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Effect of Salinity Levels on the Morpho-Physiological Characteristics and Yield Attributes of Sweetpotato Genotypes

Hossain K. M. Delowar[1], M. A. Hakim[2]

[1]Department of Environmental Science and Technology, Jessore University of Science and Technology, Jessore-7408, Bangladesh

[2]Department of Environmental Science and Technology, Jessore University of Science and Technology, Jessore-7408, Bangladesh

Abstract: ***A pot experiment was conducted at Bangladesh Institute of Nuclear Agriculture (BINA), Mymensingh, during the period from October 2011 to March 2012 to investigate the effect of salinity on the morpho-physiological characteristics and yield attributes of sweetpotato genotypes. Three exotic genotypes, JB, J7, J8 (Japanese) and one local genotype Tripti were used in the study. There were five salinity levels viz. control (0.64 dSm⁻¹), 3, 6, 9 and 12 dSm⁻¹ applied by adding the measured quantity of NaCl solution to the soil. Among the genotypes, Tripti was the best genotype which was tolerant to salinity and produced better yield, whereas the yield of storage root/plant decreased significantly in the genotypes JB, J7 and J8 at 9 dSm⁻¹ levels of salinity. The genotype Tripti showed better potentiality in growth, yield and morpho-physiological attributes followed by JB, J7, and J8 at saline condition up to 6 dSm⁻¹ level of salinity.***

Keywords: Sweetpotato, genotype, morpho-physiological characteristics, salinity

1. Introduction

Sweetpotato [*Impomoea batatas* (L.) Lam.] belongs to the family Convolvulaceae and is an important starch rich root crops of Bangladesh. Though it was originated in tropical America but now is being extensively cultivated throughout the tropical and subtropical countries of the world [5]. In Bangladesh, it is cultivated more or less in all the districts but mainly concentrated in the char areas or in the river banks where it gives a bumper crop yield with least efforts [4]. The crop is very popular among the poor people of Bangladesh due to its low price. The storage root of sweetpotato is edible and consumed as boiled, baked or fried forms [2]. The storage root of sweetpotato is very rich in starch (19-22%) and its tender leaf contains appreciable quantity of protein (2-4%), minerals (0.1 ash) and vitamin (0.18-2.7 mg carotene/100g dry matter [7]. For increasing crop production, it is urgently needed to extend cultivation of sweet potato rapidly to all possible areas of Bangladesh. But the cultivation of sweet potato in those areas is difficult due to lack of salinity tolerant variety. So, the selection of salinity tolerant genotypes with moderate yield potential is necessary to cultivate in Bangladesh. In a previous study, with 5 genotypes of sweet potato by Islam [1], JB & J7 performed relatively better in the saline condition up to 9 dSm⁻¹. In an another study conducted by Uzzaman [6], the sweet potato genotypes Tripti and J8 showed better yield performance among the five tested genotypes in the saline levels up to 9 dSm⁻¹. The selected four (4) salt tolerant genotype of sweet potato from the previous two studies were taken to reexamine and confirm in the present study. With this aim in view, the present study was undertaken to compare the growth and yield of sweet potato genotypes at different salinity levels and select the better genotypes suitable for growing in the saline soils of coastal areas.

