Scholars Journal of Agriculture and Veterinary Sciences

OPEN ACCESS

Abbreviated Key Title: Sch J Agric Vet Sci
ISSN 2348–8883 (Print) | ISSN 2348–1854 (Online)
Journal homepage: www.saspublishers.com

Selection of Suitable Harvesting Times of Sweet Potato Genotypes of Sadar Upazilla at Sylhet District in Bangladesh

S. M. Tareq Mahmud, A. F. M Saiful Islam, Sharifunnessa Moonmoon*

Department of Crop Botany and Tea Production Technology, Faculty of Agriculture, Sylhet Agricultural University, Sylhet-3100, Bangladesh

DOI: 10.36347/sjavs.2019.v06i11.002 | **Received:** 08.11.2019 | **Accepted:** 15.11.2019 | **Published:** 11.12.2019

***Corresponding author:** Sharifunnessa Moonmoon

Abstract **Original Research Article**

Appropriate harvesting time of sweetpotato is a critical issue for obtaining a quality sweetpotato. With a view to finding a suitable harvesting time of sweetpotato genotypes, an experiment was conducted at Daspara village of Sylhet Sadar in Bangladesh during November 2017 to April 2018 using seven sweetpotato genotypes *viz.* Local-1, Local-5, Local-6, Local-8, Exotic-2, Exotic-3, and BARI Sweetpotato-12 harvested at four dates *viz.*105, 120, 135 and 150 days after planting (DAP) following Randomized Complete Block Design with three replications. Morphological and yield attributes were recorded at every harvesting date. Result revealed that at 120 DAP, Local-5 had the highest vine number plant^{-1} (37.40), highest vine fresh (503.4 g plant^{-1}) and dry (88.1 g plant^{-1}) weight plant^{-1} and at 105 DAP, Local-6 had maximum leaf number plant^{-1} (576.02). At 135 DAP, the highest storage roots number plant^{-1} (7.57) was found in Exotic-2 and at 120 DAP, the longest storage roots (20.90 cm) were in Local-5. The thickest storage roots (4.92 cm) was found in Local-8 at 135 DAP whereas the thinnest (1.62 cm) in Local-5 at 120 DAP. At 150 DAP, the highest fresh (867.69 g plant^{-1}) and dry (274.42 g plant^{-1}) weight of storage roots were in Local-1. At 105 DAP, the highest non-marketable yield of storage roots was recorded in Exotic-2 and Local-5 while the highest marketable yield (46.96 t ha^{-1}) and total yield (48.21 t ha^{-1}) in Local-1 at 150 DAP. It is concluded that genotype Local-1 showed the best performance among all the genotypes in respect to total yield and marketable yield.

Keywords: Genotype, harvesting time, yield, storage root.

INTRODUCTION

Sweetpotato [*Ipomoea batatas* (L.) Lam.] is one of the most traditional root crops in many countries of the world including Bangladesh. It gives satisfactory yield under adverse climatic and soil conditions, as well as under low or non-use of external inputs [1]. Among the root and tuber crops grown in the world, sweetpotato ranks second after cassava [2]. The area under cultivation of sweetpotato in Bangladesh is decreasing day by day. The area was reduced to 61470 acre in 2015-16 from 64213 acre in 2013-14 year, whereas the production was 259372 ton to 259472 ton [3]. The present yield could be enhanced by using improved technology like adjustment of harvesting time, inclusion of high yielding varieties and so on. Sweetpotato is cultivated in different parts of the country, but the production is comparatively lower in Sylhet. Due to the lower production of the sweetpotato, the demand of sweetpotato is partially filled by the production of other parts of the country. Adverse climatic conditions like heavy rainfall, high humidity, seasonal flooding along with acidity etc. are the obstacles for the sweetpotato production in Sylhet region. In Bangladesh, sweetpotato is generally harvested during March to May when cereal supply like rice is the minimum. It plays an important role to compensate the demand of cereals of the needy people of Bangladesh. Harvesting of storage roots at appropriate stage of maturity is a very important factor in deciding yield, quality and storage life. The quality of storage roots at harvest and its post-harvest storage are expected to be influenced by the stage of the maturity. An appropriate harvesting time for different varieties in relation to quality, yield and economic return is required to determine, and thus the present study was conducted to assess the effect of harvesting times on growth and yield of seven sweetpotato genotypes.

