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PRODUCTIVITY OF STEVIA REBAUDIANA BERTONI PLANT AND ITS AFFECTIVE BY SALINITY, NITROGEN AND POTASSIUM FERTLIZATION

Hamad, A. M.
Sugar Crops Res. Inst., Agric. Res. Cent., Giza, Egypt

ABSTRACT

Two field experiments were conducted at Sakha Agric. Res.. Station farm at Kafr El-Sheikh Governorate, Egypt during consecutive seasons of 2013/2014 and 2014/2015 to study some morphological and chemical characters inducing from salinity from irrigation by water have salinity (0, 7500 and 10000 ppm) in addition, nitrogen levels (20 and 30 kg N/fed) and potassium levels (24 and 48 kg N/fed.). All mentioned factors were collected in complete randomized block design in three replications.

Final results were pointed out that significant increase in all characters under study were observed resulted from decreasing salinity lowing less than (10000ppm) and increased nitrogen rate up to 30 kg/fed. and increased potassium dose up to 48 kg K_2O/fad in both seasons. On the opposite direction, the same trend was found when salinity rate decreased than 10000 to control (without salinity and without nitrogen or potassium fertilization). This was true in both seasons. All values of all traits were increased with the 1st and 2nd cuts and decreased in 3rd, 4th and 5th cuts. These results due to bad effect of high salinity on absorption of elements and osmotic effect on absorption of water which affected on plant growth and stevioside content of leaves. Whereas, decreased of characters values in cut 3, 4 and 5 due to decreased in temperature degree in these periods.

Finally ,we concluded that the highest values for the mentioned characters under study were optained resulted from treatments 7500ppm salinity, 30 kgN/cut and 48 kg k2o/fad .for stevia plants.

INTRODUCTION

Stevia rebaudiana, a sort of composite perennial herb it is simultaneously an excellent source of sugar with 14 kinds of microelement and 32 kinds of nutrient. Stevioside is 300 times as sweet as sucrose, which accounts for about 60 to 70% of total glycosides.

The text included the effect of different fertilizers rates (N and K) and salinity soil levels on yield and quality of Stevia plant. The stevia plant planting now in Egypt in order to produce natural sweetener than sugar cane or sugar beet and for example, one faddan from Strevia may be produce up to 400 kg of Stevia sugar annually which equivalent to about 80,000 sweetening. Taking in our consideration that one fad. of sugar cane or sugar beet produces about 5000 or 3500 sweeting units, respectively (Sweetening unit is equivalent to the sweetness of one kilogram of sucrose) (Allam, 2007).

With increasing salinity from 0.4 to 10.0 dS/m significantly decreased leaves fresh and dry weight and stevioside%, whereas, salinity up to 2.5 dS/m gave maximum number of branches,number of leaves and leaf area/plant and over this rate, these traits significantly decreased for all cuts in

both seasons (Ashraf andWaheed, 1993; Cony and Trione, 1998 **,** Mubarak *et al*. (2012) studied effect of different concentrations of NaCl at 0, 5000, 7500 and 10000 ppm for salinity stress. Results showed that the plantlet growth characters studied as number of leaves, number of shoots which decreased as salinity levels increased and Ebtsam *et al*., (2014) Increasing salt concentration up to (75mM) significantly increase total soluble sugars and reducing sugar (mg/g DW) for two cultivars of *Stevia rebaudiana* regenerated in vitro (Sharutir *et al*., 2014)

