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

EL-BAWAB, A.M.O. AND A.O. KHOLOUSY2

1 Barley Res. Dept. Field Crops Res. Inst., ARC, Giza. 2 Weed Research Centeral Lab., ARC, Giza.

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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/m² 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 cultivars 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<sup>2</sup> of each plot to calculate number of weeds/ 1 m<sup>2</sup> (NW /m<sup>2</sup>) and weed fresh weight,gm (Fw,g/m2). At harvest five plants from each treatment were chosen at random to determine some agronomic data includingplant height,cm (Ph),spike length (SI), 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/m2) 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.

						conservation of		Availal	ole p	pm	
Depth	Clay %	Silt%	Fine sand%	Corase matter%	Organic matter%	Coca3%	N	Р	К	кн	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  $m^2$ , 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<sup>2</sup> was gradually increased by increasing seedling rate. It is true in the individual seasons and when data were

combined. The average number of spikes/m2 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/m2 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 / m2) 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 /m² 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

Treatme	nt	Seas	on 1	Seas	on 2	Seas	on 3	
SR kg/fad	wc	NW/m <sup>2</sup>	FW/m <sup>2</sup>	NW/m <sup>2</sup>	FW/m <sup>2</sup>	NW/m <sup>2</sup>	FW/m <sup>2</sup>	
30	1 *	97	1312	57	1513	77	1413	
olver to the	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	
1000	2	26	349	37	375	32	362	
, while the	3	3	21	0	0	2	5-11:	
	Mean	33	469	31	438	32	454	
50	1 *	31	865	44	620	36	743	
OT WANT I	2	23	243	9	56	16	149	
and the state of	3	0	0	0	0	0	0	
unis official	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	
the late of the	Mean	4	32	6	45	5	39	
WC	1	52	821	43	783	48	802	
	2	28	266	23	221	25	243	
BY Tale 1	3	2	19	Section :	3	1.11	11	
Grand Me	an	28	369	23	336	27	352	
L.S.D at o	0.05	25.00						
SR	STILL TO	10	90	9	120	7	100	
WC	a with	14	200	10	160	11	180	
SRXW	) - 1	18	310	12	220	15	260	

construction of their wift I was comparisoned the form of the form of the second

<sup>\*1-</sup> 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.

