

RESPONSES OF THREE SORGHUM (*Sorghum bicolor* (L) Moench) VARIETIES TO SOME WEED CONTROL TREATMENTS.

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ABSTRACT

Sorghum (*Sorghum bicolor* (L) Moench) had no official recommendations for weed control in Egypt until now. For this reason six field experiments were conducted at Shandaweel Research Station during 2004 and 2005 summer seasons to evaluate the response of three varieties of sorghum namely Dorado, Shandaweel 6 and Giza 15 to weed control treatments. Two experiments were carried out for each variety to avoid the effect of shedding of tall on dwarf variety. Every experiment included six weed control treatments i.e. (1) Fluroxypyr. (Starane 20% EC) at the rate of 40 g/fed. (2) Triclopyr. (Garlon 48% EC) at the rate of 96 g/fed. (3) Fluroxypyr at the rate of 40 g/fed. + triclopyr at the rate of 96 g/fed. combination, (4) Atrazine (Gesaprim 80% WP.) at the rate of 400 g/fed. (5) Hand hoeing twice and (6) Unweeded check. The effect of these treatments on weeds, growth, yield and yield components of sorghum was studied. Results indicated that under untreated check treatments, the tallest variety Giza 15 seemed to have less weed infestation than Shandaweel 6 and Dorado varieties by 7.2 and 13.5% in 2004 season and by 3.5 and 16.9%, respectively in 2005 season. This may be due to the increase in plant shedding on weeds with the tallest variety. In general both hand hoeing twice or atrazine application gave significant consistent reduction in the total weight of weeds than other treatments. fluroxypyr or triclopyr or fluroxypyr + triclopyr combinations were very effective against broadleaved weeds, meanwhile atrazine was effective against broadleaved + grassy weeds.

Concerning the effect on forage and grain yield of sorghum, the highest yield increases were obtained by hand hoeing and atrazine ranged between 37.9 – 110% for forage yield and 58.2 – 130.5% for grain yield as compared to unweeded check, meanwhile triclopyr or fluroxypyr came in the second category for increasing forage and grain yield and minimizing weed competition. Such increases are mainly attributed to the improvement in yield components of 1000 kernels weight, shelling percentage and weight of head.

Thus the previous mentioned herbicides can be recommended as alternative or complement to hand hoeing for minimizing weed sorghum competition and close the gap in weed control technology in sorghum crop, which consider an important cereal crop in Upper Egypt with a cultivated area of about 380000 feddans.

INTRODUCTION

Sorghum (*Sorghum bicolor* (L) Moench) is considered as one of the important crops in Upper Egypt. The cultivated area is about 380000 feddans producing about 6.5 million ardab of grain yield. The annual sorghum grain yield losses due to weed competition reached 20 to 40 % (Philippe, 1970). Burnside and Wicks (1965) reported that sorghum yield losses were 1.12 kg of grain for each kg / ha of weed dry matter produced. Hurst *et al.* (1966) and Brenda *et al.* (1990) reported that grasses after 12 weeks of competition

reduced sorghum height compared to sorghum grown weed free and interference for 8 and 12 weeks reduced head weight and sorghum grains. Burnside and Wicks (1967) found that the most severe competition in sorghum occurs during 30 days after planting and weeds germinate later have little effect on yield. Guneyli *et al.* (1969) stated that sorghum hybrid comparative advantages largely derived from rapid germination and emergence plus early root and shoot growth. To overcome such problem agronomic practices such as sowing date , soil fertility , irrigation , row spacing , tillage and chemical as well as mechanical weed control or sorghum genotypes must be optimized to give the best growing conditions to minimize weed crop competition. Burnside and Wicks (1969) showed that combination of cultivation, narrow rows and pre-emergence herbicides controlled weeds more effectively than any single method. Raghuvanshi *et al.* (1990) showed that weeds eliminated 14-54% of sorghum forage yield or dry matter and the reduction in grain yield reached 85% in the presence of severe competition of weeds . Okafor and Zitta(1991) and Mahalle and Seth (1992) found that atrazine applied at 0.75 kg/ha pre. em. reduced weed dry weight in sorghum fields by 43-75%, while hand hoeing twice at 30 and 40 days after sowing by 48-86% .Porwal (2000) indicated that atrazine applied at 1.0 kg/ha post-emergence gave weed control efficacy by 69.5 and 69.4 % and increased grain yield by 46.5 and 38.9% for the first and second seasons, respectively. Ismail (2003) indicated that hand hoeing gave the highest reduction on dry weight of total annual weeds by 90.0 and 72.9% followed by atrazine at 750.0 g/fed. by 76.7 and 72.9 % for the first and second seasons, respectively .The highest grain yield was obtained from hand hoeing twice (13.3and 10.6 ardab/fed.) followed by atrazine at 750.0 g/fed. (13.1 and 6.6 ardab/fed.) for the first and second seasons respectively.

