SUST
Journal of Agricultural and Veterinary Sciences
Journal homepage:
http:// journals.sustech.edu

Chemical Weed Control in Faba Bean (*Vici faba* L.) in Dongola Locality, Northern State, Sudan

Mukhtar A. Mohamed[1]*; Atif K. Awadalla[1] and Babiker M. Mahgoub[2]

1. Faculty of Agricultural Sciences-El Selaim-Dongola University, Sudan
2. Faculty of Agriculture- Bahri University, Sudan
*Corresponding Author: email: mukhtarazizm@gmail.com
Article history: Received: 10/11/2013
Accepted: 05/12/2013

Abstract:

Weeds constitute a major biotic constraint that limits production of faba bean (*Vicia faba* L.) in Northern Sudan. This experiment was conducted for two consecutive winter seasons of 2009/2010 and 2010/2011 at Dongola Research Station Farm, Dongola Locality, Northern State, Sudan to evaluate the effects of two used pre-emergence herbicides in Sudan, namely, imazethapyr (Pursuit) and oxyfluorfen (Goal) and their tank mixtures on yield of faba bean and weed control. Combined analysis of both winter seasons revealed that imazethapyr (Pursuit) at three rates of application gave poor control of grasses and broad-leaved weeds, while oxyfluorfen (Goal) at three rates gave moderate control of grasses and moderate to very good control of broad-leaved weeds. Also combined analysis referred that Pursuit at two rates low (0.050 kg.a.i./ha) and medium (0.075 kg.a.i./ha) in tank mixture with Goal at all rates (0.24, 0.44 and 0.64 kg. a.i./ha) gave effective control of grasses and broad-leaved weeds. The tank mixtures of herbicides insured persistent and effective weed control in this crop. The best control of both grassy and broad-leaved weeds was achieved with the tank mixture of Pursuit at 0.075 kg a.i./ha. with Goal at three rates (0.24, 0.44 and 0.64 kg a.i/ha.) which gave excellent weed control. Combined analysis of both winter seasons confirmed that all herbicides treatments significantly reduced weed biomass compared to weedy check treatment. The highest weed biomass reduction was achieved by herbicides tank mixtures. Combined analysis of both winter seasons indicated that unrestricted weed growth significantly reduced faba bean seed yield by 49.88% compared to full season weed free treatment. Combined analysis of both winter seasons showed that all herbicides treatments at their different rates and continuous hand weeding gave significant increase (26.33%-99.52%) in faba bean seed yield compared to unweeded control. Within all herbicides treatments the tank mixture of Pursuit at 0.075 kg a.i./ha with Goal at 0.44 and 0.64 kg a.i./ha were the best treatments which controlled annual weeds very effectively and gave significant increase in seed yield which was comparable to that obtained by weed-free full season treatment. Combined analysis of both winter seasons referred that the use of herbicides at their different rates and their tank mixtures gave significantly increased in yield and yield components. Plant height was significantly reduced by 41.84 % under full season weedy infestation. The same trend was observed for number of leaves/plant.

Keywords: Imazethapyr, oxyfluorfen weed control, faba bean.

Introduction

Faba bean (*Vicia faba* L.) belongs to the family Fabaceae. It is the fourth most important pulse crop in the world especially in the Sudan. It is grown mainly for its dry seeds or as green vegetabe both of which are important for human and animal consumption. It also increases soil nitrogen levels through biological nitrogen fixation. It is, therefore, used as a break crop in cereal rotation system to sustain soil fertility (Kamal and Abbas, 2011; Awadalla *et al.*, 2012 and Rowyda, 2013). Faba bean is widely grown throughout the world and cover 2.3 million hectares.It is concentrated in temperate and subtropical climate. With regard to its production, 33%, 34%, 7%, 6%, 4% and 2% occurs in Asia, Africa, South America, Europe, Australia and North Central America, respectively. The main producing countries in the world are: Ethiopia, Algeria, Morocco, Tunisa, Egypt, Sudan, Iraq, Afghanistan, China, India, France, Italy, U.S.A, Mexico, Brazil and Argentina (Amal and Mukhtar, 2012 and Rowyda, 2013). In the Sudan, faba bean production is concentrated in the Northern State, taking advantage of the relatively cool winter, produces more than 70%, River Nile State produces about 20% of the crop. Small amounts are produced in Khartoum State and Jabel Mara area in Western Sudan (Kamal and Abbas, 2011 and Rowyda, 2013).

