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Effect of Packagings on shelf life and post-harvest quality of fruits different cultivars of Bael [*Aegle marmelos* (L.) Correa] under ambient conditions

Sanjay Kumar and Bhagwan Deen

Abstract
Bael [*Aegle marmelos* (L.) Correa] is one of the important fruits of India and having tremendous therapeutic and commercial potentialities. A wide range of variations in morphological and physico-chemical was observed in bael fruit cultivars. The packaging and storage environment greatly affect the post-harvest storage life and quality of fruits. Effect of packagings on shelf life and quality attributes of bael fruits cv. NB-4, NB-5, NB-7 and NB-9 were studies. Bael fruits were harvested at physiological mature stage, wrapped in news paper, polythene bags and dipped fruits in Niprofresh wax (20%). The packed fruits and control (without packaging) were stored under ambient conditions i.e. 27-32°C and 52-65% RH and analyzed for various physico-chemical parameters after every 10 days interval. News paper wrapping proved to be most effective on NB-9 then NB-4 in extending the storage life of bael fruits up to thirty days and maintained superior quality as indicated by lower physiological loss in weight (23.46%), decay loss (1.03%), total soluble solids, total sugars, acidity, and higher ascorbic acid (31.80 mg/100g) and organoleptic score.

Keywords: Packagings, *Aegle marmelos* L. bael, Niprofresh

Introduction
Bael fruit [*Aegle marmelos* (L.) Correa] a tree of Indian origin is known from pre-historic time. It has been medicinal in ancient system of medicine due to its curative and therapeutic potential. It belongs to family rutaceae, the family of citrus fruits. Bael is a very hardy tree and can be also grown well in swampy, alkaline or stony soils having p^H range from 5 to 8 and up to an altitude of 1200 meters (Orwa *et al.*, 2009) [11]. It is grown throughout India as well as Sri Lanka, Pakistan, Bangladesh, Burma, Thailand and most of the Southern Asian countries (Singh and Roy, 1984) [19]. It is utilized in day-to-day life in various forms due to nutritional, environmental as well as commercial importance. It has been use as a medicine for relieving constipation, diarrhoea, dysentery, pectic ulcer and respiratory infections. There is a lot of potential for processing of bael fruits into various products like preserve, squash, dehydrated slices, toffee, RTS and powder etc. which can be very easily popularized in domestic as well as International markets. The dried bael fruit is used for the preparation of 'No Caffeine Tea' and in Thailand, *nammatoom* (bael juice) is occasionally taken by Bhuddhist monks as an evening beverage to stave off hunger pains. Generally, a wide range of morphological and bio-chemical variations were found in bael cultivars and fruits take about 10-11 months to mature. The harvesting of bael fruits start in the third week of March and continues up to the end of May. Due to prevalence of high temperature during harvesting, interferes with post-harvest quality and marketability of fruits and ultimately leads to glut and postharvest losses. Though bael fruits are hardy and can easily transported to the distant market but mechanically damage and fruits spoilage rapidly is one of the major causes of quality loss of fruit. To regulate the marketing and greater remuneration, the packaging of fresh fruits is essential in the whole distribution cycle, starting from produce to the final user. Therefore, proper packaging is demanded for better protection and shelf life extension under ambient condition. The packaging and storage environment greatly affect the post-harvest storage life and quality of fruits. So the aim of present study was to detect the comparative effect of packagings on shelf life and assess the quality of fruits different cultivars of bael under ambient condition.

Materials and Methods

The fruits of bael cv.NB-4, NB-5, NB-7 and NB-9 were harvested at physiological mature stage. The bruised and diseased fruits were sorted out and only healthy and uniform sized fruits were selected from the bael orchard at main experiment station. This research was conducted at the laboratory of Post-harvest Technology of the Department of Horticulture, N.D. University of Agriculture & Technology, Kumarganj, Faizabad (U.P.) during 2012-13.

Three types of packaging films *viz* News paper wrapping, Polyethene bags, Niprofresh wax (20%) and control (without any treatments). The experiment was carried out in factorial completely randomized design with 3 replications. Bael fruits were wrapped with News paper, packed in polythene bags and dipped in 20% Niprofresh wax solution for 2 minutes. Thereafter, the packed fruits as well as control (without packaging) fruits were kept in laboratory at ambient condition (Temperature 27-32°C).