The objective of this study was to compare the response of three varieties of sorghum to six herbicidal and mechanical treatments with respect to their effects on weed control and yield of sorghum crop.

MATERIALS AND METHODS

Six field experiments were conducted at Shandaweel Research Station in Sohag Governorate during 2004 and 2005 summer seasons to study the response of three varieties of sorghum (*Sorghum bicolor* (L) Moench) to six weed control treatments. The varieties were Dorado, Shandaweel 6 and Giza 15. Soil texture of the experimental plots was clay loam in both seasons. A complete randomized block design was used with four replications. The sorghum varieties were grown on June 22nd and 15th for the first and second seasons and harvested on 17th October and 9th for the first and second season , respectively . The plot area was 9.6 m² and each plot consisted of four ridges 4m long and 60 cm apart. The normal cultural practices were carried out according to the local recommendations. Each experiment contains the following six weed control treatments: -

1-Fluroxypyr [4-amino-3,5-chloro-6-fluoro-2pyridyloxyaceticacid] known commercially as Starane 20% EC applied at the rate of 40 g/fed. post-emergence .

2- Triclopyr [3,5,6 trichloro-2- pyridyloxy acetic acid] known commercially as Garlon 48% EC applied at the rate of 96 g/fed. post- emergence .

3- Fluroxypyr at the rate of 40 g/fed. post – emergence. 15 days after sowing + Triclopyr at 96 g/fed. Post- emergence 45 days after sowing.

4- Atrazine [2 chloro-4-athylamino-6- isopropyl amine-s-triazine] known commercially as Gesaprim 80%WP applied at the rate of 400 g/ fed after sowing and immediately before irrigation .

5- Hand hoeing twice 15 and 30 days after sowing .

6- Unweeded check.

Knapsack sprayer was used with water volume of 200 L/fed. Nitrogen fertilization and other cultural practices except weed control and varieties were carried as normal.

Data recorded

A- On weeds

Weeds were hand pulled from one square meter random from each plot at 60 days after sowing and classified to broadleaved and grassy weeds and were air dried for seven days and then oven dried at 70 °C until reaching a constant weight and weighed to record :

1- Dry weight of broadleaved weeds g/m². 2- Dry weight of grassy weeds g/m². 3- Dry weight of total weeds g/m².

B- On growth character of sorghum:

At harvest, ten plants were taken randomly from each plot to study the following characters:

1- Plant height (cm). 2- Plant weight (g). 3- Leaf area index (LAI).

C- Sorghum yield and yield components:

1- Head weight (g). 2- Weight of 1000 kernel (g). 3- Shelling percentage.

4- Forage yield ton / fed. 5- Grain yield ardab / fed.

Statistical analysis:

Data were subjected to statistical analysis according to **Snedecor and Cochran (1981)** and the least significant difference LSD at 5% was calculated.

RESULTS AND DISCUSSION

A – Effect of weed control treatments on dry weight of broadleaved, grassy and total annual weeds: -

Data in Table 1 show the effect of weed control treatments on dry weight of broadleaved, grassy and total weeds associated with the three varieties of sorghum i.e. Dorado as dwarf variety, Shandaweel 6 as medium height variety and Giza 15 as tall variety in 2004 and 2005 seasons.

