Integrated weed management of wheat under sprinkler irrigation in south Tahreer region in Egypt

I- Effectiveness on different types of weeds

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ABSTRACT

Two field trials of wheat crop (*Triticum aesitivum* var. sids 6) were carried out in reclaimed desert land at South Tahreer region in Egypt during 1996- 1998 seasons, to evaluate the efficacy of three sowing methods and herbicidal treatments, under hand move sprinkler irrigation system. The methods of sowing are pre-irrigation with tillage before seeds drilling, pre-irrigation with contact herbicide and non pre-irrigation before sowing. Twenty herbicidal treatments, including tribenuron-methyl, metosulam , chlorosulfuron , isoproturon. , fenoxa prop-ethyl, tralkoxydim , diclofop-methyl , flamprop-isopropyl, clodinafop-propargyl and imazamethabenz-methyl and some of their combinations, were studied for controlling grassy and broad-leaved weeds under optimum cultural practices management.

The annual weeds observed in the course of this location included spiny emex , black mustard, thimble mustard , clover lambsquarters, scarlet pimpernel, thowthistle , wild oat, annual blue grass and canary grass. Among these thimble mustard and blue grass weeds were the most dominant weeds in the first season, whereas wild oat, ryegrass and thimble mustard were the dominant in the second season. Infestations of grassy weeds in the second season were greater than those recorded in the first season, since wild oat was the dominant weed in this case.

The lowest grassy and total weeds were obtained with pre-irrigated with contact herbicide before wheat sowing compared with pre-irrigated with tillage or with non pre-irrigated system.

Chemical weed control proved to be an effective way for controlling broad leaf and grassy weeds, under the sowing of pre-irrigation system. In this respect all herbicidal treatments except tribenuron-methyl , metosulam and chlorosulfuron , gave best control to grassy weeds , so the highest values were obatined with isoproturon + fenoxaprop-ethyal and isoproturon + diclofop-methyal in both seasons . Fenoxaprop ethyl tralkoxydim , clodinafop-propargyl , diclofop-methyl , dopler and imazamethabenz-methyl were effective against most of grassy weeds except annual blue grass and isoproturon the only herbicide which gave good results against this weed. On the other hand, metosulam , tribenurom-methyl and chlorosulfuron gave best control against broad leaf weeds . Isoproturon gave good control to many broad leaf and grassy weeds, but caused some phytotoxicity to wheat plants. Most herbicidal combinations were effective against all weeds, particularly , metosulam + clodinafop which was suprior in this respect .

The general results in two seasons showed that, pri-irrigation with tillage or with contact herbicide improved wheat grain yield, compared with non-pre-irrigation and all the herbicidal treatments increased significantly wheat grain yield compared with unweeded check .

INTRODUCTION

The following review will be presented the ways in which farming practices can be manipulated to reduce the impact of weed, thereby lowering the requirement for the application of herbicides in wheat. Crop rotation; tillage; cultivar selection; sowing date, and sowing method; nutrients; irrigation system; Leveling of soil; plant growth stimulator and

herbicides are considered in relation to this topic. Many workers have been studied these components of the integrated weed management in wheat cop such as EL-Titu. 1988; Malik, et al 1993; Orson, 1993; Ragehr, 1993; Al-Khatib, 1995; Ulmann and Vanova, 1991; and Ding and Chem, 1995.

Good seedbed preparation with tillage and soil sleveling especially with flooding irrigation system are enhanced the uniform germination of wheat seeds, the rapid growth of the wheat seedlings and this implies a great save in water use. Shafia *et al* (1995) and platonov *et al.* (1992), observed that wheat grain yield increased with increasing extent of tillage with and without weed control. Code and Donaldson (1996) also found that , cultivation to 80 mm before Sowing in the first years, followed by direct drilling in subsequent years, resulted in a wild radish population of 6.9 plants /m^2 in the third week of crop, compared to 116 plants/m2 in the first season. Several investigators evaluated the effect of sowing methods, sowing date and rate, cultivar choice, irrigation and fertilizers dates and weed growth and wheat grain yield.

Several herbicides, singly or in combinations, were successfully used to control weeds in wheat crop many years ago. Isoproturon is the alternative herbicide for bromoxynil which gave high weed control efficacy against both type of weeds (Gogoi and Kalita, 1995; Panwar *et al.*, 1995; Soliman, 1995; Soroka *et al.*, 1995 and Sabra *et al.*, 1999.

The sulphonylureas, imidazolinones; and triazolopyrimidines are chemically different, yet all Shaw the same site of action, namely acetolactate synthase (ALS). These new groups of herbicides will be solve the problem of broad leaved weeds in wheat plantation (Gulidov and narezhnaga, 1994; Montazeri, 1995; Koscalny and Peeper, 1996; Koscelny *et al.*, 1996; Kumer *et al.*, 1996 and Sabra *et al.* 1999).

Graminicides are selective herbicides used against grassy weeds in wheat crop. Diclofop-methyl is a selective herbicide for controlling ryegrass (Khan and Rashid, 1994 Suliman , 1995; Koscelny and Peeper, 1996 and Sabra *et al*, 1999). Fenoxaprop-ethyl is a graminicide containing the safener fenchlorazole , controlled phalanx's sp. Weeds in winter wheat (Huff et al, 1989, Hallgren , 1990, Soliman, 1995 and Sabra *et al.*, 1999). Tralkoxydim has been registered in France Since 1987 for post-emergence grass control in cereals and it showed excellent selective control of Arena sp. And Labium sp. (Escher Brenner 1990; Juan et al 1995, Panwar et al 1999 El-Shoura 1994 and Sabra *et al.* 1999). Clodinafop-Propargyl also is a new herbicide recently used in wheat against grassy-weeds and compatible with several broad leaved herbicides (Lenerle and Verbeek 1995 ; Strachan 1995 and Sabra et al., 1999).

