reduce breakage of branches and to encourage fruiting in all the seasons. This will certainly ensure the demand of guava as well as nutrient throughout the year. Moreover, this may improve the socio-economic condition also. Under the above circumstances, the effect of different seasons on the overall qualitative and quantitative flowering and fruiting conditions of all four varieties (Safeda, Chittidar, Surkha, L-49) of guava production in Tekari Orchard.

MATERIALS AND METHODS

Present investigation was conducted in district Gaya, P.G.Department of Botany, M.U., Bodh Gaya and the field study has been followed at a district Gaya, Panchanpur administrative division under Tekari Block. On the five different orchards containing mixed cultivation of guava like Allahabad Safeda, Allahabad Surkha, Chittidar and L-49. Orchards are situated at adjacent to the river bank Panchanpur. Due to its good quality and high production area under guava cultivation, as it covers the entire Magadh zone market.

Random selection of the trees has been made from the different sections of the all five orchards (10 x 5) during the year 2016-2018 for the study of seasonal quantitative fruit analysis. The average number of fruits per plant was recorded at that time of harvest from the tagged plants. The total yield per tree was obtained through the number of fruits retained on the trees and weighing the fruits by electronic balance.

The total number of seeds per fruit was calculated by separating the seeds by using a sieve (20 mm.) and then counting of seeds per fruit.(Sarkar Tanmoy *et.al.*, 2016).

RESULTS AND DISCUSSION

The study reveals three major seasonal impacts on the shape, size, weight and total productivity per tree of five different orchards of mix cultivation on safeda, chittidar, and surkha and L-49 breeds of guava.

Table-1 reveals the Average weight (gm. /fruit) of safeda in July-Sep. is 90.2gm. whereas the size (mm.) of the fruit is 55.68(L.) and 54.6(D.). The average amount of seeds/fruit is 160. The overall productivity of fruit in season July-Sep. is around 146kg. In the month of Nov.-Jan. season II, the average weight, size (Length/Diameter), number of seeds and total production in kilogram is (181.4, 75.58/74.8, 180 & 175kg.) respectively which is highly significant. Season III Feb.-Apr. data shows (151.6, 65.58/64.8, 172 & 130kg.) respectively which shows significant productivity of fruits in respect of season I.

Table-2 reveals the Average weight (gm. /fruit) of Chittidar in July-Sep. is 89.3gm whereas the size (mm.) of the fruit is 46.22(L.) and 46.4(D.). The average amount of seeds/fruit is 166. The overall productivity of fruit in season July-Sep. is around 126kg. In the month of Nov.-Jan. season II, the average weight, size (Length/Diameter), number of seeds and total production in kilogram is (170.2, 63.36/72.6, 182 & 175kg.) respectively which is highly significant. Season III Feb.-Apr. data shows (140.5, 58.62/56.2, 172 & 144kg.) respectively which shows significant productivity of fruits in respect of season I.

Table-3 reveals the Average weight (gm. /fruit) of Surkha in July-Sep is 70.0gm whereas the size (mm.) of the fruit is 46.22(L.) and 39.12(D.). The average amount of seeds/fruit is 140. The overall productivity of fruit in season July-Sep. is around 95kg. In the month of Nov.-Jan. season II, the average weight, size (Length/Diameter), number of seeds and total production in kilogram is (90.9, 55.34/47.32, 160 & 125kg.) respectively which is highly significant. Season III Feb.-Apr. data shows (86.3, 48.90/44.44, 144 & 105kg.) respectively which shows significant productivity of fruits in respect of season I.

Table-4 reveals the Average weight (gm. /fruit) of L-49 in July-Sep is 98.2gm whereas the size (mm.) of the fruit is 60.01 (L.) and 54.04 (D.). The average amount of seeds/fruit is 98. The overall productivity of fruit in season July-Sep. is around 115kg. In the month of Nov.-

Jan. season II, the average weight, size (Length/Diameter), number of seeds and total production in kilogram is (160, 66.23/55.11, 115 & 179kg.) respectively which is highly significant. Season III Feb.-Apr. data shows (143, 58.21/52.44, 105 & 146kg.) respectively which shows significant productivity of fruits in respect of season I.

Table 1: Safeda.

Seasons (Months)	Fruit wt.(gm.)	Fruit Size(mm)		Number of seed/fruit	Production per tree (Kg.)	C.D. Level (0.5%)
		Length	Diameter			
July-Sep.	90.2	55.68	54.6	160	130	*
Nov.-Jan.	181.4	75.58	74.8	180	180	***
Feb.-Apr.	151.6	65.58	64.8	172	147	**

Table 2: Chittidar.

