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EFFECT OF SOME WEED CONTRPL TREATMENTS ON EGYPTIAN COTTON PRODUCTIVITY IN UPPER EGYPT

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Key Words:

Egyptian cotton

Weeds control

ABSTRACT

The present study was carried out at Shandaweel Agricultural Research Station (ARC), Sohag Governorate during two successive summer seasons of 2016 and 2017 to study the effect of some weed control treatments on Egyptian cotton productivity in Upper Egypt. Twelve weed control treatments were used including 10 herbicides treatments as follow: T_1: Butralin (2.5 L/fed.), T_2: Prometryn (1.5 L/fed.), T_3: Pendimethalin (1.7 L/fed.), T_4: Butralin (2.5 L/fed.) + fluazifop-p-butyl (2 L/fed.), T_5: Prometryn (1.5 L/fed.) + Fluazifop-p-butyl (2 L/fed.), T_6: Pendimethalin (1.7L/fed.) + Fluazifop-p-butyl (2 L/fed.). T_7: Butralin (2.5 L/fed.) + oxyflurofen (0.750 L/fed.), T_8: Prometryn (1.5 L/fed.) + Oxyflurofen (0.750 L/fed.), T_9: Pendimethalin (1.7 L/fed.) + Oxyflurofen (0.750 L/fed.), T_{10}: Prometryn (1.5 L/fed.) + Pendimethalin (1.7 L/fed.), T_{11}: Hand hoeing thrice and T_{12}: Un-weeded control. A completely randomized block design (RCDB) with four replicates was used in both seasons.Dry weight of grassy, broad-leaved and total weeds (g/m^2) at 75 (DAP) were decreased significantly by weed control treatments in both seasons. The lowest dry weight values (favorable) of grassy (1.2 and 7.3 g/m^2) were found in T_4 and T_{11} at 2016 and 2017 respectively. While T_{11} and T_{10} treatments exhibited the best results of broad-leaved dry weight and total weeds (g/m^2) as compared with un-weeded treatment in both seasons.The growth traits were significantly affected by weed control treatments in both seasons. In the 1st season, applying T10 gave the best results on growth traits, while, in the 2nd season applying T7 gave the best results on growth traits as compared with un-weeded control in both seasons.The results revealed that weed control treatments significantly effected on yield and its components in both seasons. In the first season, applying T11 and T10 increased significantly the yield and its components compared with un-weeded control in both seasons. Fiber properties i.e., fiber fineness (F.F), fiber strength (F.S), upper half mean (U.H.M) and uniformity ratio (U.R) were insignificantly affected by weed control treatments in both seasons.In this investigation we can recommended that application of hand hoeing thrice at 18, 30 and 45 day after planting (DAP) or applying prometryn per-emergence 1.5 L/fed., followed by pendimethalin per-emergence 1.7 L/fed, to control total weeds (grassy and broad-leaved weeds), and obtain the highest seed cotton yield (kentar/fed).

INTRODUCTION

Cotton (*Gossypium hirsutum* L.) is one of the most important fiber and cash crop in world which belongs to Malvaceae family and is known as "King of fibers" or "White Gold". It plays a pivotal role in the rural, national and international economy. It is grown mainly in tropical and subtropical region of more than 80 countries in the world. It is grown mostly for fiber used in the manufacture of clothes for mankind. Besides, cotton seed is also valued for its oil (15 - 20%) which is used as vegetable oil and in soap industries. It is the most important fiber crop of the world and is cultivated by 33.923 million hectares in same 80 countries of the world **Khan (2003). Nadeem *et al.* (2013)** showed that the minimum dry weight (12.66 g) of weeds was recorded in case of pendimethalin + prometryne at 875 g/ha. **Asif *et al.* (2014)** found that oxyflurofen and prometryn gave an efficient control of *Euphorbia species* in cotton (*Gossypium hirsutum* L.). **Tariq *et al.* (2018)** showed that the treatments comprised of weedy check and pendimethalin at 825 g/ha and the lowest (4.7%) weed index were recorded for pendimethalin alone. **Ali *et al.* (2013)** showed that pendimethalin at 2.5 l/ ha treatment increased seed cotton yield significantly by 2280 and 3172 kg/ha during in both seasons compared to weedy check (965 and 1339 kg/ha), respectively. **Nadeem *et al.* (2013),** found that the number of monopodial and sympodial branches, mature bolls per plant, seed weight and seed cotton yield were increased with all weed control practices over weedy check. Pendimethalin + prometryne 875 g/ha produced the maximum seed cotton yield of 2249.18 kg. **Barakova and Delchev (2016)** found that Goal 2 E, oxyfluorfen (80 ml/da); Wing-P, pendimethalin + dimethenamid (400 ml/da) and Bazagran 480 SL, bentazone (150 ml /da) gave the highest cotton yield. **Shivashankar *et al.* (2017)** revealed that pendimethalin 38.7 CS (PRE) recorded 2253 kg/ha higher seed cotton yield. **Farid *et al.* (2000),** noted that pendimethalin at rate of 3 l/ha was did not differ significantly in terms of staple length, staple uniformity ratio, or fibre quality. The quality parameters (ginning percent, lint index, fibre length, fibre fineness, and seed index) of cotton were affected significantly by weed control treatments, pendimethalin (1.25 kg/ha), oxyfluorfen (0.125 kg/ha) and pendimethalin + oxyfluorfen **(Balasubramanian and Sankaran, 2001). Ali *et al.* (2013)** included that pendimethalin 2.5 l/ha, hand-weeding and weed control. The staple length (mm) was not affected by chemical treatments and no significant differences in micronaire values (µg inch-1) among different chemical and mechanical treatments. The changes in fiber properties observed in the present study were too small to be of any practical importance. The present study indicates that both chemical and mechanical weed control techniques do not adversely affect fiber quality.The main objective of this investigation is studying the effect of some weed control treatments on weeds, growth, yield, its components and quality Egyptian cotton.

