EFFICACY OF SOME WEED CONTROL TREATMENTS ON ANNUAL WEEDS AND GROWTH CHARACTER AND YIELD AND ITS COMPONENTS OF FLAX (*LINUM USITATISSIMUM* L.)

GHALWASH A. M. AND I. E. SOLIMAN

Weed Research Central Laboratory, A R C, Giza

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Abstract

Two field experiments were conducted during two successive seasons of 2004/05 and 2005/06 at Sakha Agricultural Research Station, Egypt, to investigate the efficacy of some weed control treatments i.e. bentazon, bromoxynil, fluazifop-p-butyl and butralin, in addition to the hand weeding for controlling annual weeds and their effects on some growth characters, straw and seed yield of flax.

Results indicated that bromoxynil, bentazon and butralin achieved good control for broad leaf weeds during the two seasons. These herbicides reduced broad leaf weeds by 81.3, 74.9 and 71.2%, respectively in 2004/05 season and by 76.2, 71.1 and 72.1%, respectively in 2005/06 season as compared to the weedy check. Fluazifop-p-butyl achieved the highest reduction of annual grassy weeds as it reduced grassy weeds by 71.8 and 70.9%, respectively in the two seasons as compared to weedy check. Hand weeding (twice) was not enough for reducing weed population, as it reduced annual weeds only by 62.6 and 59.6%. Therefore, it can be practiced only as a helping factor in weed control program.

Results revealed that all studied herbicides significantly increased growth characters of flax i.e. plant height, dry weight/plant, technical length and fruit zone length during the growth stage and at harvest. Bromoxynil, bentazon, butralin and fluazifop-p-butyl herbicides increased straw yield by 55.3, 51.6, 51.6 and 51.6% and; 71.1, 36.7, 49.2 and 35.2% and increased seed yield of flax by 35.2, 35.1, 13.5 and 13.5% and; 35.9, 33.3, 25.6 and 15.4% during both seasons, respectively as compared to the weedy check. Data also cleared that most herbicidal treatments slightly decreased chlorophyll(a) and (b) but did not adversely affect oil content of flax seeds.

INTRODUCTION

Flax (linum usitatissimum L.) is one of the well known ancient which crops grown for its fiber and oil. In Egypt it is grown as a double purpose crop for its seed and its fiber. Flax ranks second after cotton, as a fiber crop, where flax plays an important role in the national economy as one of the crop, which increase the national income and may contribute in increasing exports.

Weeds which emerged soon after planting caused high reduction in seed and straw yield of flax if not removed as reported by Ibrahim and El-Maghraby (1978). In Flax it is nearly impossible to use any mechanical method for weed control. Thus, chemical weed control plays an important role in improving the growth of flax plants, and consequently increase the productivity of unit area and lowering the cost of production as compared to hand weeding.

In this respect, Roebuck and Trennery (1977) found that using of bromoxynil mixed in various proportions with MCPA reduced herbicides toxicity on flax plants. Also, Osman (1982) found that number of capsules per plant, number of seeds per capsule and weight of 1000 seeds were not affected by using bromoxynil at rate of 1/2 l/fed. as a post-emergence application. Bor (1976) found that bromoxynil and bentazon at the moderate rates (0.5-1.0 l/fed.) gave the highest controlling of most broad leaved weeds in flax.

Concerning the growth and yield of fiber or seeds in flax, Chow (1977) and El-Maghraby et al. (1985) show that Brominal did not show any harmful effect on growth and development of flax and increased the straw and seed yield. Bentazon at the recommended dose gave an increase in fiber yield by 5.9% as indicated by Maddens, (1973). The high rate of bentazon show some favourable on straw and seed yield of flax (Stryckers and Van-Himme, 1972), Also, Salim et al. (1985) found that bromoxynil and bentazon gave effective control for broad-leaved weeds and significantly increased straw and seed yield by using either of these herbicides at the rate of 0.5 l/fed.

