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STUDYING THE DIFFERENCES BETWEEN COMMON AND INTRODUCTION BREAD WHEAT (*TRITICUM AESTIVUM* L.) VARIETIES IN IRAQ ON TRAITS OF GROWTH, YIELD, AND ITS COMPONENTS. – MOSUL LOCATION

AL -Barwary . Ary Sulayman1 and Abdullsattar Asmair Alrijabo2
[1](Ministry of Agric. and Water Resources-Directorate of Res. and Extension-Erbil)
[2] (College of Agriculture and Forestry/ Mosul University, IRAQ)
This research is part 3 of PhD. Thesiss of the 1st Auther
Email : *ari84shele@hotmail.com*

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Abstract:

This study was conducted in the agricultural season 2019/2020 in Nineveh Governorate, Tel Kaif District. The field experiment, which is a simple one-factor experiment, was carried out in a randomized complete block design, R.C.B.D. The effect of the genetic factor of sixty-four varieties of bread wheat on traits of growth, yield and its components was studied. The most important results obtained can be summarized as follows:
1- The bread wheat varieties (Azmar, Khanaqin, Bohouth 158, Koya 18) were distinguished by achieving the highest rate of grain yield compared to the rest of the bread wheat varieties.
2- The bread wheat varieties (Azadi, Tal Afar 3, Al Adnaniya, Koya 8, and Denk) were distinguished by achieving the highest rate for the test weight trait compared to the rest of the bread wheat varieties.

Keywords: Bread Wheat--Iraqi varieties-Rainfed Area- Growth, Yield, And Its Components.

INTRODUCTION

In Iraq, Muhammad and Issa (2012) indicated that the variety (Ipaa 95, Temmoz 2) was significantly superior in plant height over the rest of the varieties in the first season by giving them the highest rate of the trait, and the lowest rise was observed in the variety (Noor), which did not differ significantly from the two varieties (Ipaa 95 and cham 6), and in the second season, the two varieties (Temmoz 2 and Ipaa 99) recorded the highest height (78.24, 76.66 cm), respectively, and significantly outperformed the other varieties. The results of the study of Judoua et al. (2017) on two varieties of wheat (Ipaa 99, Abu Ghraib 3) showed that (Ipaa 99) was significantly superior to (Abu Ghraib 3) in terms of plant height.

It was clear in the study of Wahid and others (2017), that the control of crop height is mainly through the genetic structure of the variety and can also be affected by environmental conditions. In a study conducted by Al-Aseel et al. (2018) on seven varieties of wheat (Ipaa 99, Al-Fatah, Buhouth 22, Buhouth 10, Al-Rasheed, Al-Baraka, Uruk) the results showed the superiority of the varieties (Al-Barakah, Ipaa 99, Al-Fatah, and Buhooth 22) in a high The plant was significantly higher than the other varieties (Al-Rasheed, Bohouth 10 and Uruk).

Al-Dulaimi (2018) found in a study for two consecutive seasons on three varieties of wheat (Al-Rasheed, Temmoz 2, Abu Ghraib 3) that the Rasheed variety was significantly superior in terms of plant height, compared to the two varieties (Temmoz 2, Abu Ghraib). In their study of seven varieties of bread wheat and their response to sowing dates.

Al-Aseel et al. (2018) noticed that there were significant differences between the varieties, as the variety Ipaa 99 outperformed in the trait of weight of 1000 grains, and the variety (Bohouth 22) in the trait of the number of grains in the spike, As for the (Al Baraka) variety, it was significantly superior to the number of spikes and grain yield.

Among the results obtained by Baqir and Al-Naqeeb (2018) for three varieties of bread wheat, the variety (Bouhout 22) achieved a significant superiority in the traits of the number of tillers, the number of spikes and the grain yield, while the variety (Ipaa 99) was superior in the trait of the number of grains per spike and weight. 1000 grains.

Mahajan and others (2018) recorded, in their study of four varieties of bread wheat, that there was a significant difference between the varieties in most of the traits. The variety (1994NIAW-) excelled in the trait of plant height, number of tillers, number of grains per spike, grain weight per spike, 1000-grain weight, and grain yield, and harvest index on the rest of the varieties.

It was clear from Al-Fahdawi's study (2019) of four varieties of wheat that there was a significant difference between the varieties in many traits, as Al Ezz variety was superior in the trait of plant height, and the variety (Abu Ghraib 3) was superior in the trait of harvest index , and the superiority of the variety (Ipaa 99) in the trait of grain yield.

