EVALUATION OF SOME WHEAT GENOTYPES UNDER DIFFERENT SEEDING RATES

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ABSTRACT

Two field experiments were conducted at the Experiment and Research Center, Fac. Agric., Moshtohor, Benha Univ., Kalubia Governorate, Egypt, during 2007/08 and 2008/09 seasons, to study the effect of three seeding rates (40, 60 and 80 kg fed^{-1}) on growth, yield and yield components of seven wheat genotypes (Giza 168, Sakha 93, Sakha 94, Gemmiza 7, Gemmiza 9, Sids 1 and Sids 12). The most important results which were obtained from this study were as follows:

Gemmiza 7 gave the highest values of flag leaf area, spike length, No. of spikelets spike^{-1}, seed index and grain yield fed^{-1}, Gemmiza 9 gave the highest values of plant height and straw yield fed^{-1} while, Sakha 94 gave the highest values of No. of tillers plant^{-1} and No. of spikes/m^2 moreover, Sids 1, Gemmiza 7 and Sakha 93 genotypes were earlier heading, respectively compared with other genotypes.

The highest values of plant height, No. of spikes/m^2, grain and straw yields fed^{-1}were produced by the highest seeding rate (80 kg fed^{-1}). On the other hand, the lowest seeding rate (40 kg fed^{-1}) producing the highest values of No. of tillers plant^{-1}, flag leaf area, spike length, No. of spikelets spike^{-1}and seed index, while No. of days to 50% heading was not significantly affect by different seeding rates.

Effect of the interaction between wheat genotypes and seeding rates was significant on No. of tillers plant^{-1}, No. of days to 50% heading, flag leaf area, plant height, spike length, No. of spikelets spike^{-1}, No. of spikes/m^2, seed index, grain and straw yields fed^{-1}.

Results indicate that No. of tillers plant^{-1}, plant height, spike length, number of spikes/m^2 and straw yield fed^{-} had the greatest influence on grain yield fed^{-1}. Flag leaf area, was significantly correlated with grain yield fed^{-1}.

Keywords: *Wheat, Genotypes, Seeding rates, Growth, Yield and its components*.

INTRODUCTION

Wheat is considered the main source of food in the world and in Egypt. Raising wheat production through increasing productivity and increasing the cultivated area is an important national target to minimize the gap between the Egyptian production and consumption. In Egypt, the wheat cultivated area is about 2.9 million feddans producing 7.83 million tons (Agric. Statistic Bulletin, 2008). Increasing wheat yield per unit area can be achieved by breeding high yielding varieties or improving the cultural treatments of the crop.

Several investigators showed that wheat cultivars differed in growth, yield and its components **(Metwally *et al,* 1998; Mehasen, 1999; El-Hawary, 2000; Abd El-hameed, 2002; Ali *et al,* 2004; Mehasen and Mohamed, 2005; Abu-Grab *et al,* 2006; Omar, 2007; El-Ganayni and Mahmoud, 2008; Hassan, 2008 and El-Nady, 2009).**

Most of the previous studies have shown different effects for seeding rate on growth, yield and yield attributes of wheat. **Toaima *et al,* (2000); Saleh (2002); Ramadan (2003); Ali *et al,* (2004); Abu-Grab *et al,* (2006); Omar (2007); El-Afandy *et al,* (2007); El-Ganayni and Mahmoud (2008); Ramadan and Awaad (2008) and Hassan (2008)** reported increases in plant height, No. of spikes/m^2,

grain and straw yields with increasing seeding rates, while No. of tillers plant^{-1}, No. of days to 50% heading, flag leaf area, length spike, No. of spikelets spike^{-1} and 1000-kernels weight were decreased.

Grain yield fed^{-1} was positively and significantly correlated with plant height, spike length, No. of spikes/m^2 and straw yield **(El-Wakil and Abd-Alla, 2004; Swelam, 2008; El-Ganayni and Mahmoud, 2008; Ramadan and Awaad, 2008 and Hassan, 2008).**

Therefore, the present investigation was designed to study the performance and productivity of wheat genotypes under different seeding rates, in Kalubia Governorate.