It is well known that post-emergence herbicides may affect chorophyll content of flax plant. In respect Soliman (2002) reported that butralin had the least effect in inhibiting chlorophyll contents after sixty three days from application at rate of 2.0 and 2.5 l/fed. as soil incorporation. Where it decreased total chlorophyll contents by 19.89 and 21.88%, respectively. Also, gave significant increase in straw and seed yield of flax.

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

MATERIALS AND METHODS

Two field experiments were conducted at Sakha Agricultural Research Station during 2004/05 and 2005/06 seasons to study the effectiveness of some weed control treatments for controlling annual weeds in flax, (*Linum usitatissimum,L.)* c.v. Giza7. Sowing dates were 5th and 11th Nov. in 2004/2005 and 2005/2006 season respectively.

This experiment was laid out in a randomized complete block design with four replications with plot area of 21 m^2. Weed control treatments were:

1-Basagran (bentazon 48% AS) at 0.75 l/fed., applied at 30 days after sowing (DAS).

2- Brominal (bromoxynil 24% EC) at 0.5 l / fed., applied at thirty DAS.

3- Fusilade super (fluazifop-p-butyl 12% EC) at 0.5 l/fed., applied at 30 DAS.

4-Amex (butralin 48%EC) at 2.0 l/ fed., applied after sowing and before irrigation).

5- Hand weeding (twice) carried out after 45 and 60 days after sowing.

6- Control (untreated).

Herbicides in both investigations were sprayed by Knapsack sprayer CP3 with water volume of 200 liters per feddan. Nomenclature of herbicides are listed in Table (1). All agronomic practices in flax such as land preparation, fertilization and irrigation were done as recommended during the two study seasons. The following data were recorded:

1- Dry weight of annual weeds, g/m^2

Weeds were hand pulled at random from one square meter of each plot after 60 and 120 days from sowing. Weeds were identified and dried in a forced draft oven at 70 °C for 48 hours and the dry weight of both broad and narrow-leaved weed species were estimated as g/m^2.

Reduction percentage (%R) for annual weeds or dodder were calculated according to Topps and Wain (1957) formula as following:

$$\%\ R = \frac{A - B}{A} \times 100$$

Where: A = Dry weight of weeds in untreated plot.

B = Dry weight of weeds in treated plot.

2- Flax growth characters and yield components

The growth characters of flax plants were calculated after 70, 90 days from sowing and at harvest from 10 plants were taken at random from each plot. While, yield and its components were determind in this study at harvest from plants of each plot.

3- Oil content

Samples of seeds were taken randomly from each treatment to determine oil content according to method described by the (A.O.A.C., 1990), using petrolium ether (40 - 60 c) in Soxhlet apparatus.

4 - Chlorophyll content

Chlorophyll content of flax leaves were measured according to Sweeny and Martin (1961). Chlorophyll a, b and total chlorophyll were recorded as mg

chlorophyll/g sample (fresh weight). Reduction percentage in chlorophyll content of the treated plants was estimated considering the untreated ones as standard. Control treatment carried out using flax leaves that not subjected to any herbicide.

5 - Statistical analysis

The obtained data were subjected to proper statistical analysis of variance according to Snedecor and Cochran (1980).

Treatment means were compared using Duncan's multiple range test (Duncan, 1955), at the 5% level of propability.

Table a. Nomenclature of the studies herbicides

Common name	Trade name	Chemical name
Bentazon	Basagran	3 - isopropyl 1 H–2,1,3 benzothiadiazin -4-(3H) one 2,2 – dioxide.
Bromoxynil	Brominal	3,5–dibromo–4– hydroxyl benzo nitrile.
Butralin	Amex	4- (1,1- dimethylethyl)-N-(1-methylpropyl)- 2,6-dinitrobenzenamine.
Fluazifop-p-butyl	Fusilade super	butyl (*R*)-2-[4-[[5-(trifluoromethyl)-2-pyridinyl]oxy]phenoxy]propanoate

RESULTS AND DISCUSSION

A. Effect of weed control treatments on annual weeds

The most dominant weeds in the two seasons were, *Rumex dentatus, Sonchus oleraceus, Medicago hispida, Anagallis arvensis, Ammi majus, Convolvulus arvensis, Brassica nigra, Coronopus sp., Phalaris sp.* and *Eleusine indica.* Table (2) shows means of dry weight of broad leaf, grassy and total annual weeds of the two weed surveys as affected by different herbicidal treatments and hand weeding compared with the control treatment in both seasons.

