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UTILIZATION OF SOME AGRICULTURAL PRACTICES TO IMPROVE SOME WHEAT CULTIVARS PRODUCTIVITY. II- GROWTH AND PROTEIN YIELD.

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ABSTRACT

Two field experiments were conducted at El-Mansoura Agric. Center, Dakahlia district, Egypt during 1996/1997 and 1997/1998 seasons. The main purpose of this investigation was to study the effect of fertilization treatments, foliar application times on performance of some wheat cultivars as well as their interactions on growth characters, grain protein content, nitrogen uptake and protein yield. The trails were arranged in a strip split plot design with four replications. The main findings could be summarized as follows:

1- Addation of Syrialin (400 gm/fad) + Phosphorin (400 gm/fad) + organic fertilizer (40 m^3/fad) as biofertilization increased flag leaf area (cm^2) and number of tillers/m^2. Plant height, grain protein percentage and protein yield/fad were significantly increased by adding the biofertilization of Syrialin (600 gm/fad) + Phosphorin (600 gm/fad) + organic fertilizer (40 m^3/fad). However, the highest nitrogen uptake was obtained from NPK fertilization.

2-Foliar application of Super Grow 20-20-20 significantly increased plant height, number of tillers/m^2, flag leaf area, nitrogen uptake and protein yield/fad when sprayed at tillering + elongation stages. Spraying Super Grow at heading stage significantly increased grain protein percentage.

3-Gemmiza 3 CV surpassed the other two tested wheat cultivars, i.e. Sakha 69 and Sids 8 in plant height and number of tillers/m^2. Sids 8 CV had the highest flag leaf area, grain protein percentage, nitrogen uptake and protein yield/fad compared with Gemmiza 3 and Sakha 69 CVs.

4- The tallest plants, highest flag leaf area and highest grain protein percentage of Sakha 69 and Gemmiza 3 CVs were obtained from biofertilization of Syrialin (600 gm/fad) + Phosphorin (600 gm/fad) + organic fertilizer (40 m^3/fad). The highest nitrogen uptake of Sids 8 produced with biofertilization of Syrialin (400 gm/fad) + Phosphorin (400 gm/fad) + organic fertilizer (40 m3/fad).

Generally, it could be concluded that Sids 8 and Gemmiza 3 CVs produced the highest growth parameters, grain protein percentage, protein yield/fad and nitrogen uptake per unit area with biofertilization of Syrialin (400 gm/fad) + Phosphorin (400 gm/fad) + organic fertilizer (40 m^3/fad) with spraying Super Grow 20-20-20 at tillering + elongation stages.

INTRODUCTION

Wheat (*Triticum aestivum* , L.) is considered one of the main cereal crops in the world as well as Egypt and Libya. Increasing wheat productivity is a national target to fill the gab between production and consumption. It could be achieved by using the recommended biofertilization treatments such as organic fertilizer or bacteria that fix 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, Sharief *et al.*, 1998 and El-Nagar, 1999). 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 and tillering. Kawther Rabie *et al.* (1995) reported that grain wheat inoculated with Azotobacter chrococcum and/or Azospirillium brasilense increased plant plant height and fruitful tillers percentage. El-Nagar (1999) showed that inculation Wheat with phosphatic biofertilization led to significant increase for plant height at booting and farvest stages. Sarief *et al* (1998) reported that Azotobaktakters and Azosprillium inculation enhanced Wheat plant height, flage leaf area and tillering. Sultan *et al* (1999) concluded that inculaion of Wheat grains with Azosprillium markedly incrteased plant height, flage leaf area as well as protein pecentage. Sharief *et al* (2000) found that biological fertilizer of Syrialin + Phosphorien + 50 kg N/fad significantly resulted in tallest plants, highest values of flage leaf area and protein percentage.

With respect to times of foliar spraying effect. Badawi *et al.* (1988) reported that time of foliar spraying had a significant effect on tillers number. 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. Gobrah (1998) found that highest grain and straw yield/fad produced from spraying 0.6 % $ZnSO_4$ at booting stage. Sharief *et al.* (2000) stated that foliar application of Mn, Fe And Cu in combination at both tillering and elongation stages significantly maximized growth characters and protein percentage.