kg/fad. WC NK/S 1000 kwt Im² Fed NK/S 1000	Treatment	ent		Season	1 1			Season	2 2			Combined	peu	
KKS 1000 kwt   /m²   Fed NK/S   1000 kwt   /m²   1000 kwt   /m²   Fed NK/S   1000 kwt   /m²   Fed NK/S   1000 kwt   /m²   1000 kwt	SR			4	SN	GY Ard/			SZ				S	GY Ard/
62 44.33 174 8.82 56 44.39 208 9.91 59 44.36 191 70 49.6 217 12.84 62 47.74 208 14.7 66 48.67 213 17.1 12.84 62 47.74 208 14.7 66 48.67 213 18.0 11.64 50 46.97 227 16.08 66 47.74 201 201 10.164 50 46.39 227 16.08 66 47.74 201 201 42.27 226 12.84 50 40.49 262 12 55 41.38 244 201 44.53 259 14.88 54 44.77 285 16.86 60 44.57 268 20.08 62 46.64 272 269 14.45 25 14.48 54 44.77 285 16.85 60 44.57 261 261 44.53 263 14.88 54 44.74 286 22.08 62 46.64 272 261 261 44.53 263 14.88 56 39.42 304 18.86 57 42.81 283 251 44.53 265 11.48 60 36.3 301 25.44 61 41.4 289 252 44.73 225 11.31 283 301 25.44 61 41.4 289 252 11.31 283 321 19.44 52 40.7 302 24 44.73 225 11.31 49 35.47 315 19.49 50 40.63 294 21.0 25.44 13.88 274 11.31 283 38.47 262 13.86 27 41.73 276 14.86 52 41.33 279 11.31 46.9 39.47 262 13.91 52 41.72 247 21.0 24.13 251 19.44 65.9 255 14.22 57 41.33 279 11.31 283 11.31 284 274 11.31 283 11.31 284 274 11.31 283 11.31 283 11.31 283 11.31 284 274 11.31 284 11.31 284 274 11.31 284 274 11.31 284 274 11.31 284 274 11.31 284 11.31 284 274 11.31 284 274 11.31 284 11.31 284 274 1	kg/fad.	Š		$\overline{}$	/m <sup>2</sup>	Fed	NK/S	1000 kwt	/m <sup>2</sup>		NK/S	1000 kwt	$/m^2$	Fed
70 49.6 217 12.84 62 47.74 208 14.7 66 48.67 213 72 47.83 210 13.14 60 46.97 227 16.08 66 47.4 218 66 47.4 218 67 42.27 226 12.84 50 40.49 262 12 55 44.38 244 68 47.2 226 12.84 50 40.49 262 12 55 44.38 244 68 47.2 226 12.84 50 40.49 262 12 55 44.38 244 68 47.2 226 12.84 50 40.49 262 12 55 44.2 261 69 47.2 226 14.88 54 44.74 286 22.08 62 46.64 27.2 60 46.08 245 14.22 53 42.31 278 16.92 59 44.2 261 60 46.08 245 14.28 56 39.42 304 18.38 57 42.81 289 61 44.53 265 10.44 48 37.61 284 1572 50 41.07 274 62 46.6 27 41.46 55 37.78 296 19.84 56 41.78 282 62 44.73 263 13.08 52 37.33 321 19.44 52 41.13 303 62 44.73 265 14.46 52 36.67 330 21.06 52 40.7 302 63 47.04 254 13.58 49 36.47 315 19.49 50 44.03 270 64 48.9 255 14.22 57 41.16 286 21.18 60 44.03 270 65 43.97 232 14.25 57 41.16 286 21.18 60 44.03 270 66 45.97 247 13.13 54 40.73 276 17.29 60 44.3 267 67 45.97 247 13.13 54 40.73 276 17.29 60 44.03 270 68 45.97 247 13.13 54 40.73 276 17.46 57 43.35 261 69 45.97 256 14.22 57 41.16 286 21.18 60 44.03 270 60 45.97 267 13.13 54 40.73 276 17.29 60 14.03 270 60 45.97 267 13.13 54 40.73 276 17.89 80 15.80 15.80 61 1.54 1.11 14 1.18 1.18 NS	30	*	62	44.33	174		56		208		59	44.36	191	9.12
72 47.83 210 13.14 60 46.97 227 16.08 66 47.4 218 68 47.26 200 11.64 59 46.37 214 13.56 64 46.81 207 214 13.56 200 11.64 59 46.37 214 13.56 64 46.81 207 218 47.25 226 12.84 50 40.49 262 12 55 41.38 244 27.2 226 12.84 51 4.27 226 12.84 61 4.74 286 22.08 62 46.64 27.2 268 245 14.22 53 42.31 278 16.92 59 44.2 261 272 46.08 245 14.22 53 42.31 278 16.92 59 44.2 261 272 261 14.26 50 39.42 304 18.36 57 42.81 283 262 46.65 2.08 13.02 44 35.41 293 18 46 57 42.81 283 262 46.56 276 14.46 60 36.3 304 25.44 61 41.47 288 22.08 18 46.0 41.07 274 44.73 263 13.02 44 35.41 293 18 46 40.07 278 226 44.73 263 13.02 44 35.41 293 18 46 40.07 278 226 44.73 263 13.02 44 35.41 293 18 46 40.07 278 226 44.73 275 14.46 52 36.67 330 21.06 52 41.13 303 21.0 44.89 255 14.22 57 41.16 286 21.18 60 44.03 270 270 270 270 270 270 270 270 270 270		2	70	49.6	217	12.84	62	47.74	208	14.7	99	48.67	213	13.77
68 47.26 200 11.64 59 46.37 214 13.56 64 46.81 207 60 42.27 226 12.84 50 40.49 262 12 55 41.38 244 60 47.43 251 1.65 54 41.71 286 16.88 60 44.57 268 61 48.53 259 14.88 54 44.74 286 22.08 62 46.64 272 62 46.08 245 14.22 53 42.31 278 16.92 59 44.2 261 62 46.08 245 14.28 56 39.42 30.4 18.36 57 42.81 283 62 46.5 263 14.56 60 38.3 30.1 25.44 61 41.4 289 62 46.5 268 13.46 60 38.3 30.1 25.44 61 41.4 289 62 44.73 263 13.02 44 35.41 293 18 46 40.07 278 63 44.03 268 13.08 52 37.33 321 19.44 52 41.13 303 64 44.8 274 13.58 49 36.47 315 19.49 50 40.63 294 65 43.97 247 13.13 49 39.47 262 13.91 52 41.73 207 64 46.9 255 14.22 57 41.16 286 21.18 60 44.03 270 65 45.97 247 13.13 54 40.73 276 17.46 57 43.35 261 66 1.54 20 1.32 4 3.67 15 44.8 37.81 289 67 45.97 247 13.13 54 40.73 276 17.46 57 43.35 261 68 1.54 20 1.32 8 3 NS NS 0 7.85 NS NS 45 67 4.81 1.11 14 1.08 3 NS NS 0 7.85 NS NS 45 67 4.81 2.81 4.81 6.82 NS NS NS NS 45 68 1.81 4.82 1.84 6.85 NS NS NS NS NS NS NS 45		8	72	47.83	210	13.14	09	46.97	227	16.08	99	47.4	218	14.61