Marofi and Amin (2019), noticed, in their study of three wheat varieties, that there were significant differences in plant height and 1000-grain weight in favor of the (Baj) variety, while the (Florkwa) variety significantly outperformed the biological yield.

Hassanein et al. (2018) study of two bread wheat varieties showed a significant difference between the two varieties, as (Misr-2) outperformed in plant height, number of tillers, number of spikes and biological yield, while (Sids-12) outperformed in spikes weight and grains yield.

In the study of Almaliky et al (2019) to estimate some genetic parameters for nine varieties of bread wheat in the conditions of Al-Diwaniyah Governorate, the results showed the presence of significant differences between the varieties. In the traits of the number of spikes, the number of grains of the spike, the grains yield, and the weight of the grains of the spike.

Philipp et al. (2019) compared two groups of winter bread wheat, the first group included 180 genetic accessions, and the second group 210 distinct varieties. The varieties showed a significant superiority over the input combinations in the yield and its components. This superiority resulted mainly from the increase in the number of grains of the spike and the grains of the spike. While no significant increase in the weight of 1000 grains was observed in the stable varieties compared to the introduced compositions.

Abu Al-Nadr (2019) indicated through his experiment on six varieties of wheat that there are significant differences in the test weight trait between the varieties, as the variety (Ipaa 99) was significantly superior and scored 77.87 kg.hl-1, while the variety (Bohouth 22) recorded the lowest average of 74.23 kg.hl-1.

The results of Abdul Karim (2020) during an experiment he conducted in Al-Diwaniyah governorate during the winter season 2019-2020 on four varieties of bread wheat (Ipaa 99, Bohouth 22, Latifia, Temmoz 2) indicated that the variety (Ipaa 99) was significantly superior to the rest of the varieties in the trait of biological yield reached (19.37 tons. hectares^{-1}), while the variety (Bohouth 22) was significantly superior in the traits of the number of spikes per square meter (375 spikes.m^{-2}), the weight of 1000 grains (39.3 gm) , the number of grains in the spike (50.91 grains. spike^{-1}), and specific weight. (81.48 kg. hectoliter^{-1}) compared to the rest of the other varieties

During an experiment carried out by Al-Fahdawi (2021) for five varieties of soft wheat (Cham 6, Ipaa 99, Boora, Bohouth 22, Abu Ghraib 3), the results showed a significant difference for the cultivated wheat varieties, where the variety Cham 6 achieved the highest average for the number of grains in the spike, which amounted to 52.52 Spike^{-1}. The variety (Cham 6) also achieved the highest mean for the trait of biological yield.

MATERIALS AND METHODS:

This experiment was conducted during the agricultural season (2019-2020) in the field of farmer in Telkief District in Nineveh Province .

The field experiment was designed as a simple experiment with one factors: for 64 bread wheat varieties, with three replications according to a randomized complete block design (R.C.B.D). The comparison between the averages was done using the LSD test at the level (0.05) to compare the studied traits means. Sowing date was in 27/12/2019, after the first effective rain falls .Soil sample was taken from field at a depth of 0-30 cm before sowing for analysis and knowledge of the physical and chemical properties of the soil. The data of rainfall for Telkief site were obtained from the Directorate of Agriculture of Nineveh Table (1) .

The grains of all cultivars were planted at a constant sowing rate of 300 grains.m-2 according to the recommendation of (alrijabo & Hassan), and the field was fertilized with 80 kg.ha^{-1} DAP Di Ammonium Phosphate fertilizer with 80 kg.ha-1 Urea.

Table (1) Soil analysis and rainfall ppt. in (2019-2020) season.

Measurement type	Value	Rain Monthly precipitation	mm.
pH	7.3	Oct. 2019	13
EC ds.m^{-1}	0.26	Nov. 2019	3
available Nitrogen mg.kg^{-1}	59.12	Dec. 2019	130.5
Organic Matter %	3.62	Jan. 2020	98
Available Phosphorous mg.kg^{-1}	48.07	Feb. 2020	225
Available Potassium mg.kg^{-1}	260	Mar. 2020	31.5
Clay %	20.30	Apr. 2020	31.5
Silt%	45.20	May 2020	0

Sand %	**34.50**	**Total ppt. mm.**	**532.5 mm.**
texture	**Silt Loam**		

RESULTS AND DISCUSSIONS

1- Plant height.cm.