Zahida (2009) found that applied 60 kg N/ha as urea gave significantly higher dry weight/plant and leaf yield compared to 50 kg N/ha. which recorded lowest values.Al-Adakatti *et al*. (2012) concluded that growth parameters viz., plant height, number of branches and number of plants were significantly higher with nitrogen, phosphorus and potassium, 400, 200 and 200 kg/ha, respectively, which were on par with 300, 150 and 100 kg/ha, respectively.Novake *et al*. (2012) reported that the highest dry leaves yield (30.28 and 30.98 g/plant) was achieved by applying 1.6 and 0.8 g N/plant compared with control.Zahida *et al*. (2013) tested effect of some nitrogen levels (0, 20, 40 and 60 kg/ha). They concluded that 60 kg N/ha gave the highest number of branches, number of leaves/plant, higher leaf area index, dry leaf yield and dry matter accumulation/plant. Farinaz *et al*. (2014) found that with increasing nitrogen and potassioum as biofertilizers caused to significant increase in stevioside percentage. According to Inugraha *et al*. (2014) number of leaves, leaf area and leaf area index gave maximum values resulted from significant interaction effect between nitrogen x potassium fertilizers (200 kg N and 225 kg K_2O/ha.

Prakash *et al*. (2012) researched influence of potassium rates from 1% to 10% on *Stevia rebaudiana*, leaves weight and stevioside content. They found that high weight and content were maximum with 7% K humat concentration. Fakhrul *et al*. (2014)found that potassium enhanced significant effect on number of branches, number of leaves; stevioside% and stevioside yield of *Stevia rebaudiana* as well as plant dry and fresh weight.

MATERIALS AND METHODS

This study was carried out in Sakha Agricultural Research Station farm at Kafr El-Sheikh Governorate during the two successive of seasons of 2013/2014 and 2014/2015. It is important to study the influence of salinity levels (0, 7500 and 10000 ppm) and nitrogen doses (20 and 30 kg N/fad) and potassium rate (24 and 48 kg K_2O/fed) on yield and quality of *Stevia rebaudiana* cultivar Spanti were obtained from sugar Crops Research Institute, Agriculture Research Center, Ministry of Agriculture, Egypt, which grown in complete randomized block design in three replications contains twelve treatments combination between salinity , nitrogen and potassium levels as follows :

1.10000 ppm
2.7500 ppm
3.Control (without salinity and fertilization).
4.10000 ppm + 24 kg K_2O/fed + 20 kg N/fed/cut.
5.7500 ppm + 24 kg K_2O/fed + 20 kg N/Fed/cut.
6.10000 ppm + 48 kg K_2O/fed + 20 kg N/Fed/cut
7.7500 ppm + 48 kg K_2O/fed + 20 kg N/Fed/cut
8.10000 ppm + 24 kg K_2O/fed + 30 kg N/Fed/cut
9.7500 ppm + 24 kg K_2O/fed + 30 kg N/Fed/cut
10.10000 ppm + 48 kg K_2O/fed + 30 kg N/Fed/cut
11.7500 ppm + 48 kg K_2O/fed + 30 kg N/Fed/cut

At 1/2/2013 and 1/2/2014 seasons seeds were sown in wood boxes take dimensions 30 x 40 cm in glass houses of Sugar Crops Department at Sakha in soil consists of mixture of sand, peat-moss and silty clay soil at ratio of 1:1:2. Complete germination was through 5-7 days after sowing and gave plantelets. After 75 days from planting at ١٥/٤/2013 and ١٥/٤/2014 plantlets were sprayed with nutrients solution contained 1.5 g Zn + 0.4 g Ca + 1.2 g F + 1.2. g B + 0.2 g Mg, all of these amounts were added to 20 litter from water after ten days from germination and repeated every two weeks until transplanting the plantlets to permanent soil. Irrigation was applied as recorded in treatments and nitrogen applied to plants at two equal doses, the first was added after ten days from planting and the other with the second irrigation and after that the first dose after cutting and the second before the second irrigation for every dose with 5 cuts. All potassium and phosphorus fertilizers were applied during land preparation at rates 100 kg p2o5 and 24 ,48 kg k2o per faddan and putting it in cement experiment plot area (m^2)(1x1m) having ten plants spacing between plants (20cm) and between ridgs (50cm) to allowted to control for irrigation at mentioned salinity rates. at mentioned doses. Cutting dates take intervals 60 days between each cut as follows:

