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UTILIZATION OF SOME AGRICULTURE PRACTICES TO IMPROVE SOME WHEAT CULTIVARS PRODUCTIVITY. I- YIELD AND ITS COMPONENTS.

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ABSTRACT

Two field experiments were conducted at extension farm, in El-Mansoura Agric. Center, Dakahlia district, Egypt during 96/1997 and 97/1998 seasons to study the effect of fertilization treatments, foliar application times on performance of some wheat cultivars as well as their interaction on growth yield and yield components. Also, to study the interrelationship between grain yield/fad and yield components through simple correlation coefficients multiple linear regression and stepwise regression analysis the trails were arranged in a strip plot design with four replications. The main findings could be summarized as follows:

1-The biological fertilizer of Syrialin + Phosphorin (400 gm/fad) + 40 m^3 Farmyard manure maximized flag leaf area, plant height, number of tillers and spikes, spike length, grain weight/spike, number of grains/spike, protein percentage, grain and straw yields/fad compared with other fertilizer treatments in both seasons.

2-Foliar application of Super Grow at tillering + elongation stages produced highest values of flag leaf area plant height number of tillers and spikes /m^2 and grain yield/fad compared with other times of applications. Meanwhile, foliar spraying at heading and/or tillering + elongation stages significantly increased 1000 grain weight, protein percentage and straw yield/fad without significant differences between them in both seasons.

3-The studied wheat cultivars markedly varied in all estimated characters. Sids 8 cultivar surpassed the other two cultivars i.e. Sakha 69 and Gemmaza 3 in flag leaf area, spike length, number of spikelets and grains number/spike, 1000 -grain weight, grain protein percentage and grain yield/fad. However, Gemmaza3 cultivar exceeded Sakha 69 and Sids8 cultivars in plant height, number of tillers and spikes/m^2, grain weight/spike and straw yield/fad in both seasons.

4-The interaction between fertilization treatments and wheat cultivars showed significant effect on number of tillers and spikes/m^2, grain and straw yields/fad in both seasons. The interaction between times of foliar spraying of Super Grow and wheat cultivars had a significant effect on number of grains/spike, 1000-grain weight, grain and straw yields/fad in both seasons.

5-A positive and significant correlation coefficients was found between grain yield/fad and each of plant height, number of tillers/m^2, flag leaf area, spike length, spike weight, spikes number /m^2 , spikelets number /spike, grains number / spike, grain weight / spike and 1000-grain weight.

6-Multiple linear and stepwise regression analysis indicated that plant height (3.83 % , 6.06%) number of spikes /m^2 (69.64% , 77.93 %)and grain weight

/spike (56.66% , 63.99 %)had high relative contributing towards grain yield/fad in prediction equation, respectively.

In genera, it could be summarized that for maximizing grain/fad per unit area by using Syrian + Phosphorin (400 mg/fad)+40m^3 Farmyard manure and foliar application (Super Grow) at tillering + elongation stages and using sides 8 cultivar was recommended treatment under the environment condition of Dakahlia district.

INTRODUCTION

Wheat (*Triticum aestivum* , L.) is considered one of the main cereal crops in the world as well as Egypt and Libya. The importance of wheat as a major food source for man in many countries has increased consistently in the last decade. Increasing wheat productivity is a national target to fill the gap between production and consumption. The increases in wheat production through using the recommended biofertilization treatments such as organic fertilizer or bacteria that fixe nitrogen as well as time of foliar spraying of macro and microelements on performance of some wheat cultivars.

With regard to the effect of different fertilization treatments, application of FYM from 20 to 60 m^3 / fad significantly increased plant height, flag leaf area, number of tillers/m^2 (Dawood *et al.*,1992), grain and straw yields/fad (Sabrah *et al* ., 1993 ; EL Bahgoury *et al.*, 1998 and Sharief *et al.*, 1998). Several free living and availability bacteria species can fix atomespheric nitrogen and availability phosphorus which are phosphorin, Ahmed (1995) stated that Azotobacters enhanced wheat plant height, flag leaf area, tillering, yield components, grain and straw yields / fad. Kaawther Rabie *et al.* (1995) reported that grain wheat inoculated with Azotobacter chrococcum and/or Azospirillium brasilense increased plant height, percentage of fruitful tillers, number of spikes, weight of spikes and grain yield/plant. El-Nagar (1999) showed that inoculation wheat with phosphatic biofertilization led to significant increases for plant height at blooting and harvest stages, grain and straw yields/fad as well as yield components. Sharief *et al.*, (1998) reported that, Azotobacters and Azosprillium inoculation enhanced wheat plant height, flag leaf area, tillering, yield components, grain and straw yields/fad. Sultan *et al.*, (1999) concluded that inoculation of wheat grains with Azospirillium sp. markedly increased plant height, number of grains/spike, grain weight/spike, 1000-grain weight , grain and straw yields/fad as well as protein percentage. Sharief *et al.*, (2000) found that biological fertilizer of Syrialin + Phosphorin + 50 kg N/fad significantly resulted in tallest plants, highest values of flag leaf area, grain number/spike, heaviest grains weight, protein percentage, grain, straw and protein yields/fad. They added that a positive and significant correlation coefficients was found between grain yield/fad and flag leaf area, spike length, spike weight, number of spikes/m^2, number of grains /spike and 1000-grain weight. Multiple linear regression analysis indicated that flag leaf area (R^2=9.75%) number of spikes/m^2 (R^2=14.29%) and grain weight/spike (R^2=23.3%) were the most important variables toward grain yield/fad.

With respect to times of foliar spraying effect, Badawi *et al.* (1988) reported that time of foliar sprayings had a significant effect of tillers and

spikes number/plant, grain number/spike, grain weight/spike, grain and straw yields/fad. El-Awday and Abd El-Naim (1990) reported that maximum yield of wheat was recorded from double foliar application of 0.4% $ZnSO_4$ at tillering and shooting stages. El-Kalla and Leilah (1998) found that foliar spraying of foliar X-250 at 40 + 80 days after sowing produced highest grain and straw yields/ha under the environmental conditions of Al-Arish disrict. Gobarh (1998) found that highest grain and straw yield/fad produced from spraying 0.6% $ZnSO_4$ at botting stage. Sharief *et al.* (2000) stated that foliar application of Mn, Fe and Cu in combination at both tillering and elongation stages significantly maximized grain, straw and protein yields/fad.

