

Performance of banana cultivars at Patuakhali region of Bangladesh

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Abstract: Thirty cultivars were used and shown the significant effect on yield and quality of banana. Among the cultivars the tallest plant (409.30 cm) at 210 DAP was found from BAN025 (*Atekola-2*) while the shortest (200.3 cm) from BAN017 (*Mehersagor-1*). The highest hands per bunch (14.0) and fingers per hand (17.67) were observed from BAN006 (*Cinichampa-1*) and BAN014 (*Campa-1*) and the lowest (7.0) from BAN004 (*Agnishor-1*), BAN012 (*Localsobri-1*) and BAN024 (*Localsobri-3*). The highest yield (25.97 kg and 25.63 kg) were obtained from BAN025 (*Atekola-2*) and BAN023 (*Atekola-1*) followed by BAN009 (*Mortoman-1*; 22.43 kg), BAN011 (*Mortoman-2*; 21.8 kg), BAN026 (*Mehersagor-2*; 21.5 kg), BAN027 (*Amritosagor-2*; 21.5 kg) which were statistically identical, whereas the lowest yield (6.33 kg) gave BAN012 (*Localsobri-1*). Maximum yield per hectare (72.21 ton) was produced by BAN026 (*Mehersagor-2*) and minimum (12.62 ton) from BAN012 (*Localsobri-1*). In case of quality attributes, the highest TSS (19.97% brix) were found from BAN023 (*Atekola-1*) and BAN025 (*Atekola-2*) and the lowest (10.17% brix) from BAN016 (*Anagikola-1*). Maximum shelf-life (19.67 days) was observed from BAN023 (*Atekola-1*) and minimum (9.0 days) from BAN008 (*Amritosagor-1*) and BAN017 (*Mehersagor-1*). Considering the yield per plant, per hectare, TSS and shelf-life, BAN009 (*Mortoman-1*), BAN011 (*Mortoman-2*), BAN023 (*Atekola-1*), BAN026 (*Mehersagor-2*) and BAN027 (*Amritosagor-2*) had more responsible for quality higher yield of banana. So, the farmers may grow these cultivars at Patuakhali region of Bangladesh for profitable production.

Key words: Banana cultivars, Patuakhali region, yield, quality.

Introduction

Banana is one of the most important commercial and oldest fruits of the tropical area of the world, belongs to the family Musaceae (Kamal *et al.*, 2014). It grows well in a temperature range of 15-35°C with relative humidity of 75-85% (Hussain *et al.*, 2015). In Bangladesh, banana grows almost everywhere in the country throughout the year. The main banana growing areas are Rangamati, Noakhali, Barisal, Khulna, Kustia, Faridpur Dhaka and Rangpur. Important varieties of banana cultivated in different areas of Bangladesh are- *Amritasagar*, *Mehersager*, *Shagar*, *Sabri*, *Kobri*, *Champa*, *Chini Champa*, *Bangla*, *Atia*, *Kanthali*, *Singapuri*, *Nepali*, *Kabuli*, *Jahaji*, *Agnishwar*, *Basrai*, *Seeded banana*, *Anaji* or *Kancha Kola* and *Singapuri* etc. (BBS, 2014 and Akter *et al.*, 2013). The yield of banana is 801000 MT under the total area of 53036.44 ha with an average yield of 2482.99 kg/ha in 2010-11 (BBS, 2012). The production of banana was 745000 MT in 2011-12 and it was much lower than other banana producing countries in the world (BBS, 2014). The banana occupies an important position among the fruits of Bangladesh not only for its highest production but also for its increasing popularity to many farmers as an economic crop (Akter *et al.*, 2013). It contains carbohydrate, crude fiber, protein, fat, ash, phosphorous, iron, β -carotene, riboflavin, niacin and ascorbic acid (Akter *et al.*, 2013). It is a good source of potassium, phosphorus, calcium and magnesium. A number of banana varieties are in Bangladesh, but their performance is not equally well in all regions due to difference in varietal adaptability and micro-climatic variation (Hossain, 2014). *Amritasagar*, the widely accepted commercial variety has been declining due to its low yield of 8.13 kg/bunch in the hilly area at *Jaintapur*, Sylhet (Saha and Uddin, 1992). *Mehersagor* and *Sabiri* also showed low yield of 14.9 and 10.20 kg/bunch, respectively due to its genetic variability and adaptability with the regions (Ara *et al.*, 2011). There are several factors contributing to low production of banana in Bangladesh. Such as- (i) lack of selected varieties for different AEZ's (ii) lack of recommended cultivars area-wise specially inundated coastal zone (iii) lack of modern production technologies (iv) lack of disease resistant planting materials, (v) postharvest management etc. Gaidashova *et al.* (2008) also reported that the locally