The first season(2013/2014)	The second season(2014/2015)
15/6/2013	15/6/2014
15/8/2013	15/8/2014
15/10/2013	15/10/2014
15/12/2013	15/12/2014
15/2/2014	15/2/2015

After the first season, the plants we need to it for planting in the second seasons were prepared it to planting from the first season plants it in every box (٣0 x ٤0 cm). Control treatment was irrigated with normal water irrigation, while the other salinity treatments were irrigated with salinity water. Five cuts were taken each two months intervals for every season. The characters were studied and measured at two growing seasons (2013/2014 and 2014/2015) at every cut as follows:

1. Number of branches/plant
2. Leaves fresh weight (g/plant/cut)
3. Leaves fresh yield (ton/fed/cut)
4. Leaves dry yield (ton/fed/cut).

5. Stevioside percentage
6. Stevioside yield (kg/fed/cut)
= leaves dry weight x stevioside percentage

Stevioside content was determined using high performance liquid chromatography (HPLC) according to Nishiyama etal (1992) method.

The optained results were analysed ,where variance (ANOVA) and test significant difference (LSD) were calculated at 5% levels as reported by Gomez and Gomez(1984).

RESULTS AND DISCUSSION

1.Number of branches/plant:

Number of branches is very important trait for stevia plant, because it's the source of leaves which considered producer for stevioside. Data presented in Table 1 revealed that increasing salinity up to 10000 ppm significantly decreased this character in both seasons, while with decreasing salinity and increasing both nitrogen and potassium doses from 20 and 24 to 30 and 48 kg from N and K, respectively caused to gave the highest number of branches in both seasons (31.60 and 30.67). These results returned to bad effects of salinity on growth of plants by inhibiting growth of roots, while with increasing nitrogen and potassium dose gave good effect for plant growth. Similar results were found by Ashraf and Waheed (1993), Cony and Trione (1998)and Ebtsam *et al*. (2014).

Table 1: Effect of salinity, nitrogen and potassium on number of branches/plant of *Stevia rebaudiana* Bertoni during 2013/2014 and 2014/2015 seasons.

Treat.	2013 / 2014						2014 / 2015					
	Cut 1	Cut 2	Cut 3	Cut 4	Cut 5	Mean	Cut 1	Cut 2	Cut 3	Cut 4	Cut 5	Mean
1	9.66	10.33	8.91	7.33	6.85	8.61	7.22	8.33	7.14	7.01	6.39	7.21
2	12.33	14.05	10.22	9.33	8.44	10.87	10.14	11.22	9.16	9.04	8.33	9.57
3	17.39	19.14	16.21	13.80	11.33	15.57	14.32	16.11	12.16	10.51	9.66	12.55
4	21.66	23.17	19.33	17.20	13.18	18.90	17.66	19.31	17.13	15.66	12.31	16.41
5	24.11	25.10	22.14	21.33	18.66	22.26	18.99	20.15	20.13	18.51	16.21	18.79
6	25.13	26.21	23.55	21.76	19.14	23.14	21.15	23.11	21.33	19.65	18.71	20.79
7	26.39	27.66	24.51	24.91	20.33	24.76	24.10	26.22	24.55	22.91	22.01	23.95
8	27.39	29.13	28.33	25.77	23.66	26.97	25.19	28.71	25.57	23.81	22.66	25.18
9	30.10	30.66	28.99	27.15	24.71	28.32	28.10	29.61	27.15	24.91	24.14	26.78
10	30.75	32.11	30.91	28.66	25.14	29.51	29.11	31.06	30.14	28.13	27.77	29.24
11	33.19	35.06	33.13	29.19	27.41	31.60	31.15	33.16	31.60	29.15	28.33	30.67
LSD at 0.05	6.13	8.11	7.33	9.55	7.36	10.90	9.05	11.02	8.15	10.13	7.21	8.03

2.Leaves fresh weight (g/plant/cut):

From Table 2 it quite be seen that significant differences were observed between mean values of leaves fresh weight in all cuts in both seasons resulted from different salinity levels and both levels of nitrogen and potassium. Maximum values were obtained (37.65 and 39.13 g/plant) resulted from increasing nitrogen and potassium levels up to (30 kg N and 48 kg K_2O/fed) with decreasing salinity level up to to (7500 ppm) as compared with other treatments which recorded lowest values (19.30 and 16.64 g/plant). These results are in harmony with those of Prakash *et al*. (2012) and Fakhrul *et al*. (2014).