The field trials studies were conducted to determine the efficiency of three sowing methods, and herbicide treatments for selective control of weeds. The present work was conducted in two successive seasons during (1996 – 1998) in South Tahreer region to transfer and utilization of integrated weed management to increase wheat grain yield, with optimum cultural practices management.

MATERIALS AND METHODS

The present investigation was conducted in South Tahree region, Desert Development Center (DDC), EL-Khartoum Village, American University, during 1996-1998 seasons. An area of 2.5 feddan, from unit 17, was selected to conduct an integrated weed management programme, under hand move sprinkler irrigation. The field was naturally infested with grassy and broad leaf weeds, and the soil texture is sand. The soil was ploughed and disked deeply to break up soil and then the soil was levelled. The field area was divided into, three main plots. The lands in the first and second main plots were irrigated on November 20 in two

trials, to initiate the germination of the first flush of weeds. In this case population of weeds were reduced either by tillage or contact herbicides (parquet 0.5 L /feddan) before wheat sowing, whereas, the third main plot was not irrigate. High quality of wheat seeds, sides 6 variety was used. Planting depth was not deeper than 2 inches and cross sowing method of wheat (75 Kg/feddan) was done in the whole field experiment using seed driller. The date of sowing was at November, 30, in both seasons and the sowing irrigation was conducted at December , first.

The sub plots (30 m^2) were allocated to twenty herbicidal treatments which are shown in Table (1). Herbicidal treatments were applied five weeks after sowing using a knapsack sprayer. The percentages of weed coverage were estimated, according to a visual rating system (Frans and Talber, 1997 and Robert, 1982), after 28 days from herbicides application. The percentages of weed control for total broad leaf and grassy weeds, and for the total weeds were calculated as follows:

$$\text{Reduction percentage} = \frac{\text{\% coverage of weeds in control-\% coverage in a treatment}}{\text{\% coverage of weeds in the control}} \times 100$$

The percentages of weed infestations were also estimated to indicate the dominant weeds.

At the heading stage of wheat growth, an assessment of the efficiency of chemical weed control treatments under optimum cultural practices management were recorded by, sampling weeds from random quadrate (minimum 2, with size 0.25 m^2) from each plot. The percentages of weeds control were calculated according to the fresh weight of weeds. The efficiency of the pre-irrigated system and weed control treatments were also estimated as the infestation percentage in weeds fresh weight of the treated plots compared to the unweeded check.

Methods for assessment grassy weeds seed production have been developed most extensively for annual grass weeds. Robert's method (1982) were used at harvesting stage to count seed heads in each quadrate (0-25 m^2). Two quadrate counts per plot of total grassy weedswere Carried out. Percentage control values of weed control treatments were then calculated.

Obtained yield data were subjected to Analyses of Variance (Snedecor and Cochran, 1967).

RESULTS AND DISCUSSION

The effect of pre-irrigated system with tillage or contact herbicide before wheat sowing and herbicidal treatments were evaluated on controlling weeds compared of none pre-irrigated. Generally, in both two seasons, the annual weeds observed in the course of this location included spiny emex, black mustard, thymble mustard, clover , lambsquarters, scarlet pimpernel, thowthistle, wild oat, annual blue grass and canary grass in the three pre-irrigation systems (Figures, 1-6). Among these thymble mustard and blue grass weeds, were the most dominant weeds, and the broad leaf weeds were much greater than grassy weeds in the first season. On the other hand, infestation of grassy weeds in the second season, were greater than those recorded in the first. This may be due to building up grassy weeds in this area, as a result of application broad leaf herbicide in previous winter wheat season without application of graminicide. Since , wild oat was the dominant weed in this case. Pre-irrigation with tillage was more widespread of the wild oat, than the pre-irrigation with contact herbicide or with none pre-irrigation and the lowest grassy and total weeds were obtained

with the pre-irrigation with contact herbicide. However, under the sprinkler irrigation, it is very important to pre-irrigate the soil, and controlling the emergence weeds before wheat sowing by contact herbicide or tillage.

Chemical weed control proved to be an effective way for controlling broad leaf and grassy weeds under the pre-irrigation system. In this respect, the visual rating system, weed mass at heading stage and final account of grassy seed heads, are the most common methods for evaluation of herbicides efficacy.

1- Visual rating system:

a) Pre-irrigation with tillage Figures 1 and 2 illustrate the following Points in the both two season:

Percentages of weed infestation in the control were 33% for grassy weeds and 67% for broad leaf weeds. The dominant grassy weed was annual blue grass which represents 25.1% while the thumble mustard was (17.4%),and considered the dominant broad leaf weed. With regarding to weed infestation in untreated control in the second season, the pre-irrigation with tillage-increased wild oats compared with pre-irrigation with contact herbicide or with the pre-irrigation method, where the percentages of wild oats coverages in untreated check were 60.6, 28.6 and 24.9 respectively. With regarding to table (2) Chlorosulfuron+ diclofop-methyl treatment (% R = 100)was the most effective combination against all weeds coverrage grown in wheat crop followed by chlorosulfuron treatment (% R = 92.9); isoproturon + imazamethabenz-methyl (% R = 92.1) and isoproturon + Fenoxaprop-ethyl = isoproturon + Flamprop – isopropyl (% R = 91.1) in the first season. Whereas, metosulam + clodinafop-propargyl, chlorosulfuron + diclofop-methyl and isoproturon + imaza methabenz-methyl(ready mix) were the best herbicide combinations in the second season.