MATERIALS AND METHODS

Field experiments were carried out at Shandaweel Agricultural Research Station, (ARC), Sohag Governorate, Egypt at summer seasons of 2016 and 2017 to study the effect of some weed control treatments on Egyptian cotton productivity. The cotton variety Giza 90 was sown at the recommend rate on 28th and 30th of March in 2016 and 2017 seasons, respectively. The dry method of cotton planting was used. The treatments were arranged in a randomized complete block design (RCBD) in four replicates with plot area size 10.5 m^2. The preceding winter crop was Egyptian clover (Barseem) (*Trifolium alexandrium* L.) in both seasons.

The twelve weed control treatments were tested as follows:

1. Butralin applied into the soil surface after planting but before irrigation (pre-emergence) at rate (2.5 L/fed.) (T1).
2. Prometryn applied as pre-emergence at rate (1.5 L/fed.) (T2).
3. Pendimethalin applied as pre-emergence at rate (1.7 L/fed.) (T3).
4. Butralin applied as pre-emergence at rate (2.5 L/fed.) followed by fluazifop-p-butyl applied as post-emergence foliar spraying at 30 days after planting (DAP) at rate (2 L/fed.) (T4).
5. Prometryn applied as pre-emergence at rate (1.5 L/fed.) followed by fluazifop-p-butyl applied as at 30 (DAP) at rate (2 L/fed.) (T5).
6. Pendimethalin applied as pre-emergence at rate (1.7 L/fed.) followed by fluazifop-p-butyl applied at 30 (DAP) at rate (2 L/fed.) (T6).
7. Butralin applied as pre-emergence at rate (2.5 L/fed.) followed by oxyflurofen applied on the soil surface after sowing but before irrigation (pre-emergence) at rate (0.750 L/fed) (T7).
8. Prometryn applied as pre-emergence at rate (1.5 L/fed.) followed by oxyflurofen applied as pre-emergence at rate (0.750 L/fed) (T8).
9. Pendimethalin applied as pre-emergence at rate (1.7 L/fed.) followed by oxyflurofen applied as pre-emergence at rate (0.750 L/fed) (T9).
10. Prometryn applied as pre-emergence at rate (1.5 L/fed.) followed by pendimethalin applied as pre-emergence at rate (1.7 L/fed.) (T10).
11. Hand hoeing thrice at 18, 30 and 45 (DAP) (T11).
12. Un-weeded check (control) (T12).

Herbicide treatments were sprayed using knapsack sprayer at water volume of 200 L/fed. All agricultural practices were applied as recommended throughout the growing seasons. The mechanical and chemical analysis of the experimental is presented in Table (2):

Table (1): Common, trade and chemical names of used herbicides

Common name	Trade name	Group	Chemical name	Mode of action
Butralin	Amex 48%EC	Dinitroaniline	N-butan-2-yl-4-tert-butyl-2,6-dinitroaniline	Microtubule assembly Inhibition
Prometryn	Gesagard 80%WP	Triazine	6-methylsulfanyl-2-N,4-N-di(propan-2-yl)-1,3,5-triazine-2,4-diamine	Inhibition of photosynthesis at photosystem II
Pendimethalin	Stomp exstra 45.5%CS	Dinitroaniline	3,4-dimethyl-2,6-dinitro-N-pentan-3-ylaniline	Microtubule assembly Inhibition
Fluazifop-p-butyl	Fusilade max 12.5%EC	Aryloxyphenoxy-propionate 'FOPs'	----------	Inhibition of acetyl CoA carboxylase (ACCase)
Oxyfluorfen	Goal 24%EC	Diphenylether	2-Chloro-1-(3-ethoxy-4-nitrophenoxy)-4-(trifluoromethyl)benzene	Inhibition of protoporphyrinogen oxidase (PPO)

Table (2): Soil analysis of the experimental site in the two growing seasons

Seasons	Properties											
						Soluble ions (meq/100g soil (1:5))						
	Soil texture	Ph	EC Mmhos/cm.	$CaCO_3$ %	Total N (%)	$H CO_3^-$	Cl^-	So_4^-	Ca^{++}	Mg^{++}	Na^+	K^+
2016	Clay loam	7.85	1.95	2.8	0.78	0.9	11.4	3.2	5.8	2.5	6.1	1.1
2017	Clay loam	7.76	0.92	1.75	0.67	0.78	12	3.01	5.2	2.23	5.98	0.95

Data recorded;

I- Weeds

Weeds were hand pulled from one square meter chosen randomly in each plot after 75 (DAP) and classified into three groups according as follows:

1. Dry weight of grassy weeds (g/m^2).
2. Dry weight of broad-leaved weeds (g/m^2).
3. Dry weight of total weeds (g/m^2).

The dry weight of each group was recorded after air drying for three days and oven dried at 70 ºC for 24 hours.

The efficiency of each weed control treatment was calculated based on total weeds dry weight by the following equation:

$$EC\ \% = \frac{Pc - Pt}{Pc} \times 100$$

Whereas:-

EC =efficiency coefficient.

