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EFFECT OF SEEDING RATE AND METHOD OF WEED CONTROL ON THE PRODUCTIVITY OF GIZA 2000, A PROMISING BARLEY LINE, UNDER NEW LANDS CONDITION

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Abstract

Two field experiments were conducted at Nubaria Agricultural Research Station during two consecutive growing seasons; 1999/2000 and 2000/2001 to determine the optimum seeding rate and weed control package for the new promising line (Giza 2000) under new lands.Four seeding rates (30,40,50,and 60 kg seeds/fad.) and three weed control (1-unweeded control 2- hand weeding twice 3-herbicidal control by Sinal 10% followed by Grasp10%. The highest seeding rates 60 and 50 kg /fad. produced the highest values of grain yield/fad., number of spikes/m^2 and the lowest number and fresh weight of weeds (*Avena spp* was the dominant grassy weed and Raphanus raphanistrum as a dominant broad leaf weed). On the other hand seeding rate at 30 kg seeds /fad. gave the highest values of number of spikes /plant, grain yield / plant ,biological yield /plant, number of kernels/spike, spike kernel weight, 1000kwt, and number and fresh weight of both weed species. Grain yield increased from 12.6 ard. /fad. with 30 kg seeds / fad. to 16.51 ard. /fad. with 60 kg seeds /fad. This increased estimated by 31.90 %. Controlling weeds by herbicidal treatments increased grain yield by about 40.3 and 13.6 % compared to unweeded and hand weeding, respectively. Number of weeds decreased from 77 plants under 30 kg. seeds/ fad. to 13 plants under 60 kg. seeds / fad. However, when application of the mentioned herbicidal treatment totaley, vanquished the weeds, since zero number of weed plants was recorded after 90 days from sowing. The tratments of 40,50 and 60 kg seeds/fad with weed control and 60 kg seeds/fad. only (unweeded control) gave similar grain yield. The recommended package of the newly promising line (Giza 2000) sowing by 40 kg seeds /fad. and treated by Sinal 10 % SC at 40 cc/fad. applied after 20 days from sowing and followed by Grasp 10 % EC at 1 L/fad. after 21 days interval. The second recommended tretment was sowing by 60 kg seeds/fad. without weed control.

INTRODUCTION

Cereal crops, particuarly barley, provide the major source of animal feed and human food in the world. The demand for these crops is ever increasing because of rapid increase in human population making it imperative to raise cereal productivity. Key measures for achieving this goal include the development of high yielding cultivars and appropriate cultural practices. In Egypt barley is one of the most adapted cereal crops in the new reclaimed areas. Seeding rate is considered one of the most important factors affecting yield, yield component and competitive ability against weeds. In this regard, Stikler and Pauli (1964) stated that cultivårs differ in yield response to increasing seeding rates. Morever, Harris (1981) found that the yield of barley sown on 26 september was increased with increasing seeding rate. El Sayed *et al*, (1998), used three seeding rates 95, 119, and 142 Kg seeds/ha under New valley conditions. The results inicated that the highest yield was obtained from using 119 kg seeds/ha. Controling weeds through agricultural practices by increasing the competitive ability of various cereal cultivars against weeds along with herbicides or hand weeding is a necessary part of reducing production costs and maximizing yield (Andersson, 1983, Challaiah *et al*, 1983, Moss, 1985 and El Bawab, 1994). Effective weed control could increase cereal yield by 20 % or more in Middle East and North Africa (ICARDA Annual Report 1978) . Kholosy, *et al* ,1991 and Hassanenin *et al*, 1993, showed that, brominal or koril and granstar had been recommended to control annual broad-leave weeds and their mixtures to control both species of weeds to improve barley or wheat productivity. The main objectives of this study were to determine the optimum seeding rate and weed control package required for high productivity of the new promising barley line Giza 2000 in the new lands (Nubaria) and to study the effect of seedig rate and weed cntrol on the annual weeds in these areas.

