

YIELD AND YIELD COMPONENTS OF SUGAR BEET AS INFLUENCED BY SOME WEED CONTROL METHODS UNDER SANDY SOIL CONDITION

OUDA, SOHIER M. M. * AND M. F. SHATLA**

**Sugar Crops Research Institute, Agric., Res. Center, Giza, Egypt*

***Weed Research Central Laboratory Agric., Res., Center, Giza, Egypt.*

(Manuscript received 25 November 2005)

Abstract

Two field trials were conducted of El-Kassasien Agricultural Research Station, Ismailia Governorate, in two successive seasons of 2001/ 2002 and 2002 / 2003 to study the effect of weed control methods on weeds infestation and sugar beet productivity (*Beta vulgaris*, L.). Weed control methods are: 1) Betanal progress 18 % EC (6% desmedipham + 6% phemedipham+ 6% ethofumesate) at the rate of 2L / fad, applied post – emergence 1 L/ fad at two true sugar beet leaves stage and 1L / fad with 8 days later followed by one hand hoeing (at 55-60 DAS), 2) Goltix 70% , WP (metamitron) at 2kg / fad, applied post sowing, 3) Fusilade super 12.5% EC (fluazifop – P- butyl) at the rate of 2L / fad, applied at 30 DAS, when the grassy weeds had 3-5 leaves stage followed by one hand hoeing at (55-60DAS), 4) hand hoeing three times at 2, 4 and 8 weeks after sowing, 5) un weeded (control) treatment, 6) Goltix 70%, WP (metamitron) at 2kg / fad, applied post sowing + Fusilade super 12.5% EC (fluazifop – P- butyl) at the rate of 1 L / fad, applied at 30 DAS, when the grassy weeds had 3-5 leaves stage + one hand hoeing (at 30 days later) and 7) Betanal progress 18 % EC (6% desmedipham + 6% phemedipham+ 6% ethofumesate) at the rate of 1 L/ fad at two true sugar beet leaves stage + one hand hoeing at 4 weeks later + Fusilade super 12.5% EC (fluazifop – P- butyl) at the rate of 1 L / fad, applied at 50 DAS + one hand hoeing at 30 days later.

The important results could be summarized as follow:

The effect of weed control methods the results showed that narrow leaves weeds were completely eradicated by use of Fusilade super alone with one

hand hoeing or in combination with either Betanal or Goltix(both of 7th and 6th treatments). The best treatments of chemical weed control were either (Betanal 1L /fad at two thure beet leaves stage + one hand holing at 4 weeks later + Fusilade super 1L / fad at 50 DAS + one hand holing at 30 days later) or (Goltix 2 kg / fad + Fusilade super 1 L / fad at 30 DAS + one hand holing at 30 days later) combination. Both were followed by hand hoeing treatment. Using either Betanal 2 /L fad + one hand hoeing at 55 – 60 DAS or Goltix 2 Kg /fad alone (broad leaves herbicide) was more effective and the root yields increased 270 % for Betanal and to 258 % for Goltix. Using (Goltix at 2kg / fad + Fusilade super at 1L/fad, applied at 30 DAS + one hand hoeing at 30 days later) treatment increased the yield by 306% and (Betanal at 1L/fad applied at two true leaves stage + one hand hoeing at 4 weeks later + Fusilade super at 1L/fad, applied at 50 DAS + one hand hoeing at 30 days later) treatment by 325%. Hand hoeing three times increased root yield by 220% only as compared with the control. Also, weed control methods affected sugar yield and its quality significantly. The control treatment had high sucrose %. Hoeing produced the mose impure juice followed by an ascending order by the use of Goltix. The more pure juice was produced under (Betanal 2L/fad + pone hand hoeing), (control) and (Goltix 2 kg/ fad + Fusilade super 1L/fad + one hand hoeing) treatments.