Pc= average dry weight of weed per m^2 for the un-weeded plots.

Pt = average dry weight of weed per m^2 for the treated plots.

II- Growth traits:

1. Plant height (cm.).

2. Number of fruiting branches /plant. It was calculated using growth traits by the following equation:

$$EC\ \% = \frac{Pt - Pc}{Pc} \times 100$$

Whereas:-

EC =efficiency coefficient.

Pc= average growth traits for the un-weeded plots.

Pt = average growth traits for the treated plots.

III- Yield and its components:

1. Seed cotton yield (Kentar/fed) It was estimated as the weight of seed cotton yield in each plot and then converted to kentar/fed. (Kentar = 157.5 kg).
2. Lint yield (Kentar/fed). It was determined as the total lint yield resulted from seed cotton yield from feddan.
3. Boll weight (g): It was determend as average weight of 25 bolls picked randomly from each plot. It was calculated using yield and its components by the following equation:

$$EC\ \% = \frac{Pt - Pc}{Pc} \times 100$$

Whereas:-

EC =efficiency coefficient.

Pc= average yield and its components for the un-weeded plots.

Pt = average yield and its components for the treated plots.

IV- Fiber properties:

The fiber properties were measured using HVI according to (ASTM D- 4605 - 86). spectrum. in the laboratories of the Cotton Technology Research Division, Cotton Research Institute.

1. Fiber fineness (F.F): Fineness was expressed as micronaire instrument reading. The characters were measured with micromat instrument – ASTMD – 3818 – 98.
2. Fiber strength (F.S): Measured by HVI in gram/tex units.
3. Upper half mean (U.H.M): Measured by (HVI).
4. Uniformity ratio (U.R) staple uniformity is expressed as: 50 % span length X 100 / 2.5% span length. The fiber properties were under the standard conditions of tests (65+ 2% relative humidity and 70+ 2F^{o} temperature). Determined as follow:

$$U.I = M.L. / U.H.M$$

Statistical analysis

The collected data were statistically analyzed in randomized completeblock design and the least significant differences (LSD) at 5% significant levels were calculated according to the procedure outlined by **Snedecor and Cochran (1981)**.

RESULTS AND DISCUSSION

During both growing seasons of cotton crop the dominant grassy weeds species were: Jungle rice (*Echinochloa colonum* L.) Poaceae while the major broad-leaved weeds were: Morning-glory (*Ipomoea eriocarpa*) Convolvulaceae, Common cocklebur (*Xanthium strumarium*) Asteraceae, Malta cross (*Tribulus terrestris*) Zygophyllaceae, Jimsonweed (*Datura stramonium*) Solanaceae, Sun spurge (*Euphorbia geniculate*) Euphoriaceae, Pigweed (*Chenopodium album*) Amaranthaceae and Common Purslane (*Portulaca oleracea*) Portulacaceae.

I- Effect of weed control treatments on weeds at 75 days after planting (DAP):

1. Dry weight of grassy weeds (g/m^2).

Data in Table (3) and Fig (1) showed that dry weight of grassy weeds (g/m²) at 75 (DAP) was affected by weed control treatments in both seasons.

Insignificant differences between the weed control treatments (T_4, T_5, T_7, T_9, and T_{11}) were found, and exhibited the lowest values 1.2, 1.4, 1.3, 1.3, and 1.5 g/m^{2}of dry weight of grassy weeds respectively in the first season. Meanwhile, the treatments T_5, T_{10} and T_{11} did not differed significantly in dry weight of grassy weeds and obtained the lowest values 8.0, 8.3 and 7.3 g/m^2 respectively in the second season. These results due to the combination effect between grassy weed herbicide with other herbicides under study for growth inhibition, killing and eradication of grassy weed species. Indicated that the herbicides efficiency for grassy weed control. These results are in line with those obtained by **Richardson *et al*. (2007); Dilbaugh *et al.* (2009) and Ali *et al.* (2013).**

2. Dry weight of broad-leaved weeds (g/m^2).

Results in Table (3) and Fig (2) revealed that weed control treatments were effected significantly on the dry weight of broad-leaved weeds (g/m²) at 75 (DAP) in 2016 and 2017 seasons. Applying the control treatment of T_{11} and T_{10} and were did not differed significantly in dry weight of broad-leaved weeds, and produced the lowest values 136.0 and 290.8 g/m^2 respectively in the first season. Applying T11, T10 and T8 were insignificantly differed in dry weight of broad-leaved weeds and exhibited the best values 7.8, 14.3 and 14.3 g/m^2 respectively, as compared to un-weeded treatment in the second season. These results were in line with those obtained by **Richardson *et al.* (2007); Dilbaugh *et al.* (2009); Ali *et al.* (2013) and Asif *et al.* (2014).**

3. Dry weight of total weeds (g/m^2).

Results in Table (3) and Fig (3) indicated that the effect of weed control treatments were effected significantly on dry weight of total weeds in both seasons. The application of T11, T10 and T8 The lowest value (137.5 g/m^2) in dry weight of total weeds were obtained from hand hoeing treatment (T_{11}), followed by T_{10} (309.8 g/m^2) comparing with un-weeded control in the first season. The best weed treatment controlare T_{11}, T_{10} and T_2 in the second season, whereas these treatments did not differed significantly and produced the lowest values in dry weight of total weeds as 15, 22.5 and 31.0 g/m^2 in the second season. These finding are indicated

that the high efficiency coefficient of hand hoeing (T_{11}) and applying prometryn + pendimethalin (T_{10}) were (91.4 and 80.6 %) and (92.4 and 88.6 %) in the first and second season respectively. These results due to kill weed species by application weed control treatment increased the effectiveness period of herbicides and increased spectrum of weed species which killed by the herbicide. These results are in agreement with the finding of **Farid *et al.* (2000); Khan *et al.* (2001); Khan and Khan (2003); Tunio *et al.* (2003); Richardson *et al.* (2007); Dilbaugh *et al.* (2009); Nadeem *et al.* (2013) and Tariq *et al.* (2018).**

