



RESPONSE OF VARIETIES OF SORGHUM TO DIFFERENT LEVELS OF GIBBERELLIN

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Abstract

A field experiment was carried out in the Field Crops Field, Faculty of Agriculture, Tikrit University, for the autumn semester 2017, to study the effect of Gibberellin on the growth and grain yield of five varieties of white maize. Use the design of the complete splinters and three replicates according to the order of the splinters. The main plates of the algebraic concentrations (150,100,50. 0 mg / l) and the varieties (goodness, rescue, Rabeh, ibusein and space 113) were in secondary panels. The results showed that the concentration exceeded 100 mg / L⁻¹ by giving the highest rate of plant height, stem diameter and number of leaves in the plant And the weight of 1000 grain and the number of grains in the head and grain yield with values of 125.67 and 20.46 mm and 10.18 leaves of plant or 31.86 g and 2997.91 love head and 5.27 tons H⁻¹ The superiority of the category Rabeh in the attributes of weight 1000 grain and the number of grain head and grain yield values were 34.62 g And 3358.65 head and 6.68 tons. ha⁻¹ and gave the category Abu Seventeen highest rate of plant height amounted to 163.12 cm and the good variety in Qatar stem was 21.20 mm and the rescue in the number of leaves plant 10.25 sheets and the results showed that the overlap between the Rabeh and concentration of 100 mg per liter⁻¹ gave the highest rate of weight of 1000 grain and the number of grain head and the sum of grain alone.

Key words: varieties of sorghum, Field Crops, gibberellin

Introduction

White corn is one of the most important cereals and fodder crops locally and internationally. It is used as a dairy feed or green feed to feed animals and poultry. It is considered a crop capable of growing and growing as well as its ability to grow well and within a wide range of agricultural soils (Ottman, Olsen, 2009; Prakash *et al.*, 2010). Despite the many uses and advantages of this crop, which can contribute to meet the needs of humans and animals of food, but in Iraq is a secondary crop at present and the reasons for many of them, the absence of high-quality products and the lack of research and studies implemented in the field of E white Compared to other competitive summer crops such as yellow corn and sun flower so it is important to find good genotypes characterized by good growth qualities and productivity and high quality. Plant growth regulators play a major role in many important physiological events in regulating plant growth. These organizations are important in promoting stem elongation, cell expansion, and increased plant efficiency in nutrient uptake and thus increased growth (Moor, 1979). Due to the importance of the

economic crop of white maize, the aim of this study is to identify the effect of sulfuric acid in the growth and yield of grains of five varieties of white corn and increase production

Materials and Methods

The experiment was carried out in the fields of Field Crops Department-Faculty of Agriculture-Tikrit University for the autumn season 2017. A total of five groups of white atoms were used (Al-Khair, Safa, Rabeh, Abu Hussein, and Giza 113). The design of the complete sections was randomized by the order of the splinters. The triangle of algebraic spray concentrations (150, 100, 50 and 0 mg / L⁻¹) was the main factor,. The soil was prepared and divided according to the design used and according to what is recommended, the seeds were planted in the center of the distance between the center of 75 cm and between the plant and the last 20 cm. Add urea fertilizer 46% nitrogen as a source of nitrogen at the rate of 400 kg. N ha⁻¹ and in three batches at planting, in the elongation phase and before flowering. Calcium superphosphate fertilizer was added at the rate of 200 kg

ha⁻¹ 45% P₂O₅ one batch at planting Biodiesel (10%) used an active ingredient of 4 kg ha⁻¹ and in stage 3-4 leaf to prevent the insect of tail digger. The pepper was sprayed on the vegetation of the plant during the elongation phase. The spray was sprayed in the early morning using the hand spray and the water treatment was sprayed only. Data were taken on 10 plants to study the following traits: plant height, stem diameter, number of leaves, weight of 1000 grains, number of head beans and unit area. The statistical analysis of the studied traits was carried out according to the design used by the ready-made program and the Duncan test was used to compare the arithmetic averages at the 5% probability level.

Results and discussion

Plant height

The data in Table 2 show significant differences in the height of the plant with the effect of spraying with gibberellin. The third concentration gave the highest rate of 125.67 cm while the lowest rate of 117.59 cm in the comparison treatment. This is in accordance with the attribution (2015) The results of table 2 indicate that the superiority of the category Abu-70, the highest rate of 168.12 cm, while the good category gave the lowest grade rate of 97.03 cm and attributed the superiority of the class Abu-70 to The genetic differences between the two species were pointed out by Ahmad and Aboud (2016) and Abd Al-Hamid (2016). The results showed that the Abu-Sabain category in the third concentration gave the highest rate of the label was 167.71 cm while the lowest rate of the class of 95.13 cm for the good variety In the comparison transaction.

Table 1: Table of variance analysis of the studied characteristics represented by mean squares.

