Assessment of Faba Bean (*Vica faba* L.) Productivity under Different Weed Control Methods

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ABSTRACT: Two field experiments were carried out at the Experimental Farm, Faculty of Agriculture (Saba Basha), Alexandria University, Egypt during 2019/2020 and 2020/2021 seasons, to investigate the effect of different weed control methods on yield of faba bean. Ten weed control methods and their combination treatments were distributed at random within the plots in a Randomized Complete Block Design (RCBD) with three replicates in both seasons. Each experimental unit (plot) consisted of 6 ridges, 3 meters in length, 60 cm width and 20 cm between hills (10.80 m^2). Seeds of faba bean were planted on 20th and 25th of October at the rate of 50 kg seeds/fed according to each cultivar in both seasons, respectively. The results revealed that yield and its components of faba bean Giza 716 cultivar as well as weeds characters were affected by weed control methods and their combination. The highest values of yield components characters of faba bean were achieved when using one-handed hoeing with pre- or post- emergency herbicides also these treatments reduced the effect of weeds under Alexandria conditions, Egypt.

Keywords: Faba bean, weed control, method, yield, components, Giza 716.

INTRODUCTION

Faba bean (*Vicia faba* L.) is the most important food legume crop in Egypt, as a source of plant protein, and plays a good role in farming, as a break crop in intensive cereal systems. The planted area, in Egypt, was about 113.810 feddans (4200 m^2), with an average productivity of 9.2 ardabs/ feddan (ardab=160 kg), during the last five years. There is a need to improve productivity and total production to meet the increasing demand for faba bean in Egypt. This could be achieved through enhancing crop breeding and agriculture practice (FAO, 2019).

Weeds are plants that compete with crops for nutrients, space, and light, with a variety of negative consequences such as lowering crop quality and quantity if populations are not managed (Halford *et al*., 2001; Kavaliauskaite and Bobinas, 2006). Weed infestation is the primary biotic restriction in agriculture production systems, resulting in poor crop establishment and output constraints (Gasim *et al*., 2015). As a result, combining herbicide with additional crop management methods like mulch or hoeing might result in a higher yield advantage than using herbicide alone. In seeded rice systems, for example, an integrated use of mulch and pesticide offered more effective and long-term weed control, resulting in improved crop production (Chauhan and Abugho, 2013).

There are serious issues with many crops, such as weed infestation, which is one of the world's main risks to seed production. Controlling weeds has been the subject of several studies. Weeds may be managed in crops using agronomic, mechanical, and chemical approaches. Using these methods separately or in combination can efficiently control weeds without incurring economic loss or damaging the environment, as points out by Magain (2008). Otherwise, Burnside *et al.* (1967) showed that early-stage weed competition in sorghum and alternative weeds can minimize weed impacts and losses in respect to plants. On the other side, depending on the weed species and environmental circumstances, weed development beyond two weeks following sorghum emergence decreased yields of sorghum plants (Smith *et al*., 1990).

Weeds have long been regarded as formidable competitors of agricultural plants, and they are now an inextricable element of agronomic systems, causing crop losses. Herbicide treatment reduced weed biomass and enhanced broad bean biological and seed yield as compared to the weedy control. Among herbicide treatments, imazthapyr at a dosage of 0.6 L/ ha decreased weed dry matter by 98.7%, and this treatment had the lowest weed dry matter. The weed-free check had the highest biological output of broad beans, which was substantially higher than the other treatments (Aboali and Saeedipour, 2015). However, El-Metwally and Abdelhamid (2008) found that herbicide treatments were more effective than the two hand-hoeing treatments. Similarly, Kandil and

Kordy (2013); Kebede *et al*. (2016); Gebremariam *et al.* (2018) revealed that when both pesticides and manual hoeing were used, it resulted in a substantial rise. The most efficient method of managing weeds and consequently increasing maize yield was to combine hand hoeing with pre- and post-emergence herbicides. Similarly, the results showed that after the emergency, hand hoeing twice or once with one herbicide improved corn growth and production. Hand hoeing twice or one hand hoeing with post-emergence herbicides resulted in the greatest weed reduction.

The advantage obtained by s-metolachlor and pendimethalin at 1.5 kg/ha as herbicides each augmented with one hand weeding was 216 and 198 % larger than the value obtained from the control (untreated), respectively. The best yield and economic advantage were achieved with S-metolachlor at the rate of 1.0 kg/ha supplemented with hand weeding treatment. However, if labor is scarce and smetolachlor herbicide is readily accessible, a pre-emergence application of 2.5 kg/ha of s-metolachlor should be used to avoid yield loss and maximize benefit (Daba and Janmejai, 2018).

