EFFECT OF SOWING DATE AND IRRIGATION INTERVALS ON YIELD AND ITS COMPONENTS OF SOME WHEAT CULTIVARS.

F.S.Abd-El-Samie ; Ekram. A.Migawer ; A.M.A.El-Sherif and E.S.Abd-El-aziz

Agronomy Department, Faculty of Agriculture Fayoum University , Egypt.

ABSTRACT :

The Field experiments were conducted out during the two successive winter seasons of 2012/2013 and 2013/2014 at the Experimental Farm (Demo) of the Faculty of Agriculture, at Fayoum University, Egypt .The aim of these experiments was to evaluate yield and yield components of some wheat cultivars under different Sowing Dates and different irrigation intervals . The experiment was laid out in split - split plot design with four replicates and comprised of three dates of Sowing, namely 1st, 15th and 30th November in main plots and three irrigation intervals, namely, I_1 Irrigation every 21 days, I_2 Irrigation every 28 days, I_3 Irrigation every 35 days, in sub- plots and three wheat cultivars namely, Sakha 93, Sakha 94, and Sids 12 in sub-sub-plots. The results of wheat cultivars, irrigation intervals and different sowing dates mostly showed significant differences ($P < 0.05$) for yield and yield components. The cultivar Sids 12 ranked the first in all characters. Irrigation intervals showed significant differences on all characters except number of spikelets/spike and irrigation every 28 days recorded the highest values in most characters followed by every 35days. The sowing dates shown significant effect on all traits except harvest index and the highest values were obtained when cultivars sown in 15th November in most characters. The results indicated that crop planted on November 15, produced higher grains yield as compared to late and early planting. This indicated that late sowing shorted the development phases of wheat and adversely affected the grains development and thus the grain yield. On the other hand, The interactions effect between sowing date and irrigation intervals, sowing date and wheat cultivars, irrigation intervals and wheat cultivars and sowing date x irrigation intervals x wheat varieties remained significant on all traits except the interaction between irrigation intervals and wheat variety on spike length, weight of grain/spike, seed index and harvest index. Generally, Sids12 under sowing on 30th November and irrigation every 28days followed by the same variety when sown on 15th November and irrigation every 35days surpassed the other tested treatments in grain yield/fed. (2.97 and 2.93 t/fed.) respectively.

Key words: Sowing date, Cultivars, Irrigation intervals, yield and yield components.

INTRODUCTION :

Wheat (*Triticum aestivum L.*) is the world's most outstanding crop that excels all other cereals both in area and production, known as king of cereal in Egypt, the total cultivated area of wheat reached about 1.419 million hectare in 2013 season, and the total production exceeded 9.460 million tons with an average of 6.668 t/ha. Under Egypt condition, increasing wheat production is considered as one of the most important strategic goals in order to decrease the great gap between production and human consumption especially under the yearly increase in the population with a more rate than production. Solving these problems needs pressing hard to increase wheat yield. It can happen through some ways. One of that can go through planting highly productive varieties, other way the recommended sowing date and managing irrigation. The limited share of the Nile water that Egypt receives is not expected to increase in the future. Taking into account the population growth and the expected negative effect of climate change on rain in Ethiopia, Egypt will face a problem to allocate water to agriculture to maintain in food security.

Wheat varieties effect was studied by several investigators; it appears that were a great response between varieties where specific one surpassed others in yield and its components (**Sharaan *et al*, 2000; Abd El-Ghafar, 2005 ; Shah *et al*, 2006 ; Ouda *et al*, 2007 and Bayoumi *et al*,2008**) .

The response of wheat varieties was shown to be differ greatly to the delay in sowing date ; wheat yield and its components responded negatively due to the delay in sowing date (**Tammam and Tawfils,2004; Soliman ,2006; El-Gizawy, 2009 and Abdelnour and Fateh, 2011)** .

The objectives of the present investigation were to study the productivity of three wheat cultivars under different sowing dates, and different irrigation intervals to determine the optimum treatment suitable for increasing wheat yield .

MATERIALS AND METHODS

Two field experiments were conducted during 2012/ 2013 and 2013/ 2014 growing seasons at the Experimental Farm, Faculty of Agriculture, at (Demo) Fayoum, University of Fayoum , Egypt. Each experiment included 27 treatments (arranged in a split-split-plot design with 4 replicates) which were the combinations of:

1) Three wheat cultivars, i.e. Sakha 93(V_1), Sakha 94(V_2) and Sids 12(V_3) (allocated in the sub –sub –plots).