Results indicate that all herbicidal treatments as well as hand weeding significantly decreased the dry weight of broad leaf weeds in both seasons as compared with un weedy check with the exception of fluazifop treatment. These results were in complete harmony with the mentioned by Bor (1976), Roebuck (1977) and Salim *et al.* (1985) who indicated that bentazon, bromoxynil gave excellent control of broad leaved weeds in flax.

Table 1. Dry weight of annual weeds (g/m2) at 60 and 75 days after sowing as affected by weed control treatments in 2004/05 and 2005/06 seasons

Treatments	Rate per feddan (l/f)	Dry weight of weeds (g/m^2) after 60 days from sowing			Dry weight of weeds (g/m^2) after 120 days from sowing		
		Broad leaf weeds	Grassy weeds	Total Weeds	Broad leaf weeds	Grassy weeds	Total Weeds
2004/05 season							
Bentazon	0.75	5.13 a	6.00 ab	11.13 a	11.35 a	10.13b	21.48 ab
Bromoxynil	0.7	4.16 a	6.13 ab	10.29 a	8.46 a	10.53 ab	18.99 a
Butralin	2 .0	5.79 a	5.98 a	11.77 b	13.00 ab	9.97 a	28.97 b
Fluazifop-butyl	0.5	19.40 b	2.76 a	22.16 c	21.17 c	4.38 a	25.55 c
Hand weeding		6.80 a	3.42 a	10.22 b	16.35 b	6.34 a	22.69 b
Control		22.10 b	9.59 b	31.69 d	45.15 d	15.53 b	60.68 d
2005/06 season							
Bentazon	0.75	7.69 ab	7.00 b	14.69 a	18.02 b	12.20 b	30.22 a
Bromoxynil	0.7	6.29 a	6.89 b	13.18 a	14.84 a	12.89 bc	27.73 a
Butralin	2 L	7.21 a	6.92 b	14.13 a	17.47 ab	10.75 b	28.22 a
Fluazifop-butyl	0.5	18.79 c	3.09 a	21.88 c	51.29 d	4.47 a	55.76 b
Hand weeding		9.47 b	5.59 ab	16.06 b	23.36 c	8.14 ab	31.50 ab
Control		23.19 d	10.28 c	33.47 d	62.54 e	15.36 c	77.90 c

Means followed by the same letter are not significant different at 5 % level according to Duncan's multiple range test.

Concerning to grasses, the results clearly indicate that fluazifop- p- butyl as a post-emergence gave highest controlling of grasses during the two seasons.

B. Effect of weed control treatments on flax

B.1. On plant length

Data presented in Table (2) show the effect of weed control treatments on plants length (cm) at 70, 90 days after sowing and at harvest in 2004/05 and 2005/06 winter seasons. All tested herbicides increased plant length in both seasons as compared to the control treatment. This results similar with that obtained by Soliman (2002).

Data revealed, also that herbicide bentazon gave the tallest plants and increased the plant length at harvest time by 20.15 and 11.6 % in the two seasons at harvest time respectively, as compared to control treatment, follwed by bromoxynile and butralin, while herbicide fluazifop gave lowest plant length at harvest in both seasons as compared to the other studied herbicides.

B.2. On dry weight of flax plant

Data in Table (2) revealed that dry weights of flax plant at 70, 90 days and harvest in both seasons were significantly influenced by weed control treatments during both seasons. The herbicide bentazon gave the significantly highest values and increased the dry weight of flax plants by 38.5 and 46.9 % in two seasons, respectively, compared to the check, followed by butralin and bromoxynil. The herbicide fluazifop-p-butyl gave the least values compared with other herbicides. This reduction in dry weight under the control treatment might be attributed to the negative effect of different weeds on flax plants growth which may be occurred as a result of the competition between flax plants and weeds. The superiority of herbicides might treatments be attributed to that flax plants exposed to low weed competition as a result of eliminating weed and its negative impacts on crop plants.

