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Response of some Bread Wheat Varieties under Different Planting Dates and Nitrogen Levels in Basra Governorate

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Abstract

An experiment to evaluate the growth of three bread wheat varieties, four nitrogen fertilization levels, and three planting dates at the College of Agriculture-University of Basra/Karma Ali site, during the winter season of 2023–2024 on silty loam soil to find out the impact of four nitrogen fertilizer levels (0, 60,120 and 240 kg N ha^{-1}), and three planting date (1st December, 15th December, and 1st January) on the growth of three varieties of bread wheat (Al-Shaima, Al-Karam, and Ibaa-99). In a Randomized Complete Block Design (R.C.B.D.) with three replications, the factorial experiments within split plots was used , the nitrogen levels were assigned to main plots ,while varieties and sowing dates as sub plots. The results of the study showed that Al-Shaima variety outperformed the other varieties in practically all evaluated traits. The results indicated that planting on 1stNovember considerably gave the highest traits when compared to the late sowing date (1st December).All traits were improved when the N level was increased from 60 to 240 kg N ha^{-1}.

Keywords: Wheat, variety ,sowing date ,nitrogen , growth

I. Introduction

An estimated 75% of human food demands are met by grains, including the wheat crop (*Triticum aestivum* L.) appears first among cereal crops ,Consequently, over 35% of the world's population depends on grains as their primary food supply, with 65% of his grains being utilized directly for human consumption. (Harlan ,1995). The wheat crop became known as the "king of grain crops" because of its notable benefits, including the balance of its grain components, such as proteins and carbohydrates(Costa *et al.*, 2013).Iraq is one of the nations where wheat first appeared and where the conditions necessary for its successful development are present, but its average level of productivity remains below what is needed. There are various agricultural practices and advances that must be followed in order to increase the area planted with this crop, such as the introduction of new varieties with high yields and good quality . Iraq is situated in arid semiarid areas with little organic matter and poor nitrogen levels in a lot of plants, therefore the use of nitrogen fertilizers is the most important method of supplying the required quantity of nitrogen, all of the metabolic processes that plants go through depend on nitrogen, it is the primary ingredient of plants, particularly in the creation of living tissue (Mohamed *et al*., 2022). Al-Jabri (2020) noted that the level of 200 kg N ha^{-1} was superior by giving the highest average of plant height and flag leaf area (80.72cm and 52.49cm^2 respectively). Wheat that is sown on time has the best growing conditions, allowing the crop to build more biomass and ultimately produce more growth and grain yield. Many investigations have shown that the impact of varying planting dates causes different changes in the behavior of varieties with regard in growth and yield. The results of Mukhlif *et al.* (2023) indicated that the date of 15th December was superior to the plant height and flag leaf area with an average of 82.30cm and 43.31cm^2. Considering that research in this area is necessary to obtain the optimal growth features the effects of nitrogen fertilizer and planting date on three wheat varieties were investigated .

II. Materials and Methods

At the College of Agriculture-University of Basra/Karmat Ali site, (30° 57` N lat.,47° 80` long.) Iraq, on silty loam soil with a pH 7.50, E.C. of 14.20 dSm^{-1},organic carbon (0.50%), available nitrogen (30.50 mg kg^{-1}) , phosphorus (19.33 mg kg^{-1}) and potassium (111 mg kg^{-1}) during the winter season of 2023–2024 to find out the impact of four nitrogen fertilizer levels (0, 60,120 and 240 kg N ha^{-1}) symbolized N0, N1,

