



Research Paper

**SEASONAL MANIFESTATIONS ON THE PRODUCTIVITY OF GUAVA
(*Psidium guajava* L.) AT TEKARI ORCHARD, GAYA, BIHAR**

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Abstract

Present communication reveals the quantitative analysis on the five different orchards containing mixed cultivation of guava like Allahabad Safeda, Allahabad Surkha, Chittidar and L-49., which has been followed at a district Gaya, Panchanpur administrative division under Tekari Block adjacent to the Panchanpur river. The result obtained during all three major seasons (July-Sep, Nov-Jan and Feb-Apr), season II evidently shows supremacy over the another two seasons in respect of the fruit shape, size, number of seeds and total yield in kilogram.

Key words: *Psidium guajava* Linn., Allahabad Safeda, Allahabad Surkha, Chittidar, L-49, Brix, trichlorophonoxy acetic acid.

INTRODUCTION

Guava (*Psidium guajava* Linn.) 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 Vitamin C, Niacin Panthotenic acid, Thiamine, Riboflavin and Vitamin-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 trichlorophenoxy acetic acid on fruit drop also increases fruit size and quality.

The growing of guava fruits also varies to the seasons and localities. In order to meet the demand of the market throughout the year in all over the world, the different commodities are preserved using different techniques. High moisture content will lead to the drop of quality referred to decrease in quantity. Different methods are adopted to minimize post-harvest changes in fruits, like temperature management which extends the shelf life of fruits (Aulakh, 2004; Lee & Kader, 2000) by regulating physiological and biochemical processes. But at the same time, lower temperatures may cause chilling damage and higher ones can reduce the storage life of the product (Biolatto et.al., 2005; Dixon et.al., 2004; Marcilla et.al., 2006; Pailly et.al., 2004; Tembo et.al., 2008; Widayat et.al., 2003). In spring season, the weather is in transition phase from winter to summer while in autumn it's vice versa (Finch, Samuel, & Lane, 2014). Fruits are ripening in spring seasons had faced chilling temperatures of winter while fruits ripening in autumn season had under gone through blazing heat of summer, which put the impacts on brix and pH level on the fruit.

Material and Method:

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.

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 production of fruits per plant in kilogram, shape, size and total number of seeds 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 which have been measured through **Dial Vernier Caliper** scale and weighing the fruits by **Electronic Balance Machine**.

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).

Result 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, 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 48.66(L.) and 46.22(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, 56.23/55.11, 115 & 179kg.) respectively which is highly significant. Season-III Feb.-Apr. data shows (143, 53.21/47.44, 105 & 146kg.) respectively which shows significant productivity of fruits in respect of season-I.

Conclusion:

In view of economic importance total yield analysis has been carried out in respect of quantitative analysis. The average fruit production in term of shape, size and weight, shows highly significant in the month of Nov.-Jan. (Season-II) with all four varieties like Safeda, Chittidar, Surkha and L-49 as compare to other two seasons. The suitable climatic condition (sunlight, humidity, temperature) is one of the major factors to increase the quality of fruits. Rate of infestations are another cause to reduce the rate of yield production.

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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	**

NS :- Non Significant
* :- Significant
** :- More Significant
*** :- Highly Significant

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	**

NS :- Non Significant
* :- Significant
** :- More Significant
*** :- Highly Significant

Table-3 (Surkha)

