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EFFECT OF SOME WEED CONTROL TREATMENTS ON TRANSPLANTED ONION (*Allim cepa*, L.) YIELD AND ITS ASSOCIATED WEEDS.

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ABSTRACT

Two field experiments were conducted during 2004/05 and 2005/06 seasons at Sakha Agricultural Research Station to investigate the effect of some weed control treatments on annual weeds, some growth characters, yield components and quality of onion. Each experiment included ten treatments i.e. pendimethalin, trifluralin, oxyfluorfen, oxadiargyl, metribuzin + fluazifop-p-butyl, metribuzin + codinafop propargyl, metosulam + fluazifop- p-butyl, metosulam + fenoxaprop-p-ethyl, hand hoeing (twice) and weedy check.

Results indicated that all herbicidal treatments exerted significant efficacy against annual weeds during both seasons. The most effective treatments against broad leaf weeds were oxyfluorfen, hand hoeing, pendimethalin, oxadiargyl, and trifluralin. Meanwhile, metosulam + fluazifop-p-butyl, oxadiargyl, hand hoeing twice, metribuzin + fluazifop-p-butyl and metosulam + fenoxaprop-p-ethyl were the most effective in controlling *Phalaris* spp. as annual grassy weed. Also, all tested herbicidal treatments significantly increased onion growth characters during the growing stage and at harvest during both seasons. Bulb onion yield per fed significantly increased to different extents as result of using the tested herbicidal treatments in both the two seasons as compared to weedy check. Thus, weed elimination in transplanted onion by these potent herbicides can be recommended for weed control in transplanted onion.

INTRODUCTION

Weeds in transplanted onion fields not only compete with onion seedlings for growth factors but also act as hosts of insects and fungal diseases such as downy mildew that in turn infest onion plants. Weed growth reduce the yield of transplanted onion by 26 – 48% as reported by Babiker and Ahmed (1986).

The use of herbicides in onion fields plays an important role in improving the growth of onion plants, and consequently increase the productivity of unit area and lowering the cost of production as compared to hand weeding. In this respect, Salem *et al.* (1991) and El-Kafoury *et al.* (1992) showed that oxyfluorfen accounted for good activity against broad leaved weeds without injuring onion seedlings. Hegazy *et al.* (1993) revealed that using methabenz– thiazuron as pre-emergence followed by oxyfluorfen as post-emergence resulted in good control of annual weeds and significantly increased the weight of onion seedlings. Also, Singh *et al.* (1997), Nandal *et al.* (2002) and Shekar *et al.* (2002) they indicated that the highest onion bulb yield was observed from the application of oxyfluorfen at 0.37 kg a.i./ha, used alone or combined with hand weeding 40 days after transplanting.

Amrutkar *et al.* (1998) and Satao and Dandge (1999) found that the highest bulb yield and weed control efficiency were obtained from plots treated with trifluralin at 1.08, 1.0 and 0.96 kg/ha in onion. Also, Sinha *et al.* (1996) and Verma and Singh (1997) found that in onion (*Allium cepa*, L.)

weed population and weed dry weight/m^2 were lowest in plots treated with pendimethalin at 1.5 kg a.i./ha. Also, they found that marketable bulb yield was highest by this treatment by 30.29 t/ha as compared to the control treatment. While, Nadagouda *et al.* (1996 and 1998), Vinay-Singh *et al.* (1997) and Rameshwar *et al.* (2002) cited that the herbicide pendimethalin significantly reduced weed density and increased onion yield. The lowest weed density (29.4/m^2) and dry matter (35.8 g/m^2) and the highest bulb yield (135.6 q/ha) when the herbicide was applied after 48 h. from transplanting plus hand hoeing carried out at 60 days after transplanting. Sanjeev *et al.* (2003) found that highest weed control efficiency were recorded from oxyfluorfen at 0.16 kg a.i./ha, pendimethalin at 0.75 kg a.i./ha and metribuzin at 0.70 kg a.i./ha and recorded the highest increase in onion bulb yield (226.1 q/ha), (223.0 q/ha) and (220.2 q/ha), respectively as compared to control treatment.

