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THE EFFECTS OF THE METHOD OF CULTIVATION AND LEAF FERTILIZATION WITH BORON IN SOME OF THE CHARACTERISTICS OF VEGETATIVE GROWTH FOR THREE HYBRIDS OF SWEET CORN IN THE SPRING SEASON

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This study was undertaken to evaluate the performance of cut Dendrobium pink sunshine under various holding solutions at post graduate lab Department of Horticulture, Faculty of Agriculture, Annamalai University, Tamil Nadu, India, during February 2016. The treatments with three replications were carried out in completely randomized design with 3 spikes in each replication. Nine chemical preservative solutions were used for extending the vase life and the treatments are T₁ 8-HQC (200-ppm), T₂ Citric Acid (200-ppm), T₃ STS (200-ppm), T₄ GA (200-ppm), T₅ Al₂(SO₄)₃ (10-ppm), T₆ 8-HQC (200-ppm) + 5% sucrose, T₇ Citric Acid (200-ppm) + 5% sucrose, T₈ STS (200-ppm) + 5% sucrose, T₉ GA (200-ppm) + 5% sucrose, T₁₀ Al₂(SO₄)₃ (200-ppm) + 5% sucrose and T₁₁ Distilled water. Postharvest observations including bud open (%), flower drop (%), flower colour retention (days), flower diameter (cm), vase life and water uptake (ml). Among the treatments (T₁₀) Al₂(SO₄)₃ (200-ppm) + 5% sucrose recorded maximum performances in the postharvest studies followed by (T₈) STS (200-ppm) + 5% sucrose.

The field experiment was conducted during the spring season 2019 at the Research Station department of horticulture and garden engineering Faculty of Agriculture University Diyala to study the effect of the method of agriculture and leaf fertilization boron in the growth and the product of three hybrids of sweet corn, the experiment included three factors, the first is the cultivation of three hybrids of sweet corn, namely Roi Soleal, Seker misir and Succaro, the second factor of the method of cultivation and included two methods of seed farming directly in the field and agriculture in the seedling The third factor is leaf fertilization with boron, which includes three levels (zero, 50 and 75) L⁻¹. The experiment was carried out according to the Split-Split plot design within the design of the entire random sectors (RCBD) and the results showed the following: 1 -hybrids have influenced morally in most of the qualities studied for the plant of sweet corn, as the hybrids of Seker misir (V₂) is morally superior to the height of the plant (159.8 cm) and the number of leaves at 10.66 leaf⁻¹ and exceeds the hybrids Succar (V₃) in leg thickness if it reaches 1.544 cm, early female flowers (47.33 days), early male flowers (45.27 days) and nodes ratio (94.80%). 2-The method of cultivation has affected morally in most of the studied traits of the plant of sweet corn, as the method of seedling sitted has outperformed the best results in the height of the plant (161 cm), leg thickness (1.54 cm), the number of leaves (11.11 leaf⁻¹), the early female flowers (42.92 days), the early ness of the male flowers (41.33 days) and the nodes ratio (91.70%). 3-The effect of the concentration of boron morally in most of the characteristics studied for the plant sweet corn, with the concentration exceeding 50 mg L⁻¹ with the best results in plant height (158.8 cm), leg thickness (1.527 cm), number of leaves (10.83 leaf⁻¹), early female flowers (47.77 days) and nodes ratio (90.30%). The concentration exceeded 75mg L⁻¹ in early male flowers (57.11 days).

Keywords : Cultivation, leaf fertilization, boron, vegetative growth,

ABSTRACT

Introduction

Sweet corn *Zea mays* var. *rugosa* follows the grain family (Poaceae or Gramineae) the northern parts of the United States and Canada are the main areas dedicated to the production of economically sweet corn, while the Southern United States allocates the areas of this crop for fresh consumption, which is produced during the winter and spring (Al-Mansi and others, 1985), The sweet corn is the result of a natural mutation of recessive genes that control the conversion of starch into sugar within the Sweida Fabric tissue, unlike corn varieties, which are harvested when the grains are dry and mature (Erwin), boron plays an important role in the growth of the plant and one of the most important vital activities it performs is the division of cells, the formation of leaf buds and flowers, the formation of cell

walls, the growth of roots, the increase of the plant's content of chlorophyll, the facilitation of the movement and transmission of photosynthesis products from the leaves to the active areas of the plant, and this may be due to the union of borat with the hydroxyl root in sugars, alcohols or organic acids to be boric acid esters (Mengel and Kirkby, 1987).