Besides insect pests and diseases, weeds constitute a serious obstacle in faba bean production in the Northern State and elsewhere in the Sudan. They reduce yield directly, through competition, parasitism and allelopathy or, indirectly, through hindering cultural and harvest practices, interfere with the use of land and water resources and adversely affect human welfare (Mukhtar *et al.*, 2007; Nasr Eldin, 2009; Hamada *et al.*, 2009 and Mukhtar and Elamin, 2011). Weeds infestations reduced faba bean yield in Selaim Basin in North Sudan by 50%. The fourth week after sowing is the most critical stage in crop weeds competition, so controlling weeds during this stage gives as high yield as continuous weeding (Dawood, 1989). The traditional method of weed control in the Northern State depends on late voluntary hand removal of weeds for fodder to their livestock. Hand weeding is labor intensive operation and therefore expensive, time consuming, and moreover labour has become scarce. The yield losses are mainly due to delayed weeding, or insufficient weed control (El Sadig and Abdalla, 1997; Osama, 1999). In developing countries manual weeding is the most common method of weed control but in many instances the available labour is unable to remove weeds from vast areas of land during critical periods, thus, the use of herbicides is a necessity (Elamin, 1991 and Abdel Rasoul, 1998). Herbicides constitute highly efficient method for controlling weeds, increasing yields and reducing labour in crop production (Mukhtar, 2006). In Northern State, faba been received little attention and the available information is inadequate especially in area of weed control. This study was, therefore, conducted to assess the magnitude of yield losses due to weed infestation and to evaluate the activity and selectivity of the pre-emergence herbicides imazethapyr as Pursuit 10% EC, oxyfluorfen as Goal 24% EC and their tank mixtures in controlling weeds in faba bean.

Materials and Methods

A herbicides experiment was conducted during two consecutive winter seasons of the years 2009/2010 and 2010/2011 at the Demonstration Farm of Dongola Research Station, Dongola Locality, Northern State, Sudan. The area was located within latitudes 16° and 22° N, and longitude 20° and 32° E. It is a true desert with extremely high temperatures and radiation in summer, low temperature in winter, scarce rainfall and high wind speed (Osman, 2004). The mean maximum and minimum temperatures are 36.8 and 19.5°C, respectively. The climate is hyper arid with a vapour pressure

of 10.8 mb and a relative humidity of less than 20% (Mukhtar, 2012).

The soil of the area is clay loam, with 20.67% sand, 17% silt and 62.33% clay (Damirgi and Al-agidi, 1982). The experimental site was ploughed, disc harrowed, leveled and divided into plots. It was comprised of 14 treatments arranged in randomized complete block design, with four replicates. Plot size was 2×2 m. Each plot was made of five rows, each was two meters long. Faba bean cultivar Selaim Muhassen was sown on 13 November for both winter seasons of the years 2010/2011 and 2011/2012. Three seeds per hole were planted in rows 60 cm a part and 20 cm between holes, on the flat plots. The seedlings were later thinned to one plant per hole two weeks after planting.

The herbicides imazethapyr as Pursuit 10% EC at 0.050, 0.075 and 1.000 kg. a.i/ha, oxyfluorfen as Goal 24% EC at 0.24, 0.44 and 0.64 kg a.i/ha and imazethapyr as Pursuit 10% EC at 0.050 and 0.075 kg. a.i/ha in tank mixture with oxyfluorfen as Goal 24% EC at 0.24, 0.44 and 0.64 kg a.i/ha were applied pre-emergence, immediately after sowing, with a knapsack sprayer at a volum rate of 150 liters per feddan and a pressure 4 bars with a flood jet nozzle. Application of the herbicides was followed by irrigation. Weed free and weedy treatments till harvest were included as controls. Irrigation was applied at 7-10 days interval depending on temperature and other environmental conditions.