MATERIALS AND METHODS

Two field experiments were carried out in the 1999/2000 and 2000/2001 growing seasons in new land at Nubaria Agric. Res. Station. The experiments aimed to study the effect of four seeding rates and three weed control treatments on growth, yield and yield components of the new promising barley line Giza 2000 (Cr.366-13-1 / Giza121) under new lands (Nubaria) .Treatments were arranged in split plot design with three replications The four seeding rates i.e 30, 40, 50, and 60, kg seeds / fad. were allocated in the main plots. The sub plots

were occupied by the three weed control treatments, which were: 1-Unweeded check 2- Hand Weeding twice (carried out at 21 and 35 days from sowing), and 3- Sinal 10 %SC at 40.5 cc/ fad. applied after 20 days of barley sowing and followed by Grasp 10% at one L/fad after 21days with spray volume of 168 L /fad. The experiments were sown on 15 and 20 November 1999 and 2000, respectively. The plot size was (3.5 x3.0m). The other cultural practices were followed according to the recomendations of growing barley in these area. Representative soil samples from the experimental site were collected for chemical and physical analysis Table 1. In addition at 90 days from sowing, weeds were removed by hand pulling $1m^2$ of each plot to calculate number of weeds/ 1 m^2 (NW /m^2) and weed fresh weight,gm (Fw,g/m^2). At harvest five plants from each treatment were chosen at random to determine some agronomic data includingplant height,cm (Ph),spike length (Sl), number of spikes / plant (NS/P), biological yield /plant, (BY/P) ,grain yield /plant,(GY/P), number of kernels /spike (NK/S), spike kernel weight,(SKW), 1000 kernel weight, (1000 kwt), number of spikes / m2 (NS/m^2) and grain yield ard./fad (GY ard./fad). Data were subjected to analysis of variance and least significant difference (L.S.D) was calculated according to Steel and Torrie (1980) .

Table 1. Mechanical and chemical analysis of the experimental site.

Depth	Clay %	Silt%	Fine sand%	Corase matter%	Organic matter%	Coca3%	Available ppm				
							N	P	K	KH	Ec/cm
0.3	14.3	20	42.1	13.2	1.2	27.5	4.2	2.5	69	7.8	0.65

RESULTS AND DISCUSSIONS

Data in tables 2,3 and 4 indicate the effect of seeding rates and weed control method on annual weeds and plant characteristics of the promising barley line (Giza 2000) at Nubaria in 1999-2000 and 2000 - 2001 seasons .

1-Weeds

1.1-Effect of seeding rates

In the experimental sites the predomiant weeds were Avena spp as grassy weed and *Raphanus raphanistrum* as broad leaf weed. *Avena spp* had more effect on barley and it could decrease grain yield between 0-72% (Wilson and Peters

1982) or from 19 to 52% (Torner *et al* 1985) depending on the percentage of *Avena* infestation and the competitive ability of barley cultivar. Table2. showing that barley seeding rate and weed control treatments had a significant effect on both number and fresh weight of weed plants/m^2. After 90 days from planting the lowest number and fresh weight of annual weed plants / m^2 were recorded with the highest seeding rates 60 and 50 kg seeds/fad. Under 60 kg of barley seeds / fad., 13 weed plants were collected from each m2, they being 85 gm.The lowest seeding rate 30 kg seeds /fad. gave the highest number and fresh weight of weeds. These results may be due to that the the highest seeding rates increased the competitive ability of barley aganist weeds. Whilst, the lowest seeding rate encouraged the early emerged weeds to compete with barley, strongly. Similar results were mentioned by Moss, (1985).

1.2-Effect of weed control

Weed control treatments significantly affected both number and fresh weight of weed plants/m2 The herbicidal treatment of Sinal 10 %SC at 40.5 cc/ fad. applied after 20 days of barley sowing and followed by Grasp 10% at one L/ fad after 21 interval with spray volume of 168 L /fad. significantly reduced the average number of weeds plants /m2 to only one plant being 11 gm. These results are in line with those obtained by Wilson *et al*, 1974. Generally, application of the mentioned herbicidal treatment on barley seeded with either 50 or 60 kg seeds/fad.