MATERIALS AND METHODS

MATERIALS

The experiment was conducted at the farmer's field of Daspara village, Khadimpara Union of Sylhet Sadar upazila in Bangladesh during November 2017 to

April 2018. The local sweet potato genotypes: Local-1, Local-5, Local-6, Local-8 were collected from Sylhet region; exotic genotypes Exotic-2, Exotic-3 from Japan via Sylhet Agricultural University, and BSP-12 (BARI SP-12) from Bangladesh Agricultural Research Institute (BARI), Gazipur.

Experimental Design

The experiment was laid out in a Randomized Complete Block Design (RCBD) and the experimental field was divided into 3 blocks representing 3 replications and each block had 7 individual plots. The size of the plot was 3 m × 2.4 m. The adjacent blocks and neighboring plots were separated by 0.70 m and 0.70 m, respectively. Sweetpotato vines were planted in lines with a spacing of 0.60 m and 0.30 m for row to row and plant to plant, respectively. There were five rows in a plot having eight plants in each row and the total number of plants in a plot was 40. Manures and fertilizers were applied to the experimental field @ cow dung (5 t ha^{-1}), Urea (220 kg ha^{-1}), TSP (214 kg ha^{-1}), Mop (210 kg ha^{-1}), Gypsum (91.4 kg ha^{-1}) and $ZnSO_4.7H_2O$ (9 kg ha^{-1}). The vine cutting was planted on 04 November 2017. Intercultural operations such as gap filling, irrigation, weeding, vine lifting, earthing-up, etc. were done as and when necessary. Harvesting was done at four dates at 105 days after planting (DAP) (17 February), 120 DAP (4 March), 135 DAP (19 March) and 150 DAP (3 April) following 15 days interval. Each of the genotypes and harvesting dates were treated as treatment. Data on morphological features (longest vine length, leaf number plant^{-1}, vine number plant^{-1}), physiological parameters (fresh and dry weight plant^{-1} of leaf, vine, fibrous roots and storage roots), and yield and yield contributing characters (storage roots number plant^{-1}, storage roots length and diameter, non-marketable yield, marketable yield and total yield of storage roots) were collected at each harvesting date.

Data Analysis

The means for all the treatments were calculated and two-way analysis of variance (Anova) was performed to find out the significant difference among the treatments. The significance of the difference between the pair of means was evaluated by Duncan's Multiple Range Test (DMRT).

RESULTS

Morphological Characteristics

Leaf number plant^{-1}, longest vine length and vine number plant^{-1} differed significantly among the genotypes at different harvesting dates ($p \leq 0.05$). The genotype Local-6 had the highest leaf number plant^{-1} (576.02) at 105 DAP followed by Local-6 at 120 DAP whereas the lowest leaf number plant^{-1} (130.30) was in Exotic-2 at 105 DAP had (Table-1). The longest vine length (235.86 cm) was obtained from the treatment combination of Local-8 at 150 DAP followed by Local-8 at 135 DAP and the lowest (59.16 cm) was in Exotic-3 at 105 DAP which was statistically identical with the treatment combination of Local-6 at 105 DAP (Table-1). On the other hand, vine number plant^{-1} was highest (37.40) in Local-5 at 120 DAP followed by Local-6 at 120 DAP and lowest vine number plant^{-1} (10.41) was in the genotype Exotic-2 at 105 DAP which was statistically identical to the vine number of Exotic-3 at 120 DAP (Table-1).

Table-1: Interaction effect of genotypes and harvesting dates on morphological characters of sweet potato. Values in parenthesis are SEM, n=3.

Treatment combination: Genotypes × Harvesting Dates		Leaf number plant^{-1}	Longest vine length (cm)	Vine number plant^{-1}
Local-1	105 DAP	282.84(0.33) i	109.73(4.91) m	25.79(0.38) fg
	120 DAP	409.77(3.40) e	177.35(2.94) f	34.35(0.44) c
	135 DAP	507.45(2.12) c	119.23(1.68) j-l	27.94(0.91) e
	150 DAP	204.11(1.82) m	123.90(4.47) jk	23.63(0.72) hi
Local-5	105 DAP	286.57(1.53) hi	214.77(1.92) bc	35.18(1.38) bc
	120 DAP	389.54(0.87) f	209.05(1.32) cd	37.40(0.60) a
	135 DAP	229.31(1.16) k	215.91(2.20) b	27.27(1.12) ef
	150 DAP	132.08(3.79) r	140.60(0.23) hi	17.26(0.39) m-o
Local-6	105 DAP	576.02(2.10) a	63.68(1.76) r	31.71(1.07) d
	120 DAP	562.75(5.75) b	88.58(0.29) p	37.16(0.61) ab
	135 DAP	514.83(1.45) c	90.67(0.33) op	28.15(0.52) e
	150 DAP	442.11(4.69) d	151.83(3.61) g	27.48(0.74) ef
Local-8	105 DAP	209.28(2.61) lm	199.26(1.16) e	23.78(1.10) gh
	120 DAP	189.29(1.79) o	206.88(1.33) d	18.31(0.38) l-n
	135 DAP	167.53(1.49) q	220.09(1.13) b	15.23(0.82) op
	150 DAP	160.99(1.26) q	235.86(2.28) a	16.29(0.68) no
Exotic-2	105 DAP	130.30(1.69) r	75.61(1.62) q	10.41(0.49) r
	120 DAP	216.35(2.33) l	72.20(0.50) q	21.37(0.63) ij
	135 DAP	390.06(1.73) f	141.55(1.90) h	21.76(0.25) h-j
	150 DAP	270.83(1.36) j	134.90(2.33) i	18.20(0.33) l-n