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N2 and N3, and three planting date (1st November, 15th November, and 1st December) symbolized D1 ,D2, and D3 on the growth of three varieties of bread wheat (Al-Shaima, Al-Karam, and Ibaa-99) are consecutively symbolized V1, V2, and V3. In a Randomized Complete Block Design (R.C.B.D.) with three replications, the factorial experiments within split plots was used , the nitrogen levels were assigned to main plots ,while varieties and sowing dates as sub plots .Plowing, smoothing, leveling, and dividing the field were all done in accordance with the experiment's design .The sub plot size was 2m × 2 m area, There were 10, rows 2m long with a 20 cm space between rows. The recommended seeding rate 120 Kg $ha^{-1}$was applied .Urea(46% N) was used as source of nitrogen fertilizer, and the treatments applied in three splits each, the first after the emergence ,the second at the beginning of elongation stage and the third at flowering . All plots at plantings received a super triphosphate (46% P_2O_5) with an average 100 kg P ha^{-1} before planting , in addition as necessary, weeding and irrigation were carried out. Furthermore, weather data from Iraqi Agrometeorological Center/ Iraqi Ministry of Agriculture (Table1).Studied characteristics were chlorophyll content, days to 50% flowering ,plant height , flag leaf area , days from 50% flowering to maturity and number of tillers. The GenStat program was used to statistically analyze the data, and the least significant differences (L.S.D) test between the means of the components and their interactions was applied at a 5% probability level (Al-Rawi and Khalafallah, 2000).

Table (1) Monthly average temp. , thermal assembly and monthly solar radiation during the season 2023- 2024

Weather Information	Months					
	November	December	January	February.	March.	15-April
Temp. Min C°	23.87	21.07	22.027	21.280	25.585	32.95
Temp. Max C°	9.66	10.29	8.96	9.2989	12.045	17.62
Growing Degree Day	322.3	300.2	286.28	269.09	399.02	288.7
Total Solar Radiation	9.756	11.68	10.811	12.403	15.002	17.68
Rainfall mm	1.3	17.97	7.7	26	37.9	4.5

III. Results and discussion

Total chlorophyll content of flag leaf (mg 100g-1)

All varieties , planting dates, nitrogen levels and all interactions differ significantly ($P<0.05$) in chlorophyll content in leaves except the interaction between planting dates with varieties and nitrogen levels (Table 2), however V1 had greater value than the two other varieties (41.116 mg 100 g^{-1}) while the lowest value was found by V3(36.582 mg 100 g^{-1}), Differences in chlorophyll content between varieties may be due to genetic differences between them .This result was in agreement with Al- Jabri (2020). As for the effect of the planting dates D1 gave the highest chlorophyll content about 39.132 mg 100 g^{-1},while the date D3 gave the lowest (37.532 mg100 g^{-1}). Different N levels also caused variations in the content of chlorophyll, highest chlorophyll content (40.179 mg 100 g^{-1}) was produced when N applied 240 kg N ha^{-1} and the lowest found from control (36.815 mg 100g^{-1}) .The highest chlorophyll content (41.765 mg 100 g^{-1}) was produced by V1×N3 while the lowest was found by V3 ×N0 (35.279 mg 100 g^{-1}).The interaction V1×D1×N3 gave the highest chlorophyll content reaching 42.298 mg 100 g^{-1}, on the other hand the lowest average was found in V3×D3×N0 interaction, reaching 34.600 mg.100 g^{-1}.

Table.2.The effect of nitrogen fertilizer and planting dates on chlorophyll content(mg 100 g^{-1}) of wheat varieties

Nitrogen level (Kg h-1)	Planting dates)	Varieties			N ×D
		V1	V2	V3	
N0	D1	39.311	37.843	35.878	37.678
N1		40.270	38,294	36.803	38.456
N2		41.470	39.709	37.582	39.587
N3		42.298	41.505	38.621	40.808