The various physico-chemical parameters were recorded at 10 days interval during storage. The physiological loss in weight (PLW) after each interval of storage was calculated by subtracting final weight from the initial weight of the fruits and expressed in per cent. Decay (%) of the fruits were observed visually for rotting and microbial infection. The total soluble solids (T.S.S.) of the fruit juice were determined using a hand refractometer and expressed as per cent T.S.S. after making the temperature correction at 20ºC. Reducing sugar and total sugar were determined by Lane and Eynon Method. Titratable acidity were estimated as per standard procedure (Ranganna, 2010) [15]. Ascorbic acid by 2, 6-Diclorophenol-Indophenol Visual Titration Method and B - carotene by Sagar and Samuel (2008) [18] method and total phenol by Sigleton and Rossi (1965) [21]. The overall organoleptic rating of the fruits was done by a panel of five judges on the basis of external appearance of fruits, texture, taste, and flavor, making use of a 9-point Hedonic scale (Amerine *et al.*, 1965) [2].

Results and Discussion

Changes in colour

A close examination of changes in colour of fruits data presented in table 1 and it showed that there was no effect of packaging on changes in colour of fruits in all the cultivars during entire period of storage. The change in colour was indicative of fruit maturity. The changes in colour of fruit, which was observed with storage period, might be due to loss of chlorophyll with increase the pigments. The colour of fruits changes from initial green to yellow in all the cultivar with variation at maturity. Thus it could be summarized that changes in colour of fruits solely depend on cultivar and was not affected by packaging. The results are in line with the findings of Padmavathamma and Hulmani (2006) [12] in pomegranate.

Physiological loss in weight

The PLW of the all four cultivars were increased throughout the storage period irrespective of packagings treatments including in control (Table 2). The treatment T_2 was most effective treatment controlling PLW (22.67%) on 40th day followed by T_4 and T_1, while the lowest PLW (4.16%) was in T_3 due to loss in moisture through transpiration and utilization of carbohydrates in respiration. The cultivar NB-9 was most responsive to minimum PLW (19.23%) among the cultivars. The treatment T_2 was most effective on NB-9 during entire period of storage in reducing the PLW because many undesirable changes like higher decay loss were recorded in other treatments. The results supported by the other reports on this aspects like Ghosh and Mitra (2004) [5] in bael and Rathore *et al*. (2009) [16] in mango.

Decay loss

There was no decay loss up to 20th DAS in all the treatments and cultivars (Table 3). Treatment T_2 showed minimum (1.21%) decay loss on 40th DAS while maximum (1.76%) decay loss was recorded in treatment T_3 packed fruit. Treatment T_2 was most effective with NB-5 on 40th DAS in respect of minimum decay loss. The decreasing in decay loss due to effect of wrapping on delaying senescence and escape the commodity from pathogenic infection (Patricia *et al.*, 2005) [13]. The polythene bags conserve maximum moisture content that resulting maximum decay loss. These findings are supported by Bhadra and Sen (1998) [3] in bael and Meena *et al*. (2009) [9] in Ber.

Total soluble solids (T.S.S.)

The T.S.S. content of bael fruits in all treatments and cultivars increased continuously up to 30th DAS and declined thereafter during storage (Table 4). The increasing trend in T.S.S. with storage period might be due to hydrolysis of polysaccharides into sugars. The T.S.S. was minimum in T_3 (29.30%) followed by T_4 and T_2 whereas control fruits were recorded significantly higher in T.S.S. during entire period of study. That might be because of the fact that fruits were unable to check the moisture loss through transpiration. The interaction between treatments and cultivars was non-significant during entire period of storage. Treatment T_2 was most effective for maximum retention of T.S.S. content in bael fruits whereas maximum T.S.S. content (34.20%) was found in NB-9 cultivar during study period. The results are supported by the findings of Sharma *et al*. (2007) [20] in kinnow mandarin.

Acidity content

The data depicted in Table 5 showed that acidity content was slightly increased in all the treatments and cultivars on 10th, 20th and 30th day of storage and after that it decreased considerable. This might be due to excess biosynthesis of citric acids initially in the fruits. There was linear increased in acidity in all the treatment and cultivars except T_2 and NB-5 up to 30th day of storage. The minimum acidity (0.35%) content was found in NB-9 cultivar and maximum (0.48%) in NB-7. The minimum (0.39%) acidity content was observed in T_4 treated fruits followed by T_3 and then T_2 while maximum was recorded in control during entire period of study. The results are in line with findings of Sharma *et al*. (2007) [20] in kinnow mandarin and Ghosh and Mitra (2004) [5] who stated that titrable acidity of bael fruits initially increased slightly but declined considerable thereafter.

