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INFLUENCE OF LENGTH STEM UNDER WATER AND DEPTH WATER ON VEGETATIVE GROWTH OF PAPYRUS AND REEDS IN MARSH AL- CHIBAYISH

Abstract: *This investigation was carried out during season 2017 at 30 march on plants of papyrus and reeds grown in marsh east 30 km at AL- Chibayish, Nassria Governorate in area Ishan Goba at length stem under water 100 - 150 cm and quality of water. The plants were grown in silt soil . The experiment included the local cultivar plants of papyrus and reeds with three replicates and the replicate 5 plants . It is adopted according to Randomized Complete Block Design (RCBD), and the results were statistically analyzed according to Duncan test at the probability level of 5% . Results showed that, leaf area, leaf moisture, number leaves / plant, leaf thickness, number of nods, total chlorophyll and firmness of pulp on plants of stem at length 100 cm from soil more than plants of stem at length 150 cm from soil . The best water quality was increased with decreasing depth from surface water .There were a significant effect between treatment .*

Key words: *length stem under water and depth water, papyrus and reeds in AL- Chibayish marsh.*
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Introduction

The marsh world is considered for its natural social constituents an extension to ancient history owing to the continuation of primitive life features building reed houses, making boats, transport and fishing, despite the huge progress in these features in the world. Its described as rare from in the world (Klaff, 2005). Its historical and legacy in civilization still continues in its special world. These natural areas which are not polluted by elements of modern development are known as virgin areas, which the international organizations endeavor to protect . They call them "the protected areas in the world", represented by (virgin woods, rivers that have no establishments on them, human primitive units and areas not damaged by are limited in the world and the Iraqi marches are within these quantifications. In brief, it is a territory with some parts flooded with water throughout the year and some parts flooded quarterly. It has own unique geographical character (Azzam, et. al.2010). Before 2003, the marshes were drained to 10% of their original size (Cutis and Najaha, 2006). Upon the importance of marshes, successive governments beyond 2003 in ordination

with international and regional and local organizations to relief and rehabilitate rashes but these efforts never achieved its objectives as to that there are many international and external obstructions (Ahmad, 2012). The location Ishan Goba north AL- Chibayish beside Euphrates river on the south . The out lest of these marshes discharge to Euphrates and Hammar marsh through groups of ways and bridges on AL- Chibayish – Mdaina road, especially between Almdaina and Alfhood. The discharge of these is about 1500m^3/s during floods. Papyrus is grown completely in marshes throughout AL- Chibayish area Nassria, Iraq. The stems pulp is eaten by people with very good test and the local name of it is " AL-Egeed" .People prefer " AL- Egeed" during spring time because it becomes fresh and less firm .There is another plant which is eaten and named " AL- Kareed".It represents the flower of the plants and it is taken during May each year . The meathead to prepare it is the flowers and pollens put out upon special screen and under some of water vapors which leads make it firm. This method were used from thousands years ago by AL-Summareen (Wilfred, 1960). Al-Saady (2008) found that, the

water in the beginning of marsh (western side) is of low color values that increase towards the end of the marsh and the water color was altered from yellowish at the mid of marsh to yellowish reddish at the end of it. Water's color for the second season is of less intensity than the first season while the feeding water is colorless. The samples of water in the mid of marsh characterized by disliked odor especially in the first season, and the result showed that the marsh water's temperature was affected directly by air temperature because of low depth. Marsh water for two seasons has low alkalinity and with less alkalinity than feeding water and with low content of dissolved oxygen and high content of carbon dioxide in the first season compared with the feeding water. Most of samples especially of the marsh margins characterized by hydrogen sulfate content while the water in the second season and feeding water for two seasons lack this gas. In the second season the marsh water has high content of DO and CO2 compared with feeding water and have high content of DO relative to first season. Marsh water for two seasons with higher content than total dissolved solids relative to feeding water and the average content of first season is higher than the second season. The types of marsh water for first season range between sodium sulfate, calcium-sulfate and sodium chloride and for the second season's varies between sodium chloride and sodium sulfate while the feeding water varies between calcium sulfate in the first season to sodium chloride in the second one. Marsh and the feeding water content of elements such as (Cd, Pb, Ni, Co) without cobalt of feeding water in the second season is higher than suitable limit for drinking and agricultural water and within the suitable limit of animals drinking water. Substance found in sources of water, point sources pollution and non point sources pollution effect in growth pants water (Radwan et al., 2003).The plants marsh gave good growth with the best water quality parameters, water depth and light (Horne and Goldman, 1994) .The purpose is to study growth plants of papyrus and reeds and quality of water in marsh AL- Chibayish.

