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EFFECT OF SOME HERBICIDES ON ANNUAL GRASS AND BROAD LEAVED WEEDS IN MAIZE CROP
I- Effect of foramsulfuron herbicide on annual grass and broad leaved weeds

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ABSTRACT

Two trials were conducted during 2010 and 2011 summer seasons in Tahanoub area, Qualubia Governorate, Egypt, to evaluate the control efficiency of different doses of the new selective herbicide Equip 22.5% OD (foramsulfuron + isoxadifen-ethyl) against annual grass and broad leaved weeds in maize (*Zea mays* L.) fields compared to the recommended herbicide by the Egyptian Ministry of Agriculture; Starane 20% EC (fluroxypyr) and manual hoeing.

The results of the average density existed broad leaved weeds (BLW) and grass leaved weeds (GLW) control percentage of the 1st and the 2nd seasons indicated that manual hoeing treatment showed the highest control effect (88.36% and 85.7%), followed by Equip 22.5% OD at the double recommended rate (1500 cc/fed.), showing 75.16 and 77.7%, while when applied at the recommended rate (750 cc/fed.), it showed 71.46 and 62.1%. Starane 20% EC recorded 58.1and 45.2%, compared to the untreated control, respectively.

Average of BLW_s dry weight of the two seasons indicated that hoeing showed high reduction of BLW_s dry weight, being 92.57% of the control followed by Equip 22.5% OD at the double dose (83.54%). and, when used at the recommended dose, showed 76.51%. The minimum average reduction was obtained by Starane 20% EC reaching 59.78% of the control. Also, GLW_s average dry weight was significantly reduced by hoeing (89.9%), followed by Equip 22.5% OD at the double rate (87.7%), while at the recommended rate it was 59.9%. Starane 20% EC showed the minimum reduction percentage (51%).

***Key words**:* Equip 22.5% OD, foramsulfuron + isoxadifen-ethyl, Maize plant (Zea mays L.), Starane 20% EC, weed control, weed density.

1. INTRODUCTION

Maize (*Zea mays* L.) is the world's third most important cereal grain after wheat and rice. Maize is grown primarily for grain and secondarily for fodder. It has high nutritive value as it contains 72% starch, 10% protein, 4.8% oil, 9.5% fiber, 3% sugar and 1.7% ash (Chaudhary, 1983). Among various factors responsive for low yield, weed infestation is of supreme importance.

Maize is sensitive to weeds, especially in early growth stages (Baghestani *et al.,* 2007). Weeds compete vigorously with maize for many resources. They reduce crop yield by competing for light, water, nutrients and carbon dioxide, interfere with harvesting and increase the cost involved in crop production. When weed populations are left uncontrolled they can substantially reduce maize yields (Hall *et al.*, 1992 Knezevic *et al.*, 1994, Evans *et al.*, 2001, Halford *et al.*, 2001). Researchers have shown that season-long interference from weeds can reduce yields by more than 30% (Arnold, 2003).

Control of weeds in maize field is, therefore, very essential for obtaining good crop.

Weed control practices in maize resulted in 77 to 96.7% higher yield than weed check (Khan *et al.*, 1998). Weeds can be controlled by cultural, biological and chemical measures. No doubt cultural methods are still useful tools but are laborious, time consuming and getting expensive. Moreover, the labor problem is becoming acute day by day and it will not be possible and economic to stick to the

traditional cultural weed control practices (Oreck and Dehne, 2004; Oerke, 2005).

Keeping in view these limitations, chemical weed control is an important alternative. Herbicide application is an efficient way to check weed infestation that helps in achieving a speedy breakthrough for increasing maize production. Weed control in maize by herbicides has been suggested by many researchers (Devender *et al*., 1998; Toloraya *et al*., 2001).

A new post-emergence herbicide (Equip 22.5% OD) was used in this study. Equip 22.5% OD is a novel sulfonylurea herbicide for post-emergence use in maize which is effective against major grass weed species, as well as some broadleaf weeds. Translocation of this herbicide takes place through leaves and roots of the weeds and then their growth stops leading to death. Post emergence herbicides are generally absorbed through leaves.