At 10 weeks from sowing, 5 plants were randomly selected from the three inner rows in each plot. Plant height was measured and number of leaves/plant was counted.

At harvest each plot was harvested. Pods of ten randomly selected plants from each treatment were cut, air dried and used for determination of yield components including, number of pods/plant and 100 seed weight (g).

An area of 1 m^2 was harvested from each plot, pods air dried and threshed in bulk, then weighed and the seed yield was calculated.

The procedure described by Gomez and Gomez (1984) was used to estimate the combined analysis of variance (ANOVA), which was carried out on data obtained using the statistical analysis system (SAS) computer package for SAS Institute Inc., 1990, to detect significant effects among the treatments and populations compared. Mean squares for treatments or populations were calculated. Simple statistics including mean, standard deviation, standard error and coefficient of variation (C. V. %) were also calculated.

Results and Discussion

The weed flora in the experimental site consisted of grassy and broad-leaved weeds. In both winter seasons broad-leaved weeds were predominant. The dominant weed species were *Cynodon dactylon* (L.) pers., *Malva palviflora* L., *Eruca sativa* Mill., *Sinapis alba* L., *Tribulus terrestris* L., *Rhynchosia memnonia* (Del.) cooke, *Trigonella hamosa* L., *Echinochloa colona* L., *Portulaca oleraceae* L. and *Convolvulus arvensis* L. Weeds compete vigorously with legumes such as faba bean for water, nutrients and light due to the low competitive ability during the early stages of growth. Unrestricted growth of weeds in Hudeiba decreased faba bean seed yield by 54% (Abdel Marouf, 2004).

Visual observations indicated that, the herbicide treatments showed no phytot-oxicity symptoms on the crop. Combined analysis of both winter seasons reported that Pursuit at three rates gave poor control of grasses and broad-leaved weeds while Goal at three rates gave moderate control of grasses and moderate to very good control of broad-leaved weeds (Table 1). This result is in line with previous work of Mukhtar (1998) who said that pre-emergence application of Goal gave effective control of annual grasses and broad-leaved weeds. Also combined analysis of both winter seasons showed that Pursuit at low and medium rates in tank mixture with Goal at all rates gave effective control of annual grasses and broadleaved

weeds. The tank mixtures of herbicides confirmed their merits weed control in this crop. The best control of both grassy and broad-leaved weeds was achieved by the tank mixture of Pursuit at intermediate rate (0.075 kg a.i./ha.) with Goal at three rates (0.24, 0.44 and 0.64 kg a.i/ha.) which gave excellent weed control (Table 1). Similar findings were reported by Mohamed (1992) and Mohamed (1996) who found that the pre-emergence application of Pursuit in tank mixture with Goal gave satisfactory control of grasses and broadleaved weeds. Some of perennial weed species in the experimental site such as *Convolvulus arvensis* L., *Cynodon dactylon* L. and *Rhyncosia memnonia* L. have shown some tolerance as manifested by their appearance in the herbicide treated plots.

Combined analysis of both winter seasons revealed that all herbicides treatments significantly reduced weed biomass compared to weedy full season treatment. The highest weed biomass reduction was achieved by herbicides tank mixtures (Table 1). The similar results were found by Mukhtar and Elamin (2011).

Combined analysis of both winter seasons indicated that unrestricted weed growth significantly reduced faba bean seed yield by 49.88% compared to weed free full season treatment (Table 2). Similar result was found by Dawood,(1989) and Abdel Marouf, (2004) who reported that unrestricted weed growth reduced faba bean yield by 36% in Northern State and 46%-54% in Hudeiba. This is in line with the previous work of Mohamed (1996) who indicated that unrestricted weed growth reduced seed yield of faba bean by up to 80%. Also similar result was reported by Mohamed *et al*. (1992) who found that the reduction in faba bean seed yield due to weeds was highly significant and was between 17% and 29%. The same result was mentioned by Kamal and Abbas (2011) who reported that unrestricted weed growth reduced seed yield of faba bean by 54% in Northern State, Sudan. This result could be attributed to the presence of weeds which compete with the faba bean crop for essential mineral nutrients, water and light which reduced plant growth and reflected in decreased faba bean seed yield.