grown banana varieties are susceptible to *Fusarium* wilt, nematodes and weevil borers while productive varieties which have resistant capacity to pests and diseases. Banana production is very restricted in vast area of coastal saline region. It is observed different ie, some local banana cultivars can survive water logging, comparatively high saline conditions. Though the people of this region do not cultivate banana but some promising local banana races here and there producing banana without proper care, management and cultivation procedure, whose taste is very good, attractive size and colours, can survive water logging, low land, canals and river side even inundate conditions, market price is high and production cost low will be the target of research. The potential for expansion of banana cultivation and increase yield per hectare is needed in the country. Production of banana on commercial scale has been increasing in different areas of Bangladesh. For improvement of the local banana of Bangladesh, some research was conducted at the Horticultural Research Centre, BARI under the NARS system. But these works are insufficient at Patuakhali region. If it is possible to select proper variety and develop update technology of promising one's and recommended for this region by supplying quality planting materials and production technologies, it can be an achievement for boost up banana production, farmers, commercial growers can be benefited. The variability in the population is largely due to genetic cause with least environmental effect, the probability of isolating superior genotype is a prerequisite for obtaining higher number of fruits, which is the ultimate expression of various fruit producing characters. Therefore, the research was undertaken to know the comparative performance of 30 accessions of banana at Patuakhali region to study the morphological characteristics, select the best cultivar(s) and find out the potentiality of different cultivars suitable at Patuakhali conditions.

Materials and Methods

The experiment was conducted at Germplasm Centre, Department of Horticulture, Patuakhali Science and Technology University, Dumki, Patuakhali during the period from January 2015 to March 2016. The treatments consisted with single factor i.e., 30 local accessions of banana. The suckers of banana accessions were used as

planting materials which were collected from different regions of Bangladesh. They are presented in Table 1.

Table 1. Thirty banana cultivars collected from different areas to evaluate the performance at Patuakhali region of Bangladesh

Excession no.	Cultivar name	Collected location
BAN001	<i>Sobri-1</i>	Pirojpur
BAN002	<i>Kathali-1</i>	Dumki, Patuakhali
BAN003	<i>Kathali-2</i>	Satani, Patuakhali
BAN004	<i>Agnishor-1</i>	Pirojpur
BAN005	<i>Kathali-3</i>	Mirjagong, Patuakhali
BAN006	<i>Cinichampa-1</i>	Naluya, Patuakhali
BAN007	<i>Jansundari-1</i>	Naluya, Patuakhali
BAN008	<i>Amritosagor-1</i>	BAU, Mymensingh
BAN009	<i>Mortoman-1</i>	Dumki, Patuakhali
BAN010	<i>Jansundari-2</i>	Bauphal, Patuakhali
BAN011	<i>Mortoman-2</i>	Gouronadi, Barisal
BAN012	<i>Localsobri-1</i>	Srirampur, Patuakhali
BAN013	<i>Japkathali-1</i>	Kolapara, Patuakhali
BAN014	<i>Campa-1</i>	Kolapara, Patuakhali
BAN015	<i>Localsobri-2</i>	Gouronadi, Barisal
BAN016	<i>Anagikola-1</i>	Srirampur, Patuakhali
BAN017	<i>Mehersagor-1</i>	BAU, Mymensingh
BAN018	<i>Cinichampa-2</i>	Mirjagong, Patuakhali
BAN019	<i>Anagikola-2</i>	Dumki, Patuakhali
BAN020	<i>Agnishor-2</i>	Mymensingh
BAN021	<i>Campa-2</i>	Jessore
BAN022	<i>Kobri-1</i>	PSTU Campus, Patuakhali
BAN023	<i>Atekola-1</i>	PSTU Campus, Patuakhali
BAN024	<i>Localsobri-3</i>	PSTU Campus, Patuakhali
BAN025	<i>Atekola-2</i>	Srirampur, Patuakhali
BAN026	<i>Mehersagor-2</i>	Tongi, Gazipur
BAN027	<i>Amritosagor-2</i>	Tongi, Gazipur
BAN028	<i>Kobori-2</i>	Jessore
BAN029	<i>Japkathali-2</i>	Dumki, Patuakhali
BAN030	<i>Localsobri-4</i>	PSTU Campus, Patuakhali