2) Three irrigation intervals, i.e.21(I_1), 28(I_2) and 35(I_3) days from the beginning of the second irrigation were randomly allocated in sub –plots.

3) Three sowing dates, i.e. 1st November(S_1), 15th November (S_2)and 30th November(S_3), arranged in the main plots.

The experimental plot area was 7 m^2 (2.0 × 3.5 m) . The soil texture of the sites was sandy loam in both seasons, with PH of 7.7, EC 4.01 and contained organic matter of about 0.76% and CaCo3 of 4.5 % .With the

exception of the applied treatments other recommended practices of growing wheat were performed.

At harvesting, random sample of five plants from each sub-sub plot in both season was taken to measure the following characters:

1- Spike length (cm).
2- Number of spikelets per spike.
3- Number of grains per spike.
4- Weight of grains per spike(g).

Also, a random area of 1 m^2 per each sub-sub plots was used to measure the following characters.

5- 1000 – grains weight (g).
6- Number of spikes/m^2.
7- Biological yield (t/fed.).
8- Grain yield (t/fed.).
9- Harvest index (%) according to ***Wallace et al* (1972)** it was expressed of follows :

$$HI = \frac{\text{Economic yield}}{\text{Biological yield}} \times 100$$

All collected data were subjected to statistical analysis of split- split plot design described by **Gomez and Gomez(1984).**Treatment means were compared using the least significant differences test (LSD) .

Results and Discussion :

Effect of wheat cultivars :

Statistical analysis revealed that wheat cultivars significantly differed in spike length , number of grains/ spike, grains weight/ spike, 1000 grain weight, number of spikes/m2 and grain , biological yield / fad and harvest index of the study (Tables,1-9).Several investigators reported varietal differences in yield and yield attributes **(Shah *et al* (2006), Ouda *et al* (2007), Bayoumi *et al* (2008), Zedan *et al* (2009) and Swelam and Atta(2015))** . Sids 12 cultivar was significantly more number of grains/ spike (61.54) and spikes/ m2 (388.74) and heaviest weight of grains/ spike (3.04) than those other two cultivars Sakha 93 and Sakha 94. Generally, Sids 12 surpassed other tested cultivars (Sakha 93 and Sakha 94) for all characters except 100 grain weight. This result might reflect the different response, due to genetic factors, of the three tested cultivars to the environmental conditions. Sids 12 out yielded Sakha 93 in grain yield /fed by (17.4%) over two seasons . as well as Sakha 94 by (16.5 %) . This may be due to inherent differences between the cultivars in the yield components like the number of spikes /m^2, number of grains/ spike and grains weight /spike. Sakha 93 cultivar gave the highest values of 1000 grains weight (54.87g) over two seasons. While minimum values for these trait was noted Sakha 94 produced the lowest values of 1000

grains weight (49.78g).

Effect of irrigation intervals :

Differences among irrigation intervals of spike length, number of grains/ spike, weight of grain per spike, number of spike/ m2 , biological yield t/ fed , grain yield t/ fed and harvest index were significant . While number of spiklets per spike was not significantly by irrigation intervals. Irrigation intrvales (I_2) every 28 days gave the highest values in most characters. These results are in the same trend of the results obtained **by Soliman 2006, Tammam and Abdel-Rady (2010) and Swelam and Atta (2015) .**

Effect of sowing date :

According to the statistical analysis of obtained data significant differences were detected for all studied traits except harvest index. Maximum values were recorded when sowing on 15th November for weight of grain/spike, number of spikes/m^2, biological and grain yield. While, sowing date 30th November gave the highest values for spike length, number of spikelets/spike and number of grain/ spike. On the other hand, minimum values for number of grains/ spike, weight of grains / spike, seed index, biological yield and grains yield/fad. were noted when crop was planted on 30th November. The results indicated that crop planted on November 15, produced higher grain yield as compared to late and early planting (Tables,1-9). These results stand in harmony with those obtained by **Elsarag and Ismaiel (2013) and Qasim *et al* (2008).**

INTERACTION EFFECT :

