Menoufia J. Plant Prod., Vol. 2 June (2017): 207 - 217

EFFECT OF NITROGEN FERTILIZER LEVELS ON SOME WHEAT VARIETIES BELONGING TWO SPECIES

E.H. El-Seidy[(1)], A. A. Morad[(2)] , R.A. El-Refaey[(1)] and Nehal Kh.El-Hadidy[(1)]

[(1)] Dept. of Agron., Fac. of Agric., Tanta Univ., Egypt
[(2)] Field Crops Research Institute, ARC, Egypt

Received: Mar. 6 , 2017 **Accepted: Mar. 8 , 2017**

ABSTRACT: *Field experiments were carried out at the experimental farm of Gemmeiza Agriculture Research Station A.R.C, El-Gharbeia Governorate , Egypt. This investigation was performed during the two successive growing seasons 2013/14and 2014/15 to study the effect of three nitrogen levels on yield and yield components of eight common wheat varieties. The significantly highest means of yield and yield components were obtained from fertilized by 100 unit /fad in both seasons, while the lowest one was obtained from 50 unit /fad nitrogen fertilizer in both seasons, except harvest index which was significant greater at 75 unit /fad than at 100 unit /fad specially in the second season and grain yield, where its values were not differ significantly at both N rates in both seasons.*

The genotype Gemmeiza-11 recorded the highest values for number of grains/spike, 1000–grain weight, harvest index and grain yield/plot, followed by Gemmeiza-9 for number of grains/spike, 1000–grain weight. On the other hand, Sohag- 3 recorded the lowest values for number of grains/spike and 1000–grain weight in both seasons. Wheat genotype Gemmeiza-10 recorded the highest number of spikes / m^2 in both seasons ,while Banei Sweif 5 recorded the lowest one in both seasons.The highest means of biological yield were detected for Banei Sweif 6 , followed by Gemmeiza 9, while Gemmeiza-10 recorded the lowest values for biological yield in both seasons.

Key words: *Wheat, nitrogen rate, yield components, varieties, durum wheat.*

INTRODUCTION

Wheat is one of the most important cereal crops in Egypt and in the world , It is being the most important sources of stable food urban and rural societies used in human nutrition, Bread wheat (*Triticum aestivum, L.)* has been considered the first strategic food crop for more than 7000 years in Egypt. It is used for making bread , some industrial purposes and as major source of straw fodder for animal feeding. While durum wheat *(Triticum turgidum L.var.durum*) is the second most important wheat species grown in the world , it is the best wheat for producing semolina to make macaroni due to its strong gluten ,excellent amber color and superior cooking quality Gerba *et al* (2013). Recently, a great attention of several investigations has been directed to increase the productivity of wheat to minimize the gap between the Egyptian production and consumption by increasing the cultivated area and wheat yield per unit area (Zaki *et al* 2012). Increasing wheat production per unit land area could be improved through usage of high yielding varieties and the application of agromanagement practices , especially added nitrogen fertilization. Many researchers have found that, nitrogen application is an important input for wheat production. El-Hag (2011) indicated that, grain and straw yields ,number of spike m^{-2}, number of grains / spike, plant height, days to heading, days to maturity increased with increasing nitrogen rates .Therefore, the present investigation aimed to study the effect of some wheat cultivars belonging two species to different application of nitrogen fertilization level on yield and yield components .

MATERIALS AND METHODS

Two experiments were carried out at the experimental farm of Gemmeiza Agriculture Research Station. the first one was sown on 15 th November ,2013 where split-plot design with four replications was used .The three nitrogen levels (50,75 and 100kg/fad.) were allocated in main-plots and the eight wheat cultivars(Gemmeiza 9, Gemmeiza 10, Gemmeiza 11,Shandaweel 1,Sohag 3, Bani Sweif 1, Bani Sweif 5 and Bani Sweif 6)were arranged in sub-plots. In 22nd November, 2014 the second experiment was conducted as in the first season. The experimental sub-plot consisted of six rows, 4 meters long with 20 cm between rows and 10 cm between plants within rows. Each experimental sub-plot size was 4.8 m^2. In order to minimize border effects, the four middle rows were harvest with the area of 3.2 m^2 . Analytical data the soils used for the two seasons are presented in Table (1).

