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EFFECT OF NITROGEN FERTILIZERS ON GROWTH AND YIELD TRAITS OF MAIZE

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ABSTRACT

A field experiment was carried out in the fields of the college of agricultural engineering sciences, university of Baghdad during the fall season of 2021, in order to find out which of the cultivated genotypes of maize are efficient under nitrogen fertilization. The experiment was applied according to a RCBD (split plot design with three replications). The genotypes of experiment (Baghdad, 5018 and Sarah) and supplying three levels of nitrogen fertilizer, which are N1 (100 kg/ha), N2 (200 kg/ha) and N3 (300 kg/ha), the results of the statistical analysis are showed the superiority of the cultivar Sarah in the trait of number of days until 50% silking, chlorophyll index, number of pods per plant, number of grains per row and number of seeds per row, where their averages were 61 d, 590.27 mg/m^2, 2.0 ear^{-1}, 48.78 grains/row and 818.07 ear^{-1} respectively, there were no significant differences between the genotypes in the traits of number of rows per ear, weight of 100 grains and total grain yield. The increase in nitrogen fertilizer caused an increasing of traits, especially at the highest level N3, where it gave the highest average of the number days 50% tasseling, the number of silking 50%, the number of ears per plant, the number of rows per ear, the number of grains per row, the number of grains per ear, and weight 100 grains, and caused of increasing of characteristic of the total grain yield, and the averages were 59 d, 63.11 d, 2.2 earbuds-^{1}, 18.622 ear^{-1}, 48.78 grains/row, 993.0 grains/ear, 31.78 g, and 14. 88 tons/ha respectively.

keywords: maize, grain yield, nitrogen fertilizer.

تأثير السماد النيتروجيني في نمو وصفات حاصل الذرة الصفراء

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الخلاصة

تم تنفيذ تجربة حقلية في حقول كلية علوم الهندسة الزراعية - جامعة بغداد خلال الموسم الخريفي لعام ٢٠٢١، بهدف معرفة اي الاصناف المنزرعة اكثر تحمل لنقص او زيادة التسميد النيتروجيني لمحصول الذرة الصفراء، وقد طبقت التجربة وفق تصميم القطاعات العشوائية الكاملة وبثلاث مكررات وباستعمال ثلاث اصناف (بغداد و5018 وسارة) وباضافة ثلاث مستويات سماد نيتروجيني والتي هي N1 (100 كغم/هـ) وN2 (200 كغم/هـ) وN3 (300 كغم/هـ)، وبينت نتائج التحليل الاحصائي تفوق الصنف سارة في صفة عدد الايام لغاية التزهير الذكري 50% ودليل الكلوروفيل وعدد العرانيص بالنبات وعدد الحبوب بالصف وعدد الحبوب بالعرنوص، حيث بلغت متوسطاتها 61 يوم و590.27 ملغم/م^2 و2 عرنوص/نبات بواقع 48.78 حبة/صف و818.07 حبة/عرنوص على التوالي، ولم يكن هناك فروق معنوية بين التراكيب الوراثية في صفة عدد الصفوف بالعرنوص ووزن 100 حبة وحاصل الحبوب الكلي، ولوحظ ان زيادة التسميد النيتروجيني سبب زيادة في جميع الصفات المدروسة لاسيما عند المستوى الاعلى N3، اذ اعطى اعلى متوسط لصفة عدد الايام لغاية 50% تزهير ذكري وعدد الايام لغاية 50% تزهير انثوي وعدد العرانيص بالنبات وعدد الصفوف بالعرنوص وعدد الحبوب بالصف وعدد الحبوب بالعرنوص ووزن 100 حبة، وايضاً ادى ذلك الى زيادة في صفة حاصل الحبوب الكلي وكانت المتوسطات 59 يوم و63.11 يوم و2.2 عرنوص/نبات بواقع 18.622 صف/عرنوص و48.78 حبة/صف و993 حبة/عرنوص و31.78 غم و14.88 طن/هـ على التولي.

كلمات مفتاحية: الذرة الصفراء، حاصل حبوب، السماد النيتروجيني.

