Al-Azhar J. Agric. Sci. Sector Res.,
Vol. 5 : pp 51-62(Desember)2008

THE PRODUCTIVITY OF THE TWO EGYPTIAN WHEAT VARIETIES UNDER DIFFERENT SOURCES OF NITROGEN FERTILIZER

Darwish, N.I.; Harb, O.M.S.; Salem, M.S.A.*
and Abo Remela, S.I. **
*Agron .Dep. Fac. Agric. AL-Azhar Univ.
**Agric. Engineering, Ministry of Agric. Giza, Egypt

ABSTRACT: At Abo-Remela, El-Behera Governorate, two field trials were carried out during 2004/2005 and 2005/2006 seasons to detect the effect of the mineral nitrogen or biofertilizer ,as well as the combination between them at the rate of 75 Kg N/fad. on some growth, yield and yield components characters for Gemmeiza 9 and Sakha 93 wheat varieties

The results showed that, Gemmeiza 9 va r.pronounced its superiority for all growth characters, yield and its components under study, than the other variety.

The presence of Cerealine or Biogen in the combination with mineral nitrogen (NH_4NO_3) at different rates were most effective on most cases than mineral or bio nitrogen fertilizer only.

The interaction between var. x N fert. had significant effect on all studied characters, in the two studied seasons.

The maximum values of the growth characters under study associated with Gemmeiza 9 under the application of (1/2mineral N+1/2Nfrom Cerealine). Whereas, the highest straw and biological yields attributed to Gemmeiza 9 cultivar that was fertilized with 75 Kg N/fad as mineral fertilizer. Inoculation Gemmeiza 9 var. with Cerealine or Biogen awarded the greatest means of harvest index.

INTRODUCTION

Wheat (*Triticum aestivum* l.) is a backbone of food in the world, it is the Master of the cereal crops, for that many of progressive or development countries try to achieve sufficiency from that strategic crop by horizontal extension i.e. reclaimination the sandy soils and desert invasion, or by vertical extension such as produce new genotypes and varieties have ability to adapt with environmental conditions, In this respect Sadek and Abo-Warda(1998),observed the response of some Egyptian wheat varieties (Sahel1, Sakha69, Giza167, Sidis1and Sidis4 and Giza168) to 240KgN/fad. The obtained results showed that the higher yielding cultivars Sahel1,Sidis1,Giza167 and Sakha69 possessed a desirable nutrient efficiency. On the other hand, the productivity of the soil increased by

enhancing it's fertility with different sources of fertilizers especially nitrogen ones, that reflect on yield and quality of wheat crop. Many investigations advocated the previous foremost, Eleithi et al (1996), Gomma (1997), El-Barary (1989) and Hamed(1998) found that increasing nitrogen levels up to 90,100,70 and 40 or 50KgN/fad.,respectively enhanced wheat productivity and its plant parameters ,under Egyptian conditions. El–Mancy (2005), reported that the highest values for wheat dry weight / plant, grain and protein yields were obtained with the application slow release fertilizer at 50 and 75 kg N/fad. It is well known that, the factories of mineral fertilizer production cause harmful influence on environment and increase the pollution rate, for that reason, the utilize of biofertilizers on partly may be reduce the completely dependence on that pollutant fertilizers, Hamed (1998) ,indicated that inoculated wheat grains with Azotobacter recorded higher values of plant height ,spike weight and number of spikes / m^2,biological and grain yields/fad. Zeidan et al. (2005), demonstrated that in all experimented cultivars (Sakha 8, Gemmeiza 3 and Sakha 93), Cerealine showed positive effect on plant dry weight, flag leaf area and grain yield. Karman –Shaukat et al. (2006), advocated the previous results, they recorded that bacterial strains or biofertilizer enhanced wheat plant biomass as well as yield parameters.

The combination between mineral and biofertilizers was effective in many cases of wheat plant parameters. Hamed (1998) revealed that inoculation of wheat grains with Azotobacter sp. under application of nitrogen at the rate of 60KgN/fad.gave significant increase in grain and biological yields/fad.

The aim of this research is to study the effect of different sources of nitrogen fertilizers on some growth parameters, yield and yield components of Sakha 93 and Gemmeiza 9 wheat cultivars.