From Table (2), it is clear that the genetic factor has a clear impact on the plant height, as it was possible to divide the bread wheat varieties included in the study according to the height of their plants into five groups based on the LSD value of (10.441), as the varieties (Al-Ezz 66, Tal Afar 3) were distinguished by their achievement, the highest plant height reached (112.33, 116.41 cm, respectively), while the short-height group included the two varieties (Falado and Degla al-Khair) (71.39 and 62.17 cm), respectively. These results agree with what Al-Salem et al. (2017) and Muhammad and Issa (2012) showed that the genotypes differ among themselves in the phenotypic traits of plants, including plant height.

2-The number of spikes. m^{-2}.

It is clear from Table (3) that the bread wheat varieties were classified into five groups based on the LSD value of (116.19), as the variety (Bohouth 158) achieved the highest significant value in the number of spikes.m^{-2}, which amounted to (822.6 spikes.m^{-2}).), while the lowest value for the number of spikes in the two varietys Rizgari and Degla Al-Khair was (223.5, 226 spikes.m^{-2}), respectively, as they represent the fifth group of the classification. These results are in agreement with what was shown by Shaherly and Kheti (2011) and Al Sebahi et al. (2015) that the genotypes differ among themselves in the trait of the number of spikes.m^{-2}

3-The number of grains in spike. grain. $spike^{-1}$.

In the trait of the number of spike grains Table (4), the bread wheat varieties that achieved the highest significant value in the trait of the number of spike grains were determined based on the LSD value of (11.139), and they are the varieties (Jarmo, Baghdad 1, Abu Ghraib, Al Baraka, Azmar), which achieved the values of (64.57, 64.99, 71.83, 72.64, 74.48 grains. $Spike^{-1}$), respectively, while the lowest value for the number of grains of Spike was in the variety (Saberbek) with a value of (27.85 grains. $Spike^{-1}$). The result of the variety (Azmar) in this trait is considered an advanced result compared to other local and introduced varieties, which represents a promising result for field crop breeders and farmers.

These results are in agreement with what Tahir et al. (2009) have shown about the difference in genotypes in the trait of the number of spike grains

Table (2) Effect of varieties of bread wheat on plant height (cm).

Varieties		Means
1	Degla al-Khair	62.17
2	Falado	71.39
3	Koya 20	72.83
4	Noor	72.87
5	Erbil 2	74.53
6	Alfaris 1	75.00
7	Bohouth 158	75.12
8	Boora	75.33
9	Sofia	75.33
10	Alrashedeyah	75.94
11	Wafia	75.97
12	Kalverto	76.25
13	Cham 6	77.00
14	Illico	77.44
15	Lancelillotto	77.67
16	Ding	77.89
17	Sherwana	77.96
18	Jehan 99	78.06
19	Wifi	78.33
20	Baghdad 1	78.39
21	Jawaher 1	78.44
22	Jarmo	78.55
23	Ipaa-99	78.67
24	Rayahnah	78.67
25	Temmoz 2	79.04
26	Beebaz	79.37
27	Khaneqeen	79.79
28	Koya 4	79.89
29	Aryhane	80.28
30	Abu graib-3	80.67
31	Mahdi	80.69
32	Albarakah	80.92
33	Erbil 4	81.17
34	Koya 18	81.25
35	Bohouth 22	81.28
36	Almadaeen	81.33
37	Maroof	81.72
38	Bohouth 10	81.83
39	Alfatah	81.94
40	Bankal	82.67
41	Deyar	82.72
42	Adana 99	83.92
43	Almahmoodeyah	84.17
44	Azadi	84.21
45	Araz	84.28
46	Tekin	84.83
47	Razkari	84.92

48	Alatefeyah	85.33
49	Sulaymani 2	85.79
50	Azmar	86.64
51	Kalar 1	87.25
52	Hsad	87.67
53	Attilla 50	88.58
54	Koya 8	89.2
55	Alaa	89.61
56	Babil 113	93.08
57	Alrashed	93.5
58	Bohouth 4	94.04
59	Aladnaneyah	95.17
60	Kalar 2	98.29
61	Saberbeak	103.96
62	Rabeah	104.83
63	Al Ez 66	112.33
64	Ta l Aafar 3	116.41
	Mean Varieties	82.92
	(0.05)	
	d.f.	128
	LSD	10.441