60 42.27 226 12.84 50 40.49 262 12 55 41.38 244 66 47.43 251 15 54 41.71 285 16.68 60 44.57 268 66 48.53 259 14.88 5.4 41.71 285 16.68 60 44.57 261 61 44.53 265 10.44 48 37.61 284 1572 50 41.07 274 62 46.65 276 10.44 48 37.61 284 1572 50 41.07 274 62 46.5 276 14.46 60 36.3 301 25.44 61 41.4 289 62 46.5 276 14.46 60 36.3 301 25.44 61 41.4 289 62 46.5 276 14.46 50 36.3 301 25.44 61 41.4 289 62 44.73 263 13.02 44 35.41 293 18 46 00.7 278 63 44.70 252 11.31 49 35.47 219.44 52 41.13 303 62 44.73 275 14.46 52 36.67 330 21.06 52 40.7 302 63 47.04 254 13.58 49 36.47 315 19.49 50 40.63 294 65 46.9 255 14.22 57 41.16 286 21.18 60 44.03 270 64 45.9 255 14.22 57 41.16 286 21.18 60 44.03 270 65 1.54 20 1.32 4 3.67 15 44.8 3 1.69 17 66 1.54 20 1.32 4 3.67 15 44.8 3 1.69 17 67 45.9 255 14.20 57 41.16 286 21.18 60 44.03 270 68 1.54 26.9 255 14.20 57 41.16 286 21.18 60 44.03 270 69 1.54 26.9 255 14.20 57 41.16 286 21.18 60 44.03 270 60 1.55 24 20 1.32 4 3.67 15 4.88 3 1.69 17 60 1.55 24 20 1.35 24 20.7 30.7 30.7 30.7 30.7 30.7 30.7 30.7 3		×	68	47.26	200	11.64	59	46.37	214	13.56	64	46.81	207	12.6
66         47.43         251         15         54         41.71         285         16.68         60         44.57         268           70         48.53         259         14.88         54         44.74         286         22.08         62         46.64         272           85         46.08         26.5         10.44         48.72         53         42.31         274         274           86         46.2         263         14.58         56         39.42         30.4         18.36         57         42.81         284           86         46.2         268         13.44         60         36.3         30.4         18.36         57         42.81         289           87         46.2         268         13.44         60         36.3         30.4         18.36         57         42.81         289           86         46.7         276         14.46         60         36.3         30.1         25.44         61         41.4         289           87         46.7         268         13.02         44         35.41         18.44         52         41.13         30.3         21.06         52         40.7	40	-	09	42.27	226		20	40.49	262	12	55	41.38	244	12.42
70         48.53         259         14.88         54         44.74         286         22.08         62         46.64         272           65         46.08         245         14.22         53         42.31         278         16.92         59         44.2         261           61         44.53         265         10.44         48         37.61         284         1572         50         41.07         274           62         46.5         263         14.58         56         39.42         30.4         18.36         57         42.81         283           57         46.74         56         37.78         296         19.84         56         41.78         282           57         44.73         263         13.02         24         50         41.78         282           55         44.73         263         13.01         25.44         61         40.07         278           56         44.73         263         13.01         25.44         61         40.07         278           57         44.73         267         13.61         13.44         52         41.13         30           50		7	99	47.43	251	15	54	41.71	285	16.68	09	44.57	268	15.84