The dominant weeds in this study were *Portulaca oleracea*, L.; *Corchorus olitorius*, L.; *Amaranthus hybridus*, L.; *Xanthium strumarium*, L.; *Tribulus longipetabus*, L. and *Euphorbia geniculata* Ortega as broadleaved weeds and *Echinochloa colonum*, L. as grassy weed.

1 - Dorado variety experiment: -

Results indicate that the use of triclopyr at the rate 96 g/fed. fluroxypyr at 40 g/ fed + triclopyr at 96 g/fed. and hand hoeing gave the best results in controlling broadleaved weeds by 98.7, 98.2 and 91.0 % in the first season, while fluroxypyr alone, fluroxypyr + triclopyr and triclopyr gave the best results by 100, 100 and 97.9% in the second season. The highest effect for controlling grassy weeds were obtained by atrazine at the rate of 400 g/fed. by 62.4 and 71.1% in 2004 and 2005 seasons, respectively. Hand hoeing exceeded all herbicidal treatments in decreasing dry weight of total annual weeds in the first and second seasons by 73.1 and 90.5 %, respectively.

Table 1: Effect of weed control treatments on dry weight of broadleaved, grassy and total annual weeds in sorghum varieties in 2004 and 2005 seasons.

Characters Treatments	Rate /fed.	Dorado variety				2005 season			
		2004 season		Total g/m ²	Control %	Broad leaved g/m ²	Grasses g/m ²	Total g/m ²	Control %
		Broad leaved g/m ²	Grasses g/m ²						
Fluroxypyr	40g	48.9	169.3	245.2	57.6	0.0	142.6	142.6	79.8
Triclopyr	96g	3.3	294.6	297.9	48.5	8.6	170.8	179.4	44.7
Fluroxypyr&T riclopyr	40+96g	4.5	412.8	417.3	27.8	0.0	193.6	193.6	72.7
Atrazine	400g	117.8	123.8	241.6	58.2	74.1	85.1	159.2	47.5
Hand hoeing	twice	22.3	133.3	155.6	73.1	20.8	46.6	67.4	90.5
Unweeded check		249.0	329.3	578.3		414.2	293.8	708.0	
LSD at 5%		38.7	79.5	15.8		45.0	76.9	76.6	
Shandaweel 6 variety									
Fluroxypyr	40g	16.0	404.3	420.3	23.0	20.3	221.0	241.3	60.6
Triclopyr	96g	11.4	268.0	279.4	48.8	25.4	206.0	231.3	62.2
Fluroxypyr&T riclopyr	40+96g	0.0	405.1	405.1	25.8	10.1	177.9	188.0	69.3
Atrazine	400g	101.5	170.9	272.4	50.1	63.9	46.7	110.6	81.9
Hand hoeing	twice	21.9	143.5	165.4	69.7	4.5	43.8	48.3	92.1
Unweeded check		202.3	343.8	546.1		375.9	236.8	612.7	
LSD at 5%		50.7	53.7	73.6		80.2	87.9	101.4	
Giza 15 variety									
Fluroxypyr	40g	3.2	285.8	289.0	43.2	13.3	187.5	200.8	66.1
Triclopyr	96g	0.0	319.8	319.8	37.2	18.3	195.8	214.1	63.8
Fluroxypyr&T riclopyr	40+96g	0.0	303.2	303.8	40.3	19.8	178.9	198.7	66.4
Atrazine	400g	112.8	116.8	229.6	54.9	68.3	46.5	114.8	80.6
Hand hoeing	twice	68.3	106.9	175.2	65.6	17.8	34.6	52.4	91.1
Unweeded check		200.5	308.8	509.3		381.3	210.5	591.8	
LSD at 5%		67.3	55.7	76.6		90.9	91.3	132.1	

2 - Shandaweel 6 variety experiment: -

As shown in Table 1 fluroxypyr + triclopyr, triclopyr and fluroxypyr controlled broadleaved weeds with high efficacy by 100, 94.4 and 92.1% in the first season, respectively while, hand hoeing combination of fluroxypyr

and triclopyr and fluroxypyr decreased dry weight of broadleaved weeds by 98.8, 97.3 and 94.6% in the second season, respectively. Atrazine was superior in controlling *E. colonum* weed and decreasing the dry weight by 61.5 and 80.3% in the first and second seasons, respectively as compared to unweeded check. Hand hoeing gave the best results in decreasing dry weight of total weeds by 69.7 and 92.1% in the first and second seasons, respectively.

