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Effect of Pre Harvest Spraying of Nutrients and Bagging with Different Colours of Polythene on Physico-Chemical Quality of Rainy Season Guava (*Psidium guajava* L.) Fruits cv. L-49

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A B S T R A C T

The treatments comprised of pre harvest spraying of various nutrients and bagging with different colours of polythene to study various physico quality of rainy season guava. The two year data indicates that $CaCl_2$ (2%) + K_2SO_4 (2%) + Bagging (Blue colour polythene) was found more pronounced than other treatments Increased physico chemical properties of rainy season guava like fruit weight, volume of fruit, fruit specific gravity, fruit size (length and width), fruit firmness, TSS, acidity, reducing sugar, non-reducing sugar, total sugar and organoleptic quality of rainy season guava and decreased insect damage and spotted guava fruits during both years respectively.

Introduction

Guava belongs (*Psidium guajava* L.) to the family Myrtaceae. Guava is a popular fruit widely grown in the tropical and subtropical regions of the world. The fruit originated in tropical America, stretching from Mexico to Peru gradually getting distributed to several countries of the world, where it got domesticated due to its excellent adaptability to different climatic conditions, hardy nature, prolific bearing. It is one of the important fruits of India and it is considered to be the poor man's apple. It has adopted in India so well that it appears to be an Indian fruit. Guava is considered as one of the exquisite, nutritionally valuable and remunerative crops. It can be grown well in tropical and sub-tropical region. The importance of guava is due to the fact that it is a hardy fruit which can be grown in poor alkaline or poorly drained soils with minimum manuring and irrigation. It can be grown in soil with the pH ranging from 4.5 to 8.2. Guava is rich source of Vitamin-C and a fair source of Vitamin-A, Calcium, Phosphorus, Pantothenic acid, Riboflavin, Thiamin and Niacin. It is rich source of Pectin, hence suitable for Jelly making. Year round production is also a great factor which cannot be achieved due to removal of one season crop. This is only possible by means of development of

technology for quality production of rainy season guava. Potassium regulates the opening and closing of stomata, the pores through which leaves exchange CO_2, water vapor, and O_2 with the atmosphere. The activation of enzymes by K and its involvement in adenosine triphosphate (ATP) production is probably more important in regulating the rate of photosynthesis than is the role of K in stomatal activity. Also the funtion of K transport of sugar, water and nutrient transport, protein synthesis, starch synthesis and crop quality.Pre harvest spraying of calcium directly on the fruit as a means of improving Ca uptake was adop ted. However, pre harvest spraying was found to improve firmness and shelf life of the fruits. Fruit enhance the level of Ca due to pre harvest treatment with Ca were found to have a greater resistence to the development of decay. Calcium effect on decay could be due to the formation of cell wall components resistent to degredation by pathogens.

Materials and Methods

The present investigation entitled "Effect of pre harvest spraying of nutrients and bagging with different colours of polythene physic chemical quality of rainy season guava (*Psidium guajava* L.) cv. Lucknow-49" was carried out on the orchard of guava at main experimental station of Horticulture and Post-Harvest Technology laboratory, Narendra Deva university of Agriculture & Technology, Kumarganj, Faizabad (U.P.) during two consecutive seasons 2015-16 & 2016-17. Six years old bearing guava trees cv. Lucknow-49, having uniform vigour and healthy plants selected in guava orchard. The treatments combination T_1Control, T_2 $CaCl_2$ (2%), T_3 K_2SO_4 (2%), T_4 $CaCl_2$ (2%) + K_2SO_4 (2%), T_5 $CaCl_2$**@** 2% + Bagging (Red colour polythene), T_6 $CaCl_2$**@** 2% + Bagging (Green colour polythene), T_7 $CaCl_2$**@**2% + Bagging (Yellow colour polythene), T_8 $CaCl_2$**@** 2% + Bagging (Blue colour polythene), T_9 K_2SO_4**@** 2% + Bagging (Red colour polythene), T_{10} K_2SO_4**@** 2% + Bagging (Green colour polythene), T_{11} K_2SO_4**@** 2% + Bagging (Yellow colour polythene), T_{12} K_2SO_4**@** 2% + Bagging (Blue colour polythene), T_{13} $CaCl_2$ (2%) + K_2SO_4 (2%) + Bagging (Red colour polythene), T_{14} $CaCl_2$ (2%) + K_2SO_4 (2%) + Bagging (Green colour polythene), T_{15} $CaCl_2$ (2%) + K_2SO_4 (2%) + Bagging (Yellow colour polythene), T_{16} $CaCl_2$ (2%) + K_2SO_4 (2%) + Bagging (Blue colour polythene) The experiment was laid out in Randomized Block Design (RBD) with 3 replications and bagging with different colours polythene before thirty days of harvesting during July, 2015 & 2016. After harvested fruits were kept for physico chemical study at Post Harvest Laboratory, NDUA&T, Kumarganj, Faizabad. The experimental data reported in the manuscript were analyzed statistically applying Randomized Block Design by the using method of "analysis of variance" as described by Cochran and Cox (1970).

