

EFFECT OF SOME WEED CONTROL TREATMENTS ON TRANSPLANTED RICE AND NUTRIENTS UPTAKE BY RICE AND WEEDS.

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ABSTRACT

Two field experiments were conducted during the two summer seasons of 2000 and 2001 at Sharbas Village , Domietta Governorate, Egypt , to study the effect of some weed control treatments in transplanted rice and nutrients uptake by rice and weeds . The predominant weeds in the experimental field were *Echinochloa crus-galli* and *Cyperus difformis* .The results indicated that when the weeds were allowed to grow with the crop , grain yields were reduced by about 62.03 % when compared with twice hand weeded treatments after 20 and 40 days from transplanting .The heighest dry weight of weeds (210.34 g/m²) were observed in the unweeded check. The following treatments were applied: Cinmethylin (Argold) 0.03 kg a.i./fed, Oxadiazon (Ronstar) 0.19 kg a.i./fed, Thiobencarb (Satrin)1.00 kg a.i /fed, Butachlor (Machete) 0.90 kg a.i /fed, and Bentazon (Basagrane) 0.72 kg a.i /fed alone or plus one hand weeding after 40 days from transplanting , hand weeded treatments twice after 20 and 40 days from transplanting as well as unweeded control . All herbicides were applied 3 days after transplanting rice , except Bentazon which was applied 15 days after transplanting .Hand weeded treatment twice as well as all herbicide treatments plus one hand weeded treatment gave the best weed control and increased grain yield / fed when compared to herbicid treatments alone . Bentazon alone gave poor control for *Echinochloa crus - galli* . All weed control treatments reduced N,P and K uptake by weeds from (12.67 to 0.210 kg N from 0.468 to 0.01 kg P from 7.74 to 0.17 kg k) when compared to the unweeded control (31.8 kg N, 1.175 kg P and 19.44 kg K)/fed. The greatest uptak of N,P and K by rice was obtained by all herbicide treatments plus one hand weeded treatment after 40 days from transplanting and by twice hand weeded treatments .

From the obtained results it can be concluded that all weed control treatments increased rice grain and straw yields and decreased dry weight of weeds . All weed control treatments reduced N, P and K uptake by weeds . The greatest uptake of N , P and k by rice was obtained by all herbicides plus one hand weeded treatment after 40 days from transplanting .

INTRODUCTION

Weed control in rice field is very necessary, since weeds compete with the rice plants for light, nutrients, water. Weed harboring various insect pests and acting as hosts for different diseases . Reduction in the potential yield of rice due to weed competition is a factor of major importance . Weeds cause 20 % to 95 % yield losses Gogoi, *et al.*, (1996) and Karim *et al.*, (1998)

At present, chemical weed control in Egypt receives great attention as an improved cultural practice in transplanted and direct seeded rice fields for reducing the costs of production and increasing the yield . Jain *et al.*, (1998) , Suresh *et al.*, (1998) Sharma and Bhunia (1999) Found that Oxadiazon, Butachlor and Thiobencarb provided 80.5%,78.3% and 35.1% control

efficiency and increased grain yield above the weedy control .Weed control with Fluchloralin + 2,4-D, Benthocarb , Anilofos, Butachlor and Pendimethalin applied 4 days after transplanting or two hand weedings decreased nutrient uptake by weeds and increased N,P and K uptake by rice compared with the unweeded control Balaswamy and Kondap (1989), Srivastava and Vaishya (1993).