b) Pre-irrigation with contact herbicide

Figures 3 and 4 indicate that: Percentages of weed infestation in untreated control were 12 for grassy weeds and 88 for broad leaf weeds. Also, the dominant grassy weed was the annual blue grass (9.7 %).and thumble mustard (40.5%) was the dominant broad leaf weed in the first season, while wild oats was the dominant weed in the second season (coverage present = 28.6). The same trended was obtained in controlling all weeds by herbicide combinations table (3). Very important observation was noticed with pre-irrigated with contact herbicide. This treatment before wheat sowing decreased weed coverage to 22.4 compared of 31 and 53.8 to pre-irrigated with tillage or non-pre-irrigated respectively. These means that, with sprinkler irrigation system the pre-irrigation of soil and using contact herbicide before wheat sowing is the best method for decreasing weeds population.

c) None-pre-irrigation:

Table 4 and Figures 5 and 6 indicate the following: The percentages of weed infestation in untreated control were 11.2 for grassy weeds and 88.8 for broad leaf weeds, and the dominant grassy weed was canary grasses (7.1%) whereas the thumble mustard (27.8%) was the dominant broad leaf weed in the first season. On the other hand, weed infestation in untreated cheek were 56.7% for grassy weeds and 43.3 for broad leaf weeds in the second season and wild oats (24.9%) and thumble mustard (19%) were the dominant two weeds. Most of herbicide combinations gave good result in controlling all weeds in two seasons.

2- Weed mass at heading stage.

A – Pre-irrigation with tillage

Data in table 2 showed that, percentages of weed infestation in untreated control in the first season were 73.7% for broadleaf weeds and 26.3% for grassy weeds, while the percentages of weed infestation were 85.8 for grasses and 14.2 for broad leaves in the second season. With regard to chemical weed control chlorosulfuron was the most effective herbicide against broad leaf weeds followed by chlorosulfuron + diclofop-methyl and metosulam + clodinafop-propargyl . However, Tribenuron-methyl either alone or in combination with tralkoxydim gave good control in both two seasons. On the other hand. Most of herbicidal treatments are effective against grassy weeds except broadleaf herbicides (Tribenuro-methyl, and metosulam), (chlorosulfuron and isoproturon) and flamprop-isopropyl. The highest herbicidal treatments in controlling all weeds in two seasons (Table 2) are chlorosulfuron + diclofop-methyl followed by metosulm + clodinafop- propargyl.

b) **Pre-irrigation with contact herbicides:**

In the first season (tables 3 and 5) percentages of weed infestation in weeded check were 57.4% for broad leaves and 42.6% for grassy weeds and the dominant broad leaf weed was black mustard, while the wild oat was the dominant grassy weed. On the other hand, percentages of total grassy and broad leaf weeds infestation during second season were 52.2 and 47.8 respectively, since , wild oat and thumble mustard were the two dominant weeds.Chlorsulfuron and metosulam and their combinations with other herbicides gave good effective control in broad leaf weeds compared of unweeded check whereas , most of herbicide treatments were effective in controlling grassy weeds except broad leaf herbicides (chlorosulfuron, metosulam, tribenuron-methyl and isoproturon). Chlorosulfuron, chlorosulfuron+ diclofop-methyl, tribenuron-methyl + tralkoxydim and isoproturon + imazamethabenz-methyl (ready mix) were the most effective herbicide treatments in controlling all weeds in the first season, whereas metosulam + clodinafop-propargyl, chlorosulfuron + diclofop-methyl and tribenuron –methyl+tralkoxydim were the best in controlling of all weeds in the second season

c) **None Pre-irrigation:**

During two seasons, table 4 pointed that , percentages of weed infestation in untreated check were 65% for broad leaf weeds and 34.9% for grassy weeds in the first season and the dominant broad leaf weeds were spiny emex and black mustard , whereas, wild oats was the dominant grassy weed. On the other season, percentages of weed infestation were 49.6 and 50.4 for narrow and broad leaf weeds respectively and the dominant grassy weeds were ryegrass and wild oat, whereas thumble mustard was the dominant of broad leaf weed. The same trend , in the percent of grassy, and broad leaves reduction in relation to herbicidal treatments on pre irrigated with tillage or contract herbicide were obtained with none pre-irrigated. Also the same trend was obtained with controlling total of all weeds.

3- **Final account of grassy seedheads.**

we are noticed that annual blue grass was the most dominant weed at all of three pre-irrigated systems in the first season, whereas wild oat was the dominant the second. This result agrees with the previous data of visual grass weeds coverage.

Chemical weed control proved to be an effective way for controlling grassy weeds (Tables 2, 3 and 4). In this respect, all herbicidal treatments except tribenuron – methyl , msetosulam , chlorosulfuron, Flamprop-isopropyl and unweeded check gave best control to grassy weeds, so, the highest values of control were obtained with isoproturon + fenoxaprop-ethyl and isoproturon + diclofop-methlyl in both seasons. Isoproturon is the only herbicide treatment which gave good control against annual blue grass. These results are in agreement

with the findings of Khan and Rashid 1994; Soliman , 1995; Koscelny and Peeper, 1996; Sabra , 1999; Huff *et al.* , 1989; Hallgren , 1990 ; El-Shoura, 1994 ; and Starchan 1995.