Ascorbic acid

Data presented in Table 6 showed that ascorbic acid content in bael fruit was increased up to 20 days of storage and declined thereafter in all treatments and cultivars. The maximum ascorbic acid (31.80 mg/100g) content was retained by T_2 on 20th day of storage and NB-9 (34.36 mg/100g) cultivar, respectively. The interaction between treatments and cultivars was non-significant during entire period of study. The increasing trend of ascorbic acid content might be due to tannins and polyphenols, which probably retarded the oxidation of ascorbic acid in fruits. The decreasing trend of ascorbic acid might be due to different level of oxidation in different treatments and cultivars. Treatment T_2 and T_3 were higher in retention of ascorbic acid in fruits that might be due to delayed oxidation in comparison to control. The results are confirmed by Ghosh and Mitra (2004) [5] who reported that ascorbic acid content of fruits increased up to 12 days of storage and declined thereafter and similar results are also observed by Gupta and Mehta (1988) in ber.

Sugars

The data presented in (Table 7 and 8) indicate that total sugars and reducing sugar content was increased in all the treatment and cultivars up to 20th day of storage and declined thereafter. The slow increment in sugars during storage was least in all the treatment due to least PLW, while maximum in control. The initial increase in reducing sugars may be due the conversion of starch into reducing sugars and afterwards their decrease possibly due to utilization of these sugars in the process of respiration by the fruits. The results are in conformity with the findings of Biale (1960) [4] in mango, Kapse *et al.* (1979) [6] who stated that sugars in mango fruits first increased at room temperature and then decreased and Ali *et al*. (2004) [1] in apple.

The non-reducing sugar content was showed increasing trend up to 30th day of storage and thereafter decreased till the end of storage in all the treatment and cultivars (Table 9). The maximum non-reducing sugar content was estimated in unpacked fruits followed by fruit packed in polythene. Such tendency of increment in non-reducing sugars in initial days of storage may be mainly due to hydrolysis of starch in the stored fruits. The results are similar to Mahajan (1997) [10] in litchi.

Total carotenoids LE

The total carotenoids content in bael fruits was increased progressively up to 30th DAS and thereafter declined considerably in all the packaging treatments and cultivars (Table 10). The total carotenoids content was higher (33.46 µg/100g) in T_4 followed by T_2, while minimum (28.46 µg/100g) retention was in control fruits. The cultivar NB-5 was retained (34.70 µg/100g) maximum on 30th day of storage. The interaction between T_4 and NB-9 was most effective in respect of maximum retention of total carotenoids followed by T_2 with NB-9. The increase in total carotenoids might be due to reduction in chlorophyll content and synthesis of more carotenoids. The findings are supported by Kaushik and Yamdagni (1999) [7] in bael fruits and Rajwana *et al*. (2010) [14] in mango.

Total phenols

The data showed in (Table 11) indicate that the total phenols content was observed in decreasing trend in all the treatments and cultivars during entire period of observation. The maximum (25.85 mg/100g) total phenols content was recorded in T_4 followed by T_2 (23.65 mg/100g) and minimum in control on 40th day of storage while NB-5 cultivar retained maximum total phenol (24.70 mg/100g) among the cultivars. Decrease in phenols content might be due to reduction in tannin with the increase in sugar synthesis. The results are supported by Roy and Singh (1980) [17] and Yadav *et al.* (2011) in bael.

Table 1: Effect of packagings and cultivars on changes in colour of bael fruits during storage

Treatments	Changes in colour at different intervals (days)							
	10				20			
	NB-4	NB-5	NB-7	NB-9	NB-4	NB-5	NB-7	NB-9
Control (T_1)	Green	Spotted Light green	Light green	Light green	Light yellow	Yellowish light green	Whitish green	Whitish green
Newspaper wrapping (T_2)	Green	Spotted Light green	Light green	Light green	Light yellow	Yellowish light green	Whitish green	Whitish green
Polythene bags (T_3)	Green	Spotted Light green	Light green	Light green	Light yellow	Yellowish light green	Whitish green	Whitish green
Niprofresh wax 20% (T_4)	Green	Spotted Light green	Light green	Light green	Light yellow	Yellowish light green	Whitish green	Whitish green