2. Materials and Methods

The experiment was conducted at Bangladesh Institute of Nuclear Agriculture, Mymensingh, during 20 October 2011 to 22 March 2012. The experiment was conducted in pots. The soil used in pot was collected from the BINA head quarter farm, Mymensingh. Earthen pots were used having 25cm diameter at the top and 15cm at the bottom the depth of the pot was 21cm. The collected soil was dried in the sun and crushed to make free from plant debris. After that, cow dung and other fertilizer was mixed with soil. Each pot was filled with 8kg soil. A polythene lining was provided inside the pot. The pots were placed at the pot yard of BINA premises. Five level of salinity as control, 3, 6, 9 and 12 dSm⁻¹ was introduced in those pots. Three exotic genotypes of sweetpotato viz. JB, J7, J8 (Japanese) and one local genotype Tripti were evaluated in the study. The experiment was laid out in a Randomized Complete Block Design with five replications. The pH, EC and Cation exchange capacity of the soil were measured by pH meter, Electrical conductivity meter and flame photometer, respectively. Twenty to 30cm long vine with five to seven nodes were used as planting material in each experimental pot. At final harvest the collected plants were kept into paper bag and carried out to the laboratory. The plant parts were separated into storage roots, vines, leaves and fibrous roots and their fresh dry weights were measured. Data were taken on the length of primary vines, diameter of storage roots, secondary vines per branch and number of leaves per plant. Besides, leaf chlorophyll was measured by UV-VIS spectrophotometer at 663 & 645 nm wavelength, for chlorophyll-a and chlorophyll-b, respectively. Salinity Bridge was used to determine cell sap conductivity. Leaves and fibrous roots were dried at 60^0c for 48 hours, vines were dried at 65^0c for 60 hours and storage roots slice were dried at 72^0c for 72 hours prior to recording the total dry weight. The collected data were analyzed statistically with computer packages and the mean differences were separated with Duncan’s Multiple Range Test.

3. Results and Discussion

3.1 Morphological parameters

3.1.1 Number of vines per plant

The number of vines/plant was greater in the genotype Tripti (5.26). The highest number (4.48) of vines was recorded in control treatment and the lowest (2.99) in 12 dSm⁻¹ salinity (Table 2). The lowest number of vines (2.33) from the J8 at 12 dSm⁻¹ salinity levels and highest number of vines (6.33) were recorded from Tripti at control and 3 dSm⁻¹ treatment (Table 3).

3.1.2 Length of main vine per plant

The highest length of vines was found in J8 (55.28 cm) and the lowest (48.39 cm) in Tripty. But plants in control treatment had the highest vine length which gradually decreased with the increase in salinity levels (Table 2). The highest length of vine was recorded 74.87 cm in control treatment and it was the lowest in 12 dSm⁻¹ level of salinity (28.0 cm).

Table 1: Effect of genotypes on some morphological features and fresh and dry weights of above-ground plant parts of sweetpotato.

Genotype	No. of vines/plant	Length of main vine/plant (cm)	Number of leaves/plant	Fresh weight of leaves/plant (g)	Dry weight of leaves/ plant (g)	Fresh weight of vines/plant (g)	Dry weight of vines/plant (g)
JB	4.05b	54.20a	83.79c	46.93b	5.28a	40.24b	6.91b
J7	3.13c	54.19a	88.19b	25.10c	4.04b	33.04c	6.09c
J8	3.06c	55.28a	83.79c	22.49c	3.35c	28.92c	4.88d
Tripti	5.26a	48.39b	95.59a	51.25a	5.66a	54.95a	8.55a

In a column, figures bearing same letter(s) do not differ significantly at 5% level of significance by Duncan's Multiple Range Test.

3.1.3 Number of leaves per plant

The highest number (95.59) of leaves per plant was produced by the Tripti and the lowest number of (83.79) was found in JB and J8. The highest (116.58) and lowest (53.33) number of leaves were recorded at control and 12 dSm⁻¹ salinity level, respectively (Table 2). The highest number of leaves (127.33) was observed in Tripti and lowest (45.66) of that was found in JB at control and 12 dSm⁻¹ salinity level, respectively.

Table 2: Effect of salinity levels on some morphological features and fresh and dry weights of above-ground plant parts of sweet potato.

Salinity level (dSm⁻¹)	Number of vines/plant	Length of main vine/plant (cm)	Number of leaves/plant	Fresh weight/of leaves/plant (g)	Dry weight of leaves/plant (g)	Fresh weight of vines/plant (g)	Dry weight of vines/plant (g)
Control (0.64)	4.48 a	74.87 a	116.58 a	54.73 a	6.89 a	60.94a	9.67 a
3	4.33 a	69.66 b	111.16 b	44.68 b	5.48 b	46.64 d	8.02 b
6	3.91 b	55.58 c	84.91 c	39.13 c	5.17 b	40.17 c	7.00 c
9	3.66 b	36.99 d	73.24 d	31.38 d	3.62 c	30.88 d	5.46 d
12	2.99 c	28.00 e	53.33 e	12.19 c	1.74 d	17.81 c	2.90 c

In a column, figures bearing same letter(s) do not differ significantly at 5% level of significance by Duncan's Multiple Range Test.