MATERIALS AND METHODS

Two field experiments were conducted at the Experimental Research Center, Faculty of Agriculture at Moshtohor, Benha Univ., Kalubia Governorate, Egypt, during the two winter successive growing seasons 2007/08 and 2008/09, to study the effect of three seeding rates (40, 60 and 80 kg fed^{-1}) on growth yield and yield components for seven wheat genotypes (Giza 168, Sakha 93, Sakha 94, Gemmiza 7, Gemmiza 9, Sids 1 and Sids 12). The soil was clay in texture with a pH value of 7.81, 7.79 and an organic matter content of 1.67, 1.78% and available N of 50, 58 ppm during the two growing seasons, respectively.

The treatments were assigned in a split-plot design with three replications. Genotypes of wheat were arranged at random in the main plots while, seeding rates occupied the sub-plots. The sub-plot area was 10.5 m^2 consisted of 15 rows of 3.5 m length and spaced 20 cm apart.

Wheat genotypes were cultivated on November 28th and 30th in the first and second seasons, respectively. The preceding crop was maize in both seasons. The normal cultural practices were carried out as recommends.

The studied traits were No. of tillers plant^{-1}, No. of days to 50% heading and flag leaf area (cm^2). Random samples of 10 plants were taken from sub-plots at harvesting time to determine the following characters: plant height (cm), spike length (cm), and No. of spikelets spike^{-1}. For determine No. of spikes/m^2 and seed index (g) a sample of one square meter from each sub-plot was taken. Grain and straw yields (kg fed^{-1}) were estimated on whole sub-plot basis.

Analysis of variance was done for the data of each season separately and combined analysis was performed for the data over the two seasons according to **Snedecor and Cochran (1980)** treatment means were compared using least significant difference test at 0.05 level of significance. Simple and multiple correlation and coefficient of determination were computed between the above mentioned characters as outlined by **Steel and Torrie (1987)**. Using the MSTAT-C Statistical Software package (**Michigan State University, 1983**)

RESULTS AND DISCUSSION

Analyses of variances for all traits in each season as well as the combined analysis are presented in **Table (1)**. Test of homogeneity revealed that the error variance for the two seasons were homogenous,

therefore combined analysis was processed. Year's mean squares were highly significant for all the studied traits except for No. of spikelets spike^{-1} and seed index were not significant. Wheat genotypes mean squares were highly significant for all traits in both seasons as well as the combined data. Seeding rates mean squares were significant for all traits in both seasons as well as the combined data except No. of days to 50% heading. The interaction between years and wheat genotypes mean squares was not significant for all of the studied characters except No. of tillers plant^{-1} and straw yield fed^{-1}. The interaction between years and seeding rates mean squares was not significant for all of the studied characters except No. of tillers plant^{-1}, flag leaf area, No. of spikelets spike^{-1} and seed index. The interaction between years, wheat genotypes and seeding rates mean squares were not significant for all of the studied characters except No. of tillers plant^{-1} and straw yield fed^{-1}.

Table (1). Mean squares values and significance for growth, yield and yield components of wheat genotypes in 2007/08, 2008/09 seasons and their combined analysis

