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### Effect of Weed Control Treatments on some Maize Hybrids and its Associated Weeds

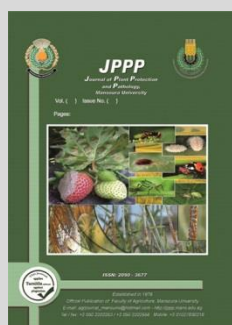
May H. M. Elattar<sup>1</sup> and S. R. Nagib<sup>2\*</sup>

<sup>1</sup> Weed Res. Central Lab., Agric. Res. Center, Giza, Egypt.

<sup>2</sup> Agron. Dept, Fac. Agric, Minia Univ. Minia, Egypt.



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#### ABSTRACT

Two field trials were conducted in 2018 and 2019 seasons at Mallawy Agric. Res., Station, El-Minia Governorate, Egypt, to study the effect of fifteen weed control treatments, (Maister power at 750, 500 and 250 cm<sup>3</sup>/fed alone, Maister power at 750, 500 and 250 cm<sup>3</sup> /fed. tank mixed with Divest at 500 cm<sup>3</sup> /fed. Equib at 1125, 750 and 375 cm<sup>3</sup> /fed. alone, Equib at 1125,750 and 375 cm<sup>3</sup>/fed tank mixed with Divest at 500 cm<sup>3</sup>/fed. alone as well as hand hoeing twice and unweeded (check) on weeds, yield and its components of three maize hybrids (SC 168, SC 131 and TC 324). The results indicated that: Maize hybrids exhibited a significant effect on dry weight of grassy and total annual weeds in both seasons. SC 168 surpassed the other tested hybrids in all maize grain yield and its components. Except 100- grain weight. Weed control treatments decreased significantly the dry weight of grassy, broad-leaved and total annual weeds on both seasons, and had a significant effect on maize yield and its component in both seasons. Grassy, broad leaved and total annual weeds differed significantly in first season only. Maize ear diameter, no. rows/ear in both seasons and ear length in the second season only were significantly affected by the interaction between maize hybrids and weed control treatments. Grain yield ardab/fed. were positively and highly significantly correlated with maize yield and its components and negatively and highly significantly correlated with weed characters in both seasons.

**Keywords:** Maize hybrid, weed control, post-emergence, yield, yield components

#### INTRODUCTION

Maize (*Zea mays* L.) is ranked as the third of the most important cereal crops in the world which surpassed by wheat and rice. In Egypt, Maize is essential for livestock and human consumption as an available source of carbohydrate, oil and slightly for protein. Weeds are considered to be the most important factor which decrease maize productivity as weeds compete for space, water, light and nutrients with main crop and thereby decreasing crop yield and increasing production cost Shah *et al.*, (2003), extreme weeds growth in corn field leads to 66-80% reduction in crop yield. Ismail *et al.*, (2016), showed that increasing common cocklebur density, decreased maize grain yield and yield components such as plant height, ear length, ear weight, grains number ear<sup>-1</sup>, 100- grain weight and grain yield of maize (ardab/fed.). Abouziena *et al.*, (2007), found that application of two hand hoeing gave the best control of total weeds and increased maize yield up to 74.5% over the control. Darkwa *et al.*, (2001), maize weeds comprise diverse plant species from grasses to broadleaf weeds and sedges and cause substantial yield losses (18-85%). Ghanizadeh *et al.* (2014), maize crop is very often characterized by a complex plurispecific weed flora, composed of grass and broadleaved weeds, Pannacci and Tei (2014), thus, in maize production, it is very necessary to take into account weed control which causes to increase maize grain yield. So, herbicide application offers effective and economical weed control and increase crop yield Noor *et al.*, (2011), despite the environmental and some management problems with herbicides, they remain one of the most popular and practical methods in weed control.