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N0			D2	38,379	36.814	35.359	36.851
N1				39.653	37.363	36.515	37.844
N2				40.668	39.189	36.684	38.847
N3				41.882	40.635	38,649	40.389
N0			D3	37.636	35.516	34.600	35.917
N1				38.739	36.823	35,052	36.871
N2				39.480	38.464	36,058	38.001
N3				41.116	39.719	37.186	39.340
			Mean V	41.116	38.490	36.582	Mean N
				V1	V2	V3	
V x N			N0	38.442	36.724	35.279	36.815
			N1	39.554	37.493	36.123	37.724
			N2	40.539	39.121	36.775	38.812
			N3	41.765	40.620	38.152	40.179
D x V				V1	V2	V3	Mean D
			D1	40.837	39.338	37.221	39.132
			D2	40.145	38.500	36.802	38.483
			D3	39.243	37.630	35.724	37.532
LSD P<0.05	N	D	V	N × D	V x N	D x V	V x D x N
	0.2549	0.1385	0.1385	N.S	0.3167	N.S	0.4979

Days to 50% flowering

The data on days to flowering in Table (3) showed that the days to 50% flowering were effected significantly *(P<0.05)* for the varieties , planting dates , nitrogen levels and all interactions except the interaction between nitrogen levels with planting dates .The variety V3 had the longest period to reach this stage of 65.08 days, while V1 required shorter days for flowering (58.69 day). This may be due to the differences in the genetic composition of the varieties and their response to temperature and light duration .This result is consistent with what was reached by Al-Abdullah (2015). The table results show the planting date D3 had the longest days to reach 50% flowering, (62.72 days), this may be attributed to the increased thermal and light accumulation required for flowering (Table 1), these results are consistent with Al-Jiashi *et al.*, (2021). The nitrogen level N3 achieved the longest period of 64.33 days, while the levels N0 and N1 took shorter days which was 59.00 and 59.81 days. The variety V3 achieved the highest number of days to flowering for all planting dates, were 65.25, 65.33 and 64.67 days ,while the V1 at planting dates D1 and D2 and variety V2 D1 had the lowest number of days, reaching 58.00, 58.17 and 58.67 days respectively. As for the interaction between varieties and nitrogen levels, V3 ×N2 gave the longest duration (67.44days), while the shortest duration was achieved in V1×N0 (56.11 days). The interaction treatment V3×D2×N2 took Longest time to reach 50% Flowering (69.33 days), while the shortest duration was found in V2×D1×N0 (52.67 days).

Table.3.The effect of nitrogen fertilizer and planting dates on days to 50% flowering of wheat varieties

Nitrogen level (Kg h-1)	**Sowing**	**Varieties**	N×D

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			dates	V1	V2	V3	
N0			D1	56.00	52.67	65.33	58.00
N1				56.67	58.00	63.33	59.33
N2				59.00	59.67	66.67	61.78
N3				60.33	64.33	65.67	63.44
N0			D2	56.00	57.67	63.00	58.89
N1				56.00	57.67	61.33	58.33
N2				57.33	60.33	69.33	62.33
N3				63.33	63.00	65.00	63.78
N0			D3	56.33	60.33	63.67	60.11
N1				61.33	61.00	63.00	61.78
N2				60.67	62.67	66.33	63.22
N3				61.33	67.67	68.33	65.78
Mean V				58.69	60.42	65.08	
				V1	V2	V3	Mean
V x N			N0	56.11	56.89	64.00	59.00
			N1	58.00	58.89	62.56	59.81
			N2	59.00	60.89	67.44	62.44
			N3	61.67	65.00	66.33	64.33
V x D				V1	V2	V3	Mean D
			D1	58.00	58.67	65.25	60.64
			D2	58.17	59.67	64.67	60.83
			D3	59.92	62.92	65.33	62.72
LSD P<0.05	N	D	V	N x D	V x N	V x D	V x D x N
	1.307	1.048	1.048	N.S	2.031	1.815	3.579

Plant height (cm)