MATERIALS & METHODS

This investigation was conducted at Abo–Remela EL–Behera Governorate during 2004/2005 and 2005/2006 seasons, to evaluate the effect of different sources of nitrogen fertilizers i.e. mineral one (Ammonium nitrate, 33.5 %) and Cerealine(the weight of each envelope was 500g,it ables to supply wheat plants by 13KgN/fad) as well as Biogen(the weight of each envelope was 500g,it ables to supply wheat plants by 28KgN/fad) as biofertilizers, on some growth parameters, yield and yield components of the two wheat varieties, Sakha 93 and Gemmeiza

9 that were gained from Agric. Res. center. Giza, Egypt.

The studied treatments:

1. Ammonium nitrate (33.5%N) at the rate of 75 kgN/fad. as control.
2. Ammonium nitrate at the rate of 50 kg N/fad (2/3 of the total amount) +1/3 N from Cerealine.
3. Ammonium nitrate at /the rate of 37.5 kg N/fad. (1/2 of the total amount) +1/2 N from Cerealine.
4. Ammonium nitrate at /the rate of 25 kg N/fad. (1/3 of the total amount) + 2/3 N from Cerealine.
5. Cerealine as recommended dose, it was 2850g/fad=75KgN/fad.
6. Ammonium nitrate at the rate of 50 kg N/fad. (2/3 of the total amount) + 1/3 N from Biogen.
7. Ammonium nitrate at the rate of 37.5 kg N/fad. (1/2 of the total amount) +1/2 N from Biogen.
8. Ammonium nitrate at the rate of 25 kg N/fad. (1/3 of the total amount) +2/3 N from Biogen.
9. Biogen fertilizer as recommended dose, it was 1000g/fad=75KgN/fad.

All the above mineral fertilizer rates were applied on two equal doses, the first dose was added with the first irrigation and the second one was applied with the third irrigation. Whereas, wheat grains were blended with the experimented biofertilizers before sowing.

A split plot design with 3 replications was used, the main plots were devoted to wheat varieties, and the sub plots were assigned to the different sources of nitrogen fertilizers. So this experiment includes 18 treatments which were the combination of two varieties and 9 nitrogen fertilizers.

The soil was plowed and flalled to provide a satisfactory bed for sowing. Calcium supper phosphate (15.5 % p_2O_5) at the rate of 150 kg/fad. and potassium sulphates (48.8 %k_2O) at the rate of 50 kg/fad were applied during land preparation. Grain was hand drilled at the seed rate of 50 kg/fad. Sowing date was on 15 and 17th November in the first and second seasons, respectively. The experimental plot area was 10.5 m^2 (3x3.5 m), there were 15 rows in each plot spaced 20 cm apart

Soil samples were collected to depth of 0 – 30 cm before planting for mechanical and chemical analysis (A.O.A.C 1994), results are recorded in Table(1)

Table(1):Soil Mechanical and Chemical analysis for experimental site.

mechanical and chemical analysis (A.O.A.C 1994), results are recorded in Table(1)

Table(1):Soil Mechanical and Chemical analysis for experimental site.

Chemical analysis	ppm
pH	7.5
Cu	6.4
Zn	0.55
Mn	44.50
Fe	36.50
N	50.9
P	33.4
K	273.0

Mechanical analysis	Experimental site
Sand%	35.3
Clay%	53.5
Silt%	12.1

The studied characters:

Sample of ten individual plants were taken randomly from the middle rows of each plot at 50% of spike initiation stage to determine following characters:

1. Growth parameters:
   1. Plant height (cm).
   2. Leaf area / plant.
   3. Plant dry weight (g).
2. Yield and yield components: samples of the whole plants were taken from each plot at harvest stage to determine
   1. Number of grains / spike.
   2. Grains yield/fad. (Ardab)
   3. Straw yield (ton/ fad).
   4. Biological yield (ton/fad) was determined from the weight of (grains + straw) from an area 6 m^2 in each plot.
   5. Harvest index: was estimated according to the following formula:

$$\text{Harvest index} = \frac{Grain\ yield}{Total\ biological\ yield} \times 100$$

Statistical analysis:

All data were subjected to statistical analysis is as split plot design according to procedures outlined by Snedecor and Cochran (1982). Treatments mean were compared by least significant difference (L.S.D.) at 5% level of probability.