Ravinder *et al.* (1998), Shimi and Maillet (1998), Ishwar *et al.* (2000), Ved-Prakash *et al.* (2000) and Kolne (2001) reported that weed control treatments in onion whether, alone or in a combination with hand weeding once after 60 days or hand weeding twice after 40 and 60 days from transplanting reduced weeds and improved onion plants growth, bulb diameter and bulb development.

The present investigation was conducted to study the effect of some weed control treatments on annual weeds and their effects on growth characters, yield and its components of onion.

MATERIALS AND METHODS

Two field experiments were conducted at Sakha Agricultural Research Station during 2004/2005 and 2005/2006 seasons to study the effect of some weed control treatments for controlling annual weeds in onion (*Allium cepa*, L.). Each experiment included ten treatments. The treatments were as follows:

1-Stomp (pendimethalin 50% EC) at 1000 g a.i./fed, soil surface applied pre-transplanting.
2-Triverdex (trifluralin 48 %EC) at 480 g a.i. / fed, soil incorporated pre-transplanting.
3-Goal (oxyfluorfen 24% EC) at 180 g a.i./fed, applied 21 days after transplanting.
4-Topstar (oxadiargyl 80%WG) at 200 g a.i./fed, applied 7days after transplanting .
5-Sencor (metribuzin 70% WP) at 70 g a.i /fed, applied pre–transplanting + Fusilade super (fluazaifop-p-butyl 12.5% EC) at 62.5 g a.i./fed, applied 30 days after transplanting.
6-Sinal (metosulam 10% SC) at 7g a.i./fed, applied pre–transplanting + Fusilade super (Fluazifop-P-butyl 12.5% EC) at 62.5 g a.i./fed, applied 30 days after transplanting.
7-Sencor (metribuzin 70%WP) at 70 g a.i./fed, pre-transplanting + Topik (coldinafop propargyl 51%WP) at 15 g a.i./fed, applied 30 days after transplanting.

8-Sinal (Metosulam 10%SC) at 7 g a.i./fed, pre–transplanting + Puma super (fenoxaprop-p-ethyl 75% EC at 37.5 g a.i./fed, applied 21 days after transplanting.
9-Hand hoeing (twice) at 30 and 45 days after transplanting.
10-Weedy check.

Herbicides in both field experiments were sprayed by Knapsack sprayer CP3 with water volume of 200 liters per fed Herbicidal nomenclature are listed in Table (a).

In both seasons, calcium super phosphate (15.5% P2O5)at the rate of 100 kg/fed was added before transplanting and ammonium nitrate (33.5% N) at the rate of 100 kg/fed was added before the 1st and 2nd irrigation. Each experiment was laid out in a randomized complete block design with four replications. The plot area was 3.5x3 m². Seedlings of onion cultivar El-Bhary, were transplanted at the last week of November in the two seasons, where onion seedlings were transplanted in two sides on each ridge in 10 cm apart.

Table (a) Common, trade and chemical names of the nine tested herbicides.

Common name	Trade name	Chemical name
Pendimethalin	Stomp	*N*-(1-ethylpropyl)-3,4-dimethyl-2,6-dinitrobenzenamine
Trifluralin	Triverdex	4-(1,1-dimethylethyl)-*N*-(1-methylpropyl)-2,6-dinitrobenzenamine
Oxyfluorfen	Goal	2-chloro-1-(3-ethoxy-4-nitrophenoxy)-4-(trifluoromethyl)benzene
Metribuzin	Sencor	4-amino-6-(1,1-dimethylethyl)-3-(methylthio)-1,2,4-triazin-5(4*H*)-one
Fluazifop-p-butyl	Fusilade super	butyl (*R*)-2-[4-[[5-(trifluoromethyl)-2-pyridinyl]oxy]phenoxy]propanoate
Fenoxaprop-p-ethyl	Puma super	(R) – 2- [4-[(6-chloro –2-benzoxazolyl)oxy]phenox]propanic acid.
Clodinafop propargyl	Topik	Prop-2- ynyl- (R)-2-[4- (5-chloro –3- fluoropyridin –2- yloxy) phenoxy] propionate.
Oxadiargyl	Topstar	3-[2,4-dichloro-5-(2-propynyloxy)phenyl]-5-(1,1-dimethylethyl)-1,3,4-oxadiazol-2(3*H*)-one
Sulam	Sinal	*N*-(2,6-dichloro-3-methylphenyl)-5,7- dimethoxy[1,2,4] triazolo[1,5-*a*]pyrimidine-2-sulfonamide