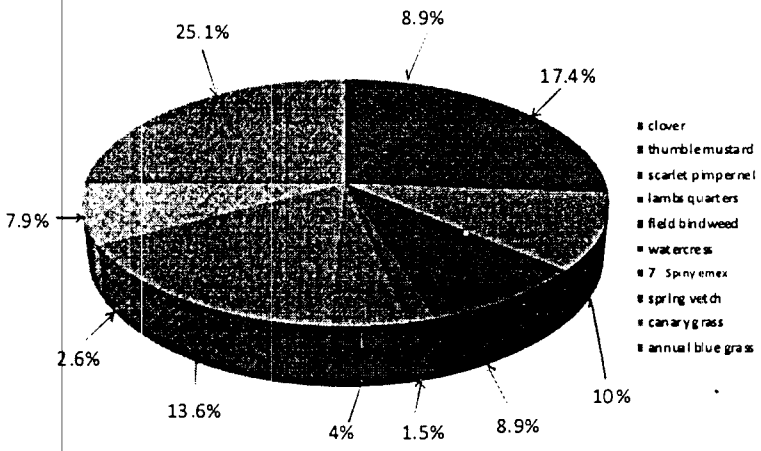

Fig. (1) : Percentages of weed infestation under pre- irrigation with tillage during 1996 - 1997

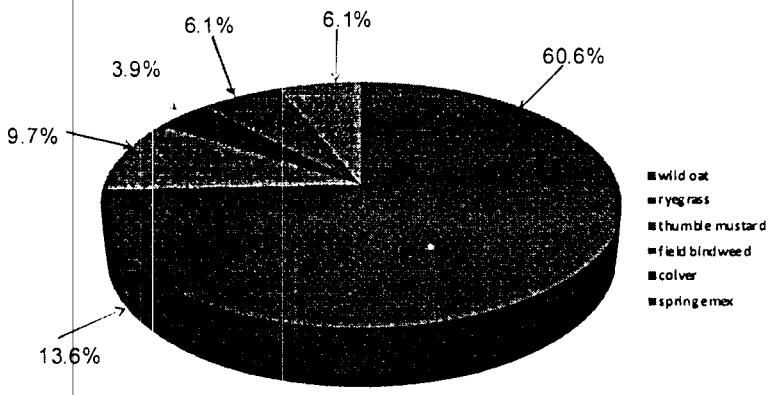

Fig. (2) : Percentages of weed infestation under pre- irrigation with tillage during 1997 - 1998

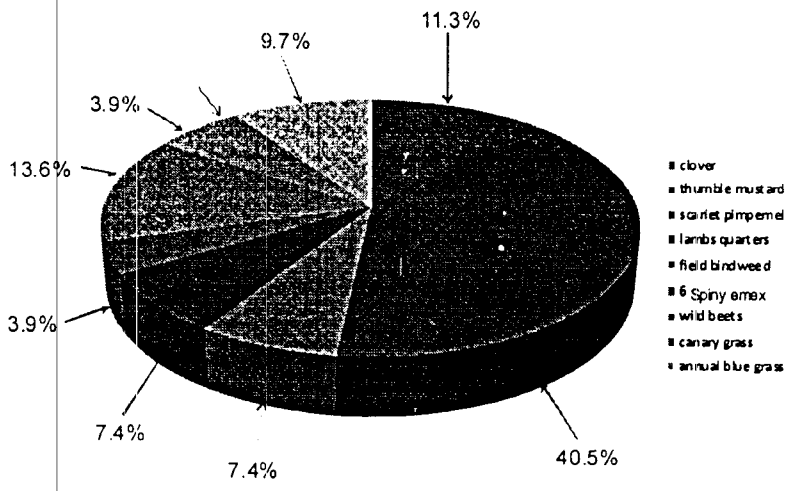

Fig. (3) : Percentages of weed infestation under pre- irrigation with contact herbicides during 1996 - 1997

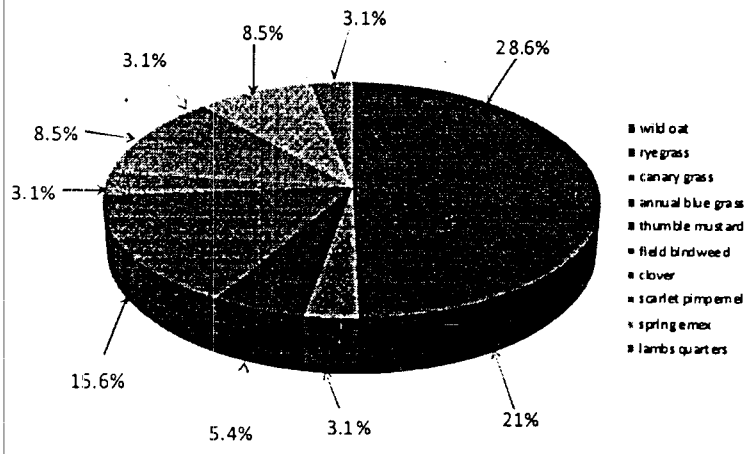

Fig. (4) : Percentages of weed infestation under pre- irrigation with contact herbicides during 1997 - 1998

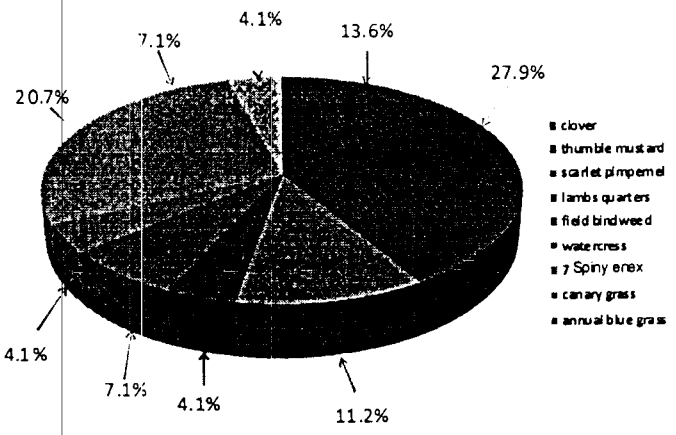

Fig. (5) : Percentages of weed infestation under none pre- irrigation during 1996 - 1997