Table (3): Effect of weed control treatments on the dry weight (D.W) of grassy, broad-leaved and total weeds (g/m^2) at 75 (DAP) for cotton in 2016 and 2017 seasons

Treatments	75 days after planting					
	Season 2016			Season 2017		
	D.W of grassy weed (gm)	D.W of broad-leaved weed (gm)	D.W of total weeds (gm)	D.W of grassy weed (gm)	D.W of broad-leaved weed (gm)	D.W of total weeds (gm)
Butralin (T1)	28.3	705.8	734.0	26.8	24.0	50.8
Prometryn (T2)	44.5	438.8	483.3	13.5	17.5	31.0
Pendimethalin (T3)	30.0	507.8	537.8	26.5	94.5	121.0
Butralin + fluazifop-p-butyl (T4)	1.2	566.0	567.2	16.5	115.0	131.0
Prometryn + fluazifop-p-butyl (T5)	1.4	440.3	441.6	8.0	76.3	84.3
Pendimethalin + fluazifop-p-butyl (T6)	9.7	510.8	520.4	10.8	98.0	108.8
Butralin + oxyflurofen (T7)	1.3	433.8	435.1	24.0	15.8	39.8
Prometryn + oxyflurofen (T8)	8.8	332.5	341.3	28.3	14.3	42.5
Pendimethalin + oxyflurofen (T9)	1.3	397.3	398.5	26.3	31.0	57.8
Prometryn + pendimethalin (T10)	19.0	290.8	309.8	8.3	14.3	22.5
Hand hoeing (T11)	1.5	136.0	137.5	7.3	7.8	15.0
Untreated (control) (T12)	64.5	1532.3	1596.8	57.5	139.3	196.8
LSD 0.05	**25.9**	**258.8**	**267.2**	**13.9**	**24.4**	**29.2**

Fig. (1): Effect of weed control treatments on the dry weight of grassy weeds (g/m^2) at 75 (DAP) for cotton in 2016 and 2017 seasons

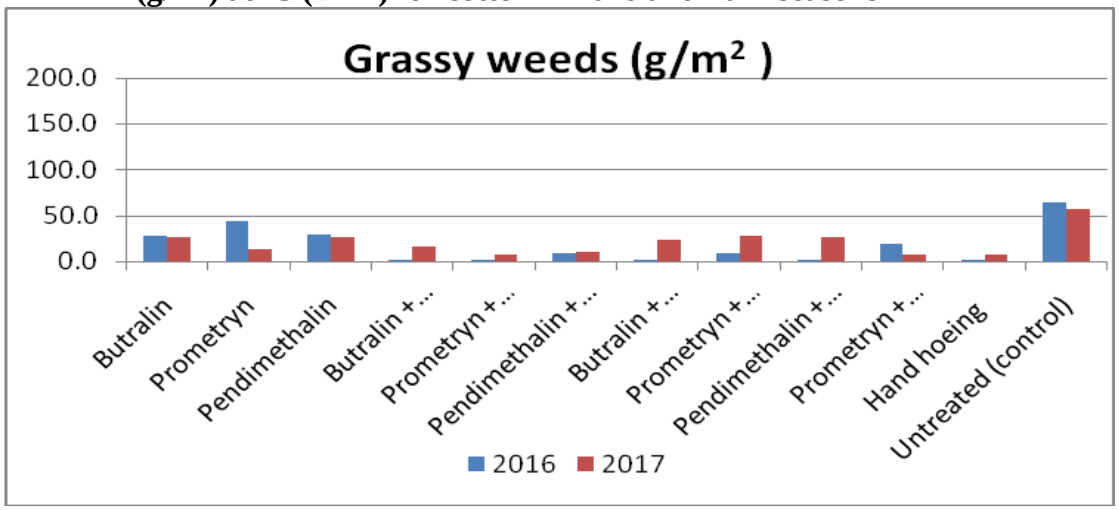


Fig. (2): Effect of weed control treatments on the dry weight of broad-leaved weeds (g/m^2) at 75 (DAP) for cotton in 2016 and 2017 seasons