All agronomic practices in onion such as land preparation, fertilization and irrigation were done as recommended during the two seasons of study. The collected data were as follows:

A- On weeds .

1- Susceptibility rating:

The susceptibility of weeds to herbicides was measured after 21 days from application the herbicides by visual estimating the reduction percentage of the fresh weight of each species compared to the un-weeded check according to Frans and Talbert (1977) as follows:

a - Susceptible (S) = > 90%.
b - Moderately susceptible (MS) = 80 - 89%.
c - Moderately tolerant (MT) = 60 -79%
d -Tolerant (T) = < 60%

2 - Fresh weight of weeds (g/m²):

Weeds were hand pulled at random from one square meter from each plot after 70 days from transplanting and classified into three categories (annual broad leaf, annual grassy and total weeds), the fresh weight of each species was estimated as (g/m²).

B – Onion growth characters and yield components:

Samples of 10 onion plants were collected at random from each plot after 90 days from transplanting and at harvest to estimate onion growth characters i.e. plant height (cm), number of leaves/ plant and bulb diameter (cm). While, yield and its components (number and fresh weight of marketable and non-marketable bulb yield/ m^2 and average fresh weight of marketable and non-marketable bulb (g.)) were determined in this study at harvest from each plot.

Statistical analysis:

The obtained data were subjected to proper statistical analysis of variance according to Snedecor and Cochran (1980) and the least significant differences (LSD) at 5% level of significance were calculated.

RESULTS AND DISCUSSION

The most dominant weeds in the two seasons were, *Medicago intertexta*, *Sonchus oleraceus*, *Chenopodium* sp., *Portulaca oleracea*, *Beta vulgaris*, *Ammi majus* and *Phalaris* sp.

The efficiency of the applied weed control treatments on onion annual weed species was determined by two methods: (a) visual grades of weeds susceptibility, and (b) fresh weight of weeds (g/m^2.)

(a) Susceptibility rating:

Results in Table (1) indicated that in both seasons, *Medicago intertexta* weed was susceptible to all tested herbicidal treatments (93 – 98 controlling %) except for metosulam + fluazifop-p-butyl treatment which was moderately susceptible (87 and 83 controlling %) in the first and second seasons, respectively.

Sonchus oleraceus, was susceptible to all tested herbicides (93 – 98 controlling %) in the first season. But it, obtained moderately susceptible rates in the second season to all tested herbicides (83 – 89 controlling %) except for, oxyfluorfen and oxadiargyl herbicides which was susceptible (93 - 94 controlling%).

Data also, revealed that *Chenopodium* sp. and *Portulaca oleracea* weeds were susceptible (90 – 98 controlling %) to all tested herbicides in both seasons. *Beta vulgaris*

Ammi majus was susceptible to pendimethalin but, was moderately tolerant to metosulam + fluazifop-p-butyl and, was moderately susceptible to trifluralin, oxyfluorfen, oxadiargyl, metribuzin+ fluazifop- p- butyl, metribuzin +coldinafop propargyl and metosulam +fenoxaprop-p-ethyl (81 – 89 controlling %) in both seasons.

weed was susceptible (94 – 98 controlling %) in the first season while it, was moderately susceptible (82 - 89 controlling %) in the second season to all tested herbicides.