3.1.4 Fresh weight of leaves per plant

The highest fresh weight of leaves (51.25 g/plant) was observed in genotype Tripti, while it was the lowest (22.49 g/plant) in J8 at final harvest (Table 1). The highest leaf fresh weight (54.730 and lowest (12.19 g/plant) were obtained from control treatment and 12 dSm⁻¹ salinity level, respectively. Genotype Tripti produced highest amount fresh weight (74.56 g/plant) at control treatment. The J7 produced the lowest fresh weight (7.27 g/plant) at 12 dSm⁻¹ salinity level.

3.1.5 Leaf dry weight per plant

The maximum leaf dry weight (5.66 g/plant) was obtained from Tripti and the minimum (3.35 g/plant) leaf dry weight was recorded in J8. The highest leaf dry weight (9.21 g /plant) was recorded in the control treatment with Tripti (Table 3) and the lowest (1.23 g/plant) was found in 12 dSm⁻¹ salinity level with J7 genotype.

3.1.6 Fresh weight of vines per plant

The highest vine fresh weight was observed in Tripti and the lowest (28.92 g/plant) in J8 which was statistically similar to J7 (Table 1). The highest amount of vine fresh weight (60.94 g/plant) in control treatment and the lowest (17.81 g/plant) in 12 dSm⁻¹ salinity level was recorded (Table 2). The highest (80.58 g/plant) vine fresh weight at control with Tripti and the lowest (12.42 g/plant) in 12 dSm⁻¹ with J7 was recorded (Table 3).

Table 3: Interaction effect of genotype and salinity level on some morphological features and fresh and dry weights of above ground plant parts of sweet potato

Genotypes	Salinity levels (dSm^{-1})	Number of vines/plant	Length of vines/plant	Number of leaves/ plant	Leaf fresh weight/ plant (g)	Leaf dry weight/plant (g)	Fresh weight of vine/plant (g)	Dry weight of vine/plant
JB	Control (0.64)	4.60 cd	71.66c	115.66bc	73.16a	7.70b	60.71b	9.94ab
	3	4.33cde	75.66bc	110.66cd	60.94b	6.36bc	42.99de	8.57bcd
	6	4.00def	57.06de	82.66ef	50.5c	6.15cd	39.30def	6.85def
	9	4.00def	41.66g	64.33gh	34.46de	4.10fgh	37.16ef	5.77efg
	12	3.33gh	25.00j	45.66i	15.59gh	2.11ijk	21.07hi	3.46ijk
J7	Control (0.64)	3.66fg	81.33ab	113.00bcd	39.25d	5.84cde	53.95bc	9.60abc
	3	3.00hi	74.66bc	105.66d	33.28def	5.30cdef	39.07def	7.66d
	6	3.33gh	39.33f	82.66ef	26.28ef	4.96cdefg	34.05efg	5.65fgh
	9	3.00hi	34.66ghi	78.33f	18.74fg	2.89hij	25.73gg	4.75ghi
	12	2.66ij	31.00ij	60.33h	7.27h	1.23k	12.42i	2.79jk
J8	Control (0.64)	3.33gh	82.83a	110.33cd	31.96de	4.84defg	48.54cd	8.15cd
	3	3.66fg	73.66bc	108.00cd	27.04ef	3.90fgh	30.88fgh	5.fgh
	6	3.00hi	59.60de	82.00ef	26.54ef	3.48ghi	29.59fgh	5.08ghi
	9	3.00hi	32.33hij	70.66g	18.90fg	3.03hi	23.15gh	3.94hij
	12	2.33j	27.00ij	47.00i	8.05h	1.50jk	12.47i	1.89k
Tripti	Control (0.64)	6.33a	62.66d	127.33a	74.56a	9.21a	80.58a	11.00a
	3	6.33a	54.66ef	120.33ab	57.49bc	6.38c	73.65a	10.48a
	6	5.33b	56.33def	90.33e	52.49bc	6.09cd	57.75bc	10.43a
	9	4.66c	39.33gh	79.66f	53.85bc	4.49efg	37.51ef	7.39de
	12	3.66fg	29.00ij	5.33g	17.88fg	2.15ijk	25.28gh	3.48ijk

In a column, figures bearing same letter(s) do not differ significantly at 5% level of significance by Duncan's Multiple Range Test.