The single factor experiment consisting 30 treatments and was laid out in Randomized Complete Block Design with three replications. In each block the land was divided into thirty plots for thirty treatments (30 accessions). One accession represent one treatment and one plant in an accession represent one replication. The land was thoroughly prepared by ploughing and cross ploughing followed by laddering. The pits of 60 cm × 60 cm × 60 cm were prepared by digging the soil with spade at three weeks before planting. Fertilizers were applied as per Fertilizer Recommendation Guide (BARC, 2012): N = 230g, P = 80g, K = 300g, S = 36g, Zn = 1.2g, B = 0.34g and Cowdung = 10 kg. Half of the Cowdung and P, and all of S, Zn and B were applied in each pit at 10–15 days before planting of sucker and mixed thoroughly with the soil followed by irrigation. The remaining half manure and P were applied as broadcast before final land preparation. The N and K were applied in four splits as top dressing around the plants and mixed thoroughly with the soil followed by irrigation. Fifteen days after the pits were filled in with manures and fertilizers, selected sword suckers were planted on 30 January, 2015. Two earthing up were done. Suckers were not allowed to grown and were pruned by cutting at ground level fortnightly. Few suckers were allowed to grow after flowering of the mother plant. The propping was done with bamboo poles about 4 m long at flowering stage to protect the plants from falling over due to storm and weight of bunch. As a preventive measure against insect pests Malathion 57 EC was applied @ 2 ml per litre of water both at vegetative and reproductive stage. Some plants were infected by

panama disease. To prevent the spread of the disease Dithane M-45 @ 2 g per litre of water was sprayed in the field. The bunches were harvested when the fingers were full rounded. The harvesting was started in January 2016 and continued till March 2016. Thirty fingers of each accession were selected from the middle part of bunch. Individual banana fingers were kept on Table in the Farm laboratory room at ambient atmospheric conditions for observations of quality attributes of fruits. Data were recorded on plant height, number of leaves, base girth, days to shooting, days to bunch maturity, crop duration, number of hands per bunch, number of fingers per hand, yield per plant (kg), yield per hectare (ton), pulp to peel ratio, total soluble solids (TSS) content and shelf-life. The collected data from each experiment were statistically analysed as per design of experiment using the MSTATc program. The means for all treatments were calculated and the analyses of variances were performed by the 'F' variance test. The significance of difference between pair of means was performed by the Least Significant Difference (LSD) test taking the probability level 5% as minimum unit of significance (Gomez and Gomez, 1984).

Results and Discussion

The result among the different characters has been presented in different tables and figures under the following sub headings:

Plant height (cm): The cultivars significantly affected the height of banana plant at 210 days after planting (Fig. 1). The cultivar BAN025 had highly significant than that of other cultivars to produced the tallest plant (409.30 cm) followed by BAN009 (397.0 cm), BAN023 (395.0 cm) and BAN011 (390.70 cm). Similarly, BAN017 had the lower effective and produced the shortest plant (200.30 cm). Variation of Banana plant height might be due to the genetic variability and adaptability with the regional factors of the studied Patuakhali region. Sagar *et al.* (2014) found significant variation for plant height due to 23 banana genotypes where the plant height was the highest (305.00 cm) in *Monthon* and the lowest (147.81 cm) in *Kayipallebale* at 240 day after planting.