INTRODUCTION

Since the reclaimed sandy soils constitute the majority desert areas for future expansion, attenion should be devoted to their nutritional status, to maintain high quality and sustainable produc-tivity of sugar beets grown on sandy soil. The effect of weed control methods, sugar beet plants could not be grown economically without weed control because the rate of growth of sugar beet plants is so very slow at early growth stages and the crop is unable to complete effectively with weeds, these words are in full agreement with those obtained by ER and Inan (1988), they reported that weed competition in the early growth stages of sugar beet caused 60 – 80% of yield reduction due to competition for minerals, water and light. Knights *et al.*, (1991) mentioned that addition the split application of 4 liters /ha from Betanal progress herbicide gave excellent results sugar beet weed control. Abd El-Aal (1995) found

that one or two hoeing improved drastically the efficiency of all the applied herbicidal treatments and all tested weed control treatments reduced significantly fresh weight of broad-leaved, grassy and total weeds of sugar beet. Gabibullaev (1996) observed that Betanal progress AM at 1.5 liters/ ha was on average 93.3% effective against weeds in sugar beet fields. Ceglarek *et al.*, (1997) demonstrated that the best reduction in Quack grass (*Elymus repens*) population was obtained by mechanical control before sowing involving skim cultivation and 2 passes with a cultivator, plus spraying with Fusilade super at 2 liters/ ha during crop growth. Al-Moghazy (2000), found that the application of one supplementary hoeing (30 days after herbicidal treatments) increased the efficiency of herbicides (pyramin, pyradur, Pyracor, Goltix, Betanal and Fusilade Super) in controlling total sugar beet weeds at 160 DAS by > 50 % than the unhoed herbicidal treatments.

For the effect of weed control methods on sugar beet plants, Ceglarek and Plaza (1994), reported that pyramin + Betanal or Pyramia + Buracyl + Dual combined with shelling + harro-wing resulted in the greatest weed control and sugar beet yields and the best sugar quality. Gagro and Dadacek (1996) indicated that best results were achieved with post-emergence herbicide + hoeing treatments, and highest crop yields were obtained with 2 liters / ha Betanal (phenmedipham) + 2kg Goltix (metamitron). Abd El-Fatah (2000) reported that the application of phenmedipham at 0.34 kg a.i. / fed + one hoeing under 50 cm between ridges provided the highest values of sucrose %. Al-Moghazy (2000) concluded that hand hoeing three times plus weeding (all season) produced significantly the tallest and thickest root and resulted in the highest top and root yields ton/ fad. Ouda (2003) showed that purity % was not affected by hoeing intervals, but hoeing at intervals of 7 days produced highest root length, root diameter sugar, root and top yields ton / fad and sucrose and T.S.S. percentages compared with 15 days ones.

Therefore, the aim of this work is to discern the effect of weed control treatments on the production and quality of sugar beet.

MATERIALS AND METHODS

The presented work was conducted in two successive growing seasons of 2001/2002 and 2002/ 2003 at El-Kassasien Agricultural Research Station of ARC in Ismaillia Governorate to study the effect of weed control methods on yield and

quality of sugar beet under drip irrigation system. Treatments were seven weed control methods, they are :

- 1) Betanal progress 18 % EC (6% desmediphan + 6% phenmedipham + 6% ethofumesate) at the rate of 2L / fad, applied post – emergence 1 L/ fad at two true sugar beet leaves stage and 1L / fad with 8 days later followed by one hand hoeing (at 55-60 DAS),
- 2) Goltix 70% , WP (metamitron) at 2kg / fad, applied post sowing.
- 3) Fusilade super 12.5% EC (fluazifop – P- butyl) at the rate of 2L / fad, applied at 30 DAS, when the grassy weeds had 3-5 leaves stage + one hand hoeing at 55-60 DAS .
- 4) hand hoeing three times at 2, 4 and 8 weeks after sowing.
- 5) un weeded (control) treatment.
- 6) (Goltix 70%, WP (metamitron) at 2kg/fad, applied post sowing +Fusilade super12.5% EC (fluazifop – P- butyl) at the rate of 1 L / fad, applied at 30 DAS, when the grassy weeds had 3-5 leaves stage + one hand hoeing at 30 days later .
- 7) Betanal progress 18 % EC (6% desmedipham + 6% phenmedi-pham + 6% ethofumesate) at the rate of 1L/fad, applied post–emergence at two true sugar beet leaves stage + one hand hoeing at 4 weeks later + Fusilade super 12.5% EC (fluazifop – P- butyl) at the rate of 1 L / fad, applied at 50 DAS + one hand hoeing at 30 days later.