3.1.7 Dry weight of vines per plant

The highest (8.55 g/plant) vine dry weight was produced by Tripti and the lowest (4.88 g/plant) by the genotype J8 (Table 1). The maximum (11.00 g/plant) dry weight of vine in control treatment with Tripti and minimum (1.89) in 12dSm $^{-1}$ salinity level with genotype J8 was recorded. In case of Tripti, the control, 3 and 6 dSm^{-1} salinity levels showed statistically similar result.

3.2 Physiological parameters

3.2.1 Chlorophyll content in leaf

The maximum total chlorophyll (1.13 mg/g fw) in the genotype J7, chlorophyll-a (0.78 mg/g fw) in the genotype JB and J7, chlorophyll-b (0.35 mg/g fw) was obtained from J7 and Tripti. The lowest total chlorophyll (0.91 mg/g fw), chlorophyll-a (0.365 mg/g fw), chlorophyll-b (0.25 mg/g fw) was found in J8 (Table 4). In case of salinity the maximum total chlorophyll (1.26 mg/g fw), chlorophyll-a (0.87 mg/g fw) and chlorophyll-b (0.40 mg/g fw) were obtained in the control treatment followed by 3 dSm^{-1}, 6 dSm^{-1}, and 9 dSm^{-1} (Table 4). In contrast, the lowest amount of total chlorophyll (0.86 mg/g fw), chlorophyll-a (0.60 mg/g fw), and chlorophyll-b (0.25 mg/g fw) was obtained at highest salinity level at 12 dSm^{-1} (Table 5). The highest amount of total chlorophyll (1.55 mg/g fw), chlorophyll-a (0.99 mg/g fw), chlorophyll-b (0.55 mg/g fw) was obtained from J7 was obtained at control treatment. The minimum amount of the total chlorophyll (0.67 mg/g fw), chlorophyll-a (0.47 mg/g fw), chlorophyll-b (0.19 mg/g fw) in the genotype J8 at highest salinity level was found (Table 6).

Table 4: Effect of genotypes on the chlorophyll content and cell sap conductivity of sweet potato

Genotypes	Chlorophyll-a (mg/g fw)	Chlorophyll-b (mg/g fw)	Total chlorophyll (mg/g fw)	Chlorophyll-a/b ratio	Cell sap conductivity (mmhos/cm)
JB	0.78a	0.32b	1.10a	2.41b	1.95b
J7	0.78a	0.35a	1.13a	2.32b	1.95b
J8	0.65b	0.25c	0.91b	2.60a	2.31a
Tripti	0.77a	0.33ab	1.11a	2.26b	1.51c

In a column, figures bearing same letter(s) do not differ significantly at 5% level of significance by Duncan's Multiple Range Test.

Table 5: Effect of salinity levels on the chlorophyll content and cell sap conductivity of sweet potato

Salinity level (dSm^{-1})	Chlorophyll-a (mg/g fw)	Chlorophyll-b (mg/g fw)	Total chlorophyll (mg/g fw)	Chlorophyll-a/b ratio	Cell sap conductivity (mmhos/cm)
Control (0.64)	0.87 a	0.40 a	1.26 a	2.22 b	1.45 c
3	0.78 b	0.31 b	1.10 b	2.49 a	1.61 b
6	0.75 bc	0.30 b	1.06 b	2.49 a	1.86 c
9	0.73 c	0.30 b	1.04 b	2.39 ab	2.20 b
12	0.60 d	0.25 c	0.86 c	2.39 ab	2.53 a

In a column, figures bearing same letter(s) do not differ significantly at 5% level of significance by Duncan's Range Test.