Combined analysis of both winter seasons showed that all herbicides treatments and continuous hand weeding gave significant increase 26.33%-99.52% in faba bean seed yield compared to unweeded control (Table 2). Moreover within all herbicides the tank mixture of Pursuit at 0.075 kg a.i./ha with Goal at 0.44 and 0.64 kg a.i./ha were the best treatment which control annual weeds very effectively and gave significant highest increase seed yield which was comparable to that obtained by weed-free full season treatment (Table 2). These results have shown that early removal of weeds by herbicides and their tank mixtures enabled the crop to maximize the use of the available resources. Increase in faba bean seed yield due to herbicides is in agreement with the findings of Mukhtar and Elamin (2011) and Kamal and Abbas (2011) who reported that, application of pre-emergence herbicides in faba bean gave excellent control of weeds and resulted in high seed yield compared to the weedy control.

Combined analysis of both winter seasons referred that the use of herbicides and their tank mixtures gave significantly increased yield and yield components (Table 2). This is in line with the previous work of Mukhtar (1998). Plant height was significantly reduced by 41.84 % under full season weedy infestation. The same trend was observed for number of leaves/plant (Table 3). The same result was obtained by Mukhtar and Elamin (2011).

Table 1: Effect of pre-emergence herbicides on weed control in faba bean during winter seasons (2009/ 2010 and 2010/ 2011 Combined)

Treatments	Herbicide rate (kg. a.i./ha.)	Grass weed control %	Broad-leaved weed control %	Weed biomass (g / m^2)
Pursuit (imazethapyr	0.050	40.91	41.88	28.75c
Pursuit (imazethapyr)	0.075	43.14	42.91	35.25b
Pursuit (imazethapyr)	1.000	46.91	46.28	20.38cd
Goal (oxyfluorfen)	0.24	60.57	60.74	21.63cd
Goal (oxyfluorfen)	0.44	68.50	70.03	23.38cd
Goal (oxyfluorfen)	0.64	69.91	76.35	22.75cd
Pursuit+ Goal	+ 0.24 0.050	75.57	79.88	18.25d
Pursuit+ Goal	+0.44 0.050	77.93	79.92	10.88de
Pursuit+ Goal	+ 0.64 0.050	79.49	80.74	10.25de
Pursuit+ Goal	+0.24 0.075	81.72	84.03	11.75de
Pursuit+ Goal	0.075+ 0.44	90.72	91.51	8.75e
Pursuit+ Goal	+ 0.64 0.075	94.04	93.53	8.25e
Weed free full season	-	100.00	100.00	-
Weedy full season	-	0.00	0.00	56.00a
Sig	-	-	-	*
C.V%	-	-	-	41.25
S.E±	-	-	-	4.19

-Means with the same letters in a column are not significantly different at 0.05 level of probability according to DMRT.

* = Significant at 0.05 probability level

Table 2: Effect of pre-emergence herbicides on faba bean seed yield and yield components during winter seasons (2009/ 2010 and 2010/ 2011 Combined)