3 - Giza 15 variety experiment: -

The broadleaved herbicides triclopyr, fluroxypyr + triclopyr and fluroxypyr were superior in decreasing significantly the dry weight of broadleaved weeds by 100, 100 and 98.4% in 2004 season. While fluroxypyr, hand hoeing and triclopyr gave the highest reduction by 96.5, 95.3 and 95.2% in 2005 season, respectively as compared to unweeded check.

Hand hoeing and atrazine gave the best results in controlling total weeds which decreased dry weight of total weeds by 54.9 and 65.6% in the first season, respectively and 80.6 and 91.1% in the second season, respectively.

Similar results were obtained by Mahelie and Seth (1992) who found that applying atrazine at 0.75 kg/ha pre-em. decreased dry weight of weeds in sorghum field by 43 – 75% and hand hoeing by 48 – 86%. Ismail (2003) indicated that hand hoeing gave the highest reduction on dry weight of total annual weeds followed by atrazine at 750.0 g/fed.

The conclusion from the above results suggest that the tallest variety Giza 15 had less total weeds than the dwarf variety Dorado by 13.5 and 13.1% or semi dwarf variety Shandaweel 6 by 7.2 and 3.5% in the first and second seasons, respectively. This may be due to shedding by the big biomass of Giza 15 variety. Guneyli *et al.* (1969) attributed the competitiveness of some sorghum hybrid varieties to the rapid germination and early root and shoot growth.

B. Growth characters

1 - Dorado variety: -

Table 2 shows that the effect of weed control treatments on sorghum plant height, plant weight and leaf area index (LAI). No significant differences were noticed between weed control treatments concerning plant height in both seasons. Weed control treatments, however, affected significantly the plant weight (g) but, in the first season only. Also LAI was not significantly affected by weed control treatments in both seasons.

2 - Shandaweel 6 variety: -

Weed control treatments had no significant effect on plant height or leaf area index of Shandaweel 6 variety in both seasons. Plant weight (g) was significantly affected by weed control treatments but in the first season only where atrazine gave the highest plant weight (g) i.e. 71% higher than the unweeded check.

3 - Giza 15 variety: -

The above mentioned growth characters was not significantly affected by weed control treatments. This was true in both seasons, except in the case of plant height in the second season.

Ismail (2003) indicated that plant height and LAI were not significantly affected by weed control treatments in both seasons.

C. Sorghum yield and yield components:

Data in Table 3 show the effect of weed control treatments on head weight (g), 1000-kernel weight, shelling%, forage yield ton/fed. and grain yield ardab/fed. at harvest.

Table(2):Effect of weed control treatments on growth characters of Sorghum varieties in 2004 and 2005 seasons.

Characters	Rate /fed.	2004 season			2005 season		
		Plant height	Plant weight g	LAI	Plant height	Plant weight g	LAI
Dorado variety							
Treatments							
Fluroxypyr	40g	151.5	385.7	8.9	120.0	145.3	4.1
Triclopyr	96g	150.8	416.5	10.7	117.0	164.9	5.3
Fluroxypyr&Triclopyr	40+96g	155.3	358.3	10.3	123.0	137.0	5.2
Atrazine	400g	154.3	398.4	11.1	130.0	164.4	4.9
Hand hoeing	twice	139.3	471.6	9.7	122.5	155.4	6.5
Unweeded check		144.5	322.2	9.7	118.3	155.6	5.2
LSD at 5%		NS	71.3	NS	NS	NS	NS
Shandaweel 6 variety							
Fluroxypyr	40g	217.5	341.6	10.2	188.8	296.8	6.7
Triclopyr	96g	197.3	619.2	12.1	188.5	293.8	9.0
Fluroxypyr&Triclopyr	40+96g	210.0	577.8	10.2	190.0	214.8	8.3
Atrazine	400g	209.3	664.3	12.7	206.3	270.8	8.9
Hand hoeing	twice	201.0	579.0	11.7	185.0	290.7	8.2
Unweeded check		209.3	388.5	9.9	201.0	227.5	8.7
LSD at 5%		NS	87.6	NS	NS	NS	NS
Giza 15 variety							
Fluroxypyr	40g	390.0	661.5	9.3	320.0	590.4	5.6
Triclopyr	96g	373.8	715.4	9.0	363.8	622.4	6.0
Fluroxypyr&Triclopyr	40+96g	383.8	876.4	9.3	353.8	487.9	8.2
Atrazine	400g	382.5	732.5	9.2	353.8	583.1	7.4
Hand hoeing	twice	403.8	706.4	9.6	361.3	629.6	8.8
Unweeded check		385.0	753.0	8.6	357.5	483.8	6.3
LSD at 5%		NS	NS	NS	21.8	NS	NS