Treatments were arranged in randomized complete block design in four replications. The plot area was 21 m² (7m in length and 3 m in width), sugar beet variety, viz Sultan was used in this study. Sowing dates were on 15th and 20th November in the first and the second seasons, respectively. After 190 days from sowing sugar beet plants had been harvested. A recommended doses of NPK /fad (120 kg N, 30 kg P₂O₅ 48kg K₂O) were applied. Nitrogen fertilizer was applied in three equal doses, the 1st was after thinning (30 days from sowing), the 2nd was applied at 45 days from sowing and the third was applied at 65 days from sowing. Potassium and phosphorus fertilizers were applied during land preparation. All the recommended practices in sugar beet field were done.

Data recorded:

The following data was recorded in both seasons. At harvest, four guarded ridges were harvested topped and weighted to determine to determine :

- 1.Yield and yield component.

1.1. Root yield ton / fed.

1.2. Top yield ton / fed.

1.3. Sugar yield ton / fed was calculated according to the following equation: Gross sugar yield/ ton/ fed= rot Yield ton/ fad X sucrose %.

2. Yield attributes and juice quality.

At harvest, a sample of ten sugar beet roots for each treatment were randomly taken from each replication to determine the following parameters:

2.1. Root diameter (cm).

2.2. Root length (cm).

2.3. Total soluble solids percentage (T.S.S.%) in beet root which was determined by hand refractometer.

2.4. Sucrose percentage was determined according to Le Docte (1927) .

2.5. Apparent purity percentage = Juice purity % was obtained according to the following equation:

$$\text{Purity \%} = \frac{\text{Sucrose X 100}}{\text{T.S.S.}}$$

3. Weeds:

Weeds were hand pulled from one square meter chosen at random for each treatment after 150 days from sowing. The most common weed species accompanied in this work were wild beet (*Beta vulgaris*, L.); dentated dock (*Rumex dentatus* L.); burclover (*Medicago hispida*, Gearth); common lambsquarters (*Chenopodium Album* L.), tooth pick (*Ammi visnaga* L.); wild chicorey (*Chicorium endivia* L.); bind weed (*Convolvulus arvensis* L.) and canary grass (*Phalaris canariensis* L.).

4. Statistical analysis:

Analysis of variance and combined analysis for the two seasons were conducted on the obtained data according to the method described by Snedecor and Cochran (1981). Weed data which included zero were subjected to transformation. According to Gomez and Gomez (1976) log (X+) transformation was selected. For LSR at 0.05 level of significance was used according to Duncan, (1955).