Therefor, the aim of the present investigation was to study the effect of some weed control treatments on transplanted rice and nutrients

MATERIALS AND METHODS

Two field experiments were carried out during summer season of 2000 and 2001 at Sharbas Village ,Domietta Governorate ,Egypt to study the effect of some weed control treatments in transplanted rice and nutrients uptake by rice and weeds .The experimental soil was clay loam soil having sand 30.5%, silt 19. 4%, clay 50.1%, ph.7.1, organic matter 1.76% , total nitrogen 1.25% , available N 180 ppm , total P 9.98, ppm available P 7.4, K⁺ 26 ppm and El. Conductivity 0.37 (mmhos/cm²).The experiment was laid in randomized block design with four replications. The plot size was 50m² (5m x10m) during both seasons . Rice cv. Giza 177 was sown on 5 May in both seasons. Treatments were applied after 3 days from transplanting except Basagran. Basagran was applied after 15 days from transplanting . Sand coating involves mixing the herbicide and broadcast also by hand into water except Basagran, Basagran was sprayed using a Kanpasack sprayer . Recommended cultural practices were followed to maintain optimum crop growth. Each experiment consisted of 12 treatments which were five herbicides , five herbicides plus one hand weeding after 40 days from transplanting , hand weeding (20 and 40 days after transplanting) and unweeded control .

The treatments were as follow :

- 1-Cinmethylin at 0.03 Kg a.i/fed after 3days from transplanting .
- 2- Oxadiazon at 0.19 Kg a.i / fed after 3 days from transplanting .
- 3- Thiobencarb at 1.00 kg a.i/fed after 3 days from transplanting .
- 4- Butachlor at 0. 90 kg a.i / fed after 3 days from transplanting .
- 5- Bentazon at 0.72 kg a.i / fed after 15 days from transplanting .
- 6- Cinmethylin + Hand weeded after 40 days from transplanting .
- 7- Oxadiazon + " " " " " " " "
- 8- Thiobencarb + " " " " " " " "
- 9- Butachlor + " " " " " " " "
- 10 -Bentazon + " " " " " " " "
- 11- Hand weeded twice after 20 and 40 days from transplanting .
- 12- Unweeded control .

The common , trade and chemical names of each herbicide used were shown in Table 1 .

During the growing seasons , one weed sample was taken randomly by using one square meter from each plot before 20 days from

harvesting .Rice was harvested on September 10 and 5 in 2000 and 2001 seasons , respectively. The plant height (cm) , panicles length (cm) , number of spikes per square meter and 1000- grain weight (gm) were recorded .

The grain and straw yields were calculated in ton / fed. Uptake of N,P and k by rice or weeds were determined by micro kjeldahl , calorimetric and flame photometer methods, respectively .

All data obtained were statistically analyzed according to Snedecor and Cochran (1980), L.S.D. at 5% level of significant was used to compare between means .

RESULTS AND DISCUSSION

A -Weed control :

Echinochloa crus-galli (L) Beauv and *Cyperus difformis* L. were the dominant weed species . Table 2 shows that all herbicid treatments alone or with one hand weeded treatments after 40 days from transplanting and hand weeded treatment twice at 20 and 40 days from transplanting significantly reduced the dry weight of annual weeds in both seasons compared with the unweeded control. All herbicide treatments with one hand weeded treatment and hand weeded twice gave excellent weed control (94.4 % and 99.09 %) for *Echinochloa crus- galli*. Thiobencarb at 1.0 kg a.i / fed and Butachlor at 0.90 kg a.i / fed , Oxadiazon at 0.19 kg a.i / fed and Cinmethylin at 0.03 kg a.i / fed gave the second rank (87.56 % , 86.19 % ,85.30 % and 78.42 % respectively) for *Echinochloa crus – galli* . Bentazon gave poor effective control (45.81 %) for *Echinochloa crus – galli* when compared with the other treatments .All weed control treatments gave best control for *Cyperur difformis* (86.87 % - 100 %). In general , it could be concluded form these results that Thiobencarb + hand weeded , Butachlor + hand weeded , Oxadizon + hand weeded , hand weeded twice and Bentazon + hand weeded applied post-emergence were the most effective against annual weeds. Bentazon alone at 0.72 kg a.i / fed gave less effectiveness for annual weed control (60. 1 %). These reults are similar to those obtained by Shaban *et al.*, (1987), El. Desoki, (1994) , Jain *et al.*, (1998), patel *et al.*, (1998) , Rajendran and kempuchetty , (1998) .