1 - Dorado variety: -

Weed control treatments significantly affected head weight in the first season only. Hand hoeing gave the highest head weight followed by triclopyr herbicide which increased head weight by 42.1 and 34.7% as compared to unweeded check in the first season. No significant differences were noticed between weed control treatments in the second season but, triclopyr and hand hoeing gave the highest head weight.

On the other hand weed control treatments had no effect on 1000-Kernel weight in the first season, while it was significantly effective in the second season and triclopyr gave the highest weight of kernels by 25% compared to unweeded check. Concerning shelling % no significant differences were observed between weed control treatments and unweeded check in both seasons.

Regarding forage yield ton/fed. it was noticed from the results in Table3 that there were significant differences between weed control treatments in both seasons. Hand hoeing gave the highest forage yield in

both seasons which estimated by 110.3 and 56.9% in the first and second season, respectively.

It is also clear from the results in Table3 that hand hoeing, triclopyr and combination of fluroxypyr and triclopyr increased grain yield ardab/fed. by 106.1, 86.6 and 85.4% in the first season as compared to unweeded. In the second season hand hoeing, triclopyr and atrazine gave best results which increased the grain yield by 107.5, 59.7 and 58.2% compared to unweeded check, respectively.

2 - Shandaaweel 6 variety: -

Combination of fluroxypyr and triclopyr and triclopyr alone gave the highest head weight in the first season which estimated by 47.8 and 43.5%, respectively, while triclopyr alone and combination of fluroxypyr and triclopyr gave 70.3 and 55.7% increases in the second season.

Table (3): Effect of weed control treatments on yield and its components of sorghum varieties in 2004 and 2005 seasons.

Dorado variety												
Characters	Treatments	Rate /fed.	2004 season				2005 season					
			Head weight g	1000 kernels	Shelling %	Froge yield ton/fed	Grain yield ardab/fed.	Head weight g	1000 kernels	Shelling %	Froge yield ton/fed.	Grain yield ardab/ fed
	Fluroxypyr	40g	38.0	29.7	75.0	14.4	10.4	22.2	28.3	75.3	7.8	8.9
	Triclopyr	96g	47.0	27.9	75.5	18.8	15.3	34.9	30.0	75.3	7.1	10.7
	Fluroxypyr& Triclopyr	40+96g	46.1	29.4	76.0	16.6	15.2	27.9	29.5	75.8	6.3	9.1
	Atrazine	400g	43.4	28.1	75.0	12.3	9.5	30.4	28.5	74.8	8.0	10.6
	Hand hoeing	twice	49.6	29.3	75.3	22.5	16.9	33.2	29.0	76.3	9.1	13.9
	Unweeded check		34.9	25.5	72.5	10.7	8.2	25.3	24.0	72.8	5.8	6.7
	LSD at 5%		4.6	NS	NS	1.9	1.2	NS	3.5	NS	1.0	1.7
Shandaaweel 6 variety												
	Fluroxypyr	40g	66.1	29.2	75.5	14.6	16.3	36.2	26.3	74.8	16.0	14.1
	Triclopyr	96g	71.2	29.3	77.0	19.1	15.7	46.5	27.8	76.8	16.5	18.9
	Fluroxypyr& Triclopyr	40+96g	73.3	28.8	75.0	13.5	12.3	42.5	29.3	75.3	11.2	15.8
	Atrazine	400g	67.1	29.7	74.8	19.2	13.8	33.6	28.5	75.8	19.1	17.1
	Hand hoeing	twice	64.2	28.6	76.5	21.6	17.2	35.1	28.3	77.0	18.5	16.0
	Unweeded check		49.6	26.1	72.8	14.2	13.0	27.3	24.9	72.5	9.5	8.4
	LSD at 5%		4.8	1.8	NS	2.7	1.9	52.0	2.0	NS	2.1	2.2
Giza 15 variety												
	Fluroxypyr	40g	87.0	48.9	71.0	20.5	19.3	69.0	46.5	70.8	23.5	19.3
	Triclopyr	96g	92.6	49.7	71.0	24.8	23.5	73.9	46.3	70.3	24.1	20.4
	Fluroxypyr& Triclopyr	40+96g	103.9	49.7	71.3	28.2	23.8	72.8	46.3	71.3	18.5	19.8
	Atrazine	400g	99.4	49.1	72.0	25.0	24.1	70.3	46.3	71.8	26.1	22.6
	Hand hoeing	twice	95.9	48.5	70.3	29.0	28.2	63.2	45.5	71.3	27.9	20.2
	Unweeded check		87.3	49.8	68.3	20.0	20.9	57.7	46.5	68.3	12.1	10.3
	LSD at 5%		10.2	NS	NS	2.9	3.8	NS	NS	NS	2.2	1.8