Exotic-3	105 DAP	201.32(2.25) mn	59.16(2.93) r	13.97(0.83) pq
	120 DAP	229.80(0.90) k	96.46(1.26) no	12.44(0.43) qr
	135 DAP	202.49(2.37) m	90.67(1.81) hi	19.11(1.18) k-m
	150 DAP	176.04(2.46) p	117.56(1.84) kl	20.20(0.53) j-l
BSP-12	105 DAP	317.80(2.24) g	115.01(1.96) lm	20.30(0.79) j-l
	120 DAP	321.53(4.74) g	133.78(1.00) i	23.70(0.57) gh
	135 DAP	294.15(1.85) h	101.31(1.71) n	22.20(0.97) h-j
	150 DAP	194.17(1.57) no	123.90(1.79) j	21.19(0.90) jk
Level of significance		**	**	**

In each column, figure having common letter(s) do not differ significantly at p≤0.05 as per DMRT

Yield and Yield Contributing Characteristics

Fresh and dry weights of leaves, vines, fibrous roots and storage roots plant^{-1} varied widely among the genotypes and different harvesting dates (p≤0.05). The maximum leaf fresh weight plant^{-1} (543.01 g) was obtained from the genotype Exotic-2 at 150 DAP and the minimum leaf fresh weight plant^{-1} (106.9 g) in Local-1 at 150 DAP which was statistically identical with Local-5 at 150 DAP and Exotic-2 at 105 DAP (Fig. 1). On the other hand, the maximum leaf dry weight plant^{-1} (58.21 g) was obtained from the genotype Exotic-2 at 150 DAP followed by Local-5 at 120 DAP and the minimum leaf dry weight plant^{-1} (13.55 g) in Local-1 at 150 DAP which was statistically identical to the BSP-12 at 150 DAP (Fig-1).

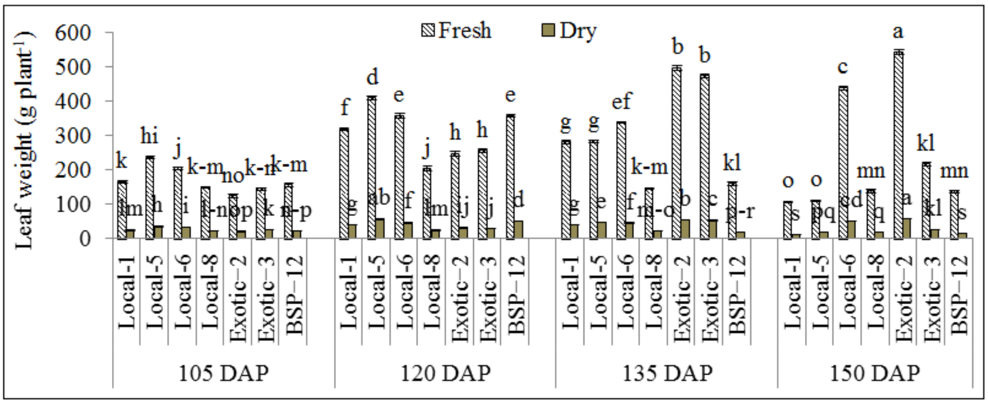

Fig-1: Interaction effect of genotypes and harvesting dates on leaf fresh and dry weight of sweetpotato genotypes. Vertical bars indicate SEM, n=3

The maximum vine fresh weight (503.4 g) and dry weight (88.11 g) plant^{-1} was obtained from Local-5 at 120 DAP whereas the minimum vine fresh weight (79.52 g) and dry weight (12.64 g) plant^{-1} from Exotic-2 at 105 DAP (Fig-2).