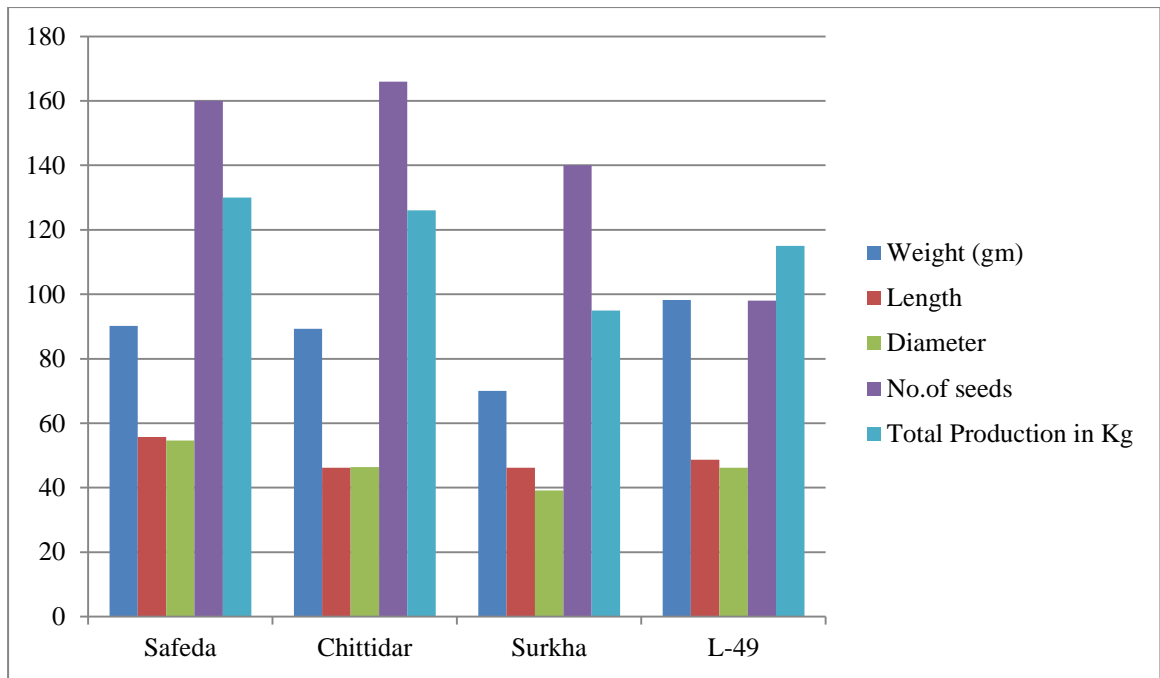
Seasons (Months)	Fruit wt.(gm.)	Fruit Size(mm)		Number of seed/fruit	Production per tree (Kg.)	C.D. Level (0.5%)
		Length	Diameter			
July-Sep.	70.0	46.22	39.12	140	95	*
Nov.-Jan.	90.9	55.34	47.32	160	125	***
Feb.-Apr.	86.3	48.90	44.44	144	105	**

NS :- Non Significant
* :- Significant
** :- More Significant
*** :- Highly Significant

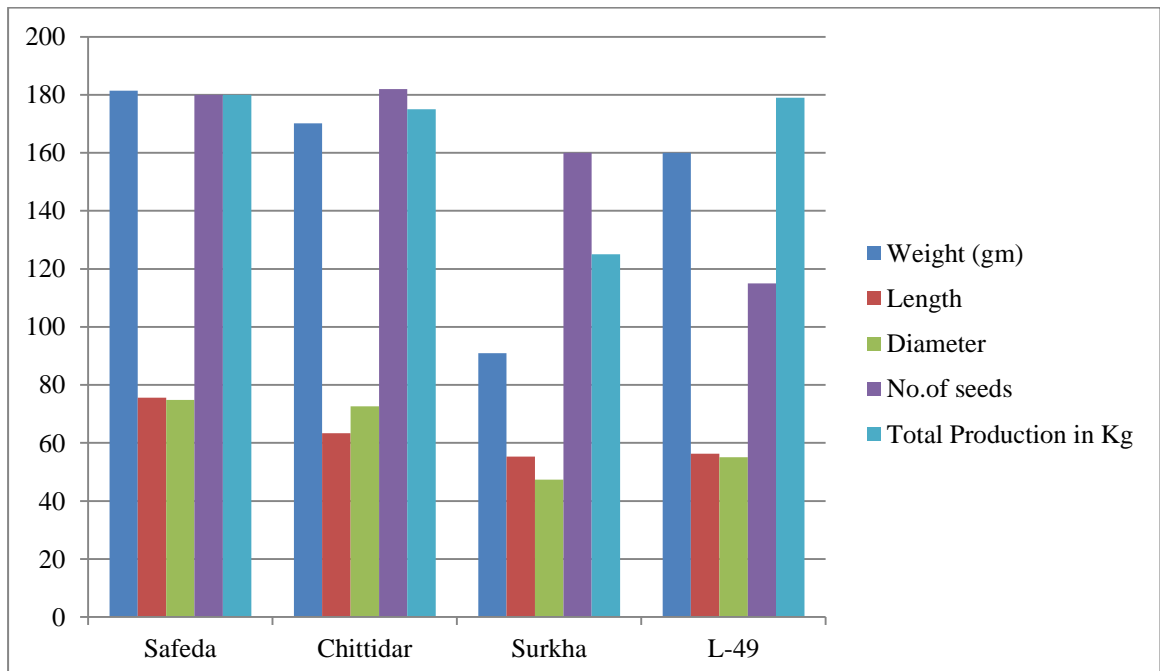
Table-4 (L-49)