Materials and methods

This study was conducted in area Ishan Goba in Marche distant 30 km east AL- Chibayish, Nassria Governorate during at 30 march 2017 on plants of papyrus (*Typha anguststa* L.) and reeds (*Phragmites commons* L .) that grown in silt soil to investigate the effects of immerse stem length (100 – 150 cm) from soil on vegetative growth parameters. The experiment included the local cultivar plants of papyrus and reeds with four replicates and the replicate 5 plants . It is adopted according to Randomized Complete Block Design (RCBD), and the results were statistically analyzed according to Duncan test at the probability level of 5% (Al-Rawi

and Khalf Allah, 2000). The leaf aria cm^2, Percentage of leaf moisture, number leaves / plant , number of nods, leaf thickness mm and length of plant cm according to (Ibrahim, 2010). Firmness was measured with an Effegi penetrometer (Model NI, McCormick Fruit Tech, Yakima, WA) Fitted with an 11.1mm tip . Total chlorophyll mg /100 gm F.W according to (A.O.A.C, 1985). pH of water with pH meter . Ec of water (µs/cm) with Ec meter . Turbidity (NTV) according to (Fermanich, 2003) . Total Suspended Solids (T.S.S) mg/L according to (EPA, 2003) . Total Dissolved Solids (T.D.S) mg/L according to(Cole, 1983) . . Color of water (PCU), Total alkality mg/L and Total hardness mg/L according to (Bagley et al., 1997) . Soluble CO2 mg/L and Soluble DO mg/L L according to (Golterman, 1978). Heavy elements Cadmium (cd), Cobalt (Co), Chromium (Cr) and Nickel (Ni) was determined by using Atomic absorption spectrophotometer (Eisenmann, 2001) .

Results and discussion

1-Leaf aria, leaf moisture, number leaves / plant, leaf thickness, total chlorophyll, length of plant and firmness of pulp in plant papyrus .

The data in table(1) indicate that, plant papyrus which grown on stem at length 100 cm from soil led to a significant increased in the leaf aria, leaf moisture, number leaves / plant, leaf thickness, total chlorophyll, length of plant, firmness of pulp compared to plant papyrus grown on stem at length 150 cm from soil . The highest rates ($56.58\ cm^2$, 80.73 %, 9.22, 5.17 mm, 128.45 mg/1gm FW, 210.23cm and 5.83 kg/cm^2) in the plant grown on stem at length 100 cm from soil in comparison to the lowest values rates ($53.95\ cm^2$, 80.52 %, 7.64, 3.98 mm, 123.21 mg/1gm FW, 200.51cm and 5.72 kg/cm^2) in plant grown on stem at length 150 cm from soil , respectively . Increasing leaf aria, leaf moisture, number leaves / plant, leaf thickness, total chlorophyll, length of plant, firmness of pulp in plant papyrus grown on stem at length 100 cm from soil due to the fact that parts growth were to be exposed to air more than plants grown at length stem 150 cm from soil and thus encourages the accumulation carbohydrate materials in leaves and this enhanced characterize of vegetative (Abo-salam, 2009) . Also the quality of water effect on plants growth of marshes tables(3 and 4) . These result are in line with (Boyd and Claude, 2000) on plant marches they mentioned that plants gave the higher growth vegetative in best water quality.

2-Leaf aria, leaf moisture, number leaves / plant, umber of nods, total chlorophyll, length of plant and firmness of pulp in plant reeds .