3.2.2 Chlorophyll-a and chlorophyll-b ratio

The highest chlorophyll a/b ratio (2.60) was found in J8 and lowest (2.26) in Tripti. In case of salinity levels highest chlorophyll a/b ratio (2.39) was found at 9 and 12 dSm^{-1} (Table 4 and 5). The lowest level (2.22) was found in the control. Maximum (2.83) and minimum (1.80) chlorophyll a/b ratio was found in the genotype J7 at 12 dSm^{-1} (Table 6) and in control treatment, respectively.

3.2. 3 Yield and yield contributing characteristics

Table 6: Interaction effect of genotypes and salinity levels on the chlorophyll content and cell sap conductivity of sweet potato

Genotypes	Salinity levels (dSm^{-1})	Chlorophyll-a (mg/g fw)	Chlorophyll-b (mg/g fw)	Total Chlorophyll (mg/g fw)	Chlorophyll-a/b ratio	Cell sap conductivity (mmhos/cm)
JB	Control (0.64)	0.83 bc	0.34 bc	1.17 bc	2.44 abcde	1.38 i
	3	0.81 bcd	0.34 bc	1.16 bc	2.38 abcde	1.73 fg
	6	0.80 bcd	0.31 bc	1.12 bc	2.58 abcd	1.94 e
	9	0.80 bcd	0.33 cd	1.14 bc	2.42 abcde	2.19 d
	12	0.67 fg	0.30 cd	0.97 cde	2.23 cdef	2.51 b
	Control (0.64)	0.99 a	0.55 a	1.55 a	1.80 f	1.49 h
J7	3	0.81 bcd	0.32 bc	1.13 bc	2.53 abcde	1.54 h
	6	0.73 def	0.31 bc	1.04 bcde	2.35 abcde	1.81 f
	9	0.70 ef	0.33 bc	1.03 bcde	2.12 def	2.32 c
	12	0.68 efg	0.24 ef	0.92 de	2.83 a	2.61 b
J8	Control (0.64)	0.81 bcd	0.34 bc	1.16 bc	2.38 abcde	1.79 fg
	3	0.67 fg	0.25 de	0.92 de	2.68 abc	1.92 e
	6	0.66 fg	0.24 ef	0.91 de	2.75 ab	2.27 cd
	9	0.66 fg	0.24 ef	0.91 de	2.75 ab	2.59 b
	12	0.47 h	0.17 f	0.67 f	2.47 abcde	2.98 a
Tripti	Control (0.64)	0.85 b	0.37 b	1.22 b	2.29 bcde	1.14 k
	3	0.83 bc	0.35 bc	1.19 b	2.37 abcde	1.27 j
	6	0.81 bcd	0.35 bc	1.17 bc	2.31 bcde	1.45 hi
	9	0.76 cde	0.33 bc	1.10 bcd	2.30 bcde	1.69 g
	12	0.60 g	0.cde	0.89 e	2.06 ef	2.02 e

In a column, figures bearing same letter(s) do not differ significantly at 5% level of significance by Duncan's Range Test

3.2.4 Number and diameter of storage roots per plant

The highest number of storage roots per plant (5.53 in JB followed. The lowest number (4.06) and diameter (1.91 cm) was obtained in J8 (Table 7). These were more or less agreement with findings of Rahman and Haque [3]. The highest number of storage roots (6.91) and (3.190 diameter of storage root/ plant at the control treatment but lowest at 12 dSm^{-1} salinity level.

Table 7: Effect of genotypes on the characteristics of the sub- ground parts, total fresh and dry weights of sweet potato

Genotypes	No. of storage roots/plant	Diameter of storage roots/plant (cm)	Fresh weight of yield storage roots/plant (g)	Dry weight of storage roots/plant (g)	Absorbing fibrous fresh weight roots/plant (g)	Absorbing fibrous roots dry weight/plant (g)	Total fresh weight/plant (g)	Total dry weight/ plant	% dry weight of storage roots/plant (g)
JB	5.33a	2.32b	224.62b	65.59a	12.55a	1.59a	323.40b	79.38b	20.38ab
J7	4.06c	2.27b	132.78d	41.99c	10.08c	1.39b	251.06c	61.06c	20.90a
J8	4.59b	1.91c	169.48c	49.49b	10.93b	1.40b	195.26d	51.56d	20.58ab
Tripti	5.19a	2.61a	248.72a	70.59a	12.50a	1.58a	356.79a	86.40a	19.47b

In a column, figures bearing same letter(s) do not differ significantly at 5% level of significance by Duncan's Range Test.