Efficacy of pendimethalin, Metribuzin and Betazon herbicides combined with hand weeding has not yet been evaluated in faba bean growing in Alexandria, Egypt. Hence, the objectives of this study was to evaluate the effect of pre- and post-emergence herbicides with or without hand weeding on weed control, and yield components and yield of faba bean and to assess the economic feasibility of supplementing herbicides with hand weeding for effective weed management.

MATERIALS AND METHODS:

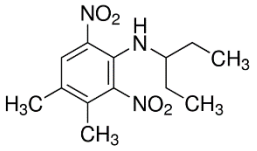
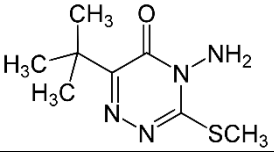
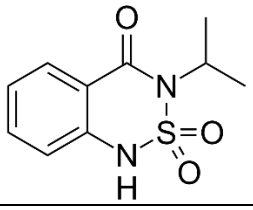
Two field experiments were conducted out at the Experimental Farm, Faculty of Agriculture, Saba Basha, Alexandria University, Alexandria Governorate, Egypt, during the two winter seasons of 2019/2020 and 2020/2021 to study the effect of weed control treatments and their combination on growth, productivity and quality of faba bean (*Vicia faba* L. cv. Giza 716).

Treatments were arranged in a Randomized Complete Block Design (RCBD) with three replicates in both seasons.

Ten weed control methods treatments were distributed at random within the experimental units as follows:

1. T1= Control (without weed control method).
2. T2= Mechanical weed control (Hand hoeing two times).
3. T3= Spray pre- emergency herbicide (Stomp 45.5% at the rate of 1.5 L/fed).
4. T4= Spray pre- emergency herbicide (Sencor 70% at the rate of 300 g/fed).
5. T5= Spray mix of pre- emergency herbicides (Stomp at the rate of 1.5 L/fed + Sencor at the rate of 300 g/fed)
6. T6= Spray pre- emergency herbicide (Stomp 50% at the rate of 1.5 L/fed) + one hand hoeing (after 30 days from sowing=DAS).
7. T7= Spray pre- emergency herbicide (Sencor 70% at the rate of 300 g/fed) + one hand hoeing (after 30 days from sowing=DAS).
8. T8= Spray post- emergency herbicide (Basagran 48% after 30 DAS at the rate of 0.5 L/fed).
9. T9= Spray pre- emergency herbicide (Stomp 50% at the rate of 1.5 L/fed) then Spray post- emergency herbicide (Basagran 48% after 30 DAS at the rate of 0.5 L/fed).
10. T10= Spray pre- emergency herbicide (Sencor 70% at the rate of 300 g/fed) then Spray post- emergency herbicide (Basagran 48% after 30 DAS at the rate of 0.5 L/fed).

Table 1 Description of herbicides used for the experiments

Common name	Trade name	Chemical name	Structure
Pendimethalin	Stomp® 45.5% CS	[N-(1-ethylpropyl)-2, 6-dinitro-3, 4-xylidine]	
Metribuzin	Sencor 70%	4-amino-6-(1,1-dimethylethyl)-3-(methylthio- 1, 2, 4 triazin- 5 (4H)-one	
Betazon	Basagran 48 %	3- (1- methylethyl)-1H-2,1,3- benzothiadiazin-493H)-one 2,2-dioxide	

CS = Capsule Suspension

Representative soil samples at the depth of (0 – 60 cm) were taken from the experimental site to determine some physical and chemical properties of soil before cultivation during the two seasons according to the method described by **Page *et al.* (1982)** and are presented in **Table (2).**

Table 2. Soil Physical and chemical properties of experimental sites in both seasons (2019/2020 and 2020/2021).