Characters studied*:*

Yield and yield components:

It has been taken it five plants at random from the lines of the interior each piece experimental at harvest to estimate the following characteristics:

1-Number of spikes /m^2: numbers of fertile tillers/m^2 were calculated by counting all spikes per square meter.

2-Number of grains/spike: It was counted as an average number of grains collected per spike.

3-1000- grain weight: A random sample of 1000 grains was taken from each sub-plot, hand by handly counted and weighted.

4-Biological yield: It was estimated by weighting the harvest area (3.2 m^2) for each sub- plot.

5-Grain yield: It was estimated by weighting the grains from the harvest area (3.2 m^2) of each sub- plot.

6-Harvest index: Was recorded as a ratio of grain yield to the total above ground dry matter of each sub- plot.

Harvest index (%) = (Grain yield/ Biological yield) × 100

Statistical analysis:

Data were subjected to the proper statistical analysis as the technique of analysis of variance (ANOVA) of split-plot design as mentioned by Gomez and Gomez (1984). Treatment means were compared using the Least Significant Difference (LSD) test as outlined by Waller and Duncan (1969). All statistical analysis performed using analysis of variance technique by "MSTAT-C" computer software package 1990.

RESULTS AND DISCUSSION

Yield and yield components:

1-Analysis of variance:

Mean squares from the analysis of variance for number of spikes /m^2, number of grains /spike, 1000 –grain weight, biological yield, grain yield/plot and harvest index are presented in Table (2).

It is clear from the data collected that, mean squares of seasons were highly significant for number of spikes /m^2, number of grains /spike, 1000 –grain weight, biological and grain yields/plot, except harvest index. This could indicate that, the effect of season could be changed from season to another for these traits. It is worthy to mention that, data tabulated in Table (1) revealed that chemical and mechanical analysis of experimental soil changed from season to another, whereas the second season was higher in organic matter available nitrogen, available phosphorus and available potassium than the first one, which may illustrate the changed of seasons.

Nitrogen fertilization mean squares were highly significant for all the above mentioned studied traits, which could be attributed to the existence of the effect of different N levels fertilization on the traits in view.

Table (1): Chemical and mechanical analysis of experimental soil in 2013/14 and 2014/15 seasons at Gemmeiza Agriculture,Research station.

Soil properties	Season	
	2013/14	2014/15
Mechanical analysis		
Clay%	45.55	45.30
Silt%	26.50	27.23
Sand%	14.63	16.5
Organic matter	1.95	2.10
Textural class	Clay	Clay
Chemical analysis		
Available N(ppm)	25.36	29.56
Available p (ppm)	6.82	7.15
Available k(ppm)	7.56	7.70
pH	7.98	8.2

Table (2): Analysis of variance for Yield and yield components based on combined analysis:

S.O.V	*d.f*	Number of spikes/m^2	Number of grains/spike	1000-grain weight(g)	Biological yield (kg/plot)	Grain yield (kg/plot)	Harvest index (%)
Seasons(S)	1	93412.63**	476.91**	159.14**	6.53**	1.37**	0.241
Rep	6	1412.83	10.40	3.59	0.23	0.14	20.859
Fertilization (F)	2	111845.77**	1909.63**	1515.74**	21.12**	15.85**	1639.04**
S×F	2	218.27	31.49*	7.23	0.05	0.12	40.265
Error(a)	12	608.56	6.28	3.39	0.15	0.07	11.255
Genotypes(g)	7	5647.49**	1366.82**	120.90**	2.98**	1.4**	346.74**
S×G	7	822.42	38.92*	3.23	0.36	0.05	11.400
F×G	14	524.49	33.08**	7.47	0.08	0.05	14.010
S×F×G	14	166.65	27.06**	1.52	0.07	0.011	9.122
Error(b)	126	716.87	11.50	4.50	0.15	0.098	13.993

Genotypes mean squares were highly significant for all above mentioned traits, which might be attributed to their variation in genetic make-up and the unsteady environmental conditions as well as to the differences in most yield components characters.