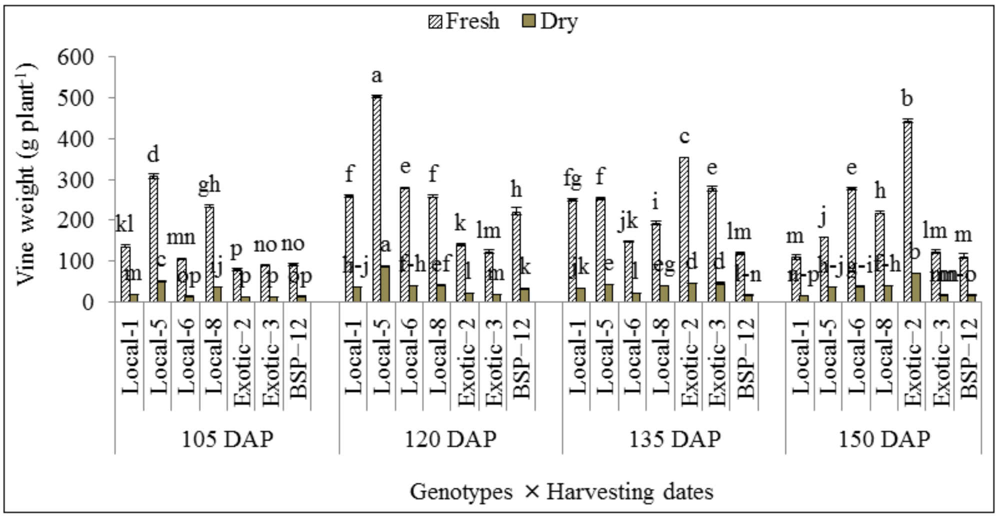

Fig-2: Interaction effect of genotypes and harvesting dates on vine fresh and dry weight of sweetpotato. Vertical bars indicate SEM, n=3

The highest fibrous roots fresh (4.59 g) and dry (1.25 g) weight plant^{-1} was observed in the genotype Exotic-2 at 150 DAP whereas the lowest fresh (0.18 g) and dry (0.04 g) weight plant^{-1} was in BSP-12 at 105 DAP (Fig-3).

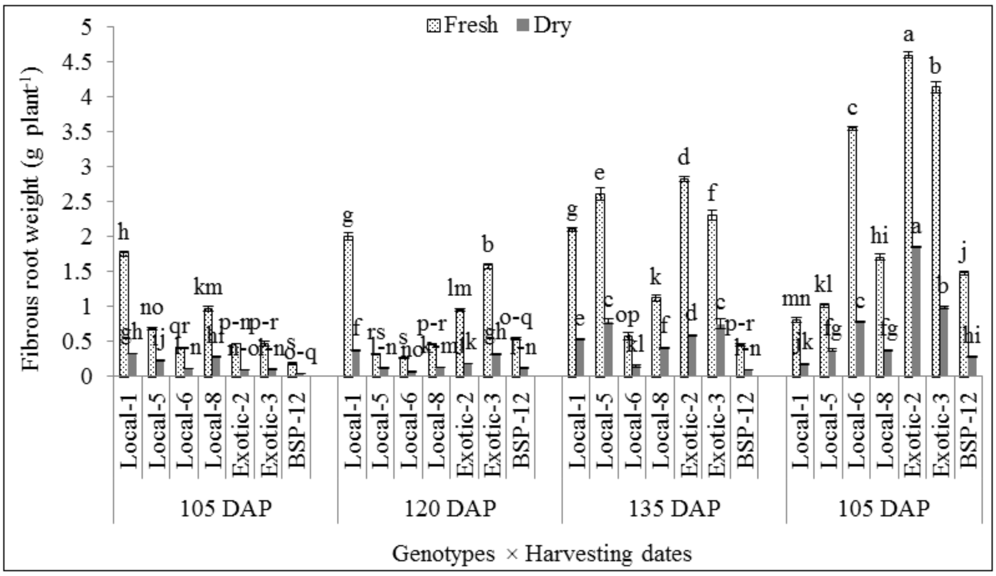

Fig-3: Interaction effect of genotypes and harvesting dates on fibrous roots fresh and dry weight of sweetpotato. Vertical bars indicate SEM, n=3

The maximum storage roots fresh weight (867.69 g) and dry weight (274.42 g) plant^{-1} were obtained from Local-1 at 150 DAP (Fig-4). The minimum storage roots fresh weight (127.58 g) and dry weight (34.23 g) plant^{-1} were in Local-5 at 120 DAP, and it was statistically similar to Local-5 and Local-6 at 105 and 135 DAP (Fig-4). The minimum storage roots dry weight plant^{-1} (34.23 g) was obtained from the genotype Local-5 at 120 DAP and it was statistically similar to Exotic-3 at 105 DAP (Fig-4).