It is clear from the results of Table (4) Moral effect significantly (P<0.05)of varieties, planting dates , nitrogen fertilizer levels and interaction of nitrogen levels with planting dates were significantly affected (*P<0.05*) in this trait. V1 was significantly superior to the other varieties in plant height with an average of 97.00 cm, and the lowest plant height was found in the variety V3 (84.17 cm), this may be due to the fact that the physiological, chemical and biological processes of the varieties are under genetic control (Hussain *et al.*,2017). This result is consistent with what was found by (Al-Mashhadani *et al.*, 2022; Jassim *et al.*, 2023; Al-Shammari, 2023). The results of the table (4) showed that D1 was superior in giving the highest average height of 95.47 cm, while the lowest plant height was recorded at D3 (84.37 cm). These results are consistent with many researchers (Al-Tamimi, 2019; Mahmoud et al., 2022). The highest plant height was recorded at the N3 fertilizer level with an average of 97.38 cm, while the N0 level gave the lowest value(83.21 cm). This may be due to its increased availability in the root area and its increased absorption by the plant leading to increased cell division and elongation, and thus an increase in the height of the plant (Al-Badrani, 2010). These results were found by(Solomon and Anjulo,2017). The results indicated that the interaction between planting date D1 with N2 and N3 and the interaction between D2×N3 recorded the highest average height of 101.67 cm, 100.89 cm and 101.47 cm respectively without significant differences between them, while the interaction D3×N0 gave the lowest(78.89 cm).

Table.4.The effect of nitrogen fertilizer and planting dates plant height(cm) of wheat varieties

Nitrogen fertilizer	Sowing dates	Varieties	N x D

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level (Kg h-1)		(day)	V1	V2	V3		
N0		D1	93.00	84.33	80.33		85.89
N1			100.67	97.33	82.33		93.44
N2			106.33	102.00	94.33		100.89
N3			108.00	101.67	95.33		101.67
N0		D2	92.27	85.30	77.03		84.87
N1			95.97	84.97	80.30		87.08
N2			106.37	98.40	89.70		98.16
N3			107.20	102.13	95.07		101.47
N0		D3	83.33	81.67	71.67		78.89
N1			88.33	87.67	76.00		84.00
N2			89.53	83.33	83.93		85.60
N3			93.00	90.00	84.00		89.00
Mean V.			97.00	91.57	84.17		Mean N
			V1	V2	V3		
V x N		N0	89.53	83.77	76.34		83.21
		N1	94.99	89.99	79.54		88.17
		N2	100.74	94.58	89.32		94.88
		N3	102.73	97.93	91.47		97.38
V x D			V1	V2	V3		Mean D
		D1	102.00	96.33	88.08		95.47
		D2	100.45	92.70	85.52		92.89
		D3	88.55	85.67	78.90		84.37
LSD P<0.05	N	D	V	N x D	V x D	V x N	V x D x N
	2.246	1.645	1.645	3.287	N.S	N.S	N.S

Flag leaf area (cm^2)

The results of the table (5) indicate that there was a significant effect *(P<0.05)* of varieties, planting dates, nitrogen levels, and their dual interactions on flag leaf area, as the two varieties V1 and V2 had the highest average flag leaf area of 46.09 and 46.02 cm2 respectively , while V3 gave the lowest (41.23 cm^2),this is due to their genetic variation. These results are consistent with (Mahmoud et al., 2022 and Al-Mousa, 2022). The results of table (5) indicated the superiority of planting date D1 which gave the highest flag leaf area (47.35 cm^2), while D3 had the lowest (42.27cm^2), this may be due to the suitability of climatic conditions (temperatures and light periods) at the time of planting, which led to an increase in the products of the photosynthesis and thus an increase in the area of the flag leaf (Al-Jiashi *et al.* ,2020). Fertilizer level N2 and N3 recorded the highest flag leaf area of 47.68 and 47.30 cm^2, while the lowest flag leaf area given by level N0 was 39.16 cm^2 (table 5).This may be due to the availability of nitrogen at the beginning of plant growth until the flowering stage, which is the period that includes the emergence and growth of the flag leaf, as nitrogen is necessary for all vital processes, as it activates growth through cell division and elongation, which is reflected in the leaf area (Fayyad et al., 2005). V1 ×D1 gave the highest flag leaf area of 49.46 cm^2, while V3 × D3 gave is the lowest (39.84 cm^2), also the results showed that V1× N2 gave the highest average for flag leaf area (49.87 cm^2), while V3×N0 gave the lowest value (36.33 cm^2). D1 × N2 achieved the highest flag leaf area of 52.08 cm^2, while the interaction D3× N0 gave the lowest (36.80 cm^2).