INTRODUCTION

Maize (*Zea mays*. L) is one of the most widely distributed cereals in the world and is of great importance as human food, animal feed, and raw materials for industrial products including proteins, vitamins and oils. In most developing countries approximately 50% to 55% of maize production in consumed humankind as food **(Arunkunar *et al.*, 2007)**. Nitrogen fertilizer is one of the main nutrients in the production many of crops and plays an important role in photosynthesis activity. The lack of nitrogen in the soil is one of the determinants of yield **(Gehl *et al.*, 2005)**. Moreover, when exceeding the recommended doses of nitrogen fertilizer supplied, the effective use of nitrogen to produce maize is important of increasing the grain yield **(Chaudhari *et al.*, 2002).** Maize are used large quantity of nitrogen fertilizer because of the considered a crop with a high efficiency in growth and accumulation of dry matter. It is considered one of C4-plants. The quantity of nitrogen are reach to 400 kg.N/ha-1 and this equivalent to a ton of urea, so we can considered it economically expensive because of the high value of the fertilizer and the environmental pollution caused by these fertilizers **(Ditta & Arshad, 2015)**. Nitrogen is essential growth and development of plant, and the use of nitrogen fertilizers can be improved yield of maize and its overuse of nitrogen fertilizers can be caused environmental degradation and resource depletion **(Nazir *et al.*, 2016)**. Excessive use of nitrogen fertilizers by farmers to get l areage productivity may also contribute to global warming and other environmental pollution **(Srikanth *et al.*, 2016)**. Studies conducted by **Wen *et al.* (2016)** indicated that maize cultivars are different in the nitrogen absorption and tolerate of nitrogen stress. The developing of maize cultivars to tolerate low nitrogen fertilizer remain of the best way to reduce of pollution**. (Zhang *et al.*, 2018)**, In addition to, the enhancement of maize yield under low nitrogen and improved of maize cultivars as important issue of maize production production **(Chen *et al.*, 2013)**. The aim of this study was to identify of maize cultivars and grown under different nitrogen levels, that will be give high yield.

MATERIALS AND METHODS

A field experiment was carried out during the fall season of 2021 in the experimental field for college of agricultural engineering sciences, university of Baghdad, with the aim of finding out which genotypes are more tolerant of a deficiency or excess of nitrogen fertilization in maize crop. The land was plowed with a flip-flop plow on 15/7/2021 and soil samples were taken for analysis and measurement of ready nitrogen in the soil, total nitrogen, soil pH and soil EC. Then the process of tillage and leveling of field area was carried out, and divided into identical experimental units (3×9 m), three cultivars of maize were used (Baghdad, 5018, Sarah) according to the RCBD (split plot design), the seeds were planted on distance between of furrows and another 0.75 m and between one hole and another 0.25 m at the rate of 2-3 seeds/hole on 7/26/2021.The field was irrigated every 4-5 d. The plants were thinned to one plant after 15 d from emergence, urea (N46%) was supplied in three levels at the rate of 100 kg/ha, 200 kg/ha and 300 kg/ha at two period of time, the time 2021/8/16 and the second 2021/9/4, and the weeding was carried out as needed for this process.

Attributes under study

growth traits

Number of days from planting to 50% tasseling

The number of days from planting (the first irrigation) until the tasseling was recorded by 50% **(Elsahookie & Daoud, 2021)**.

Number of days from planting to50%silking:

The number of days from planting (the first irrigation) until the emergence of the silking was recorded by 50% **(Elsahookie & Daoud, 2021)**.

The components of the result

The number of pods per plant (ear/plant)

The number of grains at harvest was calculated from five plants from each experimental unit.

Number of rows in the cob (row/ear)

The number of rows for each stalk was calculated in the five ear per plants from each experimental unit.

Number of grains in a row (grains/row)

The number of grains in one row was calculated from the sum of all five random ear per plants from each unit experimental.

The number of grains in the ear (grains/ear)

The number of grains in the ear was calculated by (number of rows/ear) × (the number of grains/row).

Weight of 100 grains (g)

The yield of five grain plants was weighed **(Al-Sahoke, 1990)**.