S.O.V	d.f	No. of tillers plant^{-1}	No. days to 50% heading	Flag leaf area (cm^2)	Plant height (cm)	Spike length (cm)	No. of spikelets spike^{-1}	No. of spikes/ m^2	Seed index (g)	Grain yield (tons fed^{-1})	Straw yield (tons fed^{-1})
2007/2008 season											
Rep.	**2**	0.192*	2.016	0.800	0.103	0.007	0.044	0.444*	0.291	7938.111	3594.048*
Geno.	**6**	0.395**	23.106**	68.660**	489.92**	11.62**	3.452**	454.92**	27.783**	118688.4**	36340.06**
Err.(a)	**١٢**	0.033	2.812	2.527	0.711	0.035	0.053	11.981	0.152	2838.481	590.103
SR.	**2**	18.94**	0.111	644.46**	368.22**	2.325**	4.488**	20100**	32.465**	223291.9**	584754.3**
G.xSR.	**12**	0.168**	0.630	5.166**	8.087**	0.052	0.056*	105.75**	0.181*	2303.680**	3381.611**
Err.(b)	**28**	0.027	0.698	1.270	1.894	0.035	0.023	26.071	0.078	734.024	565.357
C.V.%		4.38	0.91	2.90	1.37	1.60	0.73	1.15	0.67	0.87	0.56
2008/2009 season											
Rep.	**2**	2.90	0.762	0.970	1.968	0.004	0.089	18.143	0.136	3603.762	2401.921*
Geno.	**6**	0.092**	22.222**	61.449**	420.27**	11.65**	3.017**	681.98**	25.193**	88599.51**	37171.40**
Err.(a)	**١٢**	0.017	1.429	1.554	1.339	0.028	0.040	21.513	0.151	1076.188	482.550
SR.	**2**	14.80**	0.619	636.50**	468.63**	2.517**	7.888**	22844**	43.871**	226737.5**	646942.7**
G.xSR.	**12**	0.067**	1.452**	5.893**	5.394**	0.037	0.073	50.148	0.382**	1583.942**	1903.693*
Err.(b)	**28**	0.014	0.405	1.493	1.643	0.025	0.066	13.889	0.086	457.770	846.508
C.V.%		2.91	0.69	3.08	1.25	1.33	1.23	0.83	0.70	0.68	0.68
Combined analysis											
Year	**1**	1.904**	22.294**	25.976**	160.25**	0.731**	0.168	613.36**	0.446	30520.00**	268366.8**
RepxY	**4**	0.099**	1.389	0.885	1.036	0.006	0.066	9.294	0.213	5770.937*	2997.984**
Geno.	**6**	0.184**	43.442**	127.51**	907.98**	23.26**	6.431**	1096.7**	52.812**	205506.1**	71779.77**
YxG.	**6**	0.303**	1.886	2.590	2.216	0.015	0.038	40.180	0.164	1781.767	1731.698*
Err.(a)	**24**	0.025	2.120	2.040	1.025	0.032	0.046	16.747	0.152	1957.335	536.327
SR.	**2**	33.57**	0.103	1272.3**	833.65**	4.839**	12.13**	42897**	75.891**	449686.0**	1230423**
Yx SR.	**2**	0.184**	0.627	8.591**	3.205	0.003	0.239**	47.484	0.446**	343.437	1273.198
G.xSR.	**12**	0.127**	1.529**	9.787**	12.102**	0.080**	0.105*	132.94**	0.456**	3479.481**	3825.967**
YxGxS	**12**	0.108**	0.553	1.272	1.379	0.009	0.023	22.966	0.107	408.140	1459.337*
Err.(b)	**56**	0.020	0.552	1.381	1.769	0.030	0.045	19.980	0.082	595.897	705.933
C.V.%		3.68	0.81	2.99	1.31	1.47	1.02	1.00	0.68	0.78	0.62

***and ** significant at 5% and 1% level of probability, respectively.**

-Genotypes differences.

The results reported in **Table (2)** indicate clearly that, there were significant differences between the different wheat genotypes in all studied traits. Moreover; it is clear from **Table (2)** that Gemmiza 7 gave the highest values of flag leaf area, spike length, No. of spikelets spike^{-1}, seed index and grain yield fed^{-1}, Gemmiza 9 gave the highest values of plant height and straw yield fed^{-1} while, Sakha 94 gave the highest values of No. of tillers plant^{-1} and No. of spikes/m^2 moreover, Sids 1, Gemmiza 7 and Sakha 93 genotypes were earlier heading compared with other genotypes.