Table.5.The effect of nitrogen fertilizer and planting dates on flag leaf area (cm^2) of wheat varieties

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Nitrogen fertilizer level (Kg h-1)			Sowing dates	Varieties			N×D
				V1	V2	V3	
N0			D1	43.66	42.71	39.22	41.86
N1				45.29	46.40	39.77	43.82
N2				55.34	53.28	47.61	52.08
N3				53.54	53.89	47.45	51.63
N0			D2	40.15	40.56	35.78	38.83
N1				46.93	45.90	38.38	43.73
N2				48.51	47.46	43.71	46.56
N3				47.56	46.31	43.52	45.80
N0			D3	36.34	40.07	33.99	36.80
N1				45.21	45.01	39.96	43.39
N2				45.77	45.03	42.37	44.39
N3				44.77	45.64	43.04	44.49
			Mean V.	46.09	46.02	41.23	Mean N
				V1	V2	V3	
V x N			N0	40.05	41.11	36.33	39.16
			N1	45.81	45.77	39.37	43.65
			N2	49.87	48.59	44.56	47.68
			N3	48.62	48.62	44.67	47.30
							Mean D
				V1	V2	V3	
V x D			D1	49.46	49.07	43.51	47.35
			D2	45.79	45.06	40.35	43.73
			D3	43.02	43.94	39.84	42.27
LSD P<0.05	N	D	V	N × D	V x N	V x D	V x D x N
	1.006	0.630	0.630	1.343	1.343	1.092	N.S

Number of days from 50% flowering to maturity

The results of Table (6) show the significant effect of varieties, planting dates, nitrogen fertilizer levels, and their interactions on this trait *(P<0.05)*. The variety V1 took the longest time to reach full maturity (78.75 days), while V3 needed the least number of days to reach this stage, which was 73.25 days, this is due to their variation in the duration of the vegetative and reproductive growth stage, and their response to the environmental conditions in the study area. (Shirinzadeh *et al.*, 2017; Meleha *et al.*, 2020). The results of the table(6) also showed that planting date D1 achieved the highest average number of days until full maturity, reaching 88.19 days, while planting date D3 gave the lowest number of days (68.86 days), this may be explained on the basis of the difference in temperature and light duration, the same results found by (AL-Asseel *et al.*, 2018 ; El haj,2019). The results indicated that N3 level took the longest days by 80.96 days, while the N0 level gave the lowest average, (71.74 days), these results are consistent with (Hussein *et al.*, 2017;Mohamad *et al.*, 2022). The interaction V1 ×D1 gave the highest number of days (91.42 days), while the interaction of V3 × D2 gave the lowest (68.00 day) ,it is also clear from the results the interactions V2× N3 and V1 × N2 achieved the highest days to maturity of 82.33 and 82.00 days, while V3×N0 gave the lowest (65.56 day). Number of days to reach this stage in the first sowing date(D1) with a high level of nitrogen(N3) gave 93.11days, while the lowest days to maturity was with the interaction D3×N0(64.56 days).The interactionsV1×D1×N2 andV1×D1×N3 gave the maximum duration to reach this stage was 94.00 days, while the lowest average was recorded in V3×D3× N0 (61.33 days).