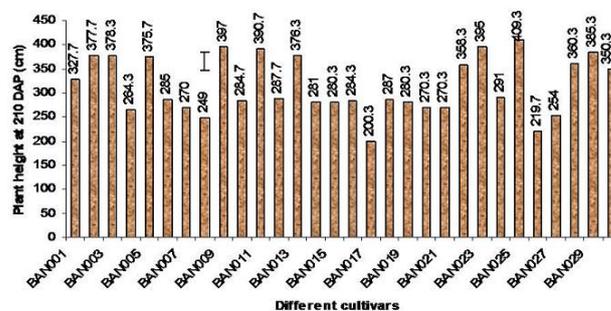


Fig. 1. Plant height of different banana cultivars. Vertical bar represent LSD at 1% level of probability

Number of leaves/plant: Number of leaves/plant was significantly influenced by the banana cultivars (Fig. 2). BAN012 showed the lowest number of leaves/plant (8.67) while the cultivars BAN009, BAN011 and BAN013 took the same higher number of leaves/plant (14.00). Variation of number of leaves might be due to cultivars genetic makeup. Sagar *et al.* (2014) found that the genotype Hanuman recorded maximum number of leaves (17.33)

while minimum number of leaves (10.67) was recorded in both the genotypes Elakkibale and Pisanglilin.

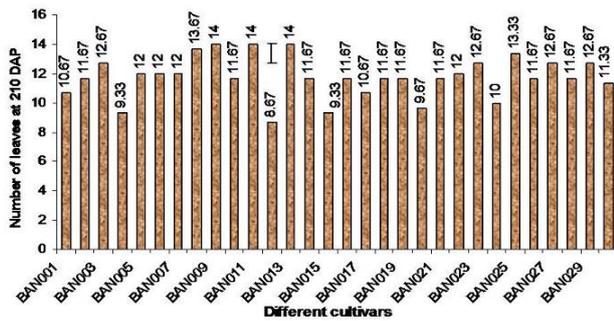


Fig. 2. Number of leaves of different banana cultivars. Vertical bar represent LSD at 1% level of probability

Base girth (cm): The base girth recorded at harvest and varied significantly from 31.00 to 94.33 cm (Table 2). It was found that the cultivar BAN013 shown the highest girth followed by BAN029 (92.00 cm) and BAN025 (90.67 cm) while BAN026 recorded the lowest girth (31.00 cm). The variation in base girth might be due to the

variation in height of plant. Wilberforce *et al.* (2015) found that plant girth ranged from 35.1 cm for NARITA 19 to 57.7 cm for NARITA 8 due to different genotypes.

Days to shooting: There was a significant variation for days to shooting due to different cultivars. It was significantly varied from 220.30 to 276.70 days. Among the cultivars, the cultivar BAN028 required more time for shooting followed by BAN001 (268.0 days), BAN023 (267.70 days) while the cultivar BAN0126 needed least time for shooting (Table 2). It is found that all the cultivars differed significant from each other. This might be due to the variation in genetic makeup or genotypic characteristics.

No. of leaves per plant at flowering: The production of leaves/plant at flowering stage varied significantly from 10.67 to 12.00 due to different cultivars of banana (Table 2). Among the cultivars, the production of leaves/plant at flowering stage had highest in BAN027 and lowest in BAN023. BAN008, BAN009, BAN011, BAN017, BAN025, BAN026 and BAN029 produced same 2nd maximum number of leaves/plant (11.67) at this stage. Hoque (2008) supported the present findings.

Table 2. Yield attributes of banana cultivars at Patuakhali region of Bangladesh

Cultivars No.	Base girth (cm)	Days to shooting	No. of leaves/plant at flowering	Days to bunch maturity	Crop duration (days)
BAN001	60.00	268.0	8.67	96.33	365.0
BAN002	63.33	250.0	10.67	94.67	355.0
BAN003	66.67	255.3	10.67	97.00	359.7
BAN004	45.00	261.0	9.67	98.00	365.0
BAN005	65.33	250.7	10.67	97.00	365.0
BAN006	47.00	235.3	9.67	97.33	345.0
BAN007	55.67	245.3	10.67	93.67	348.0
BAN008	35.00	225.0	11.67	94.67	327.3
BAN009	86.33	254.7	11.67	98.33	365.3
BAN010	45.00	245.3	9.67	96.33	352.3
BAN011	89.00	261.3	11.67	98.00	366.0
BAN012	55.33	248.7	7.67	97.00	352.3
BAN013	94.33	259.7	10.67	97.67	365.3
BAN014	41.67	240.3	10.67	95.33	345.0
BAN015	58.33	250.3	8.00	98.00	355.3
BAN016	41.33	245.3	8.00	97.00	351.7
BAN017	33.00	222.3	11.67	96.00	325.3
BAN018	43.67	238.0	10.33	97.00	350.3
BAN019	44.33	250.0	8.33	95.33	350.0
BAN020	42.33	265.0	8.67	98.67	367.7
BAN021	42.00	242.3	9.67	94.00	341.3
BAN022	43.00	245.3	10.00	97.00	351.7
BAN023	84.67	267.7	10.67	98.00	369.7
BAN024	58.00	250.3	7.00	97.00	356.3
BAN025	90.67	265.3	11.67	98.33	372.3
BAN026	31.00	220.3	11.67	97.67	325.0
BAN027	36.00	227.3	12.00	96.00	331.7
BAN028	41.33	276.7	10.67	96.00	350.0
BAN029	92.00	261.0	11.67	97.67	367.7
BAN030	64.00	265.3	9.00	97.00	368.0
LSD at 5%	4.82	19.06	1.21	2.80	4.12
LSD at 1%	6.39	25.24	1.61	3.71	5.46
Level of sign.	**	**	**	**	**
CV (%)	5.26	4.70	7.39	1.79	1.72