Treatments	Herbicide rate (Kg. a.i./ha.)	Number of pods/plant	100 seed weight (g)	Seed yield (t /ha)
Pursuit (imazethapyr)	0.050	4.00d	51.00e	63oe
Pursuit (imazethapyr)	0.075	4.50d	49.50e	635.28e
Pursuit (imazethapyr)	1.000	5.50d	57.50d	629.30e
Goal (oxyfluorfen)	0.24	6.00cd	45.70f	623.10e
Goal (oxyfluorfen)	0.44	6.50c	48.90e	629.68e
Goal (oxyfluorfen)	0.64	8.00bc	48.00e	697.48d
Pursuit+ Goal	+ 0.24 0.050	8.00bc	62.00c	749.30c
Pursuit+ Goal	+0.44 0.050	9.00b	68.80b	812.88b
Pursuit+ Goal	+0.64 0.050	9.50b	71.00b	817.68b
Pursuit+ Goal	+0.24 0.075	10.00ab	70.00b	882.80b
Pursuit+ Goal	0.44 0.075+	12.00a	72.90ab	972.00a
Pursuit+ Goal	+ 0.64 0.075	12.50a	76.00b	985.73a
Weed free full season	-	13.00a	81.13a	994.98a
Weedy full season	-	3.50e	39.00g	498.68f
Sig	-	*	*	*
C.V%	-	14.27	4.02	1.01
S.E±	-	0.61	1.12	3.09

-Means with the same letters in a column are not significantly different at 0.05 level of probability according to DMRT.
* = Significant at 0.05 probability level

Table 3: Effect of pre-emergence herbicides on faba bean plant height (cm) and number of leaves/plant during winter seasons (2009/ 2010 and 2010/ 2011 Combined)

Treatments	Herbicide rate (Kg. a.i./ha.)	Plant height (cm)	Number of leaves/plant
Pursuit (imazethapyr)	0.050	63.25ab	17.03c
Pursuit (imazethapyr)	0.075	65.69ab	18.53bc
Pursuit (imazethapyr)	1.000	66.50ab	20.43b
Goal (oxyfluorfen)	0.24	62.78ab	17.43c
Goal (oxyfluorfen)	0.44	62.63ab	21.03ab
Goal (oxyfluorfen)	0.64	62.50ab	18.93bc
Goal+ Pursuit	0.24 + 0.050	54.00b	21.60ab
Goal+ Pursuit	0.44 + 0.050	68.50a	17.65c
Goal+ Pursuit	0.64 + 0.050	69.00a	18.60bc
Goal+ Pursuit	0.24 + 0.075	68.63a	18.00bc
Goal+ Pursuit	0.44 +0.075	67.50a	20.78b
Goal+ Pursuit	0.64 + 0.075	68.50a	20.85b
Weed free full season	-	69.00a	23.90a
Weedy full season	-	40.13c	14.28d
Sig	-	*	*
C.V%	-	9.20	14.61
S.E±	-	3.00	1.15

-Means with the same letters in a column are not significantly different at 0.05 level of probability according to DMRT.
* = Significant at 0.05 probability level

References

Abdel Marouf, A. M. E. (2004). *Chemical weed control in faba bean (vicia faba L.) using two foliar-applied herbicides*. M. Sc. thesis. University of Khartoum, Sudan.

Abdel Rasoul, I. B. (1998). *Chemical weed control in Sunflower (Helianthus annuus* L.*)*. M. Sc. thesis. University of Khartoum, Sudan.

Amal, A. N. and Mukhtar, A. M. (2012). Efficacy of neem and ash against faba bean beetle (*Bruchidius incarnatus* Boh.) infesting stored faba bean in Northern State, Sudan. *University of Dongola Journal for Scientific Research* **2**: 298–307.

Awadalla, A. A.; Wolfgang, L.; Amel, A. M.; Sief Eldin, M. G. and Jamal, E. K. (2012). Genotypic variability in faba bean (*Vicia faba* L.) for seed yield and protein content under drought stress during vegetative and reproductive stages. *University of Khartoum Journal of Agricultural Sciences*, **20**(1): 1- 25.

Damirgi, S. M. and Al-agidi W. K. (1982). Soil structure types. Glossary of soil science terms. P: 130-137.

Dawood, D. A. (1989). Effect of crop weed competition on faba beanproduction in Selaim basin (North Sudan). Annual report Dongola research station. Agricultural research corporation (ARC). Sudan. 120-124.

El Sadig. S. M. and Abdalla, H. N. (1997). Chemical weed control in garlic (*Allium sativum* L.). *University of Khartoum Journal of Agricultural Sciences* **5**(1): 40-51.