Table 2. Effect of weed control treatment on some growth characters of flax in 2004/ 05 and 2005/ 06 seasons

Treatments	Rate per feddan (l/f)	After 70 days		After 90 days		At harvest			
		Plant height (cm)	Dry weight/ plant (g)	Plant height (cm)	Dry weight/ plant (g)	Plant height (cm)	Dry weight /Plant (g)	Tech. length (cm)	Fruit zone length (cm)
2004/05 season									
Bentazon	0.75	31.35 c	0.04 c	61.00 b	2.14 c	93.72 d	1.33 c	78.9 c	12.48 b
Bromoxynil	0.7	22.71 a	0.03 b	55.60 b	1.79 ab	86.18 c	1.17 b	72.25 b	12.17 b
Butralin	2.0	26.25 b	0.03 b	55.30 b	1.93 ab	86.12 c	1.19 b	75.72 c	13.35 c
Fluazifop-butyl	0.5	24.23 a	0.03 b	49.25 a	1.86 b	83.17 b	1.09 a	70.87 ab	12.30 a
Hand weeding		24.99 ab	0.03 b	55.25 b	1.98 bc	80.30 a	0.98 a	67.05 a	10.27 a
Control		22.14 a	0.02 a	49.18 a	1.68 a	78.00 a	0.96 a	65.20 a	10.70 a
2005/06 season									
Bentazon	0.75	45.13 c	0.04 c	78.00 b	2.19 b	93.77 c	1.88 c	83.37 c	12.40 b
BromOxynil	0.7	41.50 b	0.03 ab	74.12 b	1.90 ab	88.18 b	1.82 ab	76.07 b	12.92 b
Butralin	2.0	42.00 b	0.03 b	78.51 b	2.5 b	86.07 a	1.85 b	74.50 a	10.27 a
Fluazifop-butyl	0.5	36.70 a	0.04 c	73.25 a	1.89 ab	85.30 a	1.71 ab	73.30 a	10.12 a
Hand weeding		46.75 c	0.03 a	77.00 a	1.85 a	85.30 ab	1.37 a	76.62 b	11.0 ab
Control		41.11 b	0.03 a	74.15 b	1.67 a	84.00 a	1.28 a	74.55 a	10.10 a

Means followed by the same letter are not significant different at 5 % level according to Duncans' multiple range test.

Data presented in Table (2) showed significant differences for weed control treatments on the technical length and fruit zone length. Where, all herbicide treatments were superior in increasing these traits than hand weeding treatment and control treatment in both seasons. Results, also showed that using the tested

herbicides was necessary to eliminate annual weeds and to avoid their negative impacts on crop plants. Similar results were reported by Salim *et al.* (1985) and Soliman (2002). Same trend was noticed for plant height and dry weight during both seasons.

B.3.On flax yield and its components

Results presented in Table (3) show the effect of weed control treatments on number of capsules per plant, number of seed per capsule, number of seed per plant, weight of seed per plant, weight of 1000 seeds, straw yield (ton/fed.), seeds yield (ton/fed.) and oil yield (kg/fed.) at harvest in both 2004/2005 and 2005/2006 seasons.

B.3.a.On number of capsules / plant

Data reveal that number of capsules / plant was significantly affected by weed control treatments during the two growing seasons. Results denoted that weed control treatments increased number of capsules / plant in both seasons as compared to the control treatment. This might be attributed to that flax plant in the latter treatment exposed to severe competition from weeds. The highest significant number for capsules per plant was harvested from herbicide bromoxynil treatment, followed by butralin and bentazon. These treatments increased number of capsules per plant by 51.2, 39.2 and 27 %, respectively in 2004/05 and by 48.3, 13.2 and 22.1%, respectively in 2005/06 season. Meanwhile, fluazifop gave the lowest increase in number of capsules (7.8 and 9.1 %) in both seasons, respectively compared to control treatment.