Table.6. The effect of nitrogen fertilizer and planting dates on number of days from 50% flowering to full maturity (day) of wheat varieties

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Nitrogen fertilizer level (Kg h-1)	**Sowing dates** (day)	**Varieties** V1	V2	V3	N×D
N0	D1)	87.33	84.33	73.33	81.67
N1		90.33	88.67	85.00	88.00
N2		94.00	91.67	84.33	90.00
N3		94.00	94.67	90.67	93.11
N0	D2	73.67	71.33	62.00	69.00
N1		69.67	69.67	68.67	69.33
N2		79.00	71.33	69.67	73.33
N3		78.33	76.33	71.67	75.44
N0	D3	66.67	65.67	61.33	64.56
N1		67.67	65.67	71.00	68.11
N2		73.00	66.67	65.67	68.44
N3		71.33	76.00	75.67	74.33
Mean V.		78.75	76.83	73.25	Mean N
		V1	V2	V3	
V x N	N0	75.89	73.78	65.56	71.74
	N1	75.89	74.67	74.89	75.15
	N2	82.00	76.56	73.22	77.26
	N3	81.22	82.33	79.33	80.96
		V1	V2	V3	Mean D
V x D	D1	91.42	89.83	83.33	88.19
	D2	75.17	72.17	68.00	71.78
	D3	69.67	68.50	68.42	68.86

LSD P<0.05	N	D	V	N x D	V x N	V x D	V x D x N
	0.609	0.918	0.918	1.578	1.578	1.591	3.038

Number of tillers (tiller m^{-2})

Data shows that number of tillers were significantly (P<0.05) affected by varieties, planting dates, nitrogen levels (Table 7) .V1 had the highest number of tillers (490.80 tiller m^{-2}), while V3 gave the lowest number (426.10 tiller m^{-2}), this may be attributed to the genetic nature of these varieties and their ability to grow and take advantage of the available growth requirements. Similar results were also reported by (Al-Aboudi, 2019, Al-Ghanimi, 2021, and Al-Mousa, 2022). The planting date D1 was superior in the number of tillers, recording the highest average of 488.40 tiller m-2, while the planting date D3 gave the lowest number (429.60 tiller m^{-2}). The results of the table (7) showed that the N3 level was superior in giving the highest number of tillers, (489.10 tiller m^{-2}), while the lowest number of tillers was found by the control (424.80 tiller m^{-2}), the reason may be due to the presence of nitrogen at the beginning of plant growth, which encourages growth Roots, primary and secondary shoots, growth of shoots, and prolonging the growth period to produce them. (Al- Jabri, 2020).The data in Table (7) significant interaction was found between the varieties and nitrogen levels, the results indicated that Interaction V1 × N3 had the highest average number tillers reaching 520.80 tiller m^{-2} , whereas the lowest values were found by V3 ×N0 (386.90 tiller m^{-2}). The nitrogen levels x planting dates interaction had significant effects, D1 × N3 had the highest average number of tillers reaching 515.10 tiller m^{-2}, while the interaction N0 × D3 gave the lowest number (403.10 branches m^{-2}).

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Table.7. The effect of nitrogen fertilizer and planting dates on number of tillers of wheat varieties

Nitrogen fertilizer level (Kg h-1)	Sowing dates	Varieties			N × D
		V1	V2	V3	
N0	D1	472.70	444.70	414.70	444.00
N1		511.70	499.00	447.30	486.00
N2		552.70	515.00	457.70	508.40
N3		553.30	520.00	472.00	515.10
N0	D2	459.00	433.30	389.30	427.20
N1		484.30	482.00	425.00	463.80
N2		497.30	470.70	446.70	471.60
N3		530.70	501.30	454.70	495.60
N0	D3	452.70	400.00	356.70	403.10
N1		438.00	454.70	412.00	434.90
N2		459.30	408.00	403.30	423.60
N3		478.30	458.30	433.30	456.70
Mean V.		490.80	465.58	426.10	Mean N
		V1	V2	V3	
V x N	N0	461.40	426.00	386.90	424.80
	N1	478.00	478.60	428.10	461.60
	N2	503.10	464.60	435.90	467.90
	N3	520.80	493.20	453.30	489.10
V x D		V1	V2	V3	Mean D
	D1	522.60	494.70	447.90	488.40
	D2	492.80	471.80	428.90	464.50
	D3	457.10	430.20	401.30	429.60
LSD P<0.05	N	D	V	N × D	V x N	V x D	V x D x N
	22.53	8.30	8.30	24.55	24.55	N.S	N.S