RESULTS & DISCUSSION

1. Growth parameters:

From tables (2,3 and 4) it is obvious that, Gemmeiza 9 wheat variety was superior and ranked first in plant height, leaf area/plant and plant dry weight as enduring with Sakha 93 var., in the two growing seasons. These results are in harmony with those obtained by Cook and Veseth (1991); they reported that wheat varieties showed significantly differences in some growth parameters.

Table (2): Effect of mineral and biofertilizer nitrogen on plant height (cm) for Sakha 93 and Gemmeiza9 wheat varieties during 2004/2005 and 2005/2006 seasons

	2004/2005 Season			2005/2006 Season		
Variety / Fertilizer	Sakha 93	Gemmeiza 9	Mean	Sakha 93	Gemmeiza 9	Mean
*Control (N)	**107.30**	**123.07**	**115.18**	**107.40**	**110.30**	108.85
3/2 N + 1/3 cy.	**104.33**	**121.63**	**112.98**	**100.50**	**109.60**	105.05
1/2 N + 1/2 cy.	**107.00**	**130.63**	**118.82**	**103.70**	**111.00**	107.35
1/3 N + 2/3 cy.	**104.67**	**125.83**	**115.25**	**100.80**	**109.63**	105.22
Cerealine (cy)	**102.00**	**120.73**	**111.37**	**98.37**	**102.17**	100.27
3/2 N + 1/3 B.	**104.27**	**121.63**	**112.95**	**103.50**	**108.00**	105.75
½ N + 1/2 B.	**104.67**	**123.07**	**113.87**	**104.60**	**108.20**	106.40
1/3 N + 2/3 B.	**104.67**	**129.10**	**116.83**	**103.8**	**110.20**	107.00
Biogen (B)	**101.70**	**116.33**	**109.06**	**97.50**	**105.00**	101.25
Mean	104.51	123.56	114.4	102.24	108.23	105.24
L.S.D at 5% level for						
Variety		*			*	
Fertilizer		1.1			1.15	
Variety x Fertilizer		1.55			1.62	

*Control (N) means 75 k N/F as ammonium nitrate NH4NO3 (33.5%)

Concerning the effect of different sources of nitrogen fertilizer on the above properties, plant height and leaf area/plant were increased significantly 0.5 treated wheat plants with (1/2 mineral N from NH_4NO_3 + 1/2 N from Cerealine/fad.) than the control treatment(75kg/fad.) and the other studied treatments, whereas the lowest values attributed to the application with biofertilizer only in the first and second growing seasons, meanwhile plant dry weight was enhanced significantly due to the application of (1/2 N from NH_4NO_3+1/2 N from Biogen) as compared with other treatments. These results are supported by Sonbol et al.(2000),they demonstrated that bacteria of biofertilizer plays a saving role to nitrogen by fixing process and avoiding N losses of soluble chemical N fertilizer . This N helps in increa sing wheat plant growth. Added to that, Saber (1993) published that some of bacteria can be secrete

hormones which encourage plant growth and increase nutrients uptake.

Table (3): Effect of mineral and biofertilizer nitrogen on leaf area (cm^2) for Sakha 93 and Gemmeiza9 wheat varieties during 2004/2005 and 2005/2006 seasons

	2004/2005 Season			2005/2006 Season		
Variety / Fertilizer	**Sakha 93**	**Gemmeiza 9**	**Mean**	**Sakha 93**	**Gemmeiza 9**	Mean
*Control (N)	**87.00**	**92.53**	**89.77**	**85.10**	**90.60**	87.85
3/2 N + 1/3 cy.	**88.00**	**91.90**	**89.95**	**86.01**	**89.83**	87.92
1/2 N + 1/2 cy.	**91.67**	**92.90**	**92.28**	**90.47**	**90.64**	90.55
1/3 N + 2/3 cy.	**85.00**	**91.00**	**88**	**83.67**	**89.01**	86.34
Cerealine (cy)	**69.00**	**72.00**	**70.50**	**67.73**	**71.93**	69.83
3/2 N + 1/3 B.	**89.00**	**94.00**	**91.50**	**87.06**	**92.03**	89.55
½ N + 1/2 B.	**90.00**	**95.00**	**92.50**	**88.63**	**93.40**	91.02
1/3 N + 2/3 B.	**87.00**	**92.00**	**89.50**	**85.50**	**89.30**	87.40
Biogen (B)	**73.60**	**74.00**	**73.80**	**72.40**	**72.78**	72.59
Mean	84.47	88.37	86.42	82.95	86.61	84.78