Concerning cultivars performance, cultivar differences in grain, straw and protein yields/fad (El-Karamity, 1998). The differences between cultivars were significant in number of grains/spike and 1000-grain weight (Abou-Grab and Darwish, 1998), number of tillers/plant, number and weight of grains/spike (El-Hefnawy *et al.*, 1991 and Said *et al.*, 1999), plant height and spike length (Shalaby *et al,* 1992 and Ashour and Abd El-Haleem, 1995) and flag leaf area (Sutan *et al.*, 1994 and Sharief *et al.*, 1998).

With respect to the interaction between biofertilization and cultivars, Millet *et al.* (1984) stated that wheat cultivars which inoculated with Azospirillium sp. produced more grains and/or spikes number/m^2 and could fix nitrogen in the presence of high concentrates of ammonium and could extract NH_4. Sharief *et al.* (1998) reported that the interaction between wheat cultivars and biofertilization had a significant effect on plant height and grain yield/fad. In addition, El-Nagar (1999) found that inoculation grains under different phosphoric fertilizer increase plant height, grain and straw yields/fad, 1000-grain weight, spike number/m^2 and spike length.

The objectives of this investigation was to study the utilization of some agriculture practices to improve wheat productivity through different fertilization treatments, time of foliar nutrients on some wheat cultivars as well as their interaction on growth, yield and yield components. Also, study the interrelationship between grainyield/fad and its components through correlation coefficient and multiple as well as stepwise regression analysis.

MATERIALS AND METHODS

Two field experiments were conducted at Mansoura Center, Dakahlia Governorate, in extension field during 96/1997 and 97/1998 seasons. This investigation was aimed to study the effect of different fertilizer treatments i.e. without, recommended NPK (70 kg N/fad, 23 kg P_2O_5/fad and 25 kg K_2O/fad), 40 m^3 farmyard (FYM) manure/fad, inoculation grains of Syrialin (400 gm/fad) + phosphorin (400 gm/fad) + 40 m^3 FYM, inoculation grains of syrialin (800gm/fad) + phosphorin (800gm/fad) + 40 m^3 FYM and times of foliar nutration of Super Grow at tillering (40 days from sowing), at elongation (60 days from sowing), at heading (80 days from sowing), at tillering + elongation stages, at tillering + heading stages on growth, yield and yield components of three wheat cultivars i.e. Sakha 69, Sids8 and Gemmiza 3.

A strip split plot design with four replicates was used. The horizontal plots were devoted as above mentioned six fertilization treatments. The

vertical plots were allocated with the five times of foliar application of Super Grow nutrient as above mentioned. The sub plots were occupied by the choosen three wheat cultivars, namely Sakha 69, Sids8 and Gemmiza 3. The sub plots area was 3.0 x3.5 m (10.5 m^2) i.e. 1/400 fad. The recommended of nitrogen fertilization in the form of urea (46.5% N) was used at a rate of 70 kg N/fad and applied in two equal portions with the first watering and before the second watering calcium superphosphate at a rate of 150 kg /fad (15.5% P_2O_5) and potassium sulphate at a rate of 50 kg/fad (50%K_2O) were added during land preparation Bacterial inoculation of wheat grains was done immediately before sowing irrigation. Biofertilization included Azotobacter, Azospirillium and Bacillus bacteria and obtained from ARC Ministry of Agriculture. Organic fertilizer as farmyard manure was taken from dairy farm Agric. Experiment Station Fac. Of Agric. Mansoura Univ. and it contents showed in Table 1. Foliar application of Super Grow 20-20-20 at a rate of 50 gm/300 liter water was used in this study. Super Grow consists of 20% of total nitrogen, 20% available phosphoric acid (P_2O_5) 20% soluble potash (K_2O), 0.15% Fe, 0.05% Mn, 0.05% Cu, 0.005% Mo, 0.2% S, 0.15%Zn, 0.05% Mg, 0.05% Ca and 0.02% B. Grains of wheat cultivars were obtained from Wheat Breeding Section, ARC. The description of tested cultivars are presented in Table2. The experimental soil was loamy clay texture, the mechanical and chemical analysis of experimental soil are presented in Table 3. In both seasons, wheat was preceded by maize. Grains of wheat cultivars were sown on mid November at a rate of 70kg/fad in both seasons.

At the end ot the heading stage, ten guarded plants were taken at random from each sub plot to determine the following characters:
1-Average flag leaf area (cm^2) was determined by multiplying blade length x blade width by a constant (0.75) according to Owen (1968).

At harvest ,ten guarded plants of one square meter of each sub plots were taken at a random to estimate the following characters :1- Number of tillers/m^2.2-spike length (cm) as average of ten spike. 3-Spike weight as average of weight of ten spikes.4-Grain number/spike as average of weight grains per ten spikes.5-Thousand grain weight. 6-Grain yield in ton/fad was determined from plants of one square meter of each sub plot which harvested tied and left to dry then after it was threshed and grain at 13% moisture were weight in kg , then the weight was converted to ton /fad.7-Straw yield in ton/ha , straw of previous sample was estimated in kg/m^2 then it was converted to ton/ha.8- Crude protein percentage was estimated according to A .O .A .C .method (1980).

Data of the two seasons were subjected to the proper statistical analysis of the technique of analysis of variance of strip split plot design as mentioned by Gomez and Gomez (1984).Treatments means were compared using New Least Significant Differences (N-LSD)test at 5 % and 1% level probability. Simple correlation coefficients and multiple linear regression analysis were done to study the relationship between grain yield /fad and yield attributes as published by Snedecor and Cochran (1981). Stepwise multiple linear regression according to Draper and Smith (1966) was carried out to determine the variables accounting for the majority of the total yield variability.

Table 1 :Chemical analysis of the Farmyard manure over both seasons.

PH	Organic Carbon %	Total Nitrogen %	C/N Ratio %	Total Phosphorus %	Total Potassium %
7.21	19.35	1.46	13.1	0.26	1.41

Table 2: Cultivars characters

Cultivars	Plant height	Rust disease	Earliness	Drought	Bedigree
Sakha 69	100-110 cm	Resistant	Medium	-	Lnia/RL4220//7C/3/yr"S" CM 15430-251 S-05
Sids 8	105-113 cm	-	Long	Tolerance	Maya "S"//CMH 74 A. 592/3/Sakha 8*2 SD 10002
Gemmiza 3	115-122 cm	-	Medium	Tolerance	Bb/7c2//4504Kal 3/5 Sakha8 /4/Rrv/Ww15/3/Bj "S"//on/3 Bon. Gm 4024-1 Gm-13 Gm-2Gm-0Gm

Table3: Mechanical and chemical analysis of experimental soil in both seasons.