Results and Discussion

The data pertaining to the effect of different colours of bagging and spraying of nutrients on average fruit weight, volume of fruits and specific gravity presented in Table 1. Out of all pre harvest treatments the maximum average fruit weight was recorded in treatment T_{15} $CaCl_2$ (2%) + K_2SO_4 (2%) + Bagging (blue colour polythene) 167.44 and 158.77 g followed by 154.11 and 149.66 g in plants treated with $CaCl_2$ **@** 2% + Bagging (Red colour polythene) during both year respectively. The minimum fruit weight was noted in control i.e. 97.63 and 100.32 g during both years respectively. The appreciable improvement in fruit weight has been reported with application of K_2SO_4 by (Burondkar *et al.,* 2002) and with $CaCl_2$ by (Rubyrani and Brahamchari, 2004) in mango fruits. The maximum volume of fruit was

recorded in treatment K_2SO_4 @ 2% + Bagging (Green colour polythene) 170.34 and 166.52 followed by 162.39 and 154.94 cm^3 in $CaCl_2$ (2%) + K_2SO_4 (2%) + Bagging (Green colour polythene) during both year respectively. The minimum volume of fruit was recorded in control i.e. 99.89 and 102.56 cm^3 during both years respectively. The above results were in close conformity with the findings of (Gulhane and Gupta, 1974) in guava. The maximum fruit specific gravity was recorded in treatment K_2SO_4 @ 2% + Bagging (Green colour polythene) 0.98 and the minimum fruit specific gravity was recorded during control 0.97 during both year respectively.

The above results are in accordance with the findings of Roy and Biswas, 1981 in Mango and Paralkar *et al.,* 1987 in Sapota fruits. The data pertaining to the effect of different colours of bagging and spraying of nutrients on fruit firmness, insect damage and spotted fruits of rainy season guava fruits presented in Table 2. The fruits from plants treated with $CaCl_2$ (2%) + K_2SO_4 (2%) + Bagging (Blue colour polythene) were the most firm with firmness value of 10.67 and 9.71 kg/cm^2 followed by the pre harvest treatment of $CaCl_2$ (2%) + K_2SO_4 (2%) + Bagging (Green colour polythene) with firmness value of 10.13 and 9.23 kg/cm^2 during both year respectively. The lowest firmness value of 8.57 and 7.81 kg/cm^2 was recorded in control during both year respectively. Softening of fruits is caused by either by breakdown of insoluble proto-pectin into soluble pectin or cellular disintegration leading to membrane permeability (Mattoo *et al.,* 1975). Pantastico *et al.,* (1984) studied on 'Carabao' mango and reported that the fruit firmness decreased abruptly early in the ripening period. The maximum insect damage fruit were recorded in control and minimum was recorded in $CaCl_2$ (2%) + K_2SO_4 (2%) + Bagging (Blue colour polythene) during both year whereas other treatments showed significantly less infestation than control during both years respectively. Edirimanna *et al.,* (2015) reported that colour and materials of bagging have significant effect on size and quality of the guava fruits. White and blue polythene bags are the most protecting for fruit fly attack. Abbasi *et al.,* (2014) reported that Polythene bags reduced the damage by fruit fly to maximum extent followed by newspaper and muslin cloth bags on guava fruits. Minimum spotted fruits were found in plants treated with $CaCl_2$ (2%) + K_2SO_4 (2%) + Bagging (Blue colour polythene) and maximum spotted fruits were found in control during both years. The result corroborates with the findings of Garg *et al.,* 2009 and Sindhu *et al.,* (2009) revealed that the wax coating of pear fruits cv. Punjab beauty minimized the spoilage with excellent appearance and better fruit quality.