Diversity in varieties is one of the most important factors determining the success of sweet maize production, as well-known local varieties have been replaced by the cultivation of hybrid varieties created by humans in the first half of the 20th century as new varieties of plants .Hybrid varieties are spread less and produce the largest number of evenly mature keisans, and they yield a higher return than local varieties, It meets industrial requirements in terms of the presence of very soft grains and it is easy to separate

grains from keisan, the basic differences between hybrid varieties include the period of their germination and the content of sugars and their suitability for various uses (Bont, 1990 and Reyes, 1983), the sugary atom is of commercial importance as many studies have revealed that the highest crop of corn grown for grains can be obtained only when the plant has sufficient quantities. Nutrients during the growth period (Vessey, 2003).

That the method of cultivation with seedlings is a well-known method and circulated in vegetable crops in general, it shortens the time required for the growth of the plant, where seeds are grown in special vessels and under controlled conditions before the date of planting in the field for a suitable period, and when the plants reach the stage of transportation to the field became environmental conditions became suitable for the cultivation of the crop, that agriculture with seedlings enables the plant to overcome the problem of high temperature during the period of pollination and fertilization resulting from the dryness of pollen due to the high temperature as the plants will bloom before the high of temperature Therefore, this technique allows enough time for the plant to plant flowers in more favorable conditions, which increases the nodes ratio and this reflects positively on the increase in the yield in quantity and quality.

This study aims to :

- 1- Introducing new hybrids from different international establishments and choosing the best suitable for local environmental conditions is characterized by high productivity and desired quality recipes.
- 2- Determining the appropriate method of cultivation to early in the spring season, which at the end of the year

temperatures rise, and this rise accompanies the period of flowering, where it causes a decrease in the proportion of the nodes.

- 3- Knowing the appropriate concentration of boron element to be sprayed on the vegetative total to increase the proportion of the nodes.

Materials and Methods

Search Steps

The field experiment was conducted during the spring planting season 2019 at the Research Station of the Department of Horticulture and Gardening Engineering, Faculty of Agriculture, University of Diyala, to study the effect of the method of agriculture and leaf fertilization of boron in the growth and outcome of three hybrids of sweet corn The field for agriculture was prepared by cleaning the field of the bushes and remnants of the previous crop, and then the tilling process was carried out with the tilting excreted plow twice and at a depth of 30 cm and soften by the rotifiter and equaled by equalization tool .Then add the compound fertilizer Dap (46:18 nitrogen to phosphorus) at a rate of 180kg E⁻¹ before agriculture and urea fertilizer was added 46% N at a rate of 260kg H⁻¹ in two batches at the beginning of agriculture and after ripeness of plants 0.2 m (Jony and others, 2002), before the addition of fertilizer took quantities of soil and from different locations of the field and at depths of 0 to 30 cm and then mixed and took from it a representative sample and conducted some chemical and physical analysis in the laboratory of the soil department at the Faculty of Agriculture University of Tikrit, and table 1 shows some of the chemical and physical qualities of the soil of the field before agriculture.

Table 1 : Shows some of the physical and chemical qualities of the soil of agriculture.

Value	Units	Soil qualities	
7.04	pH value	
7.55	Ds m ⁻¹	Electrical conductivity (1:1)	
54.01	Mg kg ⁻¹	Nitrogen	Ready-made elements
8.042	Mg kg ⁻¹	Phosphorus	
81.786	Mg kg ⁻¹	Potassium	
6.9	g kg ⁻¹	Organic matter	
260.1	g kg ⁻¹	CaCO ₃	
286.6	g kg ⁻¹	Sand	Soil separates
591.2	g kg ⁻¹	alluvium	
122.2	g kg ⁻¹	mud	
Silty loam	Mixed alluvium	soil texture	
25	%	Field capacity	
1.35	g cm ⁻³	Virtual density	

Study factors :The study included the following factors:

1- hybrids : coded (V) the study included three genotypes : Roi Soleal, Seker misir and Succar.

2-Planting method : symbolized in the table by the symbol (D) and the study included two methods of agriculture, the first method

Planting seeds in the field : It is symbolized in the table by the symbol (D₁) which is the cultivation of the three genotypes directly in the soil of the field.