The interactions of seasons x nitrogen fertilization mean squares were found to be significant for number of grains/spike. This might indicate that, the effect of nitrogen levels differed from season to another for number of grains/spike. On the other side, all above rest traits showed not significant, indicating that the effect of N levels on these traits not differ by seasonal changes, Table (2).

The interaction of season x genotypes mean squares was significant for number of grains /spike.

This would indicate that, the tested varieties behaved in different way by changing seasons for this trait. While, for the other traits the same interaction was not significant, indicating that the varieties not affected by the seasonal changes for these traits.

The interactions of genotypes x nitrogen levels mean square was found to be highly significant for number of grains/spike. This would indicate that, the tested varieties behaved in different way by changing nitrogen levels for this trait, while the same interaction was not significant for the other traits, indicating that, the effect of nitrogen fertilization on these traits not differ from the variety to another.

The second order interaction; seasons x varieties x nitrogen levels mean squares was found to be highly significant for number of grains/spike. This would indicate that, the cultivars differ with the change of N rates and revealing that performance of cultivars differ with the change of season. While the same interaction was not significant for the other traits, indicating that the performance of cultivars for these traits would be stable with the changing of seasons as well as N levels.

2- Mean performance:

Data in Table (3) showed highly significant effect of nitrogen rate on number of spikes /m^2, number of grains /spike, 1000–grain weight, biological and grain yields/plot and harvest index in both seasons.

Table (3): Means of yield and yield components as affected by nitrogen fertilization levels in both seasons:

Factors	Number of spikes/m^2		Number of grains/spike		1000-grain weight(g)		Biological yield(kg/plot)		Grain yield (kg/plot)		Harvest index (%)	
	Season 2013/14	Season 2014/15	Season 2013/14	Season 2014/15	Season 2013/14	Season 2014/15	Season 2013/14	Season 2014/15	Season 2013/14	Season 2014/15	Season 2013/14	Season 2014/15
Nitrogen levels:												
50 unite	309.25	349.41	58.46	60.67	42.07	43.96	5.10	5.519	1.95	2.06	38.35	37.19
75	350.47	397.94	64.52	69.28	48.30	50.72	5.75	6.06	2.68	2.95	46.64	48.50
100	390.50	435.22	69.00	71.48	52.00	53.10	6.29	6.63	2.84	2.96	45.13	44.61
F-test	**	**	**	**	**	**	**	**	**	**	**	**
LSD0.05	17.64	12.02	1.73	1.31	1.36	0.82	0.30	0.15	0.19	-0.13	2,28	1.79
LSD0.01	26.72	18.21	2.62	1.98	2.07	1.25	0.46	0.22	0.28	0.20	3.45	2.71

The successive increase in nitrogen rate from 50 to 100 unit /fad resulted in a progressive increase for all the studied traits above mentioned , the highest means of yield and yield components were obtained from fertilized by 100 unit /fad in both seasons ,while the lowest one was obtained from 50 unit /fad nitrogen fertilizer in both seasons, except harvest index which was significant greater at 75 unit /fad than at 100 unit /fad specially in the second season, and grain yield/plot where its values were not significantly differ at both N fertilization levels. However, when increasing consumption of more nitrogen fertilization rates, this would lead to the highest number of grains /spike, because the lack of N in the soil cause a big loss in a number of grains as a result of failure to spikelets fertilization and / or an increase in abortions advanced grain due to insufficient supply of N and lack of soil fertility . The differences among the nitrogen levels were significant in both seasons. This means that N application promoted tillers and spikes initiation and also seemed to be important in regulating survival and eventual grain production through enhancement the production of more spikes per unit area, probably through providing the individual tiller with sufficient amounts of various metabolites to ensure development and activation of the essential enzyme systems, and endogenous growth regulators for survival and growth of tiller and its spike. In the other words, available nitrogen in the experimental soil is not adequate to supply the needs of wheat plants.