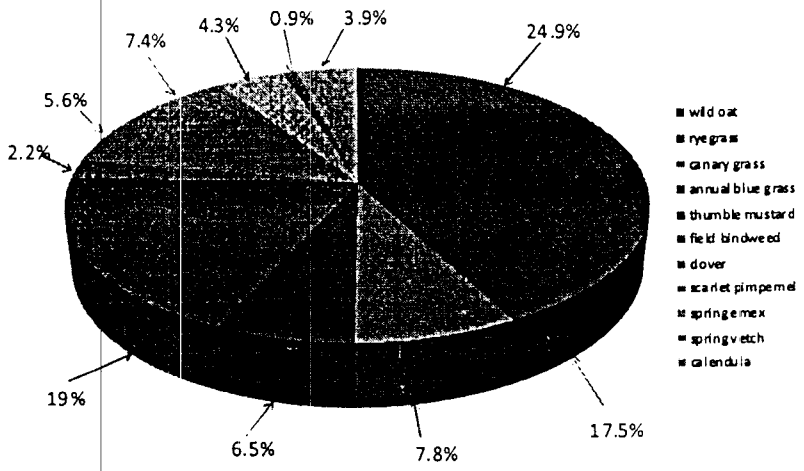

Fig. (6) : Percentages of weed infestation under none pre- irrigation during 1997 - 1998

Table(1) : Common and trade names, rate and formulation of herbicide treatments

No. of Treat	Common name	Treade name	Rate/fedd.	Formulation
1	Tribenuron-methyl	Grandstar	8 gm	75% DF
2	Metosulam	Sinal	40 ml	10% SC
3	Chlorosufuron	Glean	15 gm	75% DF
4	Isoproturon	Arelon	750 ml	50%FL
5	Isoproturon +Fenoxaprop-Ethyl	Arelon + puma super	750 ml +500 ml	50% FL + 75% EW
6	Isoproturon +Tralkoxydim	Arelon + Grasp	750 ml + 1250 ml	50% FL + 10% EC
7	Isoproturon +Diclofop-methyl	Arelon + Illoxan	750 ml + 1250 ml	50% FL + 36% EC
8	Isoproturon +Flamprop-isopropyl	Arelon + Suffix	750 ml + 1250 ml	50% FL + 20% EC
9	Isoproturon +Imazamethabenz-methl (ready mix)	IPU-Assert	1250 ml	150/240 SC
10	Tribenuron-methyl +Tralkoxydim	Grandstar + Grasp	8 gm + 1250 ml	75% DF + 10% EC
11	Chlorosulfuron + Diclofop -methyl	Glean + Illoxan	15 gm +1250 ml	75% DF + 36% EC
12	Metosulam + Clodinafop-propargyl	Sinal + Topic	40 ml + 100 ml	10% SC + 24% EC
13	Tralkoxydim	Grasp	1250 ml	10% EC
14	Diclofop-methyl	Illoxan	1250 ml	36% EC
15	Fenoxaprop-ethyl	Puma super	500 ml	75% EW
16	Flamprop-isopropyl	Suffix. BW	1250 ml	20% EC
17	Imazamethabenz-methyl	Assert	1250 ml	25% FL
18	Clodinafop-propargyl	Topic	100 ml	24%EC
19	Diclofop methyl + Fenoxaprop-Ethyl	Dopler	1500 ml	27% EC
20	untreated check	_	_	_

Table (2) Effect of herbicidal treatments on visual weed coverage, weeds mass and grassy seedheads under pre-irrigation with tillage treatment before wheat sowing in south Tahreer region during 1996 - 1998

Treatments	Percentage of visual weed coverage								Weeds mass (gm / m^2)								Grassy seedheads number / m^2			
	1996 - 1997				1997 - 1998				1996 - 1997				1997 - 1998				1996 - 97		1997 - 98	
	grassy	broad	total	%R	grassy	broad	total	%R	grassy	broad	total	%R	grassy	broad	total	%R	number	%R	number	%R
1	4.9	1.4	6.3	86.6	21.3	1.9	23.2	25.2	27	120	147	92.6	1660	30	1690	54.7	160.5	29.0	142	36.0
2	6.9	0	6.9	85.3	26	2.1	28.1	9.4	90	385	475	76.1	1596	15	1611	56.8	124	45.1	96	56.8
3	2.6	0.7	3.3	93.0	17.8	0.7	18.5	40.3	7	0	7	99.6	1070	5	1075	71.2	77.5	65.7	163	26.6
4	0	6.1	6.1	87.0	5.9	3.5	9.4	69.7	57	605	662	66.7	160	358	518	86.1	79	65.0	67	69.8
5	0	4.2	4.2	91.1	2.4	4.9	7.3	76.5	115	825	940	52.7	48	370	418	88.8	7	96.9	8	96.4
6	0	8.9	8.9	81.1	3.7	4.4	8.1	73.9	40	980	1020	48.7	90	695	785	79.0	18.5	91.8	29	86.9
7	0	5.4	5.4	88.5	2.6	4.9	7.5	75.8	15	1635	1650	17.0	25	1577	1602	57.1	0	100.0	26	88.3
8	0	4.2	4.2	91.1	4.2	3.1	7.3	76.5	6	802	808	59.4	350	430	780	79.1	0.5	99.8	42	81.1
9	0.7	3	3.7	92.1	2.4	3.8	6.2	80.0	35	500	535	73.1	435	105	540	85.5	1	99.6	33	85.1
10	5.7	2.6	8.3	82.3	8.3	0.7	9	71.0	42	105	147	92.6	635	100	735	80.3	2.5	98.9	82	63.1
11	0	0	0	100.0	5.4	0	5.4	82.6	42	2	44	97.8	295	10	305	91.8	0	100.0	29	86.9
12	6.4	1.2	7.6	83.8	3	0.7	3.7	88.1	186	11	197	90.1	130	11	141	96.2	87	61.5	64	71.2
13	3	23.1	26.1	44.5	4.2	5.4	9.6	69.0	67	729	796	60.0	215	673	888	76.2	12.5	94.5	29	86.9
14	3.5	19.4	22.9	51.3	4.9	8.5	13.4	56.8	50	518	568	71.4	180	1070	1250	66.5	115	49.1	11	95.0
15	6.4	26.9	33.3	29.1	4.2	9.6	13.8	55.5	40	447	487	75.5	110	815	925	75.2	24	89.4	10	95.5
16	7.2	14.9	22.1	53.0	9.9	4.9	14.8	52.3	125	205	330	83.4	1165	250	1415	62.1	43	81.0	158	28.8
17	6.9	13.2	20.1	57.2	4.9	4	8.9	71.3	66	213	279	86.0	380	20	400	89.3	26.5	88.3	36	83.8
18	4.7	22.4	27.1	42.3	0.7	8	8.7	71.9	26	489	515	74.1	130	1340	1470	60.6	115	49.1	18	91.9
19	8.3	25	33.3	29.1	4.2	5.8	10	67.7	145	314	459	76.9	145	333	478	87.2	48	78.8	15	93.2
20	15.5	31.5	47	0.0	23	8	31	0.0	523	1465	1988	0.0	3200	530	3730	0.0	226	0.0	222	0.0
%I									26.3	73.7			85.8	14.2						