L.S.D at 5% level for

Variety	*	*
Fertilizer	0.78	1.66
Variety x Fertilizer	1.10	2.35

*Control (N) means 75 k N/F as ammonium nitrate NH4NO3 (33.5%)

Table (4): Effect of mineral and biofertilizer nitrogen on plant dry weight (g) for Sakha 93 and Gemmeiza9 wheat varieties during 2004/2005 and 2005/2006 seasons

	2004/2005 Season			2005/2006 Season		
Variety / Fertilizer	Sakha 93	Gemmeiza 9	Mean	Sakha 93	Gemmeiza 9	Mean
*Control (N)	**14.80**	**16.83**	**15.82**	**13.90**	**16 .13**	15.02
3/2 N + 1/3 cy.	**1500**	**16.20**	**15.60**	**14.00**	**15.53**	14.77
1/2 N + 1/2 cy.	**15.23**	**16.80**	**16.02**	**14.70**	**16.20**	15.05
1/3 N + 2/3 cy.	**14.10**	**15.90**	**15.00**	**13.80**	**15.10**	14.45
Cerealine (cy)	**12.10**	**13.20**	**12.65**	**11.53**	**12.81**	12.17
3/2 N + 1/3 B.	**15.07**	**16.70**	**15.88**	**1 4.01**	**16.13**	15.07
½ N + 1/2 B.	**16.60**	**17.00**	**16.30**	**14.83**	**16.23**	15.53
1/3 N + 2/3 B.	**14.90**	**16.00**	**15.45**	**14.00**	**15.06**	14.53
Biogen (B)	**12.80**	**13.90**	**13.35**	**11.67**	**12.97**	12.32
Mean	14.40	15.84	15.12	13.61	15 .04	14.32

L.S.D at 5% level for

Variety	*	*
Fertilizer	0.32	0.31
Variety x Fertilizer	0.45	0.44

*Control (N) means 75 k N/F as ammonium nitrate NH4NO3 (33.5%)

The interaction between (Var.XN Fret.) had significant influence on the studied growth characters. With respect to plant height parameter,

fertilized Gemmeiza 9 var. with the application of (1/2 N from NH_4NO_3 +1/2 N from Cerealine) achieved the tallest plants 130.63 cm in the first season and 111.0 cm in the second one. As for, leaf area and plant dry weight traits, the highest values associated with treating Gemmeiza 9 var. by the combination of (1/2 N from NH_4NO_3 + 1/2 N from Biogen). These findings may be ought to, the beneficial effect of inoculation that can produced growth promoting substances which have positive effect on plant growth as explicated by Saleh and EL Demerdash, (1989).

Yield and yield components:

Data tabulated in tables (5 , 6 and 7) clear that, the highest averages for no. of grains / spike, grain straw yield (ardab / fad.) and biological yield (ton / fad.) were obtained from Gemmeiza 9 as compared with Sakha 93 varieties. So, the results showed that there was positively correlation between the studied growth characters and yield components of the same variety.