Keeping these factors in view, the present experiment is conducted to study the effect of the new post emergence herbicide Equip 22.5% OD on weed density and growth in maize fields.

2. MATERIAL AND METHODS

2.1. Field preparation and experimental design

The trials were conducted during 2011 and 2012 summer seasons in Tahanoub area, Qualubia Governorate, Egypt, to evaluate the efficiency of the recommended rate (750 cc/fed.) and its double rate (1500 cc/fed.) of the new herbicide foramsulfuron against annual grass and broad leaved weeds in maize (*Zea mays* L.) compared to the herbicide recommended by the Egyptian Ministry of Agriculture. All treatments were laid out in a randomized complete block design with three replications as well as the untreated check (control), having a net plot size of 54 m^2. Hagen 2030 (hybrid) maize variety was used. The analysis indicated that the soil was silty clay with particle size distribution of the grown soil is 0.0% sand, 61% silt and 39% clay. Some of the physico-chemical characteristics and organic matter content (OM) of the soil are as in Table (1).

The existed weeds were classified by the Weed Research Central Laboratory, Agricultural Research Center and divided into two groups as follows:-

Group I: broad leaved weeds:

1st season:	***2nd season:***
Trianthema portulacastrum	*Trianthema portulacastrum*
Euphorbia geniculata.	*Euphorbia geniculata*
Portulaca oleraceae.	*Corchorus olitorius* L.
Amaranthus spp.	*Datura stramonium* L.
	Convolvulus arvensis L.

Group 2: grass weeds:

1st season:	***2nd season:***
Echinochloa colonum.	*Echinochloa colonum*
	Cyperus longus L.
	Paspalum paspaloides (Michx) Scribn.
	Dactyloctenium aegyptium (L.) *P.Beauv*

2.2. Herbicide treatments

The two herbicides were sprayed after crop and weeds emergence after 3 weeks from planting by a knapsack hand sprayer using flat fan nozzle at field capacity condition. Hoeing was done twice with the help of a hand hoe in the manual hoeing treatment when the soil was at field capacity condition after the 1st and the 2nd irrigation. All other agronomic practices were kept normal and uniform for all treatments.

Equip 22.5 OD was applied at the recommended rate (750 cc/fed.) and at the double recommended rate (1500 cc/ fed.), and Starane 20% EC at the rate of 200 cc/fed. The treated and the untreated check were replicated 3 times and distributed in a completely randomized plots.

Data regarding weed density, dry weight and control percentags were recorded from a 1 m^2 area.

2.3. Weed control efficacy

After 21 days from application, the density of grass leaved weeds (GLW_s) and broad leaved weeds

Table (1): Physico-chemical characteristics of the grown soil.

pH	EC	Soluble cations (meq/l)				Soluble anions (meq/l)			O.M %	SP %*
(1:2.5) Suspen	Dsm^{-1} at 25 C	Ca^{++}	Mg^{++}	K^{+}	Na^{+}	HCO_3^{-}	Cl^{-}	SO_4^{--}		
7.2	6.9	37.84	20.3	1.6	21.74	4.25	26.56	50.67	1.96	53.33

*** Saturation percentage**

(BLW_s) were counted in each plot by using a $1m^2$ frames and the average count/3 replicates of each weed was recorded. Weeds were harvested from a $1\text{-}m^{-2}$ area (x3 replicates) in each plot, identified by species, then counted, and then oven dried at 72 °C for 48 h.

Based on weed density/m^2 and dry weight (g/m^2), control efficacy % of the different treatments was recorded compared to the untreated check after 3 weeks from application against each one of the existed weeds according to Henderson and Tilton (1955) equation as follows:

$$\textbf{Control efficacy \%} = \frac{\textbf{weed No. in cont.} - \textbf{weed No. in treatment}}{\textbf{Weed No. in control}} \times 100$$

2.4. Statistical analysis: Data collected were analyzed statistically using SPSS analysis of variance and least significant difference test was applied at 5% probability level to compare treatment means.