B-Effect of weed control treatments on grain , straw yields and yield components of rice .

1 – Plant height :

Results in Table 3 indicate clearly that all weed control treatments increased plant height (cm) when compared with the unweeded control . Bentazon alone gave less plant height (89.27cm.) when compared with the other treatments .All treatments produced significantly taller plant height than the unweeded control . This superiority in plant height could be attributed to the less competition resulted from the absence of weeds .These results are

Table 1 : Common , trade and chemical names of the herbicides used in this study

Common name	Trade name	Chemical
1-Ginmethyin .	Argold 10% E.c.	(1 Rs , 2 SR , 4 SR) - 1,4 -epoxy -p- rrethiy -2- methylbenzyl ether) -2- {(2- methylphenyl) methoxy} -7- oxabicyo {2,2, 1} heptane (CA) .
2-Oxadizon .	Ronstar 25% E.c	2- tert - butyl -4-(2,4- dichloro - 5 - isopropyl - oxy phenyl - 1,3,4- oxadizoline - 5- one .
3- Thiobencarb or Benthocarb.	Satrin 50 % Ec.	S-(4- chlorobenzyl) N,N diethyl thiolcarbamate .
4- Machete	Butachlor 60 % E.c	N-(butoxymethyl) -2- chloro -2,6 -diethyl- acetnilide .
5- Bentazone	Basagrane 48% As	3- isopropyl 1 H - 2,1,3 benzathiadiazin - 4 -(3H) one 2,2 - dioxide .

Table 2 : Effect of weed control treatments on dry weight of weeds in rice field (combined analysis of two seasons 2000 and 2001)

Treatment	<i>Echinochloa crus - galli</i>		<i>Cyperus difformis</i>		Total weeds	
	dry. Weight (gm)/m ²	efficiency %	Dry weight (gm)/ m ²	efficiency	Dry weight (gm)/ m ²	efficiency
1- Cinnethylin at 0.03 kg a. i /fed.	32.91	78.42	7.6 0	86.87	40.51	80.74
2- Oxadiazon at 0.19 kg a. i /fed .	22.42	85.3 0	4.74	91.81	27.15	87.02
3- Thiobencarb at 1.00 kga. i /fed .	18.97	87.56	3.04	94.75	22.01	89.46
4- Butachlor at 0.90 kg a. i /fed .	21.05	86.19	4.78	91.74	25.33	87.89
5- Bentazon at 0.72 kg a. i / fed .	82.63	45.81	1.19	97.94	83.82	60.1
6-Cinnethylin + Hand weeded	7.14	95.32	0.23	99.6 0	7.37	96.42
7- Oxadiazon + Hand weeded	4.48	97.06	0	100.00	4.48	97.79
8- Thiobencarb + Hand weeded	1.38	99.09	0	100.00	1.38	99.26
9- Butachlor + Hand weeded	1.82	98.81	0	100.00	1.82	99.05
10- Bentazon + Hand weeded	10.07	93.4 0	0	100.00	10.07	95.14
11- Hand weeded twice	5.57	96.35	0	100.00	5.57	97.27
12- unweeded control	152.48	0.00	57.87	0	210.34	0
L.S.D at 5 %	4.13		1.53		3.54	

Table (3) Effect of weed control treatments on yield and some yield components of transplanted rice (combined analyses for 2000 and 2001 seasons).