The data pertaining to the effect of different colours of bagging and spraying of nutrients on Total Soluble Solids, Acidity and Ascorbic acid of rainy season guava fruits presented in Table-3 data that all the pre harvest treatments and bagging with different colours of polythene influenced TSS content in guava fruits significantly. The maximum TSS content 15.00 and 13.00 % was recorded both year in fruits treated with treatments $CaCl_2$ (2%) + K_2SO_4 (2%) + Bagging (Blue colour polythene) the minimum TSS content of 7.06 and 4.50 % was noted in control during both years respectively. The above results were in close conformity with the findings of Nanyakkara *et al.,* (2005) and Wali and Kumar (2006) in mango fruits. The maximum acidity content of 0.67 and 0.69 % was recorded in Control during both year respectively, while the minimum acidity content of 0.55 and 0.56 was recorded in $CaCl_2$ (2%) + K_2SO_4 (2%) + Bagging (Blue colour polythene) during both year respectively.

Table.1 Effect of different colours bagging and spraying of nutrients on average fruit weight (g), Volume of fruits (cm^3) and specific gravity of rainy season guava fruits

Treatments	Average fruit weight		Volume of fruits		Fruit specific gravity	
	2015-16	**2016-17**	**2015-16**	**2016-17**	**2015-16**	**2016-17**
T_1-Control	97.63	100.32	99.89	102.56	0.97	0.97
T_2-$CaCl_2$ (2%)	134.40	125.33	138.88	129.72	0.96	0.96
T_3-K_2SO_4 (2%)	123.66	120.00	127.21	123.47	0.97	0.97
T_4-$CaCl_2$ (2%) + K_2SO_4 (2%)	151.22	140.44	158.68	149.20	0.95	0.94
T_5-$CaCl_2$ @ 2% + Bagging (Red colour polythene)	154.11	148.66	160.13	154.29	0.96	0.96
T_6-$CaCl_2$ @ 2% + Bagging (Green colour polythene)	123.77	117.77	130.33	125.43	0.94	0.93
T_7-$CaCl_2$ @ 2% + Bagging (Yellow colour polythene)	141.33	111.00	147.21	117.21	0.96	0.94
T_8-$CaCl_2$ @ 2% + Bagging (Blue colour polythene)	142.27	113.97	148.73	118.98	0.95	0.95
T_9-K_2SO_4 @ 2% + Bagging (Red colour polythene)	144.00	142.38	152.88	150.53	0.94	0.94
T_{10}-K_2SO_4 @ 2% + Bagging (Green colour polythene)	151.66	149.00	170.34	166.52	0.98	0.95
T_{11}-K_2SO_4 @ 2% + Bagging (Yellow colour polythene)	111.66	104.86	118.22	112.11	0.94	0.93
T_{12}-K_2SO_4 @ 2% + Bagging (Blue colour polythene)	126.33	118.23	136.16	128.85	0.92	0.91
T_{13}-$CaCl_2$ (2%) + K_2SO_4 (2%) + Bagging (Red colour polythene)	123.88	119.94	130.86	127.61	0.94	0.93
T_{14}-$CaCl_2$ (2%) + K_2SO_4 (2%) + Bagging (Green colour polythene)	152.66	135.48	162.39	147.94	0.94	0.91
T_{15}-$CaCl_2$ (2%) + K_2SO_4 (2%) + Bagging (Yellow colour polythene)	137.00	131.04	148.23	138.56	0.92	0.94
T_{16}-$CaCl_2$ (2%) + K_2SO_4 (2%) + Bagging (Blue colour polythene)	167.44	158.77	160.95	164.20	0.94	0.90
SEm±	0.55	0.62	0.60	0.56	0.01	0.01
CD at 5 %	1.58	1.80	1.70	1.63	0.02	0.03