The second method is the cultivation of seedlings : It is symbolized in the table (D₂)where seeds from the three genotypes are grown in plastic plates (104 eye plate⁻¹) and

using the bitmus as an agricultural environment for the growth of seedlings.

3-leaf spraying with boron : It is symbolized in the table by the symbol (B)and includes spraying three concentrations of it on the genotypes, which are as follows:

The first is the comparison (spraying with distilled water only) and is symbolized in the table by the symbol (B₀).

The second concentration is 50 mg L⁻¹ liter water and is symbolized in the table by the symbol (B₁).

The third concentration is 75 mg L⁻¹ liters of water and is symbolized in the table by the symbol (B₂).

The vegetative total was sprayed three times using back spray an early morning with a diffuse substance (Published article).

Experimental qualities

The data was taken from ten plants per experimental unit and each repeater studied the following characteristics:

The characteristics of vegetative growth, syphilis and the ingredients of the obtainer and then extract the rate of each characteristic.

The qualities studied

1-The height of the plant (cm)

The length of the plant was measured when the male flowers of the plant appeared using the measuring tape from the plant's soil contact to the highest growing peak of each of the 10 plants allocated to the measurement for all experimental units and then extracted the rate (sahoki, 1990){8}.

2-Leg thickness (cm)

It was measured at the last picking from the plant's main leg contact with the soil using Vernier for plants in the experimental unit and then extracted the rate.

3-Number of leaves (leaf¹)

The number of total leaves of plants was calculated at the end of the season and then the rate was extracted.

4-Early female flowering (day)

The number of days has been calculated in need of the flowering of 50% of the feminine flowering from the date of the planting.

5-Early male flowering (day)

The number of days was calculated in need of the flowering of 50% of the male inflorescence from the date of the transplant.

6 -Nodes ratio (%)

The nodes ratio was calculated by calculating the number of female flowers contracted on the total number of female flowers in the ear for each transaction and then extracted the rate.

Results and Discussion

1-Plant height (cm)

The results of Table 2 indicate a moral effect of genetic structures in the rise of the plant, Seker Misir (V₂) surpassed the highest height of 159.8 cm, while it dropped to 141.4 cm in Roi Soleal (V₁) composition, and the method of cultivation was morally affected in the characteristic, as the plants planted in the form of the seedling (D₂) were characterized by the highest height of 161.0 cm, while reduced to 141.1 cm in plants planted in the direct seed method (D₁) The effect of leaf fertilization with boron is morally high in the height of the plant, as the plant has been overtaken by concentration of 50 mg L⁻¹ (B₁) at a height of 158.8 cm compared to the non-sprayed plants (B₀, in which the height of the plant was reduced to 136.1 cm).

2-Leg thickness (cm):

The results of table 3 show the existence of a moral effect of the genotypes in the thickness of the leg, where the

plants of the composition V₃ outperformed the highest thickness of the leg at 1.544 cm and was the least valuable in the genotypes V₁ at 1.477 cm, and there were moral differences in this characteristic between the two methods of agriculture, The D₂ method outperformed the highest thickness of the leg at 1.540 cm and was less valuable in the D₁ method at 1.477cm, and the effect of both boron B₁ and B₂ concentrations in the thickness of the leg was 1.527 and 1.516cm on the sequence and the thickness of the leg decreased in the comparison transaction (B₀) It reached 1.483 cm.

3-Number of leaves (leaf¹):

The results of table 4 show the existence of a moral effect of the genotypes in the number of leaves, where the composition V₂ surpassed the highest number of leaves leaf¹, while the composition V₁ recorded the lowest number of leaves 10.00 leaf¹, and the method of cultivation had a moral effect in the characteristic, as the method of agriculture D₂ excelled in recording the highest number of 11.11 plant leaf¹, while this characteristic decreased in the method D₁ if it reached 9.480 leaf¹. The effect of leaf fertilization with boron is morally in the number of leaves, as superiority plants transactions b₁ and B₂ outperforming the highest number of 10.83 and 10.61 leaf¹ plants in succession, and reduced to 9,440 leaf¹ in the plants of the comparison transaction (B₀).