RESULTS AND DISCUSSION

A) Effect of weed control methods

i) Weeds

From Table (1) it is clear that the fresh weight of narrow leaves weeds was affected by weed control method different. Narrow leaves weeds were completely eradicated by the use of Fusilad super at the rate of 2L/fad, applied at 30 DAS + on hand hoeing at 55-60 DAS or in combination with either Betanal 1L/fad at two true leaves stages + one hand hoeing at 4 weeks later or Goltix alone. The broad leaves weeds also affected by different methods but some weeds could escape. The effect of Betanal at the rate of 2L/fad, 1L at two true leaves stage and 1L at 8 days later + one hand hoeing at 55-60 DAS and / or Goltix treatment and / or Goltix, though both meant for broad leaves. The best treatments of chemical weed control were either (Betanal at the rate of 1L/fad at two true leaves stage + one hand hoeing at 4 weeks later + Fusilade super at the rate of 1L/fad at 50 DAS + one hand hoeing at 30 days later) or (Goltix 2 kg /fad applied post sowing + Fusilad super at the rate of 1L/fad, applied at 30 DAS + one hand hoeing at 30 days later) treatments combinations. Both were followed by hand hoeing three times at 2, 4 and 8 weeks from sowing. Total fresh weed weight was also influenced significantly using Betanal at the rate of 2L/fad, 1L at two true leaves stage and 1 L at 8 days later + 1 hand hoeing at 55 – 60 DAS or Goltix 2kg /fad, applied post sowing alone. The total weight down to 10% and 10.9%, respectively, whereas the use of Fusilade super at the rate of 2L/fad, applied at 30 DAS + one hand hoeing at 55-60 days could bring this weight down to 48%. Using later two treatments were more efficient and only 3.5% and 3.6% of the total weeds could escape. Hand hoeing could get rid of 93% of the total weeds. These results suggest that use of both narrow and broad leaves herbicides is an effective method of weed control in sugar beet fields. Similar results were also recorded by Kolbe (1984); Osman *et al.*, (1984); Cleal (1986); Kottling and Zink (1992); Rola and Rola (1995); Ostrowski and Adamczewski (1999) and Al-Moghazy (2000) they found that the application of one supplementary hoeing (30 days after herbicidal treatments) increased the efficiency of herbicides (pyrmin, pyradur, pyracor, Goltix, Betanal and Fusilade super) in controlling total sugar beet weeds at 160 DAS by > 50% than the unhoed herbicidal treatments and they added that Goltix was fully effective against most spp of weeds and ineffective against deep

rooted weeds such as *Cirsium arvense*. Shalaby (2001) reported that the effect of weed control treatments on numbers/ m² and fresh and dry weights of both broad-leaved and grassy weeds were significant at the two assessment samples in both seasons. Goltix plus one hand hoeing decreased numbers and fresh and dry weight of broad-leaved weeds. While fusilade super plus one hand hoeing the best results, where the reduction in the population of grassy weeds were to about 94 and 99% at the first samples and 90 and 99% the second sample in the two seasons, respectively.

ii. Root yield and its attributes

Root length and diameter were effected significantly by weeds control methods consequently root and top yields. Control treatment where no weed control was practiced produced longer but very narrow roots consequently very low root yield. Statistically same length but bigger diameter root were produced when using the narrow leaves weed control herbicide which made the root yield almost double. Using either (Betanal at the rate of 2L/fad , 1L at two true leaves stage and 1L with 8 days later + on hand hoeing at 55-60DAS) or (Goltix 2kg /fad , applied post sowing alone) broad leaves herbicides were more effective and the yields increased to 270% for (the first treatment) and to 258% for (the second treatment). Using 6th treatment increased the yield by 306% and 7th treatment by 325%. Hand hoeing three times increased the yield by 220% only. These results were in harmony with those of table (1). The ability of the herbicide to kill weeds is the factor that determine the root yield. Similar results were obtained by Abd El-Aal (1995); El-Zeny (1996), Al-Moghazy (2000) and Shalaby (2001).

iii. Sugar yield and quality:

As seen in table (3) that differed weed control methods affected sugar yield and its quality significantly. Sucrose content has shown significant variation. Using a combination of (Betanal at the rate of 1L/fad at two true leaves stage + one hand hoeing at 4 weeks later + Fusilade super at the rate of 1L/fad at 50 DAS + one hand hoeing at 30 days later) treatment, followed by with insignificant differences by (Betanal at the rate of 2L/fad, 1L at two true leaves stage and 1 L at 8 days later + one hand hoeing at 55 – 60 DAS or Goltix 2kg /fad, applied post sowing alone) (both broad leaves) as well as the control treatment. The lowest sugar content was observed with either Fusilade super 12.5% EC (fluazifop-P- butyl) at the rate of

2L/fad, applied at 30 DAS, when the grassy weeds had 3-5 leaves stage followed by one hand hoeing at 55-60DAS or its combination with Goltix (6th treatment). Sucrose content data coincided with root yield data except that either of control or of combination with of (6th treatment). The control treatment had high sucrose content because its juice its more concentrated due to low root yield. The 6th treatment had more diluted juice due to its relatively higher yield.