Treatments	Changes in colour at different intervals (days)							
	30				40			
	NB-4	NB-5	NB-7	NB-9	NB-4	NB-5	NB-7	NB-9
Control (T_1)	Yellow	Light greenish yellow	Light greenish yellow	Light green with light yellow patches	Dark yellow	Dark yellow	Yellow	Dark yellow with light green patches
Newspaper wrapping (T_2)	Yellow	Light greenish yellow	Light greenish yellow	Light green with light yellow patches	Dark yellow	Dark yellow	Yellow	Dark yellow with light green patches
Polythene bags (T_3)	Yellow	Light greenish yellow	Light greenish yellow	Light green with light yellow patches	Dark yellow	Dark yellow	Yellow	Dark yellow with light green patches
Niprofresh wax 20% (T_4)	Yellow	Light greenish yellow	Light greenish yellow	Light green with light yellow patches	Dark yellow	Dark yellow	Yellow	Dark yellow with light green patches

Table 2: Effects of packagings and cultivars on changes in physiological loss in weight (PLW) of bael fruits at different intervals of storage

Treatments	Physiological loss in weight (%)				Cultivars	Physiological loss in weight (%)			
	DAS					DAS			
	10	20	30	40		10	20	30	40
Control (T_1)	18.33	23.96	26.82	28.60	NB-4	13.17	15.79	18.16	20.53
Newspaper wrapping (T_2)	14.64	19.78	21.57	22.67	NB-5	12.21	17.91	19.78	19.84
Polythene bags (T_3)	3.26	3.56	3.98	4.16	NB-7	14.13	19.59	20.70	21.85
Niprofresh wax 20% (T_4)	15.82	21.41	23.46	26.02	NB-9	12.54	15.43	17.18	19.23
S.Em±	0.173	0.194	0.206	0.248	S.Em±	0.173	0.194	0.206	0.248
C.D. 5%	0.498	0.559	0.594	0.715	C.D. 5%	0.498	0.559	0.594	0.715
Interaction (TxC)	T_3 and T_2 most effective with NB-9								

Table 3: Effects of packagings and cultivars on changes in decay loss of bael fruits at different intervals of storage

Treatments	Decay loss (%) DAS				Cultivars	Decay loss (%) DAS			
	10	20	30	40		10	20	30	40
Control (T_1)	-	-	1.33	1.39	NB-4	-	-	1.06	1.12
Newspaper wrapping (T_2)	-	-	1.03	1.21	NB-5	-	-	1.57	1.67
Polythene bags (T_3)	-	-	1.66	1.76	NB-7	-	-	1.57	1.69
Niprofresh wax 20% (T_4)	-	-	1.40	1.54	NB-9	-	-	1.21	1.42
S.Em±			0.006	0.006	S.Em±			0.006	0.006
C.D. 5%			0.016	0.019	C.D. 5%			0.016	0.019
Interaction (TxC)	NS								

Table 4: Effect of packagings and cultivars on changes in total soluble solids (T.S.S.) of bael fruits at different intervals of storage

Treatments	T.S.S. (%) DAS				Cultivars	T.S.S. (%) DAS			
	10	20	30	40		10	20	30	40
Control (T_1)	29.65	32.38	34.20	32.45	NB-4	30.13	31.18	32.43	31.38
Newspaper wrapping (T_2)	28.23	30.20	32.68	31.13	NB-5	29.03	30.73	32.45	31.45
Polythene bags (T_3)	26.23	27.30	29.30	28.45	NB-7	22.90	25.78	28.98	27.18
Niprofresh wax 20% (T_4)	27.93	29.78	31.88	29.98	NB-9	29.98	31.43	34.20	32.00
S.Em±	0.293	0.313	0.360	0.327	S.Em±	0.293	0.313	0.360	0.327
C.D. 5%	0.845	0.902	1.037	0.941	C.D. 5%	0.845	0.902	1.037	0.941
Interaction (TxC)	NS								

Table 5: Effect of packagings and cultivars on changes in acidity content of bael fruits at different intervals of storage