3. RESULTS AND DISCUSSION

3.1. Annual broad leaved weed density

At the 1^{st} and the 2^{nd} seasons, the data presented in Tables (2 and 3) showed that all the treatments significantly reduced BLW_s density compared to the untreated control. The effect of the treated herbicides fluctuated significantly according to the herbicide type, dose and weed group as well as species. The maximum significant weed density of all existed BLW_s was recorded in the untreated check followed by Starane 20% EC. The untreated check and Starane 20% EC treatments showed the minimum average of weed control percentage being 0.0 and 48.7%, respectively. Manual hoeing showed highly significant reduction of broad leaved weed density recording the highest weed control percentage (88.36%), followed by Equip 22.5% OD. The results of Equip 22.5% OD treatments showed no significant differences in the number of BLW_s when it was applied at the double rate or at the recommended rate showing average weeds control percentage being 81.7 and 74.95% of the untreated control, respectively.

3.2. Annual grass leaved weeds density

All the treatments showed significant effect on the existed GLWs compared with the untreated check during the two growing seasons.

In the 1^{st} season, all the treatments showed insignificant effect on *E. colonum* density, (Tables 4 and 5). Manual hoeing treatment recorded the highest control percentage (100%), followed by Equip 22.5% OD at the rate of 1500 cc/fed., (81.8%) and at the rate 750 cc/fed, (54.5%), while Starane 20% EC showed the lowest control effect (45.5%) compared to the control.

During the 2^{nd} season, data presented in Tables (4 and 5) showed that hoeing treatment reduced *D. aegyptium* and *E. colonum* density/m^2 significantly comparing with the other treatments and recorded the highest control percentage (57.32 and 78.26%, respectively). Equip 22.5% OD at the rate of 1500cc/fed., significantly reduced *D. aegyptium* and *E. colonum* density compared to 750 cc/fed. treatment reaching 41.09 and 62.62% of the control, respectively, while Starane 20% EC showed the lowest significant control effect (16.23 and 25.8%, respectively).

Density of *P. paspaloides*, was reduced significantly by Equip 22.5% OD treatment (1500 cc/ fed.) which achieved the highest control percentage (86.53). Hoeing showed insignificant effect on *P. paspaloides*, density and control percentage comparing with Equip 22.5% OD (750 cc/fed.), being 73.06 and 73.06%, respectively. The minimum significant density reduction of *P. paspaloides*, was obtained by Starane 20% EC treatment record 29.14% of the control.

From the data of the average BLW_s and GLW_s control percentages during the 1^{st} and the 2^{nd} seasons, it was concluded that the manual hoeing treatment showed the highest control effect (88.36 and 85.7%), followed by Equip 22.5% OD at the double rate (75.16 and 77.7%), and the recommended rate (71.46 and 62.1%), respectively. Starane 20% EC showed the least effect being 58.1 and 45.2%, respectively.

3. 3. Annual broad leaved weed dry weight

The data presented in Tables (6 and7) revealed that all BLW_s weeds showed the same pattern against all treatments. Hoeing and Equip 22.5 OD significantly reduced the total dry weight/m^2 of the broad leaved weeds after 21 days from application compared with Staranee 20% EC and the control treatments. Also, Equip 22.5% OD at the double rate was significantly effective than the low rate. Hoeing treatment showed the least significant effect on dry weight being 15.26 g and 0.5 g/m^2, while Starane 20% EC achieved the highest effect on dry weight reaching 74.29 and 5.4 g/m^2 at the 1^{st} and the 2^{nd} season, respectively.

Table (2) : Average denisty of broad leaved weeds in maize field as influnced by herbicide treatments after 21 days from application.