Soil properties	Seasons	
	2019/ 2020	2020/2021
A- Mechanical analysis		
Sand	14.50	14.70
Silt	42.10	42.10
Clay	43.40	43.20
Soil texture	Clay loam	Clay loam
B- Chemical properties		
p^H (1:1)	8.10	8.20
EC (1:1) dS/m	4.70	4.80
1- Soluble cations (1:2)		
K^+	1.40	1.45
Ca^{++}	14.20	14.40
Mg^{++}	10.30	11.50
Na^+	13.60	13.80
2- Soluble anions (1:2)		
CO^-_3+ HCO^-_3	2.80	2.90
CL^-	20.70	20.80
SO^-_4	16.40	15.50
Calcium carbonate (%)	6.70	6.90
Total nitrogen (%)	1.10	1.20
Available P (mg/kg)	3.70	3.60
Organic matter (%)	1.50	1.60

The preceding crop was maize (*Zea mays* L.) in both seasons. Each experimental unit consisted of 6 ridges, 3 meters in length, 60 cm width and 20 cm between hills on one side of the ridge with one plant in each hill, (10.80 m^2). Faba bean (Giza 716) was planted on 20th and 25th of October at the rate of 120 kg seeds/ha (ha=10000 m^2) in 2019/2020 and 2020/2021 seasons.

The field experiment was ploughed twice was applied before planting as single calcium- Super Phosphate (15.5% P_2O_5) at the rate of 480 kg/ha., and potassium sulphate (48 % K_2O) was added at

the rate of 120 kg/ha., before planting with soil preparation. Faba bean seed treated with Rhizobium inoculation (*R. leguminosum* cv. *Vicieae bacterium*) suspension containing 10 cell bacterium per one gram. However, nitrogen fertilizer was applied as urea fertilizer (46% N) at the rates of 48 kg N/ha in one dose before the first irrigation. Other agricultural practices for growing faba bean plants were applied as recommendation of Ministry of Agriculture and Land Reclamation.

The weed flora present in the experimental site, at the age of 75 days from planting, from the second ridge in each replicate just before crop flowering by placing a quadrat (0.50 long × 0.60 m length) randomly in each replicate and converted into m^2. Species and families of weed spread in the experimental site were categorized according to their families with the aid of flora books. Weed count (m^2), total fresh weigh (g/m^2), total dry weight (g/m^2) were dtermined after three days of sun drying, the samples were oven dried at 65° C to a constant weight.

Yield and yield components, at harvest time 170 days from planting, were determined from the third and fourth ridges of each plot, and the following data were recorded: Plant height (cm).Number of branches/plant. Number of pods/plant. Pod length/cm. Number of seeds/pod.100- seed weight/ gm. Biological yield ton/ha. Seed yield (t/ha) = Biological yield (t/ha) – straw yield (t/ha).Harvest index (%) was calculated as the ratio of seed yield (t/ha) to the total aboveground dry biological yield (t/ha).

All collected data were subjected to analysis of variance according to **Gomez and Gomez (1984).** Statistical analysis was performed using analysis of variance technique using CoStat computer software package **(CoStat, Ver. 6.311., 2005).** The least significant difference (LSD at 0.05) was used to compare the treatment means.

RESULTS AND DISCUSSIONS:

A) Effect of weed control methods on faba bean attributes:

The recorded results in **Table (3)** showed that plant height (cm), number of branches/plant, number of pods/plant, pod length (cm) of faba bean were significantly affected by weed control methods and their combination during two seasons 2019/2020 and 2020/2021.

Data are shown in **Table (3)** revealed the most effective treatment was recorded by one hand hoeing + Herbicide i.e. T6= Spray pre- emergency herbicide (Stomp 50% at the rate of 1.5 L/fed) + on hand hoeing (after 30 DAS), followed by T7= Spray pre- emergency herbicide (Sencor 70% at the rate of 300 g/fed) + one hand hoeing (after 30 DAS), whereas, all the above mentioned characteristics were significantly increased when compared with other treatments especially T1= Control (without weed control method). The increase in these traits of faba bean plant may be due to the effect of one hand hoeing plus herbicide on the reductions of the number of weeds and on decreasing the competition between faba bean plants and weed. These results are in the same trend with those obtained by **Kandil and Kordy (2013); Kebede et al. (2016); Gebremariam *et al*. (2018); Srinivasaperumal and Kalisudarson (2019)** they recorded the role of herbicides and weeding in increasing yield and its components of various crops and reducing the spread of weeds.

Table 3. Plant attributes of faba bean as affected by different weed control methods and their combination during 2019/2020 and 2020/2021 seasons.