1.3-Effect of seeding rate and weed control interaction

Data indicated that there is a considerable role forthe interaction between seeding rate and weed control method on controlling weeds.Inceeasing seeding rate from 30 to 60 kg seeds /fad. remarkabley increased the effect of weed control treatments. However for unweeded control ,number of weeds decreased from 77 plants under 30 kg seeds /fad. to 13 plants under 60 kg seeds / fad.. The same effect was observed with other weed control treatments , where weed fresh weight was affected as well. Similar results were recorded by Moss, (1985).

2-Barley grain yield and yield components.

2.1 Effect of seeding rate

Results indicated that number of spikes/m^2 was gradually increased by increasing seedling rate. It is true in the individual seasons and when data were

combined . The average number of spikes/m^2 significantly increased from 207 to 261 spikes by increasing seeding rate from 30 to 40 kg seed/ fad. In addition, a significant increase was realized by raising the seeding rate to 50 kg seeds / fad. However 60 kg seeds/fad. caused more increase in number of spikes/m^2 but this increase did not reach the level of significance. Increasing number of spike / unit area, which is in fact increasing number of tillers, is one of the advantages of increasing seeding rate to raise up the compitive ability of barley plants(Andersson, 1983, Moss, 1985, and El Bawab, 1994). On the contrary, increasing seeding rate had average effect on number of kerenls/spike. Increasing seeding rate tended to decrease the number of kernels/spike. The seeding rate of 30 kg seeds/ fad. produced 64 kernels/spike, each 10 kg increases in seeding rate up to 60 kg seeds /fad. tended to decrease this number by an average of 8.5.5.4 and 12.0%,respectively. However, the decrease in number of kernels / spike produced by the seeding rate of 50 kg / fad. was not significant. The same trend was observed in case of the effect of seeding rate on 1000-kernel weight. The average 1000kwt significantly decreased from 46.8 gm with 30 kg seeds / fad. to 44.2 gm with 40 kg seeds / fad. and to 41.8 gm with 50 kg seeds / fad. These results are expected because if one of the yield triangle increased (number of spikes / m^2) the other two components or at least one of them could be decreased.

In the first season the significantly highest grain yield (14.22 ard. /fad.) was recorded under 40 kg seeds /fad. ,whereas 50 kg seeds /fad. produced the highest one (19.84 ard. /fad.) in the second season. However,the combined analysis indicated that grain yield significantly increased from 12.6 ard. /fad. with 30 kg seeds /fad. to 15.57 ard. /fad. with 40 kg seeds /fad. This increase is estimated by 23.57%.Another insignificant increase was also recorded when seeding rate increased from 40 to 50 or 60 kg seeds / fad. These results may be attributed to the highly significant increase in number of spikes /m^2 by increasing seeding rate from 30 to 40 kg seeds /fad. , which estimated by 54 spikes or 20.7 %, and also to the decrease in number of kernels/spike and 1000kwt due to increasing seeding rate.In this respect El Bawab (1994) and El Sayed *et al,* (1998) found similar results.

2.2-Effect of weed control treatment

Concerning yield components, results in Table 3 indicated that the tested weed control treatments significantly affected number of kernels /spike only. However, controling weeds by hand weeding increased the yield components over

Table 2. Number and fresh weight of weed plants /m2 as affected by barley seeding rate and weed control treatments