wt = weed fresh weight
%R= Percent of weed, reduction
%I = Percentage of weed infestation in unweeded ch

Table (3) Effect of herbicidal treatments on visual weed coverage, weeds mass and grassy seedheads under pre-irrigation with contact herbicide before wheat sowing in south Tahreer region during 1996 - 1998

	Percentage of visual weed coverage								Weeds mass (gm / m^2)								Grassy seedheads number / m^2			
	1996 - 1997				1997 - 1998				1996 - 1997				1997 - 1998				1996 - 97		1997 - 98	
Treatments	grassy	broad	total	%R	grassy	broad	total	%R	grassy	broad	total	%R	grassy	broad	total	%R	number	%R	number	%R
1	1.9	2.4	4.3	86.1	11.8	1.9	13.7	38.8	250	20	270	53.0	1090	0	1090	51.7	47.5	57.8	186	19.8
2	3	1.2	4.2	86.4	13.9	1.9	15.8	29.5	131	12	143	75.1	1270	0	1270	43.8	35.5	68.4	155	33.2
3	1.2	0	1.2	96.1	15.8	2.1	17.9	20.1	82	2	84	85.4	725	0	725	67.9	52.5	53.3	119	48.7
4	0	4.7	4.7	84.8	8	2.6	10.6	52.7	7	622	629	-9.4	70	1405	1475	34.7	61.5	45.3	42	81.9
5	0	9.6	9.6	68.9	3.1	3.7	6.8	69.6	50	470	520	9.6	0	740	740	67.2	6	94.7	11.5	95.0
6	0	4.2	4.2	86.4	5.3	3.7	9	59.8	10	450	460	20.0	55	1420	1475	34.7	22.5	80.0	25	89.2
7	0	4.9	4.9	84.1	1.7	7.5	9.2	58.9	50	411	461	19.8	0	1920	1920	15.0	2	98.2	12	94.8
8	0	5.9	5.9	80.9	5.8	2.3	8.1	63.8	40	491	531	7.7	5	1500	1505	33.4	2	98.2	35	84.9
9	0	2.6	2.6	91.6	3.8	0.7	4.5	79.9	12	113	125	78.3	200	475	675	70.1	2.5	97.8	42	81.9
10	2.6	1.2	3.8	87.7	6.7	1.9	8.6	61.6	42	77	119	79.3	455	0	455	79.9	2.5	97.8	35	84.9
11	1.2	1.2	2.4	92.2	3.8	0	3.8	83.0	50	47	97	83.1	110	5	115	94.9	0	100.0	5	97.8
12	2.3	0.7	3	90.3	2.2	1.2	3.4	84.8	239	2	241	58.1	175	290	465	79.4	30	73.3	19	91.8
13	1.9	14.6	16.5	46.6	7.2	6.3	13.5	39.7	48	317	365	36.5	55	875	930	58.8	12	89.3	64	72.4
14	4.9	12.9	17.8	42.4	1.9	8.7	10.6	52.7	90	352	442	23.1	121	879	1000	55.7	42	62.7	9	96.1
15	4.9	12.7	17.6	43.0	4.9	9.4	14.3	36.2	3	288	291	49.4	50	1325	1375	39.1	40	64.4	9	96.1
16	3.7	12	15.7	49.2	9.9	4.9	14.8	33.9	34	595	629	-9.4	275	995	1270	43.8	29.5	73.8	121	47.8
17	1.9	12	13.9	55.0	4.7	6.3	11	50.9	273	134	407	29.2	555	20	575	74.5	20.5	81.8	42	81.9
18	2.3	12.6	14.9	51.8	2.6	9.6	12.2	45.5	34	317	351	39.0	10	985	995	56.0	56	50.2	10	95.7
19	1.9	14.4	16.3	47.2	3.3	8.7	12	46.4	45	492	537	6.6	0	1350	1350	40.2	45	60.0	6	97.4
20	3.7	27.2	30.9	0.0	13	9.4	22.4	0.0	245	330	575	0.0	1180	1079	2259	0.0	112.5	0.0	232	0.0
%I									42.6	57.4			52.2	47.8						

wt = weed fresh weight

%R= Percent of weed, reduction

%I = Percentage of weed infestation in unweeded ch

Table (4) Effect of herbicidal treatments on visual weed coverage, weeds mass and grassy seedheads under none pre-irrigation before wheat sowing at south Tahreer region during 1996 - 1998