Elamin, S. E. A. (1991). *Study of plant density-dependent factors on the activity of soil-applied herbicides*. Ph. D. Thesis. The Queen's University of Belfast.

Gomez, K. A. and Gomez, A. A. (1984). *Statistical procedures for agricultural research, 2nd. Edition*. John Wiley and Sons, Inc. New York

Hamada**,** A. A., Ali, E. S. and Mohamed, M. A. (2009). Weed survey on maize (*Zea mays* L.) in Dongola area, Northern State,Sudan. *Sudan Journal of Agricultural Research* **13**: 57-66.

Kamal, A. M. B. and Abbas, E. M. E. (2011). Chemical control of wild sorghum (*Sorghum arundinaceum* (Del.) Stapf.] in faba bean (*Vicia faba* L.) in the Northern State of Sudan. *Univ- ersity of Khartoum Journal of Agricultural Sciences* **19**(1), 78-90.

Mohamed, El. S. S. (1992). Botany (weed control). Annual Report, Hudeiba Research Station and Dongola Research Sub- Station. Agricultural Research Corporation, Sudan, p: 75

Mohamed**,** El. S. S. (1996). *Weed control in legumes Production and improvement of cool-season food legumes in the Sudan.* Edited by Salih, H. Salih; Osman A. Ageeb; Mohan C. Saxena and Mahmoud B. Solh. Published by the International Center for Agricultural Research in the Dry Areas(ICARDA). Ajoint publication with the Agricultural Research Corporation (ARC), Wad Medani, Sudan.185-201

Mohamed, El**. S**. S.; Babiker, A. G. T.; Mohamed, G. E. and Khalid, M. E. (1992). Chemical weed control in faba bean, experiment (1). Annual report, Hudeiba Research Station and Dongola Research Sub-station. Agricultural Research Corporation (ARC). Sudan.75-77.

Mukhtar, A. M. (2006). Weeds in maize (*Zea mays* L.) (importance and control) with special reference to the North State of Sudan. Ph. D. Thesis. Sudan University of Science and Technology, Sudan.

Mukhtar, A. M. (2012). Weed survey on wheat in the Northern State, Sudan. *University of Khartoum Journal of Agricultural Sciences,* **20**(1): 26-43

Mukhtar, A. M. and Elamin, S. E. (2011). Effect of some soil-applied herbicides on growth, yield and weed control in faba bean (*Vicia faba* L.). *University of Dongola Journal for Scientific Research*, **1**: 255 – 268.

Mukhtar, A. M.; Eltahir, S. A.; Siraj O. M. and Hamada, A. A. (2007). Effect of weeds on growth and yield of maize (*Zea mays* L) in Northern State, Sudan. *Sudan Journal of Agricultural Research*, **8**: 1- 7.

Mukhtar, A. M. (1998). Effect of some soil-applied herbicides on growth, yield and weed control in faba bean (Vicia faba L.). M. Sc. Thesis. University of Khartoum , Sudan.

Nasr Eldin, K. A. (2009). Evaluation of the efficacy of Codal Gold 412.5 DC (prometryn 250+metolachlor 162.5) for weed control in potato (*Solanum tuberosum* L.). *The 18th Meeting of the National Pests and Diseases Committee*, Pp: 1-9.

Osama, M. E. (1999). *The efficacy of some soil-applied herbicides on growth, yield and weed control in wheat (Triticum aestivum* L.*)*. M. Sc. thesis. University of Khartoum, Sudan.

Osman, A. M. I. (2004). Effect of irrigation frequency, furrow length and farm yard manure on barley (Hordeum vulgare) production under salt affected soil in Dongola area. Ph. D Thesis. University of Khartoum. Sudan.