Treatment		Season 1		Season 2		Season 3	
SR kg/fad	WC	NW/m^2	FW/m^2	NW/m^2	FW/m^2	NW/m^2	FW/m^2
30	1 *	97	1312	57	1513	77	1413
	2	60	447	41	416	50	431
	3	5	56	2	13	4	34
	Mean	54	605	33	647	44	626
40	1	70	1036	55	940	63	988
	2	26	349	37	375	32	362
	3	3	21	0	0	2	11
	Mean	33	469	31	438	32	454
50	1 *	31	865	44	620	36	743
	2	23	243	9	56	16	149
	3	0	0	0	0	0	0
	Mean	18	369	18	225	18	297
60	1	10	70	15	100	13	85
	2	3	25	2	35	3	30
	3	0	0	0	0	0	0
	Mean	4	32	6	45	5	39
WC	1	52	821	43	783	48	802
	2	28	266	23	221	25	243
	3	2	19	1	3	1	11
Grand Mean		28	369	23	336	27	352
L.S.D.. at o.o5							
SR		10	90	9	120	7	100
WC		14	200	10	160	11	180
SR X WC		18	310	12	220	15	260

*1- Unweeded 2- Hand weeding twice 3- Herbicidal treatment

Table 3. Estimates of phenotypic correlation coefficients among 13 lentil characters of lentil genotypes evaluated at three environments.

Treatment		Season 1				Season 2				Combined			
SR kg/fad.	WC	NK/S	1000 kwt	NS /m^2	GY Ard/ Fed	NK/S	1000 kwt	NS /m^2	GY Ard/ Fed	NK/S	1000 kwt	NS /m^2	GY Ard/ Fed
30	1 *	62	44.33	174	8.82	56	44.39	208	9.91	59	44.36	191	9.12
	2	70	49.6	217	12.84	62	47.74	208	14.7	66	48.67	213	13.77
	3	72	47.83	210	13.14	60	46.97	227	16.08	66	47.4	218	14.61
	X	68	47.26	200	11.64	59	46.37	214	13.56	64	46.81	207	12.6
40	1	60	42.27	226	12.84	50	40.49	262	12	55	41.38	244	12.42
	2	66	47.43	251	15	54	41.71	285	16.68	60	44.57	268	15.84
	3	70	48.53	259	14.88	54	44.74	286	22.08	62	46.64	272	18.48
	X	65	46.08	245	14.22	53	42.31	278	16.92	59	44.2	261	15.57
50	1	51	44.53	265	10.44	48	37.61	284	1572	50	41.07	274	13.08
	2	58	46.2	263	14.58	56	39.42	304	18.36	57	42.81	283	16.47
	3	62	46.5	276	14.46	60	36.3	301	25.44	61	41.4	289	19.95
	X	57	45.74	268	13.14	55	37.78	296	19.84	56	41.78	282	16.49
60	1	47	44.73	263	13.02	44	35.41	293	18	46	40.07	278	15.5
	2	51	44.93	285	13.08	52	37.33	321	19.44	52	41.13	303	16.26
	3	52	44.73	275	14.46	52	36.67	330	21.06	52	40.7	302	17.64
	X	50	44.8	274	13.58	49	36.47	315	19.49	50	40.63	294	16.51
WC	1	55	43.97	232	11.31	49	39.47	262	13.91	52	41.72	247	12.61
	2	63	47.04	254	13.86	56	41.53	279	17.29	60	44.3	267	15.57
	3	64	46.9	255	14.22	57	41.16	286	21.18	60	44.03	270	17.7
Grand mean		60	45.97	247	13.13	54	40.73	276	17.46	57	43.35	261	15.3
.....S.D. at 0.0													
SR		6	1.54	20	1.32	4	3.67	15	4.48	3	1.69	17	1.86
WC		4	1.11	14	1.08	3	NS	NS	3	2	1.58	15	2.2
SR X WC		NS	2.2	50	2.5	NS	NS	60	7.85	NS	NS	45	4.5

*1- Unweeded 2- Hand weeding twice 3- Herbicidal treatment

Table 4. Plant characters as affected by seeding rate and weed control treatments.