B.3.b.On number of seeds / capsules

Weed control treatments exerted a significant effect on number of seed/ capsules. Generally, fluazifop-p-butyl along with unweeded were the inferior treatments in this respect. Contrarily, handweeding and bromoxynil treatments were the potent treatments. Such finding was true in both the two experimental seasons.

B.3.c.On number of seeds / plant

Data illustrated in Table (3) indicate that bentazone and bromoxynil treatments were significantly the best weed control treatments and gave the highest number of seeds / plant in the two seasons as compared with other treatments. On the other hand, fluazifap-p-butyl gave the lowest number of seeds / plant as compared with control treatment.

B.3.d.On weight of seeds per plant and weight of 1000 seeds

All herbicidal treatments (bromoxynil, bentazon, butralin and fluazifop-p-butyl) increased weight of seeds per plant significantly in the two seasons, as well as the weight of 1000 seeds in most cases as compared to cntrol treatment. These results are similar to those reported by El-Maghraby *et al.* (1985) and Salim *et al.* (1985).

B.3.e.On straw yield (t/fed.)

Data illustrated in Table (3) show that bromoxynil and bentazon gave the highest straw yield in both seasons and were not differ significantly as compared with each of butralin and fluazifop on most cases. Chow (1977) and Salim *et al.* (1985) found the same results in their experiments. On the other hand, control treatment was the worst in straw yield, where it gave the lowest straw yield. Such finding was in and agreement with that obtained by Salim *et al.* (1985) and Soliman (2002).

B.3.f. On seed yield (t/fed.)

Regarding the effect of weed control treatments on seed yield, data denoted that both of bromoxynil and bentazon gave the highest seed yield, ton/fed. followed by butralin and fluazifop. The influence of such treatments on seed yield had the same trend of that of plant height, technical length, number of capsules / plant, weight of seed / plant, straw yield and dry weight of flax/ plant.

Hand weeding treatment recorded the lowest seed yield (0.39 and 0.40 ton/fed.) as compared to seed yield estimated from tested herbicidal treatments. The above results presented in Table (4) agreed with those obtained by Osman, (1982), El-Maghraby *et al.* (1985), Salim *et al.* (1985) and Soliman (2002).

Table 3. Effect of weed control treatments on flax seed yield and its yield components during 2004/05 and 2005/ 06 seasons

Treatments	Rate per fed. (l/f)	Number of capsules / plant	Number of seeds / capsule	Number of seeds / plant	Weight of seeds / plant	Weight of 1000 seeds	Straw yield t / fed.	Seed yield t / fed..	Oil % of seeds	Oil yield kg/fed.
2004 / 05 season										
Bentazon	0.75	7.62 b	5.85 ab	68.10 c	0.50 c	8.61 b	1.73 b	0.50 b	38.61	193.1 c
Bromoxynile	0.7	9.07 c	6.12 b	61.8 bc	0.51 c	8.95 b	1.77 b	0.50 b	38.95	194.8 c
Butralin	2.0L	8.35 b	6.10 b	48.7 a	0.46 b	8.40 ab	1.73 b	0.42 a	38.18	160.4 b
Fluazifop-butyl	0.5	6.47 a	5.14 a	45.1 a	0.43 a	8.31 a	1.73 b	0.42 a	38.12	160.1 b
Hand weeding		7.20 ab	6.45 b	56.8 b	0.43 a	7.92 a	1.69 ab	0.39 a	38.08	148.5 ab
Control		6.00 a	5.12 a	47.4 a	0.40 a	8.10 a	1.14 a	0.37 a	37.00	136.9 a
2005 / 06 season										
Bentazon	0.75	9.10 ab	5.98 ab	66.66 d	0.54 c	8.50 ab	1.75 b	0.52 c	38.45	199.9 cb
Bromoxynile	0.7	11.00 c	6.06 b	59.10 c	0.46 b	9.01 b	2.19 c	0.53 c	38.63	204.7 c
Butralin	2.0L	8.40 a	5.61 a	44.70 ab	0.37 a	8.37 a	1.91 ab	0.49 b	38.40	187.6 b
Fluazifop-butyl	0.5	8.40 a	4.76 a	39.80 a	0.35 a	8.33 b	1.73 b	0.46 ab	38.21	176.2 ab
Hand weeding		9.30 b	6.00 b	62.70 d	0.51 c	7.84 a	1.67 b	0.40 a	38.01	152.0 ab
Control		7.42 a	5.30 a	45.5 b	0.37 a	8.15 a	1.28 a	0.39 a	37.05	144.5 a

Means follwed by the same letter are not significant different at 5 % level according to Duncans multiple range test.