65 46.08 245 14.22 53 42.31 278 16.92 59 44.2 261  651 44.53 265 10.44 48 37.61 284 1572 50 41.07 274  652 46.5 276 14.46 56 39.42 304 18.36 57 42.81 289  652 46.7 276 14.46 55 37.78 296 19.84 56 41.78 282  654 44.73 263 13.02 44 35.41 293 18 46 40.07 278  654 44.73 263 13.02 44 35.41 293 18 46 40.07 278  655 44.73 275 14.46 52 36.67 330 21.06 52 40.7 302  656 43.97 232 11.31 39 39.47 315 19.49 50 44.03 267  657 46.9 255 14.22 57 41.16 286 21.18 60 44.03 270  658 45.97 247 13.13 54 40.73 276 17.29 60 44.03 270  659 44.73 274 13.13 54 40.73 276 17.46 57 43.35 261  660 45.97 247 13.13 54 40.73 276 17.46 57 43.35 261  670 45.97 247 13.13 54 40.73 276 17.46 57 43.35 261  681 1.54 10.08 30 NS		က	7.0	48.53	259	14.88	54	44.74	286	22.08	62	46.64	272	18.48
61 44.53 265 10.44 48 37.61 284 1572 50 41.07 274 44.53 263 14.58 56 39.42 304 18.36 57 42.81 283 62 46.5 263 14.58 56 39.42 304 18.36 57 42.81 283 62 46.5 268 13.46 60 38.3 301 25.44 61 41.4 289 62 44.73 263 13.02 44 35.41 293 18 46 40.07 278 41.73 263 13.02 44 35.41 293 18 46 40.07 278 55 44.73 275 14.46 52 37.33 321 19.44 52 41.13 303 55 43.97 232 11.31 49 36.47 315 19.49 50 40.63 294 65 43.97 232 14.25 50 41.52 267 14.6 52 41.73 278 13.61 19.49 50 44.03 274 13.8 46.9 255 14.22 57 41.16 286 21.18 60 44.03 270 270 17.29 60 44.03 270 17.29 60 17.29 60 17.29 60 17.29 60 17.29 60 17.29 60 17.29 60 17.29 60 17.29 60 17.29 60 17.29 60 17.29 60 17.20 60		×	65	46.08	245	14.22	53	42.31	278	16.92	59	44.2	261	15.57
68         46.2         263         14.58         56         39.42         304         18.36         57         42.81         283           62         46.5         276         14.46         60         36.3         301         25.44         61         41.4         289           57         45.74         268         13.14         55         37.38         301         19.84         56         41.78         289           51         44.93         263         13.02         4         35.41         293         18         40.07         278           52         44.73         275         14.46         52         36.67         330         21.06         52         40.7         302           50         44.89         274         13.58         49         36.47         31.51         19.44         52         41.72         24           50         44.89         274         13.51         12.84         50         40.63         264           55         47.04         254         41.16         286         21.18         60         44.33         27           50         45.97         247         13.16         286	50	-	51	44.53	265		48	37.61	284	1572	50	41.07	274	13.08
62         46.6         276         14.46         60         36.3         301         25.44         61         41.4         289           57         45.74         268         13.14         55         37.78         296         19.84         56         41.78         282           44.73         263         13.02         44         35.41         293         18         46         40.07         278           52         44.73         285         13.08         52         37.78         296         41.78         278           52         44.73         285         14.46         52         36.67         330         21.06         52         40.7         302           50         44.8         274         13.68         49         36.47         315         19.49         50         40.63         294           50         43.97         252         13.91         52         41.72         247           54         46.97         254         14.28         56         41.53         57         44.33         279           50         45.97         247         14.73         276         17.46         57         43.35		7	58	46.2	263	14.58	56	39.42	304	18.36	22	42.81	283	16.47