Seasons	Mechanical analysis				Chemical analysis		
	Coarse sand %	Fine sand %	Silt %	Clay %	Organic matter %	PH	Total N%
1996/97	5.49	19.80	36.29	38.42	1.88	7.80	0.122
1997/98	6.59	18.80	40.41	34.20	1.81	7.75	0.117

RESULTS AND DISCUSSION

A-Fertilization treatments effects:

Data presented in Tables 4 through 5 indicated that fertilization treatments significantly affected flag leaf area, plant height, number of tillers/m^2 and spikes number/m^2,spike length, spikelets number/spike , number of grains/spike, grain weight/spike,1000 grain weight ,protein percentage ,grain and straw yields/fad in both seasons. Inoculation grains with Syrialin + Phosphorin (at 400 gm/fad) +40m^3 farmyard manure significantly maximized flag leaf are, number of tillers /m^2 ,grain weight/spike and grain yield/fad in both seasons compared with other treatments. Also increased plant height, number of spikelets/spike, number of grains/spike, protein percentage and straw yield/fad but insignificant with addition of Syrialin + Phosphorin (at 600 or 800 gm/fad) + 40 m^3 farmyard manure compared with other treatments in both seasons. However, the lowest values of all studies characters produced from without fertilization treatments. The increases in yield components due to syrialin and phosphorin inoculation may be due to the effect of fixed nitrogen that play a role in growth stimulation such as plant height, flag leaf area and number of tillers/m^2 which in turn building up to the photosyntatic area and more dry matter accumulation. In addition ,the increase in grain yield due to biofertilization may be due to the effect of biofertilizer in increases of endogenous photosynthesis rate and translocation and accumulation reflected increases in yield components

(Ahmed ,1995) such as number of spikes/m^2 and grain weight/spike(Table4),1000-grain weight (Table5)reflected increases in grain yield /fad. These results in harmony with those reported by Dawood *et al* .(1992), Sharief *et al.*(1998)and El-Naggar(1999).

B-Time of foliar spraying effects:

Super Grow foliar application at different stages significantly affected flag leaf area , plant height, number of tillers and spikes /m^2, number of spikelets and grains /spike ,1000 grain weight ,grain protein percentage, grain and straw yields /fad in both seasons and grain weight/spike in the second season only as presented in Tables 4 through 6. However, spike length insignificantly affected in both seasons. Foliar application of Super Grow at tillering +elongation stages maximized values of flag leaf area, plant height, number of tillers and spikes/m^2 and grain yield/fad compared with other times of spraying in both seasons. Meanwhile, foliar spraying of Super Grow at elongation, heading, tillering + elongation and tillering + heading stages significantly maximized number of spikelets/spike and number of grains/spike in both seasons without significant differences. Foliar application of Super Grow at heading or at tillering + elongation stages significantly increased 1000-grain weight without significant differences between in both seasons. However ,foliar application of Super Grow at heading stages produced highest percentage of protein in grains in both seasons. Whilst, the lowest values of aforementioned characters were obtained from foliar application of Super Grow at tillering stages in both seasons. The increase in grain yield due to foliar application of Super Grow at tillering + elongation stages may be attributes to macro and micro-elements in Super Grow such as Fe, Mn, Cu, Mo and B that applying micronutrients delayed the senescence of wheat plants through an increase in the level of IAA, chlorophyll content and NAR in leaves and increased the total dry matter accumulation reflected increase in yield and yield components. The increase in growth such as flag leaf area, plant height and number of tillers/m^2 (Table4) due to macro and micro foliar spraying at tillering + elongation stages may be attributed to growth stimulation which in turn encourage building up the photosynthitic capacity and more dry matter accumulation reflected increases in grains number/spike, 1000-grain weight (Table 5 and 6) and then grain yield/fad. These results in a good agreement with those reported by El-Awady and Abd El-Naim (1990); El-Kalla and Leilah (1998); Gobarh (1998) and Sharief *et al.*(1998).

C- Cultivar performance:

Data presented in Tables 4 through 6 show that tested cultivars significantly differed in flag leaf area ,plant height, number of tillers and spikes/m^2 ,spike length ,number of spikelets and grains /spike, grain weight/spike ,1000-grain weight ,grain protein percentage , grain and straw yields/fad in both seasons .Sids8 cultivar surpassed Sakha 69 and Gemmiza 3 cultivars in flag leaf area ,spike length ,number of spikelets and grains/spike,1000-grain weight, grain protein percentage and grain yield/fad in both seasons. However, Gemmiza 3 cultivar exceeded Sakha 69 and Sids

8 cultivars in plant height , number of tillers and spikes /m^2, grain weight/spike, and straw yield/fad. There is insignificant differences between Sakha 69 and Gemmiza 3 cultivars in number of grains/spike. The varietal differences in grain yield/fad may be attributed to genetical factors and environmental condition which effected on yield attributes. These results in harmony with those reported by Abu-Grab and Darwish (1998) ;El-Karamity (1998)and Sharief *et al.*(1998).

D-Significant interaction effects:

The interaction between fertilization treatments and wheat cultivars significantly affected number of tillers/m^2 , number of spikes/m^2 ,grain and straw yields/fad in both seasons as shown in Table 7. Maximum number of tillers/m^2 were obtained from inoculation of Syrialen + Phosphorin at 400 gm/fad + Farmyard manure at 40m^3/fad and sowing Sids 8 or Gemmiza 3 cultivars without significant differences between in both seasons. Highest grain and straw yields/fad produced from biofertilization of Syrialen+Phosphorin at 400 gm/fad or at 600 gm/fad or at 800 gm/fad + addition 40 m^3/fad of farmyard manure with sowing Sakha 69, Gemmeza 3 or Sids 8 cultivars, respectively with insignificant differences between them in both seasons. However, the lowest number of tillers and spikes/m^3, grain and straw yields/fad were obtained from without fertilization and sown Sakha 69 or Sids 8 cultivars in both seasons. Similar conclusions were reported by Millet *et al.* (1984) and Sharief *et al.* (1998).