B.3.g. On Oil % and oil yield (kg/fed.)

Results in Table (3) revealed a slight differences in oil% and a significant differences in oil yield per feddan among different weed control treatments in both season. The highest oil% and yield were produced by bromoxynil and bentazon followed by butralin, fluazifop-p-butyl and hand weeding. Meanwhile, the lowest oil yield were obtained from the control treatment. Such superiority of these treatments in increasing oil yield was mainly due to higher seed yield, whereas, the lowest oil yield was due to reduction in seed yield reflecting the dominated weed growth.

B.3.h.On chlorophyll contents

Chlorophyll contents of the leaves of flax plants were estimated after 15, 21 and 35 days from herbicidal treatment. The results of this study were shown as mg chlorophyll per gm fresh leaves of the flax plants,

Data presented in Table (4) show that fluazifop-p-butyl herbicide after thirty five days from applied decreased total chlorophyll content of flax leaves by 24.7,18.4 and 21.8% in 2004/02005 season, and 21.1, 21.8 and 22.4% in 2005/ 2006 season for chlorophyll a, b and total chlorophyll respectively, this herbicide was more effective than any other used one.

Table 4. Effect of weed control treatments on chlorophyll contents of flax leaves (mg/ gm) fresh weight.

Treatments	Rate perfed. (L/fed.)	15 days			21 days			35 days		
		Chloro. (a)	Chloro. (b)	Total Chloro.	Chloro. (a)	Chloro. (b)	Total Chloro.	Chloro. (a)	Chloro. (b)	Total Chloro.
2004/05 season										
Bentazon	0.75	1.06 c	0.86 c	1.92	1.26 d	1.06 c	2.32	1.35 c	1.24 c	2.59
Bromoxynile	0.7	1.09 d	0.87 c	1.96	1.28 d	1.08 c	2.36	1.38 c	1.25 c	2.69
Butralin	2.0L	1.02 b	0.82 b	1.84	1.20 c	1.01 b	2.21	1.28 b	1.17 b	2.45
Fluazifop-p-butyl	0.5	0.99 a	0.80 b	1.79	1.17 b	0.99 a	2.16	1.25 b	1.15 b	2.40
Control		1.19 e	0.94 d	2.13	1.45 e	1.17 d	2.62	1.66 d	1.41 d	3.07
2005/06 season										
Bentazon	0.75	1.03 b	0.83 b	1.86	1.21 b	1.02 b	2.23	1.30 c	1.20 c	2.50
Bromoxynile	0.7	1.05 c	0.84 b	1.89	1.23 b	1.05 c	2.28	1.34 c	1.22 c	2.56
Butralin	2.0L	1.01 b	0.81 b	1.82	1.18 a	1.00 b	2.18	1.27 b	1.18 b	2.45
Fluazifop-p-butyl	0.5	0.97 b	0.79 a	1.76	1.14 a	0.95 a	2.09	1.27 b	1.11 b	2.35
Control		1.15 d	0.91 c	2.06	1.40 c	1.13 d	2.53	1.61 d	1.42 d	3.03

Means follwed by the same letter are not significant different at 5 % level according to Duncans multiple rang test.

The herbicides butralin, bentazon and bromoxynil caused decrease in total chlorophyll by 20.2, 15.6 and 12.4% in 2004/05 season, and 19.1, 17.5 and 15.5% in 2005/06 season, respectively. These results are in harmony with those obtained by Ahmed *et al* (1995) and soliman, (2002).