57         45.74         268         19.14         55         37.78         296         19.84         56         41.78         282           47         44.73         263         13.02         44         35.41         293         18         46         40.07         278           55         44.73         265         13.06         52         37.33         321         19.44         52         41.13         303           55         44.73         274         13.58         49         36.47         315         19.49         50         40.77         302           55         43.07         232         11.31         49         36.47         262         13.91         52         40.77         302           55         43.04         25         14.25         279         17.29         60         44.3         267           54         46.9         256         14.22         57         41.16         286         21.18         60         44.03         270           50         45.97         247         13.13         54         40.73         276         17.46         57         43.35         261           6         <		က	62	46.5	276	14.46	09	36.3	301	25.44	61	41.4	289	19.95
47         44.73         263         13.02         44         35.41         293         18         46         40.07         278           551         44.93         285         13.08         52         37.33         321         19.44         52         41.13         303           550         44.93         275         14.46         52         36.67         330         21.06         52         40.7         302           550         44.93         274         13.58         49         36.47         262         13.91         52         41.72         247           53         47.04         254         13.66         56         41.53         279         17.29         60         44.3         267           54         46.9         255         14.22         57         41.16         286         21.18         60         44.3         267           50         45.97         247         13.13         54         40.73         276         17.46         57         43.35         261           6         1.54         20         1.32         4         3.67         15         4.48         3         1.5           4 </td <td></td> <td>×</td> <td>57</td> <td>45.74</td> <td>268</td> <td>13.14</td> <td>55</td> <td>37.78</td> <td>296</td> <td>19.84</td> <td>56</td> <td>41.78</td> <td>282</td> <td>16.49</td>		×	57	45.74	268	13.14	55	37.78	296	19.84	56	41.78	282	16.49
51 44.93 285 13.08 52 37.33 321 19.44 52 41.13 303 552 44.73 275 14.46 52 36.67 330 21.06 52 40.7 302 550 44.73 275 14.46 52 36.67 336 21.06 52 40.7 302 550 44.73 232 11.31 49 39.47 262 13.91 52 41.72 247 53 47.04 254 13.86 56 41.53 279 17.29 60 44.03 267 54 46.9 255 14.22 57 41.16 286 21.18 60 44.03 270 50 45.97 247 13.13 54 40.73 276 17.46 57 43.35 261 50 45.97 247 13.13 54 40.73 276 17.46 57 43.35 261 50 45.97 247 13.13 54 40.73 276 17.46 57 43.35 261 50 45.97 247 13.13 54 40.73 276 17.46 57 43.35 261 50 47.11 14 1.08 3 NS	09	-	47	44.73	263		44	35.41	293	18	46	40.07	278	15.5
52         44.73         275         14.46         52         36.67         330         21.06         52         40.7         302           50         44.8         274         13.58         49         36.47         315         19.49         50         40.63         294           55         43.97         252         11.31         49         39.47         262         13.91         52         41.72         247           34         47.04         254         13.86         56         41.53         279         17.29         60         44.03         276           50         45.97         247         13.13         54         40.73         276         17.46         57         43.35         261           6         1.54         20         1.32         4         40.73         276         17.46         57         43.35         261           4         1.11         14         1.08         3         NS         NS         1.69         17           4         1.11         14         1.08         3         NS         NS         NS         15           A         2.2         180         NS         NS<		7	51	44.93	285	13.08	52	37.33	321	19.44	52	41.13	303	16.26