The reduction in maize productivity due to weed competition varied according to maize cultivar sowing. Use of aggressive cultivars can be effective cultural practice for weed growth suppression. Hucl (1998), indicated that the less competitive genotypes suffered a 7-9% greater yield loss than that of the more competitive genotypes. On the other hand, Cardina (1995), reported that more competitive cultivars are not necessarily higher yielding. Abouziena *et al.*, (2013), found that the broad-leaved weeds were more sensitive than the narrow leaved weeds to the variation in the cultivars growth habit, where SC164 cv plots had significant lower broad leaved weeds dry weight by 12.6 and 18.3% than that of SC166 cv at 8 and 12WAS, respectively. Cultivar SC164 significant had more values of plant height and ear length than SC166 cv, while cultivar SC166 significant surpassed the other one in the values of ear diameter and weight, grain weight/ear, grain index and grain yields. Ismail *et al.*, (2016), showed that SC173 was high competitive than SC 166 to common cocklebur, reduce its dry weight and gave highest yield and yield component of maize.

Many results reported herbicides usage for weed control, improved growth and maximize yield of maize Zargar *et al.*, (2017) showed that herbicide weed control particularly during critical period of crop-weed competition is an important alternative to manual weeding because it is cheaper, faster and gives better weed control Jagadish and Prashant (2016), using herbicides for weed control may reduce yield losses, and reduce weed population density Mehmeti *et al.*, (2012), nowadays, post-emergence herbicides

\* Corresponding author.

E-mail address: [sami.nagib@mu.edu.eg](mailto:sami.nagib@mu.edu.eg)

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can be used as alternative to pre-emergence and soil acting herbicides which causing environmental pollution. Maister power (formasulfuron sodium + iodosulfuron methyl-sodium + thiencazone-methyl 4.53 % OD) herbicide is a new post-emergence herbicide used at rate of 500 cm<sup>3</sup>/fed. for weed control on maize.

Foramsulfuron showed a good crop selectivity without negative effect on maize yield. Zaremohazabieh and Ghadiri (2011), found that maximum weed biomass reduction and the highest maize grain yield were obtained with foramsulfuron herbicide. Foramsulfuron is a sulfonylurea that exerts its herbicidal activity by inhibiting acetolactate synthase also known as acetohydroxy acid synthase and provides control of grass, perennial and some broad-leaved weeds with a good selectivity to the maize. Richard *et al.*, (2005), showed that all the herbicides evaluated did not reduce corn yields as compared to the untreated controls. However, not all were effective for control of weeds which emerged in our study. Nicosulfuron plus rimsulfuron, or foramsulfuron in combination with dicamba, dicamba plus atrazine, and diflufenopyr plus dicamba were the best treatments for weed control and corn yield. Stefanovic *et al.*, (2010), investigated the selectivity of herbicides isoxaflutole, nicosulfuron, foramsulfuron, dicamba + rimsulfuron, mesotrione and thifensulfuron-methyl. They were applied in 2-3 leaf of maize. Phytotoxic effect of herbicides on the grain yield of maize is assessed by a 9-point scale of EWRS (European Weed Research Society). maize hybrids show different sensitivity to the applied herbicides. The lowest is the selectivity of herbicides rimsulfuron and thifensulfuron-methyl, in which the lowest values of maize grain yield were registered. Waligora *et al.*, (2008), found that the highest maize yield of cobs is obtained after treatment with the combination Meister (formasulfuron + iodosulfuron), Aminopielik Gold (fluroxypyr + 2.4-D) and Ivanovic *et al.*, (1998), reported that foliar sulfonylurea herbicides rimsulfuron, primsulfuron-methyl, prosulfuron + primsulfuron-methyl and nicosulfuron have a retarding effect - increased grain yield, but decreased plant height. Two hands hoeing produced the maximum of ear length, weight of kernels plant<sup>1</sup>, while, applying of metribuzin gave the highest of grain maize yield. Tagour and Mosaad (2017), showed that Nicosulfuron plus rimsulfuron, or foramsulfuron in combination with dicamba, dicamba plus atrazine, and diflufenopyr plus dicamba were the best treatments for weed control and corn yield without any reduction in the grain yield. Mobarak and Eid (2017), found that Maister power at rate of 500 cm<sup>3</sup>/fed. reduced grassy, broad-leaved and total annual weeds by 89.8, 92.1 and 91.7% in 2014 season and 86.0, 90.2 and 89.3% in 2015 season. Sepahvand *et al.*, (2014), found that application of Equip herbicide + hand hoeing once gave the highest grain yield (6758 kg/ha). However, Ali *et al.*, (2011), recorded that hand weeded and chemical weed control treatments gave the highest 1000-grain weight, grain and biological yields of maize. Abana and Godwin (2015), indicated that application of herbicides significantly increased the vegetative and yield attributes of maize than of un-weeded plots. Also, similar results that obtained from all weed control practices decreased the weed density over weedy check have been cleared by Arnold *et al.*, (2005) and James *et al.*, (2006).