Concerning the results in Table (2), leaf aria, leaf moisture, number leaves / plant, umber of nods, total chlorophyll, length of plant and firmness of

pulp in plant reeds were significantly affected by length stem plant immersed from soil . It is cleared that plant reeds which grown on stem at length 100 cm from soil increased compared with reeds grown on stem at length 150 cm from soil . The plant reeds which grown on stem at length 100 cm from soil gave the highest parameters they were (28.79 cm^2, 83.61 %, 7.34, 7.82, 109.32 mg/1gm FW, 418.55 cm and 9.59 kg/cm^2) in comparison to the lowest values (26.46 cm^2, 82.27 %, 6.70, 6.20, 101.85 mg/1gm FW, 418.55 cm and 7.96 kg/cm^2) respectively . The reason of increasing the leaf aria,

leaf moisture, number leaves / plant, umber of nods, total chlorophyll, length of plant and firmness of pulp in plant reeds as a result of the growth stem length from soil. Decreasing soluble DO and increasing the pH, Ec, turbidity, total suspended solids, total dissolved solids, total alkality, total hardness, soluble CO_2 and heavy elements (Cd, Co, Cr and Ni) in water of marche area Ishan Goba with increasing the depth of water, which results through Tables (3 and 4) due to the fact that this compound decrease in the percentage of growth in plant reeds .

Table 1.

Effect of length stem under water from soil on growth plants Papyrus for season 2017.

Papyrus	Leaf aria cm^2	%Leaf moisture	Number leaves / plant	Leaf thickness mm	Total chlorophyll mg / 100g FW	length of plant cm	Firmness pulp 30cm from soil kg/cm^2
Stem plants at length 100 cm from soil	56.58a	80.73a	9.22a	5.17a	128.45a	210.23a	5.83a
Stem plants at length 150 cm from soil	53.95 B	80.52a	7.64b	3.98b	123.21b	200.51b	5.72a

Means followed by the same letters are not significantly different.

Table 2.

Effect of length stem under water from soil on growth plants reeds for season 2017.

Reed	leaf aria cm^2	%Leaf moisture	Number leaves / plant	Number of nods	Total chlorophyll mg / 100g	length of plant cm	Firmness 30cm from soil kg/cm^2
Stem plants at length 100 cm from soil	28.79a	83.61b	7.34a	7.82a	109.32a	418.55a	9.59a
Stem plants at length 150 cm from soil	26.46b	82.27a	6.70b	6.20b	101.85b	400.10b	7.96b

Means followed by the same letters are not significantly different.

Table 3.

Effect of depth water on contenting water from visual and chemical characterize in area Ishan Goba for season 2017.

Water contenting	Color PCU	pH	Ec (µs/cm)	Turbidity NTV	T.S.S mg/L	T.D.S mg/L	Soluble CO2 mg/L
Depth 100 cm from surface	5 b	7.24 a	1454 b	2.80 b	84 b	1066 b	20.77 b
Depth 150 cm from surface	9 a	7.61 a	1500 a	5.24 a	104 a	1098 a	29.50 a

Means followed by the same letters are not significantly different.

Table 4.

Effect of depth water on contenting water from visual and chemical characterize in area Ishan Goba for season 2017.

Water contenting	Soluble DO mg/L	Total hardness mg/L	Total alkality mg/L	Cd	Cr	Ni	Co
Depth 100 cm from surface	4.5 b	60-115 b	180.13 b	0.026 a	0.011 b	0.043 b	0.040 b
Depth 150 cm from surface	6.9 a	75-150 a	219.56 a	0.035 a	0.090 a	0.065 a	0.055 a

Means followed by the same letters are not significantly different.

Conclusion

It could be concluded from this experiment that, characterize of vegetative growth on plants Papyrus and Reed i.e leaf area, leaf moisture, number leaves / plant, leaf thickness, number of nods, total chlorophyll and firmness of pulp at plants of stem at length 100 cm from soil more gave the best result compared with plants of stem at length 150 cm from soil and best water quality in decreasing depth from surface water .

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