Treatments	Percentage of visual weed coverage								Weeds mass (gm / m^2)								Grassy seedheads number / m^2			
	1996 - 1997				1997 - 1998				1996 - 1997				1997 - 1998				1996 - 97		1997 - 98	
	grassy	broad	total	%R	grassy	broad	total	%R	grassy	broad	total	%R	grassy	broad	total	%R	number	%R	number	%R
1	1.2	0	1.2	92.9	16.5	2.2	18.7	65.2	105	120	225	66.1	1600	0	1600	66.4	46	59.8	125	44.2
2	1.9	1.4	3.3	80.5	14.6	0.5	15.1	71.9	64	7	71	89.3	1106	0	1106	76.8	29	74.7	116	48.2
3	0.7	0.7	1.4	91.7	13.4	1	14.4	73.2	22	71	93	86.0	1160	30	1190	75.0	75.5	34.1	90	59.8
4	0.7	1.4	2.1	87.6	7	15.4	22.4	58.4	0	148	148	77.7	350	3625	3975	16.5	74.5	34.9	15	93.3
5	0.7	3	3.7	78.1	2.6	7.9	10.5	80.5	9	204	213	67.9	0	1545	1545	67.5	15.5	86.5	0	100.0
6	1.4	3	4.4	74.0	2.1	12.7	14.8	72.5	3	254	257	61.2	0	2200	2200	53.8	42	63.3	25	88.8
7	0	1.2	1.2	92.9	3.3	7.3	10.6	80.3	0	119	119	82.1	90	1205	1295	72.8	0	100.0	13	94.2
8	0	0.7	0.7	95.9	3.3	6.7	10	81.4	0	263	263	60.3	145	820	965	79.7	1	99.1	7	96.9
9	0.7	1.4	2.1	87.6	3.8	4.6	8.4	84.4	2	185	187	71.8	350	120	470	90.1	0.5	99.6	24	89.3
10	0.7	0.7	1.4	91.7	10.5	2.2	12.7	76.4	13	160	173	73.9	340	75	415	91.3	1.5	98.7	116	48.2
11	0	1.2	1.2	92.9	4.6	1.7	6.3	88.3	5	65	70	89.4	305	13	318	93.3	3.5	96.9	40	82.1
12	1.9	1.9	3.8	77.5	2.8	3.8	6.6	87.7	55	68	123	81.4	520	10	530	88.9	56.5	50.7	48	78.6
13	0.7	8.4	9.1	46.2	1.9	31.4	33.3	38.1	7	242	249	62.4	20	2760	2780	41.6	6.5	94.3	61	72.8
14	0.7	13	13.7	18.9	1.6	19.9	21.5	60.0	22	382	404	39.1	190	1240	1430	70.0	41	64.2	24	89.3
15	1.4	6.5	7.9	53.3	6.8	10.9	17.7	67.1	8	340	348	47.5	66	1543	1609	66.2	35	69.4	99	55.8
16	0.7	9.3	10	40.8	10.7	18.1	28.8	46.5	32	229	261	60.6	600	675	1275	73.2	28	75.5	97	56.7
17	2.3	9.7	12	29.0	6.3	6.9	13.2	75.5	128	190	318	52.0	225	220	445	90.7	28	75.5	159	29.0
18	1.2	11.5	12.7	24.9	2	27.3	29.3	45.5	67	314	381	42.5	65	975	1040	78.2	48.5	57.6	9	96.0
19	1.9	5.9	7.8	53.8	3.6	21.1	24.7	54.1	35	289	324	51.1	20	1660	1680	64.7	12.4	89.2	38	83.0
20	1.9	15	16.9	0.0	30.5	23.3	53.8	0.0	222	441	663	0.0	2360	2400	4760	0.0	114.5	0.0	224	0.0
%I									34.9	65.1			49.6	50.4						

wt = weed fresh weight

%R= Percent of weed, reduction

%I = Percentage of weed infestation in unweeded ch

Table (5) Mean of wheat yield of pre-irrigated with tillage (Till.) or with contact herbicide (Cont.) and none pre-irrigateed (None) as affected by herbicidal treatments during 1996 - 1998 .

Treatments	Grain yield ton / feddan							
	1996 - 1997				1997 - 1998			
	Till.	Cont.	None	Av.	Till.	Cont.	None	Av.
1	1.287	1.302	1.262	1.258	0.99	1.19	1.03	1.073
2	1.375	1.36	1.151	1.295	0.96	1.31	1.14	1.14
3	1.316	1.126	1.307	1.25	1.05	1.3	0.99	1.115
4	1.433	1.261	1.229	1.307	1.2	1.29	0.84	1.113
5	1.404	1.17	1.521	1.024	1.17	1.28	1.07	1.177
6	1.258	0.966	1.463	1.229	1.24	1.29	1.07	1.202
7	1.248	1.278	1.326	1.284	1.3	1.2	0.99	1.17
8	1.068	1.214	1.121	1.135	1.18	1.16	1.21	1.186
9	1.243	0.848	1.303	0.131	1.2	1.38	1.22	1.273
10	1.419	1.39	1.375	1.394	1.19	1.28	1.2	1.224
11	1.375	1.141	1.229	1.248	1.27	1.4	1.13	1.268
12	1.433	0.98	1.097	1.17	1.26	1.44	1.19	1.297
13	1.009	0.995	0.966	1	1.12	1.28	0.9	1.103
14	0.995	1.185	0.995	1.058	1.29	1.47	1.24	1.336
15	1.507	1.244	1.082	1.277	1.31	1.37	1.38	1.353
16	1.141	1.112	1.115	1.122	1.36	1.02	1.09	1.156
17	1.448	1.039	1.141	1.209	1.16	1.47	0.93	1.189
18	1.258	0.98	1.156	1.131	1.31	1.36	1.19	1.29
19	1.36	1.097	1.2	1.219	1.468	1.5	1.25	1.432
20	0.907	0.629	0.702	0.746	0.8	0.85	0.73	0.79
Av.	1.273	1.107	1.183		1.195	1.296	1.09	