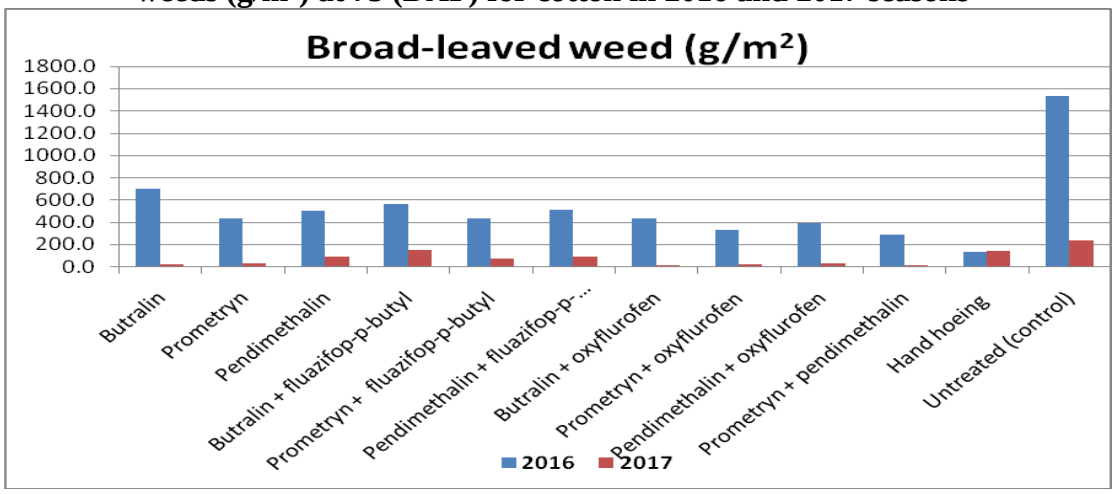
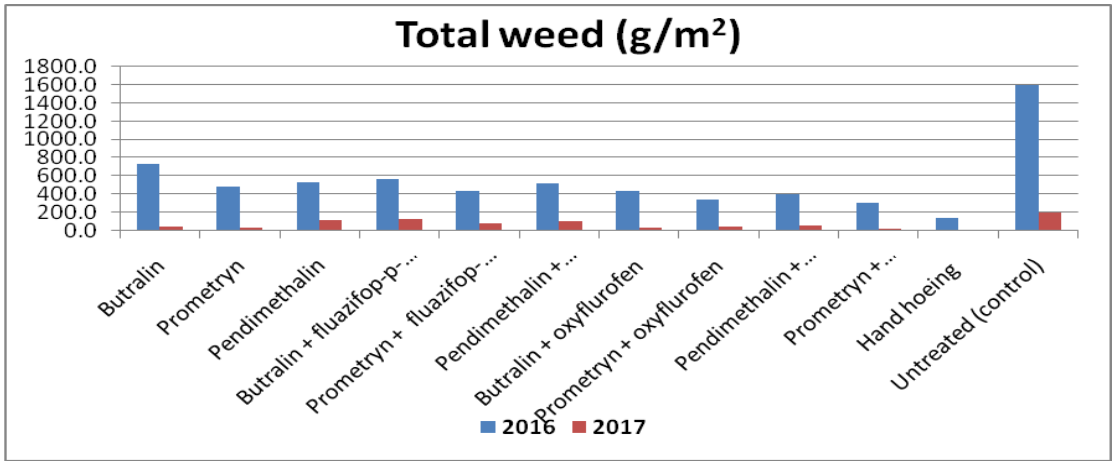


Fig. (3): Effect of weed control treatments on the dry weight of total weeds (g/m^2) at 75 (DAP) for cotton in 2016 and 2017 seasons



II- Effect of weed control treatments on:

1. Cotton growth traits:

Results in Tables (4) show that weed control treatments effected significantly on plant height (cm) and number of fruiting branches/plant in 2016 and 2017 seasons. There is not any significant differences were found between the weed control treatments of T11, T10 and T8 and exhibited the highest values of the plant height (cm) and number of fruiting branches/plant, whereas they increased by (76.3, 72.3 and 61.9%) and (150.0, 137.9 and 115.5%), respectively, in 2016 season, as compared with un-weeded treatment. The weed control treatments T11, T10 and T2 did not showed any significant differences between them and exhibited the higher values of the plant height (cm) than the un-weeded control by (80.7, 70.2 and 61.4%) and number of fruiting branches/plant by (135.4, 112.3 and 92.3%), respectively, in 2017 season. The highest values of these three treatments, may be due to that are very important not only to control weed but also to create suitable edaphic environmental conditions i.e.

good aeration, high biotic activity and increase availability of some nutrients for cotton plants to grow well away from weed competition for growth factors such as nutrients, water and solar radiation. Similar results were obtained by **Awad and Hassan (1980); Tunio *et al.* (2003); Mahar *et al.* (2007); Maqbool *et al.* (2001); Oad *et al.* (2007) and Nadeem *et al.* (2013).**

Table (4): Effect of weed control treatments on growth traits of cotton in 2016 and 2017 seasons

Treatments	2016 season		2017 season	
	Plant height (cm)	No. of fruiting branches /plant	Plant height (cm)	No. of fruiting branches /plant
Butralin (T1)	90.0	6.3	98.3	9.5
Prometryn (T2)	103.4	7.8	128.0	12.5
Pendimethalin (T3)	98.5	7.3	95.3	6.5
Butralin + fluazifop-p-butyl (T4)	93.0	7.0	96.3	7.3
Prometryn + fluazifop-p-butyl (T5)	107.6	7.8	104.8	8.8
Pendimethalin + fluazifop-p-butyl (T6)	101.5	7.0	101.8	7.3
Butralin + oxyflurofen (T7)	116.9	10.5	122.5	11.5
Prometryn + oxyflurofen (T8)	125.8	12.5	119.5	11.5
Pendimethalin + oxyflurofen (T9)	121.7	11.5	108.5	9.8
Prometryn + pendimethalin (T10)	133.9	13.8	135.0	13.8
Hand hoeing (T11)	137.0	14.5	143.3	15.3
Untreated (control) (T12)	77.7	5.8	79.3	6.5
LSD 0.05	**8.9**	**2.2**	**10.0**	**2.4**