For these reasons, the aim of this investigation was to optimize the efficacy of Maister power and Equip by tank mixing with Divest against weeds associated with maize crop, maize yield and its components.

## MATERIALS AND METHODS

Two field experiments were conducted at Mallawy Agric. Res., station, (latitude of 28° N, longitude of 30° E and altitude of 49 m above sea level), Agricultural Research Center, El-Minia Governorate, Middle Egypt, during two successive growing summer seasons 2018 and 2019. To study the effect of some weed control treatments on yield and yield components of some maize hybrids and its associated weeds. A randomized complete block design (RCBD) was used, in a split plot arrangement and replicated four times. Each experiment included combinations of forty-five treatments. The preceding winter crop was wheat in both seasons. The soils of this study were silt clay loam texture with 7.99 and 8.14 sand, 53.32 and 54.35 silt and 36.69 and 37.51 clay, pH were 8.01 and 8.14 and organic matter (%) were 1.14 and 1.18 during 2018 and 2019 seasons, respectively. The main plots were devoted three maize hybrids, while, fifteen weed control treatments were assigned in sub-plots as follows:

**A. Maize hybrids (main plots):** SC 168, SC 131 and TC 324

**B. Weed control treatments (sub-plots):**

- T1. Formasulfuron sodium + iodosulfuron methyl-sodium+ thiencazone-methyl 4.53 % OD) known commercially as Maister power at rate of 750 cm<sup>3</sup>/fed. applied at 2-6 maize leaves stage.
- T2. Maister power at rate of 500 cm<sup>3</sup>/fed.
- T3. Maister power at rate of 250 cm<sup>3</sup>/fed.
- T4. Maister power at rate of 750 cm<sup>3</sup>/fed. tank mixed with dicamba48% known commercially as Divest 4 S 48% at rate of 100 cm<sup>3</sup>/fed.
- T5. Maister power at rate of 500 cm<sup>3</sup>/fed. tank mixed with Divest 500cm<sup>3</sup>/fed.
- T6. Maister power at rate of 250 cm<sup>3</sup>/fed. tank mixed with Divest 500cm<sup>3</sup>/fed.
- T7. Formasulfuron 2.25% OD known commercially as Equip at rate of 1125 cm<sup>3</sup>/fed.
- T8. Equip 22.5% OD at rate of 750 cm<sup>3</sup>/fed.
- T9. Equip 22.5% OD at rate of 375 cm<sup>3</sup>/fed.
- T10. Equip 22.5% OD at rate of 1125 cm<sup>3</sup>/fed. + Divest 500cm<sup>3</sup>/fed.
- T11. Equip 22.5% OD at rate of 750 cm<sup>3</sup>/fed. + Divest 500cm<sup>3</sup>/fed.
- T12. Equip 22.5% OD at rate of 375 cm<sup>3</sup>/fed. + Divest 500cm<sup>3</sup>/fed.
- T13. Divest 500cm<sup>3</sup>/fed.
- T14. Hand hoeing twice.
- T15. Unweeded check.