M6	M5	M4	M3	M2	M1	df	S.O.V
0.001295	4.243	0.00084	0.02050	0.03137	0.6219	2	R
2.27127	370233.60	16.59432	0.28442	1.08008	193.140	3	Varieties
0.004352	1.370	0.0076	0.01662	0.04766	0.90500	6	Error a
15.7154	1321245.81	129.7813	0.39397	16.06696	8462.817	4	BI
0.05969	14195.089	0.77108	0.0034	0.12928	16.765	12	AB
0.002886	1.972	0.003934	0.00569	0.062090	1.2553	32	Error b

Table 2: Effect of Gibberellin and the Varieties and Interference between Them in Plant Height (cm).

Rate of varieties	T ₄	T ₃	T ₂	T ₁	Varieties
97.03 e	95.45k	100.71 j	96.81 k	95.13k	Alkhair
108.09 c	105.26l	115.97 g	110.52 h	100.61 j	Enkathe
105.95 d	105.64 i	111.07 h	106.47 i	100.60j	Rabeh
163.12 a	159.68 c	167.71 a	163.85 b	161.24 c	Abusabean
129.88 b	127.50 f	132.91 d	128.73 ef	130.39 e	Giza 113
120.81	118.70 c	125.67 a	121.28 b	117.59 d	General Average

Stem diameter (mm)

The table 3 shows there are significant differences between the mean diameter stem impact spray Gibberellin where he gave the third focus the highest rate of the recipe was 20.46 mm while given the comparative treatment of the lowest rate was 19.82 mm due to the role Gibberellin increase in elongation and cell division Qatari direction and also activates the cambium cells Leading to increased stem diameter (descriptive, 1990). Al-Mubarak and Al-Chalabi (2011) reported the effect of growth regulators in increasing stem diameter. It is clear from the table that the cultivar has achieved the highest mean diameter of 21.20 mm and Giza 113 gave the lowest rate of 8.82 mm due to the genetic differences between the varieties. Many researchers mentioned these plants among the varieties (Ayub *et al.* (2010), Promkhambut and others 2011). Table 3 shows that the space category at the third concentration exceeded 22.00 mm while it was given Gezah 113 when the comparison mm was the lowest of 18.43 mm.

Number of leaves per plant

The results of table 4 show that the third concentration achieved the highest mean of 10.18 leaf leaves or differed significantly from the other concentrations while the lowest rate of the concentration at the fourth concentration amounted to 9.86 leaves plant -1, and may be due to the fact that Gibberellin helps in the high rate of composition The results of table 4 indicate that the characteristic of the cultivar was rescued at the highest rate of 10.25 leaves per plant. The lowest average grade of 113 was 9.82 leaf¹ and was due to variation in origin F in the average number of leaves per plant to

different varieties in the composition of the effect of environmental factors through the variation of varieties in the period of growth required It requires a longer period of growth, leading to a longer period of vegetative growth, coinciding with increased temperature and light duration, thus increasing the rate of appearance and growth of leaves. These differences are mentioned, and Hib and others (2017) and Jubouri and Zubaidi (2013). As for the overlap between the varieties and concentrations, the rescue category exceeded the third

Table 3: Effect of Gibberellin and the Varieties and Interference between Them in the Diameter of the stem (mm).

Rate of varieties	T ₄	T ₃	T ₂	T ₁	Varieties
21.20 a	20.95 bc	22.00 a	21.15 b	20.71 bcd	Alkhair
20.67 b	20.66 cd	20.97 bc	20.46 d	20.70 bcd	Enkathe
20.86 b	20.79 bcd	21.13 bc	20.81 bcd	20.72 bcd	Rabeh
18.86 c	18.95 ef	19.05 e	18.90 ef	18.52 fg	Abusabean
18.82 c	18.85 efg	19.14 e	18.84 efg	18.43 g	Giza 113
19.96	20.04 b	20.46 a	20.03 b	19.82 c	General Average

Table 4: Effect of Gibberellin and the varieties and their Interference in the number of leaves in the plant.

Rate of varieties	T ₄	T ₃	T ₂	T ₁	Varieties
10.05 b	9.87 fgh	10.22 bc	10.11 cde	9.99 ef	Alkhair
10.25 a	10.15 bcd	10.36 a	10.28 ab	10.21 bcd	Enkathe
10.11 b	9.93 fg	10.26 ab	10.16 bcd	10.08 cde	Rabeh
9.84 c	9.67 i	10.07 de	9.86 gh	9.78 hi	Abusabean
9.82 c	9.67 i	9.99 ef	9.85 gh	9.77 hi	Giza 113
10.01	9.86 c	10.18 a	10.05 b	9.97 bc	General Average

concentration of the rate of 10.36 leaf⁻¹, while the class gave the space at the comparison treatment the lowest rate of 9.99 (sheets)⁻¹.