Table 2: Effect of salinity, nitrogen and potassium on leaves fresh weight g/plant/cut of *Stevia rebaudiana* Bertoni during 2013/2014 and 2014/2015 seasons.

Treat.	2013 / 2014						2014 / 2015					
	Cut 1	Cut 2	Cut 3	Cut 4	Cut 5	Mean	Cut 1	Cut 2	Cut 3	Cut 4	Cut 5	Mean
1	21.13	23.19	19.22	18.33	14.66	19.30	18.32	19.44	17.22	16.13	12.10	16.64
2	22.66	25.11	20.21	19.66	17.77	21.08	19.14	20.05	18.33	18.04	13.15	17.74
3	23.35	27.15	21.14	20.31	19.11	22.25	20.66	21.35	18.99	18.33	15.17	18.90
4	25.3	28.71	24.33	21.15	20.13	23.89	22.33	24.13	19.19	19.11	18.00	20.55
5	26.66	30.33	26.10	24.19	21.66	25.78	25.51	27.10	24.32	21.13	19.21	23.45
6	28.32	32.15	27.05	25.00	24.18	27.34	28.99	30.41	28.15	27.66	23.15	27.67
7	31.55	34.33	30.17	27.11	26.14	29.86	30.33	33.97	31.17	29.33	25.13	29.98
8	32.61	36.14	31.66	29.33	27.66	31.48	33.14	35.66	33.11	32.13	28.16	32.44
9	35.77	37.33	32.00	31.17	30.96	33.44	34.85	38.14	34.17	33.66	30.11	34.18
10	36.81	38.10	35.66	32.33	32.00	34.98	37.14	40.00	36.11	35.13	33.15	36.30
11	38.66	42.13	37.13	36.66	33.71	37.65	40.77	45.11	38.66	36.15	35.00	39.13
LSD at 0.05	6.05	9.13	8.22	10.05	9.13	9.15	9.03	11.06	8.09	10.23	12.00	12.81

3.Leaves fresh yield (ton/fed):

Concerning the effect of salinity, nitrogen and potassium levels on leaves fresh yield/fed/cut. Data presented in Table 3 indicated that leaves fresh yield led to maximum leaves fresh yield (1.50 and 1.56 ton/fed) in both seasons from five cuts resulted from the highest nitrogen rate 30 kg and 48 kg K_2O/fad with decreasing salinity level up to 7500 ppm. These advantage due to nitrogen and potassium role for encourage and increase growth rate through low salinity soil level. These findings are in agreement with those obtained by Zahida and Saini . (2009) and Novak *et al*. (2012).

Table3: Effect of salinity, nitrogen and potassium on leaves fresh weight ton/fed/cut of *Stevia rebaudiana* Bertoni during 2013/2014 and 2014/2015 seasons.