Treatments	Acidity (%) DAS				Cultivars	Acidity (%) DAS			
	10	20	30	40		10	20	30	40
Control (T_1)	0.40	0.41	0.42	0.39	NB-4	0.40	0.41	0.42	0.38
Newspaper wrapping (T_2)	0.39	0.39	0.41	0.37	NB-5	0.36	0.36	0.37	0.34
Polythene bags (T_3)	0.38	0.39	0.40	0.36	NB-7	0.46	0.47	0.48	0.43
Niprofresh wax 20% (T_4)	0.37	0.38	0.39	0.35	NB-9	0.32	0.34	0.35	0.31
S.Em±	0.004	0.004	0.004	0.004	S.Em±	0.004	0.004	0.004	0.004
C.D. 5%	0.012	0.012	0.012	0.012	C.D. 5%	0.012	0.012	0.012	0.012
Interaction (TxC)	NS								

Table 6: Effect of packagings and cultivars on changes in ascorbic acid content of bael fruits at different intervals of storage

Treatments	Ascorbic acid (mg/100g) DAS				Cultivars	Ascorbic acid (mg/100g) DAS			
	10	20	30	40		10	20	30	40
Control (T_1)	28.10	29.12	28.80	24.42	NB-4	30.82	33.27	32.46	27.21
Newspaper wrapping (T_2)	30.24	31.80	31.28	26.09	NB-5	28.49	28.82	28.49	23.63
Polythene bags (T_3)	29.14	30.37	30.00	24.98	NB-7	25.46	26.02	25.80	22.80
Niprofresh wax 20% (T_4)	29.92	31.17	30.76	25.76	NB-9	32.59	34.36	34.12	27.60
S.Em±	0.280	0.328	0.329	0.227	S.Em±	0.280	0.328	0.329	0.227
C.D. 5%	0.805	0.946	0.949	0.655	C.D. 5%	0.805	0.946	0.949	0.655
Interaction (TxC)	NS								

Table 7: Effect of packagings and cultivars on changes in total sugars content of bael fruits at different intervals of storage

Treatments	Total sugars (%) DAS				Cultivars	Total sugars (%) DAS			
	10	20	30	40		10	20	30	40
Control (T_1)	18.24	18.69	18.57	18.89	NB-4	17.04	17.46	17.30	16.81
Newspaper wrapping (T_2)	16.89	17.41	17.18	16.71	NB-5	18.45	18.99	18.65	17.97
Polythene bags (T_3)	16.96	17.49	17.29	16.74	NB-7	15.50	15.90	15.80	15.45
Niprofresh wax 20% (T_4)	16.71	17.06	16.83	16.35	NB-9	17.81	18.30	18.10	17.43
S.Em±	0.151	0.190	0.184	0.180	S.Em±	0.151	0.190	0.184	0.180
C.D. 5%	0.436	0.546	0.531	0.518	C.D. 5%	0.436	0.546	0.531	0.518
Interaction (TxC)	NS								

Table 8: Effect of packagings and cultivars on changes in reducing sugars content of bael fruits at different intervals of storage

Treatments	Reducing sugars (%) DAS				Cultivars	Reducing sugars (%) DAS			
	10	20	30	40		10	20	30	40
Control (T_1)	4.93	5.20	5.03	4.55	NB-4	4.60	4.80	4.40	4.15
Newspaper wrapping (T_2)	4.55	4.85	4.53	4.17	NB-5	5.10	5.38	4.85	4.45

Polythene bags (T_3)	4.43	4.73	4.38	4.05	NB-7	4.13	4.43	4.18	3.95
Niprofresh wax 20% (T_4)	4.45	4.63	4.30	4.02	NB-9	4.53	4.80	4.80	4.25
S.Em±	0.049	0.052	0.048	0.044	S.Em±	0.049	0.052	0.048	0.044
C.D. 5%	0.140	0.150	0.138	0.128	C.D. 5%	0.140	0.150	0.138	0.128
Interaction (TxC)	NS								

Table 9: Effect of packagings and cultivars on changes in Non-reducing sugars content of bael fruits at different intervals of storage

Treatments	**Non-reducing sugars (%)**				**Cultivars**	**Non-reducing sugars (%)**			
	DAS					**DAS**			
	10	**20**	**30**	**40**		**10**	**20**	**30**	**40**
Control (T_1)	13.31	13.49	13.54	13.34	NB-4	12.44	12.66	12.90	12.69
Newspaper wrapping (T_2)	12.34	12.56	12.65	12.54	NB-5	13.35	13.61	13.80	13.48
Polythene bags (T_3)	12.54	12.76	12.91	12.69	NB-7	11.38	11.48	11.63	11.50
Niprofresh wax 20% (T_4)	12.26	12.44	12.53	12.33	NB-9	13.29	13.50	13.30	13.18
S.Em±	0.144	0.129	0.136	0.138	S.Em±	0.144	0.129	0.136	0.138
C.D. 5%	0.415	0.372	0.392	0.398	C.D. 5%	0.415	0.372	0.392	0.398
Interaction (TxC)	NS								