Total grain yield (ton/ha)

The yield of grain via harvested five plants calculated from each experimental unit, when the plants reached to maturity, and the moisture content were ad justified to of 14% based on the following equation:

$$\text{Weight of seeds at 14\% moisture} = \frac{\text{Weight of seeds at original moisture}}{86} \times 100$$

RESULS AND DISCUSSION

Growth traits

Number of days to 50% tasseling

The results of the statistical analysis (Table 1) showed significant differences between the cultivated genotypes in the tasseling, as the cultivar (Sara) gave the least number of days to reach 50% tasseling, as the number of days reached 61 d compared to the cultivar (Baghdad) which are gave the highest number of days to tasseling, which reached 62 d. The difference in the tasseling among maize cultivars is caused by the flowering genes (Ft) represented by ZCN8, which is responsible for increasing the acceleration of pollen formation **(Jawad *et al.*, 2019)**. It is noted from (Table 1) that there is a significant effect of nitrogen levels in the period of 50% tasseling as the level of nitrogen fertilization N3 gave the lowest of tasseling 59 d compared to the level of nitrogen fertilization N1 which are gave the highest rate of 65 d. The increase in the early access to tasseling with an increasing at the level of nitrogen fertilization is due to the effect of nitrogen in accelerating the growth of the plant and also causes cell division in the tassel of maize, which in turn increases the formation of pollen grains **(Golla *et al.*, 2019)**. The results of (Table 1) showed that there was a significant effect of the interaction between genotypes and nitrogen fertilization levels, as the cultivar (Sara) at the fertilizer level (N3) gave the lowest rate in male flowering, reaching 58 d compared with the cultivar (Baghdad) at the level of N3 The nitrogen fertilizer (N1), which gave the highest rate in male flowering, reached 66 d. Increasing the level of nitrogen fertilization helps in the production of florigen hormone responsible for plant flowering in the maize, which is related to the phosphate idylethanolamine-binding protein (PEBP), which is induced by the PEBP gene, which accelerates flowering in maize **(Skonieski *et al.*, 2019)**.

Table (1): Effect of nitrogen fertilization levels on the number of days from sowing to 50% tasseling of genotypes in maize.

Cultivars	Nitrogen level			Mean Cultivars
	N1	N2	N3	
Baghdad	66	62	59	62
5018	64	61	59	62
Sarah	65	60	58	61
L.S.D 0.05	1.1			0.6
Mean N	65	61	59	
L.S.D 0.05	1.0			

Number of days 50% silking

Flowering in maize plants occurs as a result of the transfer of metabolites from the leaves and stored at the top of the stem to the promordia, and that the increasing silking caused by the action of some flowering-related genes (*FLC)C, T(FT), (SOC1)* that encode the flowering regulation pathways in maize (F3). The results of (Table 2) showed that there were significant differences between the cultivated genotypes in the of silking, as the Cultivar (Baghdad) gave the least number of days to silking 65.22 d, compared to the cultivar (5018), which are gave the highest tasseling 65.89 day. The increasing of the early flowering period of the silking maize, is due to the increase of the florigen hormone, which is transmitted from the leaves through the phloem and then to the tissues forming the silks,. It is noted that there is a significant effect of nitrogen levels in the period from planting up to 50% of silking, as the nitrogen fertilization level N3 gave the lowest silking 63.11 d, compared to the level of nitrogen fertilization N1 which are gave the highest rate of 69.33 d to silking. Increasing the level of nitrogen fertilization increases the activity of the flowering hormone florigen, which is related to the synthesis of phosphate idylethanolamine-binding protein (PEBP) , that which is increased by excess of amino acids **(Putterill & Varkonyi, 2016)**. There was a significant effect of the interaction between genotypes and nitrogen fertilization levels, as the Cultivar (Sara) at the N3 fertilization level gave the lowest rate in the early ness of female flowering, reaching 62.33 d compared with the Cultivar (Baghdad) at the N1 nitrogen level, which gave the least early characteristic of female flowering reached 69.67 d. That increased nitrogen level increases the gene expression of *SOC1* and *BCSVP* genes closely related to the control of flowering regulation in plants and **(Ding & Nilsson, 2016)**.

Table (2): Effect of nitrogen fertilization levels on the number of days from sowing to 50% silking of genotypes in maize.