50         44.8         274         13.58         49         36.47         315         19.49         50         40.63         294           55         43.97         232         11.31         49         39.47         262         13.91         52         41.72         247           53         47.04         254         14.28         56         41.63         279         17.29         60         44.03         270           50         45.97         247         13.13         54         40.73         276         17.46         57         43.35         261           6         1.54         20         1.32         4         40.73         276         17.46         57         43.35         261           4         1.11         14         1.08         3         NS         16         17         17           4         2.2         50         2.5         18         NS         60         7.85         NS         45           5         4.80         1.31         1.80         3         NS         10         7.85         NS         45           5         4.80         1.80         1.80         1.80		ო	52	44.73	275	14.46	52	36.67	330	21.06	52	40.7	302	17.64
55 43.97 232 11.31 49 39.47 262 13.91 52 41.72 247  53 47.04 254 13.86 56 41.53 279 17.29 60 44.3 267  54 46.9 255 14.22 57 41.16 286 21.18 60 44.03 270  50 45.97 247 13.13 54 40.73 276 17.46 57 43.35 261  6 1.54 20 1.32 4 3.67 15 4.48 3 1.69 17  A 1.11 14 1.08 3 NS NS NS NS NS HS NS NS HS L5  2. Hand weed in or living the state of the state		×	50	44.8	274	13.58	49	36.47	315	19.49	50	40.63	294	16.51
83         47.04         254         13.86         56         41.53         279         17.29         60         44.3         267           54         46.9         255         14.22         57         41.16         286         21.18         60         44.03         270           50         45.97         247         13.13         54         40.73         276         17.46         57         43.35         261           6         1.54         20         1.32         4         3.67         15         4.48         3         1.69         17           4         1.11         14         1.08         3         NS         NS         3         2         1.58         15           8         2.2         50         2.5         NS         NS         60         7.85         NS         45	×	-	55	43.97	232	11.31	49	39.47	262	13.91	52	41.72	247	12.61
34     46.9     255     14.22     57     41.16     286     21.18     60     44.03     270       50     45.97     247     13.13     54     40.73     276     17.46     57     43.35     261       6     1.54     20     1.32     4     3.67     15     4.48     3     1.69     17       4     1.11     14     1.08     3     NS     NS     3     2     1.58     15       8     2.2     50     2.5     NS     NS     80     7.85     NS     45     45       8     2.7     Harbicidal treatment     3. Harbicidal treatment		N	63	47.04	254	13.86	56	41.53	279	17.29	60	44.3	267	15.57
50     45.97     247     13.13     54     40.73     276     17.46     57     43.55     261       6     1.54     20     1.32     4     3.67     15     4.48     3     1.69     17       4     1.11     14     1.08     3     NS     NS     3     2     1.58     15       8     2.5     50     2.5     NS     NS     NS     NS     45       8     2.7     Harbicida treatment		က	64	46.9	255	14.22	57	41.16	286	21.18	09	44.03	270	17.7
6 1.54 20 1.32 4 3.67 15 4.48 3 1.69 17 4 1.08 3 NS NS 3 2 1.58 15 VS 2.2 50 2.5 NS NS 60 7.85 NS NS 45 2. Harbicidal treatment	Grand m	ean	09	45.97	247	13.13	54	40.73	276	17.46	57	43.35	261	15.3
6 1.54 20 1.32 4 3.67 15 4.48 3 1.69 17 4 1.11 14 1.08 3 NS NS 3 2 1.58 15 VS 2.2 50 2.5 NS NS 60 7.85 NS NS 45 2. Harbicidal treatment	S.D. a	t 0.0				17								
4         1.11         14         1.08         3         NS         NS         3         2         1.58         15           VS         2.2         50         2.5         NS         60         7.85         NS         45           2- Hand weeding twice         3- Harbicidal traatment	SB	1	9	1.54	20	1.32	4	3.67	15	4.48	က	1.69	17	1.86
VS 2.2 50 2.5 NS NS 60 7.85 NS 45 AS 2- Hand weeding twice 3- Harbicidal treatment	NG.		4	1.11	14	1.08	3	SN	SZ	က	2	1.58	15	2.2
2- Hand weeding twice	SRXW	O	S	2.2	50	2.5	SN	SN	09	7.85	SS	SN	45	4.5
	*1- Unw	eede	Þ	2- Hand	y week	ding twice	0	3- Her	picidal	treatmen	+			

