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

ABSTRACT:-

The present experiment entitled "Effect of Fruit Bagging on the Yield and Quality of Rainy Season Guava (*Psidium guajava*) cv Allahabad Safeda" was conducted at Department of Horticulture, Naini Agricultural Institute, Sam Higginbottom University of Agriculture, Technology and Sciences, Prayagraj during the session 2022 - 2023. 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 ^{0}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 plainsand 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. It belongs to the division Tracheophyte, class Magnoliopsida, order Myrtales, family Myrtaceae, genus Psidium, and species *Psidium guajava*. Guava is considered a climacteric fruit, with not-so-long shelflife&is available to every person at a very low price during the season. There are mainly three bahar seasons of the guava fruit. Ambe bahar, Mrig bahar, Hasth bahar. The fruits of the ambe bahar are of poor quality whereas the fruit of the hasth bahar has excellent quality and good yield.

2. MATERIALSANDMETHODS:-

2.1Geographical location of the experimental site

The experimental site is located at a latitude of 25.41º North and longitude of 81.84 ºEast,with an altitudeof98meters abovethemean sealevel(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 46ºC – 48ºC and seldom falls as low as 4ºC – 5ºC. 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. RESULTSANDDISCUSSION

3.1 Effect of bagging on fruit characters.

The maximum values of physical characters of guava fruits like fruit weightwas maximum (192.09g) in fruits covered with yellow polyethylene bag followed by fruits covered with white paper bag 176.67gand minimum fruit weight was observed in control.The maximum values of fruit girthof (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 diameterof (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

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^{o}B), VitaminC(161.99 mg/100g) and TSS/acid ratio (37.64) was recorded in treatment T3 (yellow polyethylene bag)followed bytreatment T7 with white paper bagwith titrable acidity (0.39%), TSS(14.52^{o}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(^{o}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

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 ^{0}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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