Table(1): Visual rating of susceptibility of annual weed species to some weed control treatments during 2004/05 and 2005/06 seasons

Treatments	Rate/fed (g a.i.)	Annual broad leaved weeds g/m² 2004/05 season						Grasses *Phalaris* spp.
		Medicago intertexta	*Sonchus oleraceus*	*Chenopodium spp.*	*Portulaca oleracea*	*Beta vulgaris*	*Ammi majus*	
Pendimethalin	1000	93 S	98 S	96 S	99 S	97 S	91 S	91 S
Traifluralin.	480	94 S	96 S	90 S	98 S	98 S	86 MS	89 MS
Oxyfluorfen.	180	97 S	97 S	96 S	97 S	96 S	81 MS	81 MS
Oxadiargyl.	200	95 S	93 S	91 S	98 S	96 S	87 MS	95 S
Metribuzin + Fluazifop.	(70+62.5)	97 S	95 S	91 S	98 S	96 S	81 MS	94 S
Metosulam + Fluazifop.	(7+62.5)	87 MS	95 S	90 S	98 S	97 S	78MT	95 S
Metribuzin + Coldinafop.	(70+15)	94 S	93 S	94 S	95 S	96 S	89 MS	91 S
Metosulam + Fenoxaprop.	(7+37.5)	98 S	96 S	97 S	98 S	94 S	81 MS	93 S
2005/06 season								
Pendimethalin.	1000	95 S	87 MS	96 S	97 S	83 MS	92 S	92 S
Traifluralin.	480	94 S	84 MS	95 S	98 S	89 MS	88 MS	81 MS
Oxyfluorfen.	180	97 S	93 S	95 S	97 S	87 MS	84 MS	87 MS
Oxadiargyl.	200	91 S	94 S	94 S	95 S	87 MS	82 MS	93 S
Metribuzin + Fluazifop.	(70+62.5)	95 S	89 MS	96 S	94 S	83 MS	89 MS	91 S
Metosulam + Fluazifop.	(7+62.5)	83 MS	87 MS	94 S	96 S	82 MS	76 MT	90 S
Metribuzin + Coldinafop.	(70+15)	92 S	86 MS	96 S	98 S	87 MS	84 MS	92 S
Metosulam + Fenoxaprop.	(7+37.5)	97 S	83 MS	96 S	95 S	83 MS	82 MS	95 S

S = > 90 MS = 80 - 89 MT = 60 - 79 T = < 60

As for the *phalaris* sp. (the only grassy weed) it was affected in a similar way in both seasons. Such weed was moderately susceptible (81 - 89 controlling%) to triflurlin and oxyfluorfen and susceptible (90 - 95 controlling%) to other tested herbicidal treatments.

2-Effect of weed control treatments on fresh weight of annual weeds :

Data presented in Table (2) showed that in unweeded control plots annual broad leaved weeds were about 94.9 and 93.5% of the total annual weeds compared with 5.1 and 6.5% for annual grassy weed (*Phalaris* sp.) in the 1st and 2nd seasons, respectively. *Chenopodium sp., portulaca oleracea and Beta vulgaris* were the most prevalent weeds and constituted 30.0, 23.8

and 20.5% as well as 47.1, 22.5 and 6.0% of the total weeds in the 1st and 2nd seasons, respectively. Other broad leaved weed species included *Medicago intertexta, Sonchus oleraceus* and *Ammi majus* whom constituted 8.6, 7.9 and 4.0% of total weeds in 2004/2005 and 2005/2006 seasons, respectively.

Results indicated that all herbicidal treatments as well as hand weeding significantly decreased the fresh weight of annual weeds in both seasons as compared with the weedy check. These results are in complete harmony with that mentioned by Sinha *et al.* (1996) Verma and Singh (1997), Ishwar *et al.* (2000) and Sanjeev *et al.* (2003), whom they indicated that oxyfluorfen, pendimethalin and metribuzin significantly reduced the weed population.