Table.2 Effect of different colours bagging and spraying of nutrients on Fruit firmness (Kg/cm^2), Insect damage fruits and Spotted fruits (%) of rainy season guava fruits

Treatments	Fruit firmness		Insect damage fruits (%)		Spotted fruits	
	2015-16	2016-17	2015-16	2016-17	2015-16	2016-17
T_1-Control	8.57	7.81	25.64	28.42	60.45	62.54
T_2-$CaCl_2$ (2%)	9.14	8.71	18.22	20.00	23.55	24.88
T_3-K_2SO_4 (2%)	9.18	8.91	17.34	17.56	25.44	26.88
T_4-$CaCl_2$ (2%) + K_2SO_4 (2%)	9.22	8.42	15.76	16.44	15.77	16.55
T_5-$CaCl_2$ @ 2% + Bagging (Red colour polythene)	9.44	8.31	0.11	0.12	0.09	1.11
T_6-$CaCl_2$ @ 2% + Bagging (Green colour polythene)	9.46	8.41	0.10	0.13	0.72	0.98
T_7-$CaCl_2$ @ 2% + Bagging (Yellow colour polythene)	9.44	8.44	0.03	0.10	0.81	1.09
T_8-$CaCl_2$ @ 2% + Bagging (Blue colour polythene)	9.40	8.50	0.10	0.09	0.91	0.89
T_9-K_2SO_4 @ 2% + Bagging (Red colour polythene)	9.56	8.51	0.02	0.91	1.00	0.81
T_{10}-K_2SO_4 @ 2% + Bagging (Green colour polythene)	9.54	8.21	0.89	0.90	0.98	0.52
T_{11}-K_2SO_4 @ 2% + Bagging (Yellow colour polythene)	9.94	8.31	0.29	0.79	0.00	0.81
T_{12}-K_2SO_4 @ 2% + Bagging (Blue colour polythene)	10.13	8.92	0.51	0.83	0.90	1.00
T_{13}-$CaCl_2$ (2%) + K_2SO_4 (2%) + Bagging (Red colour polythene)	9.90	8.89	0.33	0.77	0.92	0.98
T_{14}-$CaCl_2$ (2%) + K_2SO_4 (2%) + Bagging (Green colour polythene)	10.11	9.23	0.44	0.74	0.88	0.84
T_{15}-$CaCl_2$ (2%) + K_2SO_4 (2%) + Bagging (Yellow colour polythene)	9.80	9.21	0.54	0.57	0.78	0.21
T_{16}-$CaCl_2$ (2%) + K_2SO_4 (2%) + Bagging (Blue colour polythene)	10.67	9.71	0.6	0.09	0.22	0.55
SEm±	0.20	0.19	**0.016**	**0.013**	**0.026**	**0.016**
CD at 5 %	0.59	0.54	**0.047**	**0.038**	**0.075**	**0.046**

Table.3 Effect of different colours bagging and spraying of nutrients on TSS (%), acidity and ascorbic acid (mg/100g) of rainy season guava fruits