Significant differences were observed between sowing dates with irrigation intervals on spike length, number of spikelets per spike , number of grain per spike , grain weight per spike, seed index, number of spikes/m^2, biological yield t/ fed , and grain yield t/ fed. Interaction between sowing dates and varieties was significant differences for all traits except for biological yield /fed., was non-significant. Also, irrigation and cultivars interaction was significant differences for number of spikelets /spike, number of grains /spike, number of spike/m^2, biological yield and grain yield /fed., while this interaction was non-significant for other traits. The high order interaction (SxIxV) in this study show significant differences for all studied traits except for 1000-grains weight was non-significant. Generally, Sids12 under sowing on 30th November and irrigation every 28days (I_2) followed by the same variety under sowing on 15th November and irrigation every 35 days gave the highest values in grain yield/feddan (2.97 and 2.93 t/fed.) respectively. Those results are agreement with those obtained by **El- Kalla *et al* (2010) and Tammam and Abdel rady (2010).**

Table (1): Mean spike length at harvest, in cm, as affected by sowing dates, irrigation intervals, wheat varieties and their interactions (combined analysis for 2012/013and 2013/014 seasons).

Sowing dates (S)	Irrigation intervals (I)	Varieties (V)			mean
		V_1	V_2	V_3	
S_1	I_1	10.43**	10.60	11.17	10.73**
	I_2	10.27	10.80	11.50	10.86
	I_3	1017	10.13	11.10	10.47
	mean	**10.29****	**10.51**	**11.26**	**10.69****
S_2	I_1	11.03	11.20	11.93	11.39
	I_2	10.13	10.80	11.77	10.90
	I_3	10.73	11.07	12.10	11.30
	mean	**10.63**	**11.02**	**11.93**	**11.20**
S_3	I_1	11.50	10.63	12.20	11.44
	I_2	11.53	11.43	11.97	11.64
	I_3	10.57	10.80	11.37	10.91
	mean	**11.20**	**10.96**	**11.84**	**11.33**
Mean of irrigation intervals	I_1	10.99	10.81	11.77	11.19**
	I_2	10.64	11.01	11.74	11.13
	I_3	10.49	10.67	11.52	10.89
Mean of varieties		**10.71****	**10.83**	**11.68**	**11.07**

L.S.D at 5% level for :

Sowing date (S)	0.11	S X I	0.26	S x I x V	0.44
Irrigation (I)	0.15	S x V	0.25		
Varieties (V)	0.15	I x V	NS		

Table (2): Mean number of spikelets per spike, as affected by sowing dates, irrigation intervals, wheat varieties and their interactions (combined analysis for 2012/013 and 2013/014 seasons).

Sowing dates (S)	Irrigation intervals (I)	Varieties (V)			mean
		V_1	V_2	V_3	
S_1	I_1	16.93*	16.87	16.53	16.78**
	I_2	17.33	16.60	15.97	16.63
	I_3	16.73	16.67	15.87	16.42
	mean	**17.00****	**16.71**	**16.12**	**16.61****
S_2	I_1	17.67	16.97	18.33	17.66
	I_2	17.13	17.57	17.33	17.34
	I_3	16.60	17.43	17.93	17.32
	mean	**17.13**	**17.32**	**17.87**	**17.44**
S_3	I_1	19.40	18.67	19.53	19.20
	I_2	18.53	19.00	19.33	18.96
	I_3	19.83	19.40	20.80	20.01
	mean	**19.26**	**19.02**	**19.89**	**19.39**
Mean of irrigation intervals	I_1	18.00*	17.50	18.13	17.88
	I_2	17.67	17.72	17.54	17.64
	I_3	17.72	17.83	18.20	17.92
Mean of varieties		**17.80**	**17.69**	**17.96**	**17.81**

L.S.D at 5% level for :

Sowing date (S)	0.31	S X I	0.53	S x I x V	0.70
Irrigation (I)	NS	S x V	0.40		
Varieties (V)	NS	I x V	0.40		

Table (3): Mean number of grain per spike, as affected by sowing dates , irrigation intervals, wheat varieties and their interactions (combined analysis for 2012/013and 2013/014 seasons).

