

Effect of Fruit Bagging on the Yield and Quality of Rainy Season Guava (*Psidium guajava*) cv Allahabad Safeda

ABSTRACT:-

The present experiment was conducted at Department of Horticulture, Naini Agricultural Institute, Sam Higginbottom University of Agriculture, Technology and Sciences, Prayagraj during the session 2022 - 2024. The experiment was laid out in randomized block design, and the study consists of eight treatments with three replications including control. From the present investigation, it was concluded that bagging had significant effect on fruit characters in guava. The best treatment was T3 (Yellow Polythene) which shows highest values in all the parameters viz fruit characters (fruit weight-192.09g, fruit girth- 6.39 cm, fruit diameter-6.53cm, pulp weight-74.91g, pulp percentage-89.06%, seed weight-6.22g, seed percentage-5.71% & specific gravity-1.23), quality attributes (TSS -15.32 °Brix, acidity- 0.40%, vitamin C- 161.99 mg/100g, TSS/acid ratio-37.64). Increased fruit yield and quality might be due to the increased absorption of sunlight & favorable microclimate created due to bagging.

Key words: Guava, Yellow Polythene, *Psidium*, guajava, bagging

1. INTRODUCTION:-

“Guava (*Psidium guajava*) is a delicious and nutritious fruit rich in vitamin C (200-300 mg/100 g of pulp), calcium, mineral and phosphorus”(Mitra and Sanyal, 2004).“India shares 4% of

the world production of guava producing 3.668 mt from 0.268 mha area with the productivity of 4516 mt ha⁻¹ (NHB, 2023). Guava is one of the most important highly productive fruit crops and grown commercially throughout sub-tropical and tropical regions of the world. Uttar Pradesh, Bihar, Rajasthan, Madhya Pradesh and Maharashtra are the major guava growing states in the country. However, Prayagraj of Uttar Pradesh has the reputation of growing best quality guava fruits in the world”(Maji, 2010).

Guava is a climacteric fruit and used as fresh fruit as well as for making jam, jelly, paste, toffees, candy etc. Guava is available in cheap rate and popularly known as “apple of plains and poor man’s apple”. In north Indian agro-climate conditions guava flowers twice in a year-first in April-May for rainy season crop and then, September-October for winter season crop. Generally, fruit yield is more in rainy season crop as compared to winter season (Rathore and Singh, 1974; Singh *et al.*, 2000a), but fruits of rainy season crop is poor in taste quality (Meena, 2016) and more infestation of pests and diseases in comparison to winter season (Rawal and Ullasa, 1988).

Guava is mainly grown in the states of Uttar Pradesh, Madhya Pradesh, Maharashtra and Bihar. The excellent quality guava fruit in the world is produced from Allahabad district of Uttar Pradesh. Uttar Pradesh occupied first rank in production of guava in India with production of 4,86,700 Metric tones (NHB-2023). 30 – 50 per cent of losses are seen in post-harvest handling due to the lack of marketing and storage facilities (Pooja *et al.*, 2020). It contains remarkable mineral levels that includes calcium, phosphorus, iron and vitamins such as niacin, pantothenic acid, thiamin, riboflavin and ascorbic acid. It has large amounts of antioxidant properties due to the existence of polyphenolic compounds and carotenoids in it.

Guava is native to Mexico, Central America, the Caribbean, and northern South America. Commercially, it is a very important fruit in several countries due to its availability throughout the year, nutritional value, and affordability. There are mainly three bahar seasons of the guava fruit. Ambebahar, Mrigbahar, Hastbahar. The fruits of the ambebahar are of poor quality whereas the fruit of the hastbahar has excellent quality and good yield.

2. MATERIALS AND METHODS:-

2.1 Geographical location of the experimental site

The experimental site is located at a latitude of 25.41° North and longitude of 81.84° East, with an altitude of 98 meters above the mean sea level (MSL).

2.2 Climatic conditions of the experimental area

The area of Prayagraj district comes under subtropical belt in the South east of Uttar Pradesh, which experience extremely hot summer and fairly cold winter. The maximum temperature of the location reaches up to 46°C – 48°C and seldom falls as low as 4°C – 5°C. The relative humidity ranged between 20 to 94 percent. The average rainfall in this area is around 1100 mm annually. Prayagraj has a sub- tropical and semi- arid climate with rain mostly during July- September.