The efficiency of weed control treatments on *phalaris* sp. can be arranged in descending order as follows, metosulam + fluazifop –p-butyl , oxadiargyl, hand hoeing, metribuzin +fluazifop –butyl, metosulam + fenoxaprop-p-ethyl , metribuzin + coldinafop propargyl, pendimethalin, trifluralin and oxyfluorfen (95.0, 94.7, 94.5, 94.0, 92.7, 90.9, 90.5, 89.5 , and 84.7 %) and (94.5, 93.0, 93.0, 92.8, 92.0, 91.7, 91.3, 91.0 and 81.7%) in the first and second seasons respectively.

Weed control treatments exerted a significant reduction in fresh weight of broad leaved weeds than the control. Generally, oxyfluorfen, hand hoeing, pendimethalin and oxadiargyl were the potent treatments in this respect and decreased total broad leaved weeds than the control by 96.8, 96.4, 95.8 and 94.9 % and by 96.0, 95.4, 94.6 and 94.2 % in the first and second seasons, respectively.

Table (2): Table (2): Effect of weed control treatments on fresh weight (g/m^2) of annual weeds in onion at 70 days after transplanting during 2004/05 and 2005/06 seasons

Treatments	Rate/fed (g, a.i.)	Annual broad leaved weeds (g/m^2)								
		2004/05 season								
		Medicago intertexta	*Sonchus oleraceus*	*Chenopodium spp.*	*Portulaca oleracea*	*Beta vulgaris*	*Ammi majus*	Total broad leaf weeds	Grassy weeds	Total annual weeds
Pendimethalin.	1000	15	13	66	45	45	45	229	28.2	257
Trifluralin.	480	31	17	173	28	24	32	306	31.2	337
Oxyfluorfen.	180	3	43	29	25	20	25	175	45.4	230
Oxadiargyl.	200	28	32	99	66	45	25	295	15.8	311
Metribuzin + Fluazifop.	70+62.5)	17	25	156	25	47	45	314	16.6	331
Metosulam + Fluazifop.	(7+62.5)	62	21	166	30	35	50	364	14.9	379
Metribuzin + Coldinafop.	(70+15)	74	34	149	30	50	30	367	27	394
Metosulam + Fenoxaprop.	(7+37.5)	10	19	220	25	66	45	385	21.6	407
Hand hoeing twice		33	11	29	25	20	25	196	16.4	212
Weedy check		495	454	1728	1371	1184	232	5464	297	5761
LSD at 5%		167	145	192	74.1	90	66.5	356	85.2	361
2005/06 season										
Pendimethalin.	1000	16	26	83	26	45	23	219	24.9	244
Trifluralin.	480	28	12	114	12	35	50	251	25.6	277
Oxyfluorfen.	180	10	13	65	11	40	24	163	52.2	215
Oxadiargyl.	200	16	21	82	12	45	60	236	19.7	256
Metribuzin + Fluazifop.	70+62.5)	23	27	79	18	60	45	252	20.6	273
Metosulam + Fluazifop.	(7+62.5)	10	13	105	31	60	44	263	15.7	288
Metribuzin + Coldinafop.	(70+15)	18	30	107	22	55	34	266	23.8	290
Metosulam + Fenoxaprop.	(7+37.5)	83	24	130	14	48	40	339	22.6	362
Hand hoeing twice		3	27	53	40	30	37	190	20	210
Weedy check		307	191	2063	985	264	282	4092	286	4378
LSD at 5%		13.9	59.5	155	17.2	236	51.3	197	27.2	214

3-Effect of weed control treatments on growth characters of onion plant:

3.1. Plant height :

Data presented in Table (3) showed that onion plant height at 90 days from transplanting was significantly affected by weed control treatments in 2004/05 and 2005/06 seasons. All tested herbicides increased the tallest plants in both seasons as compared to the weedy check treatment.

Data revealed also, that the tallest plants were obtained by hand hoeing twice followed by oxyfluorfen, pendimethalin, oxadiargyl and trifluralin. Compared to the control, the previous excelsior treatments increased onion plant height respectively by 31.2, 26.6, 23.1, 18.8 and 12.4% in the 1st season and by 14.2, 7.5, 8.5, 8.0 and 4.5% in the 2nd season, orderly.