Table (3) Effect of varieties of bread wheat on number of spikes.spikes. m^{-2}

Varieties		Means
1	Razkari	223.5
2	Degla al-Khair	226
3	Albarakah	239.3
4	Azadi	245.5
5	Aladnaneyah	246
6	Noor	252.3
7	Boora	286
8	Alatefeyah	292.5
9	Maroof	318.5
10	Al Ez 66	321
11	Mahdi	326.5
12	Jarmo	333
13	Aryhane	337.3
14	Alrashedeyah	337.7
15	Wafia	351
16	Baghdad 1	352
17	Alrashed	366
18	Alfaris 1	369
19	Bohouth 10	377.1
20	Almahmoodeyah	380
21	Ipaa-99	385.7
22	Koya 8	387
23	Falado	387.8
24	Alaa	389
25	Jehan 99	392
26	Bohouth 22	395
27	Jawaher 1	398.5
28	Koya 20	410
29	Kalar 2	413.3
30	Bankal	413.5
31	WifiWiFi	414
32	Abu graib-3	417.5
33	Ta l Aafar 3	420
34	Temmoz 2	420.5
35	Tekin	422
36	Attilla 50	422.5
37	Adana 99	424.3
38	Azmar	425.5
39	Hsad	426
40	Sulaymani 2	428
41	Koya 18	434.7
42	Cham 6	435
43	Alfatah	439
45	Araz	444.5
45	Erbil 2	444.5
46	Illico	450
47	Deyar	453
48	Beebaz	456.5
49	Almadaeen	458
50	Koya 4	458.5
51	Kalverto	461
52	Rabeah	478.6
53	Sherwana	494
54	Babil 113	503
55	Kalar 1	505.7
56	Bohouth 4	515
57	Rayahnah	520.5
58	xxx	558
59	Khaneqeen	576.5
60	Sofia	585
61	Lancelillotto	595.7
62	Ding	601.1
63	Saberbeak	606.5
64	Bohouth 158	822.6
	Mean Varieties	414.30

	(0.05)	
	d.f.	128

	LSD	116.19

Table (4) Effect of varieties of bread wheat on number of grains in spike. grains.spike^{-1}

Varieties		**Means**
1	**Saberbeak**	**27.85**
2	**Illico**	**36.53**
3	**Erbil 4**	**37.5**
4	**Adana 99**	**37.87**
5	**Rabeah**	**39.41**
6	**Lancelillotto**	**39.73**
7	**Azadi**	**40.35**
8	**Koya 4**	**41.42**
9	**Erbil 2**	**41.64**
10	**Cham 6**	**41.77**
11	**Razkari**	**41.89**
12	**Ta l Aafar 3**	**42.13**
13	**Sulaymani 2**	**42.5**
14	**Mahdi**	**43.16**
15	**Falado**	**43.59**
16	**Deyar**	**43.63**
17	**Wafia**	**44.31**
18	**Aryhane**	**44.53**
19	**Ding**	**44.67**
20	**Sherwana**	**44.8**
21	**Almadaeen**	**44.81**
22	**Koya 20**	**45.09**
23	**Koya 8**	**45.14**
24	**Al Ez 66**	**45.3**
25	**Tekin**	**45.5**
26	**Sofia**	**45.8**
27	**Jawaher 1**	**45.94**
28	**Alrashed**	**46.07**
29	**Ipaa-99**	**47.03**
30	**Araz**	**47.07**
31	**Kalverto**	**47.48**
32	**Beebaz**	**47.58**
33	**Noor**	**47.6**
34	**Rayahnah**	**47.63**
35	**Attilla 50**	**48.13**
36	**Khaneqeen**	**48.15**
37	**Babil 113**	**48.39**
38	**Almahmoodeyah**	**48.47**
39	**Jehan 99**	**48.49**
40	**Degla al-Khair**	**48.6**
41	**Bohouth 4**	**48.85**
42	**Alrashedeyah**	**49.5**
43	**Aladnaneyah**	**50.06**
45	**Bohouth 22**	**50.5**
45	**Alaa**	**50.58**
46	**Temmoz 2**	**51.8**
47	**Bohouth 10**	**51.91**
48	**Alfaris 1**	**51.95**
49	**Kalar 2**	**52.07**
50	**Kalar 1**	**53.00**
51	**Hsad**	**53.83**
52	**Alatefeyah**	**54.98**
53	**Bankal**	**55.7**
54	**Wifi**	**56.08**
55	**Bohouth 158**	**57.92**
56	**Alfatah**	**58.33**
57	**Koya 18**	**59.8**
58	**Boora**	**60.05**
59	**Maroof**	**62.22**
60	**Jarmo**	**64.57**
61	**Baghdad 1**	**64.99**
62	**Abu graib-3**	**71.83**
63	**Albarakah**	**72.64**
64	**Azmar**	**74.48**
	Mean Varieties	**49.09**
	(0.05)	
	d.f.	**128**
	LSD	**11.139**

4-The Weight Of 1000 Grains.Gm.