** = Significant at 1% levels of probability; CV = Coefficient of variation

Days to bunch maturity: The required time for the maturity of bunch was highly significant due to the effect of different cultivars where required time for bunch

maturity ranges from 94.00 to 98.67 days (Table 2). The cultivar BAN020 needed the highest time for bunch maturity followed by BAN009 and BAN025 (98.33 days),

BAN004, BAN011, BAN016 and BAN023 (98.00 days) while least time for bunch maturity was required for the cultivar BAN021. Gaidashova *et al.* (2008) found significant variation in days to bunch maturity due to banana cultivars. Variation in days to bunch maturity might be due to the variation in genetic characters and regional growth characters such as climatic factors, nutrient status of soil etc.

Duration of crop: The duration of crop of the different banana cultivar also varied significantly from 325.0 to 372.30 days in the present study. Table 2 revealed that the crop duration or life cycle was the highest for the cultivar BAN025 followed by BAN023 (369.70 days), BAN030 (368.0 days), BAN020 and BAN029 (367.70 days). On the other hand, the duration of crop was the lowest for the cultivar BAN021 in this study. Akter *et al.* (2013) found significant variation for the duration of crop of banana due to different cultivar. Variation in crop duration might be due to the variation in climatic factors, nutrient status of

the soil and other growth characters of the Patuakhali region. The findings were similar with the findings of Hoque (2008).

No. of leaves per plant at harvest: Effect of cultivar for the production of leaves/plant at harvest showed significant variation with the ranges of 7.00 to 11.33 where maximum was found from the variety BAN025 and minimum was recorded at BAN012. The cultivar BAN025 showed the 2nd (11.00) and the cultivars BAN009, BAN010, BAN014, BAN017, BAN023 and BAN027 produced the 3rd highest (10.67) number of leaves/plant at harvest (Table 3). It was found that the leaf number at harvest reduced significantly from flowering stage which might be due to the leaf fall of dead for the maturity. Besides, the variation in leaf number might be due to the variation in genetic characteristics and adaptability with the regional condition of the studied area. The same observation was also found by Wilberforce *et al.* (2015).

Table 3. Yield attributes and quality of banana cultivars at Patuakhali region of Bangladesh