Plot area was 10.5 m<sup>2</sup> (3.0 m length 3.5 m width). Maize seeding rate was 10 kg/ fed. in hills at 25 cm distance and ridges of 70 cm apart in the 2<sup>nd</sup> week of June in both seasons. Herbicide treatments were sprayed post-emergence after 15 days after maize sowing. A knapsack sprayer (battery sprayer with constant pressure of 5 bar) equipped with one flat fan nozzle was used. The normal agricultural practices for growing maize (i.e., fertilization, irrigation, pest and diseases control) were done as recommended by the Ministry of Agriculture. During growing seasons, the following data were recorded:

**A- Weed assessment:**

Weeds were hand pulled from one square meter chosen randomly from each plot at 45 days after sowing and weed species identified according to Tackholm (1974), Weeds were air-dried for seven days and then were oven-dried at 70 C° for 24

hours until a constant weight. The dry weight of annual broad-leaved, grassy and total annual weeds (g/m<sup>2</sup>) was estimated.

**B- Yield and yield components:**

At harvest, a sample of ten maize plants were randomly taken from central area of each plot to study: plant height (cm), ear length (cm), ear diameter (cm), no. of rows ear<sup>-1</sup>, number of grain ear<sup>-1</sup>, ear weight (g), grains weight ear<sup>-1</sup> (g) and 100- grain weight (g). In addition, grain yield (ardab/fed.) was estimated from each whole plot.

Data were subjected to analysis of variance as described by Gomez and Gomez (1984). Using MSTAT-C software (1989) Least significant difference (LSD) test at 0.05 level was used to compare between means of treatments.

**RESULTS AND DISCUSSION**

**1-Effect of maize hybrids on weeds and maize characters.**

**Effect on weeds characters:**

Weed assessment show that, existed weed species in the experimental site in both seasons were *Xanthium strumarium* L., *Euphorbia geniculata* L., *Corchorus olitorius* L. and *Portulaca oleracea* L. as annual broad-leaved weeds. *Echinochola colona* L. and *Brachiaria reptans* L. as annual grassy weeds.

Data in Table (1) disclosed that maize hybrids had a significant, highly significant and no significant effect on dry weight of total annual, grassy and broad-leaved weeds in both seasons, respectively.

TC 324 and SC 168 reduced dry weight of grassy weeds by (26.8, 29.3in the first season and 16.3 , 16.5% in the second season) and total annual weeds by (15.7, 20.2 in the first season and 11.9, 10.5% in the second season), respectively, as compared to SC131. This may be due to the highly competitive ability of these hybrids which may be due to plant height, vigorous vegetative growth or the greatest leaf area. These results are in line with those obtained by Abouzienna *et al.*, (2013); Ismail *et al.*, (2016).

**Table 2. Effect of Maize hybrids on maize yield and its components in 2018 and 2019 seasons.**

Hybrids	Plant height (cm)	Ear length (cm)	Ear diameter (cm)	No. of rows /ear	No. of grains / ear	Ear weight (g)	Grain weight /ear(g)	100-grain weight (g)	Grain yield (ardab /fed.)
2018 season									
SC 168	250.87	20.36	4.32	14.62	576.15	231.00	157.05	30.44	22.09
SC 131	237.07	20.14	3.89	13.40	534.57	212.10	144.90	34.50	20.89
TC 324	271.93	19.30	3.86	12.95	493.89	201.22	137.44	34.29	20.16
F-test	**	**	**	**	**	**	**	**	**
LSD at 0.05	7.96	0.41	0.05	0.12	26.64	8.37	6.97	1.56	0.63
2019 season									
SC 168	258.07	20.83	4.38	13.89	533.39	243.25	171.32	32.73	22.17
SC 131	243.64	20.63	3.88	12.46	487.13	221.25	154.51	36.07	21.39
TC 324	280.22	19.41	3.76	11.84	434.59	207.99	132.47	32.90	18.89
F-test	**	**	**	**	**	**	**	**	**
LSD at 0.05	2.74	0.38	0.11	0.12	10.05	7.09	13.59	1.03	1.34

\*, \*\* and N.S. indicate statistically significant at 0.05 and 0.01 levels and insignificance of differences, respectively.