Cultivars	Nitrogen level			Mean Cultivars
	N1	N2	N3	
Baghdad	69.67	65.00	63.33	65.22
5018	69.00	65.00	63.67	65.89
Sarah	69.33	65.67	62.33	65.78
L.S.D 0.05	1.58			0.29
Mean N	69.33	65.22	63.11	
L.S.D 0.05	0.91			

Growth traits

Number of ears per plant (ear/plant)

The results of the statistical analysis (Table 3) showed that there were significant differences between the cultivated genotypes in the trait of the number of pods per plant, as the cultivar (Sara) gave the highest rate for the trait reached 2.0 ear/plant compared to the cultivar

(Baghdad), which gave the lowest rate for the trait reached 1.6 ear/plant. The increase in the number of pods per plant in the cultivar (Sara) results from the increase in the content of chlorophyll, as the increase in chlorophyll increases the duration of the plants' stay green and thus increases the preparation of the secondary ear with the important metabolites to the photosynthesis. The results of (Table 3) showed that there were significant differences between nitrogen fertilization levels in the number of ear per plant, where the fertilizer level N3 gave the highest rate of 2.2 ear/plant compared with the fertilizer level N1 which gave the lowest rate of 1.2 ear/plant. The increase in the level of nitrogen fertilization leads to an increase in the accumulation of photosynthetic products in the plants, due to the effective transfer from the source to sink, which are led to an increasing of the yield. The results of (Table 3) show that there is a significant effect of the interaction between the genotypes and the levels of nitrogen fertilization, as the cultivar(Sara) at the nitrogen level N3 gave the highest of 2.3 ear/plant compared to the genotypes (Baghdad) and (5018) at The fertilizer level N1, which gave the lowest value of (1.1) ear/plant .Increasing the nitrogen element increases the effectiveness of stay –green and the, which leads to an increase in the number of primordial, an increasing of the number of ears and the formatting of grains **(Ali *et al*., 2012)**. Also showed **Proudhon *et al.* (2007)** that the increase in the number of ear in plants, because of supplied nitrogen on vegetative growth and reproduction.

Table (3): Effect of nitrogen fertilization levels on the number of ears in maize genotypes.

Cultivars	Nitrogen level			Mean Cultivars
	N1	N2	N3	
Baghdad	1.1	1.7	1.9	1.6
5018	1.1	1.7	2.2	1.7
Sarah	1.9	2.2	2.3	2.0
L.S.D 0.05	0.3			0.2
Mean N	1.2	1.9	2.2	
L.S.D 0.05	0.2			

Number of rows in the ear (row/ear)

The characteristic of the number of rows in the ear is an important factor for production and is considered one of the components of the yield in addition to being easy to measure **(Abed, 2010)**. The results of (Table 4) showed that there were significant differences between the genotypes of the trait of the number of rows in the ear, where the cultivar (5018) gave the highest number of rows amounted to 16.800 row/ear compared to the cultivar (Baghdad), which are gave the lowest rate for this trait 16.578 row/ear. The difference between the genotypes of the number of ear in plants is due to the *UB3* gene, as the high expression of this gene reduces the size of the meristem, which are leads to a smaller number of rows in the ear **(Liu *et al*., 2015)**. The results of (Table 4) showed a significant effect of nitrogen fertilization levels for the number of rows in the ear, where the fertilizer level N3 gave the highest value 18.622 row/ear, compared to the fertilizer level N1 which are gave the lowest value for this trait amounted to 14.756 row/ear. The reason for the increase in the number of rows with the increase in the level of nitrogen fertilization is that the element nitrogen increases the number of ovaries fertilization , which are leads to an increase in the pollination of those ovaries in the ear and thus the number of rows in the ear increases these results are also supported **(Galindo *et al*., 2019)**. The results of the statistical analysis (Table 4) showed that there was a significant effect of the interaction between the genotypes and the levels of nitrogen fertilization for the characteristic of the number of rows in the ear, where the cultivar (Sara) at the level of nitrogen fertilization N3 gave the highest value for the characteristic of the number of rows in the ear

reached 18.800 row/ear, compared with the cultivar (Baghdad) at the nitrogen level N1, which gave the lowest value for this trait amounted to 14.667 row/ear .The reason for the increase in the number of rows in the ear of genetic structures with the increase in the level of nitrogen fertilization is due to the role of the nitrogen element in increasing cell division and expansion of meristem tissues and increasing the leaf area and thus will increase leaf area that intercepts sunlight and also improve the growth c that caused an increasing of trait **(Boomsma *et al.*, 2009)**.

Table (4): Effect of nitrogen fertilization levels on the number of rows in the cob of the plant for genotypes in maize.