Sowing dates (S)	Irrigation intervals (I)	Varieties (V)			mean
		V_1	V_2	V_3	
S_1	I_1	53.50**	54.83	64.67	57.67**
	I_2	50.17	52.17	57.50	53.28
	I_3	56.67	51.50	61.17	56.44
	mean	**53.44****	**52.83**	**61.11**	**55.8***
S_2	I_1	49.17	50.50	59.17	52.94
	I_2	60.83	55.83	61.83	59.50
	I_3	49.33	55.67	61.17	55.39
	mean	**53.11**	**54.00**	**60.72**	**55.94**
S_3	I_1	48.33	52.83	60.83	54.00
	I_2	50.00	54.17	58.50	54.22
	I_3	57.83	60.00	69.00	62.28
	mean	**52.06**	**55.67**	**62.78**	**56.83**
Mean of irrigation intervals	I_1	50.33**	52.72	61.56	**54.87****
	I_2	53.67	54.06	59.28	**55.67**
	I_3	54.61	55.72	63.78	**58.04**
Mean of varieties		**52.87****	**54.17**	**61.54**	**56.19**

L.S.D at 5% level for :

Sowing date (S)	0.81	S X I	1.07	S x I x V	2.67
Irrigation (I)	0.62	S x V	1.54		
Varieties (V)	0.89	I x V	1.54		

Table (4): Mean weight of grain per spike, (g), as affected by sowing dates, irrigation intervals, wheat varieties and their interactions (combined analysis for 2012/013and 2013/014 seasons).

Sowing dates (S)	Irrigation intervals (I)	Varieties (V)			mean
		V_1	V_2	V_3	
S_1	I_1	2.75**	2.51	2.91	2.72
	I_2	2.89	2.45	3.10	2.81
	I_3	2.54	2.42	3.11	2.69
	mean	**2.73****	**2.46**	**3.04**	**2.74****
S_2	I_1	2.53	2.58	3.24	2.79
	I_2	2.73	2.58	3.16	2.82
	I_3	2.82	2.52	3.09	2.81
	mean	**2.69**	**2.56**	**3.16**	**2.81**
S_3	I_1	2.30	2.18	2.80	2.43
	I_2	2.46	2.50	2.82	2.59
	I_3	2.53	2.61	3.14	2.76
	mean	2.43	2.43	2.92	**2.59**
Mean of irrigation intervals	I_1	**2.52**	**2.43**	**2.98**	**2.64****
	I_2	2.69	2.51	3.03	**2.74**
	I_3	2.63	2.52	3.11	**2.75**
Mean of varieties		**2.62****	**2.48**	**3.04**	**2.71**

L.S.D at 5% level for :

Sowing date (S)	0.07	S X I	0.11	S x I x V	0.16
Irrigation (I)	0.06	S x V	0.09		
Varieties (V)	0.06	I x V	NS		

Table (5): Mean seed index (1000-grain weight), ing, as affected by sowing dates, irrigation intervals, wheat varieties and their interactions (combined analysis for 2012/013and 2013/014 seasons).

Sowing dates (S)	Irrigation intervals (I)	Varieties (V)			mean
		V_1	V_2	V_3	
S_1	I_1	59.00	50.83	54.67	54.83**
	I_2	58.33	53.33	55.00	55.55
	I_3	56.67	50.00	52.17	52.95
	mean	**58.00***	**51.39**	**53.94**	**54.44****
S_2	I_1	55.67	50.67	54.33	53.56
	I_2	54.00	49.17	53.33	52.17
	I_3	55.67	49.17	54.83	53.22
	mean	**55.11**	**49.67**	**54.17**	**52.98**
S_3	I_1	50.33	45.17	46.67	47.39
	I_2	53.33	50.17	52.50	52.00
	I_3	50.83	49.50	49.00	49.78
	mean	**51.50**	**48.28**	**49.39**	**49.72**
Mean of irrigation intervals	I_1	55.00	48.89	51.89	**51.93***
	I_2	55.22	50.89	53.61	**53.24**
	I_3	54.39	49.56	52.00	**51.98**
Mean of varieties		**54.87****	**49.78**	**52.50**	**52.38**

L.S.D at 5% level for :

Sowing date (S)	1.18	S X I	2.00	S x I x V	NS
Irrigation (I)	1.15	S x V	2.05		
Varieties (V)	1.18	I x V	NS		

Table (6): Mean number of spikes, per m^2, as affected by sowing dates, irrigation intervals, wheat varieties and their interactions (combined analysis for 2012/013and 2013/014 seasons).