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

Г	GY/P	4.	33.6	9.8	32.5	27.1	30.7	30.8	29.5	21.9	24.7	5.4	24	9.	4.0	22.7	21.5	25.2	5.3	28.1	26.9		2.8	ο.	5.5
	Š	30.	88	9 33.				9 30	-		-	3 25.		3 21	2 20.	-	_	-	7 27.		4 26	L	-	<u> </u>	Н
	BY/P	81.5	87	88.6	85.8	75.8	80.5	86.9	80.4	59.6	65.2	72.8	65.8	9.99	62.2	65.6	61.5	67.8	73.7	9.97	73.4		8.9	4.5	13.5
   	NS/P	6	10	10.7	9.9	7.5	6	8.8	8.4	9	7.3	7.5	6.9	6.3	6.8	6.8	6.7	7.2	8.3	8.5	8		1.3	SU	2.5
Combined	Skw gm	3.9	3.85	3.67	3.81	3.13	3.53	3.45	3.37	2.75	3.5	3.32	3.19	2.33	2.65	2.88	2.62	3.03	3.38	3.33	3.25		0.17	0.2	0.4
	SL cm	7.3	8.8	7.9	8	6.1	7.2	7.8	7	6.1	7	7.5	6.9	5.8	9.9	7	6.5	6.3	7.4	9.7	7.1		0.7	9.0	ns
	Plht cm	111.6	121.5	119.5	117.6	116.7	124	121.8	120.8	118.3	121.7	118.3	119.4	118.5	119.8	125.2	121.2	116.3	121.8	121.2	119.8		1.8	2.8	SU
	GY/P	27.1	29.4	30.1	28.9	22.9	26.4	26.9	25.4	16.2	18.7	21	18.6	16.1	15.9	17.7	18.6	9.02	22.6	24	22.4		4	2.1	6.5
	BY/P	63.8	67.4	73.1	69.1	57.2	67.2	74.7	66.3	37.9	45.2	9.09	44.6	36.7	40.7	47.3	41.6	48.9	55.1	61.4	55.1		10.1	5.5	18
2	NS/P	6.7	7	8.7	7.4	9	7.3	9	6.4	4.3	4.7	2	4.7	4.3	4.7	4.3	4.4	5.3	5.9	9	5.7		4.1	SI	2
Season	Skw gm	3.67	3.83	3.8	3.77	2.73	3.27	3.07	3.02	2.37	3.63	3.23	3.07	1.8	2.33	2.83	2.32	2.64	3.27	3.23	3.05		0.12	0.37	0.5
	SL cm	7.7	8.3	7.7	7.9	6.2	7.7	7.8	7.2	5.7	7.4	7.7	6.9	4.8	6.3	7.2	6.1	6.1	7.5	9.7	7		9.0	4.0	Ns
	Plht cm	102.7	118	108.7	109.8	111	120.3	113.7	115	116.3	113.3	114.9	116	115.3	115.3	115.6	115.6	111.2	117.5	112.8	113.8		3	2	SII
	GY/P	33.7	37.8	37.1	36.2	31.2	35	34.8	33.7	27.5	9.08	29.9	29.3	27	24.8	27.7	26.5	29.8	32.1	32.4	31.4		4.2	S	8.5
	BY/P	99.1	106.6	104.7	103.4	90.4	93.7	66	94.4	81	85.2	95	87.1	76.4	83.6	83.8	81.3	86.7	92.3	92.6	91.5		1.2	9	15.5
-	NS/P	11.3	13	12.7	12.3	6	10.7	11.7	10.4	7.7	10	10	9.5	8.3	6	9.3	8.9	9.1	10.7	10.9	10.2		2.3	us	3
Season	Skw gm	4.13	3.87	3.53	3.84	3.53	3.8	3.83	3.72	3.13	3.37	3.4	3.3	2.87	3	2.93	2.92	3.42	3.5	3.43	3.45		0.38	us	0.7
	SL cm	7	9.3	8.2	8.2	9	6.7	7.7	8.9	65	6.7	7.4	6.9	6.8	6.8	8.9	8.9	9.9	7.4	7.5	7.2		ns	9.0	SI
	Plht cm	120.7	125	130	125.3	122.3	127.7	130	126.7	121.7	127	123.3	124	121	124.3	135	126.8	121.4	126	129.7	125.7		ns	3.8	SU
ent	WC	*	2	3	Mean	-	2	3	Mean	-	2	3	Mean	_	2	6	Mean	-	2	က	ean	t 0.05			ړ
Treatment	SR kg/fad.	30				40			_	50			_	09			_	χ			Grand mean	LS.D. at 0.05	æ	WC WC	SRXWC

3- Herbicidal treatment

2- Hand weeding twice

\*1- Unweeded

the unweeded control. Also, more increases in number of spikes /m² 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 /m² 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.