Total soluble solids percentage (T.S.S.%) was most affected by weed control methods except in the second season. Using Goltix alone or in combination with Fusilade and using the combination of (7th) treatment produced higher T.S.S. % as compared with the control treatment.

Purity percentage was also affected by weed control treatments. Hoeing produced the most impure juice followed by in an ascending order by the use of Goltix alone. The more pure juice was produced under (1st), (5th) and (6th) treatments. These results were agreement with Shady and Mosalam (1993); Ceglarek and Plaza (1994); Abd El-Aal (1995); Tula *et al.* (1997), Abde El-Fatah (2000) and Shalaby (2001).

REFERENCES

1. Abd El-Al, A. M. 1995. Integrated weed control in sugar beet with relation to yield and quality. M. Sc. Thesis, Fac. of Agric. Ain Shams Univ. Egypt.
2. Abd El-Fatah, E. M. 2000. Integrated weed control in sugar beet. M. Sc. Thesis, Fac. of Agric. Zagazig Univ., Egypt.
3. Al-Moghazy, A. L. 2000. Effect of weed control on growth and yield of sugar beet. M. Sc. Thesis, Fac. of Agric. Kafr El-Sheikh. Tanta Univ., Egypt.
4. Ceglarek, F. and A. Plaza 1994. Weed control versus yielding of sugar beet, part II. Yielding of sugar beet depending on the quackgrass control and planting methods investigated. *Roczniki -Nauk- Rolniczych- Seria-A, Produkcja – roslinna*, II0 (3-4): 95-104.
5. Ceglarek, F.; Plaza, A.; Buraczynska ; Buraczynska, D. and H. Brodowski. 1997. Mechanical and chemical control of Quackgrass before and during the growing season of sugar beet. *Biuletyn- Instytutu – Hodowl –I- K. Limatyzacji. Roslin*, No. 202: 233-237.
6. Cleal, R. A. E. 1986. Repeat low dose spraying for broad – leaved weed control, trials experience on organic soils. *Aspects of Applied – Biology*, No. 12 : 51-63.

7. Duncan, D. B. 1955. Multiple range and multiple. F. test *Biometrics*, 11: 1-42.
8. El-Zeny, Maha, M. 1996. Allelopathic effect of weeds on growth and yield of sugar beet . M. Sc. Thesis, Fac. of Agric. Ain Shams Univ. Egypt.
9. ER, C. Inan, H. 1988. Effect of weed competition on the yield and quality of sugar beet . *Yahantot rekabetinia seker pan cari verim ve kalitesine etkisi. Seker* (1987) 20 (121) 8-20 [C.F. Field Crop Abs., 1988 Vol. 41 No.1].
10. Gabibullaev, E. I. 1996. Results of work at the kuban Demon-stration centre. *Sakharnaya- Svekla*, No. 12 : 21 – 22.
11. Gagro, M. and N. Dadacek. 1996. Effect of different herbicides and their combinations on weed elimination after germination of sugar beet . *Sjmenarstvo*, 13 (1-2) : 59-65.
12. Gomez, K. A. and A. A. Gomez. 1976. Statistical procedure for agricultural research. The International Rice Research Institute, Manile Phelippines pp.193-199.
13. Knights, I. K.; Neumann, G. L. and M. Verbiest, 1991. Advances in sugar beet weed control with a new formulation of phenm-edipham, desmedipham and ethofumesate . *Mededelingen – van – de Faculteit- Landbouww -etenschappen, Rijksuniversiteit- Gent*. 56 (3a): 645-653; 4 ref.
14. Kolbe, W. 1984. Ten – year trials with Goltix for weed control in sugar and fodder beet 1974-84 with reference to methods of control over the last 20 years. *Pflanzenschutz Nachrichten Bayer*, 37 (3): 424-505.
15. Kotting, K. and J. Zink. 1992. Present requirements for a beet herbicide – reflected in Betanal progress . *Germany Gesunde – Pflanzen*, 44 (2) : 60-64.
16. Le Docte, A. 1927. Commercial determination of sugar in the beet root using the so chs. *Le- Doct. Process. Inten . Sugar J.* No. 29 : 488-492.
17. Osman, M. S.; A. A. Abd El-Hafeez, N. F. Dawla and A. F. Abdlla. 1984. Evaluation of application methods of some herbicides in sugar beet in Egypt. *Zagazig J. of Agric. Res. Egypt*. 10 (2) : 99-110.
18. Ostrowski, J. and K. Adamezewski. 1999. Chemical weed control in sugar beet using a new herbicide produced in Poland. *Ochrona – Roslin*, 43 (1): 13-14.
19. Rola, J. and H. Rola. 1995. Influence of reduced maize and sugar beet cultivation technology on secondary weed infestation on plantation of lower silesia. *Materialy – Sesji – Instytutu- Ochrony Roslin*, 35 : 139-145.