Cultivars No.	No. of leaves/plant at harvest	Hands/bunch	No. of fingers/ hand	Yield/ plant (kg)	Pulp:peel ratio
BAN001	7.67	10.33	16.33	15.57	6.27
BAN002	8.67	9.33	13.67	14.20	3.80
BAN003	9.67	9.67	13.67	14.27	3.90
BAN004	8.67	7.00	11.67	9.90	3.97
BAN005	10.33	9.67	16.00	15.13	3.93
BAN006	9.33	14.00	16.33	14.23	4.50
BAN007	9.67	11.00	13.67	14.10	6.20
BAN008	9.67	11.67	16.67	19.93	5.23
BAN009	10.67	12.33	16.67	22.43	4.63
BAN010	10.67	12.67	16.67	16.97	5.63
BAN011	10.33	12.00	17.67	21.80	4.30
BAN012	7.00	7.00	14.00	6.33	8.27
BAN013	9.67	11.00	17.00	14.27	5.17
BAN014	10.67	11.33	17.67	15.00	5.20
BAN015	7.33	8.33	13.33	7.30	8.10
BAN016	8.33	10.33	11.67	18.83	3.30
BAN017	10.67	11.67	15.00	18.17	4.63
BAN018	9.33	13.67	17.00	14.10	4.73
BAN019	8.33	9.00	13.00	20.00	3.23
BAN020	7.33	8.33	12.67	11.70	3.70
BAN021	9.67	11.67	16.00	14.73	4.70
BAN022	9.67	10.00	14.00	14.83	5.23
BAN023	10.67	10.67	14.67	25.63	3.80
BAN024	7.67	7.00	12.00	7.93	7.50
BAN025	11.33	10.67	14.67	25.97	3.50
BAN026	11.00	12.00	16.00	21.50	4.80
BAN027	10.67	10.67	16.33	21.50	4.67
BAN028	10.00	8.33	15.33	15.30	5.10
BAN029	10.00	10.00	16.00	14.33	4.60
BAN030	8.33	10.33	16.00	15.40	7.10
LSD at 5%	1.10	1.16	1.45	1.93	0.26
LSD at 1%	1.46	1.54	1.91	2.56	0.34
Level of sign.	**	**	**	**	**
CV (%)	7.21	6.90	5.92	7.42	3.14

** = Significant at 1% levels of probability; CV = Coefficient of variation

No. of hands/bunch: The number of hands/bunch varied from 7.00 to 14.00 due to the different cultivars of banana. The result of hands/bunch in Table 3 was found that the highest number of hand per bunch was produced from the cultivar BAN006 and followed by BAN018 and BAN010 (13.67 and 12.67, respectively). On the other hand, the same lowest number of hands/bunch was recorded from

the cultivars BAN004 and BAN024. This was found might be due to the genetic variation of the banana cultivars and also the variation climatic factors, soil nutrient status and other growth condition of the studied area. The same observation was also found by Tigabu *et al.* (2015) who found that maximum number of hands/bunch of (7.15) was recorded for the improved banana variety Dwarf cavandish

and minimum number of hands/bunch of (4.13) was recorded for the local check.

No. of fingers/hand: A significant variation for the number of fingers/hand was found due to the effect of banana cultivars where both BAN011 and BAN014 showed same highest (17.67) number of fingers/hand while BAN004 observed the lowest number of fingers/hand (11.67) in this study (Table 3). The cultivar BAN018 showed the 2nd (17.00) and the cultivars BAN008, BAN009 and BAN010 recorded the 3rd highest (16.67) number of fingers/hand in this study. The variation in number of fingers/hand due to the variation in height of plant, base girth, requires time for shooting.

Yield/plant (kg): The yield of banana per plant shown significant variation due to the effect of cultivars. The highest yield (25.67 kg) was recorded in BAN025 followed by BAN023 (25.63 kg), BAN009 (22.43 kg), BAN011 (21.80 kg), BAN027 (21.50 kg) while the cultivar BAN004 shown the lowest yield (9.90 kg) of banana (Table 3). The variation in yield of banana might be due to the variation in number of fingers and hands/bunch, requiring time for shooting, bunch maturity, height of plant and base girth of the cultivars. Hoque (2008) found significant variation for yield of banana due to same causes of the present findings.

Yield (ton/ha): Effect of cultivars shown significant variation for the yield of banana in ton/ha. The cultivar BAN026 produced the highest yield (72.21 ton) followed by BAN017 (63.57 ton), BAN027 (62.56 ton), BAN008 (57.45 ton) while it was the lowest (12.62 ton) in BAN012 (Fig. 3). The observation of the present study were obtained from the research findings of Shaibu *et al.* (2012).

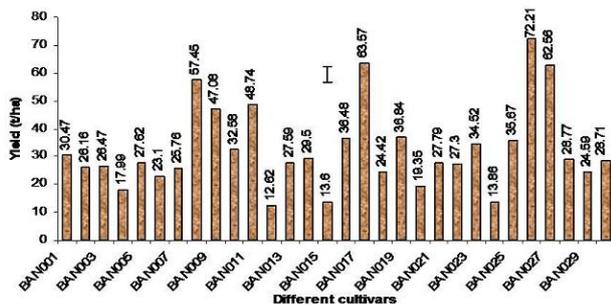


Fig. 3. Yield (ton per hectare) of different banana cultivars. Vertical bar represent LSD at 1% level of probability