# about this indicate of the 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.

conditions analysis laughted that rigidle and differences were observed for

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

# أحمد محمد عرابي البواب ، أحمد صادق خلوصي ا

١ قسم بحوث الشعير -معهد بحوث المحاصيل-مركز البحوث الزراعية-الجيزة
 ٢ المعمل المركزي لمبيدات الحشائش-مركز البحوث الزراعية \_الجيزة

اقيمت تجربتان حقليتان بمحطة البحوث الزراعية بالنوبارية لدراسة تأثير معدل التقاوى ومقاومة الحشائش على السلالة الجديدة جيزة ٢٠٠٠ في موسمى الزراعة ١٩٩٩/ ٢٠٠٠ و ٢٠٠٠/٥٩٩٠ لنسب معدل تقاوى وأفضل معاملة مقاومة حشائش لانتاج اعلى مخصول من هذه السلالة تحديد أنسب معدل تقاوى وأفضل معاملة مقاومة حشائش في المتر المربع وبعض الصفات المامة للشعير . وكانت معدلات التقاوى هي (٣٠٠ و ١٥٠٠ كيل جرام حبوب / الفدان) ومعاملات مقاومة الصشائش هي ١- بدون مقاومة ٢- مقاومة يدوية مرتين الاولى بعد ٢٠ يوم من الزراعة والثانية بعد ٢٠ يوم من الاولى بعد ٢٠ يوم من الزراعة بأستخدام السينال والثانية بعد ٢٠ يوم من الرشة الاولى باستخدام الجراسب . وكانت أهم النتائج هي :

-اعطت المعدلات العالية من التقاوى (٢٠٥٠، كيلو جرام حبوب / الغدان ) أعلى عدد للسنابل في المتر المربع وأعلى محصول حبوب (أردب/فدان) و اقل عدد ووزن للحشائش في المتر المربع في 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 في المتر المربع.

- زاد محصول الحبوب /الفدان بمعدل ٩.٢١ % نتيجة زيادة معدل التقاوى من ١٣٠ كيلو جرام حبوب / الفدان (من ١٦٠١٢لي ١٠١٦ أردب للفدان على التوالي)

- أدت مقاومة الحشائش بمبيدات الحشائش (السينال والجراسب) الى زيادة محصول الحبوب / الفدان بمقدار ٣٠٤٠ و ٦٠١٣ % 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 ٣٠ كيلو جرام حبوب / الفدان وصفر عند استخدام المعدلات العالية من التقاوى (٥٠٠٠ كيلو جرام حبوب / الفدان) ومقاومة الحشائش كيماويا.
- لم تظهر فروق معنوية فى محصول الحبوب نتيجة أستخدام معدلات التقاوى ٤٠ و٠٠ اكيلو جرام حبوب /الفدان ) عند مقاومة الحشائش يدويا أو كيماويا أو عند الزراعة بمعدل ٢٠كيلو 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.

الاستجاب بيار خاليدار متعاة التحويد الراعمة بالدويارية لوراسة داروس بعدل البلاغير و مقارعة بالدينايية الوراسة داروس بعدل البلاغير و مقارعة بالديناية المتحدد و المتحد

العملات الدسلات المالية من التعاوي ( ق. 1 كولو جرام حدوث التعاول المل متدفلستان) هم الله الربع واعلى محصول حدوث (ارديكفتان) و الفراستويون للمشاكل في اللو الربع في حين أعظى المدل الإلل (الاكتولو حرام حدوث القدار) الفل قصر الكل من عدد المسابل القبلت ومد حيوب المنتباة وورن الالفرطية وصحول العدد المنتاذ وعدد أوان المدشاكل في القد الربع

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الدين مقال مع المسادلين وموسات المسادلان السيمال والمراسد اللي زيادة مصمر المرود المراسد والمراسد والمراسد والم المرود المدار بمقدار والاوال الإمرام ومقارسة المشادل (التدريل) والمقارسة المدرية على المدرية المردية على المدر المدراني

- المطفي عند المسادس، التي البريع من ١٧ تيك تحدل التكاري النشخش ١٠ كيات بيراء منيوب /الفدال الي ٢٧ سيات للسخيل الاعتى ١٠ كيلو بيرام حسوب / الشال ومنفس عند استخداء المدلات العالمة من التطوي (١٠٠٠ - كيلو جراء حسوب / الديان) ومعارسا المسائش كيماريا.

- لم تنظير في و معتوبة في محصول المسرب تنسبة الساطنة و مدلات النظاوي الا و ١٠٠٠ ١٠ كيلو جرام حديد الافلال العد مقاومة الصلباني يتوما أو كيمارية أو عدد الزومة بعدل الأكيلو سوام عقما عدول الخارة المسائلة