These results may be due to the fact that, nitrogen is necessary element for cell structure, and function since protoplasm in the seat of cell division and plant growth, which lead to increasing dry matter accumulation. In addition, increasing nitrogen rates, encouraged the vegetative growth, meristematic activity, improve the biotic process in plant, and increasing the filling process in wheat grains, and consider the main element in protein content. The application of 100 kg /fad gave the optimum number of plants per unit area ,which lead to improve leaves growth, leaves area and dry matter which lead to increase number of tillers (Mohammady, 2003). These results agreed with those reported by Ali (2007) who stated that, when no. of spikes/m^2 exhibted highly positive response with increasing nitrogen levels in both seasons, it means that N application promoted spike initiation, and also seemed to be important in regulating survival and eventual grain production, through providing the individual tiller with sufficient amounts of various metabolites, to ensure development and activation of the essential enzyme system necessary for survival and growth of that tiller and its head. Akhtar *et al. (*2000), reported that increasing N levels increased grains per spike , 1000-grain weight and grain yield ha^{-1}. Also, Mahgoub and Mostafa (2001) indicated that, increasing nitrogen levels up to 100 kg N/fad significantly increased all the studied characters . El-Sayed (2015) stated that, tillering is the most important factor in the yield components , especially for biological yield, and thus the number of spikes , the weight of a thousand grains and the number of grains / spike. Mowafy (2002), Abu-Grab *et al*. (2006) , Hossain *et al*. (2006) , El-Sayed and Hammad (2007), El-Hag (2008) and EL-Hag. (2011) reported that, increasing nitrogen fertilizer lead to increase number of spikes /m^2, number of grains/spike and grain yield. Salem (2005), Alam *et al* (2007), Gul *et al.* (2012), Iqbal *et al* (2012), Maqsood *et al.* (2014) and Gomaa *et al. (*2015) found that, increasing nitrogen rates resulted in a progressive increase for all the studied traits. This may be attributed to imply higher photosynthetic efficiencies leading to more assimilates production and translocation to the sinks, and also cause increases the success of pollination and fertilization of higher number of spikelets in spike .The favorable effect of nitrogen, could be mainly attributed to its simulative effect on the number of grains / spike, number of spikes / m^2 and 1000-grain weight .Nitrogen effects on spike characters of wheat plant might be through its influence on the dry matter production ,increasing endogenous photohormone concentration, and photoassimilate partitioning to the grain and prolong the period of grain filling. Ali (2007) stated that, heaviest mean 1000-grain weight may be due to its grains number and weight /spike which decreased the competition grains for assimilates compared to higher number and weight of the other treatments.

In both seasons, wheat genotypes revealed highly significant differences for yield and yield components, except number of spikes / m^2 which was only significant in the second season.

Data presented in Table (4) revealed that, number of spikes / m^2 was highly significant differed among the tested wheat genotypes .Wheat genotype Gemmeiza-10 recorded the highest number of spikes / m^2 in both seasons , followed by Gemmeiza-9, Gemmeiza-11, while Banei Sweif 5 recorded the lowest one in both seasons. The variation among wheat genotypes in number of spikes / m^2 could be attributing to genetically variation as well as their interaction with environmental conditions. These results are in harmony with those reported by El-Sayed *et al. (*2000), where they indicated that wheat cultivars had significant variation for all the studied traits. Gemmeiza-9 surpassed the other two cultivars in number of spikes/m^2. El-Ganbeehy *et al*. (2001), Colabady and Arzani. (2003), Abd El-Rahman (2008), Seleiman *et al.* (2010) and Abdel-Nour and Fatheh(2011) confirmed with our results and they found insignificant differences among genotypes regarding number of spikes/m^2.

Data presented in Table (4) indicated that, the genotype Gemmeiza-11 recorded the highest values for number of grains/spike, 1000–grain weight, harvest index and grain yield/plot, followed by Gemmeiza-9 for number of grains/spike, 1000–grain weight. On the other hand, Sohag- 3 recorded the lowest values for number of grains/spike and 1000–grain weight in both seasons.