It could be concluded that varietal differences among wheat genotypes may be due to genetical make up. The superiority of Gemmiza 7 and Gemmiza 9 in grain yield (kg fed^{-1}) over other genotypes might be due to the increase in yield components, namely, spike length, No. of spikelets spike^{-1} and seed index. The results obtained by **Metwally *et al,* (1998); Mehasen (1999); El-Hawary (2000); Abd El-hameed (2002); Ali *et al,* (2004); Mehasen and Mohamed (2005); Abu-Grab *et al,* (2006); Omar (2007); El-Ganayni and Mahmoud (2008); Hassan (2008) and El-Nady (2009**) indicated marked differences among wheat varieties in growth, yield and yield components.

-Seeding rate effect:

Results in **Table (2)** indicated that, growth, yield and its attributes of wheat i.e. No. of tillers plant^{-1}, flag leaf area, plant height, spike length, No. of spikelets spike^{-1}, No. of spikes/m^2, seed index, grain and straw yields were significantly affected by different seeding rates, whereas, No. of days to 50% heading was insignificantly responded to different seeding rates, under investigation. It is clear that the significant highest values of plant height (١٠٥.٥٧cm), No. of spikes/m^2 (٤٧٨.٩), grain yield fed^{-1}(٣٢٠٩ kg) and straw yield fed^{-1}(٤٤١٨ kg) were produced by the highest seeding rate (80 kg fed^{-1}). On the other hand, the lowest seeding rate (40 kg fed^{-1}) producing the highest values of No. of tillers plant^{-1}(٤.٨٠), flag leaf area (٤٥.١٢ cm^2), spike length (١٢.١٢ cm), No. of spikelets spike^{-1}(٢١.٣٦) and seed index (٤٣.٣٣ g). The negative effect of highest seeding rate on some yield makers could be attributed to the increase in population, as a result of higher seeding rate and consequently low penetration of light within wheat canopy, hence high competition between plants for water, minerals and other environmental factors.

Grains yield fed^{-1} as a final result of all yield attributers had benefited from the progressive effects of highest seed rate on plant height and No. of spikes/m^2. Such positive effects were turn in grain yield fed^{-1}. The three seeding rates 40, 60, 80 kg fed^{-1}, yielded ٣٠٠٦, ٣١٤٥ and ٣٢٠٩ kg, respectively. The present results are in full harmony with those of **Toaima *et al,* (2000); Saleh (2002); Ramadan (2003); Ali *et al,* (2004); Abu-Grab *et al,* (2006); Omar (2007); El-Afandy *et al,* (2007); El-Ganayni and Mahmoud (2008); Ramadan and Awaad (2008) and Hassan (2008).**

Table (2). Growth, yield and yield components of wheat as affected by genotypes and seeding rates (Combined analysis of 2007 and 2008 seasons)

Treatments	No. of tillers plant	No. days to 50% heading	Flag leaf area (cm^2)	Plant height (cm)	Spike leng-th (cm)	No.of spike -lets/ spike	No. of spik-es /m^2	Seed index (g)	Grain yield (kg fed^{-1})	Straw yield (kg fed^{-1})
Genotypes										
Giza 168	٣.٩٤	٩٤.١١	٣٤.٢٢	٨٧.٤٠	٩.٣٤	٢٠.٠٢	٤٤٦.٦	٣٩.٨١	٢٩١٣	٤١٨٣
Sakha 93	٣.٨٠	٩٠.٥٠	٣٨.٩٩	٩٨.٥٠	١٢.٠٢	٢٠.٧٤	٤٥٧.٣	٤٣.٧٧	٣١٤٧	٤٢٥٦
Sakha 94	٤.٠٧	٩٢.١٦	٤٠.٢٢	٩٩.٩٣	١٢.٢٠	٢١.١١	٤٦٠.١	٤٢.٩٢	٣١٦٥	٤٢٨١
Gemmiza 7	٣.٧٩	٩٠.٨٣	٤٢.٦٦	١٠٦.٨٤	١٢.٨٠	٢١.٦٢	٤٤٠.٥	٤٤.١١	٣٢١١	٤٣٣٢
Gemmiza 9	٣.٨٨	٩٣.٨٣	٣٩.٢٦	١٠٨.٦	١٢.٤٦	٢١.٤٧	٤٤٤.٠	٤٢.٤٢	٣٢٠٠	٤٣٤٣