The interaction between times of application of Super Grow and some wheat cultivars significantly affected number of grains/spike, 1000-grain weight, grain and straw yields/fad in both seasons as presented in Table 8. Maximum number of grains/spike and heaviest grains weight were produced from foliar application at heading or at tillering + elongation stages and sown Sids 8 cultivar in both season, which were 54.3 or 54.2 grains/spike and 51.1 or 54.4 gm, respectively in the two seasons. The interaction between times of foliar spraying at tillering + elongation stages and sown Sids 8 or Gemmeza 3 cultivars in both seasons produced highest grain yield/fad, which were 7.37 and /or 7.49 ton/fad, respectively. The interaction between times of foliar spraying at heading stage or at tillering + elongation stages and sown Gemmeza 3 cultivar produced highest straw yield/fad, which were 3.87 and/or 3.89 ton/fad in the two seasons, respectively. However, the lowest number of grains/spike were produced from foliar spraying at tillering stage with sown Sakha 69 or Gemmeza 3 cultivars in both seasons. However, foliar spraying at tillering stage with sown Sakha 69 were produced the lowest weight of 1000 grains and lowest grain and straw yields/fad in both seasons.

In general it could be summarized that for maximizing grain yield of wheat per fad by using biofertilization of Syrialin and Phosphorin at 400 gm/fad + 40 m^3 of Farmyard manure and foliar spraying of Super Grow at tillering + elongation stages of Sids 8 cultivar under the environmental condition of EL-Dakahlia district.

Table 4: Means of flag leaf area, plant height ,number of tillers and spikes/m^2 as affected by fertilization treatments, time of foliar spraying of wheat cultivars during 1996/97 and 1997/98 seasons.

Characters	Flag leaf area (cm^2)		Plant height (cm)		Tillers No./m^2		Spikes No./ m^2	
Treatments	96/97	97/98	96/97	97/98	96/97	97/98	96/97	97/98
A: Fertilization treatments								
Without fertilization	26.2	26.4	82.8	82.7	240.9	244.2	197.5	194.5
NPK fertilizers, recom.	43.5	46.0	111.6	112.3	393.6	403.7	329.4	331.5
Organic fertilizers	37.1	40.6	110.1	111.1	373.6	387.0	327.4	329.3
S 400+ P 400 +O 40	45.9	48.8	112.3	113.2	423.0	430.2	353.7	355.8
S 600+ P 600 +O 40	42.8	47.0	112.7	113.2	397.1	425.5	345.3	347.6
S 800+ P 800 +O 40	41.3	46.8	112.4	113.1	385.4	417.0	347.3	349.1
F-test	**	**	**	**	**	**	**	**
N-L.S.D. at 5%	0.9	0.3	0.4	0.3	6.4	4.4	4.9	4.7
N-L.S.D. at 1%	1.2	0.4	0.6	0.4	8.7	5.9	6.6	6.4
B:Time of foliar nutrients :								
At tillering stage	37.5	40.1	104.7	105.91	357.0	361.8	286.4	286.9
At elongation stage	39.9	41.4	106.9	07.8	371.6	384.93	310.5	312.5
At heading stage	40.2	43.6	107.7	108.1	366.1	82.8	325.5	326.5
At tillering +elong. Stages	41.0	44.3	108.1	108.3	386.1	402.3	336.1	337.0
At tillering+ heading stages	38.7	43.7	107.5	107.9	363.7	391.2	325	326.9
F-test	**	**	**	**	**	**	**	**
N-L.S.D. at 5%	1.0	0.4	0.4	0.3	7.2	2.3	4.1	3.9
N-L.S.D. at 1%	1.3	0.6	0.6	0.5	9.9	3.2	5.5	5.3
C:Cultivars :								
Sakha 69	39.4	40.6	106.3	107.6	369.3	374.8	291.3	292.9
Sids 8	40.0	44.1	107.2	107.1	363.7	383.4	321.9	322.5
Gemmiza 3	39.0	43.2	107.4	108.1	373.8	395.6	337.1	338.5
F-Test	**	**	**	**	**	**	**	**
N-L.S.D.at 5 %	0.4	0.3	0.2	0.2	4.0	1.8	2.5	2.5
N-L.S.D.at 1 %	0.6	0.4	0.4	0.4	5.3	2.3	3.3	3.3

S = Syrian , P=Phosphorin and O =Organic fertilizer

E- The interrelationship between grain yield/fad and its attributes:

1-Simple correlation coefficients:

Simple correlation coefficient between grain yield/fad and each of its attributing variables are presented in Table 9. A positive and significant correlation coefficient was found between grain yield/fad and each of plant height (0.906), flag leaf area (0.879), number of tillers/m^2 (0.826), number of spikes/m^2 (0.892), spike length (0.755), number of grains/spike (0.908), grain weight/spike (0.828) and 1000-grain weight (0.922). Also, a positive and significant association was found between grain weight/spike with number of tillers/m^2 (0.791), flag leaf area (0.778) and 1000 grain weight 0.826). Number of grains/spike positively associated with number of tillers/m^2 (0.851), flag leaf area (0.893), 1000-grain weight (0.942) and grain weight/spike (0.802). 1000 grain weight significantly correlated with number of tillers/m^2 (0.886) and flag leaf area (0.910). Whereas, spike length significantly correlated with number of tillers/m^2 (0.671), flag leaf area (0.751),

1000-grain weight (0.779), grain weight/spike (0.645) , number of grains /spike (0.875) , number of spikes /m^2 (0.721). A significant and positive correlation coefficients was found between plant height and number of tillers/m^2 (0.896), flag leaf area (0.880), 1000-grain weight (0.952), grain weight/spike (0.860), number of grains/spike (0.931), number of spikes/m^2 (0.806) and spike length (0.707). Similar conclusions were reported by Sharief *et al.* (2000).

Table 5:Means spike length , number of spikelets/spike , number of grains/spike and grain weight/spike as affected by fertilization treatments , time of foliar spraying of some wheat cultivars during 1996/97 and 1997/98 seasons.