Concerning wheat cultivars performance, El-Karamity (1998) showed that wheat CVs markedly varied in protein yield/fad. The differences between cultivars were significant in number of tillers/plant (El-Hefnawy *et al.* 1991), plant height (Shalaby *et al.* 1992 and Ashour and Abd-El-Haleem 1995) and folage leaf area (Sultan *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 inoculated with Azospirillum could extract NH_4. Sharief *et al.* (1998) reported that the interaction between cultivars and biofertilization had a significant effect on plant height. In addition, El-Nagar (1999) found that inoculation grains under different phosphoric fertilizer increase plant height and spike number/m^2.

The objectives of this investigation was to study the utilization of some agriculture practices to improve wheat growth, nitrogen uptake and protein yield through different fertilization treatments, times of foliar nutrients on some wheat cultivars as well as their interaction on growth characters and grain protein percentage.

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 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. Each sub plot 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 of 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- Plant height (cm) was estimated by counting all tillers per square meter.3- Nitrogen uptake (kg/fad) in wheat plant (grain+straw) calculated by using according to Desai and Bhatia (1978) using the formula of grain yield

kg/fad x grain nitrogen %/100 (a), straw yield kg/fad x straw N %/100 (b), nitrogen uptake (kg/fad) = a + b. 4- Crude protein percentage was estimated according to A .O .A .C .method (1980). 5- Protein yield/fad computed by multiplying grain crude protein percentage by grain yield/fad.

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.

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	Pedigree
Sakha 69	100-110 cm	Resistant	Medium	Lnia/RL4220//7C/3/yr"S" CM 15430-251 S-05
Sids 8	105-113 cm	-	Long	Maya "S"//CMH 74 A. 592/3/Sakha 8*2 SD 10002
Gemmiza 3	115-122 cm	-	Medium	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:

The results in Tables 4 and 5 indicated that fertilization treatments significantly affected flag leaf area, plant height, number of tillers/m^2, nitrogen uptake, grain protein percentage and protein yield in both seasons. Inoculation grains with Syrialin + Phosphorin (at 400 gm/fad) +40m^3 farmyard manure significantly maximized flag leaf are and number of tillers /m^2 in both seasons compared with other treatments. Also increased plant height, grain protein percentage and protein yield 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. Highest nitrogen uptake in kg/fad are reported from recommended NPK fertilizers, however, the lowest values of all studies characters produced from without fertilization treatments. The increases in growth charachters 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. These results in harmony with those reported by Dawood *et al* .(1992), Sharief *et al.*(1998), El-Nagar(1999) and Sharief *et al.* (2000)

B-Time of foliar spraying effects:

Super Grow foliar application at different stages significantly affected flag leaf area, plant height, nitrogen uptake (kg/fad), number of tillers/m^2, grain protein percentage and protein yield kg/fad in both seasons as presented in Tables 4 and 5. Foliar application of Super Grow at tillering +elongation stages maximized values of flag leaf area, plant height, number of tillers/m^2 and nitrogen uptake in both seasons. However, foliar application of Super Grow at heading stages produced highest percentage of protein in grains and protein yield/fad 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 growth charachters 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 growth characters. These results in a good agreement with those reported by El-Awady and Abd El-Naim (1990); Gobarh (1998) and Sharief *et al.*(1998).

C- Cultivar performance:

Results in Tables 4 and 5 show that tested cultivars significantly differed in flag leaf area, plant height, number of tillers/m^2 and nitrogen uptake (kg/fad) and grain protein percentage in both seasons. Sids8 cultivar surpassed Sakha 69 and Gemmiza 3 cultivars in flag leaf area and nitrogen uptake kg/fad and protein percentage as well as protein yield kg/fad. However, Gemmiza 3 cultivar exceeded Sakha 69 and Sids 8 cultivars in plant height and number of tillers/m^2. 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 El-Karamity (1998)and Sharief *et al.*(1998).