Sids 1	٣.٨١	٩٠.٢٧	٣٨.٢١	١٠٣.٤٠	١١.٧٣	٢٠.٢٥	٤٤٠.٥	٤٠.٤٥	٣٠٣٩	٤١٩٥
Sids 12	٣.٨٤	٩١.٦٦	٤١.١٣	١٠٤.٦٣	١٢.٠٣	٢٠.٦	٤٤٦.٨	٤٠.٦٧	٣١٦٣	٤٢٢٤
L.S.D at 5%	**0.11**	**0.99**	**0.98**	**0.69**	**0.12**	**0.15**	**2.8**	**0.27**	**30**	**16**
Seeding rates										
40 kg fed^{-1}	٤.٨٠	٩١.٨٥	٤٥.١٢	٩٦.٦٩	١٢.١٢	٢١.٣٦	٤١٥.١	٤٣.٣٣	٣٠٠٦	٤٠٧٨
60 kg fed^{-1}	٣.٨١	٩١.٩٢	٣٨.٣٨	١٠١.٧٣	١١.٨٣	٢٠.٨٦	٤٤٩.٨	٤٢.٠٩	٣١٤٥	٤٢٨١
80 kg fed^{-1}	٣.٠٢	٩١.٩٥	٣٤.٢٢	١٠٥.٥٧	١١.٤٤	٢٠.٢٨	٤٧٨.٩	٤٠.٦٥	٣٢٠٩	٤٤١٨
L.S.D at 5%	**0.06**	**N.S**	**0.51**	**0.58**	**0.08**	**0.09**	**2.0**	**0.13**	**11**	**12**

-Interaction effect:

Significant effect of interaction between wheat genotypes and seeding rates was obtained for all growth, yield and yield components namely, No. of tillers plant^{-1}, of days to 50% heading, flag leaf area, plant height, spike length, No. of spikelets spike^{-1}, No. of spikes/m^2, seed index, grain and straw yields fed^{-1} **(Table 3)**. Gemmiza 9 with 80 kg fed^{-1} seed rate gave the highest values of plant height (١١٣.٣٣ cm), No. of spikes/m^2 (٤٧٩.٨), grain yield fed^{-1}(٣٣٠١ kg) and straw yield fed^{-1}(٤٥٢٢ kg) while, Gemmiza 7 with 40 kg fed^{-1} seed rate gave the highest values of flag leaf area (٤٩.٠٥ cm^2), spike length (١٣.٢٠ cm), No. of spikelets spike^{-1}(٢٢.١١) and seed index (٤٥.٨٠ g). Moreover, Sakha 94 with 40 kg fed^{-1} seed rate gave the highest value of No. of tillers plant^{-1}(٥.١٤) and sids 1 with 40 kg fed^{-1} seed rate surpassed the other 6 genotypes in early heading. On the other hand, Giza 168 with 40 kg fed^{-1} seed rate gave the lowest values of plant height (٨٢.٣٣ cm), grain yield fed^{-1}(٢٧٧١ kg) and straw yield fed^{-1}(٣٩٥٨ kg). Giza 168 with 80 kg fed^{-1} seed rate gave the lowest values of flag leaf area (٣١.٦٥ cm^2), spike length (٩.١٠ cm), No. of spikelets spike^{-1}(١٩.٣٦) and seed index (٣٨.٧٣ g) while, Gemmiza 7 with 80 kg fed^{-1} seed rate gave the lowest value of No. of tillers plant^{-1}(٢.٨٤) and Gemmiza 9 with 80 kg fed^{-1} seed rate gave the lowest value of No. of spikes/m^2 (٤٠٥.٣). Similar results were also reported by **Hassanein *et al*, (2001); El-Ganayni and Mahmoud (2008) and Ramadan and Awaad (2008).**

Table(3): Effect of the interaction between genotypes and seeding rates on growth, yield and yield components of wheat (over the combined analysis)