Table 8: Effect of salinity levels on the characteristic of the sub- ground parts, total fresh and dry weights of sweet potato

Salinity levels(dSm^{-1})	No. of storage roots/plant	Diameter of storage roots/plant (cm)	Fresh weight of storage roots/plant (g)	Dry weight of storage roots/plant (g)	Absorbing fibrous fresh weight roots/plant (g)	Absorbing fibrous roots dry weight/plant (g)	Total fresh weight/plant (g)	Total dry weight/plant	% dry weight of storage roots/plant (g)
Control (0.64)	6.91a	3.19a	262.52a	84.33a	15.60a	2.04a	383.01a	102.86a	22.02a
3	6.08b	2.58b	236.70b	71.04b	13.44b	1.78b	358.30a	86.33b	21.13ab
6	4.41c	2.30c	215.11c	60.00c	12.06c	1.55c	306.48b	73.73c	20.04bd
9	4.16c	2.04c	150.28d	41.09d	9.79d	1.25d	217.52c	51.43d	19.89c
12	2.66d	1.28d	106.14e	28.12c	6.68e	0.83e	142.82d	33.61e	19.59c

In a column, figures bearing same letter(s) do not differ significantly at 5% level of significance by Duncan's Range Test.

3.2.5 Absorbing fibrous roots and its dry weight per plant

The genotype JB produced highest amount of absorbing fibrous roots (12.55g) and dry weight (1.59g) at control treatment. The lowest amount of these roots (10.08g) and dry weight (1.39g) was found in J7 at 12 dSm^{-1} (Table 7 & 8). The maximum (17.98g) absorbing roots and dry weight (2.37g) was produced by J8 at control treatment. But lowest was by J8 at 12 dSm^{-1}. Here Tripti produced the highest dry weight among the genotypes (Table 9).

Table 9: Interaction effect of genotypes and salinity levels on the characteristics of the sub-ground parts of sweet potato, total fresh weight and total dry weight in different

Genotypes	Salinity levels (dSm^{-1})	No. of storage roots/ plant	Diameter of storage roots/plant (cm)	Fresh weight of storage roots/plant (gm)	Dry weight of storage roots/plant (g)	Absorbing fibrous fresh weight roots/ plant (g)	Absorbing fibrous roots dry weight/ plant (g)	Total fresh weight/ plant (g)	Total dry weight/ plant (g)	% dry weight of storage roots/plant (g)
	Control (0.64)	7.66ab	3.60a	318.82a	100.23ab	15.22bc	2.04b	457.91ab	119.91a	21.88ab
	3	7.00bc	2.46cde	298.43abc	82.31cd	14.66bc	1.90bc	417.02bc	99.14c	19.73abcde
JB	6	5.33def	2.00defg	259.09c	64.74ef	14.86bc	1.67cd	363.77cde	79.41e	17.79de
	9	4.66efg	2.10cdefg	140.35gh	48.21gh	10.26fgh	1.36ef	222.46hij	59.44g	21.67ab
	12	3.00hi	1.46hi	111.41h	32.48i	7.78i	0.99g	155.85kl	39.04hi	20.84abcd
	Control (0.64)	5.33def	3.36a	207.07d	66.85ef	15.33bc	1.86bc	315.60ef	84.15ge	21.18abc
J7	3	5.66de	2.60bcd	192.15de	60.29efg	9.79fgh	1.61d	341.05d	74.86ef	21.97ab
	6	3.33ghi	2.40cde	84.11defg	55.47fg	9.75fgh	1.56de	254.89ghi	67.64fg	21.76ab
	9	3.66gh	1.90efgh	151.71efgh	37.58hi	9.49fghi	1.26f	205.67ijk	46.48h	18.27cde
	12	2.3i	1.10i	112.36h	27.30i	6.07j	0.69f	138.12l	32.0li	19.76abcde
	Control (0.64)	6.33cd	2.66bc	188.11def	64.50ef	13.90bcd	1.92bc	282.52fg	79.05e	22.83a
J8	3	4.66efg	1.93efgh	153.31efgh	51.32g	13.61cd	1.72cd	225.39ghij	62.31g	22.76a
	6	4.66efg	2.20cdef	147.92efgh	48.36gh	12.37de	1.69cd	216.42hij	58.61g	22.34a
	9	4.33fg	1.76fgh	119.37h	30.88i	10.34fg	1.19fg	171.82jkl	39.04hi	17.97de
	12	2.00hi	1.03i	55.21i	14.92j	4.45j	0.51h	80.18m	18.82j	18.60cde
	Control (0.64)	8.33a	3.16ab	336.09a	105.75a	17.98a	2.37a	476.03a	128.33a	22.28ab
Tripti	3	7.000bc	3.33a	302.91ab	92.27bc	15.72b	1.89bc	449.77ab	109.02b	20.07abcde
	6	4.33efg	2.60bcd	269.34bc	71.46de	11.29ef	1.31f	390.87cd	89.29b	18.28cde
	9	4.00fgh	2.40cde	189.69def	47.70gh	9.09ghi	1.20fg	270.14fgh	60.76g	17.65e
	12	2.33i	1.56ghi	145.58fgh	37.80hi	8.41hi	1.15fg	197.16ijk	44.58h	19.17bcde