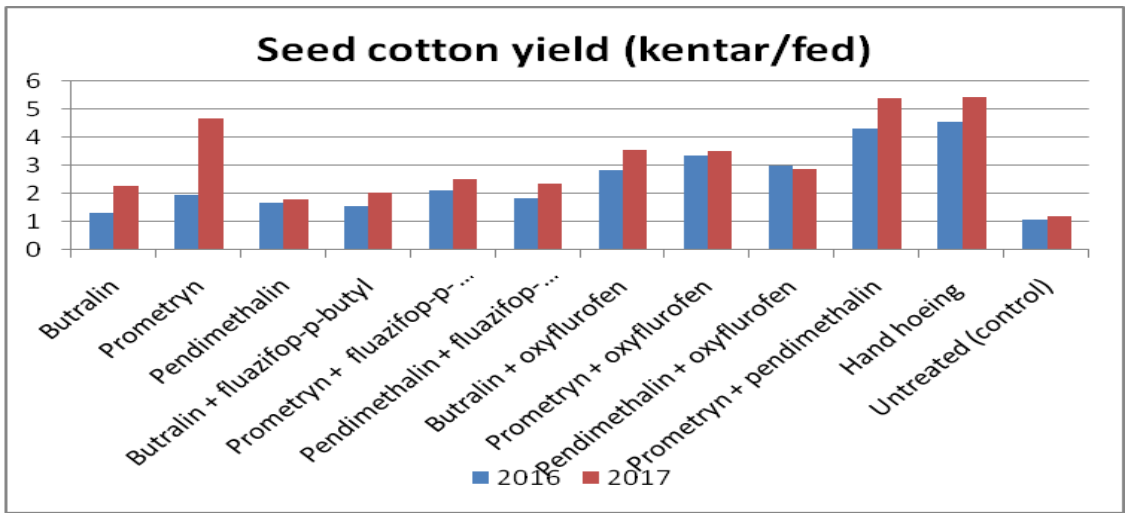
2. Yield and its components:

Results presented in Table (5) and Fig (4) revealed that weed control treatments had a significant effect on seed cotton yield (kentar/fed), lint yield (Kentar/fed) and boll weight (g) in 2016 and 2017 seasons. The application of T11, T10 and T8 increased significantly seed cotton yield (kentar/fed.), lint yield (Kentar /fed) and boll weight (g) by (323.8, 301.5 and 209.8%), (402.3, 364.2 and 258.1%) and (68.7, 62.5 and 56.3%), respectively, as compared with un-weeded treatment in 2016 season. Using T11 and T10 increased significantly the seed cotton yield (kentar/fed) by (352.5 and 350.4%), lint yield (Kentar/fed) by (437.9 and 404.5%) and boll weight (g) by (68.7 and 62.5%), respectively, as compared with un-weeded treatment in 2017 season. This finding is logic since weed control treatments gave the highest reduction in dry weight of weeds in cotton, its improved the growth traits and minimized considerably the hazardous effect of weed interference on growth and productivity of cotton. These results was in line with those obtained by **Mahar *et al.* (2007), Oad *et al.* (2007); Muhammad *et al.* (2009); Ali *et al.* (2013); Nadeem *et al.* (2013); Barakova and Delchev (2016) and Shivashankar *et al.* (2017).**

Table (5): Effect of weed control treatments on yield and its components of cotton in 2016 and 2017 seasons

Treatments	2016 season			2017 season		
	Seed cotton yield (k/fed)	Lint yield (k/fed)	Boll weight (g)	Seed cotton yield (k/fed)	Lint yield (k/fed)	Boll weight (g)
Butralin (T1)	1.337	0.391	1.7	2.280	0.709	1.7
Prometryn (T2)	1.959	0.619	2.1	4.661	1.532	2.5
Pendimethalin (T3)	1.669	0.488	2.0	1.795	0.526	1.6
Butralin + fluazifop-p-butyl (T4)	1.557	0.464	1.9	2.046	0.609	1.6
Prometryn + fluazifop-p-butyl (T5)	2.104	0.670	2.2	2.513	0.785	1.9
Pendimethalin + fluazifop-p-butyl (T6)	1.836	0.577	2.1	2.344	0.729	1.7
Butralin + oxyflurofen (T7)	2.826	0.908	2.3	3.560	1.157	2.4
Prometryn + oxyflurofen (T8)	3.346	1.110	2.5	3.502	1.107	2.4
Pendimethalin + oxyflurofen (T9)	3.001	0.970	2.4	2.883	0.902	2.1
Prometryn + pendimethalin (T10)	4.336	1.439	2.6	5.418	1.796	2.6
Hand hoeing (T11)	4.578	1.557	2.7	5.444	1.915	2.7
Untreated (control) (T12)	1.080	0.310	1.6	1.203	0.356	1.6
LSD 0.05	**0.580**	**0.180**	**0.1**	**0.340**	**0.110**	**0.17**

Fig. (4): Effect of weed control treatments on yield and its components of cotton in 2016 and 2017 seasons



3. Fiber properties:

The effect of weed control treatments on fiber properties in 2016 and 2107 seasons is presented in Tables (6). Weed control treatments effected significantly on fiber fineness (F.F), fiber strength (F.S), upper half mean (U.H.M) and uniformity ratio (U.R) in 2016 and 2017 season.