Treatments		No. of tillers plant	No. of days to 50% heading	Flag leaf area (cm^2)	Plant height (cm)	Spike leng-th (cm)	No.of spik-elets/ spike	No.of spik-es /m^2	Seed index (g)	Grain yield (kg fed^{-1})	Straw yield (kg fed^{-1})
Gi. 168	**40 kg fed^{-1}**	٤.٦٣	٩٤.٥٠	٣٧.٧٥	٨٢.٣٣	٩.٧١	٢٠.٦٣	٤١٥.٠	٤٠.٨٥	٢٧٧١	٣٩٥٨
	60 kg fed^{-1}	٣.٩٤	٩٣.٦٦	٣٣.٢٨	٨٨.٣٦	٩.٢١	٢٠.٠٨	٤٤٥.٣	٣٩.٨٥	٢٩٢٦	٤٢١٥
	80 kg fed^{-1}	٣.٢٤	٩٤.١٦	٣١.٦٥	٩١.٥٠	٩.١٠	١٩.٣٦	٤٧٩.٥	٣٨.٧٣	٣٠٤٣	٤٣٧٨
Sa. 93	**40 kg fed^{-1}**	٤.٦٤	٩٠.٨٣	٤٥.٠٣	٩٢.٣٣	١٢.٤٠	٢١.٢٨	٤٣٠.٠	٤٤.٨٥	٣٠٥٤	٤١٠١
	60 kg fed^{-1}	٣.٨١	٩٠.٥٠	٣٨.١٠	٩٩.٦٦	١٢.١٦	٢٠.٨٣	٤٥٩.٣	٤٣.٩٠	٣١٧٤	٤٢٩٠
	80 kg fed^{-1}	٢.٩٥	٩٠.١٦	٣٣.٨٥	١٠٣.٥٠	١١.٥١	٢٠.١١	٤٨٢.٦	٤٢.٥٨	٣٢١٣	٤٣٧٨
Sa. 94	**40 kg fed^{-1}**	٥.١٤	٩٢.٥٠	٤٦.٣٨	٩٥.٨٣	١٢.٥٥	٢١.٧٨	٤٣٣.٦	٤٣.٩٨	٣٠٧٩	٤١١٨
	60 kg fed^{-1}	٣.٩٣	٩١.٨٣	٣٩.٧٨	٩٨.١٣	١٢.٢٦	٢١.٢٠	٤٥٨.٦	٤٢.٩٣	٣١٩١	٤٣٠٣
	80 kg fed^{-1}	٣.١٦	٩٢.١٦	٣٤.٥١	١٠٥.٨٣	١١.٨٠	٢٠.٣٦	٤٨٨.٠	٤١.٨٦	٣٢٢٦	٤٤٢٣
Ge. 7	**40 kg fed^{-1}**	٤.٧٤	٩٠.٥٠	٤٩.٠٥	١٠٢.٣٣	١٣.٢٠	٢٢.١١	٤٠٦.٥	٤٥.٨٠	٣١٠٥	٤١٥٥
	60 kg fed^{-1}	٣.٧٨	٩١.١٦	٤٢.٨٦	١٠٧.٣٣	١٢.٩١	٢١.٦٨	٤٤٠.٣	٤٤.١٥	٣٢٣١	٤٣٥٥
	80 kg fed^{-1}	٢.٨٤	٩٠.٨٣	٣٦.٠٦	١١٠.٨٦	١٢.٣٠	٢١.٠٦	٤٧٤.٦	٤٢.٤٠	٣٢٩٧	٤٤٨٧