Treatments	plant height (cm)	panicle length (cm)	Number of panicles /m ²	weight of 1000 grains (gm)	Grain yield ton / fed .	Straw yield ton/ fed.
1- Climethylin at 0.03 kg a. l /fed.	90.91	18.53	370.00	23.88	2.461	3.611
2- Oxadiazon at 0.19 kg a. l /fed .	91.92	18.85	440.00	24.13	3.771	4.664
3- Thiobencarb at 1.00 kg a. l / fed .	92.38	19.05	445.25	24.24	3.888	5.004
4- Butachlor at 0.90 kg a. l / fed .	91.12	18.64	440.25	24.12	3.800	4.856
5- Bentazon at 0.72 kg a. l / fed .	89.27	18.23	285.00	23.82	2.185	3.260
6-Climethylin + Hand weeded	92.65	18.84	485.00	24.14	4.016	5.271
7- Oxadiazon + Hand weeded	91.67	18.83	484.75	24.26	4.028	5.265
8- Thiobencarb + Hand weeded	92.30	19.12	487.50	24.29	4.120	5.359
9- Butachlor +Hand weeded	91.86	18.9	485.00	24.23	4.010	5.299
10- Bentazon + Hand weeded	91.89	18.88	486.00	24.26	4.017	5.283
11- Hand weeded twice	92.14	18.97	486.50	24.24	4.132	5.441
12- unweeded control	87.12	18.08	193.50	23.76	1.565	2.925
L.S.D at 5 %	1.24	0.32	5.25	0.22	0.071	0.114

similar to those obtained by El- Desoki (1994) , Mishra (2000) and El- Desoki (2002) who found that hand weeding , Thiobencarb and Butachlor gave the tallest plant height .

2- Panicle length :

Data presented in Table 3 show that all weed control panicle length was achieved by using Thiobencarb at 1.0 kg a.i /fed+ one hand weeded after 40 days from transplanting and Thiobencarb at 1.0 kg / fed alone . These results might be attributed to better weed control. Similar results were recorded by Singh and Ram (1991) , EL – Desoki (1994) and El – Desoki (2002) .

3- Number of panicles /m² :

Data in Table 3 showed significant response in the number of panicles / m² to weed control treatments . All herbicidal treatments alone or plus one hand weeded treatments after 40 days from transplanting and hand weeded twice after 20 and 40 days from transplanting significantly exceeded the unweeded control. The greatest number of panicles /m² was obtained from all herbicides with one hand weeded treatment after 40 days from transplanting and hand weeded twice after 20 and 40 days from transplanting . Oxadizon at 0.19 kg a.i / fed, Thiobencearb at 1.00 kg a.i / fed and Butachlor at 0.90 kg a.i / fed , gave the second rank . While Bentazon at 0.72 kg a.i / fed and Cinmethylin at 0.03 kg a.i / fed gave lower number of panicles / m² when compared with the other weed control treatments . These results might be attributed to poor effectiveness of weed control from these treatments , These results are in agreement with those obtained by Shaban *et al* (1985) , Singh and Ram (1991) , El- Desoki (2002) .

4- Weight of 1000 - grains (gm) :

The heighest weight of 1000 – grain were obtained by using all weed control treatments with or without one hand weeded after 40 days from transplanting except with Bentazon at 0.72 % kg a.i / fed and Cynmethylin at 0.03 kg a.i / fed . All treatments gave higher values in 1000 - grain weight when compared to the unweeded control .

5- Grain and Straw yield ton / fed :

Data in Table 3 indicate clearly that all weed control treatments significantly increased grain and straw yields . All herbicidal treatments alone or with one hand weeded treatments after 40 days from transplanting produced higher grain and straw yield / fed than the unweeded control . The heighest grain and straw yields/fed were obtained by using hand weeded treatment twice after 20 and 40 days from transplanting , Thiobenocarb at 1.0 kg a.i / fed. + one hand weeded after 40 days from transplanting (4.132 and 4.120 ton grain / fed) , (5.441 and 5.359 ton straw). Cinmethylin at 0.03 kg a.i /fed or Butachlor at 0.90 kg a.i / fed or Oxadizon at 0.19 kg a.i / fed or Bentazon at 0.72 kg a.i / fed with one hand weeded treatment after 40 days from transplanting gave equal results on grain and straw yields (4.010 to 4.028 ton grain yield/fed) and (5.265 to 5.299 ton straw yield / fed)