Characters / Treatments	Spike `length (cm)		No.of Spikelets /spike		NO.of grains /spike		Grain weight /spike	
	96/97	97/98	96/97	97/98	96/97	97/98	96/97	97/98
A: Fertilization treatments								
Without fertilization	9.2	9.0	15.9	15.7	40.8	40.8	1.40	1.39
NPK fertilizers,Recom	14.4	14.9	23.6	23.3	53.7	54.6	2.14	2.22
Organic fertilizers	13.8	13.9	22.7	22.9	52.9	53.7	2.05	2.10
S 400+ P 400 +O 40	15.1	15.7	23.8	23.5	53.7	55.3	2.23	2.28
S 600+ P 600 +O 40	14.5	15.3	23.7	23.8	53.6	55.2	2.19	2.21
S 800+ P 800 +O 40	14.9	15.4	23.7	23.6	53.6	54.7	2.17	2.22
F-test	**	**	**	**	**	**	**	**
N-L.S.D. at 5%	0.2	0.3	0.1	0.2	0.5	0.3	0.04	0.04
N-L.S.D. at 1%	0.3	0.4	-	0.3	0.7	0.4	0.05	0.05
B:Time of foliar nutrients								
At tillering satage	13.5	13.8	21.9	21.7	50.0	51.4	2.01	2.05
At elongation stage	13.7	14.2	22.3	22.2	51.6	52.5	2.07	2.09
At heading stage	13.8	13.9	22.2	22.2	51.7	52.5	2.03	2.06
At tillering +elong. Stages	13.7	14.1	22.3	22.4	51.8	52.9	2.02	2.07
At tillering+ heading stages								
F-test	13.6	14.1	22.3	22.2	51.7	52.7	2.04	2.09
N-L.S.D. at 5%								
N-L.S.D. at 1%	N.S	N.S	*	**	**	**	N.S	*
	--	--	0.2	0.2	0.3	0.5	--	0.03
	--	--	--	0.3	0.4	0.7	--	--
C:Cultivars								
Sakha 69	12.6	12.9	21.9	21.7	50.8	51.2	2.00	2.09
Sids 8	16.0	16.4	22.4	22.5	52.7	54.8	2.04	2.03
Gemmiza 3	12.4	12.8	22.2	22.2	50.7	51.2	2.06	2.10
F-Test	**	*	*	*	**	**	**	**
N-L.S.D.at 5 %	0.1	0.2	0.1	0.2	0.2	0.3	0.03	0.02
N-L.S.D.at 1 %	0.6	--	--	--	0.3	0.4	0.04	0.03

S = Syrian , P=Phosphorin and O =Organic fertilizer

Table 6: Means of 1000-grain weight, grain protein %, grain yield and straw yield as affected by fertilization treatments, time of foliar spraying of some wheat cultivars during 1996/97 and 1997/98 seasons.

Characters / Treatments	1000-grain weight (gm)		Grain yield (ton/ha)		Grain protein %		Straw yield (ton /ha)	
	96/97	97/98	96/97	97/98	96/97	97/98	96/97	97/98
A: Fertilization treatments								
Without fertilization	38.70	38.63	3.41	3.43	9.50	9.51	6.21	6.22
NPK fertilizers, Recom	51.69	52.28	7.21	7.33	11.96	12.21	9.49	9.59
Organic fertilizers	50.29	50.95	6.80	6.90	11.61	11.77	9.34	9.36
S 400+ P 400 +O 40	52.58	53.19	7.67	7.81	12.48	12.67	9.61	9.75
S 600+ P 600 +O 40	52.21	53.09	7.74	7.91	12.47	12.66	9.66	9.78
S 800+ P 800 +O 40	52.56	53.13	7.68	7.90	12.26	12.57	9.63	9.75
F-test	**	**	**	**	**	**	**	**
N-L.S.D. at 5%	0.48	0.40	0.05	0.07	0.05	0.06	0.07	0.03
N-L.S.D. at 1%	0.64	0.53	0.06	0.1	0.07	0.08	0.09	0.05
B:Time of foliar nutrients								
At tillering stage	37.5	40.1	5.97	6.08	11.07	11.32	8.82	8.80
At elongation stage	39.9	41.4	6.77	6.90	11.47	11.92	8.96	9.03
At heading stage	40.2	43.6	6.94	7.08	12.02	12.14	9.11	9.19
At tillering +elong.	41.0	44.3	7.14	7.22	11.88	12.04	9.10	9.26
Att illering+ heading	38.7	43.7	7.00	7.12	11.86	12.08	8.98	9.09
F-test	**	**	**	**	**	**	**	**
N-L.S.D. at 5%	1.0	0.4	0.07	0.09	0.07	0.03	0.15	0.04
N-L.S.D. at 1%	1.3	0.6	0.10	0.12	0.10	0.06	0.20	0.05
C:Cultivars								
Sakha 69	39.4	40.6	6.31	6.41	11.54	11.69	8.99	9.01
Sids 8	40.0	44.1	7.02	7.14	11.86	12.07	8.91	9.0
Gemmiza3	39.0	43.2	6.97	7.09	11.74	11.94	9.07	9.22
F-Test	**	**	**	**	**	**	**	**
N-L.S.D.at 5 %	0.4	0.3	0.02	0.05	0.03	0.03	0.04	0.02
N-L.S.D.at 1 %	0.6	0.4	0.03	0.06	0.04	0.04	0.06	0.03

S = Syrian , P=Phosphorin and O =Organic fertilizer

2- Multiple linear regression:

The multiple correlation coefficients for grain yield are presented in Table 10. This equation was equal 0.9820. This explains that 98.20% of the total variation in grain yield/fad could be linearly related to the previously mentioned characteristics and only 1.8% to other characters. Plant height, spikes number/m^2 and grain weight/spike were the most effective traits affecting wheat grain yield/fad which recorded significant coefficient of determination reached 3.83, 69.64 and 56.66% respectively. this means that the most limiting factors for wheat grain yield/fad were plant height, spikes number/m^2 and grains weight/spike.

$$Y= -7.5371 - 0.0871 X_1 + 0.0484 X_2 + 8.4182 X_3$$

Where, X1= plant height , X2= spikes number/m^2 , X3= grain weight/spike

3- Stepwise regression analysis:

Accepted and removed variables and their relative contributions in predicting wheat grain yield/fad are presented in Table11. The results

revealed that plant height, number of spikes/m^2 and grains weight/spike were the three variables mainly related with wheat grain yield/fad. Hence, these variables were accepted as significantly contributing to variation in grain yield/fad. The relative contribution of these three variables reached 98.20% and 1.8% due to residual variables. The best prediction equation for wheat grain yield/fad was formulated as follows:

$$Y = -5.9808 - 0.0672 X_1 + 0.049 X_2 + 8.1738 X_3$$

Where, X1= plant height , X2= spikes number/m^2 , X3= grain weight/spike

Table 7: Means of number of tillers and spikes/m^2 , grain and straw yields/fad as affected by the interaction between fertilization treatments and wheat cultivars during 1996/97 and 1997/98 seasons.