Seasons (Months)	Fruit wt.(gm.)	Fruit Size(mm)		Number of seed/fruit	Production per tree (Kg.)	C.D. Level (0.5%)
		Length	Diameter			
July-Sep.	89.3	46.22	46.4	166	126	*
Nov.-Jan.	170.2	63.36	72.6	182	175	***
Feb.-Apr.	140.5	58.62	56.2	172	144	**

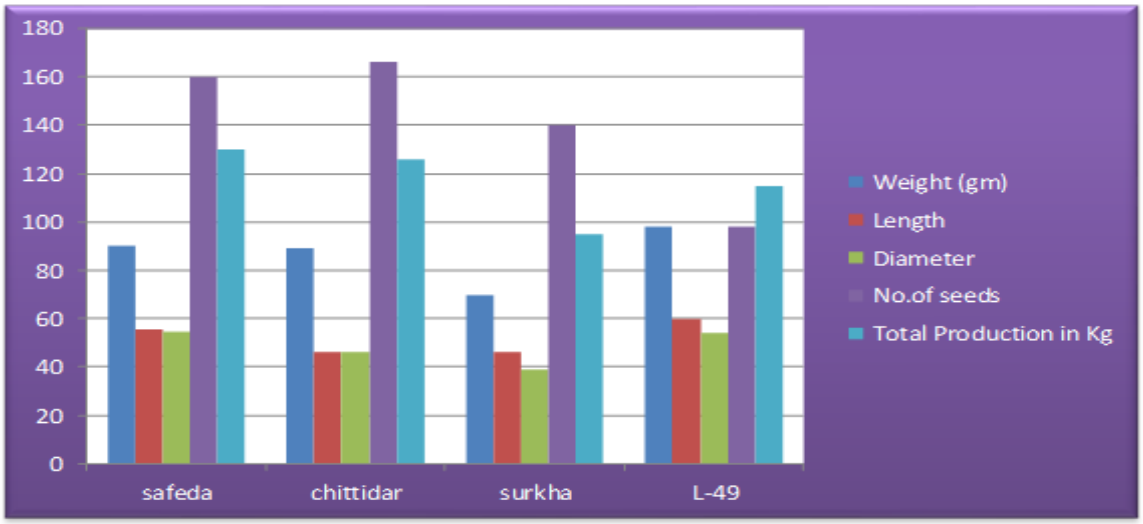
Table 3: Surkha.

Seasons (Months)	Fruit wt.(gm.)	Fruit Size(mm)		Number of seed/fruit	Production per tree (Kg.)	C.D. Level (0.5%)
		Length	Diameter			
July-Sep.	70.0	46.22	39.12	140	95	*
Nov.-Jan.	90.9	55.34	47.32	160	125	***
Feb.-Apr.	86.3	48.90	44.44	144	105	**

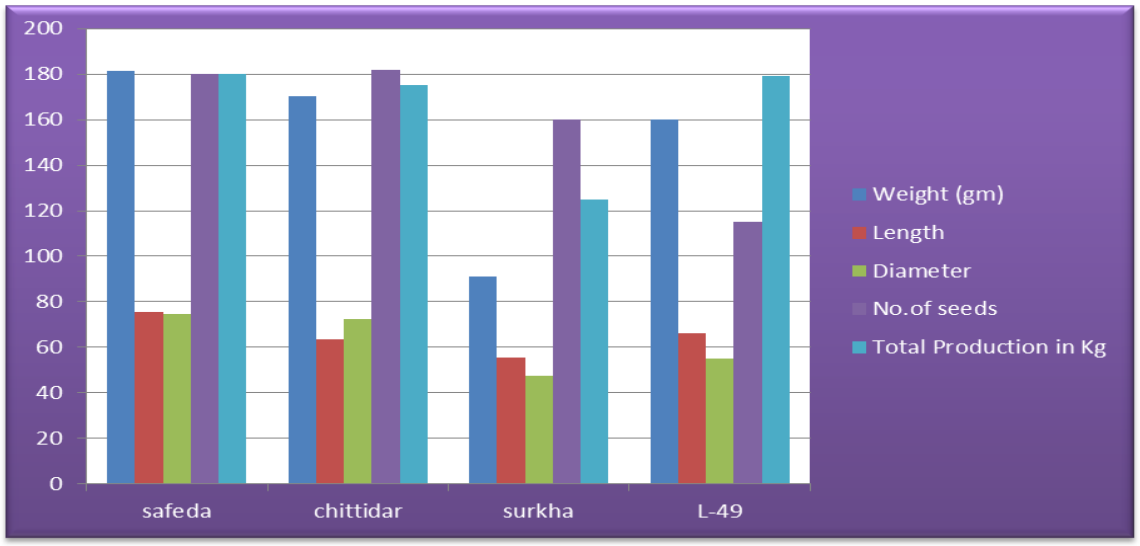
Table 4: L-49.