IV. Conclusions:

We can conclude that the variety Al-Shaima produced the highest growth traits over rest of the varieties . when sown on 1st November in this region. which may be considered as the optimum time for obtaining the highest growth. All traits were improved by increasing Nitrogen fertilization rate from 60 to 240 kg N ha^{-1} .

V. Resources

Al-Tamimi, U. H. T. (2019).Determination of genetic divergence by RAPD technology, cross-breeding (breed x Scout) and somatic crossbreeding in bread wheat (Doctoral dissertation, Master Thesis. faculty of Agriculture. Baghdad University, Iraq.

Al-Abdullah, S. A. 2015. The effect of adding nitrogen on the absorption of N, P and K distribution in plant parts, growth and yield of three wheat cultivars *Triticum aestivum* L. PhD thesis. College of Agriculture - Basrah University, Iraq.

Al-Aboudi, M. A. K.. (2019). Genetic stability analysis of wheat varieties. *Triticum aestivum* L. cultivated in different environments of Basra Governorate. PhD thesis. College of Agriculture. Basrah University, Iraq.

ISSN Onlin:2708-9347, ISSN Print: 2708-9339 Volume 14, Issue 1 (2025) PP 298 *-307*

https://iasj.rdd.edu.iq/journals/journal/issue/15 https://jam.utq.edu.iq/index.php/main/article/view/417/

AL-Asseel, A. S. M., and Daood S. M. (2018). - Response of bread wheat (Triticum aestivum L.) cultivars for sowing dates. Tikrit Journal for Agricultural Sciences (18)2:41-53

Al-Badrani, I.M. A. (2010). Effect of nitrogen levels on growth characteristics and yield of two soft wheat varieties. *Triticum aestivum* L. Anbar Journal of Agricultural Sciences 3 (8) 98 – 071.

Al-Ghanimi, M. R.A. (2021). Response of four wheat varieties *Triticum aestivum* L. for bio-organic and mineral fertilization on growth characteristics, yield and its components. Master's thesis , Agriculture College – AL-Muthanna University,Iraq.

AL-Jabri,H.H.F. (2020)contribution of the main stem and tillers to the yield and its components for cultivars from soft wheat under the influence of nitrogen .Dissertation , Agriculture College – AL-Muthanna University , Iraq.

Al- Jiashi, M. T., Hawal,A.A. and Adham,A.M. (2021).Effect of Planting Dates on Growth and Yield of Four Cultivars of Wheat. IOP Conference Series: Earth and Environmental Science(Vol. 923, No. 1, p. 012064)IOP Publish in.

Al-Jiashi, A. A. (2020). The effect of planting dates on some growth traits, yield and quality of several wheat genetic compositions .*Triticum aestivum* L. PhD thesis. College of Agriculture - Al-Muthanna University , Iraq.

Almashhadany, A. M.A; Alabar, S. T.K. and Al-ghazal, S. A.Y. (2022) Response growth and yield three (*Triticum aestivum* L.) to spray Nano-Amino acid. Kirkuk University Journal For Agricultural Sciences, 13(4):309-321.

Al-Moussa, Ammar Asaad Abdul Majeed 2022, Response of wheat varieties *Triticum aestivum* to methods of adding nitrogen fertilizer and its economic feasibility, Master's thesis- College of Agriculture -University of Basrah ,Iraq.