**2. Effect of weed control treatments on weeds and maize characters.**

**Effect on weeds characters:**

Data in table (3) show the influence of weed control treatments on dry weight of grassy, broad-leaved and total annual weeds g/m<sup>2</sup> in 2018 and 2019 seasons. Weed control treatments differed highly significantly on dry weight of grassy, broad-leaved and total annual weeds on both seasons. Maister Power 750 cm<sup>3</sup>/fed. tank mixed Divest 500 cm<sup>3</sup>/fed., Maister Power 500 cm<sup>3</sup>/fed. tank mixed Divest 500 cm<sup>3</sup>/fed., Equip1125 cm<sup>3</sup>/fed. tank mixed with Divest 500 cm<sup>3</sup>/fed., Equip 750 cm<sup>3</sup>/fed. tank mixed with Divest 500 cm<sup>3</sup>/fed. Maister power at 750 cm<sup>3</sup>/fed. alone and Equip at 1125 cm<sup>3</sup>/fed. alone gave the highest

**Table 1. Effect of Maize hybrids on dry weight of grassy, broad-leaved, and total annual weeds g/m<sup>2</sup> in 2018 and 2019 seasons.**

Hybrids	Grassy weeds (g/m <sup>2</sup> )		Broad leaved weeds (g/m <sup>2</sup> )		Total annual weeds (g/m <sup>2</sup> )	
	2018	2019	2018	2019	2018	2019
SC 168	52.93	56.44	65.53	77.07	118.47	133.71
SC 131	63.24	67.60	71.27	81.62	134.51	149.22
TC 324	46.29	47.76	67.11	71.38	113.4	119.14
F-test	**	**	NS	NS	*	*
LSD at 0.05	2.92	5.54	-	-	14.22	8.04

\*, \*\* and N.S. indicate statistically significant at 0.05 and 0.01 levels and insignificance of differences, respectively.

**Effect on maize characters:**

Data presented in table (2) show the effect of maize hybrids on plant height, yield and its components. Maize hybrids exhibited highly significant effect on their yield and its components in both seasons. SC 168 Surpassed the other tested hybrids and increased ear length (by 5. 49 and 7.36%), ear diameter (by 11.92 and 16.06%), no. rows/ear (by 12.9 and 17.31%) no. grains /ear (by 16.66 and 22.73%), ear weight (by 14.8 and 16.95%), grain weigh /ear (by 14. 27 and29.33%) and grain yield/fed. by (9.57 and 17.36%) in the first and second season, respectively, as compared with TC 324. Meanwhile, SC131 gave the greatest 100- grain weight of 43.50 and 36.07(g) in the first and second seasons, respectively. Whereas, TC324 outyielded the tallest plants of 271.93 and 280.22 cm in the first and second seasons, respectively. On contrary the lowest values for most previous traits in both seasons were obtained by TC324 hybrid. This may be due to differences in their genetic makeup and their reaction to the environments condition prevailing during it growth. These results agree with those obtained by El-Gizawy and Salem (2010) and Tagour and Mosaad (2017). On the other hand, Cardina (1995) reported that more competitive cultivars are not necessarily higher yielding.

reduction on grassy, broad-leaved and total annual weed in both seasons without any significant difference between these treatment. These treatments decreased the dry weight of grassy weeds by (92.7, 90.6, 94.6, 91.5, 92.0 and 93.6%), broad -leaved weeds by (97.7, 96.2, 95.3, 93.2, 96.1, and 95.4%) and total annual weeds by (95.8, 94.1, 95.0, 92.6, 94.6 and 91.3%) respectively, in the first season as compared with unweeded (check). Whereas, in the second season the reduction percentages were (95.9, 92.4, 93.5, 92.4, 95.2 and 94.3% )for grassy weeds, (98.0, 97.2, 97.6, 96.3, 96.6 and 95.4%) for broad-leaved weeds and( 97.2, 95.5, 96.2, 94.9, 96.1 and 95.0%) for total annual weeds in the second season respectively, as compared to unweeded.