Treatment		Weed No./ m^2								
Herbicide	Rate of Appl. CC /fed.	1st Season					2nd Season			
		T. ptul.	*P. oler.*	*E. gen.*	*A. Spp*	*D. stra.*	*C. olit.*	*E. gen.*	*T. ptul.*	*C. arve.*
Equip22.5 OD	**750**	**51.90 c**	**1.15 c**	**2.3 c**	**2.10 c**	**2.25 c**	**0.00 c**	**0.34 b**	**0.0**	**1.42 b**
Equip 22.5 OD	**1500**	**47.15 c**	**1.00 c**	**1.9 c**	**1.90 c**	**0.92 d**	**0.00 c**	**0.00 b**	**0.0**	**1.75 b**
Starane 20% EC	**200**	**103.8 b**	**3.37 b**	**4.1 b**	**4.30 b**	**3.84 b**	**0.42 b**	**0.42 b**	**0.0**	**2.59 a**
Manual hoeing	**Twice**	**17.90 c**	**0.30 c**	**0.9 c**	**1.10 d**	**0.33 d**	**0.42 b**	**0.00 b**	**0.0**	**0.42 c**
Control	--------	**202.75 a**	**5.25 a**	**7.5 a**	**7.75 a**	**7.25 a**	**0.84 a**	**0.84 a**	**0.0**	**2.92 a**
LSD		**41.784**	**1.612**	**1.519**	**0.679**	**0.706**	**0.332**	**0.404**	**0.000**	**0.823**

The figures followed by the same letters are insignificant.

Table (3): Broad weed control % based on weed density in maize treated plots after 21 days from application.

Treatment		Weed control %									Average weeds control %
Herbicide	Rate of Appl. CC /fed.	1st Season					2nd Season				
		T. ptul.	*P. oler.*	*E. gen.*	*A. Spp*	*D. stra.*	*C. olit.*	*E. gen.*	*T. ptul.*	*C. arve.*	
Equip22.5 OD	**750**	**74.4**	**78.1**	**69.3**	**72.9**	**69.0**	**100.0**	**59.5**	**100.0**	**51.4**	**74.95**
Equip 22.5 OD	**1500**	**76.7**	**81**	**74.7**	**75.5**	**87.3**	**100.0**	**100.0**	**100.0**	**40.1**	**81.70**
Starane 20% EC	**200**	**48.8**	**35.7**	**45.3**	**44.5**	**47.0**	**50.0**	**50.0**	**100.0**	**11.3**	**48.07**
Manual hoeing	**Twice**	**96.1**	**94.3**	**88**	**85.8**	**95.4**	**50.0**	**100.0**	**100.0**	**85.6**	**88.36**
Control	--------	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.00**

Table (4): Average denisty of grass leaved weeds in maize field as influnced by herbicide treatments after 21 days from application.

Treatment		Weed No./ m2				
		1st Season	2nd Season			
Herbicide	**Rate of Appl.** *CC /fed.*	*E. colo.*	*D. aeg.*	*E. colo.*	*P. pasp.*	*C. long.*
Equip22.5 OD	**750**	**1.25 a**	**4.25 b**	**40.58 c**	**1.84 c**	**0.0**
Equip 22.5 OD	**1500**	**0.50 a**	**3.34 c**	**28.50 d**	**0.92 d**	**0.0**
Starane 20% EC	**200**	**1.50 a**	**4.75 b**	**56.58 b**	**4.84 b**	**0.0**
Manual hoeing	**Twice**	**0.00 a**	**2.42 d**	**16.58 e**	**1.84 c**	**0.0**
Control	**-----**	**2.75 a**	**5.67 a**	**76.25 a**	**6.83 a**	**0.0**
LSD (0.05)		**3.043**	**0.847**	**1.883**	**0.558**	**0.000**

The figures followed by the same letters are insignificant.

Table (5) : Grass weed control % based on grass leaved weed density in maize treated plots after 12 days from application.

Treatment		% of control					Average weed
		1st Season	2nd Season				
Herbicide	**Rate of Appl.** *CC /fed.*	*E. colo.*	*D. aeg.*	*E. colo.*	*P. pasp.*	*C. long.*	*Contraol %*
Equip 22.5 OD	**750**	**54.5**	**25.04**	**46.78**	**73.06**	**100.00**	**62.1**
Equip 22.5 OD	**1500**	**81.8**	**41.09**	**62.62**	**86.53**	**100.00**	**77.7**
Starane 20% EC	**200**	**45.5**	**16.23**	**25.80**	**29.14**	**100.00**	**45.2**
Manual hoeing	**Twice**	**100**	**57.32**	**78.26**	**73.06**	**100.00**	**85.7**
Control		**0.0**	**0.00**	**0.00**	**0.00**	**0.00**	**0.0**

The figures followed by the same letters are insignificant.