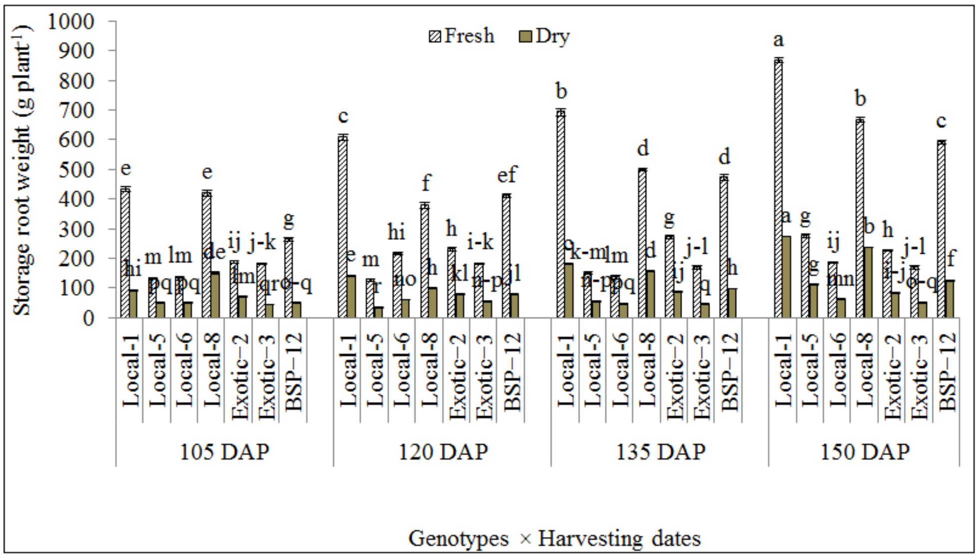

Fig-4: Interaction effect of genotypes and harvesting dates on storage roots fresh and dry weight of sweetpotato. Vertical bars indicate SEM, n=3

The genotypes and harvesting dates showed significant influence on the storage roots number plant^{-1}, length and diameter ($p \leq 0.05$). The highest storage roots number plant^{-1} (7.57) was found in Exotic-2 at 135 DAP followed by Exotic-2 at 120 and Local-8 at 105 DAP whereas the lowest storage roots number plant^{-1} (2.29) was in Local-6 at 120 DAP (Table 2). The highest storage roots length (20.90 cm) was obtained from the treatment combination of Local-5 at 120 DAP followed by viz. Local-5 at 135 and 150 DAP; Local-6 at 120, 135 and 150 DAP; and BSP-12 at 120 DAP whereas the lowest length (8.421 cm) in Exotic-3 at 105 DAP (Table-2). The maximum storage roots diameter (4.92 cm) was found from the treatment combination of genotype Local-8 at 135 DAP followed by Local-8 at 150 DAP (Table-2). The minimum storage roots diameter (1.62 cm) was found in the genotype Local-5 at 120 DAP and it was statistically similar with many treatment combinations viz. Local-5 at 105 and 135 DAP; Local-6 at 105 DAP; Exotic-2 at 105 DAP and Exotic-3 at 105 DAP etc.

Yield Characteristics

Genotypes of sweet potato showed variation in non-marketable yield of storage roots at different harvesting dates because the storage roots formation time of sweet potato genotypes was not same and different genotypes required different time for their proper growth. The highest non-marketable yield of storage roots (6.76 t ha^{-1}) was obtained from the treatment combination of Exotic-2 at 105 DAP followed by Local-5 at 105 DAP (Table-4). The lowest non-marketable yield of storage roots (1.11 t ha^{-1}) was recorded from the treatment combination of Exotic-3 at 135 DAP and it was statistically identical with many treatment combinations like Local-1 at 150 DAP, Local-6 at 120 and 135 DAP, and BSP-12 at 135 and 150 DAP etc.