The highest means of biological yield were detected for Banei Sweif 6 , followed by Gemmeiza 9, while Gemmeiza-10 recorded the lowest values for biological yield in both seasons. However, the lowest values for grain yield/plot were noticed by Banei Sweif 1 in the second season, while Gemmeiza-10 was inferior to all genotypes in this respect in the first season. These results confirmed with those reported by Sharshar and El-Sayad (2000), where they indicated that, the wheat cultivars significantly differed in all yield and yield components. Also, Moussa and Abdel-Maksoud, (2004) found that, eight wheat cultivars differed significantly for number of spikes/m^2, number of grains/spike, 1000-grain weight and straw and grain yields. El-Gizawy, (2005) found that, Gemmeiza-9 surpassed the other two cultivars in number of spikes/m^2, number of grains/spike, 1000-grain weight and grain yield. Gab Alla (2007) showed that, highly significant differences among 10 wheat genotypes in number of spikes/m^2, number of grains/spike, 1000-grain weight, grain and straw yields and harvest index. Semun-Tayyar, (2008) Abdel-Nour and Fatheh (2011) Hafez *et al.,* (2012) confirmed with our results and they found that, the wheat cultivars significantly differed in yield and yield components.

Data given in Table (5) showed that the interactions between nitrogen fertilization levels and wheat genotypes which had highly significant effect on number of grains/spike and 1000–grain weight in the second season (2014/15). Only, Gemmeiza-11 cultivar when fertilized with100 kg N/fad. recorded the highest value for number of grains/spike with value of (88.25grains) and 1000–grain weight with value of (58.4g) . While Banei Sweif 1 recorded the lowest values for number of grains/spike and Sohag 3 was inferior to all genotypes for 1000–grain weight at 50 kg N/fad. On other hand, all the other interactions for yield and yield components were not significant in both seasons.

Table 4

Table (5): Effect of the interaction between nitrogen fertilization and wheat genotypes on yield and yield components:

Factors		Number of grains/spike	1000-grain weight(g)
Nitrogen levels(kg/fad)	Genotype	Season 2014/15	Season 2014/15
50	Gemmeiza-9	66.50	42.44
	Gemmeiza-10	63.00	41.73
	Gemmeiza-11	72.50	49.95
	Shandaweel 1	65.75	43.90
	Sohag- 3	51.75	42.56
	Banei Sweif 1	53.90	42.34
	Banei Sweif 5	59.75	43.99
	Banei Sweif 6	52.25	44.78
75	Gemmeiza-9	74.25	53.36
	Gemmeiza-10	68.25	51.11
	Gemmeiza-11	83.00	55.65
	Shandaweel 1	74.25	50.89
	Sohag- 3	59.45	46.61
	Banei Sweif 1	59.80	48.15
	Banei Sweif 5	71.25	50.77
	Banei Sweif 6	64.00	49.20
100	Gemmeiza-9	80.75	55.36
	Gemmeiza-10	72.65	51.49
	Gemmeiza-11	88.25	58.41
	Shandaweel 1	77.75	52.29
	Sohag- 3	61.00	49.72
	Banei Sweif 1	65.00	50.56
	Banei Sweif 5	57.95	53.39
	Banei Sweif 6	68.50	53.60
F-test		**	**
LSD0.05		4.12	2.97
LSD0.01		5.48	3.95

Conclusion:

- Application of nitrogen fertilizer at the rate of 75 unit/fad could be recommended to producing optimum grain yield per unit area.
- The results cleared that, Gemmeiza-11 variety gave the tallest plants. Gemmeiza-11 cultivar was earlier in heading date and maturity date. Also recorded the highest values for number of grains/spike, 1000–grain weight, harvest index and grain yield/plot.

REFERENCES

Abdel-Nour, N.A.R. and H. *S*. A. Fatheh (2011). Influnence of sowing date and nitrogen fertilization on yield and its components in some bread wheat genotypes. Egypt. J. Agric. Res., 89 (4):1413-1433.

Abd El-Rahman, Magda E. (2008). Genetic analysis of yield ,yield components and earliness in some bread wheat crosses . Egypt. J. Agric. Res.,86(3):575-583.

Abu-Grab, O. S., A.M. Moussa and G.A. EL-Shaarawy (2006). Photosynthetic and N-use efficiencies for some wheat cultivars in relation to planting density and nitrogen fertilization level.Egypt.J.Appl.Sci.,21(2B):475-492.