The highest means of straw and biological yield of wheat plants attributed to treat with NH_4NO_3 at the rate of 75 kg N/ fad. (Control).These results may be attributed to the role of nitrogen fertilizer on the growth stage of wheat plants i.e. nitrogen role in protoplasm formation and all proteins amino acids, many enzymes and energy transfer materials ADPandATP (Russel, 1973). Whereas, fertilized wheat plants with the combination of (1/2 N from NH_4NO_3 + 1/2 N from Biogen) resulted in the greatest yield of grains, meanwhile the highest no. of grains / spike associated with the application of (2/3 N from NH_4NO_3+1/3N from Biogen), Table (5).Treated wheat plants with biofertilizer only (Cerealine or Biogen) scored the maximum values of harvest index, during the two growing seasons (Table, 9). These results are in accordance with those reported by El–Safty, 1974; Eweda and Viassak1988 concluded that the beneficial effect of biofertilizer on economical crops i.e. wheat and rice is due not only to nitrogen fixation but also to altering the microbial balance, suppressing pathogenic microorganisms, mobilization soil phosphate and providing promoting substances that stimulated plant development. In addition to that, the beneficial effect of biofertilizers, on yield and its components is attributed to the vigorous growth of plant and the amounts of metabolites synthesized by the plant and to the role of biofertilizers in absorbing nutrients especially, P, Fe, Znand Cu which play an important role in activation of the metabolic processes as published by Mohamed (2000).

Table (5): Effect of mineral and biofertilizer nitrogen on number of grains / spike for Sakha 93 and Gemmeiza9 wheat varieties during 2004/2005 and 2005/2006 seasons

	2004/2005 Season			2005/2006 Season		
Variety / Fertilizer	Sakha 93	Gemmeiza 9	Mean	Sakha 93	Gemmeiza 9	Mean
*Control (N)	**54.00**	**60.00**	**57.00**	**56.00**	**60.00**	58.00
3/2 N + 1/3 cy.	**55.00**	**61.00**	**58.00**	**57.00**	**61.33**	59.17
1/2 N + 1/2 cy.	**49.00**	**56.00**	**52.50**	**50.00**	**57.00**	53.50
1/3 N + 2/3 cy.	**50.00**	**57.00**	**53.50**	**52.67**	**59.00**	55.83
Cerealine (cy)	**47.00**	**53.00**	**50.00**	**49.00**	**53.33**	51.17
3/2 N + 1/3 B.	**58.00**	**62.00**	**60.00**	**59.00**	**63.00**	61.00
½ N + 1/2 B.	**43.00**	**57.00**	**50.00**	**44.33**	**58.00**	51.17
1/3 N + 2/3 B.	**48.00**	**59.00**	**53.50**	**49.00**	**60.00**	54.50
Biogen (B)	**43.00**	**49.00**	**46.00**	**45.67**	**51.00**	48.33
Mean	49.67	57.11	53.39	51.41	58.07	54.74

L.S.D at 5% level for

Variety	*	*
Fertilizer	2.35	2.24
Variety x Fertilizer	3.32	3.16

*Control (N) means 75 k N/F as ammonium nitrate NH4NO3 (33.5%)

The studied interaction (var. x fret.) had significant effect on all yield and its components under investigation, i.e., treating Gemmeiza 9 var. with NH_4NO_3 at the rate of 75kg /fad., gave the highest averages of straw and biological yield/fad.

Table (6): Effect of mineral and biofertilizer nitrogen on grain yield/fad (ardab) for Sakha 93 and Gemmeiza9 wheat varieties during 2004/2005 and 2005/2006 seasons

	2004/2005 Season			2005/2006 Season		
Variety / Fertilizer	**Sakha 93**	**Gemmeiza 9**	**Mean**	**Sakha 93**	**Gemmeiza 9**	Mean
*Control (N)	**17.50**	**21.30**	**19.40**	**17.30**	**21.17**	1923
3/2 N + 1/3 cy.	**18.00**	**21.50**	**19.75**	**17.90**	**22.00**	19.95
1/2 N + 1/2 cy.	**18.81**	**22.40**	**20.61**	**18.60**	**22.20**	20.40
1/3 N + 2/3 cy.	**16.00**	**18.50**	**17.25**	**15.90**	**18.60**	17.25
Cerealine (cy)	**11.40**	**14.40**	**12.90**	**11.53**	**14.40**	12.97
3/2 N + 1/3 B.	**18.50**	**21.60**	**20.05**	**18.30**	**21.80**	20.05
1/2 N + 1/2 B.	**19.00**	**22.60**	**20.80**	**18.60**	**22.60**	20.60
1/3 N + 2/3 B.	**16.30**	**18.57**	**17.43**	**16.20**	**18.67**	17.43
Biogen (B)	**11.50**	**14.50**	**13.00**	**11.40**	**14.60**	13.00
Mean	16.33	19.49	17.91	16.19	19.56	17.88

L.S.D at 5% level for

Variety	*	*
Fertilizer	0.71	0.38
Variety x Fertilizer	1.01	0.54

*Control (N) means 75 k N/F as ammonium nitrate NH4NO3 (33.5%)

Whereas, fertilizing Gemmeiza9 var. with Cerealine or Biogen awarded the greatest means of harvest index, during the two successive seasons.