20. Shady, M. F. A. and M. E. Mosalam. 1993. Response of sugar bet (*Beta vulgaris*, L.) and associated weeds to interaction between certain herbicides and some foliar fertilizers. J. Agric. Res. Tanta Univ., 19 (4): 988-999.
21. Shalaby, A. A. 2001. Effect of some treatments on weeds and yield of sugar beet under Kafr El-Sheikh Governorate conditions. Ph. D. Thesis, Fac. of Agric. Al-Azar Univ., Egypt.
22. Snedecor, G. W. and W. G. Cochran. 1967. Statistical Methods 6th Ed., Iowa State Univ. Press., Ames. USA: 325-330.
23. Tula, A.; Tuls, V.; Jegorova, V. and D. Rostoks. 1997. Investigation results of herbicide application in sugar beets. Proceeding of the International Conference, 19 – 21.Nov. Jelgava. (Latvia).

Table (1): Effect of some weed control methods on broad leaved , grassy and total weeds fresh weights.

Treatments	Broad – leaved weeds fresh weight (gm)/m ²			Grassy weeds weight (gm)/m ²			Total weeds fresh weight (gm)/m ²		
	1 st season	2 nd season	Combined	1 st season	2 nd season	Combined	1 st season	2 nd season	Combined
Weed control methods:									
1.Betanal 2/fad+ 1 hoeing	55.0d	53.6c	54.3d	97.5b	84.1b	90.83b	148.6c	137.8e	143.2c
2.Goltix 2kg/fad	97.5c	75.8c	86.6c	61.6c	68.3 bc	64.9c	162.5c	150.8c	156.6c
3.Fusilade 2L/fad + 1 hoeing	653.3b	728.3b	690.83b	43.6d	- d	- d	653.33b	728.3b	690.8d
4.Hand hoeing	50.0d	53.8c	51.9d	664.1a	45.8c	44.7c	94.1d	100.0d	97.0d
5.Control	831.3a	801.6a	816.4a	- d	633.3a	648.7a	1437.6a	143.1a	1434.8a
6.Goltix 2kg/fad + Fusilade 1L/fad +1hoeing	51.6d	49.1c	50.4d	- d	- d	- d	51.6d	49.1e	50.4e
7. Betainal 1L/fad+ 1hoeing + fusilade1 L /fad+ 1 hoeing	47.7d	56.6c	52.2d	- d	- d	- d	47.7d	560.1e	51.9e
F-test	**	**	**	**	**	**	**	**	**