4-The date of the female flowering (day):

Between Table 5 to the existence of moral differences of genotypes in the character of early female flowering, as the composition V₃ characterized by the lowest number of days required for female flowering date reached 37.33 days, while the number of days of required for female flowering in the composition V₁ increased to 39.22 days, and influenced the method of agriculture morally in the early flowering, as the method of transplantation D₂ was characterized by the lowest number of days It was 32.92 days.

The number of days increased in the d₁ method of agriculture to 43.70 days, and the effect of leaf fertilization with boron morally in this capacity, as the B₁ and B₂ transactions were characterized by the lowest number of days required for female flowering reached 37.77 and 37.11 days respectively, while transaction B₀ gave the highest number of days to 40.05 days.

5-The date of the male flowering (day):

Table 6 indicates the existence of a moral difference for genetic composition in this capacity, where the plants of the composition V₃ outperformed the lowest number of days for male flowering by 35.27 days, while the plants of the genetic compositions V₁ and V₂ recorded the highest number of days of 37.44 and 36.44 days respectively, and the method of cultivation affected morally in this characteristic where the plants planted in the manner of the seedlings were characterized by the lowest number of days required for the male flowering reached 31.33 days, while direct seed farming gave the highest number of days and reached 41.44 days, as the effect of leaf fertilization with boron morally in this capacity where the transaction B₂ was characterized by the lowest number of days required for male flowering amounted to 35.16 days while transaction B₀ gave the highest number of days to 38.05 days.

6 -Nodes ratio (%):

The results presented in Table 6 show the existence of moral effects of genetic synthesis in the nodes ratio, where the V_3 composition surpassed the highest nodes ratio of 94.80%, while the V_1 installation recorded the lowest percentage of 77.70%. The method of cultivation affected morally in the characteristic, as the plants of transaction D_2

characterized by the highest nodes rate of 91.70%, while the plants of transaction D_1 recorded the lowest percentage of 80.60%, as the effect of leaf fertilization with boron morally in the characteristic, where the concentration B_1 exceeded in the recording of the highest nodes rate of 90.30 % while the percentage decreased in transaction B_0 to 80.10% .

Table 2 : The effect of the method of cultivation and leaf fertilization of boron in the height of the plant (cm) shows three hybrids of sweet corn.

overlap $V \times D$	Boron Concentration			Method of cultivation	Hybrids
	75 Mg L ⁻¹ (B_2)	50 Mg L ⁻¹ (B_1)	0 Mg L ⁻¹ (B_0)		
122.8 E	125.5 J	126.5 I	116.5 k	with seeds (D_1)	Roi Soleal (V_1)
160.0 BC	166.5 C	167.0 C	146.5 f	with transplant (D_2)	
158.5 C	169.5 B	169.5 B	136.5 h	with seeds (D_1)	Seker Misir (V_2)
161.1 AB	169.3 B	170.5 A	143.5 g	with transplant (D_2)	
142.2 D	150.0 D	150.3 D	126.3 ij	with seeds (D_1)	Succar (V_3)
162.0 A	169.3 B	169.3 B	147.5 e	with transplant (D_2)	
	158.3 B	158.8 A	136.1 C	Boron averages	
The bilateral overlap between hybrids and boron					
Averages of hybrids	Boron Concentration			Hybrids	
	75 Mg L ⁻¹ (B_2)	50 Mg L ⁻¹ (B_1)	0 Mg L ⁻¹ (B_0)		
141.4 C	146.0 D	146.7 C	131.5 g	Roi Soleal (V_1)	
159.8 A	169.4 A	170.0 A	140.0 e	Seker Misir (V_2)	
152.1 B	159.8 B	159.8 B	136.9 f	Succar (V_3)	
The bilateral overlap between the method of cultivation and boron					
Averages of the method of cultivation	Boron Concentration			Method of cultivation	
	75 Mg L ⁻¹ (B_2)	50 Mg L ⁻¹ (B_1)	0 Mg L ⁻¹ (B_0)		
141.1 B	148.3 C	148.7 C	126.4 e	with seeds (D_1)	
161.0 A	168.3 B	168.9 A	145.8 d	with transplant (D_2)	

* Note:

-Averages with similar characters are not morally different from each other at the probability level of 0.05 for key factors and interferences.

-Capital letters refer to the moral of the averages of the main effects and the small letters indicate the moral of the averages of overlaps.

Table 3 : The effect of the method of cultivation and leaf fertilization of boron in the thickness of the leg (cm) shows three hybrids of sweet corn.