Akhtar, M., A. Mahmood, J. Ahmad and K. Iqbal (2000). Nitrogen uptake efficiency in wheat (*Triticum aestivum* L.) as influenced by nitrogen level and weed crop competition duration .Pak.J.Biol .Sci.3(6):1002-1003.

Alam, M.S., M.N. Nesa, S.K. Khan, M.B. Hossain and A. Hoque (2007). Varietal differences on yield and yield contributing characters of wheat under different levels of nitrogen and planting methods. J .Appl. Sci. Res., 3(11):1388-1392.

Ali, E. E.R. (2007). Performance of some wheat genotypes under different levels of irrigation and nitrogen fertilization. M. Sc. Agric. (Agronomy) –Minufiya Univ.

Colabady, M. and A. Arzani (2003). Study of genetic variation and factor analysis of agronomic traits in durum wheat. J. Sci. & Techn. Agric. & Natural Resources, 7: 115-127.

El-Ganbeehy, M.M., E.S. Essam and S.S. El-Tabakh (2001). Effect of seeding rate and planting methods on grain yield and yield components of two wheat cultivars under rainfed in North Western Coast of Egypt. J. Agric. Sci. Mansoura Unvi. 26(6):3391-3400.

El-Gizawy, N.K.B. (2005). Yield and nitrogen efficiency as influenced by rates and sources of nitrogen fertilizers of some wheat varieties. The 11th Conference of Agronomy, Agron. Dept., Fac. Agric., Assuit Univ. Nov.15-16.

EL-Hag, Dalia A.A. (2008). Effect of nitrogen fertilizer rate on productivity and quality of some wheat cultivars under different plant densities M. Sc. Thesis ,Kaferelshikh Univ. ,Egypt.

EL-Hag, Walaa A.A. (2011). Evaluation of some cultivars and lines of bread wheat under low input. M. Sc .Thesis ,Kaferelshikh Univ. ,Egypt.

El-Sayed, M.A.A., M.F. El-Krmany and Abo-Ellil (2000). Effect of irrigation and nitrogen fertilizer on yield and yield components of some wheat cultivars. Al-Azhar J. Agric. Res.32(5): 73-88. Tanta Univ.

El-Sayed, M.O.A.M. (2015). Performance of some new wheat cultivars under different irrigation regimes and sowing methods. M.Sc.Agric, Tanta Univ.

El-Sayed, Soad A. and S.M. Hammad (2007). Effect of nitrogen ,potassium levels on agronomic and quality traits in three bread wheat cultivars J. Agric Sci ,Mansoura Univ ,32(2):5139-5153.

Gab Alla, M.M.M. (2007). Effect of irrigation numbers on some varieties and strains of wheat. M. Sc .Thesis ,KaferEl-shikh Univ .,Egypt.

Gerba, L., B. Getachew and W. Walelign (2013). Nitrogen fertilization effects on grain quality of durum wheat (*Triticum turgidum* L. var. durum) varieties in central Ethiopia.Agri.Sci, 4(3):123-130.

Gomaa, M.A., F.I. Radwan, I.F. Rehab and W.S. Mabrouk (2015). Response of bread wheat to organic and nitrogen fertilization. Middle East J. Agric. Res., 4(4): 712-716.

Gomez, K.A. and A.A. Gomez (1984). Statistical Procedures for Agricultural Research (2 ^{ed}.). John wiley and sons, New York, p 680.

Gul, H., B. Saeed, A.Z. Khan, U. Latif, Kh. Ali, J. ur-Rehman and S. ur-Rehman (2012). Yield and yield contributing traits of wheat cultivars in relation with planting dates and nitrogen fertilization .Arpn J. of Agric. and Bio. Sci., 7(6):386-395.

Hafez, E.M., S.H. Aboukhadrah, S.Gh.R. Sorour and A.R. Yousef (2012). Comparison of agronomical and physiological nitrogen use efficiency in three cultivars of wheat as affected by different levels of N-sources. Proc. 13th International Conf. Agron.,Fac.of Agic., Benha Univ., Egypt, 9-10 September .