Treatment		Season 1						Season 2						Combined					
SR kg/fad.	WC	Plht cm	SL cm	Skw gm	NS/P	BY/P	GY/P	Plht cm	SL cm	Skw gm	NS/P	BY/P	GY/P	Plht cm	SL cm	Skw gm	NS/P	BY/P	GY/P
30	1 *	120.7	7	4.13	11.3	99.1	33.7	102.7	7.7	3.67	6.7	63.8	27.1	111.6	7.3	3.9	9	81.5	30.4
	2	125	9.3	3.87	13	106.6	37.8	118	8.3	3.83	7	67.4	29.4	121.5	8.8	3.85	10	87	33.6
	3	130	8.2	3.53	12.7	104.7	37.1	108.7	7.7	3.8	8.7	73.1	30.1	119.5	7.9	3.67	10.7	88.9	33.6
	Mean	125.3	8.2	3.84	12.3	103.4	36.2	109.8	7.9	3.77	7.4	69.1	28.9	117.6	8	3.81	9.9	85.8	32.5
40	1	122.3	6	3.53	9	90.4	31.2	111	6.2	2.73	6	57.2	22.9	116.7	6.1	3.13	7.5	75.8	27.1
	2	127.7	6.7	3.8	10.7	93.7	35	120.3	7.7	3.27	7.3	67.2	26.4	124	7.2	3.53	9	80.5	30.7
	3	130	7.7	3.83	11.7	99	34.8	113.7	7.8	3.07	6	74.7	26.9	121.8	7.8	3.45	8.8	86.9	30.8
	Mean	126.7	6.8	3.72	10.4	94.4	33.7	115	7.2	3.02	6.4	66.3	25.4	120.8	7	3.37	8.4	80.4	29.5
50	1	121.7	65	3.13	7.7	81	27.5	116.3	5.7	2.37	4.3	37.9	16.2	118.3	6.1	2.75	6	59.6	21.9
	2	127	6.7	3.37	10	85.2	30.6	113.3	7.4	3.63	4.7	45.2	18.7	121.7	7	3.5	7.3	65.2	24.7
	3	123.3	7.4	3.4	10	95	29.9	114.9	7.7	3.23	5	50.6	21	118.3	7.5	3.32	7.5	72.8	25.4
	Mean	124	6.9	3.3	9.2	87.1	29.3	116	6.9	3.07	4.7	44.6	18.6	119.4	6.9	3.19	6.9	65.8	24
60	1	121	6.8	2.87	8.3	76.4	27	115.3	4.8	1.8	4.3	36.7	16.1	118.5	5.8	2.33	6.3	56.6	21.6
	2	124.3	6.8	3	9	83.6	24.8	115.3	6.3	2.33	4.7	40.7	15.9	119.8	6.6	2.65	6.8	62.2	20.4
	3	135	6.8	2.93	9.3	83.8	27.7	115.6	7.2	2.83	4.3	47.3	17.7	125.2	7	2.88	6.8	65.6	22.7
	Mean	126.8	6.8	2.92	8.9	81.3	26.5	115.6	6.1	2.32	4.4	41.6	16.6	121.2	6.5	2.62	6.7	61.5	21.5
WC	1	121.4	6.6	3.42	9.1	86.7	29.8	111.2	6.1	2.64	5.3	48.9	20.6	116.3	6.3	3.03	7.2	67.8	25.2
	2	126	7.4	3.5	10.7	92.3	32.1	117.5	7.5	3.27	5.9	55.1	22.6	121.8	7.4	3.38	8.3	73.7	27.3
	3	129.7	7.5	3.43	10.9	95.6	32.4	112.8	7.6	3.23	6	61.4	24	121.2	7.6	3.33	8.5	76.6	28.1
Grand mean		125.7	7.2	3.45	10.2	91.5	31.4	113.8	7	3.05	5.7	55.1	22.4	119.8	7.1	3.25	8	73.4	26.9
L....S.D. at 0.05																			
SR		ns	ns	0.38	2.3	1.2	4.2	3	0.6	0.12	1.4	10.1	4	1.8	0.7	0.17	1.3	8.9	2.8
WC		3.8	0.6	ns	ns	6	Ns	2	0.4	0.37	ns	5.5	2.1	2.8	0.4	0.2	ns	4.5	1.9
SR X WC		ns	ns	0.7	3	15.5	8.5	ns	Ns	0.5	2	18	6.5	ns	ns	0.4	2.5	13.5	5.5