Treat.	2013 / 2014						2014 / 2015					
	Cut 1	Cut 2	Cut 3	Cut 4	Cut 5	Mean	Cut 1	Cut 2	Cut 3	Cut 4	Cut 5	Mean
1	0.84	0.92	0.76	0.73	0.58	0.76	0.73	0.77	0.68	0.64	0.48	0.66
2	0.90	1.00	0.80	0.78	0.71	0.81	0.76	0.80	0.73	0.72	0.52	0.70
3	0.93	1.08	0.84	0.81	0.76	0.88	0.82	0.85	0.75	0.73	0.60	0.75
4	1.00	1.14	0.97	0.84	0.80	0.95	0.89	0.96	0.80	0.76	0.72	0.82
5	1.06	1.21	1.04	0.96	0.86	1.02	1.02	1.08	0.97	0.84	0.76	0.93
6	1.13	1.28	1.08	1.00	0.96	1.09	1.15	1.07	1.06	0.91	0.82	1.00
7	1.26	1.37	1.20	1.08	1.04	1.19	1.21	1.25	1.14	1.01	1.00	1.12
8	1.30	1.44	1.26	1.17	1.10	1.25	1.32	1.42	1.30	1.28	1.12	1.28
9	1.43	1.49	1.28	1.24	1.23	1.33	1.39	1.52	1.36	1.34	1.20	1.36
10	1.47	1.52	1.42	1.29	1.28	1.39	1.48	1.60	1.44	1.40	1.32	1.44
11	1.54	1.68	1.48	1.46	1.34	1.50	1.63	1.80	1.54	1.44	1.40	1.56
LSDat 0.05	0.31	0.36	0.29	0.24	0.22	0.25	0.43	0.46	0.33	0.37	0.45	0.51

4.Leaves dry yield (ton/fed):

Regarding to obtained results in Table 4, it could be remarked that significant differences were observed among mean values of treatments of salinity, nitrogen and potassium levels for all cuts in both seasons. Addition 30 kg N and 48 kg K_2O/fed for stevia plants in soil having salinity 7500 ppm gave the highest leaves dry yield (0.87 and 0.85 ton/fed/cut) more than other treatments in every cut, this observation was fairly true in both seasons. The effect of salinity; nitrogen and potassium on leaves dry yield was reported by Fakhrul *et al*. (2014).

Table 4: Effect of salinity, nitrogen and potassium on leaves dry weight ton/fed of *Stevia rebaudiana* Bertoni during 2013/2014 and 2014/2015 seasons.

Treat.	2013 / 2014						2014 / 2015					
	Cut 1	Cut 2	Cut 3	Cut 4	Cut 5	Mean	Cut 1	Cut 2	Cut 3	Cut 4	Cut 5	Mean
1	0.35	0.41	0.31	0.28	0.20	0.31	0.23	0.31	0.20	0.19	0.17	0.21
2	0.39	0.43	0.37	0.34	0.30	0.36	0.31	0.39	0.28	0.24	0.20	0.28
3	0.41	0.46	0.39	0.37	0.35	0.39	0.37	0.43	0.35	0.31	0.28	0.34
4	0.46	0.51	0.44	0.41	0.39	0.44	0.44	0.49	0.42	0.38	0.35	0.41
5	0.51	0.54	0.49	0.46	0.41	0.48	0.49	0.51	0.47	0.43	0.39	0.45
6	0.55	0.59	0.53	0.49	0.47	0.52	0.53	0.57	0.50	0.47	0.43	0.49
7	0.59	0.61	0.56	0.54	0.53	0.56	0.55	0.58	0.51	0.48	0.46	0.50
8	0.62	0.67	0.61	0.59	0.57	0.61	0.71	0.76	0.67	0.61	0.59	0.66
9	0.73	0.76	0.70	0.65	0.60	0.68	0.77	0.80	0.71	0.63	0.61	0.70
10	0.79	0.85	0.75	0.69	0.66	0.74	0.83	0.85	0.76	0.73	0.71	0.77
11	0.91	0.94	0.87	0.85	0.79	0.87	0.89	0.96	0.86	0.81	0.76	0.85
LSDat 0.05	0.20	0.22	0.19	0.17	0.20	0.17	0.29	0.26	0.21	0.20	0.27	0.19

5.Stevioside%:

Stevioside concentration in leaves is the reflection mirror for stevioside yield, which we considered the final goal for any researcher. The high concentration was obtained in leaves was found in leaves of plants which fertilized with 30 kg N in addition to 48 kg K_2O/fed and planted in soil low salinity, 7500 ppm, 17.10 and 17.37% in both seasons as compared with (11.39 and 10.07%) which obtained with 10000 ppm NaCl and not take any fertilizers with all cuts, stevioside content was high with the first two cuts and decreased in other three cuts this trend due to high temperature at the first time and then decreased in other three cuts, this clear in Table 5. Prakash *et al*. (2012), Fakhrul *et al*. (2014) and Farinaz *et al*. (2014) found similar results.