Weed control methods	Plant height (cm)		Number of branches/plant		Number of pods/plant		Pod length (cm)	
	2019/2020	2020/2021	2019/2020	2020/2021	2019/2020	2020/2021	2019/2020	2020/2021
T1	88.0 f	85.5 e	2.8 e	2.7 e	6.9 e	6.1 f	8.5 c	7.5 c
T2	92.4 def	91.9 cd	5.29 cd	4.9 cd	14.1 d	13.0 e	9.7 b	9.7 b
T3	90.7 ef	91.3 cd	4.6 d	4.7 d	16.3 c	16.3 d	9.3 bc	9.3 b
T4	93.3 cde	90.3 de	5.1 cd	4.6 d	17.3 c	15.6 d	10.1 b	9.7 b
T5	97.8 bc	96.5 bc	4.6 d	4.7 d	15.8 cd	16.4 d	10.0 b	9.7 b
T6	107.3 a	107.7 a	6.6 a	6.6 a	25.4 a	24.4 a	11.3 a	11.0 a
T7	102.0 b	105.3 a	6.3 ab	6.0 ab	20.9 b	21.5 c	11.0 a	10.8 a
T8	92.4 def	92.0 cd	5.6 bc	6.0 ab	20.6 b	23.7 ab	10.0 b	10.0 a
T9	98.2 bc	98.8 b	5.9 abc	5.9 ab	21.7 b	22.1 bc	10.0 b	9.3 b
T10	96.8 cd	97.5 b	5.6 bc	5.7 bc	19.8 b	20.0 c	10.0 b	9.5 b
LSD at 0.05	4.8	5.3	0.9	0.8	2.2	2.1	0.9	0.8

- Means in the same column (s) followed by the same letter are not significant at 0.05 level of probability.

The recorded data in **Table (4)** showed that the number of seeds/pod, 100- seed weight (g), seed yield (t/ha), biological yield (t/ha), and harvest index (%) of faba bean were the significantly affected by the different treatments of weed control methods and its combination under this study during the two seasons of 2019/2020 and 2020/2021.

During, the first season and the second seasons in **Table (4)**, the results cleared that the most effective treatment resulted from by one hand hoeing + Herbicide i.e. T6= spray pre- emergency herbicide Stomp + on hand hoeing (after 30 DAS). In addition, the differences were not great enough to reach the 5 % level of significant between the mean values of number of seeds/pod, 100- seed weight during both seasons of the study and harvest index during the second seasons under T6, T7, T8, T9, and T10 whereas, all the pervious mentioned characteristics were significantly increased when compared with other treatments especially T1= Control (without weed control).

The increase in these traits of faba bean plant under the study conditions may be due to the effect of weed control management as mentioned by **Mizan *et al.* (2009) and Mengesha *et al.* (2016)** who reported that increased vegetative growth duration of more assimilates for shoot rather than root growth. The intense weed competition between the weeds and the crop under weedy check (control treatment) significantly decreased nutrient mobility towards seeds, which may have harmed the faba bean plant's seed development capacity. In line with this finding, (**Gupta, 2011**) found that weedy check (control) plots had the lowest amount of seed yield and its components. Also, **Peer *et al.* (2013); Mekonnen *et al.* (2015)** indicated that the influence of various weed control methods may have resulted in a varied yield and yield components characters of many crops. In weedy check plots, they found the lowest number of hundred seed weight of soybean. These results are in the same trend with those obtained by **Kandil and Kordy (2013); Kebede *et al.* (2016); Gebremariam *et al.* (2018)** who recorded the role of herbicides with weeding management for increasing yield of many crops and reducing the spread of weeds. On the other hand, **Alfonso *et al.* (2013)** reported good suppression of weed growth by cultural and herbicidal control measures that lead to low competition by weeds for light, space and nutrients by which the crop could utilize both biotic and abiotic resources efficiently, leading to higher dry biomass production.

Table 4. Plant attributes of faba bean as affected by the different weed control methods and their combination during 2019/2020 and 2020/2021 seasons.