In a column, figures bearing same letter(s) do not differ significantly at 5% level of significance by Duncan's Range Test.

3.2.6 Yield of storage roots and dry weight per plant

The genotype Tripti produced highest amount (248.72g) of storage roots and (70.59g) dry weight at control treatment, where J8 produced (225.62g) storage roots and (41.99g) dry weight (Table 7 and 8). The result showed that the Tripti was the highest salinity resistant genotype for producing yield of storage roots and dry weights per plant and this was followed by JB, J7, and J8 (Table 9).

4. Conclusion

In general, the range of salinity in most of the coastal arable soils of Bangladesh lies between 4 to 9 dSm^{-1}. Considering the results obtained in the study and the previous studies, the genotype Tripti showed better potentiality in growth, yield and morpho-physoilogical attributes followed by JB, J7 and J8 at saline conditions up to 6 dSm^{-1}. The genotype Tripti may be selected for cultivation in saline areas to increase the sweet potato production in Bangladesh.

5. Future Scope of this Study

This study may provide great information to select sweetpotato genotype for cultivation. New researchers who interested to study at sweetpotato genotype this study may helpful to them.

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Author Profile

Dr. K.M. Delowar Hossain received the B. Sc. (honours) Degree in Agriculture from Bangladesh Agricultural University, Mymensingh, Bangladesh in 1991. Then he worked as Extension Officer at Helen Keller International, Dhanmondi, Dhaka, Bangladesh from May 1992 - September 2000. He received M.Sc. and Ph.D. degree from Tottori University, Japan 2002 and 2005, respectively. Then he joined as Environmentalist, Natural Resources Planners, Uttara, Dhaka, Bangladesh from October 2005 - December 2007. From January 2008 - December 2008 he worked as Education Advisor, Japanese Universities Alumni Association in Bangladesh. After that, from January 2009 - June 2009 worked as researcher at Pabna University of Science and Technology, Bangladesh. Now he is an Assistant Professor in Jessore University of Science Technology, Bangladesh, at the Department of Environmental Science & Technology (EST) since June 29, 2009. He is also the Chairman of the department.

MD. Abdul Hakim received B.Sc. (honours) degree in Environmental Science from Jessore University of Science and Technology, Bangladesh in 2013. Now he is running student of M.Sc. under Environmental Science in Jessore University of Science and Technology, Bangladesh. He is also working as lab assistant in Environmental laboratory, Asia Arsenic Network, Jessore, Bangladesh since October 26, 2013.