*1- Unweeded 2- Hand weeding twice 3- Herbicidal treatment

the unweeded control. Also, more increases in number of spikes /m^2 and number of kernels / spike occured by controling both broad and grassy weeds by the herbicidal treatment. Slightly increase were recorded in 1000kwt when controling weeds only by hand weeding twice at 20 and 40 days from sowing.

Data in Table 3 reveale that weed control treatments significantly affected grain yield /fad. compared with the unweeded control. Controling weeds with hand weeding increased grain yield by 2.55 and 3.38 ard. /fad. in the two respective seasons. The average increase was 2.96 ard. / fad. (23.5 %) compared with the unweeded control. Also, more increase occured due to the herbicidal treatment in grain yield /fad., with percent increase of about 40.3 and 13.68 % compared to unweeded and hand weeding, respectively. These results my be attribute to the effect of the three weed control treatments on yield components. It could be observed that yield components were increased with hand weeding and /or with herbicidal treatment.

2.3-Effect of seeding rate and weed control interaction

The significant effects of the interaction on yield components were observed on number of spikes /m^2 in the two seasons and on the 1000 kwt in the first season only. Generally, under the four seeding rates, the average values of the three yield components were increased by hand weeding control compared with unweeded control . Also other increases were recorded when the herbicidal treatment was applied .These results were reflected on the grain yield and the same trend was recorded .Grain yield /fad. was increased with weed control treatments. These results were observed under the four seeding rates. From the combined analysis , the results also indicated that no significant differences between the highest seeding rate without weed control (60 kg seeds/fad. only) and the moderate seeding rate (40 kg seeds /fad.) with weed control.

3- Plant characters

Results of the plant characters in Table 4 indicated that, in general, increasing seeding rate tended to decrease number of spikes/plant, grain weight, length of spike and biological yield but dramatically increased plant height. Controlling weeds either by hand weeding and or by herbicidal treatments significantly increased all studied plant chracters (Ph, SL, Skw, BY/p, and Gy/p) except for NS/p. Regarding the interaction between the experimental treatments , the combined analysis revealed that significant differences were observed for

Skw. NS/p, BY/p, and GY/p .However , planting barley by using 30 kg seeds / fad. with weed control gave higher values of the studied traits/plant.On the other hand using higher seeding rates (50 or 60 kg seeds /fad.) without weed control recorded the lowest values of these characters.

CONCLUSION

It could be cocluded that The recommended package of the newly promising line (Giza 2000) sowing by 40 kg seeds /fad. and treated by Sinal 10 % SC at 40 cc/fad. applied after 20 days from sowing and followed by Grasp 10 % EC at 1 L/ fad. after 21 days interval. The second recommended tretment was sowing by 60 kg seeds/fad. without weed control.

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تأثير بعض معدلات التقاوى وطرق مكافحة الحشائش على أنتاجية السلالة الجديدة للشعير (جيزة ٢٠٠٠) تحت ظروف الاراضى الجديدة بمنطقة النوبارية

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١ قسم بحوث الشعير -معهد بحوث المحاصيل-مركز البحوث الزراعية-الجيزة
٢ المعمل المركزى لمبيدات الحشائش-مركز البحوث الزراعية -الجيزة