In 2016 season, the highest values were obtained from the application of T11 T10 and T8 gave fiber fineness (F.F), fiber strength (F.S), upper half mean (U.H.M) and uniformity ratio (U.R) by (3.82, 3.73 and 3.71), (8.61, 8.55 and 8.50), (27.60, 27.20 and 26.32) and (76.02, 75.17 and 74.25), respectively, as compared with un-weeded treatment. In 2017 season, the highest values were obtained from using T11, T10 gave fiber fineness (F.F), fiber strength (F.S), Upper half mean (U.H.M) and uniformity ratio (U.R) by (4.25 and 4.15), (8.71 and 8.44), (30.67 and 30.22) and (84.47 and 83.52), respectively, as compared with un-weeded treatment. These results are in

agreement those obtained by **Farid *et al.* (2000); Balasubramanian and Sankaran (2001) and Ali *et al.* (2013).**

Table (6): Effect of weed control treatments on fiber properties of cotton in 2016 and 2017 seasons

Treatments	2016 season				2017 season			
	F.F	F.S	U.H.M.	U.R	F.F	F.S	U.H.M.	U.R
Butralin (T1)	3.10	7.98	25.47	70.83	3.67	8.11	28.80	81.47
Prometryn (T2)	3.35	8.30	25.92	72.42	4.12	8.30	29.25	82.50
Pendimethalin (T3)	3.30	8.07	25.49	72.18	3.45	7.87	28.30	80.37
Butralin + fluazifop-p-butyl (T4)	3.30	8.01	25.49	71.49	3.57	7.99	28.32	81.12
Prometryn + fluazifop-p-butyl (T5)	3.39	8.30	26.07	73.64	3.65	8.01	28.77	81.35
Pendimethalin + fluazifop-p-butyl (T6)	3.35	8.19	25.89	72.38	3.61	8.01	28.32	81.20
Butralin + oxyflurofen (T7)	3.55	8.37	26.07	73.75	4.02	8.19	29.20	82.10
Prometryn + oxyflurofen (T8)	3.71	8.50	26.32	74.25	3.95	8.15	28.97	81.95
Pendimethalin + oxyflurofen (T9)	3.62	8.43	26.28	73.89	3.77	8.12	28.97	81.82
Prometryn + pendimethalin (T10)	3.73	8.55	27.20	75.17	4.15	8.44	30.22	83.52
Hand hoeing (T11)	3.82	8.61	27.60	76.02	4.25	8.71	30.67	84.47
Untreated (control) (T12)	3.08	7.62	25.29	70.54	3.42	7.65	28.10	80.32
LSD 0.05	**0.25**	**0.31**	**1.14**	**1.34**	**0.26**	**0.81**	**1.27**	**1.45**

REFERENCES

Ali, H.; S.A. Abid, S. Ahmad, N. Sarwar, M. Arooj, A. Mahmood and A.N. Shahzad (2013). Impact of integrated weed management on flat-sown cotton (*Gossypium hirsutum* L.). The J. of Animal & Plant Sci., 23(4): 1185-1192.

Asif, T.; K. Abdul and A. Ahsan (2014). Conventional and innovative approaches for the management of genus *Euphorbia* weeds: an insight. Pak. J. of Weed Sci. Res., 20(4):449-464.

Awad, T. M. and T.A. Hassan (1980). Chemical control of cotton weeds in Wadi Zabid, Y.A.R. Res. Bulletin, Fac. of Agric. Ain Shams Univer., (1304):12.

Balasubramanian, K. and S. Sankaran (2001). Influence of herbicides and tillage on the quality characters of cotton. Indian Agriculturist; 45(3/4):253-260.

Barakova, T. and G. Delchev (2016). Selectivity and stability of vegetation-applied herbicides in cotton (*Gossypium hirsutum* L.). Agri. Sci. and Tech., 8(2):121-126.

Dilbaugh, M., N.A. Muhammad, I. Raza and M.A. Mian (2009). Growth and development of cotton (*Gossypium hirsutum* L.) as affected by different methods of pendimethalin application. Pak. J. of Weed Sci. Res., 15(1):11-17.

Farid, S.; M.I. Gill; S.Z. Hussain and M. Anwar (2000). Evaluation of Stomp-330E pre-emergence herbicide for weed control in cotton planted on bed and furrow. Sarhad J. of Agric., 16(1):19-23.

Khan, N. U. and S.U. Khan (2003). Integrated weed management in upland cotton. Pak. J. of Weed Sci. Res., 9(3/4):185-192.

Khan, N.U., S.U. Khan, G. Hassan, I.H. Shah and Q. Nawaz (2001). Studies on weed control in cotton (*G. hirsutum* L.). Online J. Biol. Sci., 1(3): 143-145.

Khan, U.Q. (2003). Monitoring the growth and development of cotton plants using main stem node counts. Asian, J. of Plants Sci. Pak., 2(8): 593 – 596.

Mahar, G.M.; F.C. Oad, U.A. Buriro and G.S. Solangi (2007). Effect of post-emergence herbicides on the growth and yield of up-land cotton. Asian J. of Plant Sci., 6(8):1282-1286.

Maqbool, M., M.A. Tanveer, A. Abbas and R. Ahmed (2001). Effect of sowing methods and herbicides on weeds and yield of cotton (*Gossypium hirsutum* L.). Pak. J. Bot., 33(4): 383-387.

Muhammad, D.; M.N.Afzal; I. Raza and M.A. Mian (2009). Growth and development of cotton (*Gossypium hirsutum* L.) as affected by different methods of pendimethalin application. Pak. J. of Weed Sci. Res., 15(1):11-17.