2.3 Experimental details

Table 1: Different type of the bagging of guava fruits

Treatment	Type of bagging
T0	Without bagging
T1	White Polythene
T2	Black Polythene
T3	Yellow Polythene
T4	Blue Polythene
T5	Brown Paper
T6	News Paper
T7	White Paper

3. RESULTS AND DISCUSSION

3.1 Effect of bagging on fruit characters.

The maximum values of physical characters of guava fruits like fruit weight was maximum (192.09g) in fruits covered with yellow polyethylene bag followed by fruits covered with white paper bag 176.67g and minimum fruit weight was observed in control. The maximum values of fruit girth of (6.39cm) was recorded in fruits covered with yellow polyethylene bag, followed by fruits covered with white paper bag (5.81cm) and minimum fruit girth was observed in control. The maximum fruit diameter of (6.53cm) was observed in fruits covered with yellow polyethylene bag followed by fruits covered with (6.12cm) with white paper bag and minimum fruit diameter recorded in control.

The maximum pulp weight and pulp percent (73.25g, 89.06%) was recorded in fruits

covered with yellow polyethylene bag, followed by fruits covered with white paper bag (75.52g, 80.04%). The minimum pulp weight and pulp percent was observed in of the treatment control.

The maximum seed weight, seed percent and specific gravity (6.22g, 5.71%, 1.23) was recorded in fruits covered with yellow polyethylene bag, followed by white paper bag (7.35g, 6.37%, 1.21). The minimum pulp weight, seed weight, seed percent & specific gravity was observed in control.

Table 2: Effect of different Fruit Bagging on fruit characters of Guava

Sl.No	Type of bagging	Fruit weight(g)	Fruit girth (cm)	Fruit Diameter (cm)	Pulp Weight (g)	Pulp Percentage (%)	Seed weight (g)	Seed percentage	Specific gravity
T0	Without bagging	145.8	5.08	5.09	68.02	75.55	10.15	10.22	1.13
T1	White Polythene	182.6	5.79	6.07	71.75	88.14	7.75	6.63	1.19
T2	Black Polythene	166.9	5.39	5.91	70.42	84.73	9.27	9.04	1.18
T3	Yellow Polythene	192.1	6.39	6.53	73.25	89.06	6.22	5.71	1.23
T4	Blue Polythene	177.2	5.82	5.77	69.78	87.67	8.56	8.1	1.12
T5	Brown Paper	172.3	5.82	5.77	74.91	80.7	8.45	7.07	1.14
T6	News Paper	162.5	5.81	6.12	70.35	79.04	9.47	9.73	1.12
T7	White Paper	176.6	5.68	5.69	75.52	80.4	7.35	6.37	1.21
	SEm±	4.94	0.13	0.15	0.93	1.75	0.45	0.59	0.02
	CD (0.05)	1.98	0.05	0.06	0.37	0.7	0.18	0.24	0.01
	CV	8.13	6.61	7.06	5.06	5.94	15.10	21.24	3.70

3.2 Effect offruit bagging on Quality Parameters of guava

The maximum values of chemical quality attributes like titrable acidity (0.40%), TSS(15.32°B), VitaminC(161.99 mg/100g) and TSS/acid ratio (37.64) was recorded in treatment T3 (yellow polyethylene bag) followed by treatment T7 with white paper bag with titrable acidity (0.39%), TSS(14.52°B), Vitamin C(151.52 mg/100g) and TSS/acid ratio (36.53). While, the minimum values for these parameters of chemical quality characters was with control.

Table 3: Effect of different Fruit Bagging on Quality parameter of Guava

Sl.No.	Type of bagging	TSS(°B)	ACIDITY(%)	Vitamin C (mg/100g)	TSS/acid ratio
T0	Without bagging	10.87	0.55	139.09	19.51
T1	White Polythene	12.22	0.31	172.23	39.16
T2	Black Polythene	12.57	0.53	160.07	23.40
T3	Yellow Polythene	15.32	0.40	161.99	37.64
T4	Blue Polythene	13.42	0.39	164.54	33.97
T5	Brown Paper	13.69	0.49	149.79	27.54
T6	News Paper	12.12	0.33	140.88	35.96
T7	White Paper	14.52	0.39	151.52	36.57
	SEm±	0.51	0.03	4.13	2.58
	CD (0.05)	0.2	0.01	1.65	1.03
	CV	10.95	21.08	7.53	23.00

Conclusion:-

This study concluded that treatment T3, that is bagging guava fruits with yellow Polythene was found to be the best in terms of yield attributes (fruit weight-192.09g, fruit girth-6.39cm, fruit diameter-6.53cm, pulp weight-74.91g, pulp percent-89.06, seed weight-6.22g, seed percent-5.71% and specific gravity-1.23), quality attributes (TSS -15.32 °Brix, acidity- 0.40%, vitamin C- 161.99 mg/100g, TSS/acid ratio-37.64) and minimum physical damage (2%).

The different types of bagging showed positive response on yield and quality attributes of guava fruits.

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