Sowing dates (S)	Irrigation intervals (I)	Varieties (V)			mean
		V_1	V_2	V_3	
S_1	I_1	359.50**	347.67	382.00	363.06*
	I_2	350.00	356.00	381.33	362.44
	I_3	369.50	330.00	378.33	359.28
	mean	**359.67****	**344.56**	**380.56**	**361.59***
S_2	I_1	359.33	352.67	386.67	366.22
	I_2	360.67	365.17	397.67	374.50
	I_3	343.33	352.17	388.67	361.39
	mean	**354.44**	**356.67**	**391.00**	**367.37**
S_3	I_1	369.50	331.33	395.50	365.44
	I_2	373.00	364.00	393.83	376.94
	I_3	330.83	345.50	394.67	357.00
	mean	**357.78**	**346.94**	**394.67**	**366.46**
Mean of irrigation intervals	I_1	362.78**	343.89	388.06.	**364.91****
	I_2	361.22	361.72	390.94	**371.30**
	I_3	347.89	342.56	387.22	**359.22**
Mean of varieties		**357.30****	**349.39**	**388.74**	365.14

L.S.D at 5% level for:

Sowing date (S)	3.75	S X I	6.50	S x I x V	9.78
Irrigation (I)	3.75	S x V	5.65		
Varieties (V)	3.26	I x V	5.65		

Table (7): Mean biological yield, ton per faddan, as affected by sowing dates, irrigation intervals, wheat varieties and their interactions (combined analysis for 2012/013and 2013/014 seasons).

Sowing dates (S)	Irrigation intervals (I)	Varieties (V)			mean
		V_1	V_2	V_3	
S_1	I_1	7.21**	7.07	8.31	7.53**
	I_2	7.44	7.37	8.65	7.82
	I_3	6.92	7.45	7.90	7.43
	mean	7.19	7.30	8.29	7.59**
S_2	I_1	6.94	7.62	8.02	7.53
	I_2	7.75	7.47	8.65	7.96
	I_3	7.25	7.38	8.35	7.66
	mean	7.31	7.49	8.34	7.72
S_3	I_1	7.01	7.39	8.50	7.63
	I_2	6.82	7.09	7.85	7.25
	I_3	6.72	7.32	7.98	7.34
	mean	6.85	7.27	8.11	7.41
Mean of irrigation intervals	I_1	7.05**	7.36	8.28	7.56**
	I_2	7.34	7.31	8.38	7.68
	I_3	6.96	7.38	8.08	7.47
Mean of varieties		7.12**	7.35	8.25	7.57

L.S.D at 5% level for :

Sowing date (S)	0.16	S X I	0.21	S x I x V	0.30
Irrigation (I)	0.12	S x V	NS		
Varieties (V)	0.10	I x V	0.17		

Table (8): Mean grain yield per faddan,(ton), as affected by sowing dates, irrigation intervals, wheat varieties and their interactions (combined analysis for 2012/013and 2013/014 seasons).

Sowing dates (S)	Irrigation intervals (I)	Varieties (V)			mean
		V_1	V_2	V_3	
S_1	I_1	2.34**	2.38	2.62	2.45**
	I_2	2.47	2.29	2.87	2.54
	I_3	2.41	2.39	2.67	2.49
	mean	2.41**	2.36	2.72	2.49**
S_2	I_1	2.57	2.29	2.88	2.58
	I_2	2.37	2.56	2.67	2.53
	I_3	2.45	2.40	2.93	2.59
	mean	2.47	2.42	2.83	2.57
S_3	I_1	2.10	2.25	2.66	2.34
	I_2	2.18	2.42	2.97	2.52
	I_3	2.23	2.38	2.55	2.39
	mean	2.17	2.35	2.73	2.42
Mean of irrigation intervals	I_1	2.34*	2.31	2.72	2.46**
	I_2	2.34	2.42	2.84	2.53
	I_3	2.36	2.39	2.72	2.49
Mean of varieties		2.35**	2.37	2.76	2.49

L.S.D at 5% level for:

Sowing date (S)	0.04	S X I	0.08	S x I x V	0.12
Irrigation (I)	0.05	S x V	0.07		
Varieties (V)	0.04	I x V	0.07		

Table (9): Mean harvest index, as affected by sowing dates, irrigation intervals, wheat varieties and their interactions (combined analysis for 2012/013and 2013/014 seasons).