Weed control methods	Number seeds/pod		100- seed weight (g)		Seed yield (t/ha)		Biological yield (t/ha)		Harvest index (%)	
	2019/2020	2020/2021	2019/2020	2020/2021	2019/2020	2020/2021	2019/2020	2020/2021	2019/2020	2020/2021
T1	3.0 b	3.0 a	73.3 e	73.2 e	1.4 f	1.3 e	3.8 f	3.8 f	36.8 d	34.2 c
T2	3.0 b	3.3 a	80.3 cd	79.9 cd	2.6 e	2.6 d	5.3 e	5.5 e	49.1 bc	47.3 ab
T3	3.7 ab	3.0 a	78.2 d	77.9 d	2.8 d	2.7 d	5.7 de	5.7 e	49.1 bc	47.4 ab
T4	4.0 a	3.7 a	83.3 bc	82.1 bc	2.8 d	2.7 d	6.2 d	5.8 e	45.2 c	46.6 ab
T5	3.3 ab	3.7 a	83.1 bc	83.9 ab	2.8 d	2.8 cd	6.1 d	6.2 d	45.9 c	45.2 b
T6	4.0 a	3.3 a	87.0 a	86.0 a	4.0 a	3.9 a	7.9 a	7.8 a	50.6 b	50.0 ab
T7	3.3 ab	3.7 a	84.7 ab	83.4 ab	4.1 a	4.0 a	7.4 b	7.5 ab	55.4 a	53.3 a
T8	3.7 ab	3.0 a	84.4 ab	83.7 ab	3.5 b	3.6 b	7.3 b	7.4 b	47.9 bc	48.6 ab
T9	3.3 ab	3.7 a	84.3 ab	84.2 ab	3.3 bc	3.4 b	6.8 c	6.8 c	48.5 bc	50.0 ab
T10	3.7 ab	3.7 a	84.9 ab	84.9 ab	3.2 c	3.2 bc	7.2 bc	7.1 bc	44.4 c	45.1 b
LSD at 0.05	ns	ns	3.4	3.3	0.2	0.4	0.4	0.4	4.0	6.9

- Means in the same column (s) followed by the same letter are not significant at 0.05 level of probability, and ns: not significant difference.

B) Effect of weed control methods on weeds characters:

Results in **Table (5)** showed the three species of weeds and their family as botanical classification in winter seasons present in the experimental site.

Concerning the effect of control methods of weeds, the results shown in **Table (6)** cleared that weeds characters were significantly affected by weed control methods, where weeds characters such as weed count/m^2, Total fresh weight (g/m^2), total dry weight (g/m^2) had the highest values with the control treatment. On the other hand, the weed characters were reduced with any methods of the weed control from (T2) up to (T10) in both seasons and the effective method to reduce weeds spread was T7= Spray pre- emergency herbicide Sencor + one hand hoeing (after 30 DAS) as compared with the other methods.

In this line, Sajid *et al.* (2012) found that weedy check (the control) had the greatest weed count, whereas herbicide treatment in pea had the lowest weed count. They also cleared better performance of s-metolachlor in reducing weed dry biomass as compared to pendimethalin, metribuzin and isoproturon in pea. **Agegnehu and Fessehaie (2006**) also indicated that minimum dry biomass of weeds was recorded for pendimethalin, which was statistically significant as comparable with smetolachlor herbicide. These results are in agreement with the findings results of **Alfonso *et al.* (2013)**; **Kandil and Kordy (2013)** who reported maximum weed dry weight in weedy check comparing with the weeding methods.

Table 5. Species, and families of weed spread in the experimental site during cropping season.

Weed species	Family
Malva sylvestris L	Malvaceae
Chenopodium album L.	Chenopodiaceae
Beta vulgaris L.	chenopodiaceae
	Average

Table 6. Weed parameters as affected by the different weed control methods and their combination during seasons 2019/2020 and 2020/2021.

Weed control methods	Weed count (m^2)		Total fresh weight (g/m^2)		Total dry weight (g/m^2)	
	2019/2020	2020/2021	2019/2020	2020/2021	2019/2020	2020/2021
T1	59.3 a	62.3 a	133.0 a	129.3 a	29.3 a	27.1 a
T2	25.7 bc	21.0 bc	26.0 b	29.3 b	6.0 b	5.9 b
T3	36.7 ab	39.0ab	36.7 b	48.3 b	8.7 b	9.0 b
T4	11.3 bc	18.7 bc	7.7 b	14.0 b	1.5 b	2.7 b
T5	16.3 bc	17.3 bc	21.7 b	32.3 b	5.4 b	6.4 b
T6	9.3 bc	12.3 bc	18.3 b	23.3 b	3.7 b	4.7 b
T7	0.0 c	3.0 c	0.0 b	5.0 b	0.0 b	1.0 b
T8	8.7 bc	7.3 bc	22.0 b	23.7 b	4.7 b	7.3 b
T9	11.0 bc	10.3 bc	14.3 b	14.0 b	2.9 b	3.7 b
T10	14.0 bc	17.0 bc	25.7 b	26.3 b	5.4 b	5.3 b
LSD at 0.05	32.9	33.3	40.5	44.9	9.3	10.7

- Means in the same column (s) followed by the same letter are not significant at 0.05 level of probability.