Ge. 9	40 kg fed^{-1}	٥.٠٣	٩٤.١٦	٤٦.٣٨	١٠٢.٣٣	١٢.٧٣	٢١.٩٦	٤٠٥.٣	٤٤.٠٠	٣٠٦٠	٤١٤١
	60 kg fed^{-1}	٣.٧٠	٩٣.٨٣	٣٧.٩٨	١١٠.١٦	١٢.٤٦	٢١.٥٠	٤٤٦.٨	٤٢.٥٥	٣٢٤٠	٤٣٦٦
	80 kg fed^{-1}	٢.٩١	٩٣.٥٠	٣٣.٤٣	١١٣.٣٣	١٢.١٨	٢٠.٩٥	٤٧٩.٨	٤٠.٧٣	٣٣٠١	٤٥٢٢
Si. 1	40 kg fed^{-1}	٤.٦٠	٨٩.٥٠	٤٣.٩٥	٩٩.٨٣	١٢.٠٠	٢٠.٦٠	٤٠٥.٤	٤١.٨٠	٢٩١١	٤٠١٥
	60 kg fed^{-1}	٣.٨٣	٩٠.٣٣	٣٦.٨١	١٠٣.٧١	١١.٨٠	٢٠.٢٣	٤٤٦.٣	٤٠.٦٥	٣٠٧٠	٤٢٠٦
	80 kg fed^{-1}	٣.٠٠	٩١.٠٠	٣٣.٨٦	١٠٦.٦٥	١١.٤١	١٩.٩٣	٤٦٩.٨	٣٨.٩١	٣١٣٨	٤٣٦٥
Si. 12	40 kg fed^{-1}	٤.٨٣	٩١.٠٠	٤٧.٣٥	١٠١.٨٣	١٢.٢٦	٢١.١٣	٤١٠.٠	٤٢.٠٦	٣٠٦٤	٤٠٦٠
	60 kg fed^{-1}	٣.٦٩	٩٢.١٦	٣٩.٨٨	١٠٤.٧٥	١٢.٠٣	٢٠.٥٥	٤٥٢.٣	٤٠.٦٦	٣١٨٢	٤٢٣٦
	80 kg fed^{-1}	٣.٠٢	٩١.٨٣	٣٦.١٦	١٠٧.٣٣	١١.٨١	٢٠.٢٠	٤٧٨.١	٣٩.٣١	٣٢٤٣	٤٣٧٦
L.S.D at 5%		0.16	0.86	1.36	1.54	0.20	0.24	5.2	0.33	28	31

-Simple correlation analysis:

Data of simple correlation coefficient matrix shown in **Table(4)**. Results indicate that No. of tillers plant^{-1}, plant height, spike length, number of spikes/m^2 and straw yield fed^{-} had the greatest influence on grain yield fed^{-1} with r values being -0.559, 0.826, 0.517, 0.620 and 0.804 respectively. flag leaf area, was significantly correlated with grain yield fed^{-1} with r value of -0.198. Another correlation worthy of some attention is that between No. of tillers plant^{-1} and flag leaf area, plant height, No. spikelets/spike^{-1}, number of spikes/m^2, seed index and straw yield fed^{-1} with r values being of 0.798, -0.450, 0.554, -0.850, 0.514 and -0.754, respectively while, spike length was significantly associated with No. of tillers plant^{-1} with r value being of 0.215. Also positive and highly significant relationships were found between flag leaf area and each of spike length, No. spikelets/spike^{-1}, number of spike/m^2, seed index and straw yield fed^{-1} r values being of 0.619, 0.761, -0.781, 0.715 and -0.576, respectively, as well as, between plant height and each of spike length, number of spike/m^2 and straw yield fed^{-1} with r values being of 0.624, 0.381 and 0.651, respectively. Results clearly indicated that spike length showed highly significant and positive correlation with No. spikelets/spike^{-1} and seed index (r values = 0.732 and 0.692, respectively), while it was significant and positive association number of spikes/m^2. On the other hand, No. spikelets/spike^{-1} was highly significant and positive correlation with number of spike/m^2 and seed index (r values = -0.548 and 0.811, respectively) and significant and positive correlation with straw yield fed^{-1}. Number of spikes/m^2 revealed highly significantly and positively correlated with seed index and straw yield fed^{-1}(r values = -0.461and 0.841, respectively). These findings in most cases were in accordance with those obtained by **El-Wakil and Abd-Alla (2004); Swelam (2008); El-Ganayni and Mahmoud (2008); Ramadan and Awaad (2008) and Hassan (2008).**