Sowing dates (S)	Irrigation intervals (I)	Varieties (V)			mean
		V_1	V_2	V_3	
S_1	I_1	0.34**	0.32	0.35	0.34
	I_2	0.33	0.32	0.31	0.32
	I_3	0.35	0.32	0.34	0.34
	mean	**0.34****	**0.32**	**0.33**	**0.33**
S_2	I_1	0.34	0.34	0.33	0.34
	I_2	0.33	0.31	0.33	0.32
	I_3	0.34	0.33	0.35	0.34
	mean	**0.34**	**0.32**	**0.34**	**0.33**
S_3	I_1	0.31	0.33	0.35	0.33
	I_2	0.31	0.32	0.34	0.32
	I_3	0.33	0.33	0.32	0.33
	mean	**0.32**	**0.32**	**0.34**	**0.33**
Mean of irrigation intervals	I_1	0.33	0.33	0.34	**0.34****
	I_2	0.32	0.32	0.33	**0.32**
	I_3	0.34	0.32	0.34	**0.33**
Mean of varieties		**0.33****	**0.32**	**0.34**	0.33

L.S.D at 5% level for :

Sowing date (S)	NS	S X I	NS	S x I x V	0.02
Irrigation (I)	0.01	S x V	0.01		
Varieties (V)	0.01	I x V	NS		

REFERENCES:

Abd El-Ghafar, M. M. (2005). Characters behavior and performance of some newly released wheat varieties under different environmental conditions. M. Sc. Thesis, Fac. Of Agric. El-Fayoum, Cairo Univ., Egypt.

Abdelnour ; A.R.Nadya and S. H. Fateh. (2011). Influence of sowing date and nitrogen fertilization on yield and its components in some bread wheat genotypes. Egypt. Agric. Res., 89 (4): 1413- 1433.

Bayoumi, T.Y.; H. Eid and E.M. Metwali (2008). Application of physiological and biochemical indices as a screening technique for drought tolerance in wheat genotypes. African Journal of Biotechnology, 7(14):2341-2352.

El-Kalla, S.E; A.A. Leillah; M.I. El-Emery and A.M.S. Kishk (2010). Performance of some wheat (*Triticnm aestivum L.*) cultivars under late sowing in newly reclaimed soils. J. Plant Production, Mansoura Univ; 1 (5):689-697.

El-Gizawy, N.K.H. (2009). Effect of planting date and fertilizer application on yield of wheat under no till system.World. J. Agric. Sci., 5(6):777-783.

El-Sarag, E.I and R.I.M. Ismaeil (2013). Evaluation of some bread wheat cultivars productivity as affected by sowing dates and water stress in

semi-arid region. Asian Journal of Crop Science, 5(3): 167-178.

Gomez, K. A. and A. A. Gomez (1984). Statistical Procedures for Agricultural Research. John Wiley and Sons, Inc. New York.

Ouda, S.A.; T. El-Mesiry and M.S. Gaballah (2007) . Increasing water use efficiency for wheat grown under water stress conditions. J. of Applied Sci. Res., 3(12): 1766-1773.

Qasim,M.; M.Qamer; Faridullah and M.Alam (2008) .Sowing dates effect on yield and yield component of different wheat varieties. J. Agric. Res., 46(2): 135-140.

Shah, W.A.; J. Bakht; T. Ullah; A. Khan; M. Zubair and A. Khakwani (2006). Effect of sowing dates on the yield and yield components of different wheat varieties. Agron. J., 5(1): 106-110.

Sharaan, A. N.; F. S. Abd El-Samie and I. A. Abd El-Gawad (2000). Response of wheat varieties (*Triticum aestivum L.*) to some environmental influences. II- Effect of planting date and drought at different plant stages on yield and its components. Proc. 9th Conf. Agron., Minufiya Univ., 1-2 Sept. 2000: 1-15.

Soliman, E. S (2006). Productivity of some gemmiza wheat cultivars under different sowing dates and SN fertilization levels. J. Agric. Sci. Mansoura Univ., 31(11): 6873-6885.

Swelam,A; and Y. Atta (2015) . Applying deficit irrigation as an alternate option to adapt with water supply shortage in Nile Delta. New Horizons in Sci. & Technology (NHS&T), . 1(3):84-94.

Tammam, A.M. and A.G. Abdel-Rady (2010). Inhiritance of yield and its components in some bread wheat (*Triticum aestivum*) crosses under heat stress. Egypt. J. Agric. Res., 88 (4): 1239-1257.