Table (7): Effect of mineral and biofertilizer nitrogen on straw yield/fad(ton) for Sakha 93 and Gemmeiza9 wheat varieties during 2004/2005 and 2005/2006 seasons

	2004/2005 Season			2005/2006 Season		
Variety / Fertilizer	Sakha 93	Gemmeiza 9	Mean	Sakha 93	Gemmeiza 9	Mean
*Control (N)	**19.20**	**25.10**	**22.15**	**19.30**	**25.30**	22.30
3/2 N + 1/3 cy.	**18.20**	**23.00**	**20.60**	**18.20**	**23.20**	20.70
1/2 N + 1/2 cy.	**17.70**	**21.30**	**19.50**	**17.70**	**21.50**	19.60
1/3 N + 2/3 cy.	**15.95**	**18.00**	**16.98**	**16.10**	**18.07**	17.08
Cerealine (cy)	**10.30**	**13.00**	**11.65**	**10.90**	**13.13**	12.02
3/2 N + 1/3 B.	**19.00**	**22.00**	**20.50**	**18.60**	**22.50**	20.55
½ N + 1/2 B.	**18.60**	**21.90**	**20.25**	**18.10**	**22.00**	20.05
1/3 N + 2/3 B.	**16.60**	**18.10**	**17.35**	**16.40**	**18.50**	17.45
Biogen (B)	**10.50**	**13.10**	**11.80**	**10.80**	**13.20**	12.00
Mean	16.23	19.50	17.86	16.23	19.71	17.97

L.S.D at 5% level for

Variety	*	*
Fertilizer	0.58	0.38
Variety x Fertilizer	0.82	0.54

*Control (N) means 75 k N/F as ammonium nitrate NH4NO3 (33.5%).

Table (8): Effect of mineral and biofertilizer nitrogen on biological yield (kg/fad) for Sakha 93 and Gemmeiza9 wheat varieties during 2004/2005 and 2005/2006 seasons

	2004/2005 Season			2005/2006 Season		
Variety / Fertilizer	**Sakha 93**	**Gemmeiza 9**	Mean	**Sakha 93**	**Gemmeiza 9**	Mean
*Control (N)	**7425.00**	**9470.00**	**8447.50**	**7420.00**	**9100.00**	8462.50
3/2 N + 1/3 cy.	**7250.00**	**8975.00**	**8112.50**	**7235.00**	**9868.70**	8167.50
1/2 N + 1/2 cy.	**7246.00**	**8685.00**	**7965.50**	**7215.00**	**8868.70**	7951.00
1/3 N + 2/3 cy.	**6385.33**	**7275.00**	**6830.17**	**6410.00**	**7315.00**	6862.50
Cerealine (cy)	**4285.00**	**5410.00**	**4847.50**	**4435.00**	**5433.33**	4934.17
3/2 N + 1/3 B.	**7525.00**	**8740.00**	**8132.50**	**7395.00**	**8895.00**	8145.00
1/2 N + 1/2 B.	**7466.67**	**8865.00**	**8165.83**	**7315.00**	**8890.00**	8102.50
1/3 N + 2/3 B.	**6561.67**	**7315.00**	**6938.33**	**6530.00**	**7430.00**	6980.00
Biogen (B)	**4350.00**	**5600.00**	**4975.00**	**4410.00**	**5490.00**	4950.00
Mean	6499.41	7815.00	7157.20	6485.00	7860.59	7172.80

L.S.D at 5% level for

Variety	*	*
Fertilizer	374.19	182.90
Variety x Fertilizer	529.18	258.66

*Control (N) means 75 k N/F as ammonium nitrate NH4NO3 (33.5%)

Table (9): Effect of mineral and biofertilizer nitrogen on harvest index for Sakha 93 and Gemmeiza9 wheat varieties during 2004/2005 and 2005/2006 seasons