D-Significant interaction effects:

The results in Table 6 clearly indicated that flag leaf area, plant height, nitrogen uptake (kg/fad), protein percentage and protein yield/fad significantly affected by the interaction between fertilization treatments and cultivars in the two seasons. Maximum values of flag leaf area, plant height and highest grain protein percentages were obtained from biofertilzation of Syrialin (400 gm/fad) + Phosphorin (400 gm/fad) + organic fertilizer (40 m3/fad) with sown Sakha 69 cultivar or Gemmiza 3 cultivars over both seasons. In addition the interaction between fertilization treatments and wheat cultivars significantly affected nitrogen uptake in both seasons as shown in Table 6. Maximum values, nitrogen uptake kg/fad were obtained

from grain inoculation with Syrialin (400 gm/fad) + Phosphorin (400 gm/fad) + organic fertilizer (40 m3/fad) of Sids 8 cultivar in both seasons. However, the lowest values of flag leaf area, plant height, nitrogen uptake (kg/fad) and grain protein percentage from without fertilization treatment (control) and sown Sakha 69, Sids 8 or Gemmiza 3 cultivars without significant differences between them in the two seasons.

Table 4: Means of flag leaf area, plant height and number of tillers and as affected by fertilization treatments, times 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	
Treatments	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
NPK fertilizers, recom.	43.5	46.0	111.6	112.3	393.6	403.7
Organic fertilizers	37.1	40.6	110.1	111.1	373.6	387.0
S 400+ P 400 +O 40	45.9	48.8	112.3	113.2	423.0	430.2
S 600+ P 600 +O 40	42.8	47.0	112.7	113.2	397.1	425.5
S 800+ P 800 +O 40	41.3	46.8	112.4	113.1	385.4	417.0
F-test	**	**	**	**	**	**
N-L.S.D. at 5%	0.9	0.3	0.4	0.3	6.4	4.4
N-L.S.D. at 1%	1.2	0.4	0.6	0.4	8.7	5.9
B: Times of foliar nutrients						
At tillering stage	37.5	40.1	104.7	105.91	357.0	361.8
At elongation stage	39.9	41.4	106.9	07.8	371.6	384.93
At heading stage	40.2	43.6	107.7	108.1	366.1	82.8
At tillering +elong. Stages	41.0	44.3	108.1	108.3	386.1	402.3
At tillering+ heading stages	38.7	43.7	107.5	107.9	363.7	391.2
F-test	**	**	**	**	**	**
N-L.S.D. at 5%	1.0	0.4	0.4	0.3	7.2	2.3
N-L.S.D. at 1%	1.3	0.6	0.6	0.5	9.9	3.2
C: cultivars						
Sakha 69	39.4	40.6	106.3	107.6	369.3	374.8
Sids 8	40.0	44.1	107.2	107.1	363.7	383.4
Gemmiza 3	39.0	43.2	107.4	108.1	373.8	395.6
F-Test	**	**	**	**	**	**
N-L.S.D.at 5 %	0.4	0.3	0.2	0.2	4.0	1.8
N-L.S.D.at 1 %	0.6	0.4	0.4	0.4	5.3	2.3

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

In general, it could be summarized that for enhancing wheat growth, nitrogen uptake, grain protein percentage and protein yield by using biofertilzation of Syrialin (400 gm/fad) + Phosphorin (400 gm/fad) + organic fertilizer (40 m3/fad) and foliar spraying of Super Grow at tillering + elongation stages of Sids 8 or Gemmiza 3 cultivars under the environmental condition of El-Dakahlia district.

Table 5: Means of nitrogen uptake, grain protein percentage and protein yield as affected by fertilization treatments, times of foliar nutrients of some wheat cultivars during both seasons.