3.2. Number of leaves / plant:

Data in Table (3) revealed that number of leaves per plant increased by weed control treatments than weedy check treatment during both seasons. Oxyfluorfen gave the highest values and followed by pendinethalin, oxadiargyl; trifluralin, metribuzin + fluazifop–p-butyl, metosulam + fluazifop-p-butyl, hand hoeing twice metribuzin + coldinafop, propargyl, and metosulam + fenoxaprop-p-ethyl, respectively compared to weedy check treatment.

The superiority of hand hoeing and herbicidal treatments in this respect might be attributed to that onion plants exposed to low weed competition as a result of eliminating weed and its negative impacts on growth of crop plant. Similar results were reported by Ravinder *et al* (1998), Shimi and Maillet (1998) and Ved–prakash *et al.* (2000).

Table (3): Effect of weed control treatments on some growth characters of onion in 2004/05 and 2005/06 seasons.

Characters / Treatments	Rate/fed (g a.i.)	2004/05 season			2005/06 season		
		Plant height (cm)	No. of leaved/plant	Bulb diameter (cm)	Plant height (cm)	No. of leaved/plant	Bulb diameter (cm)
Pendimethalin.	1000	56.4	7.21	5.86	46	5.84	5.5
Trailluralin.	480	51.5	6.9	5.55	44.3	5.05	5.27
Oxyfluorfen.	180	58	7.8	5.86	45.6	5.54	5.09
Oxadiargyl.	200	54.4	7.25	5.45	45.8	5.18	5.46
Metribuzin+Fluazifop.	(70+62.5)	49.8	6.88	5.16	45.4	5.28	5.21
Metosulam+ luazifop.	(7+62.5)	49.5	6.63	5.06	43.5	5.11	5.28
Metribuzin+ Coldinafop.	(70+15)	48	5.58	5.02	43.3	4.8	5.27
Metosulam+ Fenoxaprop.	(7+37.5)	47.2	5.24	4.95	42.6	4.81	5.01
Hand hoeing twice		60.1	6.18	6.26	48.4	5.58	5.66
Weedy check		45.8	5.18	4.37	42.4	4.55	4.12
LSD at 5%		3.04	0.55	0.40	2.36	0.52	0.60

3.3. Bulb diameter (cm):

Data illustrated in Table (3) showed that highest bulb diameter (cm), values were obtained from the application of hand hoeing twice followed by pendimethalin , oxyfluorfen, trifluralin and oxadiargyl. Formentioned superior treatments increased bulb diameter than unweeded treatment by 30.2, 25.4, 25.4, 21.3 and 19.8% and by 27.2, 25.1, 24.5, 21.8, and 19.1% in the 1st and 2nd seasons, respectively. Chemical and mechanical weed control treatments reduced weed competition and thus afforded more efficient utilization of available resources to onion plants to produce taller plants having more leaves and bulb diameter than weedy check plants. These results are coincided with those reported by Ghosheh (2004).

4- Effect of weed control treatments on yield and its components :

4.1 Number of marketable and non-marketable bulbs/ m^2:

Data in Table (4) indicate that all tested herbicidal treatments as well as hand-hoeing treatment increased significans number of marketable bulbs and decreased significantly number of non-marketable bulbs/m^2 compared

with weedy check treatment. This was fact in both 2004/2005 and 2005/2006 seasons.

4.2. Fresh weight of onion bulbs (kg/ m²)

Data presented in Table (4) showed significant impact for weed control treatments on fresh weight of marketable onion bulb (kg/m²). Where, all herbicidal treatments and hand hoeing were superior in increasing these traits than weedy check treatment in both seasons. On the other hand, all herbicidal treatments decreased fresh weight of non-marketable onion bulb (kg/m²) in the two seasons as compared to weedy check treatment. Results also, showed that using the tested herbicidal treatments was necessary to eliminate annual weeds and to avoid their negative impacts on onion plants.