Table (5) shows the significant differences between bread wheat varieties in the trait of weight of 1000 grains based on the LSD value of (4.051), as the highest significant value achieved was (54.76 gm) in the variety (Jarmo), while the lowest value of 1000 grain weight was achieved in the fifth group, starting with the variety Erbil 4 (35.29 gm) and ending with the variety (Sarbeek) with the lowest value in the weight of 1000 grains (32.91 gm).

These results are in agreement with what was shown by researchers Jadoua and Baqer (2012), and Yusuf et al. (2019) of the difference in the weight value of 1000 grains between different genotypes of the bread wheat crop.

5-The biological yield. gm.m^{-2}.

The results of the table (6) showed a significant difference between bread wheat varieties in the biological yield weight, starting from the highest value (2028 gm.m^{-2}) in the variety (Shirwana) and ending with the lowest value (957 gm.m^{-2}) in the variety (Azadi). These results are in agreement with what was stated by the researchers Zweik et al. (2020) and Abdelkarim (2020). And we notice from the follow-up of the results of the variety Azmar that it was superior in the trait of the biological yield as well and is located in the first group, the highest in the values of this trait, which shows the reason for its superiority in the productive traits, especially the trait of the subsequent grain yield.

Table (5) Effect of varieties of bread wheat on weight of 1000 grains.gm.

Varieties		Means
1	Saberbeak	32.91
2	Erbil 2	33.81
3	Almadaeen	33.82
4	Abu graib-3	34.33
5	Sofia	34.64
6	Bohouth 4	35.05
7	Erbil 4	35.29
8	Illico	35.76
9	Degla al-Khair	35.82
10	Ipaa-99	35.85
11	Alfatah	36.05
12	Al Ez 66	36.24
13	Bohouth 22	36.62
14	Alatefeyah	36.72
15	Temmoz 2	36.79
16	Alrashed	36.99
17	Alrashedeyah	37.03
18	Rayahnah	37.21
19	Baghdad 1	37.47
20	Kalar 1	37.86
21	Deyar	38.03
22	Cham 6	38.17
23	Adana 99	38.33
24	Noor	38.54
25	Wafia	38.66
26	Falado	39.39
27	Bohouth 158	39.5
28	Mahdi	39.5
29	Ta l Aafar 3	39.61
30	Ding	39.69
31	Bohouth 10	39.83
32	Kalverto	39.89
33	Azmar	39.91
34	Lancelillotto	39.92
35	Rabeah	40.17
36	Sulaymani 2	40.29
37	Jehan 99	40.58
38	Kalar 2	40.67
39	Aladnaneyah	40.91
40	Koya 20	41.38
41	Jawaher 1	41.4
42	Bankal	41.76
43	Babil 113	42.61
45	Attilla 50	42.78
45	Boora	42.88
46	Azadi	42.91
47	Beebaz	43.13
48	Tekin	43.49
49	Maroof	43.96
50	Alfaris 1	44.1
51	WifiWiFi	44.26
52	Khaneqeen	44.48
53	Aryhane	44.64
54	Araz	44.7
55	Hsad	45.12
56	Sherwana	45.25
57	Koya 4	45.51
58	Razkari	45.61
59	Alaa	46.28
60	Almahmoodeyah	46.35
61	Koya 8	46.93
62	Koya 18	47.52
63	Albarakah	47.92
64	Jarmo	54.76
	Mean Varieties	40.47
	(0.05)	
	d.f.	128
	LSD	4.051

Table (6) Effect of varieties of bread wheat on the biological yield trait gm.m^{-2}