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.	98.2	48.66	46.22	98	115	*
Nov.-Jan.	160	56.23	55.11	115	179	***
Feb.-Apr.	143	53.21	47.44	105	146	**

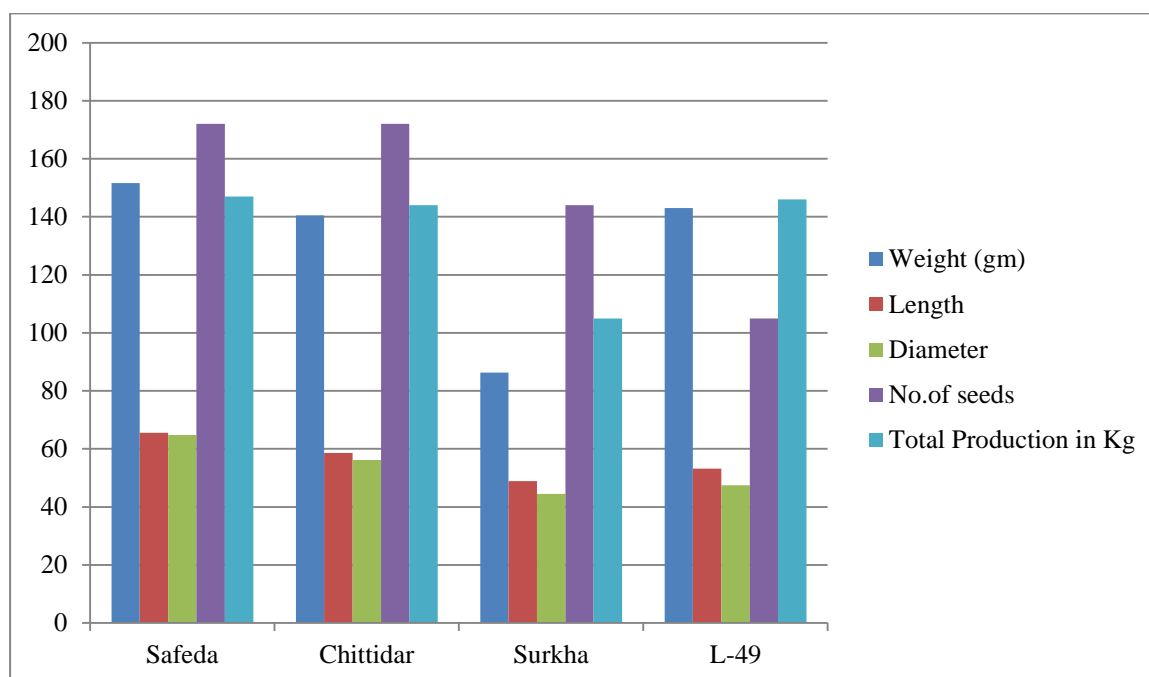
NS :- Non Significant
* :- Significant
** :- More Significant
*** :- Highly Significant



Histogram shows Season-I (July-September) assessment of all four varieties of guavas



Histogram shows season II (November-January) assessment of all four varieties of guavas



Histogram shows Season-III (February-April) assessment of all four varieties of guavas

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