4.3. Average bulb weight (g):

Data revealed that average bulb weight of onion (g) was significantly affected by weed control treatments during the two growing seasons. Results denoted that weed control
treatments increased marketable bulb weight (g), but its, decreased unmarketable bulb weight (g) compared to weedy check treatment. This might be attributed to that onion plant in the latter treatment exposed to severe competition from weeds.

4.4. Marketable onion yield (ton/fed):

Regarding the effect of weed control treatments on marketable bulb yield, data denoted that hand hoeing twice gave the highest onion yield (8.24 ton/fed) by `(5.58` ton/fed) increases than weedy check treatment, followed by oxyfluorfen, pendimethalin, oxadiargyl, trifluoralin, metribuzin + fluazifop-p-butyl, metosulam + fluazifop-p-butyl, metribuzin + coldinafop propargyl and metosulam + fenoxaprop-p-ethyl. These treatments improved marketable onion yield than control by 4.78, 4.45, 4.45, 4.43, 4.42, 4.33, 3.91 and 3.9 ton/fed, respectively in 2004/05 season, and by 5.47, 4.58, 4.22, 4.05, 4.0, 3.78, 3.42 and 3.04 ton/fed, respectively in 2005/06 season.

Also, results indicated that the influence of such treatments on marketable onion bulb yield had the same trend that of plant height, number of leaves/ plant, onion diameter, number of onion/m² and fresh weight of onion kg/m². The superiority of herbicidal treatments and hand hoeing twice treatment might be attributed to that onion plants exposed to low weed competition as a result of eliminating weed and its negative impacts on onion plants. Weeds compete with onion plants for water, light and nutrients and the feasibility of maintaining high yield with marketable quality in absence of effective weed control is strongly doubtful. The above results are in agreed with those obtained by Nadagouda *et al.* (1996), Amrutkar *et al.* (1998), Ravinder *et al.* (1998), Ishwar *et al.* (2000), Sanjeev *et al.* (2003) and Ghosheh (2004).

Table (4): Effect of weed control treatments on onion yield during 2004/05 and 2005/06seasons.

Characters / Treatments	Rate/fed (g, a i)	2004/05 season							
		No .of onion bulbs / m^2		Fresh weight of onion bulbs kg / m^2		Average bulb weight (g)		Marketable Yield (ton /fed)	Yield increases than weedyCheck (t /fed)
		Marketable	Non-marketable	Marketable	Non-marketable	Marketable	Non-marketable		
Pendimethalin.	1000	13.0	5.0	1.7	0.4	130.1	69.7	7.1	4.5
Trailluralin.	480	14.0	4.0	1.7	0.2	120.5	50.1	7.1	4.4
Oxyfluorfen.	180	16.0	4.0	1.8	0.3	110.7	77.4	7.4	4.8
Oxadiargyl.	200	13.0	3.0	1.7	0.2	130.1	65.2	7.1	4.5
Metribuzin + Fluazifop.	(70+62.5)	14.0	4.0	1.9	0.3	120.3	65.1	7.1	4.4
Metosulam + Fluazifop.	(7+62.5)	15.0	4.0	1.7	0.3	110.9	70.5	7.0	4.3
Metribuzin + Coldinafop.	(70+15)	13.0	3.0	1.6	0.2	120.3	57.4	6.6	3.9
Metosulam + Fenoxaprop.	(7+37.5)	12.0	5.0	1.6	0.4	130.1	84.2	6.6	3.9
Hand hoeing twice		14.0	4.0	2.0	0.2	140.1	60.3	8.2	5.6
Weedy check		9.0	10.0	0.6	0.5	70.3	45.2	2.7	0.0
LSD at 5%		0.49	0.09	0.41	0.14	38.55	20.40	2.05	
		2005/06 season							
Pendimethalin.	1000	14.0	4.0	1.8	0.4	138.4	70.9	8.1	4.6
Trailluralin.	480	14.0	4.0	1.8	0.4	129.4	55.7	7.6	4.1
Oxyfluorfen.	180	15.0	4.0	1.8	0.2	140.1	70.1	8.8	5.3
Oxadiargyl.	200	14.0	4.0	1.7	0.3	132.3	74.1	7.8	4.2
Metribuzin + Fluazifop.	(70+62.5)	13.0	5.0	1.7	0.4	138.4	80.4	7.6	4.0
Metosulam + Fluazifop.	(7+62.5)	13.0	5.0	1.8	0.3	134.3	70.2	7.3	3.8
Metribuzin + Coldinafop.	(70+15)	14.0	4.0	1.9	0.3	118.7	74.5	7.0	3.4
Metosulam + Fenoxaprop.	(7+37.5)	13.0	3.0	1.5	0.4	120.9	73.4	6.6	3.0
Hand hoeing twice		15.0	4.0	1.9	0.3	145.2	68.2	9.2	5.6
Weedy check		10.0	8.0	0.8	0.4	84.7	40.9	3.6	0.0
LSD at 5%		0.52	0.11	0.41	0.14	39.60	21.90	2.25	