Table-2: Interaction effect of genotypes and harvesting dates on yield and yield attributes of sweet potato. Values in parenthesis are SEM, n=3

Treatment combination: Genotypes × Harvesting Dates		Storage roots number $plant^{-1}$	Storage roots length (cm)	Storage roots diameter (cm)
Local-1	105 DAP	5.76(0.18) b-d	11.42(0.73) h-l	2.58(0.16) f-h
	120 DAP	5.61(0.47) c-f	16.94(0.92) a-e	2.89(0.18) ef
	135 DAP	5.64(0.68) c-e	16.40(0.90) b-f	3.32(0.20) de
	150 DAP	5.25(0.34) c-g	14.09(0.90) d-j	3.86(0.35) cd
Local-5	105 DAP	6.12(0.14) bc	12.08(0.26) g-l	1.64(0.29) k
	120 DAP	5.52(0.49) c-f	20.90(4.08) a	1.62(0.09) k
	135 DAP	5.47(0.76) c-f	18.52(0.16) a-c	1.68(0.07) k
	150 DAP	5.03(0.29) d-g	19.13(1.61) ab	1.91(0.01) i-k
Local-6	105 DAP	4.13(0.19) h-j	14.51(0.41) d-g	1.80(0.06) k
	120 DAP	2.29(0.09) m	19.38(3.54) ab	2.15(0.22) g-k
	135 DAP	3.31(0.26) j-l	18.50(4.51) a-c	2.36(0.09) f-j
	150 DAP	3.11(0.11) k-m	17.79(1.27) a-d	2.79(0.06) ef
Local-8	105 DAP	6.78(0.22) ab	9.81(0.55) j-l	3.27(0.16) e
	120 DAP	5.58(0.22) c-f	10.25(1.01) i-l	2.74(0.18) ef
	135 DAP	4.58(0.29) f-i	13.71(1.55) e-j	4.92(0.71) a
	150 DAP	5.51(0.47) c-f	13.72(1.39) d-j	4.63(0.18) ab
Exotic-2	105 DAP	5.60(0.30) c-f	9.47(0.31) kl	1.73(0.11) k
	120 DAP	7.48(0.41) a	11.50(0.14) h-l	2.36(0.02) f-i
	135 DAP	7.57(0.19) a	14.63(0.55) c-h	2.38(0.03) f-i
	150 DAP	5.49(0.46) c-f	15.38(1.33) b-g	2.56(0.02) f-h
Exotic-3	105 DAP	5.33(0.20) c-f	8.42(0.64) l	1.73(0.20) k
	120 DAP	5.03(0.13) d-h	9.38(0.67) kl	1.81(0.21) jk
	135 DAP	4.78(0.16) d-i	12.20(0.97) f-l	2.68(0.22) fg
	150 DAP	4.32(0.34) g-j	9.92(0.11) i-l	2.05(0.01) h-k
BSP-12	105 DAP	4.043(0.09) i-k	12.60(0.51) e-k	2.87(0.13) ef
	120 DAP	3.94(0.14) i-l	18.95(3.58) ab	3.90(0.20) cd
	135 DAP	4.54(0.32) f-i	14.13(0.36) d-i	4.07(0.21) bc
	150 DAP	3.04(0.04) lm	11.64(0.72) g-l	4.22(0.11) bc
Level of significance		**	**	**

In each column, figure having common letter(s) do not differ significantly at $p \leq 0.05$ as per DMRT

The maximum marketable yield of storage roots (46.96 t ha^{-1}) was obtained from the treatment combination of Local-1 at 150 DAP followed by the genotype Local-1 at 135 DAP and Local-8 at 150 DAP. Marketable yield of storage roots of Local-5 at 105 DAP was nil (00 t ha^{-1}) (Table-3). It might be due to its delay maturing time and it needs more time for development. The total yield of storage roots (t ha^{-1}) is an important character of a plant. The yield of storage roots varied markedly among seven genotypes at different harvesting dates. The highest yield of storage roots (48.21 t ha^{-1}) was produced by the genotype Local-1 at 150 DAP followed by the genotype Local-1 at 135 DAP whereas Local-8, Local-5 and BSP-12 at 150 DAP. On the other hand Local-6 and Exotic-3 showed the highest yields at 120 DAP and Exotic-2 showed at 135 DAP (Table-3).

Table-3: Interaction effect of genotypes and harvesting dates on yield and yield attributes of sweetpotato. Values in parenthesis are SEM, n=3