respectively. Thiobencarb at 1.0 kg a.i alone , Butachlor at 0.90 kg a.i / fed alone and Oxadiazon at 0.19 kg a.i / fed alone gave the second rank . Such superiority in higher grain and straw yields / fed may be due to suppressing effect on the annual weeds. Higher grain yield resulted from higher number of yield components namely number of panicles/m² and weight of 1000-grain. On the contrary , Cinmethylin at 0.03 kg a.i /fed and Bentazon at 0.72 kg a.i /fed gave less grain and straw yields when compared with the other weed control treatments . These results are similar to those obtained by Jain *et al* ., (1998) , Patel *et al* ., (1998) , Rajendran and Kempuchetty (1998) , Suresh *et al* ., (1998) , Rammohan *et al* ., (1999) , Sharma and Bhunia (1999).

C. Nutrients uptake :

1-Nutrients uptake by rice crop:

Higher uptake of nutrients by rice plants was observed under various weed control treatments than the unweeded control (Table 4) . All herbicides plus one hand weeded after 40 days from transplanting gave the highest uptake of nutrients (55.71 to 57.30 kg N, 11.4 to 15.48 kg P and 22.16 to 22.88 kg K/fed for grain yield) and (37.41 – 41.62 kg N, 9.63 to 9.75 kg P and 24.43 to 28.98 kg K/fed for straw yield) . Thiobencarb , Oxadiazon and Butachlor gave the second rank . Cinmethylin and Bentazon gave less uptake of nutrients when compared with the other treatments . These results may be due to better weed control and lesser competition. (Table 2) . These results are similar to those obtained by Moorthy and Mitra (1990) , Jena *et al* ., (1991) , Ramamoorthy (1991) , Sharma *et al* ., (1994) , Nandal and Singh (1995) , Singh and Sharma (1995) , and Madhua and Nanjappa (1997).

2-Nutrients removal by weeds :

Data in Table 5 show that the removal of N , P and K from the soil by weeds was reduced by all treatments . The highest nutrients removal by weeds were obtained by unweeded control , Bentazon alone at 0.72 kg a. i / fed and Cinmethylin at 0.03 kg a.i /fed (31.8 , 12.67 and 6.13 kg N , 1.175 , 0.226 and 0.468 kg P , 19.44 , 7.74 and 3.74 kg K /fed respectively . These results are in agreement with those obtained by Balaswamy and Kondap (1989) , Ramamoorthy (1991) , Srivastava and Vaishya (1993) , Prakash *et al* ., (1995) and Madhua and Nanjappa (1997). From the obtained results it can be concluded that all weed control treatments increased rice grain and straw yields and decreased dry weight of weeds . All weed control treatments reduced N , P and K uptake by weeds . The greatest uptake of N , P and K by rice was obtained by all herbicides plus one hand weeded treatment after 40 days from transplanting .

Table (4) Nutrient uptake by rice crop during 2000 and 2001 seasons (values are means of two replicates in both seasons)

Treatments	Nutrient uptake kg / feddan)					
	Grain			Straw		
	N	P	K	N	P	K
1- Cinmethylin at 0.03 kg a.l /fed.	34.12	6.6 0	12.85	27.62	6.57	18.13
2- Oxadiazon at 0.19 kg a.l /fed .	52.29	13.6 0	20.24	35.68	8.48	23.68
3- Thiobencarb at 1.00 kga.l / fed .	35.92	13.86	20.67	38.28	9.12	24.83
4- Butachlor at 0.90 kg a.l /fed .	52.69	13.6 0	20.35	37.15	8.85	24.32
5- Bentazon at 0.72 kg a.l/ fed .	30.36	6. 00	11.89	24.94	5.91	16.29
6- Cinmethylin + Hand weeded	55.69	12.04	22.4 0	38.32	9.63	25.71
7- Oxadiazon + Hand weeded	55.85	14.4 0	21.4 0	40.28	9.63	25.68
8- Thiobencarb + Hand weeded	57.13	15.48	22.16	41. 00	9.75	27.33
9- Butachlor +Hand weeded	55.6 0	14.04	22.43	40.54	9.63	27.41
10- Bentazon + Hand weded	55.71	11.4 0	20.45	37.41	9.69	24.43
11- Hand weeded twice	57.3 0	15.48	22.88	41.62	9.7 0	28.96
12- unweeded control	21.76	4.2 0	8.07	22.38	5.31	15.17

Table(S) : Nutrients removed by weeds during 2000 and 2001 seasons . (values are means of two replicates in both seasons).