Tammam, A.M. and M.B. Tawfelis (2004). Effect of sowing date and nitrogen fertilizer levels in relation to yield and yield components of durum wheat (*Triticum turgidum var, durum*) under Upper Egypt environments.J. Agric. Sci., Mansoura Univ, 29(10):5431-5442.

Wallace, D. J.; J. L. Ozburn and H. M. Munger (1972). Physiological genetics of crop yield.Adv. Agron., 24: 92-146. (Cited after sinha, S. K., FAO Consultant, FAO, Via delle Termedi Caracalla,00100 Rome, Italy). (C.F. Hassan, M. Z.,1972: effect of plant population and harvesting time on yield and its components of two chickpea varieties, M. Sc. Thesis, Fac. Of Agric., Cairo Univ., Egypt).

Zeidan, M.E .; I. M. Abdel-Hameed; A. H. Bassiouny and A. A.Waly .(2009). Effect of irrigation intervals , nitrogen and organic fertilization on yield ,yield attributes and crude protein content of some wheat cultivars under newly reclaimed saline soil condions. 4th Conf. on Recent Technologies in A griculture.

تأثير ميعاد الزراعة وفترات الرى على المحصول ومكوناته لبعض أصناف القمح

فوزى سيد عبد السميع ، اكرام على مجاور ، احمد محمد على الشريف، ايهاب سعيد عبد العزيز

قسم المحاصيل – كليه الزراعة – جامعة الفيوم

اجريت هذه الدراسة من خلال اقامة تجربتان حقليتان بمزرعة التجارب بكلية الزراعة – جامعة الفيوم بناحية دمو وذلك خلال الموسمين ٢٠١٢/٢٠١٣، ٢٠١٣/٢٠١٤ لدراسة سلوك ثلاث أصناف من القمح (سخا ٩٣، سخا ٩٤، سدس ١٢) عند زراعتها فى الاراضى الجديدة المستصلحة حديثا فى ثلاث مواعيد زراعة مختلفة (١ نوفمبر، ١٥ نوفمبر، ٣٠ نوفمبر) مع استخدام ثلاث فترات رى مختلفة (٢١ يوم، ٢٨ يوم، ٣٥ يوم).

وقد استخدم تصميم القطع المنشقة مرتين لتنفيذ التجربة حيث شغلت مواعيد الزراعة القطع الرئيسية وفترات الرى القطع المنشقة الاولى بينما تم توزيع الأصناف فى القطع المنشقة الثانية تم دراسة صفات المحصول اثناء الحصاد وذلك للوصول للهدف من الدراسة وهو تحديد أفضل ميعاد للزراعة مع افضل فترة للرى وافضل صنف ومن خلال دراسة التفاعل بين عوامل الدراسة المختلفة يمكن الوقوف على افضل توليفة لزراعة القمح تحت هذه الظروف.

ويمكن تلخيص أهم النتائج المتحصل عليها فيما يلى:

١- اظهرت النتائج تأثيرا معنويا للأصناف وفترات الرى ومواعيد الزراعة على صفة المحصول ومكوناته، واحتل الصنف سدس ١٢ المرتبة الأولى فى كل الصفات.

٢- أظهرت فترات الرى تأثيرا معنويا على كل الصفات ماعدا عدد السنيبلات فى السنبلة وأعطى الرى كل ٢٨ يوم أعلى القيم لمعظم الصفات يليه الرى كل ٣٥ يوم.

٣- كان تأثير مواعيد الزراعة معنويا على كل الصفات ماعدا دليل الحصاد وسجلت أعلى القيم من الزراعة فى ١٥ نوفمبر لمعظم الصفات كما اتضح ذلك فى صفة محصول الفدان من الحبوب مقارنة بالموعد المتأخر والمبكر.

٤- أظهرت التفاعلات المختلفة بين المعاملات المختلفة تأثيرا معنويا على كل الصفات فيما عدا التفاعل بين فترات الرى والأصناف على صفة طول السنبلة ووزن حبوب السنبلة ودليل البذرة ودليل الحصاد، وعموما أعطى الصنف سدس ١٢ عند زراعة فى ٣٠ نوفمبر والرى كل ٢٨ يوم يليه نفس الصنف مع الزراعة ١٥ نوفمبر والرى كل ٣٥ يوم تفوقا فى محصول الفدان من الحبوب (٢,٩٧ طن/فدان و ٢,٩٣طن/فدان).