Overlap $V \times D$	Boron concentration			Planting method	Hybrids
	75 Mg L ⁻¹ (B_2)	50 Mg L ⁻¹ (B_1)	0 Mg L ⁻¹ (B_0)		
1.422 C	1.433 de	1.433 De	1.400 E	with seeds (D_1)	Roi Soleal (V_1)
1.533 AB	1.533 B	1.533 B	1.533 B	with transplant (D_2)	
1.488 BC	1.500 bc	1.500 Bc	1.466 Cd	with seeds (D_1)	Seker Misir (V_2)
1.511 AB	1.500 bc	1.533 B	1.500 Bc	with transplant (D_2)	

1.522 AB	1.533 B	1.533 B	1.500 Bc	with seeds (D ₁)	Succar (V ₃)
1.577 A	1.600 A	1.633 A	1.500 Bc	with transplant (D ₂)	
	1.516 A	1.527 A	1.483 B	Boron averages	
The bilateral overlap between the hybrids and boron					
Averages of hybrids	Boron concentration			Hybrids	
	75 Mg L ⁻¹ (B ₂)	50 Mg L ⁻¹ (B ₁)	0 Mg L ⁻¹ (B ₀)		
1.477 B	1.483 bc	1.483 Bc	1.466 C	Roi Soleal (V ₁)	
1.499 B	1.500 bc	1.516 B	1.483 Bc	Seker Misir (V ₂)	
1.544 A	1.566 A	1.583 A	1.500 Bc	Succar (V ₃)	
The bilateral overlap between the method of cultivation and boron					
Average planting method	Boron concentration			Planting method	
	75 Mg L ⁻¹ (B ₂)	50 Mg L ⁻¹ (B ₁)	0 Mg L ⁻¹ (B ₀)		
1.477 B	1.488 B	1.488 B	1.455 C	with seeds (D ₁)	
1.540 A	1.544 A	1.566 A	1.511 B	with transplant (D ₂)	

*Notice:

-The means with similar letters the factors are not significantly different from each other with a probability of 0.05 for the main factors and overlaps

-The upper case letters indicate the significance of the mean of main effects, and the lowercase letters indicate the significance of the averages of the overlaps.

Table 4 : The effect of the method of cultivation and leaf fertilization of boron is shown in the number of leaves (leaf⁻¹) of three hybrids of sweet corn.

Overlap V×D	Boron concentration			Planting method	hybrids
	75 Mg L ⁻¹ (B ₂)	50 Mg L ⁻¹ (B ₁)	0 Mg L ⁻¹ (B ₀)		
9.110 D	9.333 cd	9.666 C	8.333 e	with seeds (D ₁)	Roi Soleal (V ₁)
10.88 B	10.66 B	11.66 A	10.33 b	with transplant (D ₂)	
10.11 C	10.66 B	10.66 B	9.000 d	with seeds (D ₁)	Seker Misir (V ₂)
11.22 A	11.66 A	11.66 A	10.33 b	with transplant (D ₂)	
9.220 D	9.666 C	9.666 C	8.333 e	with seeds (D ₁)	Succar (V ₃)
11.22 A	11.66 A	11.66 A	10.33 b	with transplant (D ₂)	
	10.61 A	10.83 A	9.440 B	Boron averages	
The bilateral overlap between the hybrids and boron					
Averages of hybrids	Boron concentration			Hybrids	
	75 Mg L ⁻¹ (B ₂)	50 Mg L ⁻¹ (B ₁)	0 Mg L ⁻¹ (B ₀)		
10.00 C	10.00 C	10.66 B	9.333 d	Roi Soleal (V ₁)	
10.66 A	11.16 A	11.16 A	9.666 cd	Seker Misir (V ₂)	
10.22 B	10.66 B	10.66 B	9.333 d	Succar (V ₃)	
The bilateral overlap between the method of cultivation and boron					
Average planting method	Boron concentration			Planting method	
	75 Mg L ⁻¹ (B ₂)	50 Mg L ⁻¹ (B ₁)	0 Mg L ⁻¹ (B ₀)		

9.480 B	9.880 D	10.00 D	8.550 e	with seeds (D ₁)
11.11 A	11.33 B	11.66 A	10.33 c	with transplant (D ₂)

*Notie:

-The means with similar letters the factors are not significantly different from each other with a probability of 0.05 for the main factors and overlaps

-The upper case letters indicate the significance of the mean of main effects, and the lowercase letters indicate the significance of the averages of the overlaps.