Pulp:peel ratio: The pulp:peel ratio of the obtained banana fruits from the present study showed significant variation where in ratio of pulp:peel was 3.23 to 8.27 (Table 3). Variation in pulp:peel ratio was found that the banana fruits collected from the cultivar BAN012 gave the highest pulp:peel ratio followed by the collected fruits of the cultivar BAN015, BAN024 and BAN030 (8.10, 7.50 and 7.10, respectively). On the other hand, the fruits of BAN019 gave the lowest pulp:peel ratio. Mimi (2013) found that the varieties caused significant effects on pulp to peel ratio where it was the higher (6.46) in *Champa* and lowest (2.74) in *Amritasagar*. This findings was supported by the findings of Rouf (2012).

TSS (% brix): TSS content of the harvested banana fruits was statistically significant due to the effect of cultivars

(Fig. 4). The fruits of BAN023 and BAN025 cultivars shown the same highest content of TSS (19.67% brix) while the fruits of BAN016 obtained the lowest TSS content (10.17% brix). The fruits of BAN012 (17.47% brix), BAN009 (17.23% brix) and BAN028 (17.10% brix) shown the 2nd, 3rd and 4th highest TSS content. Significant variations due to the effect of different banana cultivars were also obtained by Habiba (2012).

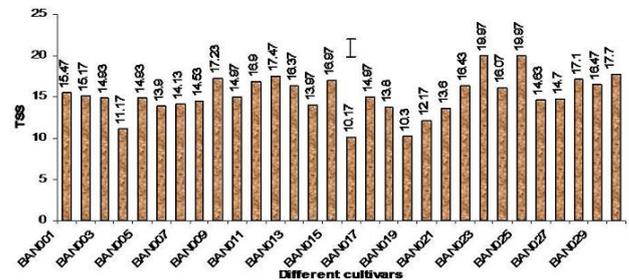


Fig. 4. Total soluble solid (TSS) of different banana cultivars. Vertical bar represent LSD at 1% level of probability

Shelf-life: The shelf-life of banana fruits was significantly influenced by the effect of cultivars where shelf-life varied from 9.00 to 19.67 days (Fig. 5). The fruits of BAN023 shown the longest shelf-life (19.67 days) followed by BAN025, BAN009, BAN013 and BAN029 (17.33, 16.67, 16.33 and 16.00 days, respectively). On the other hand, the fruits of BAN008 and BAN017 shown the same shortest shelf-life (9.00 days) followed by BAN026 and BAN027 (9.67 days) (Fig. 5). The variation in shelf-life of different banana fruits might be due to the variation in fruit maturity and storage conditions. The findings of the present study was also found by Rashid (2013) who also found significant differences on shelf-life among the varieties where the highest shelf-life (14.35 days) was observed in *Sabri* and lowest (11.90 days) in *Mehersagar*.

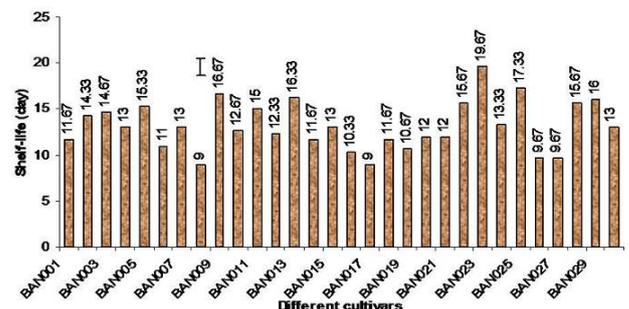


Fig. 5. Shelf-life of different banana cultivars. Vertical bar represent LSD at 1% level of probability

The cultivar BAN025 (*Atekola-2*) along with BAN008 (*Amritasagar-1*), BAN009 (*Mortoman-1*), BAN011 (*Mortoman-2*), BAN017 (*Mehersagar-1*), BAN023 (*Atekola-1*), BAN026 (*Mehersagar-2*) and BAN027 (*Amritasagar-2*) were more adaptive for getting maximum quality banana production under this region. TSS content and shelf-life of fruits were also best of those cultivars. It may be suggested that the farmers' of the Patuakhali region can cultivate these banana cultivars for production of quality banana.

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