Cultivars	Nitrogen level			Mean Cultivars
	N1	N2	N3	
Baghdad	14.667	16.467	18.600	16.578
5018	14.733	17.200	18.467	16.800
Sarah	14.867	16.200	18.800	16.622
L.S.D 0.05	0.655			Ns
Mean N	14.756	16.622	18.622	
L.S.D 0.05	0.423			

Number of grain per row (grains/row)

The results of the statistical analysis (Table 5) showed that there were significant differences between the cultivated genotypes in the trait of the number of grains per row, where the cultivar (Sara) gave the highest value of 48.78 grains/row compared to the cultivar (Baghdad), which are gave the lowest value for the trait amounted to 45.64 grains/row. The number of grains in a row is affected by genetic structure and appropriate environmental conditions, which are leads to an increase in leaf area, which results in an increase in the efficiency of photosynthesis, which increases the products of photosynthesis and increases the number of grains in a row **(Hafez & Abdelaal, 2015)**. The results of (Table 5) showed that there was a significant effect of nitrogen fertilization levels, as the fertilizer level N3 gave the highest rate for the characteristic of the number of grains in the eardrum, which amounted to 53.32 grains/row, compared to the level of nitrogen fertilization N2, which are gave the lowest rate for the trait amounted to 41.18 grains/row. Increasing the high levels of nitrogen fertilization supplied to the plant increases the efficiency of photosynthesis and increases its products and transfer to estuaries, thus reducing competition between of grains **(Adhikari *et al.*, 2021)**. The results of (Table 5) showed a significant effect of the interaction between the genotypes and nitrogen fertilization levels in the trait of the number of grains in the ear, as the cultivar (5018) at the nitrogen level N3 gave the highest value for the trait, which amounted to 54.17 grains/row compared to the cultivar (Baghdad). At the nitrogen level N1, it gave the lowest value of 40.33 grains/row. The reason for the increase in the number of grains in a row with an increase in the level of nitrogen fertilization is that the increase in nitrogen increases the rate of plant growth, which leads to a reduction in the time interval between the male and female flowering period, so pollination increases and the fertilization of ovaries , so the number of grains per row will be increased **(Alfolabi *et al.*, 2020; Abed, 2011)**.

Table (5): Effect of nitrogen fertilization levels on the number of grains per row for maize genotypes.

Cultivars	Nitrogen level			Mean Cultivars
	N1	N2	N3	
Baghdad	40.33	44.67	51.93	45.64
5018	42.40	46.53	54.17	47.70
Sarah	40.80	51.67	51.93	48.78
L.S.D 0.05	2.278			1.340
Mean N	41.18	47.62	53.32	
L.S.D 0.05	1.734			

Number of grains per ear (grains/ear)

The results of (Table 6) showed that there were significant differences between the cultivated genotypes in the trait of the number of grains in the ear, where the variety (Sara) gave the highest value of the trait amounted to 818.7 grains/ear compared to the cultivar (Baghdad), which gave the lowest value of the trait amounted to 764.7 grains/ear, that the difference in the number of grains in maize is caused by the difference in genetic diversity in the total genome size, which are varied according to varieties and species. It is noted from (Table 6) that there is a significant effect of nitrogen fertilization levels on the number of grains in the ear, where the fertilizer level N3 gave the highest value for this trait, which are approximately 993.0 grains/ear, compared to the fertilizer level N1 which gave the lowest value of 608.3 grains/ear. The number of grains are increased with increasing levels of nitrogen fertilization, due to reduced competition for nutrients and an increase in the accumulation of photosynthetic products, accompanied by an increase in the conversion of metabolites to sink, which are leads to an increase in the number of grains in the ear **(Namvar, 2016)**. It showed that there was a significant effect of the interaction between genotypes and nitrogen fertilization levels, as the cultivar (Sara) at the level of nitrogen fertilizer N3 gave the highest mean number of grains in the ear, reaching 1012.4 grains/ear, compared with the cultivar (Baghdad) at the N1 level, which gave the lowest rate for this trait, reached 592.5 grains/ear. The increasing of the number of grains per ear, because of the increasing of nitrogen fertilizer, which are reduce of time interval time between male and female flowering, and which are increased photosynthetic metabolites during the grain filling period.

Table (6): Effect of nitrogen fertilization levels on the number of grains per ear for yellow corn genotypes.