Treatments	Characters	Tillers No./m2		Spikes No./m2		Grain yield (Ton/ha)		Straw yield (ton /ha)	
		96/97	97/98	96/97	97/98	96/97	97/98	96/97	97/98
Without fertilization	Sakha 69	237.3	240.9	195.8	194.9	3.42	3.42	6.20	6.22
	Sids 8	239.7	242.7	198.8	191.8	3.41	3.40	6.21	6.22
	Gemmiza 3	245.6	249.0	197.9	196.9	3.39	3.48	6.22	6.22
NPK fertilizers (Recom)	Sakha 69	287.7	401.3	204.7	266.7	6.06	6.18	9.53	9.50
	Sids 8	391.5	402.8	149.6	351.7	7.82	7.97	9.37	9.49
	Gemmiza 3	401.5	406.9	373.9	376.0	7.74	7.82	9.56	9.76
Organic fertilizers	Sakha 69	384.3	391.5	304.1	306.2	5.75	5.87	9.13	9.15
	Sids 8	363.3	370.1	336.8	338.9	7.44	7.46	9.35	9.38
	Gemmiza 3	373.3	399.4	341.2	342.7	7.27	7.36	9.54	9.54
S 400+ P 400 +O 40	Sakha 69	415.9	419.8	344.1	346.2	7.46	7.43	9.64	9.61
	Sids 8	421.6	433.9	352.2	354.3	7.96	8.06	9.50	9.68
	Gemmiza 3	431.6	436.9	364.8	366.9	7.86	7.95	9.69	9.93
S 600+ P 600 +O 40	Sakha 69	394.9	397.4	313.0	315.1	7.66	7.85	9.75	9.81
	Sids 8	391.8	343.3	335.9	338.6	7.72	7.88	9.52	9.56
	Gemmiza 3	404.5	444.8	387.1	389.2	7.82	7.98	9.70	9.97
S 800+ P 800 +O 40	Sakha 69	395.5	397.6	326.2	328.3	7.47	7.71	9.71	9.73
	Sids 8	374.4	416.8	358.3	359.8	7.82	8.04	9.51	9.65
	Gemmiza 3	386.2	436.7	357.4	359.1	7.72	7.94	9.69	9.86
F-test		**	**	**	**	**	**	**	**
N-L.S.D. at 5%		13.3	4.3	6.2	6.1	0.05	0.05	0.11	0.05
N-L.S.D. at 1%		15.4	5.7	8.2	8.0	0.07	0.14	0.15	0.07

It could be summarized that number of grains/spike, spike length, number of spikes/m^2 and 1000-grain weight were the most closely variables that positively and significantly associated with grain yield/fad. In addition, plant height, number of spikes/m^2 and grains weight/spike were the most effective variables toward grain yield/fad that contributed by 6.06%, 77.93% and 64.99%, respectively.

Table 8: Means of grain number/spike, 1000-grain weight, grain and straw yields/fad as affected by the interaction between times of foliar application and wheat cultivars during 1996/97 and 1997/98 seasons.

Characters / Traetments		No . of Grains/pike		1000-grain weight (gm)		Grain yield (ton/ha)		Straw yield (ton/ha)	
		96/97	97/98	96/97	97/98	96/97	97/98	96/97	97/98
At tillering Stage	Sakha 69	49.3	50.2	45.3	46.9	5.53	5.65	8.60	8.62
	Sids 8	50.9	53.1	49.4	50.0	6.14	6.26	8.78	8.83
	Gemmiza 3	49.8	50.8	48.5	49.5	6.23	6.37	9.01	8.99
Atelongation stage	Sakha 69	50.8	51.1	49.8	50.2	6.06	6.19	8.50	8.94
	Sids 8	53.0	55.1	50.1	50.5	7.17	7.29	8.97	8.89
	Gemmiza 3	51.0	51.4	49.2	50.3	7.08	7.20	9.16	9.05
AtHeading stage	Sakha 69	51.2	51.1	49.5	49.9	6.56	6.69	9.16	9.17
	Sids 8	53.4	55.1	51.0	51.1	7.20	7.29	9.27	9.16
	Gemmiza 3	50.6	51.4	50.4	51.1	7.08	7.25	9.29	9.16
At illering+elongation	Sakha 69	51.2	51.8	50.6	50.1	6.76	6.77	9.27	9.23
	Sids 8	53.1	55.2	51.4	51.4	7.37	7.49	9.09	8.96
	Gemmiza 3	51.0	51.7	50.5	50.7	7.29	7.40	9.40	9.12
At tillering+Heading	Sakha 69	51.4	51.6	49.2	49.9	6.62	6.74	9.05	9.03
	Sids 8	52.9	55.1	50.6	51.0	7.24	7.35	9.01	8.88
	Gemmiza 3	50.9	51.3	49.6	50.7	7.15	7.26	9.21	9.03
f-test		**	**	**	**	**	**	**	**
N-LSD at 5%		0.8	0.8	0.5	0.8	0.05	0.11	0.09	0.05
N-LSD at 1%		0.9	1.0	0.6	1.0	0.06	0.15	0.16	0.06

Table 9: Simple correlation coefficients of grain yield/fad and yield attributing variables (data over both seasons).

Characters	10	9	8	7	6	5	4	3	2	1
Y= grain yield/fad	0.826**	0.897**	0.922**	0.828**	0.908**	0.916**	0.892**	0.897**	0.755**	0.906**
1. Plant height	0.896**	0.880**	0.952**	0.850**	0.931**	0.963**	0.806**	0.929**	0.707**	1.00
2.Spike length	0.671**	0.751**	0.779**	0.645**	0.875**	0.771**	0.721**	0.849**	1.00	
3.Spike weight	0.857**	0.877**	0.925**	0.879**	0.952**	0.951**	0.771**	1.00		
4.No. of spikes/m^2	0.729**	0.794**	0.843**	0.549**	0.845**	0.821**	1.00			
5.No. of spikelets/spike	0.882**	0.886**	0.958**	0.853**	0.941**	1.00				
6.No. of grain/spike	0.851**	0.893**	0.942**	0.802**	1.00					
7.Grain weight/spike	0.791**	0.778**	0.826**	1.00						
8.1000-grain weight	0.886**	0.910**	1.00							
9.Flag leaf area	0.876**	1.00								
10.No. of tillers/m^2	1.00									