**Table 3. Effect of weed control treatments on dry weight of grassy, broad-leaved and total annual weeds g/m<sup>2</sup> in 2018 and 2019 seasons.**

Weed control treatments	Rate cm <sup>3</sup> /fed	Grassy weeds (g/m <sup>2</sup> )		Broad leaved weeds (g/m <sup>2</sup> )		Total annual weeds (g/m <sup>2</sup> )	
		2018	2019	2018	2019	2018	2019
Maister Power	750	21.78	15.56	17.56	19.78	39.34	35.33
Maister Power	500	29.56	27.11	32.78	26.78	62.34	53.89
Maister Power	250	75.33	50.78	70.33	99.11	145.66	149.89
Maister Power + Divest	750 + 500	20.00	13.33	10.33	11.67	30.33	25.00
Maister Power + Divest	500 + 500	25.67	24.78	17.11	16.33	42.78	41.11
Maister Power + Divest	250 + 500	74.44	44.33	42.11	42.33	116.55	86.67
Equip	1125	17.56	18.56	45.56	26.89	63.12	45.45
Equip	750	25.11	28.67	60.33	36.44	85.44	65.11
Equip	375	59.33	61.44	84.33	119.00	143.67	180.44
Equip + Divest	1125 + 500	15.00	21.00	21.00	13.78	36.00	34.78
Equip + Divest	750 + 500	23.22	24.67	30.56	21.22	53.78	45.89
Equip + Divest	375 + 500	61.33	70.78	51.67	40.33	113.00	111.11
Divest	500	65.11	94.44	55.11	45.55	120.22	140.00
Hand Hoeing twice		25.44	40.11	30.56	50.11	56.00	90.22
Untreated		273.44	324.44	450.22	581.00	723.66	905.44
F-test		**	**	**	**	**	**
LSD at 0.05		13.41	18.28	11.51	25.40	21.6	28.33

\*, \*\* and N.S. indicate statistically significant at 0.05 and 0.01 levels and insignificance of differences, respectively.

No phytotoxic symptoms were observed on maize due to herbicidal treatments. These results may be due to the inhibition effect of weeded control treatments on weed growth and to the susceptibility of these main predominant weeds (*Xanthium strumarium*, *Portulaca oleracea* L *Euphorbia geniculata* and *Echinochola colona*) to Maister power, Equip and Divest herbicides. The effective influence

of weed control treatments on weed characters was noticed by Bunting *et al.*, (2005); Abouziena *et al.*, (2008); Tagour and Mosaad (2017) and Mobarak and Eid (2017)

**Effect on maize characteristics:**

Maize yield and its components had influenced highly significant by weed control treatments in both seasons as shown in Table (4).