Treatments	Nutrients removed by weeds (kg/ fed.)		
	N	P	K
1- Cinnemthylin at 0.03 kg a.I /fed.	6.13 0	0.226	3.74 0
2- Oxadiazon at 0.19 kg a.I /fed .	4.11 0	0.152	2.28 0
3- Thiobencarb at 1.00 kga.I / fed .	3.17 0	0.117	1.93 0
4- Butachlor at 0.90 kg a.I /fed .	3.83 0	0.141	2.34 0
5- Bentazon at 0.72 kg a.I/ fed .	12.67 0	0.468	7.74 0
6-Cinnemthylin + Hand weeded	1.11 0	0.041	0.68 0
7- Oxadiazon + Hand weeded	0.68 0	0.025	0.41 0
8- Thiobencarb + Hand weeded	0.21 0	0.008	0.13 0
9- Butachlor +Hand weeded	0.28 0	0.01 0	0.17 0
10- Bentazon + Hand weded	1.51 0	0.056	0.93 0
11- Hand weeded twice	0.84 0	0.031	0.51 0
12- unweeded control	31.8 0	1.175	19.44 0

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تأثير بعض معاملات مقاومة الحشائش على الأرز المنزوع بطريقة الشتل وامتصاص العناصر الغذائية بواسطة الأرز والحشائش

إبراهيم رشدي الهجرسي الدسوقي

المركز القومي للبحوث – قسم النبات – الدقى – مصر

أجريت تجربتان حقليتان في الموسمين الصيفيين ٢٠٠٠ ، ٢٠٠١ بقرية شرباص محافظة دمياط لدراسة تأثير بعض معاملات مقاومة الحشائش على الأرز المنزوع بطريقة الشتل وامتصاص العناصر الغذائية بواسطة الأرز والحشائش وقد تم استخدام تصميم القطاعات كاملة العشوائية فى اربع مكررات وكانت المعاملات فى كلا الموسمين كالاتى:

- ١-أرجولد بتركيز ٠.٣ كجم مادة فعالة / فدان خلطاً بالرمل بعد ٣ أيام من الشتل في وجود الماء .
- ٢-رونستار بتركيز ٠.١٩ كجم مادة فعالة / فدان خلطاً بالرمل بعد ٣ أيام من الشتل في وجود الماء .

- ٣- ساتيرين بتركيز ١,٠ كجم مادة فعالة / فدان خلطا بالرمل بعد ٣ أيام من الشتل في وجود الماء .
 ٤- ماثيت بتركيز ٠,٩ كجم مادة فعالة / فدان خلطا بالرمل بعد ٣ أيام من الشتل في وجود الماء .
 ٥- بازجران بتركيز ٠,٧٢ كجم مادة فعالة / فدان رشا باستخدام رشاشة ظهرية بعد صرف الماء من الأرض قبل الرش بيوم وترك الأرض يومين بدون ري بعد المعاملة وكنت المعاملة بعد ١٥ يوما من الشتل