Variety / Fertilizer	2004/2005 Season			2005/2006 Season		
	Sakha 93	Gemmeiza 9	Mean	Sakha 93	Gemmeiza 9	Mean
*Control (N)	35.35	33.73	34.54	34.97	33.45	34.21
3/2 N + 1/3 cy.	37.24	35.93	36.56	37.11	36.26	36.69
1/2 N + 1/2 cy.	38.93	38.68	38.81	38.66	38.33	38.50
1/3 N + 2/3 cy.	37.57	38.14	37.86	37.23	38.14	37.69
Cerealine (cy)	39.90	39.92	39.91	38.55	39.74	39.15
3/2 N + 1/3 B.	36.00	37.07	36.54	37.14	36.76	36.95
½ N + 1/2 B.	38.00	38.24	38.12	38.14	38.13	38.14
1/3 N + 2/3 B.	37.07	38.14	37.61	37.21	37.75	37.48
Biogen (B)	39.65	39.90	39.78	38.77	39.89	39.33
Mean	37.75	37.75	37.74	37.53	37.61	37.57
L.S.D at 5% level for						
Variety		N.S			N.S	
Fertilizer		0.32			0.42	
Variety x Fertilizer		0.46			0.60	

*Control (N) means 75 k N/F as ammonium nitrate NH4NO3 (33.5%)

Eventually, it was concluded that Gemmeiza 9 cv surpassed the other tested variety in the all parameters (growth and yield)in the two successive seasons. Fertilizing Gemmeiza9 var. with the combination between 1/2mineral nitrogen +1/2Nfrom Cerealine or Biogen achieved the highest means for plant height, leaf area /plant and its dry weight. On the other hand, fertilized the same previous variety with 75 Kg mineral N/fad gave the greatest values for straw and biological yields, while inoculated Gemmeiza9 grains with Biogen or Cerealine awarded the highest means of harvest index, in both seasons.

REFERENCES

A.O.A.C. (1994):official methods of analysis of the association of official analytical chemists published by the Association of Official Analytical chemists, INC, III North, Copyright1994 by Marcel D

Cook, R.J and Veseth, R.J (1991): Limiting effects of the physical and chemical environment. Wheat health management chap.3, APS Press.

El-Barary,S.M (1998): Effect of drought conditions and nitrogen fertilization levels on wheat yield and its water relations. J. Agric. Sci. Mansoura Univ., 23(2):207-217.

El-Leithi, A.A.; Sayed, K.M. and Elyamani, M.S. (1996):Influence of different levels of N. K and Zn fertilization on wheat yield and chemical composition in salt affected soil .J Agric. Sic. Mansoura Univ.,21(10):3735-3741.

EL-Mancy, M.H. (2005):Evaluating the performance of N biofertilizer under different sources and levels of chemical N fertilization on growth and nutrional status of wheat plants .J.Prod .and Development, 10(2): 339-358.

EL-Safty,M.M.(1974): Factors affecting nitrogen fixation by micro organism. M.Sc. Thesis.Fac .Agric.Ain Shams Univ.,Cairo, Egypt.

Eweda, W.E.and Viassak, K. (1998): Seed inoculation with Azospinillum brasilena and Azotobacter chroococcum on wheat and maize growth .Annals Agric. Ain .Shams Univ., 33:833-856.

Gomaa, M.A. (1997):Determination of proper nitrogen fertilizer level and form to be used for wheat crop (Triticum aestivum, L.) grown on sandy soils. Egypt. J. Appl. Sci, 12(2):73-87

Hamed, M.F. (1998):Wheat response to inoculation .source and rate of nitrogen fertilization.J.Agric.Sci. Mansoura Univ., 23(3):1021-1027.

Karman–Shaukat; Shazia–Affrasayab and Shahida Hasnain. (2006): Growth responses of Triticum aestivum to plant growth promoting rhizobacteria used as biofertilizers, Res.J.Microbiology;1(4):330-338.

Mohamed, S.A. (2000): Effect of mineral and biofertilization on growth, yield, chemical constituents and anatomical structure of wheat and broad bean plants grown under reclaimed soil conditions. Annals of Agric. Sc. Moshtohor Vol.38 (4): 2039-2063.