Characters / Treatments	Nitrogen uptake (kg/fad)		Protein percentage (%)		Protein yield (kg/fad)	
	96/97	97/98	96/97	97/98	96/97	97/98
A: Fertilization treatments						
Without fertilization	15.27	15.35	9.50	9.51	136.1	152.1
NPK fertilizers.Recom	63.55	66.76	11.96	12.21	362.9	361.3
Organic fertilizers	57.86	60.17	11.61	11.77	332.7	341.5
S 400+ P 400 +O 40	72.88	75.13	12.48	12.67	401.7	415.3
S 600+ P 600 +O 40	72.09	75.63	12.47	12.66	405.0	420.9
S 800+ P 800 +O 40	70.28	74.79	12.26	12.57	390.7	417.6
F-test	**	**	**	**	**	**
N-L.S.D. at 5%	0.52	0.72	0.05	0.06	2.5	4.0
N-L.S.D. at 1%	0.71	0.97	0.07	0.08	3.5	5.6
B: Times of foliar nutrients						
At tillering stage	46.87	49.75	11.07	11.32	277.6	289.4
At elongation stage	58.21	60.99	11.47	11.92	334.6	341.3
At heading stage	62.50	65.06	12.02	12.14	350.8	365.3
At tillering +elong. Stages	63.58	65.86	11.88	12.04	369.3	365.2
At tillering+ heading stages	62.06	65.02	11.86	12.08	361.4	369.3
F-test	**	**	**	**	**	**
N-L.S.D. at 5%	0.91	0.82	0.07	0.03	4.1	2.7
N-L.S.D. at 1%	1.23	1.12	0.10	0.05	5.8	3.9
C: cultivars						
Sakha 69	53.54	55.31	11.54	11.69	310.6	319.7
Sids 8	61.88	65.03	11.86	12.07	357.0	370.0
Gemmiza 3	60.51	63.67	11.74	11.94	349.5	364.1
F-Test	**	*	**	**	**	**
N-L.S.D.at 5 %	0.29	0.46	0.03	0.03	1.6	1.4
N-L.S.D.at 1 %	0.38	----	0.04	0.04	2.2	1.9

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

Table 6: Means of plant height, flag leaf area (cm2) and nitrogen uptake (kg/fad) and grain protein percentage as affected by the interaction between fertilization treatments and wheat cultivars during both seasons.

Treatments	Characters	Plant height (cm)		Flag leaf area (cm^2)		Nitrogen uptake (kg/fad)		Protein percentage (%)	
		96/97	97/98	96/97	97/98	96/97	97/98	96/97	97/98
Without fertilization	Sakha 69	82.8	82.8	26.4	26.7	15.30	15.22	9.46	9.49
	Sids 8	82.7	82.7	25.9	26.1	15.17	15.08	9.51	9.51
	Gemmiza 3	82.9	82.5	26.2	26.4	15.33	15.74	9.53	9.54
NPK fertilizers (Recom)	Sakha 69	110.9	112.1	41.3	42.3	51.79	54.36	11.71	11.98
	Sids 8	111.9	111.6	45.3	48.7	70.55	73.92	12.17	12.34
	Gemmiza 3	111.9	113.1	43.9	47.1	68.30	72.01	12.01	12.32
Organic fertilizers	Sakha 69	107.4	112.1	38.4	38.2	45.47	47.63	11.18	11.38
	Sids 8	111.1	109.6	36.9	42.5	65.05	67.77	11.89	12.08
	Gemmiza 3	111.8	111.6	36.0	41.2	62.88	65.10	11.57	11.86
S400+ P 400 +O 40	Sakha 69	111.9	112.8	48.2	49.5	68.97	70.31	12.29	12.53
	Sids 8	112.6	112.9	45.4	48.7	75.81	78.20	12.65	12.79
	Gemmiza 3	112.5	114.0	44.0	48.2	73.85	76.89	12.51	12.68
S 600+ P 600 +O 40	Sakha 69	113.1	113.0	41.3	43.5	71.04	73.28	12.37	12.49
	Sids 8	112.5	112.9	44.1	49.5	72.61	76.89	12.59	12.85
	Gemmiza 3	112.6	113.8	42.9	48.1	72.61	76.71	12.45	12.64
S 800+ P 800 +O 40	Sakha 69	111.9	112.9	40.6	43.1	68.65	71.04	12.22	12.29
	Sids 8	112.5	112.8	42.2	49.1	72.08	78.29	12.36	12.83
	Gemmiza 3	112.7	113.7	41.1	48.2	70.11	75.58	12.21	12.59
F-test		**	**	**	**	**	**	**	**
N-L.S.D. at 5%		0.6	0.5	1.1	0.7	0.71	1.12	0.07	0.08
N-L.S.D. at 1%		0.9	0.7	1.5	0.9	0.93	1.47	0.10	0.11

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

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إستخدام بعض العمليات الزراعية لتحسين إنتاجية القمح وتقليل التلوث:
٢- صفات النمو ومحصول البروتين.