Seasons (Months)	Fruit wt.(gm.)	Fruit Size(mm)		Number of seed/fruit	Production per tree (Kg.)	C.D. Level (0.5%)
		Length	Diameter			
July-Sep.	60.01	48.66	54.04	98	115	*
Nov.-Jan.	160	66.23	55.11	115	179	***
Feb.-Apr.	143	58.21	52.44	105	146	**

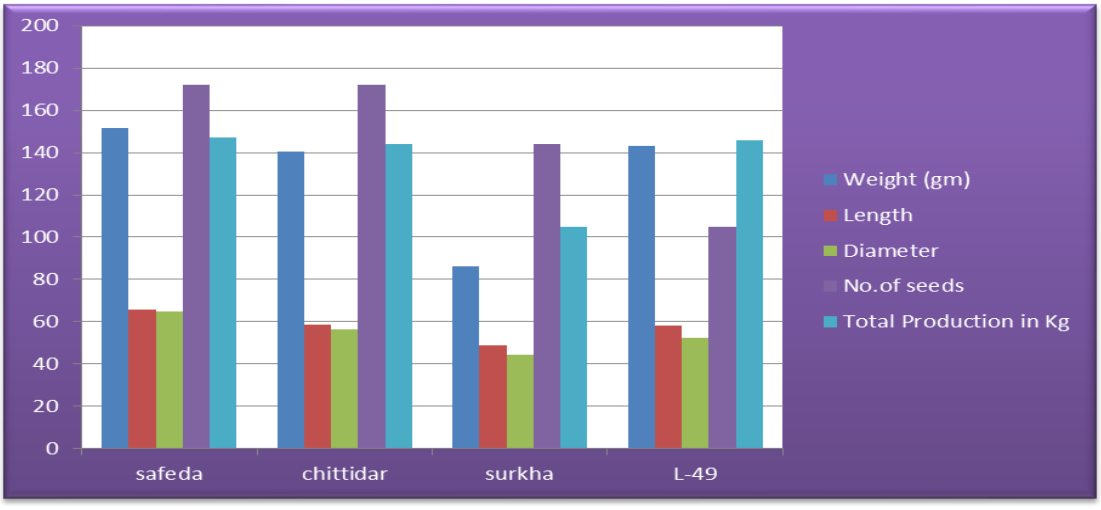
NON SIGNIFICANT : *
SIGNIFICANT : **
HIGHLY SIGNIFICANT : ***



Histogram shows season I (July-September) assessment of all four variety of guava.



Histogram shows season II (Nov-Jan) assessment of all four variety of guava.



Histogram shows season III (Feb.-April) assessment of all four variety of guava.

CONCLUSION

The experimental results shows three major seasons impact on the shape, size, weight and total average productivity on each tree of guava. The overall seasonal effect on the high yield guava during in the month of Nov.-Jan., which shows on all four major varieties of guavas (Chittidar, Safeda, Surkha, L-49), performing highly significant production. It may be due to the optimum temperature, humidity and less pest attack on the fruits.

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REFERENCES

1. Anonymous. Fruit production manual. Department of Agricultural Extension. Bangladesh Agricultural Development Corporation, 1995; 239–240.
2. Bagali AN, Hulamani NC, Sulikeri GS. Effect of foliar application of zinc, magnesium and boron on growth and yield of guava (*Psidium guajava* L.) cv. Sardar. Kr. J. Agric. Sci., 1993; 6(2): 137-141.
3. Bal JS, Singh SN, Randwa JS, Sharma SC. Effect of NAA and trichlorophonoxy acetic acid on fruit drop, size and quality of ber. Prog. Hort., 1982; 14(2-3): 148-51.
4. Balakrishnan K. Foliar spray of zinc, iron, boron and magnesium on vegetative growth, yield and quality of guava. Ann. Plant Physiol, 2000; 14(2): 151-153.
5. Balakrishnan K. Effect of foliar application of micronutrients on guava. Madras Agric. J., 2001; 88(4/6): 316-317.
6. Bakry KA. Control of flowering and fruiting to produce winter crop in guava (*Psidium guajava* L.). Egyptian Journal of Applied Science, 2007; 22.
7. Finch HJS, Samuel AM, Lane GPF. 2 – Climate and weather. In H. J. S. Finch, A. M. Samuel & G. P. F. Lane (Eds.), Lockhart & Wiseman's Crop Husbandry Including Grassland (Ninth Edition), Wood head Publishing, 2014; 27-36:
8. Khushk AK, Memon A, Lashari M. Factors affecting guava production in Pakistan. Journal of Agricultural Research, 2009; 47(2): 201-210.

9. Kizildeniz T, Mekni I, Santesteban H, Pascual I, Morales F, Irigoyen JJ. Effects of climate change including elevated CO_2 concentration, temperature and water deficit on growth, water status, and yield quality of grapevine (*Vitis vinifera* L.) cultivars. Agricultural Water Management, 2015; 159, 155-164.
10. Mamun AA, Rahman MH, Rahim MA. Effect of shoot bending and fruit thinning on productivity of guava. Journal of Environmental Science and Natural Resources, 2013; 5: 167–172. doi:10.3329/jesnr.v5i2.14808.k.
11. Singh N, Sharma D, Kumari S, Kalsi K. Techniques for crop regulation in guava–A review. International Journal of Sciences, 2018; 8: 131. doi:10.5958/2250-0499.2018.00068.x.