اقيمت تجربتان حقليتان بمحطة البحوث الزراعية بالنوبارية لدراسة تأثير معدل التقاوى ومقاومة الحشائش على السلالة الجديدة جيزة ٢٠٠٠ فى موسمى الزراعة ١٩٩٩/٢٠٠٠ و 2001/٢٠٠٠ لتحديد أنسب معدل تقاوى وأفضل معاملة مقاومة حشائش لانتاج اعلى محصول من هذه السلالة تحت ظروف الاراضى الجديدة و أثر ذلك على عدد ووزن الحشائش فى المتر المربع وبعض الصفات الهامة للشعير . وكانت معدلات التقاوى هى (٣٠و٤٠و٥٠و٦٠كيلو جرام حبوب / الفدان) ومعاملات مقاومة الحشائش هى ١- بدون مقاومة ٢- مقاومة يدوية مرتين الاولى بعد ٢٠يوم من الزراعة والثانية بعد ٢٠ يوم من الاولى ٣- مقاومة كيمائية يتم الرش مرتين الاولى بعد ٢٠ يوم من الزراعة بأستخدام السينال والثانية بعد ٢١ يوم من الرشة الاولى باستخدام الجراسب . وكانت أهم النتائج هى :

-اعطت المعدلات العالية من التقاوى (٥٠،٦٠ كيلو جرام حبوب / الفدان) أعلى عدد للسنابل فى المتر المربع وأعلى محصول حبوب (أردب/فدان) و اقل عدد ووزن للحشائش فى المتر المربع فى حين أعطى المعدل الاقل 30)كيلو جرام حبوب/الفدان) أعلى قيم لكل من عدد السنابل / النبات وعدد حبوب السنبلة ووزن الالف حبة ومحصول الحبوب للنبات وعدد ووزن للحشائش فى المتر المربع .

- زاد محصول الحبوب /الفدان بمعدل ٩.٣١ % نتيجة زيادة معدل التقاوى من ٣٠الى ٦٠ كيلو جرام حبوب / الفدان (من ٦.١٢الى ٥١.١٦ أردب للفدان على التوالى)

- أدت مقاومة الحشائش بمبيدات الحشائش (السينال والجراسب) الى زيادة محصول الحبوب / الفدان بمقدار ٣.٤٠ و٦.١٣ % عن عدم مقاومة الحشائش (كنترول) والمقاومة اليدوية على التوالى .

- أنخفض عدد الحشائش/ المتر المربع من ٧٧ نبات لمعدل التقاوى المنخفض ٣٠ كيلو جرام حبوب /الفدان الى ١٣ نبات للمعدل الاعلى ٦٠ كيلو جرام حبوب / الفدان وصفر عند استخدام المعدلات العالية من التقاوى (٥٠و٦٠ كيلو جرام حبوب / الفدان) ومقاومة الحشائش كيماويا.

- لم تظهر فروق معنوية فى محصول الحبوب نتيجة أستخدام معدلات التقاوى ٤٠ و ٥٠ ٦٠كيلو جرام حبوب /الفدان) عند مقاومة الحشائش يدويا أو كيماويا أو عند الزراعة بمعدل ٦٠كيلو جرام فقط بدون مقاومة للحشائش

- الخلاصة انه يمكن ان يوصى بزراعة السلالة الجديدة جيزة ٢٠٠٠ باستخدام معدل التقاوى ٤٠ كيلو جرام حبوب/فدان مع مقاومة الحشائش مقاومة كيماوية ويتم الرش خلالها مرتين الاولى بعد ٢٠ يوم من الزراعة باستخدام السينال والثانية بعد ٢١ يوم من الرشة الاولى باستخدام الجراسب وذلك للوصول الى أعلى انتاجية تحت ظروف الاراضى الجديدة بمنطقة النوبارية .

- يوصى باستخدام المعدل ٦٠ كيلو جرام فقط بدون مقاومة للحشائش السلالة الجديدة جيزة ٢٠٠٠ لتحقيق أعلى انتاجية تحت ظروف الاراضى الجديدة بمنطقة النوبارية.