Table 10: Effects of packagings and cultivars on changes in total carotenoids content of bael fruits at different intervals of storage

Treatments	**Total carotenoids (µg/100g)**				**Cultivars**	**Total carotenoids (µg/100g)**			
	DAS					**DAS**			
	10	**20**	**30**	**40**		**10**	**20**	**30**	**40**
Control (T_1)	26.81	28.29	28.46	26.45	NB-4	29.05	29.96	30.28	28.93
Newspaper wrapping (T_2)	29.89	32.09	32.98	29.54	NB-5	32.66	34.34	34.70	30.59
Polythene bags (T_3)	28.98	30.26	31.28	28.34	NB-7	25.48	27.50	28.35	25.50
Niprofresh wax 20% (T_4)	30.93	32.80	33.46	30.60	NB-9	29.41	31.64	32.85	29.91
S.Em±	0.317	0.264	0.347	0.310	S.Em±	0.317	0.264	0.347	0.310
C.D. 5%	0.912	0.761	1.001	0.892	C.D. 5%	0.912	0.761	1.001	0.892
Interaction (TxC)	NS								

Table 11: Effect of packagings and cultivars on changes in total phenols content of bael fruits at different intervals of storage

Treatments	**Total phenols (mg/100g)**				**Cultivars**	**Total phenols (mg/100g)**			
	DAS					**DAS**			
	10	**20**	**30**	**40**		**10**	**20**	**30**	**40**
Control (T_1)	24.59	23.79	22.99	21.33	NB-4	25.83	24.98	24.05	23.04
Newspaper wrapping (T_2)	26.76	25.78	25.03	23.65	NB-5	27.01	26.15	25.54	24.70
Polythene bags (T_3)	25.93	24.60	24.25	23.21	NB-7	24.93	23.68	22.95	22.40
Niprofresh wax 20% (T_4)	27.48	26.63	26.26	25.58	NB-9	26.99	25.99	25.99	23.63
S.Em±	0.282	0.281	0.256	0.250	S.Em±	0.282	0.281	0.256	0.250
C.D. 5%	0.812	0.808	0.737	0.250	C.D. 5%	0.812	0.808	0.737	0.250
Interaction (TxC)	NS								

Table 12: Effects of packagings and cultivars on changes in organoleptic score of bael fruits at different intervals of storage

Treatments	**Organoleptic score**				**Cultivars**	**Organoleptic score**			
	DAS					**DAS**			
	10	**20**	**30**	**40**		**10**	**20**	**30**	**40**
Control (T_1)	6.48	7.23	7.40	6.08	NB-4	6.80	7.95	7.48	5.83
Newspaper wrapping (T_2)	6.55	7.68	7.98	6.35	NB-5	6.53	7.50	8.20	6.85
Polythene bags (T_3)	6.40	7.33	7.75	6.20	NB-7	6.28	7.05	7.25	5.58
Niprofresh wax 20% (T_4)	6.53	7.58	7.88	6.35	NB-9	6.35	7.30	8.08	6.73
S.Em±	0.070	0.800	0.820	0.067	S.Em±	0.070	0.800	0.820	0.067
C.D. 5%	0.200	0.230	0.237	0.194	C.D. 5%	0.200	0.230	0.237	0.194
Interaction (TxC)	NS								

Organoleptic quality

The organoleptic quality indicates the Consumers acceptability of the product. Organoleptic score were recorded in increasing order up to 30th DAS and then declined in all the treatments and cultivars (Table 12). It means acceptability of bael fruits initially increased then declined after obtaining a highest organoleptic score during storage period. The treatment T_2 was most effective for the bael fruit packaging with highest (7.98) organoleptic score followed by T_4 (7.88) while NB-5 was superior with highest (8.20) organoleptic score on 30th day of storage. Increase in the organoleptic score in initial stage might be due to gradual improvement in quality parameters due to ripening and decrease in the organoleptic scores at latter stage might be due to over ripening and senescence of the fruits. The findings are supported by Ghosh and Mitra (2004) [5] in bael and Rajwana *et al.* (2010) [14] in mango.

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