Treatment combination Genotypes × Harvesting Dates		Non-marketable yield of storage roots (t ha^{-1})	Marketable yield of storage roots (t ha^{-1})	Total yield of storage roots (t ha^{-1})
Local-1	105 DAP	4.56(0.92) bc	17.85(1.28) fg	22.41(0.36) e
	120 DAP	2.82(0.37) de	31.01(0.42) c	33.83(0.53) c
	135 DAP	3.12(0.36) d	35.37(0.92) b	38.48(0.63) b
	150 DAP	1.25(0.37) gh	46.96(1.03) a	48.21(0.90) a
Local-5	105 DAP	6.67(0.12) a	0.00(0.00) p	6.67(0.12) mn
	120 DAP	2.13(0.55) d-h	3.35(0.74) no	5.82(0.60) n
	135 DAP	3.26(0.22) cd	5.15l(0.48) mn	8.40(0.30) k-m
	150 DAP	2.27(0.25) d-h	13.77(0.62) h	15.71(0.64) f
Local-6	105 DAP	2.16(0.20) d-h	4.75(0.27) m-o	6.89(0.08) mn
	120 DAP	2.01(0.54) d-h	10.12(0.35) i-k	12.14(0.89) hi
	135 DAP	1.42(0.31) f-h	6.69(0.74) lm	7.43(0.40) l-n
	150 DAP	1.16(0.10) gh	9.23(0.09) jk	10.39(0.14) ij
Local-8	105 DAP	4.56(0.06) bc	16.27(0.64) g	20.90(0.72) e
	120 DAP	1.72(0.46) e-h	20.92(1.40) e	21.63(0.97) e
	135 DAP	2.25(0.70) d-h	25.65(0.93) d	27.90(0.24) d
	150 DAP	2.29(0.11) d-h	35.19(0.90) b	37.46(0.77) b
Exotic-2	105 DAP	6.76(0.31) a	2.83(0.64) o	9.59(0.25) jk
	120 DAP	2.07(0.36) d-h	9.75(0.97) jk	12.43(0.61) h
	135 DAP	3.13(0.03) d	11.90(0.29) hi	15.02(0.31) fg
	150 DAP	3.15(0.30) d	10.02(0.62) i-k	13.87(1.58) f-h
Exotic-3	105 DAP	5.77(0.92) ab	5.28(0.61) mn	10.12(0.14) jk
	120 DAP	2.18(0.19) d-h	8.77(0.44) i-l	10.12(1.24) i-k
	135 DAP	1.11(0.13) h	8.08(0.51) j-l	9.19(0.39) j-l
	150 DAP	2.43(0.09) d-h	6.82(0.31) kl	9.24(0.33) j-l
BSP-12	105 DAP	2.66(0.45) d-h	10.55(0.31) ij	13.23(0.27) gh
	120 DAP	2.93(0.84) de	19.90(0.97) ef	22.83(0.39) e
	135 DAP	1.25(0.23) gh	25.00(0.68) d	26.26(0.52) d
	150 DAP	1.90(0.41) d-h	30.98(0.76) c	32.88(0.42) c
Level of significance		**	**	**

In each column, figure having common letter(s) do not differ significantly at $p \leq 0.05$ as per DMRT

DISCUSSION

Leaf number of a plant is a genetic character and it may be varied with number of vine $plant^{-1}$, length of vine, growth stage of plant etc. The present results corroborate the findings of [4] who recorded the number of leaves $plant^{-1}$ from 137.30 to 585.28 at different harvesting dates. It is stated that the vine number $plant^{-1}$ varied greatly in different varieties [5]. It is noticed that the main effects of variety significantly influenced the number of vine $plant^{-1}$ which could be mainly due to genetic differences in vigor among the genotypes [6].

Variations of leaf dry weight $plant^{-1}$ may be due to genotypic or environmental conditions. It is stated that the leaf fresh weight widely varied among different genotypes for soil characteristics. They also mentioned that leaves dry weight was varied from genotypes to genotypes and different harvesting dates [7].

Findings in regard to vines fresh and dry weight of this study were similar with the findings of [8]. Delowar HKM *et al.*, [7] reported that the vines fresh and dry weight varied widely among the varieties due to the prevailing favorable soil or weather conditions during the experimentation. Rahman H [9] showed a wide variation in case of vine fresh and dry weight among sweet potato genotypes.

The findings of the present study differed with the finding of [5] who stated that the fibrous roots fresh weight varied from 1 to 2 g. It might be due to genetical characteristics.

The results of storage roots fresh weight $plant^{-1}$ were different to the findings of [10], where the storage roots fresh weight $plant^{-1}$ of different genotypes ranged from 260 to 1120 g. These variations are perhaps the reasons like as the statements of [7], where they noticed that storage roots dry and fresh weight depends on the varietal performance to the particular soil. The storage roots fresh and dry weight $plant^{-1}$ augmented with increased harvesting dates. This might be due to increased accumulation of water and dry matter partitioning in storage roots, rainfall, soil moisture etc.

This storage roots number $plant^{-1}$ variation might also be due to different genetic makeup among sweet potato genotypes and confirmed the result with [4] stated that storage roots number $plant^{-1}$ depends on the variety while reported the storage roots number $plant^{-1}$ varied from 2 to 7.33.