Russel E.W. (1973): (Soil Condition and plant Growth) language Soc. Longman, London, 30-37

Saber, M.S.M. (1993): A multi-strain biofertilizers. The Sixth international Symposium on nitrogen Fixation with Non-legumes, Ismailia, Egypt, p, 82

Sadek Emem, M.M. and Abo-Warda, A.M.A. (1998):Water and nitrogen use efficiency and their effect on grain yield of wheat. Annual coordination mating 8-11 September, 1998. Agic.Res.Center.field crop Res. Inst., Giza, Egypt.

Saleh ,E.A. and El-Demerdash , M.E-(1989) .Effect of seed bacterization and organic amendment with Garbage compost on the growth of

maize plant .Proc.2nd conf. of the African Ass for biological N fixation , Cairo ,15-19 Dec. 514-527.

Sonbol, H.A, Taha, A.A, El-Sirafy, Z.M., and El-Naggar, E.M, (2000): Efficiency use of bio and chemical nitrogen fertilizers on wheat. 8th Conf. Agric. Dev. Res. Fac. Ain Shams Univ., Cairo, November 20-22. Annals Agric. Sci. Sp. Issuue 3: 949-975.

Snedecor , W.G.and, Chochren W.G.(1982):Staistical Methods -7th Ed .2nd printing ,Iowa State Univ.,Press, Ames .Iowa , USA,507pp.

Zeidan. E.M, El–Khawaga, A.E.A; Basha, H.A. and EL-Hammeed, I.M.A. (2005):Improvement of wheat productivity in newly reclaimed soil in Egypt. Annales-Univers.tatis-Mariae-Curie-Skodowska-Sectio-E, .Agriculture; 60:113-121.

الملخص العربي

إنتاجية صنفين من القمح المصري تحت ظروف المصادر المختلفة النتروجيني السماد من

ناير إبراهيم درويش-أسامه محمد سعد الدين حرب-محمد شيرين أنور سالم*
- صلاح إبراهيم ابورميلة**
قسم المحاصيل-كلية الزراعة-جامعة الأزهر.*
مهندس زراعي- بوزارة الزراعة جمهورية مصر العربية. **

أجريت تجربتين خلال سميمو ٢٠٠٤/٢٠٠٥،٢٠٠٥/٢٠٠٦ بقرية ابورميلة محافظة البحيرة لدراسة تأثير السماد النتروجيني سواء معدني٧٥ كجم ازوت/فدان او حيوي سيريالين،بيوجين والتوليفات فيما بينهما علي بعض صفات النمو والمحصول ومكوناته لصنفين من الاقماح المصري(جميزه٩،سخا٩٣) ولقد اضهرت النتائج تفوق الصنف جميزة ٩ في كل صفات النمو تحت الدراسة بالاضافه إلي المحصول ومكوناته مقارنة بالصنف الأخر سخا٩٣.

ولقد وجد إن استخدام السماد الحيوي (سيريالين أو بيوجين)في وجود السماد المعدني الازوتي(نترات الامونيوم)بمعدلات مختلفة كان أكثر فاعليه علي الصفات تحت الدراسة عن استخدام السماد الحيوي منفردا أو المعدني بمفرده.وأشارت النتائج إلي معنوية التفاعل فيما بين (الأصناف والسماد النيتروجيني)علي كل الصفات تحت الدراسة،خلال موسمي النمو

متوسطات فارتبطت اعلي لصفات النمو تحت الدراسة بتسميد الصنف جميزة ٩ بالمعامله(٢/١ نيتروجين معدني+٢/١ نيتروجين ماخوزمن السريالين)بالمعدل٧٥كجم ازوت/فدان بينما ارتبطت اعلي قيم المتوسطات لصفتي محصول القش والمحصول البيولوجي بتسميد الصنف السابق ذكره بالمعدل ٧٥كجم ازوت معدني/فدان (في صورة نترات امونيوم)،بينما وجد ان تلقيح حبوب هذا الصنف بالبيوجين او السريالين دون استخدام السماد المعدني ادي الي زيادة معامل الحصاد زياده معنويه مقارنة بباقي المعاملات تحت الدراسه.