The average weed control percentages of the two seasons (Tables 6 and 7) indicated that hoeing showed the highest significant reduction of BLW_s dry weight being 92.57% of the control, followed by Equip 22.5% OD at the higher rate (83.54%) and Equip 22.5% OD at the lower rate (76. 51%), while the minimum average reduction was obtained by Starane 20% EC reaching 59.78% of the control.

3.4. Annual grass leaved weed dry weight

At the 1st season (Tables 8 and 9), all treatments showed no significant effect on GLW_s (*E. colonum.*). The highest reduction percentage was obtained with hoeing reaching 100% of the control, followed by Equip 22.5% OD at the double rate (88.9%). The recommended rate of Equip 22.5% OD and Starane 20% EC showed the same reduction percentage in *E. colonum,* dry weight being 33.3% of the control.

During the 2nd season all treatments showed the same effect on *D. aegyptium.* and *E. colonum.* (Tables 8 and 9). Hoeing showed the highest significant reduction of *D. aegyptium.* and *E. colonum* dry weight reaching 86.85 and 59.33% of the control, followed by Equip 22.5% OD at the rate of 1500 cc, being 78.90 and 56.9% of the control, respectively. Equip 22.5% OD at the double rate caused more herbicidal reduction on the dry weight against *P. paspaloides* , reaching 96.19%, followed by 83.45% in manual hoeing, Starane 20% EC (44.6%) and Equip 22.5% OD at the recommended

Table (6): Average dw (gm/m^2) of broad leaved weeds in maize field as influnced by herbicide treatments after 21 days from treatment.

Treatment		Dry weight gm / m^2										
Herbicide	Rate of Appl. CC /fed.	1st Season				Total	2nd Season					Total
		T. ptul.	*P. oler.*	*E. gen.*	*A Spp*	GLW_s dw/m^2	*D. stra.*	*C. olit.*	*E. gen.*	*T. ptul.*	*C. arve.*	GLW_s dw/m^2
Equip22.5 OD	750	45.51 bc	0.11 c	0.47 bc	2.00 c	48.09 bc	1.77 c	0.00 c	0.19 c	0.0	0.39 b	2.4 c
Equip 22.5 OD	1500	29.84 c	0.12 c	0.44 bc	2.07 c	32.47 c	0.53 d	0.00 c	0.00 d	0.0	0.28 c	0.8 d
Starane 20% EC	200	70.06 b	0.32 b	0.74 b	3.17 b	74.29 b	4.55 b	0.13 b	0.28 b	0.0	0.47 ab	5.4 b
Manual hoeing	Twice	14.26 cd	0.06 c	0.18 c	0.76 d	15.26 c	0.34 d	0.14 b	0.00 d	0.0	0.06 d	0.5 d
Control	--------	188.825 a	0.70 a	1.68 a	6.90 a	198.11 a	7.84 a	0.97 a	0.98 a	0.0	0.53 a	10.3 a
LSD		26.257	0.190	0.424	0.385	26.200	0.368	0.070	0.049	0.000	0.085	0.760

The figures followed by the same letters are insignificant.

Table (7): Broad weed control % based on dry weight in maize treated plots 21 days from application.