Varieties		Means
1	Azadi	957

2	Noor	1030
3	Mahdi	1113
4	Wafia	1203
5	Aladnaneyah	1207
6	Albarakah	1228
7	Al Ez 66	1255
8	Koya 20	1307
9	Baghdad 1	1316
10	Ipaa-99	1317
11	Alaa	1318
12	Degla al-Khair	1320
13	Maroof	1324
14	Bohouth 22	1343
15	Bankal	1376
16	Hsad	1402
17	Jehan 99	1407
18	Kalverto	1418
19	Araz	1420
20	Abu graib-3	1428
21	Bohouth 4	1444
22	Jarmo	1448
23	Cham 6	1450
24	Beebaz	1455
25	Alfaris 1	1468
26	Alrashedeyah	1471
27	Koya 8	1489
28	Falado	1490
29	Erbil 2	1494
30	Alatefeyah	1518
31	Attilla 50	1522
32	Razkari	1522
33	Kalar 1	1528
34	Aryhane	1546
35	Temmoz 2	1547
36	Saberbeak	1548
37	Tekin	1555
38	Alrashed	1565
39	Sofia	1566
40	Adana 99	1574
41	Koya 18	1583
42	Boora	1589
43	Almadaeen	1603
44	Jawaher 1	1603
45	WifiWiFi	1606
46	Sulaymani 2	1612
47	Alfatah	1618
48	Illico	1619
49	Lancelillotto	1639
50	Azmar	1643
51	Deyar	1656
52	Bohouth 10	1663
53	Ding	1690
54	Almahmoodeyah	1700
55	Khaneqeen	1700
56	Erbil 4	1709
57	Ta l Aafar 3	1714
58	Rabeah	1714
59	Kalar 2	1716
60	Koya 4	1765
61	Rayahnah	1801
62	Bohouth 158	1889
63	Babil 113	1959
64	Sherwana	2028
	Mean Varieties	1508.93
	(0.05)	
	d.f.	128
	LSD	431.2

6-Grain yield, gm. m^{-2}.

Through the results of Table (7), it was possible to divide the bread wheat varieties under study according to the grain yield into four groups based on the LSD value of (225.8), as the first group, which is the highest group in the value of grain yield, represented the varieties (Bohooth 158, Azmar, Khanaqin, Koya-18) without significant differences between them, with values (1120.3, 981.8, 910.2, 895.1 gm. m^{-2}) respectively, followed by the second group that included varieties from (Shirwana - Tal Afar 3), then the third group that included (Sulaimani 2 - Elico), Finally, the fourth group, the lowest in the trait of the grain yield, included the varieties of (Al-Adnania - Degla Al-Khair), as the value of the grain yield of the variety Degla Al-Khair (318.4 gm. m^{-2}) represented the lowest value in the trait of the grain yield.

These results are in agreement with what was shown by the researchers Zweik et al. (2020) and AlMaliky et al (2019) about the variation of the genotypes of the bread wheat crop in terms of grain yield. Although the variety Bohuth 158 is the highest numerically in the trait of grain yield, there was no difference Significant difference between it and the variety (Azmar), which was distinguished for its superiority in most of the traits of the components of the yield, which qualified it to be at the forefront of the varieties distinguished by the high grain yield in it, and the same

was true with the variety (Bohuth 158), which was also in the advanced groups in the traits of the components of the yield.

Table (7) Effect of varieties of bread wheat on grain yield .gm.m^{-2}

Varieties		Means
1	Degla al-Khair	318.4
2	Mahdi	339
3	Razkari	339.4
4	Saberbeak	343.3
5	Azadi	349.3
6	Noor	388.2
7	Aladnaneyah	414.8
8	Illico	433.6
9	Wafia	439.6
10	Alrashedeyah	459.7
11	Abu graib-3	470.4
12	Erbil 2	472.8
13	Ipaa-99	498.3
14	Falado	505
15	Boora	515.8
16	Adana 99	524.1
17	Al Ez 66	524.5
18	Jawaher 1	526.2
19	Cham 6	539.4
20	Bohouth 22	543.6
21	Albarakah	544.4
22	Aryhane	560
23	Bohouth 10	580.3
24	Jehan 99	584.7
25	Beebaz	590.2
26	Alrashed	594.6
27	Almadaeen	595.7
28	Temmoz 2	610.7
29	Tekin	611
30	Alaa	637
31	Sofia	637.1
32	Koya 4	638.5
33	Sulaymani 2	650.1
34	Ta l Aafar 3	657
35	Alfaris 1	665.2
36	Almahmoodeyah	668.3
37	Bohouth 4	691.1
38	Jarmo	704.7
39	Rayahnah	706
40	Babil 113	707
41	Koya 20	724.2
42	Lancelillotto	731.7
43	Deyar	738.1
44	Kalar 2	745.1
45	Kalverto	748.5
46	Araz	750.3
47	Alatefeyah	752.6
48	Rabeah	758
49	Bankal	758.3
50	Koya 8	775.6
51	Kalar 1	782.8
52	WifiWiFi	794.6
53	Baghdad 1	799.2
54	Maroof	804.1
55	Erbil 4	823.5
56	Hsad	823.9
57	Alfatah	840.4
58	Ding	853.5
59	Attilla 50	855.7
60	Sherwana	878.9
61	Koya 18	895.1
62	Khaneqeen	910.2
63	Azmar	981.8
64	Bohouth 158	1120.3
	Mean Varieties	644.51
	(0.05)	
	d.f.	128
	LSD	225.8

7-Harvest Index %.