Table 5 : The effect of the method of cultivation and leaf fertilization of boron in early female flowering(day) shows three hybrids of sweet corn.

Overlap V×D	Boron Concentration			Method of cultivation	Hybrids
	75 Mg L ⁻¹ (B ₂)	50 Mg L ⁻¹ (B ₁)	0 Mg L ⁻¹ (B ₀)		
44.44 A	41.00 c	44.00 B	48.33 a	with seeds (D ₁)	Roi Soleal (V ₁)
34.00 C	33.00 ef	33.33 Ef	35.66 d	with transplant (D ₂)	
44.00 AB	43.66 b	44.00 B	44.33 b	with seeds (D ₁)	Seker Misir (V ₂)
32.77 DC	32.00 ef	32.33 Ef	34.00 de	with transplant (D ₂)	
42.66 B	41.66 c	41.66 C	44.66 b	with seeds (D ₁)	Succar (V ₃)
32.00 D	31.33 f	31.33 F	33.33 ef	with transplant (D ₂)	
	37.11 B	37.77 B	40.05 A	Boron averages	
The bilateral overlap between hybrids and boron					
Averages of hybrids	Boron Concentration			Hybrids	
	75 Mg L ⁻¹ (B ₂)	50 Mg L ⁻¹ (B ₁)	0 Mg L ⁻¹ (B ₀)		
39.22 A	37.00 cd	38.66 B	42.00 a	Roi Soleal (V ₁)	
38.38 B	37.83 bcd	38.16 Bc	39.16 b	Seker Misir (V ₂)	
37.33 C	36.50 d	36.50 D	39.00 b	Succar (V ₃)	
The bilateral overlap between the method of cultivation and boron					
Averages of the method of cultivation	Boron Concentration			Method of cultivation	
	75 Mg L ⁻¹ (B ₂)	50 Mg L ⁻¹ (B ₁)	0 Mg L ⁻¹ (B ₀)		
43.70 A	42.11 c	43.22 B	45.77 a	with seeds (D ₁)	
32.92 B	32.11 e	32.33 E	34.33 d	with transplant (D ₂)	

*Notie:

-The means with similar letters the factors are not significantly different from each other with a probability of 0.05 for the main factors and overlaps .

-The upper case letters indicate the significance of the mean of main effects, and the lowercase letters indicate the significance of the averages of the overlaps.

Table 6 : The effect of the method of cultivation and leaf fertilization with boron is shown in the early flowering of the male (day) of three hybrids of sweet corn.

Overlap V×D	Boron Concentration			Method of cultivation	hybrids
	75 Mg L ⁻¹ (B ₂)	50 Mg L ⁻¹ (B ₁)	0 Mg L ⁻¹ (B ₀)		
42.55 A	39.66 de	42.33 Bc	45.66 a	with seeds (D ₁)	Roi Soleal (V ₁)
32.33 C	31.33 gh	32.00 Fg	33.66 f	with transplant (D ₂)	
42.00	41.00	42.00	43.00	with seeds	Seker Misir

AB	f	f	g	(D ₁)	(V ₂)
30.88 C	30.00 h	30.33 h	32.33 fg	with transplant (D ₂)	
39.77 B	39.00 e	39.00 e	41.33 bc	with seeds (D ₁)	Succar (V ₃)
30.77 C	30.00 h	30.00 h	32.33 fg	with transplant (D ₂)	
	35.16 C	35.94 B	38.05 A	Boron averages	
The bilateral overlap between hybrids and boron					
Averages of hybrids	Boron Concentration			Hybrids	
	75 Mg L ⁻¹ (B ₂)	50 Mg L ⁻¹ (B ₁)	0 Mg L ⁻¹ (B ₀)		
37.44 A	35.50 de	37.16 bc	39.66 a	Roi Soleal (V ₁)	
36.44 A	35.50 de	36.16 cd	37.66 b	Seker Misir (V ₂)	
35.27 B	34.50 e	34.50 e	36.83 bc	Succar (V ₃)	
The bilateral overlap between the method of cultivation and boron					
Averages of the method of cultivation	Boron Concentration			Method of cultivation	
	75 Mg L ⁻¹ (B ₂)	50 Mg L ⁻¹ (B ₁)	0 Mg L ⁻¹ (B ₀)		
41.44 A	39.88 c	41.11 b	43.33 a	with seeds (D ₁)	
31.33 B	30.44 e	30.77 e	32.77 d	with transplant (D ₂)	

***Notice:**

-The means with similar letters the factors are not significantly different from each other with a probability of 0.05 for the main factors and overlap

-The upper case letters indicate the significance of the mean of main effects, and the lowercase letters indicate the significance of the averages of the overlaps.