CONCLUSION:

Yield and its components of the faba bean *cv* Giza 716 were affected by weed control methods, and their combinations. The highest value of yield characters of faba bean was achieved by spraying pre- emergency herbicide namely; stomp 50% at the rate of 1.5 L/fed pre emergence or sencor 70% at the rate of 300 g/fed pre emergence plus one hand hoeing after 30 days from sowing.

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الملخص العربي

إنتاجية الفول البلدي تحت طرق مختلفة لمكافحة الحشائش

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أجريت هذه الدراسة فى مزرعة كلية الزراعة – سابا باشا بمنطقة ابيس – محافظة الأسكندرية خلال الموسم الشتوي لعامى 2020/2019 و 2021/2020 و ذلك لدراسة استجابة نمو وانتاجية محصول الفول البلدي (جيزة 716) لطرق المكافحة للحشائش وتوليفتها تحت ظروف الأراضي المتأثرة بالملوحة. ووزعت المعاملات عشوائياً في تصميم القطاعات العشوائية الكاملة في ثلاث مكررات كالتالي:

1- المقارنة (بدون مقاومة).

2- المقاومة الميكانيكية (العزيق مرتين).

3 – استعمال مبيد ستومب بعد الزراعة وقبل الانبات بمعدل 1.5 للفدان .

4- استعمال مبيد سنكور بعد الزراعة وقبل الانبات بمعدل 300 جم للفدان.

5-خليط بين المبيدين ستومب و السنكور معا .

6- استعمال مبيد ستومب والعزيق مرة واحدة بعد شهر من الزراعة.

7- استعمال مبيد سنكور و العزيق مرة واحدة بعد شهر من الزراعة .

8- استعمال مبيد بازجران بعد الزراعة بشهر بمعدل نصف لتر للفدان .

9- استعمال مبيد ستومب بعد الزراعة وقبل الإنبات وبعدها مبيد البازجران بعد الزراعة بشهر.

10-إستعمال مبيد سنكور بعد الزراعة وقبل الإنبات وبعدها مبيد البازجران بعد الزراعة بشهر.

ولخصت النتائج فيما يلي:

وجد أن هناك تأثير معنوى للمعاملات تحت الدراسة وهي طرق مكافحة الحشائش المختلفة على انتاجية محصول الفول البلدي وعلى نمو وانتشار الحشائش حيث وجد أن المعاملة رقم (6) وهي استعمال مبيد ستومب والعزيق مرة واحدة بعد شهر من الزراعة ومعاملة رقم (7) وهي استعمال مبيد سنكور والعزيق مرة واحدة بعد شهر من الزراعة سجلا أعلى قيم للصفات المحصول ومكوناته في الفول البلدي مثل ارتفاع النبات وعدد الأفرع/نبات وعدد القرون /نبات وطول القرن (سم) وعدد البذور/ القرن ووزن 100 بذرة ومحصول البذور (طن/هكتار) و المحصول البيولوجي (طن/هكتار) ودليل الحصاد (%). كما أن هذه المعاملات قللت من صفات الحشائش مثل الوزن الطازج والجاف للمتر المربع وعدد الحشائشلكل متر مربع خلال موسمي الزراعة. واوضحت النتائج أن جميع طرق المكافحة أدت الى زيادة محصول الفول البلدي وقللت من نمو الحشائش وذلك مقارنة بمعاملة الكنترول (بدون مكافحة) وتحت ظروف التجربة بالأسكندرية. كما تم توصيف الحشائش المنتشره في محصول الفول البلدي وكان أكثر أنواع منتشرة هي الخبيزة البرية والزربيح والسلق البري في محصول الفول وتحت ظروف المنطقة التي تمت بها الدراسة.

التوصية:

من النتائج المتحصل عليها وجد أنه لزيادة محصول الفول البلدي صنف جيزة 716 وجودته المنزرع تحت ظروف الأسكندرية أو المناطق المماثلة يمكن استخدام طريقة مكافحة الحشائش (العزيق مرة واحدة + الرش بمبيد الحشائش قبل الانبثاق أو بعد الإنبثاق) حيث ان هذه التوليفة عملت على زيادة المحصول وتقليل نمو ومنافسة الحشائش لمحصول الفول البلدي .