Nadeem, M.A.; M. Idrees; M. Ayub; A. Tanveer and K. Mmubeen (2013). Effect of different weed control practices and sowing methods on weeds and yield of cotton. Pak. J. Bot., 45(4): 1321-1328.

Oad, F.C.; M.H. Siddiqui, U.A. Buriro and G.S. Solangi (2007). Weed management practices in cotton crop. Asian J. of Plant Sci., 6(2): 344-348.

Richardson, R.J.; H.P. Wilson and T.E. Hines (2007). Preemergence herbicides followed by trifloxysulfuron post-emergence in cotton. Weed Technol., 21(1):1-6.

Shivashankar; C.A.S.; N. Ananda; D. Krishnamurthy and Mahadevswamy (2017). Studies on weed management practices in irrigated Bt-cotton (*Gossypium hirsutum* L.). J. of farm Sci., 30(2):283-284.

Snedecor, G.W. and W.G. Cochran (1981). Statistical Methods. Seventh Ed. Iowa State Univ. Press, Ames, Iowa, USA.

Tariq, M.; M.N. Afzal; M. Ahmad; A. Qayyum and M.A. Khan (2018). Performance of per and post-emergence herbicides for weed contol in cotton (*Gossypium hirsutum* L.). Pak. J. Weed Sci. Res., 24(2): 147-154.

Tunio, S. D.; Ajmal; M.M. Jiskani and G.M. Tunio (2003). Effect of weed management practices on weeds and cotton yield. Pak. J. of Agric., Agric. Engineering, Veterinary Sci., 19(1):7-13.

تأثير بعض معاملات مبيدات الحشائش على انتاجية القطن المصرى بمصر العليا

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**** المعمل المركزى لبحوث الحشائش – مركز البحوث الزراعية – الجيزة – مصر.**

أجريت تجربتان حقليتان فى الموسم الصيفى لعامى 2016 و 2017 بمحطة البحوث الزراعية بشندويل محافظة سوهاج بهدف دراسة تأثير بعض معاملات مكافحة الحشائش على إنتاجية القطن المصرى بمصر العليا باستخدام الصنف جيزة 90 واشتملت التجربة على اثنتى عشر معاملة (بيوترالين, برومترين, بنديميثالين, بيوترالين متبوعا بـ فلوزيفوب- بيوتيل, برومترلين متبوعا بـ فلوزيفوب- بيوتيل, بنديميثالين متبوعا بـ فلوزيفوب- بيوتيل, بيوترالين متبوعا بـ أوكسى فلورالين, برومترلين متبوعا بـ أوكسى فلورالين, بنديميثالين متبوعا بـ أوكسى فلورالين, برومترلين متبوعا ب بنديميثالين, العزيق ثلاث مرات 18, 30, 45 يوم من الزراعة و بدون معاملة) ووزعت المعاملات عشوائيا في تصميم القطاعات الكاملة العشوائية في أربعة مكررات في كلا الموسمين.

وقد إتصح من النتائج ما يلى:

1) الوزن الجاف للحشائش بعد 75 يوم من الزراعة:-

أظهرت النتائج أن معاملات مكافحة الحشائش أثرت معنويا على الحشائش الحولية ضيقة وعريضة الأوراق والكلية (جرام/م^2) عند 75 يوم من الزراعة فى كلا الموسمين. فى الموسم الاول أعطى استخدام برومترلين متبوعا بـ فلوزيفوب- بيوتيل وفى الموسم الثانى أعطى استخدام العزيق ثلاث مرات 18, 30, 45 يوم من الزراعة أفضل النتائج فى الوزن الجاف للحشائش الضيقة وأعطى استخدام العزيق ثلاث مرات 18, 30, 45 يوم من الزراعة و استخدام برومترلين متبوعا ب بنديميثالين أفضل النتائج فى الوزن الجاف للحشائش العريضة والكلية مقارنة بمعاملة الكنترول فى كلا الموسمين.

2) **صفات النمو والمحصول:-**

أوضحت النتائج أن معاملات مكافحة الحشائش أثرت معنويا على صفات النمو فى كلا الموسمين. أعطى استخدام العزيق ثلاث مرات 18, 30, 45 يوم من الزراعة واستخدام برومترلين متبوعا ب بنديميثالين أفضل النتائج فى صفات النمو مقارنة بمعاملة الكنترول فى كلا الموسمين. أظهرت النتائج أن معاملات مكافحة الحشائش أثرت معنويا على المحصول ومكوناته فى كلا الموسمين. أعطى استخدام العزيق ثلاث مرات 18, 30, 45 يوم من الزراعة واستخدام برومترلين متبوعا ب بنديميثالين أفضل النتائج فى المحصول ومكوناته مقارنة بمعاملة الكنترول فى كلا الموسمين. لم تتأثر صفات الجودة ومنها النعومة, المتانة, الطول والإنتظام معنويا بمعاملات مكافحة الحشائش فى كلا الموسمين. تحت ظروف هذه الدراسة يمكن التوصية باستخدام العزيق ثلاث مرات 18, 30, 45 يوم من الزراعة أو استخدام برومترلين بمعدل 1.5 لتر/ف بعد الزراعة وقبل الرى متبوعا بـ بنديمثالين بمعدل 1.7 لتر/ف بعد الزراعة وقبل الرى للحصول على أعلى نسبة مكافحة للحشائش الكلية (الضيقة والعريضة الأوراق) والحصول على أعلى محصول للقطن الزهر (قنطار/فدان).