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تأثير بعض معاملات مكافحة الحشائش على محصول البصل والحشائش المصاحبة له .

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أقيمت تجربتان حقليتان في مزرعة محطة البحوث الزراعية بسخا كفر الشيخ خلال موسمي الزراعة ٢٠٠٤/٢٠٠٥و٢٠٠٥/٢٠٠٦م لدراسة تأثير بعض معاملات مكافحة الحشائش(البنداميثالين، التزايفلـورالين، أوكسى فلورفن، أوكسادرجل، متريبوزين+ فلوزيفوب ب بيوتايـل، ميتوسـولام + فلوزيفـوب ب بيوتايـل، متريبوزين+كولدينافوب بروبرجل و ميتوسولام + فينوكسابروب ب ايثايل بالاضافة الى معاملة العزيق مرتين) على مكافحة الحشائش الحولية ومعرفة تأثير هذه المعاملات على بعـض صـفات النمـو وبعـض مكونـات المحصول والمحصول فى البصل. استخدم التصميم العشوائي الكامل ذو أربعة مكررات وكانت مساحة القطعة التجريبية ١٠,٥ مترا مربعا وكان صنف البصل المنزرع هو البحيرى.

أوضحت النتائج أن كل معاملات مكافحة الحشائش المختبرة أعطت مكافحة جيدة للحشائش الكليـة فـى موسمى الدراسة حيث كانت المعاملات أوكـسى فلـورفن، العزيـق مـرتين، بنـداميثالين ، أوكـسادرجل وترايفلورالين متريبوزين+ فلوزيفوب ب بيوتايل أكثر فاعلية على الحشائش العريضة الأوراق،وكانت معاملات ميتوسولام + فلوزيفوب ب بيوتايلن، أوكسادرجل ، العزيق مرتين ،متريبـوزين+ فلوزيفـوب ب بيوتايـل و ميتوسولام + فينوكسابروب ب ايثايل أكثر فاعلية على الحشائش ضيقة الأوراق (الفلارس). أيضا أوضـحت النتائج أن كل معاملات مكافحة الحشائش المختبرة أدت الى زيادة معنوية فى صفات النمو (طول النبات ،عـدد الأوراق للنبات ، قطر البصلة) و كذلك زيادة انتاج الفدان من البصل الصالح للاستخدام و تقليل نسبة البـصل غير الصالح للاستخدام بنسب مختلفة مقارنة بمعاملة الكنترول فى موسمى الدراسة.

من ذلك يمكن التوصية بتكامل استخدام مبيدات الحشائش مثل الأوكـسى فلـورفن، متريبـوزين، بنداميثالين و أوكسادرجل مع بعض مبيدات الحشائش النجيلية مثل فلوزيفوب- ب بيوتايل ، فينوكسابروب ب ايثايل، كولدينافوب بروبرجل و العزيق مرتين حيث أعطت هذه المعاملات مكافحة جيـدة للحـشائش بـدون تأثيرات ضارة على نباتات البصل وزيادة انتاجية محصول البصل.