Table 7 : Shows the effect of the method of cultivation and paper fertilization with boron in the nodes ratio (%)For three hybrids of sweet corn.

Overlap V×D	Boron concentration			Planting method	Hybrids
	75 Mg L ⁻¹ (B ₂)	50 Mg L ⁻¹ (B ₁)	0 Mg L ⁻¹ (B ₀)		
67.40 D	66.70 h	73.20 g	62.20 i	with seeds (D ₁)	Roi Soleal (V ₁)
88.00 B	92.20 e	98.70 a	73.20 g	with transplant (D ₂)	
79.90 C	83.30 f	83.30 f	73.20 g	with seeds (D ₁)	Seker Misir (V ₂)
92.10 B	96.40 bc	96.70 b	83.30 f	with transplant (D ₂)	
94.60 AB	94.90 d	94.60 d	94.30 d	with seeds (D ₁)	Succar (V ₃)
95.00 A	95.20 b	95.40 cd	94.50 d	with transplant (D ₂)	
	88.10 B	90.30 A	80.10 C	Boron averages	
The bilateral overlap between the hybrids and boron					
Averages of hybrids	Boron concentration			Hybrids	
	75 Mg L ⁻¹ (B ₂)	50 Mg L ⁻¹ (B ₁)	0 Mg L ⁻¹ (B ₀)		
77.70 C	79.50 e	85.90 c	67.70 f	Roi Soleal (V ₁)	
86.00 B	89.80 b	90.00 ab	78.20 d	Seker Misir (V ₂)	
94.80 A	95.00 a	95.00 a	94.40 b	Succar (V ₃)	
The bilateral overlap between the method of cultivation and boron					

Average planting method	Boron concentration			Planting method
	75 Mg L ⁻¹ (B ₂)	50 Mg L ⁻¹ (B ₁)	0 Mg L ⁻¹ (B ₀)	
80.60 B	81.60 d	83.70 c	76.50 e	with seeds (D ₁)
91.70 A	94.60 b	96.90 a	83.60 c	with transplant (D ₂)

*Notice:

-The means with similar letters the factors are not significantly different from each other with a probability of 0.05 for the main factors and overlaps

-The upper case letters indicate the significance of the mean of main effects, and the lowercase letters indicate the significance of the averages of the overlaps.

Discussion

The results of the experiment in Tables 2 and 4 indicate a discrepancy between hybrids where the hybrids of Seker misir (V₂) has a moral effect on the height of the plant and the number of leaves, As the results of Table 3 indicate that the hybrids of Succar (V₃) is superior to the thickness of the leg, the early female flowers, the early flowering and the proportion of the nodes, this may be due to the high genetic susceptibility of the two species in the exploitation of the surrounding environmental conditions and their use in the photosynthesis process, as well as the efficiency of these two species in resisting soil conditions, especially in the absence of Items are available.

The results of the tables 2, 4, 5, 6 and 7 show the existence of moral differences between the methods of agriculture, as the method of agriculture with the best results in the height of the plant and the thickness of the leg and the number of leaves, early female flowering and early flowering and the ratio of the contract, is due to the superiority of the method of agriculture by seedlings in all the characteristics of vegetative growth and syphilis to the formation of the plant a strong radical total which helps him to absorb water and food required for growth well Or, the reason why the seedling farming method is superior to the direct seed method may be due to the different date of cultivation, resulting in the length of the growing season in this way and thus obtaining the best results.