Rowyda, Z. A. Z. (2013). *The effect of weed competition on the growth and yield of .faba bean (Vicia faba L.) in Northern State-Sudan*.M. Sc. Thesis, University of Dongola. Sudan

المكافحة الكيميائية للحشائش فى الفول المصرى(*Vicia faba* L.) بمحلية دنقلا الولاية الشمالية-السودان

مختار عبد العزيز محمد[1]، عاطف خضر عوض الله[1] وبابكر محمد محجوب[2]

1 -كلية العلوم الزراعية-السليم-جامعة دنقلا-السودان
2 -كلية الزراعة-جامعة بحرى-السودان
email:mukhtarazizm@gmail.com

المستخلص

تشكل الحشائش معوقاً حيوياً رئيسياً وهى تحد من إنتاج الفول المصري فى شمال السودان. أجريت هذه التجربة خلال موسمين شتويين متتاليين للعامين 2009 /2010، 2010/2011 بمزرعة محطة بحوث دنقلا – محلية دنقلا- الولاية الشمالية-السودان لتقييم ومقارنة تأثير مبيد الحشائش إمازيثابير (بيرسوت) و أوكسى فلورفين (قول) ومخاليطهما على إنتاجية الفول المصري ولمكافحة الحشائش. أوضح التحليل المشترك للموسمين الشتويين أن إمازيثابير (بيرسوت) بجرعاته الثلاث أعطى مكافحة ضعيفة للحشائش النجيلية وعريضة الأوراق بينما أعطى أوكسى فلورفين (قول) بجرعاته الثلاث مكافحة معتدلة للحشائش النجيلية ومعتدلة إلى جيدة جداً للحشائش عريضة الأوراق. أشارة التحليل المشترك أيضاً إلى أن بيروسوت بجرعتيه المنخفضة (0.05 كجم م. ف للهكتار) والمتوسطة (0.075 كجم م. ف للهكتار) مخلوطاً مع المبيد فول بكل جرعاته (0.24 و 0.44 و 0.64 كجم م. ف للهكتار) أعطى مكافحة فعالة للحشائش النجيلية وعريضة الأوراق. أثبتت مخاليط مبيدات الحشائش فعاليتها في مكافحة الحشائش في هذا المحصول. أفضل مكافحة للحشائش النجيلية وعريضة الأوراق تم الحصول عليها بخليط البيروسوت بجرعة (0.075 كجم م. ف للهكتار) مع فول بجرعاته الثلاث (0.24 و 0.49 و 0.64 كجم م. ف للهكتار) والذي نتج عنه مكافحة ممتازة للحشائش. أثبت التحليل المشترك للموسمين أن كل معاملات مبيدات الحشائش قللت معنوياً الوزن الجاف للحشائش مقارنةً بالمعاملة الموبوءة بالحشائش. أعلى نقص للوزن الجاف للحشائش أنجز بواسطة مخاليط مبيدات الحشائش. أشار التحليل المشترك للموسمين الشتويين إلى أن النمو غير المحدود للحشائش قلل معنوياً إنتاجية الفول المصرى ب 49.88% مقارنة بالمعاملة الخالية من الحشائش طول الموسم. أوضح التحليل المشترك للموسمين الشتويين أن كل معاملات مبيدات الحشائش بجرعاتها المختلفة والإزالة اليدوية المستمرة للحشائش أعطت زيادة معنوية تترلوح بين. 99.52% إلى 26.33% مقارنة بالشاهد. معاملات مبيدات الحشائش خليط للبيرسوت مع القول (0.075 كجم م. ف للهكتار) كانت من أحسن المعاملات التى كافحت الحشائش الحولية بفاعلية عالية وأعطت زيادة معنوية فى الإنتاجية ومشابهة لإنتاجية المعاملة الخالية من الحشائش طول الموسم. أشار لتحليل المشترك للموسمين الشتويين إلى أن إستخدام مبيدات الحشائش بجرعاتها المختلفة ومخاليطها أعطت زيادة معنوية فى الإنتاجية ومكوناتها. منافسة الحشائش طول الموسم أدت إلى نقص معنوي فى إرتفاع النبات ب41.48%. نفس التأثير تم ملاحظته فى عدد الأوراق فى النبات.