Table (3): Effect of some weed control methods on sugar yield and its quality

Treatments	Sucrose (%)			T.S.S. (%)			Purity (%)			Sugar yield (ton/ fad)		
	1 st season	2 nd season	Combin ed	1 st season	2 nd season	Combin ed	1 st season	2 nd season	Combin ed	1 st season	2 nd season	Combin ed
Weed control methods:												
1. Betanal 2/fad+ 1 hoeing	17.22a	18.00a	17.61ab	20.22	20.61ab	20.41	85.22abc	86.88a	86.05a	2.986a	2.837b	2.911a
2. Goltix 2kg/fad	17.05a	18.16a	17.61ab	20.33	21.61a	20.97	83.22bc	83.88ab	83.55bc	2.653ab	2.885b	2.769b
3. Fusilade 2L/fad + 1 hoeing	15.83b	16.66bc	16.24c	20.33	20.50ab	20.66	75.55d	80.88b	78.21d	1.703c	2.226bc	1.964c
4. Hand hoeing	17.33a	16.66b	16.99b	20.83	20.50ab	20.66	82.66c	80.88b	81.77c	2.761bc	2.280bc	2.271b
5. Control	17.11a	17.33c	17.22ab	19.66	19.83b	19.74	86.55ab	87.11a	86.83a	0.922d	1.195c	1.058d
6. Goltix 2kg/fad + Fusilade 1L/fad + 1hoeing	16.16b	15.88c	16.22c	19.83	21.22a	20.52	87.41a	84.66a	86.05a	3.012a	2.975b	2.993a
7. Betainal 1L/fad+ 1hoeing + fusiladel L /fad+ 1 hoeing	17.66a	18.00a	17.03a	20.22	21.16a	20.69	86.88ab	84.44a	85.66ab	3.032a	4.115a	3.573a
F-test	**	**	**	N.S	*	N.S	**	**	**	**	**	**

تأثر محصول بنجر السكر ومكوناته ببعض طرق مقاومة الحشائش تحت ظروف الأراض الرملية

سهير محمود محمد عوده * ، محمد فتحى شتله **

* معهد بحوث المحاصيل السكرية - الجيزة - جمهورية مصر العربية

** المعمل المركزى لبحوث الحشائش - - الجيزة - جمهورية مصر العربية

أجريت تجربتان حقليتان بالمزرعة البحثية بمحطة بحوث القصاصين - محافظة
الاسماعيلية خلال موسمی الزراعة ٢٠٠١/٢٠٠٢ - ٢٠٠٢/٢٠٠٣ فى أرض رملية تروى بنظام
الرى بالتنقيط وذلك لدراسة تأثير بعض طرق مقاومة الحشائش على المحصول ومكوناته لنبات
بنجر السكر . وكانت طرق مقاومة الحشائش كالتالى :

١- استخدام مبيد البيتانال بروجرس ١٨% كمبيد حشائش فى حقول بنجر السكر بعد الإنبات
لمقاومة الحشائش عريضة الأوراق بمعدل ٢ لتر/ فدان على دفعتين ، الأولى ١ لتر / فدان عند
ظهور الورقتين الحقيقيتين للبنجر ، والثانية ١ لتر / فدان بعد ٨ أيام من الأولى ، ثم عزقة واحدة
بعد ٥٥-٦٠ يوم من الزراعة .

٢- استخدام مبيد الجولتكس ٧٠% كمبيد للحشائش فى حقول بنجر السكر قبل الإنبات وبعد
الزراعة وقبل رية الزراعة لمقاومة الحشائش عريضة الأوراق بمعدل ٢ كجم / فدان .

٣- استخدام مبيد فيوزيليد سوبر ١٢,٥% كمبيد حشائش فى حقول بنجر السكر بعد الإنبات وأثناء
نمو المحصول لمقاومة الحشائش رفيعة الأوراق بمعدل ٢ لتر / فدان عند ٣٠ يوم من الزراعة
وعندما تكون الحشيشة فى مرحلة ٣-٥ ورقات ثم عزقة واحدة عند ٥٥-٦٠ يوم من الزراعة .

٤- استخدام العزيق اليدوى ٣ مرات ، المرة الأولى بعد ٢ أسبوع ، والثانية بعد ٤ أسابيع ،
والثالثة بعد ٨ أسابيع من الزراعة .

٥- معاملة الكونترول أى ترك الحشائش فى حقول بنجر السكر دون أى مقاومة سواء باستخدام
المبيد أو بالعزيق اليدوى .