Table 10: Relative contributions of yield attributes in predicting grain yield/fad of wheat by using multiple linear regression analysis

Characters	Regression coefficient	Standard error	Relative contribution R^2%
1-plant height	-0.0871	0.0336	3.83
2-flag leaf area	0.0473	0.0242	1.94
3-number of tillers/m^2	-0.0027	0.0025	0.64
4-number of spikes/m^2	0.0484	0.0025	69.64
5-spike length	-0.0987	0.0686	1.21
6-spike weight	-0.4480	0.5490	0.39
7-number of spikelets/spike	-0.0164	0.1175	0.00
8-number of grains/spike	0.0636	0.0725	0.45
9-grains weight/spike (gm)	8.4182	0.5663	56.66
10-1000-grain weight (gm)	0.0473	0.0587	0.38

Y-intercept = -7.5371, Adjusted R^2= 0.9622, Multiple R^2= 0.9643

Table 11:Accepted and removed variables and their relative contribution (R^2%) in grain yield/fad according to stepwise analysis.

Characters	Regression coefficient	Standard error	Relative contribution R^2%
A- Accepted variables:			
1-plant height	-0.0672	0.0200	6.06
2-spikes number/m^2	0.0490	0.0020	77.93
3-grain weight/spike	8.1738	0.4622	63.99
B-removed variables			
1-spike length			1.21
2-spike weight			1.15
3-spikelets number/spike			0.17
4-grain number/spike			0.13
5-1000-grain weight			0.36
6-flag leaf area			0.42
7-tillers number/m^2			0.06

Y-intercept = -5.9808, Adjusted R^2= 0.9617, Multiple R=0.9810, R2= 0.9623

REERENCES

A.O.A.C.(1980) . Official Methods of analysis (13th ed.) Association of Official Analytical Chemists. Washington , D.C.

Abu-Grab, O.S. and A.A. Darwish (1998). Response of some wheat cultivars to nitrogen fertilization and growth retardent uninoconazolp (isoproposed).Egypt J. Appl. Sci.,13(4):88-100.

Ahmed,A.A.(1995):Response of wheat plants to nitrogen and biological fertilization under condition of North West Coast of Egypt .M.Sc.THESIS fac.of Agric .Ain Shams Univ.,Egypt.

Ashour, N.I. and A.K. Abd El-Haleem (1995).A Comprative Study on Wheat production in up Stream of Dykes at Wadi El-ARISH IN North Sinai ., Bull. Fac. Of Agric .Cairo Univ., 46:55-64.

Badawi, M.A.,S.A.El-Morsy and A.A. Leilah (1998). Effect of planting methods and foliar nutration on growth and yield of wheat.J.Agric .Sci.Mansoura Univ.,13 (4): 2277-2283.

Dawood, F. A.; H.S.Rahi, K.B. Hummudi and M. Jammel (1992). Sulpher and organic matter relationship and their effect on availabilty of some micronutreints and wheat yield in calcareous soil. Proceeding Middle East Sulpher Symposium, 12-16 Feb., pp 291-294.

Draper, N.R. and H. Smith (1966). Applied regression analysis. Jhon Wiley and Sons Inc., New York.

El-Awady, R.M. and A. Abd El-Naim (1990). Effect of foliar application of zinc on crop yields of corn and wheat in clay soils. Agric. Res. Center, Soils and Water Res. Inst. Proc. Soil ferility and foliar fertilization Conf. Giza, 14-15 Jan., Egypt, pp. 177-196.

El-Bagoury, H. O.; A.N. Hegazi; M.T. Mostafa and T.H. T. El-Afandy (1998). Influence of organic manure and nitrogen fertilizer on chemical composition and technological characters of wheat under irrigation with saline water. Proc. 8th Conf. Agron., Suez Canal Univ., Egypt, Abst. 1: 1-2.

El-Hefnawy, N.N.; A.N. Eissa and T. M. Shahab El-Din (1991). Response of some Egyptian wheat cultivars to differences sources of nitrogen fertilizers. Menofiya J. Agric. Res., 16 (2): 1301-1309.

El-Kalla, S. E. and A.A. Leilah (1998). Improvement of wheat production under the desert conditions of North Sinai. Inst. For Sci. Res., Sustainable development in arid zones, Kuwait, 601-612.

El-Karamity, A. E. (1998). Response of some wheat cultivars to seeding and N-fertilization rates. J. Agric. Sci. Mansoura Univ., 23 (2):643-655.

El-Nagar, A.M.A.E. (1999): Efficiency use of bio and chemical fertilizers on wheat. Ph.D. Thesis, Fac. Of Agric. Mansoura Univ., Egypt.

Gobarh, M.A.(1998): Effect of zinc fertilization as soil and foliar application on wheat yield. Proc. 8th Conf. Agron., Suez Canal Univ., Egypt, Abst. 1.

Gomez ,k.A.and.A.A.Gomez (1984). Statistical procedures for agriculture research. John Wiley and Sons, Inc., New York.

Kawther, A.E. Rabie ; Sohair, A. Nasr and Mervat, A. Amara (1995). The effect of a symbiotic N fixers on the growth and endogenous growth substances of wheat plants. Annals Agric. Sci. Ain Shams Univ., 40(1): 11-32.

Millet, E.;Y.Avivi and M. Feldman(1984).Yield response of various wheat genotypes to inoculation with A.brasilnse.Plant and soil, 80(2):261-266.

Owen, P.C. (1968). A measuring scale for areas of cereal leaves. Exp. Agrc., 4 (4): 275-278.

Sabrah, R.E.A; M.F. Ghoneim; H.M. Abd El-Magid and R.K. Ragia (1993). Characterstics and productivity of a sandy soil as influenced by soil conditioners in Saudi Arabia J. Arid Eviron. 24 (3): 297-303.

Said El. M.; E.M. Gaber and A.A. Sarhan (1999). Response of some wheat varieties to planting dates and nitrogen fertilization. J. Agric. Sci. Mansoura Univ., 24 (6): 2711-2720.

Shalaby, E.E.; M.M. El-Ganbeehy and M.H. El-Sheikh (1992). Performance of wheat genotypes under drought stress. Alex. J. Agric. Res., 37 (1): 53-61.