Hossain, L., Kh. Islam, C. Meisner and S. Islam (2006). Effect of planting method and nitrogen levels on the yield and yield attributes of wheat. J. Bio-Sci. 14: 127-130.

Iqbal, J., KH. Hayat and S. Hussain (2012). Effect of seeding rates and nitrogen levels on yield and yield components of wheat (*Triticum aestivum* L.). Pak. J. Nutr., 11 (7): 531-536.

Mahgoub, Hayam S.S and A. K. Mostafa (2001). Evaluation of new Egyptian wheat cultivars to biofertilizer under three nitrogen levels in new land .Annals of Agric .Sci. Moshtohor ,39(2):857-866.

Maqsood, M., M.A. Shehzad, Y. Ramzan and A. Sattar (2014). Effect of nitrogen on growth, yield and radiation use efficiency of different wheat (*Triticum aestivum* L.) cultivars. Pak. J. Agri. Sci., 51(2), 441-448.

Mohammady, M.F.M. (2003). Effect of some agricultural practices on yield, technological and rheological characters of wheat crop .M.Sc. Agric.(Crop Science), Minufiya University.

Moussa, A.M. and H.H. Abdel-Maksoud (2004). Effect of soil moisture regime on yield and its components and water use efficiency for some wheat cultivars. Annals Agric. Sci., Ain Shams Univ. Cairo, 49(2): 515-530.

Mowafy, S.A.E. (2002). Effect of nitrogen fertilization on yield ,floral fertility and inter spikelet competitions of some wheat cultivars in sandy soils. Zagazig J. Agric .Res .,29(2):421-451.

Nabipour, A.R., S.B. Yazdi, A.A. Zali and K. Poustini (2002). Effects of morphological traits and their relations to stress susceptibility index in several wheat genotypes. BIABAN, 7:31-47.

Salem, M.A. (2005). Effect of nitrogen and irrigation regimes on yield and yield components of bread wheat (*Triticum aestivum* L.) genotype under newly reclaimed land condition. J.Agric. Sci. Mansoura Univ. 30(11): 6481-6490.

Seleiman, M. F., S.M. Abdel-Aal, M.E. Ibrahim and P. Monneveux (2010). Variation of yield, milling, technological and rheological characteristics in some Egyptian bread wheat (*Triticum aestivum* L.) cultivars. Emirates Journal of Food and Agriculture; 22(2): 84-90.

Semun-Tayyar (2008). Grain yield and agronomic characteristics of Romanian bread wheat varieties under the conditions of Northwestern Turkey. African Journal of Biotechnology., 7 (10): 1479-1486.

Sharshar, M.S. and A. EL-Sayed-Soad (2000). Evaluation of some wheat cultivars and lines under low and high inputs. J. Agric. Sci. Mansoura Univ. 25(5): 3109-3127.

Waller, R.A. and D.B. Duncan (1969) . Abays rule for the symmetric multiple comparison problem. Am. Stat. Assoc. J., 1485-1504.

Zaki, N.M., M. A. Gomaa, F. I. Radwan M. S. Hassanein and A. M. Wali (2012). Effect of mineral organic and bio-fertilizer on yield, yield components and chemical composition of some wheat cultivars J. of applied Sci., Res. 8(1) 174-191.

تأثير مستويات مختلفه من السماد النتروجينى على أصناف مختلفه من القمح منتميه الى نوعين مختلفين

السيد حامد الصعيدى[1] ، عبد الفتاح عبدالرحمن مراد[2] ، رمضان علي الرفاعي[1] ، نـهال خيرى الحديدى[1]

[1] قسم المحاصيل – كلية الزراعه – جامعة طنطا.

[2] قسم بحوث القمح– معهد بحوث المحاصيل الحقليه – مركز البحوث الزراعيه.