Treatment		Weed control %									Average BLW_s control %
Herbicide	Rate of Appl. CC /fed.	1st Season					2nd Season				
		T. ptul.	*P. oler.*	*E. gen.*	*A. Spp*	*D. stra.*	*C. olit.*	*E. gen.*	*T. ptul.*	*C. arve.*	
Equip22.5 OD	750	75.9	85.0	72.0	71.0	77.4	100.0	80.6	100.0	26.7	76.51
Equip 22.5 OD	1500	84.2	82.9	73.8	70.0	93.3	100.0	100.0	100.0	47.6	83.54
Starane 20% EC	200	62.9	54.6	56.0	54.1	42.0	86.5	71.4	100.0	10.5	59.78
Manual hoeing	Twice	92.4	92.1	89.3	89.0	95.7	86.0	100.0	100.0	88.6	92.57
Control	--------	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00

Table (8): Average dw (gm/m^2) of grass leaved weeds in maize field as influnced by herbicide treatments after 21 days from application.

Treatment		Dry weight gm / m^2					
		1st Season	2nd Season				Total GLW$_s$
Herbicide	Rate of Appl. CC /fed.	*E. colo.*	D. aeg.	*E. colo.*	*P. pasp.*	*C. long.*	dw/m^2
Equip22.5 OD	750	0.30 a	2.60 c	10.77 c	0.79 b	0.0	14.16 c
Equip 22.5 OD	1500	0.05 a	1.54 d	9.75 cd	0.05 d	0.0	11.34 d
Starane 20% EC	200	0.30 a	4.75 b	14.64 b	0.77 b	0.0	20.16 b
Manual hoeing	Twice	0.0 a	0.96 e	9.20 d	0.25 c	0.0	10.41 d
Control		0.45 a	7.30 a	22.62 a	1.39 a	0.0	31.31 a
LSD (0.05)		0.483	0.558	0.926	0.190	0.000	2.352

Table (9): Grass weed control % based on dry weight in maize treated plots 21 days from application.

Treatment		Weed control %					Average GLW$_s$
		1st Season	2nd Season				
Herbicide	Rate of Appl. CC /fed.	*E. colo.*	*D. aeg.*	*E. colo.*	*P. pasp.*	*C. long.*	*control%*
Equip22.5 OD	750	33.3	64.38	52.39	42.81	100.00	59.9
Equip 22.5 OD	1500	88.9	78.90	56.90	96.19	100.00	87.7
Starane 20% EC	200	33.3	34.93	35.28	44.60	100.00	51.0
Manual hoeing	Twice	100	86.85	59.33	83.45	100.00	89.9
Control		0.0	0.00	0.00	0.00	0.00	0.0

rate being 42.81% of the untreated control.

Data in Table (9) illustrated that the maximum reduction in GLW_s was obtained by hoeing (89.9%), followed by Equip 22.5% OD at the double rate (87.7%), Equip 22.5% at the recommended rate (59.9%) and Starane 20% EC (51%) of the untreated control.

The above mentioned results agree with Arnold *el al. (*2005), who mentioned that the controlling effect of herbicide treatments (nicosulfuron plus rimsulfuron, DPX 79406, and foramsulfuron) differed according to the herbicide treated and weed kinds. This variability in weed response (tolerance to herbicides) could be partially associated with growth rate differences among the specie (Damalas *et al.*, 2008), which may be responsible for differences in herbicide metabolism rate. Weed tolerance to herbicides is often associated with metabolic processes that result in herbicide degradation by the target plants (Devine *et al.*, 1993) and thus weed species can exhibit different levels of tolerance to a given herbicide even if they are similarly susceptible at their target site.

Also, Damalas *et al.* (2010), concluded that satisfactory control of early watergrass and late watergrass in corn can be achieved with increased application rates of foramsulfuron applied preferably at early growth stage, while McCullough *et al.* (2012) showed that foramsulfuron applications controlled goosegrass <55%.