The result of the present study in regard to storage length roots differed with the findings of [11] who reported the storage length roots range of 14.4 to 16.3 cm in two years average. Rashid A H [12] showed that the storage roots length differed among the genotypes. Jahan MA [13] showed that sweet potato genotype harvested at 150 DAP produced maximum storage roots length compared to any other harvesting dates.

This diameter variation might be due to genetic makeup of the genotypes [12, 14]. Who reported that storage roots diameter varied from genotype to genotype. The result of the present study is closely similar with the finding of [9] who stated that the genotypes produced different diameters ranged from 1.26 to 3.26 cm at 150 DAP.

The yield of storage roots of the genotype Local-1 at 135 DAP and Local-8 at 150 DAP are statistically identical. Total yield of storage roots varied due to plant highest or vine length, number of vine $plant^{-1}$ and harvesting time. These results were less similar to the findings of [10]. It might be due to genetic make-up. Jahan MA [13] showed that sweet potato genotype harvested at 150 DAP produced maximum yield of storage roots compared to any other harvesting dates.

CONCLUSION

It can be concluded that the suitable harvesting time of Local-6 and Exotic-3 is 120 DAP and Local-1 and Exotic-2 is 135 DAP whereas Local-5, Local-8 and BSP-12 is 150 DAP. Therefore, genotypes Local-1 and Local-8 are the two most high yield performing genotypes and their suitable harvesting time is 135 days after planting.

REFERENCES

1. Githunguri CM, Migwa YN. Performance, foliage and root yield of sweet potato clones from a preliminary yield trial at Kiboko in semiarid eastern Kenya. Kenya Agricultural Research Institute. Loebenstein, G. 2009. Origin, distribution and economic importance of sweet potato. Journal of root crops, India. 2004; 5(1): 9-12.
2. Ray RC, Ravi V. Post harvest spoilage of sweetpotato in tropics and control measures. Critical reviews in food science and nutrition. 2005 Oct 1;45(7-8):623-44.
3. BBS (Bangladesh Bureau of Statistics). Year book of Agricultural statistics of Bangladesh. Government of the People's Republic of Bangladesh. 2017; 326.
4. Haque AM. Study of important morphological features and yield of eight sweet potato genotypes, MS Thesis, Department of Crop Botany, Bangladesh Agricultural University, Mymensingh. 2002; 27-49.
5. Shen S, Gaofeng X, Clements DR, Jin G, Chen A, Kato-Noguchi FZH. Suppression of the invasive plant mile-a-minute (*Mikania micrantha*) by local crop sweetpotato (*Ipomoea batatas*) by means of higher growth rate and competition for soil nutrients. Journal BMC Ecology.2015; 15(1).
6. Martha M. Sweet potato [*Ipomoea batatas* (L.) Lam] Growth and yield as affected by planting density and cultivar in Wolaita Soddo, Souther Ethiopia. MS thesis. Haramaya University. 2014; 59.
7. Delowar HKM, Hakim MA. Effect of salinity levels on the morpho-physiological characteristics and yield attributes of sweet potato genotypes. International Journal of Science and Research (IJSR). 2014; 10(3): 929-934.
8. Uddin S K, Nazim M. Effect of different parts of vine on the growth and yield of the sweetpotato. MS thesis. Department of Crop Botany, Bangladesh Agricultural University, Mymensingh. 2006; 14-24.
9. Rahman H. Morpho-physiological evaluation of sweet potato (*Ipomoea batatas* L.) genotypes. MS Thesis. Department of Crop Botany & Tea Production Technology, Sylhet Agricultural University, Sylhet. 2015; 18-30.
10. Siddique MA, Hasanuzzaman ATM, Husain A. Growth and yield of "Three" high yielding sweet potato genotypes. Bangladesh. Journal of Agriculture. 2008; 13(3):139-145.
11. Uwah DF, Undie UL, John NM, Ukoha GO. Growth and yield response of improved sweetpotato (*Ipomoea batatas* (L.) Lam) varieties to different rates of potassium fertilizer in Calabar, Nigeria. Journal of Agricultural Science. 2013; 5(7):123.
12. Rashid AH. Comparative growth and yield studies of some exotic and local cultivar of sweet potato. MS Thesis. Department of Crop Botany, Bangladesh Agricultural University, Mymensingh. 2002; 21-41.
13. Jahan MA. Studies on growth, yield and storage of sweet potato as influenced by variety and time of harvest. MS Thesis. Department of Horticulture. Bangladesh Agricultural University, Mymensingh. 2001; 32-49.
14. Sen H, Mukhopadhyay SK, Goswami SB. Relative performance of some sweetpotato entries at early harvest. Journal of Root Crops. 2009; 16(1):18-21.