Atrazine and triclopyr gave the highest 1000-kernel weight in the first season by 13.8 and 12.3%, respectively, while the combination of fluroxypyr and triclopyr or atrazine gave the best results in the second season which estimated by 17.7 and 14.5% increase in the 1000 kernel weight, respectively.

No significant differences concerning shelling% were obtained between weed control treatments in both seasons.

Hand hoeing, atrazine and triclopyr gave the highest forage yield which estimated by 52.1, 35.2 and 34.5% in the first season, respectively compared to unweeded check, while, atrazine, hand hoeing and triclopyr gave the best results and increased the forage yield by 101.0, 94.7 and 73.7% in the second season, respectively.

With regarding the grain yield ardab/fed. hand hoeing, fluroxypyr and triclopyr gave the highest grain yield increases which estimated by 32.3, 25.4 and 20.8% as compared to unweeded check in the first season, respectively. Triclopyr, atrazine and hand hoeing gave the highest sorghum grain yield which increased by 125.0, 103.6 and 90.5%, respectively in the second season.

3 - Giza 15 variety: -

Data in Table 3 illustrate that the head weight of Giza 15 variety was significantly affected by weed control treatments in the first season only. The combination of fluroxypyr and triclopyr , atrazine and hand hoeing gave the highest head weight which increased by 19.0 and 13.8 and 9.9%, respectively.

The weight of thousand kernel and shelling percentage were not significantly affected in both seasons.

Hand hoeing, fluroxypyr and triclopyr combination and atrazine gave the highest forage yield increase i.e. 45.0, 41.0 and 25.0%, respectively in first season, while hand hoeing , atrazine and triclopyr gave the highest forage yield increase i. e 130.6 , 115.7 and 99.2%, respectively as compared to unweeded check in the second season.

With regard to sorghum grain yield ardab./fed. hand hoeing, atrazine and combination of fluroxypyr and triclopyr gave the highest grain yield increases i.e. 34.9, 15.5 and 13.9%, respectively in the first season compared to unweeded check. While atrazine, triclopyr and hand hoeing increased the yield by 119.4, 98.1 and 96.1%, respectively in the second season compared to unweeded check. Such increases in the grain yield are the result of the increases in yield components namely average weight of heads, shelling % and 1000 kernels.

The results of yield and its components, generally are in line with those obtained by Raghuvanshi *et al.* (1990), Porwal (2000) and Ismail(2003).

Results indicated that under untreated check treatments, the tallest variety Giza 15 seemed to have less weed infestation by 7.2 and 13.6 % than Shandweel 6 and Dorado variety in 2004 season and by 3.5 and 16.9%, respectively in 2005 season. This may be due to the increase in plant shedding on weeds by the tallest variety.