The results of tables 2, 3, 4, 5, 6 and 7 indicate that the concentration of boron has a moral effect in most of the characteristics studied for the plant's sweet corn plant, with a concentration of more than 50 mg L⁻¹ with the best results in plant height, leg thickness, number of leaves, early female flowers, nodes ratio and concentration of 75 mg L⁻¹ in early male flowers compared to the comparative transaction, Boron transactions may be due to the superiority of boron transactions in vegetative and syphilis growth indicators due to the effective role boron plays in its effect on physiological events such as the absorption of nutrients and their movement to plant parts .It also controls the rapid absorption of water by the plant as well as its positive effect in regulating the vital events of enzymes, which gives a greater chance of plant growth and increased branching (Barker and Pilbeam, 2007), and that the main role of boron in the transfer of substances manufactured for carbon-based products to active growth areas in the plant, particularly marstemos, which contribute to increased cell division and prolongation (Albadrani, 2006) In addition to its contribution to the construction of DNA and RNA acids necessary for cell division, which contributes to the growth of the increase in the number of leaves carried by the plant (Muhammad, 1996)

Boron has an effective role by affecting the effectiveness of the cellular membrane in the absorption of nutrients such as nitrogen, phosphorus and potassium and its significant role in the growth and organization of plant vital events (Salih, 2013).

The plant's need for boron is more in the fertility of flowers than for the production of green matter in the plant (Malakoti and Mostashareazadeh, 2008), may be attributed to the role of boron in the construction of a radical sum highly efficient in absorbing and increasing its concentration within the plant (Aydn and Sevine, 2006) and (2005) Annie, may be more than the factors of boron in the male and female flowering time.

For its significant role in promoting pollen germination and the growth of the vaccine tube, which contributes to the increase in the proportion of nodes and fertilization (Kaisher, 2010), as well as its role in the movement and movement of water and nutrients from the roots to the vegetative parts and thus the positive effect on the arrival of nutrients sufficient for the success of flowering (Abdul, 1988).

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تأثير طريقة الزراعة والتسميد الورقي بالبورون في بعض صفات النمو الخضري والزهرى لثلاث هجن من الذرة السكرية. المستخلص:

في محطة أبحاث قسم البستنة وهندسة الحدائق كلية الزراعة جامعة ديالى لدراسة تأثير طريقة الزراعة والتسميد 2019 نفذت التجربة خلال الموسم الربيعي Roi الورقي بالبورون في نمو وحاصل ثلاثة هجن من الذرة السكرية. تضمنت التجربة ثلاث عوامل العامل الاول زراعة ثلاث هجن من الذرة السكرية وهي (العامل الثاني طريقة الزراعة زراعة بذور الهجن الثلاثة مباشرة في تربة الحقل وزراعة شتل تم زراعة البذور الهجن الثلاثة Soleal , Seker misir, Succar (ملغم لتر⁻¹ نفذت التجربة حسب نظام الألواح المنشقة (0,50,75), العامل الثالث الرش الورقي بعنصر البورون بتراكيز (19/2/2019 في اطبيق بلاستيكية بتاريخ (Split-Split plot design – المنشقة) وأظهرت النتائج مايلي. RCBD ضمن تصميم القطاعات العشوائية الكامل (

معنويا في صفة ارتفاع النبات ، عدد الأوراق، V_2 - أثرت الهجن معنويا في معظم الصفات المدروسة لنبات الذرة السكرية إذ تفوق الهجين 1) (يوم 35.27 سم) والتبكير بالأزهار الذكورية (1.544) في سمك الساق، إذا بلغت (V_3 Succar) ورقة نبات¹ وتفوق الهجين 10.66 سم) و (159.8) إذ بلغت (% 94.80 يوم) ونسبة العقد (33.37) والتبكير الأزهار الإثنوي (

أثرت طريقة الزراعة معنويا في معظم الصفات المدروسة لنبات الذرة السكرية إذ تفوقت طريقة الزراعة بالشتل في تسجيل أفضل النتائج لصفة ارتفاع 2 (ورقة نبات¹ 11.11 سم) و (1.540 سم) و (161.0) النبات، سمك الساق، عدد الأوراق والتي بلغت (ملغم لتر⁻¹ في تسجيل أفضل النتائج لصفة ارتفاع النبات، سمك 50- أثرت تراكيز البورون معنويا في معظم الصفات المدروسة لنبات الذرة السكرية إذ تفوق التركيز 3 (ملغم 75 يوم). وتفوق التركيز 37.77 ورقة نبات¹ و (10.83 سم) ، (1.527 و (سم 158.8) الساق، عدد الأوراق، موعد الأزهار الأنثوية والتي بلغت على التوالي (يوم). 35.16 لتر⁻¹ في التبكير بالأزهار الذكورية (