With regarding to broad leaf weeds metosulam, tribenuron-methyl and chlorosulfuron gave good control to many broad leaf weeds. This results agrees with Gulidov and Narezhnaga, 1994; Montazeri, 1995; koscelny and peeper, 1996; Koscelny *et al.* 1996.; Kumer *et al.*, 1996; and Sabra , 1999. Isoproturon gave good control to many broad leaf and grassy weeds but it is caused some phytotoxicity to wheat crop.

Most of herbicidal combinations were effective against all weeds ands isoporturon + fenoxaprop-ethyl and isoproturon + diclofop methyl, were the top in this case. These findings were confirmed by Henly 1998; Sabra *et al.*, 1999 and Soliman et al 2000.

Little attention has been paid for controlling grassy weeds along with broad leaf weeds in wheat crop in Egypt. Information is desired on chemical control of mixed populations of broad leaf and grassy weeds infesting wheat crop and their effects on grain yield, Under weed management practices at South Tahreer region. The general results in two seasons table (5), showed that pre-irrigation with tillage or contact herbicide (Paraquat) improved grain yields compared to none pre-irrigated. This result agrees with the finding of Samarjecwa *et al*, 2005. Who found that, no tillage system resulted in the lowest wheat grain yield. Also, the results in table 5 showed that most of herbicidal treatments significantly, increased grain yield in two both seasons compared with unweeded check and the highest values were obtained with herbicide combinations. These results are in agreement with the findings of Ghanima *et al.*, 1993; Hassanein *et al*, 1994; Sabra *et al* 2003; and Soltani and Sikkema , 2005.

They pointed out the importance of integration between more than one methods of weed control specially sowing methods; optimum cultural practices and herbicides to increase the efficacy of weed control and grain yield.

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الملخص العربى

المكافحة المتكاملة لحشائش القمح تحت الرى بالرش فى منطقة جنوب التحرير1- التأثير على الحسانس المختلفة

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أجريت تجربتان حقليتان فى المناطق المستصلحة بجنوب التحرير لموسمى 1996-1998 على محصول القمح تحت الرى بالرش المتحرك وذلك لدراسة تأثير طريقة الزراعة (رى الأرض ثم حرثها والزراعة، رى الأرض ثم الرش بمبيد حشائش بالملامسة ثم الزراعة، وعدم رى الأرض والزراعة) وكذلك تأثير عشرون معاملة مبيدات حشائش وتشتمل على مبيدات ترايبنرون-ميثايل، ميتوسولام كلوروسلفيرون، ايزوبروتيرون، فينوكسابروب-إيثايلترالكوكسيديم، دايكلوفوب-ميثايل، فلام بروب-أيزوبروبايل، إيمازاميثابنز-ميثايل وبعض الخلائط منهم وذلك بهدف مكافحة الحشائش رفيعة وعريضة الأوراق تحت حزمة من العمليات الزراعية المثلى.

أظهرت النتائج أن حشيشتى الكبر وقمح العصافير هما السائدتين فى الموسم الزراعى الأول بينما الزمير والصامة والكبر هى الحشائش السائدة فى الموسم الثانى وأن نسبة الحشائش الرفيعة فى الموسم الثانى أعلى بكثير من الموسم الأول وطريقة الزراعة برى الأرض ثم المعاملة بمبيد جرامكسون قبل الزراعة أعطى أقل نسبة حشائش بالمقارنة بالطرق الأخرى. وبالنظر إلى المكافحة الكيماوية نجد أن جميع المعاملات أعطت نسبة مكافحة مرتفعة للحشائش رفيعة الأوراق ماعدا ترايبنيرون-ميثايل-متوسولام، كلوروسلفيرون ومن أفضل المعاملات فى هذا السياق كانت معاملات أيزوبروتيرون + فينوكسابروب-إيثايل، أيزوبروتيرون + دايكلوفوب-ميثايل، وجميع معاملات مبيدات النجيليات المستخدمة لم تعطى أى تأثير على حشيشة البوا رفيعة الأوراق والمعاملة الوحيدة التى أعطت تأثير عليها هى أيزوبروتيرون. يتضح من النتائج أيضا أن معاملات ترايبنيرون-ميثايل-ميتوسولام وكلوروسلفيرون. أظهر بعض السمية على نباتات القمح فى هذه الأراضى الرملية، على الوجه الآخر أعطى مبيد أيزوبروتيرون مكافحة جيدة على الحشائش عريضة ورفيعة الأوراق (ماعدا الزمير والفلارس من الحشائش رفيعة الأوراق) وأظهر بعض السمية النباتية ومن أفضل المعاملات لمكافحة الحشائش الكلية هى معاملة ميتوسولام + كلودنيافوب-بروبارجيل.

أما من ناحية المحصول فإن معاملتى الرى قبل الزراعة والحرث أو المعاملة بالجرامكسون. وكذلك معاملات مبيدات الحشائش أظهرت زيادة معنوية فى المحصول بالمقارنة بالكونترول.