- ٦- ارجولد بتركيز ٣,٠ كجم مادة فعالة / فدان + مقاومة يدوية مرة واحدة بعد ٤٠ يوما من الشتل .
 ٧- رونسار بتركيز ٠,١٩ كجم مادة فعالة / فدان +
 ٨- ساتيرين بتركيز ١,٠ كجم مادة فعالة / فدان +
 ٩- ماثيت بتركيز ٠,٩ كجم مادة فعالة / فدان +
 ١٠- بازجران بتركيز ٠,٧٢ كجم مادة فعالة / فدان +
 ١١- معاملة المقاومة اليدوية مرتين بعد ٢٠ , ٤٠ يوما من الشتل .
 ١٢- معاملة الكنترول (الغير مقاوم)

وقد أظهرت النتائج مايلي :-

- أعطت جميع المعاملات كفاءة عالية لمقاومة الحشائش حيث تراوحت بين (٦٠% - ٨٩%) بالنسبة للمبيدات منفردة زادت إلى ٩٩% عند إجراء المقاومة اليدوية مرة واحدة بعد ٤٠ يوما من الزراعة مع استخدام المبيدات.
 - جميع المعاملات أعطت كفاءة عالية في مقاومة حشيشة الدنيبة (٧٨% - ٩٨,٨%) فيما عدا مبيد البازجران منفرد فكان اقلهم كفاءة في مقاومة حشيشة الدنيبة ٤٥,٨ % .
 - تفوقت جميع المعاملات في صفة طول النبات وطول السنبلة وعدد السنابل في المتر المربع ووزن الألف حبة عند مقارنتها بالكنترول وكانت أفضل المعاملات عند استخدام المبيدات بسا لإضافة إلى المقاومة اليدوية مرة واحدة بعد ٤٠ يوما من الشتل ومعاملة المقاومة اليدوية مرتين بعد ٢٠ , ٤٠ يوما من الشتل .
 - كانت أفضل المعاملات هي استخدام مبيدات الحشائش بالإضافة إلى المقاومة اليدوية مرة بعد ٤٠ يوما من الشتل والمقاومة اليدوية مرتين بعد ٢٠ , ٤٠ يوما من الشتل حيث أعطت أعلى محصول من الحبوب (٤١,٤ - ٤٠,١ طن / فدان) و أعلى محصول من القش (٤١,٤ - ٥,٢٦٥ طن / فدان) .
 - أدى استخدام مبيد البازجران بتركيز ٠,٧٢ كجم مادة فعالة / فدان منفردا إلى أقل محصول من الحبوب والقش وذلك نتيجة قلة كفاءة المبيد لمقاومة الحشائش خاصة حشيشة الدنيبة .
 - أدت جميع المعاملات إلى نقص امتصاص الحشائش للعناصر الغذائية من التربة حيث تراوحت بالنسبة للمعاملات ما بين (٢١,٠ - ١٢,٦٧ كجم / نيتروجين ، ٠١,٠٠ - ٠,٤٦٨ كجم فوسفور ، ١٣,٠ - ٧,٧٤ كجم بوتاسيوم / فدان) مقارنة بالغير مقاوم حيث كانت النسبة ٣١,٨ كجم نيتروجين ، ١,١٧٥ كجم فوسفور ، ١٩,٤٤ كجم بوتاسيوم / فدان .
 - أدت جمع المعاملات إلى زيادة امتصاص النيتروجين والفوسفور والبوتاسيوم في كل من الحبوب والقش مقارنة بمعاملة الكنترول .
 - وبناء على ذلك يمكن التوصية باستخدام مبيدات الحشائش السابقة مع المقاومة اليدوية مرة واحدة بعد ٤٠ يوما من الشتل أو استخدام المقاومة اليدوية مرتين بعد ٢٠ , ٤٠ يوما من الشتل وهذا يؤدي إلى زيادة محصول الحبوب والقش ونقص كبير في الوزن الجاف للحشائش مما يعكس علية زيادة امتصاص نباتات الأرض للعناصر الغذائية مثل النيتروجين والبوتاسيوم والفوسفور وبالتالي يقل إستنزاف هذه العناصر عن طريق الحشائش نتيجة نقص الوزن الجاف للحشائش في معاملات المقاومة عنها في معاملة الكنترول (الغير مقاوم) .