الملخص العربى

أجريت تجربتان حقليتان بمحطه البحوث الزراعيه بالجميزه – محافظه الغربيه وذلك خلال موسمى الزراعة الشتوى 14/2013و15/2014وذلك بهدف دراسه تأثير مستويات التسميد النتروجينى (50, 100,75 وحده أزوت / للفدان) على ثمانيه أصناف من القمح (أربعه أصناف قمح خبز وأربعه أصناف قمح ديورم). وذلك على المحصول ومكوناته. وقد اوضحت النتائج ان مستوى النتروجين 100 وحده / فدان إلى زياده معنويه فى كل من عدد السنابل فى المتر المربع ,عدد حبوب السنبله , وزن الالف حبه , المحصول البيولوجى, أما معامل الحصاد فكان أعلى قيمه له عند مستوى النتروجينى 75 وحده / فدان فى الموسم الثانى , بينما لم يختلف محصول الحبوب معنويا عند التسميد بالمستويين 75 ,100 وحده أزوت /فدان . سجل الصنف جميزه 11 أكبر عدد لحبوب السنبله وكان أثقل الاصناف فى وزن الألف حبه وسجل أيضا أعلى قيمه لمحصول الحبوب ومعامل الحصاد,.يليه الصنف جميزه 9 فى عدد حبوب السنبله ووزن الالف حبه , بينما سجل الصنف سوهاج 3 اقل القيم لعدد حبوب السنبله ووزن الالف حبه فى كل من الموسمين. أعطى الصنف جميزه 10 اعلى عدد من السنابل فى المتر المربع,بينما الصنف بنى سويف 5 فقد سجل اقل عدد من السنابل فى المتر المربع فى كل من الموسمين . سجل الصنف بنى سويف 6 أعلى قيمه للمحصول البيولوجى , , يليه الصنف جميزه 9 والصنف جميزه 10 سجل اقل قيمه لهذه الصفه فى كل من الموسمين.

التوصيه :

- ينصح بإضافه السماد النتروجينى بمعدل 75 وحده أزوت للفدان لأنتاج أعلى محصول حبوب من وحده المساحه.
- زراعه الصنف جميزه 11 حيث سجل أعلى القيم لصفه ارتفاع النباتات وكان أبكر الاصناف فى طرد السنابل والنضج كما انه سجل اعلى القيم لعدد حبوب السنبله , وزن الألف حبه وكذلك محصول الحبوب ومعامل الحصاد.

Table (4): Means of yield and yield components as affected by varieties in both seasons:

Factors	Number of spikes/m^2		Number of spike/grains		1000-grain weight(g)		Biological yield		Grain yield (kg/plot)		Harvest index (%)	
Genotypes:	Season 2013/14	Season 2014/15	Season 2013/14	Season 2014/15	Season 2013/14	Season 2014/15	Season 2013/14	Season 2014/15	Season 2013/14	Season 2014/15	Season 2013/14	Season 2014/15
Gemmeiza-9	373.75	408.42	69.42	73.83	48.02	50.39	6.08	6.49	2.49	2.71	40.50	41.50
Gemmeiza-10	382.50	419.17	65.05	67.97	46.76	48.11	5.08	5.47	2.19	2.36	42.53	42.65
Gemmeiza-11	353.67	395.75	74.20	81.25	51.29	54.67	5.68	6.09	2.79	3.07	49.19	50.09
Shandaweel 1	336.75	381.92	69.00	72.58	47.55	49.03	5.68	6.10	2.71	2.92	47.28	47.56
Sohag- 3	342.58	388.25	53.34	57.4	44.59	46.30	5.59	5.89	2.37	2.51	41.97	41.90
Banei Sweif 1	337.92	383.33	57.83	59.57	45.86	47.02	5.53	5.84	2.28	2.28	40.90	38.78
Banei Sweif 5	329.17	381.42	64.88	62.98	47.98	49.38	5.75	6.14	2.69	2.78	46.61	44.96
Banei Sweif 6	334.25	395.25	58.22	61.58	47.59	49.19	6.32	6.53	2.42	2.62	37.98	40.03
F-test	**	*	**	**	**	**	**	**	**	**	**	**
LSD0.05	20.42	23.21	3.11	2.38	1.75	1.71	.32	.32	.25	.26	3.49	2.55
LSD0.01	27.16	-	4.14	3.16	2.33	2.28	.42	.42	.33	.35	4.64	3.39