Table (4). Correlation coefficient between grain yield and its attributes of wheat genotypes (combined data of the two seasons)

Characters	1	2	3	4	5	6	7	8	9
Y-Grain yield fed^{-1}	-0.559**	-0.152	-0.198*	0.826**	0.517**	0.141	0.620**	0.112	0.804**
1-No. of tillers plant^{-1}	1.000	0.085	0.798**	-0.450**	0.215*	0.554**	-0.850**	0.514**	-0.754**
2-No. days to heading		1.000	-0.178*	-0.194*	-0.373**	0.004	0.047	-0.251**	0.101
3-Flag leaf area (cm^2)			1.000	-0.067	0.619**	0.761**	-0.781**	0.715**	-0.576**
4-Plant height (cm)				1.000	0.624**	0.177*	0.381**	0.038	0.651**
5-Spike length (cm)					1.000	0.732**	-0.219*	0.692**	0.065
6-No. spikelets/spike^{-1}						1.000	-0.548**	0.811**	-0.226*
7-No. of spikes/m^2							1.000	-0.461**	0.841**

8-Seed index (g)								1.000	-0.238**
9-Straw yield fed^{-1}									1.000

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تقييم بعض التراكيب الوراثية للقمح تحت معدلات تقاوي مختلفة

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أقيمت تجربتان حقليتان بمركز البحوث والتجارب بكلية الزراعة بمشتهر – جامعة بنها- محافظة القليوبية- مصر خلال موسمى ٢٠٠٧/٠٨ و ٢٠٠٨/٠٩ م لدراسة تأثير ثلاثة معدلات تقاوي (٤٠ ،٦٠ ،٨٠ كجم للفدان) علي النمو والمحصول ومكوناتة لسبعة تراكيب وراثية من القمح (جيزة ١٦٨ ،سخا ٩٣ .سخا ٩٤ .جميزة ٧ ،جميزة ٩ ،سدس ١ وسدس ١٢)

-ويمكن تلخيص أهم نتائج التحليل التجميعى للموسمين فيما يلى .

- سجل صنف جميزة ٧ أعلى متوسطات لكل من مساحة ورقة العلم ، طول السنبلة ، عدد أبراج السنبلة ، وزن ال١٠٠٠ حبة ومحصول الحبوب للفدان. وسجل صنف جميزة ٩ اعلي القيم لكل من طول النبات ومحصول القش للفدان. بينما سجل الصنف سخا ٩٤ أعلي القيم لكل من عدد الأشطاء للنبات وعدد السنابل في المتر المربع. علاوة علي ذلك كانت أفضل الأصناف في صفة التبكير لطرد السنابل هي سدس ١ وجميزة ٧ وسخا ٩٣ علي الترتيب مقارنة بالتراكيب الوراثية الأخرى.
- أعطى أعلي معدل تقاوي (٨٠ كجم للفدان) أعلي قيم لكل من طول النبات ، عدد السنابل في المتر المربع ومحصول الحبوب والقش للفدان. وعلي العكس من ذلك أعطي أقل معدل تقاوي (٤٠ كجم للفدان) أعلي قيم لكل من عدد الأشطاء للنبات ، مساحة ورقة العلم ، طول السنبلة ، عدد أبراج السنبلة ، و وزن ال١٠٠٠ حبة. بينما لم تتأثرمعنويا صفة عدد الأيام لطرد ٥٠% من السنابل بمعدلات التقاوي المختلفة.
- تأثر معنويا كل من عدد الأشطاء للنبات ، عدد الأيام لطرد ٥٠% من السنابل ، مساحة ورقة العلم ، طول النبات ، طول السنبلة ، عدد أبراج السنبلة ، وعدد السنابل في المتر المربع ، وزن ال١٠٠٠ حبة ومحصول الحبوب والقش للفدان بالتفاعل بين التراكيب الوراثية ومعدلات التقاوي.
- أظهرت النتائج وجود ارتباط موجب وعالي المعنوية بين كل من محصول الحبوب للفدان و صفات النمو و مكونات المحصول المدروسة.