٦- استخدام مبيد الحشائش جولتكس ٧٠% قبل الإنبات وبعد الزراعة وقبل رية الزراعة بمعدل ٢
كجم / فدان + مبيد فيوزيليد سوبر ١٢,٥% بعد الإنبات أثناء نمو المحصول عند ٣٠ يوم من
الزراعة . بمعدل ١ لتر / فدان + عزقة واحدة بعد ٣٠ يوم التالية للمعاملة بالمبيد (فيوزيليد
سوبر) .

٧- استخدام مبيد الحشائش بيتال بروجرس ١٨% بمعدل ١ لتر / فدان عند ظهور الورقتين
الحقيقيتين للبنجر + عزقة واحدة بعد ٤ أسابيع التالية + فيوزيليد سوبر ١٢,٥% عند ٥٠ يوم من
الزراعة بمعدل ١ لتر / فدان + عزقة واحدة بعد ٣٠ يوم التالية للمعاملة بالمبيد (فيوزيليد
سوبر) .

وفيما يلى أهم النتائج:

١- أظهرت النتائج أن مبيد الحشائش فيوزيليد سوبر ١٢,٥% بمعدل ٢ لتر / فدان عند ٣٠ يوم عند
الزراعة ثم عزقة واحدة عند ٥٥-٦٠ يوم من الزراعة (المعاملة الثالثة) كانت أكثر فاعلية فى
مقاومة الحشائش رفيعة الأوراق سواء عند استخدامه بمفرده أو عند استخدامه مع مبيد الحشائش
بيتال بروجرس ١٨% ١ لتر / فدان + عزقة واحدة بعد ٤ أسابيع التالية (المعاملة السابعة) أو
استخدام مبيد الجولتكس ٧٠% بمفرده (المعاملة الثانية) وىلى ذلك معاملة العزيق اليدوى (المعاملة
الرابعة) .

٢- استخدام مبيد الحشائش بيتال بروجرس ١٨% بمفرده ٢ لتر / فدان على دفعتين الأولى ١
لتر / فدان عند ظهور وقتين حقيقيتين للبنجر ، والثانية ١ لتر / فدان بعد ٨ أيام من الأولى ،
ثم عزقة واحدة بعد ٥٥-٦٠ من الزراعة (المعاملة الأولى) أو استخدام مبيد جولتكس ٧٠%

٢ كجم / فدان بمفرده (المعاملة الثانية) كانتا أكثر فاعليية لمقاومة الحشائش ذات الأوراق العريضة .

٣- زاد محصول الجذور بمقدار ٢٧٠% عند استخدام مبيد البيبتال بمقدار ٢ لتر / فدان على دفعتين الأولى ١ لتر / فدان عند ظهور ورقتين حقيقتين للبنجر والثانية ١ لتر / فدان بعد ٨ أيام من الأولى ثم عزقة واحدة بعد ٥٥ - ٦٠ يوم من الزراعة (المعاملة الأولى) ، وبمقدار ٢٥٨ % في حالة استخدام مبيد جولتكس ٧٠% بمعدل ٢ كجم / فدان فقط (المعاملة الثانية) وبمقدار ٣٠٦% عند استخدام مبيد جولتكس ٢ كجم فدان + فيوزيليد سوبر ١ لتر / فدان + عزقة واحدة بعد ٣٠ يوم من المعاملة (المعاملة السادسة) وبمقدار ٣٢٥% عند استخدام مبيد بيتال ١ لتر / فدان عند ظهور الوقتين الحقيقتين + عزقة واحدة بعد ٤ أسابيع التالية + مبيد فيوزيليد سوبر بمعدل ١ لتر / فدان بعد ٥٥ يوم من الزراعة + عزقة واحدة بعد ٣٠ يوم التالية للمبيد (المعاملة السابعة) وبمقدار ٢٢٠% عند استخدام العزيق اليدوي للحشائش ثلاث مرات وهذا مقارنه بالكنترول .

٤- تأثر محصول السكر وصفات الجودة تأثراً معنوياً بطرق مقاومة الحشائش حيث بلغت النقاوة أعلى نسبة عند استخدام المعاملة الأولى يليها معاملة الكنترول (المعاملة الخامسة) ثم المعاملة السادسة .