عبد المنعم موسى عبد الله[٢] ، سمير السيد القلا[١] ، على السعيد شريف[١]، عبد الرحيم عبد الرحيم ليله[١] ، ، صالح عبد الرازق العوامى[٢]

١-قسم المحاصيل - كلية الزراعة - جامعة المنصورة - جمهورية مصر العربية

٢-قسم المحاصيل - كلية الزراعة - جامعة عمر المختار - ليبيا

أقيمت تجربتان حقليتان بمركز المنصورة بمحافظة الدقهلية خلال موسمى ١٩٩٦/١٩٩٧ ، ١٩٩٧/١٩٩٨ بهدف دراسة معاملات التسميد المختلفة ، ومواعيد إضافة التسميد الورقى بالعناصر الغذائية على صفات النمو ونسبة البروتين بالحبوب ومحصول البروتين لبعض أصناف القمح. 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 أن التسميد الحيوى (سيربالين + فوسفورين)بمعدل ٤٠٠جرام /فدان + ٤٠م٣ سماد عضوى للحصول على أعلى القيم لمساحة ورقة العلم،طول النبات، عدد الأشطاء بالمتر المربع، نسبة البروتين بالحبوب ومحصول البروتين وأن التسميد المعدنى الموصى به سجل أعلى معدل للنتروجين خلال موسمى الزراعة.

٢-وضحت النتائج أن الرش بمادة السوبر جرو٢٠-٢٠-٢٠ عند مرحلتى تكوين الأشطاء والأستطالة أعطى أعلى القيم لمساحة ورقة العلم، طول النبات،عدد الأشطاء بالمتر المربع بينما سجلت أعلى قيم نسبة البروتين بالحبوب ومحصول البروتين عند الرش فى مرحلة طرد السنابل.

٣-إختلفت أصناف القمح تحت الدراسة معنويا فى جميع صفات النمو المقاسة فى كلا موسمى الزراعة حيث تفوق الصنف سدس٨ على كل من الصنفين جميزة ٣ وسخا ٦٩ فى مساحة ورقة العلم و نسبة البروتين بالحبوب ونسبة النتروجين الممتص بينما أشارت النتائج تفوق الصنف جميزة ٣ فى كل من طول النبات وعدد الأشطاء فى المتر المربع فى كلا موسمى الزراعة .

٤-أثر التفاعل بين معاملات التسميد والأصناف معنويا على كل من مساحة ورقة العلم وطول النبات وتركيز النتروجين المتبقى ونسبة البروتين بالحبوب ، حيث سجل الصنف سخا ٦٩ أو جميزة ٣ مع التسميد الحيوى (السيربالين + الفوسفورين) بمعدل ٦٠٠جم/فدان و٤٠ م٣ سماد عضوى أعلى قيم لمساحة ورقة العلم وطول النبات ونسبة البروتين بالحبوب. بينما عندما تم زراعة الصنف سدس ٨ مع التسميد الحيوى (السيربالين + الفوسفورين) بمعدل ٦٠٠جم/فدان و٤٠ م٣ سماد عضوى أعطى أعلى القيم لتركيز النتروجين الممتص فى كلا موسمى الزراعة.

ويمكن التوصية بزراعة الصنف سدس ٨ أو جميزة ٣ مع التسميد الحيوى بالسيربالين والفوسفورين (٤٠٠ جم/فدان) والرش بالسوبر جرو ٢٠-٢٠-٢٠ فى مرحلتى الإستطالة وتكوين الأشطاء (٤٠ و ٦٠ يوم من الزراعة) وذلك لتحسين صفات النمو ونسبة البروتين بالحبوب ومحصول البروتين فى وحدة المساحة.