Treatments	TSS		Acidity		Ascorbic acid	
	2015-16	2016-17	2015-16	2016-17	2015-16	2016-17
T_1-Control	7.06	4.40	0.67	0.69	145.00	143.91
T_2-$CaCl_2$ (2%)	9.46	8.33	0.54	0.53	153.44	152.84
T_3-K_2SO_4 (2%)	9.46	9.33	0.56	0.55	156.81	156.00
T_4-$CaCl_2$ (2%) + K_2SO_4 (2%)	9.51	10.33	0.55	0.54	160.71	157.10
T_5-$CaCl_2$ @ 2% + Bagging (Red colour polythene)	10.10	9.04	0.54	0.52	161.44	155.39
T_6-$CaCl_2$ @ 2% + Bagging (Green colour polythene)	10.46	10.40	0.61	0.58	153.41	151.89
T_7-$CaCl_2$ @ 2% + Bagging (Yellow colour polythene)	11.40	10.04	0.56	0.53	156.46	151.14
T_8-$CaCl_2$ @ 2% + Bagging (Blue colour polythene)	13.23	12.13	0.58	0.56	177.00	175.00
T_9-K_2SO_4 @ 2% + Bagging (Red colour polythene)	13.50	11.20	0.51	0.55	159.61	150.21
T_{10}-K_2SO_4 @ 2% + Bagging (Green colour polythene)	11.40	10.33	0.56	0.54	155.21	149.40
T_{11}-K_2SO_4 @ 2% + Bagging (Yellow colour polythene)	10.06	9.43	0.63	0.60	164.30	157.43
T_{12}-K_2SO_4 @ 2% + Bagging (Blue colour polythene)	12.33	11.30	0.62	0.58	183.23	182.00
T_{13}-$CaCl_2$ (2%) + K_2SO_4 (2%) + Bagging (Red colour polythene)	9.98	9.23	0.60	0.57	169.31	167.00
T_{14}-$CaCl_2$ (2%) + K_2SO_4 (2%) + Bagging (Green colour polythene)	11.05	10.33	0.58	0.57	171.00	172.06
T_{15}-$CaCl_2$ (2%) + K_2SO_4 (2%) + Bagging (Yellow colour polythene)	10.46	9.36	0.56	0.54	167.40	161.10
T_{16}-$CaCl_2$ (2%) + K_2SO_4 (2%) + Bagging (Blue colour polythene)	15.00	13.00	0.54	0.55	194.00	192.00
SEm±	0.26	0.25	0.01	0.01	0.45	0.58
CD at 5 %	0.76	0.72	0.04	0.03	1.35	1.66

Table.4 Effect of different colours bagging and spraying of nutrients on Reducing sugars, Non-reducing sugars and Total sugars (%) of rainy season guava fruits

Treatments	Reducing sugars		Non-reducing sugars		Total sugars	
	2015-16	2016-17	2015-16	2016-17	2015-16	2016-17
T_1-Control	3.09	3.00	2.05	1.98	5.14	4.98
T_2-$CaCl_2$ (2%)	5.57	5.57	2.22	2.12	7.79	7.69
T_3-K_2SO_4 (2%)	5.31	4.31	2.42	2.30	7.73	6.61
T_4-$CaCl_2$ (2%) + K_2SO_4 (2%)	6.4	5.19	2.35	2.27	8.75	7.46
T_5-$CaCl_2$ @ 2% + Bagging (Red colour polythene)	7.12	6.56	2.41	2.32	9.53	8.88
T_6-$CaCl_2$ @ 2% + Bagging (Green colour polythene)	7.60	5.35	2.40	2.34	10.00	7.69
T_7-$CaCl_2$ @ 2% + Bagging (Yellow colour polythene)	7.80	6.39	3.01	2.92	10.81	9.31
T_8-$CaCl_2$ @ 2% + Bagging (Blue colour polythene)	5.39	5.25	2.71	2.67	8.10	7.92
T_9-K_2SO_4 @ 2% + Bagging (Red colour polythene)	5.48	6.00	2.53	2.49	8.01	8.49
T_{10}-K_2SO_4 @ 2% + Bagging (Green colour polythene)	7.25	6.01	2.70	2.70	9.95	8.71
T_{11}-K_2SO_4 @ 2% + Bagging (Yellow colour polythene)	6.11	5.80	2.63	2.59	8.74	8.39
T_{12}-K_2SO_4 @ 2% + Bagging (Blue colour polythene)	7.40	7.26	2.83	2.81	10.23	10.07
T_{13}-$CaCl_2$ (2%) + K_2SO_4 (2%) + Bagging (Red colour polythene)	6.20	5.12	2.80	2.72	9.00	7.84
T_{14}-$CaCl_2$ (2%) + K_2SO_4 (2%) + Bagging (Green colour polythene)	7.89	7.68	2.52	2.47	10.41	10.15
T_{15}-$CaCl_2$ (2%) + K_2SO_4 (2%) + Bagging (Yellow colour polythene)	5.10	4.07	2.52	2.42	7.62	6.49
T_{16}-$CaCl_2$ (2%) + K_2SO_4 (2%) + Bagging (Blue colour polythene)	8.00	7.96	2.91	2.81	10.91	10.77
SEm±	0.16	0.15	0.06	0.06	0.22	0.20
CD at 5 %	0.47	0.42	0.17	0.16	0.62	0.58