The results of both two seasons showed that herbicide application caused significant effect on weed dry weight. In two seasons, weed biomass obtained was significantly different from one treatment to another. These results are in agreement with Zaremohazabieh and Ghadiri, (2011), who indicated that foramsulfuron at 0.06 kg a.i. / ha^{-1}, foramsulfuron at 0.03 kg a.i. / ha^{-1}, and atrazine plus alachlor at both applied rates provided better weed control compared with the other treatments. Also, Baghestani *et al.* (2007) indicated that nicosulfuron and foramsulfuron at 80 and 562.5 g a.i. P ha^{-1}, respectively, provided satisfactory control of broadleaved and grass weeds and rimsulfuron at 10 g a.i. P ha^{-1} controlled grass weeds in maize. Zaremohazabieh and Ghadiri (2011), indicated that the maximum weed biomass reduction was obtained with foramsulfuron in both applied rates (0.03 and 0.06 kg a.i. P ha^{-1}). Also, the effectiveness of overall weed control was primarily due to lower weed population densities and a shorter duration of weed emergence after planting and therefore less re-infestation after herbicide application.

Lotfi *et al.* (2010), indicated that the most effective herbicide for weed density and weed dry weight decreasing percentage was Foramsulfuron which was significantly different from other herbicides. Also, factors including herbicide, application doses and cultivation significantly influenced weed density and dry weight. The best herbicide reduced weed density and decreased dry weight percentage was Foramsulfuron, and the best effective dose was 25% more than the recommended dose (Lotfi *et al*., 2012).

From the above mentioned results it could be concluded that satisfactory control of BLW_s and GLW_s in maize can be achieved with increased application rates of foramsulfuron applied preferably at early growth stage but the side effect on maize has to be considered.

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تأثير بعض مبيدات الحشائش على الحشائش الحولية النجيلية والعريضة في محصول الذرة

1 - تأثير بعض مبيد الحشائش فورامسلفيورون علي الحشائش الحولية النجيلية وعريضة الأوراق في محصول الذرة

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ملخص

تم إجراء التجربة خلال الموسم الزراعى الصيفى 2011 ، 2012 بمنطقة طحانوب، بمحافظة القليوبية، مصر، لتقييم كفاءة الجرعات المختلفة من مبيد الحشائش الأختيارى إيكويب 22,5% مستحضر زيتى قابل للأنتشار فى الماء (فورامسلفيورون + أيزوكسدايفين إيثيل) على مكافحة الحشائش الحولية العريضة وضيقة الأوراق النامية بحقول الذرة الشامية ومقارنة تأثيرها بالعزيق اليدوى ومبيد الحشائش الموصى به من وزارة الزراعة المصرية، ستارين 20% مركز قابل للإستحلاب (فلوروكسيباير).

أوضحت النتائج أن معاملة العزيق اليدوى حققت أعلى نسبة مكافحة معنوية للحشائش الحولية العريضة والضيقة النامية خلال موسمى الزراعة (الأول والثانى) مقارنة بالكنترول (88,36% و 85,7%)، يليها معاملة مبيد الإيكويب المعامل بضعف الجرعة الموصى بها (1500سم/ فدان) حيث حقق نسبة مكافحة بلغت 75,16% و 77,7%، بينما كانت نسبة المكافحة 71,46% و 62,1% عند معاملته بالجرعة الموصى بها، على التوالى. حققت المعاملة بمبيد ستارين أدنى مستويات المكافحة بنسبة 58,1% و 45,2% خلال الموسم الأول والثانى على التوالى.

كما أوضحت متوسطات نتائج الوزن الجاف للحشائش العريضة للموسم الأول والثانى أن معاملة العزيق أدت إلى خفض الوزن الجاف معنوياً بنسبة 92,57% مقارنة بالكنترول يليها معاملة الإيكويب المعامل بضعف الجرعة الموصى بها (83,54%) ثم تلك المعاملة بالجرعة

الموصى بها (76,51%) وأخيراً مبيد ستارين الذى كان أقل تأثيراً على الوزن الجاف حيث أدى إلى خفض الوزن الجاف بنسبة 59,78% مقارنة بالكنترول.

أيضاً، وجد أن معاملة العزيق أدت إلى خفض الوزن الجاف للحشائش ضيقة الأوراق معنوياً مقارنة بالكنترول بنسبة بلغت 89,9% يليها معاملة الإيكويب المعامل بضعف الجرعة (87,7%) ثم تلك المعاملة بالجرعة الموصى بها (59,9%)، بينما اظهر استارين أقل تأثيراً معنوياً (51%).