Al-Rawi, K. M. and Khalaf Allah, A. M. (2000). Design and Analysis of Agricultural Experiments. College of Agriculture and Forestry. University of Mosul – Iraq.

Al-Shammari, A.M. H. (2023). Stages of foliar feeding with nano-microelements on growth characteristics, yield and economic feasibility of wheat varieties *Triticum aestivum* L. Master's Thesis - College of Agriculture - Al-Muthanna University, ,Iraq.

Costa, R.; Pinheiro, N.; Almeida, A.S.; Gomes, C.; Coutinho, J.and Costa, A. (2013). Effect of sowing date and seeding rate on bread wheat yield and test weight under Mediterranean conditions . Emirates Journal of Food & Agriculture: (25(12):951-961.

Davis ,J.G.; Westfall, D.G.; Martved t, J. and Shanahan,J.F.2002.Fertilizing winter wheat. Colorado State .University,Cooperative.Ext.Agric.No.544

El haj, D. A. (2019). Performance of some Wheat Cultivars under Normal and Late Sowing - Dates in North Delta. Journal of Plant Production 10(5): 385-391

Fayyad, S. A. ; Hammadi, H. J. and Saleh, H. K. (2005). Effect of high levels of nitrogen fertilizer on the growth and yield of Shelami wheat. Anbar Journal of Agricultural Sciences 3 (2):35-40.

Harlan, J.R. (1995). The Living Fields. our Agriculture Heritage. Cambridge University press, Cambridge.

Hussain ,M. A.; Dohuki M. S. S. M. and Ameen, H. A.(2017). Response of Some Bread Wheat (*Triticum aestivum* L.) Cultivars to Nitrogen Levels , Kufa Journal For Agricultural Sciences 9(4):365-390..

Jasim, H. H.; Yousif, D. P. ; Drab D. Y. and Nefal ,A. A.(2023). Performance Comparison of different bread Wheat (*Triticum aestivum* L.) cultivated with different seeding rates in the central Region of Iraq. Ministry of Science and Technology 12(3);15-29

Mahmoud, R.M., Abdul Jabbar, Z. A. and Alogaidi ,M. A. (2022). Effect of planting dates on growth characteristics and yield of six bread wheat varieties.. Iraqi Journal of Desert Studies, 12(1);69-78.

Mekhlif, M. E.K.; Sedeeq, F. A.Q. and AL-Gubori, J. M. A.(2020). Role of Amino Acids on The Crop Performance For Varieties of Bread Wheat (Triticum aestivum L.) by Different Times. Journal of Education and Scientific studies, 4(15);196-217.

Meleha , A. M.I.; Hassan,A.F.; El-Bialy,A.A.and El-Mansoury,M.A.M. (2020). Effect of planting dates and planting methods on water relations of wheat. International Journal of Agronomy(1), **https://doi.org/10.1155/2020/8864143**

ISSN Onlin:2708-9347, ISSN Print: 2708-9339 Volume 14, Issue 1 (2025) PP 298 *-307*

https://iasj.rdd.edu.iq/journals/journal/issue/415 https://jam.utq.edu.iq/index.php/main/article/view/417/

Mohamed, I. S.; Mohiy M. and Mohamed M. M. (2022). The impact of sowing date and nitrogen fertilization on Yield in four bread wheat cultivars. Egyptian Journal of Agricultural Research, 100(1), 1-10.

Shirinzadeh, A.; Abad, H. H. S.; Mohammadi N., G.; Haravan, E. M. and Madani , H. (2017). Effect of planting date on growth periods, yield, and yield components of some bread wheat cultivars in Parsabad Moghan. International Journal of Farming and Allied Sciences 6(4), 109-119.

Solomon, W., and Anjulo , A. (2017). Response of bread wheat varieties to different levels of nitrogen at Doyogena, Southern Ethiopia. Int. J. Sci. and Res. Public, 7(2), 452-459.