Table.5 Effect of different colours bagging and spraying of nutrients on organoleptic quality of rainy season guava fruits

Treatments	Rating	Organoleptic quality	Rating	Organoleptic quality
	2015-16	2015-16	2016-17	2016-17
T_1-Control	5.46	Neither like nor dislike	5.40	Neither like nor dislike
T_2-$CaCl_2$ (2%)	6.42	Like slightly	6.20	Like slightly
T_3-K_2SO_4 (2%)	6.88	Like slightly	6.14	Like slightly
T_4-$CaCl_2$ (2%) + K_2SO_4 (2%)	7.93	Like moderately	7.89	Like moderately
T_5-$CaCl_2$ @ 2% + Bagging (Red colour polythene)	7.72	Like moderately	7.69	Like moderately
T_6-$CaCl_2$ @ 2% + Bagging (Green colour polythene)	7.78	Like moderately	7.75	Like moderately
T_7-$CaCl_2$ @ 2% + Bagging (Yellow colour polythene)	7.60	Like moderately	7.58	Like moderately
T_8-$CaCl_2$ @ 2% + Bagging (Blue colour polythene)	6.98	Like slightly	6.78	Like slightly
T_9-K_2SO_4 @ 2% + Bagging (Red colour polythene)	7.90	Like moderately	7.88	Like moderately
T_{10}-K_2SO_4 @ 2% + Bagging (Green colour polythene)	7.94	Like moderately	7.90	Like moderately
T_{11}-K_2SO_4 @ 2% + Bagging (Yellow colour polythene)	7.30	Like moderately	7.24	Like moderately
T_{12}-K_2SO_4 @ 2% + Bagging (Blue colour polythene)	7.21	Like moderately	7.18	Like moderately
T_{13}-$CaCl_2$ (2%) + K_2SO_4 (2%) + Bagging (Red colour polythene)	8.14	Like very much	8.04	Like very much
T_{14}-$CaCl_2$ (2%) + K_2SO_4 (2%) + Bagging (Green colour polythene)	8.15	Like very much	8.04	Like very much
T_{15}-$CaCl_2$ (2%) + K_2SO_4 (2%) + Bagging (Yellow colour polythene)	7.98	Like moderately	7.79	Like moderately
T_{16}-$CaCl_2$ (2%) + K_2SO_4 (2%) + Bagging (Blue colour polythene)	8.84	Like very much	8.78	Like very much
SEm±	0.17		0.17	
CD at 5 %	0.48		0.48	