The results of this study showed that the all tested herbicides were increased to different extents the above characters of flax crop as compared to control treatment without any harmful effect to flax plants. On the other hand the hand weeding gave low efficacy in reducing weeds populations. Therefore, it can be used only as a helping factor in weed control program and could not substitute using herbicides to control weeds in flax fields.

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تاثير بعض معاملات مكافحة الحشائش على الحشائش الحولية وصفات النمو والمحصول ومكوناته فى الكتان

عادل مصطفى غلوش، ابراهيم السيد سليمان

المعمل المركزى لبحوث الحشائش- مركز البحوث الزراعية - الجيزة - جمهورية مصر العربية

أقيمت تجربتان حقليتان فى مزرعة محطة البحوث الزراعية بسخا – كفر الشيخ خلال موسمى الزراعة ٢٠٠٤/٢٠٠٥ و٢٠٠٥/ ٢٠٠٦م لدراسة تأثيربعض معاملات مكافحة الحشائش (البنتازون – البروموكسينيل – البيوترالين والفلوزيفوب بيوتايل بالاضافة الى معاملة النقاوة اليدوية) على مكافحة الحشائش الحولية ومعرفة تأثير تلك المبيدات على صفات النمو وبعض مكونات المحصول فى الكتان.

أظهرت النتائج أن مبيدات البروموكسنيل – البنتازون – والبيوترالين أعطت مكافحة جيدة للحشائش الحولية عريضة الأوراق فى موسمى الدراسة ، حيث أحدثت هذه المبيدات تسمم فىالحشائش عريضة الأوراق بنسبة ٨١,٣ ، ٧٤,٩ و٧١,٢% فى موسم ٢٠٠٤/٢٠٠٥ ونسبه ٧٦,٢، ٧١,١ و ٧٢,١ % فى موسم ٢٠٠٥/٢٠٠٦ على التوالى مقارنة بمعاملة الكنترول . بينما كان مبيد الفلوزيفوب بيوتايل الأفضل فى مكافحة الحشائش الحولية ضيقة الأوراق فقد أعطى نسبة نقص ٧١,٨ و ٧٠,٩% على التوالى فى موسمى النمو مقارنة بالكنترول.

كما أوضحت النتائج أن معاملة النقاوة اليدوية غير كافية فىنقص كثافة الحشائش حيث أنقصت الحشائش بنسبة ٦٢,٦ و٥٩,٦ % على التوالى فى موسمى النمو مقارنة بالكنترول. لذا لايكفى الاعتماد عليها وحدهافى مكافحة حشائش الكتان. كما لوحظ أن جميع المبيدات المختبرة أدت الى زيادة معنوية فى صفات النمومثل طول النبات ، الوزن الجاف للنبات ،الطول الفعال وطول المنطقة الثمرية أثناء نمو النبات وعند الحصاد.

أوضحت النتائج أن مبيدات البنتازون ، البروموكسونيل ، البيوترالين و الفلوزيفوب بيوتيل أحدث استخدامها زيادة فى مجصول القش بنسبة ٥٥,٣، ٥١,٦، ٥١,٦ و٥١,٦ %على الترتيب فى الموسم الأول وزيادة مقدارها ٧١,١، ٣٦,٧، ٤٩,٢ و ٣٥,٢ % على الترتيب فى الموسم الثانى وزيادة فى محصول البذرة للفدان بنسبة ٣٥,٢، ٣٥,١، ١٣,٥ و١٣,٥% فى الموسم الأول و ٣٥,٩، ٣٣,٣، ٢٥,٦ و ١٥,٤% فى الموسم الثانى على التوالى مقارنة بمعاملة الكنترول.

كما أظهرت النتائج أن معاملات مبيدات الحشائش المستخدمة أدت الى نقص ضعيف فى محتوى كلوروفيل أ و ب بينما لم يكن لها اى تأثيرات ضارة على محتوى الزيت فى بذور الكتان. ولهذا توصى هذه الدراسة باستخدام مبيدات الحشائش السابقة كبديل للنقاوة اليدوية لمكافحة الحشائش فى الكتان حيث أعطت مكافحة جيدة للحشائش بدون تأثيرات ضارة على الكتان.