Table (8) shows the effect of the genetic factor on the trait of the harvest index %, as it was possible to divide the bread wheat varieties under study according to the values of the harvest index % into three groups based on the LSD value of (14,940), as the first group represented the highest group in the harvest index % , 23 Varieties starting with the variety (Maarouf) (60.63%) and ending with the variety (Al Baraka) (46.03%), while the second group included 37 varietys from (Rabiah - Erbil 2), and the third group, which is least in the traits of the harvest index %, included 4 varietys, namely (Eliko). , Degla Al-Khair, Saberbeek, Rizkari) with values (26.63, 24.13, 23.16, 22.73%), respectively. These results are in agreement with those of Al-Tamimi (2013), Al-Issawi et al. (2014), and Harfe (2017).

The highest value of the harvest index % achieved in the variety (Maroof) (60.63%) did not differ significantly from the value of the harvest index % in the variety (Azmar) (60.51%). The continued distinction of the variety (Azmar) in the trait of harvest index % is due to its superiority in the trait of grain yield and its ratio to the trait of the biological yield. Which indicates the continued superiority of the variety (Azmar) in the traits of the yield and its components.

8- Test Weight . kg.hl^{-1}

Table (9) shows the effect of the genetic factor on the test weight trait at the Mosul site, as it was possible to divide the bread wheat varieties under study according to the test weight values into several groups based on the LSD value of (0.9486), as the first group represented the highest group in the test weight of five Varieties starting from the variety (Talafar 3) (80.83 kg.hl-1) and ending with the variety (Azadi) (80.40 kg.hl-1), then the group of two varietys (Dijla Al-Khair - and Al-Rashidiya), which achieved the lowest value in the test weight trait (71.50 and 67.50 kg.hl-1). This is consistent with what the researcher found. Zangana (2019)

Table (8) Effect of varieties of bread wheat on Harvest Index%.

Varieties		Means
1	Razkari	22.73
2	Saberbeak	23.16
3	Degla al-Khair	24.13
4	Illico	26.63
5	Erbil 2	31.53
6	Alrashedeyah	31.62
7	Mahdi	31.87
8	Boora	32.7
9	Abu graib-3	32.71
10	Jawaher 1	32.75
11	Adana 99	33.48
12	Falado	33.88
13	Bohouth 10	34.45
14	Aladnaneyah	36.08
15	Cham 6	36.73
16	Aryhane	37.05
17	Azadi	37.2
18	Almadaeen	37.33
19	Ipaa-99	37.52
20	Wafia	37.56
21	Koya 4	37.68
22	Alrashed	38.21
23	Ta l Aafar 3	38.36
24	Noor	38.74
25	Rayahnah	39.11
26	Almahmoodeyah	39.42
27	Temmoz 2	39.48
28	Tekin	39.81
29	Sulaymani 2	40.33
30	Beebaz	40.49
31	Bohouth 22	40.95
32	Sofia	41.14
33	Jehan 99	41.58
34	Babil 113	41.7
35	Al Ez 66	41.86
36	Kalar 2	43.24
37	Sherwana	43.37
38	Deyar	44.52
39	Lancelillotto	44.67
40	Alfaris 1	45.3
41	Rabeah	45.42
42	Albarakah	46.03
43	Alaa	48.4
44	Bohouth 4	48.89
45	WifiWiFi	48.98
46	Jarmo	49.31
47	Alatefeyah	50.72
48	Ding	50.75
49	Kalar 1	51.49
50	Alfatah	51.92
51	Kalverto	53.38
52	Khaneqeen	53.48
53	Erbil 4	53.61
54	Araz	53.93
55	Bankal	55.14
56	Koya 20	55.44
57	Koya 18	56.58
58	Koya 8	57.36
59	Attilla 50	57.41
60	Hsad	58.77
61	Bohouth 158	59.16
62	Azmar	60.51
63	Baghdad 1	60.62
64	Maroof	60.63
	Mean Varieties	43.08
	(0.05)	
	d.f.	128
	LSD	14.940