Table 5: Effect of salinity, nitrogen and potassium on stevioside percentage (%) of *Stevia rebaudiana* Bertoni during 2013/2014 and 2014/2015 seasons.

Treat.	2013 / 2014						2014 / 2015					
	Cut 1	Cut 2	Cut 3	Cut 4	Cut 5	Mean	Cut 1	Cut 2	Cut 3	Cut 4	Cut 5	Mean
1	11.21	12.33	11.17	11.14	11.10	11.39	10.33	11.05	10.03	9.66	9.31	10.07
2	11.33	13.05	11.22	11.15	11.13	11.57	11.14	11.60	11.05	10.33	10.14	10.85
3	13.11	14.02	13.31	12.61	12.33	13.07	12.33	12.67	12.33	12.11	11.66	12.22
4	14.23	14.66	14.17	14.10	14.09	14.25	13.66	13.93	13.33	13.13	12.44	13.29
5	15.33	16.13	15.22	15.13	15.03	15.36	14.05	14.23	13.66	13.32	13.10	13.67
6	16.13	16.79	16.10	16.09	15.99	16.22	14.91	14.99	14.01	13.66	13.14	14.14
7	16.25	16.95	16.22	16.15	16.11	16.33	15.09	15.33	14.15	13.93	13.33	14.36
8	16.66	17.14	16.39	16.23	16.18	16.52	15.33	15.66	14.77	14.21	13.66	14.72
9	16.85	17.33	16.69	16.66	16.21	16.74	16.21	16.71	15.33	15.10	14.21	15.51
10	16.99	17.44	17.05	16.81	16.51	16.96	17.14	17.33	16.73	16.66	16.33	16.83
11	17.15	17.73	17.09	16.91	16.66	17.10	17.66	18.09	17.33	17.13	16.66	17.37
LSDat 0.05	1.23	1.31	1.18	2.00	1.22	1.14	2.11	1.90	2.95	2.01	2.65	1.18

6. Stevioside yield (kg/fed):

Concerning to the effect of nitrogen and potassium levels in addition to salinity levels on stevioside yield per cut/fed in both seasons in Table 6, it is quite clear that stevioside yield is the result from the effect of all mentioned factors (N, K and salinity levels) on all characters under study and gave maximum yield (149.34 and 149.09 kg/fed) in both seasons. The highest yields were obtained resulted from fertilized stevia plants with 30 kg N + 48 kg K_2O/fad/cut in soil having salinity 7500 ppm as compared with other treatments which recorded the lowest ones (35.55 and 22.45 kg/fed/cut). These findings are in agreement with those obtained by Fakhrul *et al*. (2014)

Table 6: Effect of salinity, nitrogen and potassium on stevioside yield kg/fed of *Stevia rebaudiana* Bertoni in 2013/2014 and 2014/2015 seasons.

Treat.	2013 / 2014						2014 / 2015					
	Cut 1	Cut 2	Cut 3	Cut 4	Cut 5	Mean	Cut 1	Cut 2	Cut 3	Cut 4	Cut 5	Mean
1	39.23	50.55	34.62	31.19	22.20	35.55	23.75	34.25	20.10	18.35	15.82	22.45
2	44.18	56.11	41.51	37.91	33.39	42.62	34.53	45.24	30.94	24.79	20.28	31.15
3	53.75	64.49	51.90	46.65	43.15	51.98	45.62	54.48	43.15	37.54	32.64	42.68
4	65.45	74.76	62.34	57.81	54.95	63.06	60.10	68.25	55.98	49.89	43.54	55.55
5	78.18	87.10	74.57	69.59	61.62	74.21	68.84	73.08	64.20	57.27	51.09	62.89
6	88.71	99.06	85.33	78.84	75.15	85.41	79.02	85.44	70.05	64.20	56.50	71.04
7	95.87	103.39	90.83	87.21	85.38	92.53	82.99	88.91	72.16	66.86	61.31	74.44
8	103.29	114.83	99.97	95.75	92.22	101.21	108.84	119.01	98.95	86.68	80.59	98.81
9	123.00	131.70	116.83	108.29	97.26	115.41	124.81	133.68	108.84	95.13	86.68	109.82
10	134.22	148.24	127.87	115.98	108.96	127.05	142.26	147.30	127.14	121.61	115.94	130.85
11	156.06	166.66	148.68	143.73	131.61	149.34	157.17	173.66	149.03	138.75	126.61	149.09
LSDat 0.05	67.15	57.01	44.06	53.15	60.13	83.14	51.60	40.05	37.12	33.17	45.13	90.03