Cultivars	Nitrogen level			Mean Cultivars
	N1	N2	N3	
Baghdad	592.5	735.7	966.0	764.7
5018	625.4	800.9	1000.7	809.0
Sarah	607.0	836.7	1012.4	818.7
L.S.D 0.05	12.92			18.01
Mean N	608.3	791.1	993.0	
L.S.D 0.05	30.02			

Weight of 100 grains (g)

The weight of the grain is one of the most important factors contributing to the yield of the plant, which can give approximate estimates of the grain yield of any crop. The results of (Table 7) showed that there were no significant differences between the genotypes grown for the trait weighing 100 grains, as the cultivar (Sara) gave the highest value for the trait amounted to 30.89 g compared to the genotypes that gave the lowest value for the trait

(Baghdad), where The value was 29.67 g. The increase in the weight of the grain can be due to the strength of the cultivar and differences in the number of genes associated with the grain weight, as well as the effectiveness of photosynthesis in increasing the metabolites and transferring to sink **(Abed, 2014)**. It is noticed from (Table 7) that there is a significant effect of nitrogen levels in the characteristic weight of 100 grains, where the fertilizer level N3 gave the highest value of the trait amounted to 31.78 g compared to the fertilizer level N1 which gave the lowest value of 28.78 g. An increase in the nitrogen level causes an increase in the transfer of photosynthetic products from the vegetative (the source) to the grain (sink) and increasing of grain weight with increased of the nitrogen fertilization level **(Thirupathi *et al.*, 2016)**. The results of (Table 7) showed that there was a significant effect of the interaction between genotypes and nitrogen fertilization levels for a 100 grain weight trait, where composition (5018) at the nitrogen level N3 gave the highest rate of 33.00 g compared to the same cultivar at the nitrogen level N1, which gave the lowest an average of 28.33. The reason behind the increase in the rate of genetic structure in the weight of 100 grains at the high fertilizer level is because it leads to an increase in the number of grains per ear and this caused a higher capacity downstream compared to the source, so the rate of filling the grains was more and thus the grain was of high weight **(Ghoneim *et al.*, 2018)**.

Table (7): Effect of nitrogen fertilization levels on the weight of 100 kernels of maize genotypes.

Cultivars	Nitrogen level			Mean Cultivars
	N1	N2	N3	
Baghdad	28.67	30.67	29.67	29.67
5018	28.33	31.33	33.00	30.89
Sarah	29.33	30.67	32.67	30.89
L.S.D 0.05	3.110			ns
Mean N	28.78	30.89	31.78	
L.S.D 0.05	2.281			

Total grain yield (ton/ ha)

The results of (Table 8) showed that there were no significant differences between the sown genotypes in the trait of grain yield. It is noticed that there is a significant effect of nitrogen levels on the grain yield, as the nitrogen fertilization level N3 gave the highest value of 14.88 ton/ha compared to the nitrogen level N1 which gave the lowest value of 9.15 ton/ha. The increase of grain yield with the increase of nitrogen levels due to the significant increase in plant height, leaf area, number of grains in the ear, as well as grain weight with supplied of nitrogen fertilizer was the main reason behind the increase in grain yield **(Abed, 2018)**. The results show that there is a significant effect of the interaction between the genotypes and the levels of nitrogen fertilization, as the cultivar (Sara) at the fertilization level N3 gave the highest rate in the character of grain yield, which amounted to 14.75 ton/ha compared to the cultivar (Baghdad). At the fertilizer level N1, which gave the lowest rate of 9.07 ton/ha. Increasing the levels of nitrogen fertilization leads to an improvement in the yield characteristics, and this is due to the fact that adding nitrogen to the plant leads to a longer stay green for the leaves, allowing more accumulation of dry matter products and their transfer from the source to the sink **(Asaduzzaman *et al.*, 2014)**.

Table (8): Effect of nitrogen fertilization levels on grain yield of maize genotypes.

Cultivars	Nitrogen level			Mean Cultivars
	N1	N2	N3	
Baghdad	9.07	12.70	14.35	12.04
5018	8.90	12.89	15.53	12.44
Sarah	9.49	12.71	14.75	12.32
L.S.D 0.05	1.095			ns
Mean N	9.15	12.77	14.88	
L.S.D 0.05	0.694			

CONCLUSION

The all maize that cultivars were variance in growth and yield components and that cultivar of 5018 gave high yield about 15.53 ton/ ha under 300 kg N fertilizer, compared cultivar of (Baghdad) gave 14.35 ton/ ha. and that show cultivar of 5018 has response to N. fertilizer compared with other cultivars and we recommended that 5018 more to grown and tolerant at high nitrogen fertilizer and capability cultivar to transmitted to grain and dry matter.

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