Weight of 1000 grain (g)

Table 5 shows that the third concentration gave the highest rate of weight of 1000 tablets at 31.86g. The lowest rate at the fourth concentration increase was 29.76. The third concentration in weight 1000 was attributed to its effect on increasing ovulation rate and its effect in prolongation of the period The survival of green leaves and increased accumulation of dry matter in seeds and the effect of hyperplasia in the increase of photosynthesis products have been mentioned by both Aziz (2010) and Attia (2015). Table 5 indicates that there are significant differences between the varieties in the weight of 1000 grain, where the superiority of the category winner at the highest average of 34.62 g and the lowest rate was good variety of 26.32 g. The superiority of the breed may return to the genetic qualities of the ability of the class to exploit photosynthesis and increase The accumulation of these ingredients in the seeds leads to an increase in the weight of the grain which has been mentioned The data between the varieties Kareema and others (2017) and Abdul Hamid (2016). The table showed that the category of Rabeh at the third concentration exceeded the other interference at a rate of 35.50 g while the lowest rate of overlap of the good in the first concentration 24.89g.

Number of grain / head

The results in table 6 indicate the effect of the number of grains in the head with spray treatments. The third

concentration gave the highest grade of 2997.91 and the lowest at 2618.95. The reason is that the addition of glycerin improves the transport of nutrients towards the final estuaries Grain and thus increase its weight and number has been noted so Bahadli and Jabri (2010).

The results of the table indicate that the number of grains in the head was 3358.65, followed by the category Abuusin with a rate of 2743.32 and the lowest average of 2500.39. This difference between the varieties in that grade is due to the genetic makeup of the species and the

dominant genetic mechanism (2016). The table showed that Rabeh was at the third concentration. The highest rate among the other interactions was 3499.4 and the lowest rate of the good variety in the first concentration was 2570.98.

Grain yield (ton/h)

The concentration was significantly different in grain yield (Table 7). The third concentration was higher with the highest grain yield of 5.27 tons.ha⁻¹, while the comparison treatment gave the lowest rate of grain yield of 4.33 tons ha⁻¹. The number of leaves per plant and the weight of 1000 grains and the number of grains in the head amounted to 10.18 sheets of plant and 31.86 g and 2997.91 grain a head compared to other concentrations and the treatment of comparison where Attia and Jdoua (1999) The goal of treatment plants growth organizations is to regulate the growth and growth of plants and hormonal relationship Referring to those results Attia (2015) We note from table 7 that the yield of the cultivar was significantly higher with a mean of 6.68 tons h⁻¹. This increase was due to the weight of 1000 grains and the number of grains in the head (35.80 g and 3499.40 grain a head), while the two categories gave goodness 113, the lowest grade of 3.86 And 3.91 tons.ha⁻¹ respectively. These differences in grain yield were reported in the unit area between the two cultivars, Kareima *et al.*, (2017) and Abdul Hamid (2016).

As for the overlap between the varieties and concentrations, it was superior to the winner at the highest concentration of the value of 7.20 tons ha⁻¹ while the lowest rate of overlap of the good when compared to the

Table 5: Effect of Gibberellin and the varieties and the Interference between them in the recipe weight 100 grain (g).

Rate of varieties	T ₄	T ₃	T ₂	T ₁	Varieties
26.32 e	26.16 m	28.18 j	26.06 n	24.89 o	Alkhair
32.30 b	32.23 e	34.03 c	31.96 f	30.98 g	Enkathe
34.62 a	33.95 cd	35.80 a	34.88 b	33.85 d	Rabeh
30.34 c	29.18 i	32.19 e	30.02 h	29.96 h	Abusabeen
28.12 d	27.26 l	29.10 i	28.11 j	27.98 k	Giza 113
30.34	29.76 c	31.86 a	30.21 b	29.53 d	General Average

Table 6: Effect of Gabrelin and the varieties and their Interference in the number of grains in the head.

Rate of varieties	T ₄	T ₃	T ₂	T ₁	Varieties
2687.31 c	2679.97 k	2800.23 g	2698.32 i	2570.93 n	Alkhair
2647.18 d	2607.10 m	2908.03 f	2625.61 l	244.97 Q	Enkathe
3358.65 a	3382.02 b	3499.4 o	3335.10 c	3218.04 d	Rabeh
2742.32 b	2694.99 j	3080.25 e	2695.76 j	2498.29 p	Abusabeen
2500.39 e	2593.79 o	2701.82 h	2400.27 r	2359.69 s	Giza 113
2787.17	2780.77 b	2997.91 a	2751.01 c	2618.98 d	General Average

Table 7: Effect of Gibberellin and varieties and their Interference in grain yield / ton.h⁻¹.

Rate of varieties	T ₄	T ₃	T ₂	T ₁	Varieties
3.86 d	3.83 k	4.21 i	3.92 k	3.54 m	Alkhair
4.84 b	4.74 f	5.64 d	4.73 f	4.23 i	Enkathe
6.68 a	6.60 b	7.20 a	6.67 b	6.21 c	Rabeh
4.48 c	4.42 h	4.91 e	4.54 g	4.03 j	Abusabeen
3.91 d	3.86 k	4.41 h	3.74 l	3.65 l	Giza 113
4.76	4.7 B	5.27 a	4.72 B	4.33 c	General Average

ratio of the rate of 3.54 tons ha⁻¹ and attributed to the death of the third category winner to the superiority of that overlap in the weight of 1000 grain (35.80 g) and the number of grain head (3499.40 grain a head).

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