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إنتاجية نبات الاستيفيا وتأثرها بالملوحة والتسميد النتروجينى والبوتاسى

عطا مرسى حماد
معهد بحوث المحاصيل السكرية ـ مركز البحوث الزراعية ـ جيزة ـ ج.م.ع

نبات الاستيفيا من النباتات التى تعتبر مصدراً للمحليات الطبيعية وخاصة لمرضى السكر وإن إنتاجيته تتأثر بملوحة التربة وكذلك التسميد النتروجينى والبوتاسى ولذا فقد أقيمت تجربتان حقليتان فى المزرعة البحثية لمحطة سخا للبحوث الزراعية بكفرالشيخ ج.م.ع فى الموسمين الزراعيين ٢٠١٣/٢٠١٤ ، ٢٠١٤/٢٠١٥ وقد اجريت التجارب في تصميم قطاعات كاملة العشوائيه في ثلاث مكررات حيث تم توزيع مستويات الملوحه في(صفر-٧٥٠٠- ١٠٠٠٠جزء في المليون) التسميد النيتروجيني(٢٠-٣٠ كجم/ن/فدان) والبوتاسيوم(٢٤،٤٨ كجم بو٢أ/ف). وقد تمت الزراعه في احواض اسمنتيه مساحتها ١ م^{٢} حتي يتم التحكم في ري معاملات الملوحه حسب المعدلات المذكوره .وقد أظهرت النتائج المتحصل عليها ما يلى:

- إن زيادة الملوحة حتى ١٠٠٠٠ جزء فى المليون قد أثر سلبا على جميع القيم للصفات التى كانت تحت الدراسة مثل عدد الأفرع ـ الوزن الغض والوزن الجاف للأوراق وكذلك محصول الأوراق الغض والجاف للفدان بالإضافة إلى نسبة الاستيفيو سيد المئوية ومحصولها للفدان لكل حشة فى الخمس حشات فى كلا الموسمين.
- أما بالنسبة للتسميد النتروجينى فقد زادت كل الصفات تحت الدراسه زيادة معنوية بزيادة معدل التسميد ٢٠-٣٠ كجم ن/ف لكل حشة فى كلا الموسمين أيضا وهذا يرجع إلى دور النتروجين فى زيادة النمو الخضرى وما يتبعه من صفات تعتمد عليه حيث تم وضع هذه الكمية على دفعتين لكل حشة.
- وقد أدت زيادة معدل التسميد البوتاسى من ٢٤ إلى ٤٨ كجم بو٢أ/ف الذى أضيف أثناء تجهيز الارض قبل الزراعة إلى إحداث زيادة معنوية بين قيم متوسطات كل الصفات التى كانت تحت الدراسة فى كل حشة فى كلا الموسمين الزراعيين.
- توصي الدراسه بأن للحصول علي اعلي قيم للصفات التى تم دراستها عندما تم زراعة الاستيفيا فى اراضى ذات ملوحة منخفضة ٧٥٠٠ جزء فى المليون أو أقل مع التسميد النتروجينى بمعدل ٣٠ وحدة لكل حشة بعد إضافة ٤٨ كجم بو٢أ/ف للتربة قبل الزراعة