Other pre harvest treatments showed higher acidity content compared T_{16} $CaCl_2$ (2%) + K_2SO_4 (2%) + Bagging (Blue colour polythene) during both year respectively. Similarly, decreasing trend in acidity content of mango fruits during the storage period has also been reported by (Deol, 1985; Upadhyay and Tripathi, 1985). All the pre harvest treatments and bagging with different colours of The maximum ascorbic acid content of 194.00 and 192.00 mg/100g was recorded when the plants were treated with $CaCl_2$ (2%) + K_2SO_4 (2%) + Bagging (Blue colour polythene) followed by the treatment K_2SO_4 **@** 2% + Bagging (Blue colour polythene) with ascorbic acid content of 183.13 and 182.00 mg/100g during both year respectively. The minimum ascorbic acid content145.00 and 143.91 mg/100g was recorded in control during both years respectively. The above results are very close to the findings of Sharma *et al.,* (1990) in mango, Singh *et al.,* (2002) in ber, Dutta (2004) in guava and Gupta (2010) in aonla fruits. The data pertaining to the effect of different colours of bagging and spraying of nutrients on total sugars, reducing sugar and non-reducing sugar per cent of rainy season guava fruits presented in Table 4 data that all the treatments improved total sugars per cent in fruits. The treatments $CaCl_2$ (2%) + K_2SO_4 (2%) + Bagging (Blue colour polythene) recorded maximum toatal sugars per cent 10.91 and 10.77 % and the treatment $CaCl_2$ (2%) + K_2SO_4 (2%) + Bagging (Green colour polythene) with total sugars content 10.81 and 10.15 % remained at par with it during both year. The minimum total sugars content of 5.14 and 4.98 was recorded in control during both years respectively. The above results corroborate the findings of in mango, (Wali and Kumar, 2006) in guava and Gupta (2010) in aonla fruits. It is found that all the pre harvest treatments improved reducing sugars content in fruits significantly during both years. The treatments $CaCl_2$ (2%) + K_2SO_4 (2%) + Bagging (Blue colour polythene) recorded the highest reducing sugars content of 8.00 and 7.96 % and the pre harvest treatment with $CaCl_2$ (2%) + K_2SO_4 (2%) + Bagging (Green colour polythene)with reducing sugars content of 7.89 and 7.68 % remained at par with it during both year. The minimum reducing sugars content of 3.09 and 3.00 was obtained on control during both years respectively. The pre harvest spray of calcium chloride have also been reported to improve the reducing sugars content of fruits by (Wali and Kumar, 2006; Goswami *et al.,* 2008) in guava, and Gupta (2010) in aonla fruits. It is evident from the data that all the treatments improved non- reducing sugar content in fruits. The pre harvest treatments and different colours polythene bagging with $CaCl_2$ **@** 2% + Bagging (Yellow colour polythene) recorded the maximum non-reducing sugar content (3.01 and 2.92 %) and the pre harvest treatments and different colours bagging with $CaCl_2$ (2%) + K_2SO_4 (2%) + Bagging (Blue colour polythene) with non-reducing sugar content of 2.91 and 2.81 remained at par with it during both year respectively. The minimum non-reducing sugar content was recorded in control during both years respectively. Similarly, the pre harvest spray of calcium chloride have also been reported to improve the non-reducing sugars content of fruits (Wali and Kumar, 2006; Goswami *et al.,* 2008) in guava fruits and Gupta (2010) in aonla fruits. The data pertaining to the effect of pre harvest treatments and bagging with different colours of polythene on Organoleptic quality of rainy season guava fruits cv. Lucknow-49 is presented in Table 5. An introspection of revealed that all the pre harvest treatments improved Organoleptic quality of rainy season guava fruits. The treatments $CaCl_2$ (2%) + K_2SO_4 (2%) + Bagging (Blue colour polythene) recorded the maximum Organoleptic quality of 8.84 and 8.78 (Like very much) during both years of experiment.

Organoleptic quality of $CaCl_2$ (2%) + K_2SO_4 (2%) + Bagging (Green colour polythene) 8.15 and 8.04 (Like very much) remained at par with it during both years respectively. The minimum Organoleptic quality of 5.46 and 5.40 (Neither like nor dislike) was obtained in control during both years respectively. Similarly, earlier workers have also reported that the fruit bagging can improves fruit quality mainly by keeping fruit appearance and preferable uniform coloration of the fruit as reported in apples (Wang *et al.,* 2000), and grape (Signes *et al.,* 2007).

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