Table (9) Effect of varieties of bread wheat on test weight . kg.hl^{-1}

Varieties		Means
1	Alrashedeyah	67.50
2	Degla al-Khair	71.50
3	Rabeah	72.00
4	Jawaher 1	72.25
5	Alrashed	72.50
6	Jehan 99	72.50
7	Kalar 1	72.50
8	Rayahnah	72.75
9	Falado	73.00
10	Alaa	73.50
11	Albarakah	73.50
12	Cham 6	73.50
13	Illico	73.55
14	Azmar	73.75
15	Bohouth 10	73.75
16	Alfaris 1	74.25
17	Kalverto	74.25
18	Temmoz 2	74.67
19	Jarmo	75.00
20	Bohouth 158	75.25
21	Adana 99	75.33
22	Sulaymani 2	75.50
23	Koya 4	75.50
24	Baghdad 1	75.75
25	Lancelillotto	75.75
26	Ipaa-99	75.83
27	Alfatah	76.00
28	Sofia	76.00
29	Hsad	76.00
30	Beebaz	76.25
31	Noor	76.25
32	Almadaeen	76.50
33	Babil 113	76.50
34	Bohouth 22	76.50
35	Kalar 2	76.50
36	Wifi	76.50
37	Mahdi	76.65
38	Araz	76.75
39	Erbil 2	76.75
40	Alatefeyah	77.00
41	Deyar	77.25
42	Abu graib-3	77.33
43	Al Ez 66	77.40
44	Bohouth 4	77.40
45	Attilla 50	77.50
46	Khaneqeen	77.50
47	Koya 18	77.50
48	Maroof	77.75
49	Erbil 4	78.00
50	Tekin	78.00
51	Wafia	78.20
52	Almahmoodeyah	78.25
53	Sherwana	78.50
54	Razkari	78.75
55	Koya 20	78.75
56	Bankal	78.85
57	Saberbeak	78.90
58	Aryhane	79.00
59	Boora	79.25
60	Azadi	80.40
61	Ding	80.50
62	Koya 8	80.50
63	Aladnaneyah	80.63
64	Ta l Aafar 3	80.83
	Mean Varieties	76.11
	(0.05)	
	d.f.	128
	l.s.d.	0.9486

CONCLUSION

The newly introduced variety (Azmar) has achieved superiority over all Iraqi varieties in traits of yield and its components, which is an excellent positive result in obtaining a new variety superior in production traits.

Through the results of the grains test weight trait, a national guide was prepared for the test weight of bread wheat varieties in Iraq by conclude that it is possible to divide the bread wheat varieties into seven groups, which are an inferred guide for the test weight of bread wheat varieties in Iraq (Ary and Alrijabo guide 2022 for test weight of Iraqi bread wheat varieties) according to Appendix (1).

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Appendix: (1) Ary and Alrijabo guide (2022) for test weight of bread wheat varieties in Iraq

74.99 kg.hl^{-1} or less	**75–75.99 kg.hl^{-1}**	**76– 76.99 kg.hl^{-1}**	**77– 77.99 kg.hl^{-1}**	**78– 78.99 kg.hl^{-1}**	**79–79.99 kg.hl^{-1}**	**80 kg.hl^{-1} and Above**
Rashid	Rabeah	Mahdi	Jehan 99	Jarmo	Erbil 4	Sherwana
Falado	Alaa	Kalverto	Wifi	Deyar	Erbil 2	Koya 8
Bohouth 158	Kalar 1	Sofia	Baghdad 1	Babil 113	Attilla 50	Almahmoodeyah
cham6	Almadaeen	Temmoz 2	Koya 4	Razkari	Alatefeyah	Koya 20
Illico	Noor	Lancelillotto	Hsad	Araz	Boora	Bankal
Jawaher 1	Alfaris 1	Azmar	Sulaymani 2	Abu graib-3	Ding	Saberbeak
Bohouth 10	Alfatah	Bohouth 22	Albaraka	Koya 18	Aryhane	Ta l Aafar 3
Rihanna				Bohouth 4	Wafia	Azadi
Degla al-Khair				Beebaz	Maroof	
Alrashedeyah				Ipaa-99	Aladnaneyah	
				Al Ez 66	Tekin	
				Adana 99		
				Kalar 2		
				Khaneqeen		