Sharief, A.E.; S.E. El-Kalla; A.A. Leilah and H.E.M. Mostafa (1998). Response of some wheat cultivars to nitrogen fertilizer levels and biological fertilization. J. Agric. Sci Mansoura Univ., 23 (12): 5807-5816.

Sharief, A.E. ; A.A. Hassan and S.I. Hafiz (2000). Response of wheat to some bio-chemical fertilization regimes and foliar nutrition by micronutrients. Egypt. J. Appl. Sci., 15(1): 83-98.

Snedecor, G.W. and W.G. Cochran(1981):Statistical methods.7 ed.,lawa State Univ. pres,lawa,USA.

Sultan,M.S.,: N.N.Zein El-din;A.M. Salama and I.M.Metwally (1994). Effect of some weed control treatments and N-levels on growth and yield of two wheat cultivars.J.of Union of Arab Biological ,Vol.1 (B)Botany, 149-161.

Sultan,M.S.;M.A.Badawi ; A.A.Salama;A.A.Ahmed and I.M.El-Metwally (1999).Effect of some herbicides and biofertilization on growth and

yield components of wheat as well as associated weeds under different pest control ,Mansoura ,Egypt,6-8 sept. Vol.(2):445-460.

إستخدام بعض العمليات الزراعية لتحسين إنتاجية القمح وتقليل التلوث:
١ - المحصول ومكوناته.

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أقيمت تجربتان حقليتان بحقل إرشادى بقرية ميت بدر خميس – مركز المنصورة بمحافظة الدقهلية خلال موسمى ١٩٩٦/١٩٩٧ ، ١٩٩٧/١٩٩٨ بهدف دراسة بعض العمليات الزراعية مثل معاملات التسميد المختلفة ، ومواعيد إضافة التسميد الورقى بالعناصر الغذائية على بعض أصناف القمح على النمو والمحصول ومكوناته لتحسين إنتاجيه القمح وتقليل التلوث من خلال استخدام التسميد العضوى وكذلك دراسة تحليل محصول الحيوب /فدان ومكوناته. تم تنفيذ التجارب الحقلية فى تصميم الشرائح المتعامدة المنشقة حيث احتوت القطع الأفقية على معاملات التسميد المختلفة. بينما احتوت القطع الرأسية على خمس معاملات لمواعيد الرش بالسوبر جرو ٢٠-٢٠-٢٠ . بينما إحتوت القطع الشقية على ثلاثة أصناف القمح تحت الدراسة وفيما يلى ملخص لأهم النتائج المتحصل عليها:

١-أشارت النتائج إلى أن التسميد الحيوى (سيربالين + فوسفورين)بمعدل ٤٠٠جرام /فدان + ٤٠م^{٣} سماد عضوى للحصول لأعلى القيم لمساحة ورقة العلم،طول النبات،عدد الأشطاء والسنابل بالمتر المربع، طول السنبلة ، وزن الحبوب بالسنبلة ، عدد الحبوب بالسنبلة، نسبة البروتين بالحبوب و محصول الحبوب والقش للفدان وذلك مقارنة بالتسميد المعدنى الموصى به ومعاملات التسميد الحيوى الأخرى.

٢-أوضحت النتائج أن الرش بمادة السوبر جرو٢٠-٢٠-٢٠ عند مرحلتى تكوين الأشطاء والأستطالة إلى الحصول على أعلى القيم معنوية لمساحة ورقة العلم، طول النبات،عدد الأشطاء والسنابل بالمتر المربع ومحصول الحبوب للفدان مقارنة بمواعيد الإضافة الأخرى بينما سجلت أعلى النتائج المعنوية فى وزن ال١٠٠٠ حبة ونسبة البروتين بالحبوب عند الرش فى مرحلة طرد السنابل وكذلك عند الرش خلال مرحلتى الأشطاء والإستطالة دون إختلافات معنوية بينهما.

٣-لقد إختلفت أصناف القمح تحت الدراسة معنويا فى جميع الصفات المدروسة فى كلا موسمى الزراعة فأوضحت تفوق الصنف سدس٨ على كل من الصنفين جميزة ٣ وسخا ٦٩ فى مساحة ورقة العلم ، طول السنبلة ، عدد كل من السنيبلات والحبوب بالسنبلة، وزن الألف حبة، نسبة البروتين بالحبوب ومحصول الحبوب للفدان بينما أشارت النتائج تفوق الصنف جميزة ٣ فى كل من طول النبات وعدد الأشطاء والسنابل فى المتر المربع وزن حبوب السنبلة ومحصول القش للفدان فى كلا موسمى الزراعة .

٤-لقد أوضح التفاعل بين معاملات التسميد والأصناف تأثير معنوى على كل من عدد الأشطاء والسنابل فى المتر المربع ومحصول الحبوب والقش فى كلا موسمى الزراعة. كان التفاعل بين مواعيد إضافة السوبر جرو٢٠-٢٠-٢٠ وأصناف القمح تأثير معنوى على كل من عدد الحبوب بالسنابل ووزن الألف حبة، عدد الحبوب بالسنبلة ووزن السنبلة وكذلك وزن الألف حبة فى كلا موسمى الزراعة .

٥-أشارت نتائج تحليل معامل الأرتباط أن هناك إرتباط معنوى موجب بين محصول الحبوب للفدان وكل من طول النبات، عدد الأشطاء/م٢ ،عدد الحبوب بالسنبلة، و وزن حبوب السنبلة وزن الألف حبة.

٦-أوضحت نتائج تحليل معاملى الأنحدار المتعدد والأنحدار المرحلى أن الصفات طول النبات (٣,٨٦% ، ٦,٠٦%) ، وزن حبوب السنبلة (٥٦,٦٦% ، ٦٣,٩٩%)، وعدد السنابل فى المتر المربع (٩٦,٦٤% ، ٧٧,٩٣%) هى الصفات الأكثر مساهمة على الترتيب فى محصول الحبوب للفدان والتى يجب أن توضع فى الأعتبار فى برامج التربية.

توصى هذه الدراسة للحصول على اعلى إنتاجية من وحدة المساحة لمحصول الحبوب/فدان من القمح وذلك بزراعة الصنف سدس٨ والتسميد الحيوى من (السيربالين + الفوسفورين) بمعدل ٤٠٠جم/فدان و ٤٠ م٣ سماد عضوى والتسميد الورقى بالسوبر جرو ٢٠-٢٠-٢٠ خلال مرحلتى التفريع والأستطالة و ذلك تحت ظروف الزراعة بمحافظة الدقهلية.ص