It is clear from the above mentioned results that Giza 15 as the tallest variety exceeded the two other varieties concerning forage yield and grain yield ardab./fed. in both seasons and this is due to its high competition to weeds. These results are similar to those obtained by Raghuvanshi *et al.* (1990) who reported that weeds culminated 14 – 54% reduction of sorghum forage yield and dry matter and reduction of grain yield reached 85% in the presence of severe competition of weeds.

Thus it is recommended to use these herbicides for weed control with the above sorghum varieties without any adverse effect on the crop to meet the needs of sorghum growers in Egypt.

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إستجابة ثلاثة أصناف من الذرة الرفيعة لبعض معاملات مكافحة الحشائش

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نظرا لعدم وجود توصيات فنية لمكافحة الحشائش في محصول الذرة الرفيعة بمصر تم إقامة ست تجارب حقلية بمحطة البحوث الزراعية بشندويل في الموسم الصيفي لعامي ٢٠٠٤ ، ٢٠٠٥ لتقييم استجابة ثلاثة أصناف من الذرة الرفيعة الموصي بها في مصر العليا وهي الصنف القصير دورادو والمتوسط شندويل ٦ والطويل جيزة ١٥ بواقع تجربتين لكل صنف نظرا لاختلاف أطوال الأصناف وتجنب احتمال وجود تأثير للأصناف الطويلة حين مجاورتها للأصناف القصيرة بالتظليل وقد شملت كل تجربة ست معاملات مكافحة للحشائش وهي :-

١- فلوركسيبير ٤٠ جم/ف - ٢- ترايكلوروبيير ٩٦ جم/ف - ٣- فلوركسيبير ٤٠ جم/ف + ترايكلوروبيير ٩٦ جم/ف - ٤- اترازين ٤٠٠ جم/ف - ٥- عزيق مرتين - ٦- بدون معاملة لمعرفة تأثيرها على الحشائش والنمو والمحصول ومكوناته لكل صنف من أصناف الذرة الرفيعة.

أوضحت النتائج وجود اختلافات بين الأصناف من حيث تأثيرها على الحشائش حيث أحدث الصنف جيزة ١٥ انخفاضا في انتشار الحشائش الحولية بمقدار ٧,٢ و ١٣,٥% عن صنفى شندويل ٦ و دورادو في موسم ٢٠٠٤ على الترتيب ، و ٣,٥ و ١٦,٩% على الترتيب في موسم ٢٠٠٥ تحت ظروف معاملة ترك الحشائش بدون مكافحة (مقارنة) وقد يعزى ذلك الى تأثير التظليل للصنف الطويل عن الصنفين الآخرين .

أعطت معاملة العزيق يليها اترازين أعلى مكافحة لمجموع الحشائش الحولية عن المعاملات الأخرى كما أن مبيد فلوروكسيبير وترايكلوروبيير متخصصين في مكافحة الحشائش عريضة الأوراق . ومبيد اترازين في مكافحة الحشائش النجيلية والعريضة معا .

أعطت معاملتي العزيق والاترازين اعلى محصول علف و حبوب وتفوقت عن بقية المعاملات بشكل ثابت تحت مختلف التجارب وتراوحت الزيادة بين ٣٧,٩ - ١١٠% في محصول العلف، ١٥,٨ - ١٣٠,٥% في محصول الحبوب وانه مع الأصناف الطويلة يمكن الاكتفاء بالعزيق ويعود ذلك إلي تقليل منافسة الحشائش للمحصول وتعزى هذه الزيادات إلى تحسين مكونات المحصول المختلفة مثل وزن القنديل أو وزن الألف حبه .

ولذلك يمكن التوصية بهذه المبيدات لأول مرة في مصر كبديل أو مكمل للعزيق لتقليل منافسة الحشائش لمحصول الذرة الرفيعة وتوفير تكنولوجيات مناسبة وبديلة للعزيق لمكافحة الحشائش في محصول الذرة الرفيعة الذي يزرع في مصر العليا في مساحة تصل إلي ٣٨٠ ألف فدان سنويا .