**Table 4. Effect of weed control treatments on maize yield and its components in 2018 and 2019 seasons.**

Weed control treatments	Rate cm <sup>3</sup> /fed	Plant height (cm)	Ear length (cm)	Ear diameter (cm)	No. of rows/ear	No. of grains/ear	Ear weight (g)	Grain weight /ear(g)	100-grain weight (g)	Grain yield (ardab /fed.)
2018 season										
Maister Power	750	260.33	20.95	4.04	13.97	608.36	234.41	159.56	34.49	23.23
Maister Power	500	255.33	20.49	4.18	13.63	561.20	225.06	155.64	33.69	22.66
Maister Power	250	247.33	19.49	4.01	13.27	478.12	200.88	137.04	30.55	18.74
Maister Power + Divest	750 + 500	264.67	21.00	4.61	14.39	641.67	238.76	162.32	36.62	23.63
Maister Power + Divest	500 + 500	261.67	20.74	4.51	14.22	608.12	233.38	159.80	35.76	23.27
Maister Power + Divest	250 + 500	249.33	19.93	3.98	13.88	518.71	212.11	143.44	31.82	21.28
Equip	1125	255.33	20.31	3.99	13.72	533.12	223.71	152.33	33.40	22.18
Equip	750	250.00	20.01	3.78	13.26	498.63	217.23	146.16	32.30	21.28
Equip	375	245.00	19.06	3.53	12.82	435.26	194.69	131.40	30.82	17.97
Equip + Divest	1125 + 500	262.67	21.02	4.43	14.33	613.61	231.24	158.78	35.84	23.12
Equip + Divest	750 + 500	258.33	20.81	4.24	13.71	568.51	225.80	153.89	34.51	22.41
Equip + Divest	375 + 500	252.33	19.66	4.07	13.47	494.97	206.69	142.00	31.47	20.77
Divest	500	242.67	19.23	4.07	13.47	489.28	199.38	137.07	31.08	19.39
Hand Hoeing twice		261.33	21.20	4.30	14.14	607.80	232.02	158.29	33.67	23.05
Untreated		233.00	15.42	2.90	12.58	365.70	146.30	99.24	30.18	12.73
F-test		**	**	**	**	**	**	**	**	**
LSD at 0.05		10.13	1.20	0.27	0.33	54.47	14.43	11.15	2.90	1.64
2019										
Maister Power	750	268.11	21.37	4.12	13.11	561.53	249.21	170.76	35.83	24.23
Maister Power	500	262.80	20.80	4.20	12.72	516.47	235.97	161.36	34.89	22.23
Maister Power	250	254.44	19.38	3.63	12.31	432.44	207.51	139.00	31.57	17.83
Maister Power + Divest	750 + 500	272.44	21.84	4.68	13.61	595.90	254.26	173.44	37.89	25.85
Maister Power + Divest	500 + 500	269.44	21.22	4.59	13.42	561.09	245.66	170.22	36.69	24.58
Maister Power + Divest	250 + 500	256.56	20.17	3.96	13.01	475.36	218.27	153.47	32.90	20.24
Equip	1125	262.78	20.88	4.01	12.46	470.63	233.98	157.50	33.50	20.87
Equip	750	257.33	21.34	3.73	12.29	448.02	227.93	150.33	33.34	19.57
Equip	375	251.89	19.13	3.48	11.78	382.07	196.13	131.78	31.38	16.55
Equip + Divest	1125 + 500	270.44	21.47	4.50	13.45	561.24	245.29	170.40	37.27	24.59
Equip + Divest	750 + 500	265.89	21.19	4.28	12.81	502.72	239.04	164.21	35.04	22.41
Equip + Divest	375 + 500	259.67	19.84	4.08	12.52	443.77	210.68	146.26	32.17	18.83
Divest	500	249.56	19.36	3.72	12.52	438.99	206.22	135.71	32.17	18.04
Hand Hoeing twice		269.00	21.54	4.34	13.33	556.89	247.06	169.36	34.71	23.66
Untreated		239.33	14.83	2.73	11.48	328.46	145.22	97.72	29.13	12.78
F-test		**	**	**	**	**	**	**	**	**
LSD at 0.05		7.85	0.45	0.24	0.27	32.64	13.99	9.52	1.78	1.32

\*, \*\* and N.S. indicate statistically significant at 0.05 and 0.01 levels and insignificance of differences, respectively.

Maister Power 750 cm<sup>3</sup>/fed. tank mixed Divest 500 cm<sup>3</sup>/fed, Maister Power 500 cm<sup>3</sup>/fed. tank mixed Divest 500 cm<sup>3</sup>/fed., Maister Power 750 cm<sup>3</sup>/fed. alone, Equip 1125 cm<sup>3</sup>/fed.

Maister Power 500 cm<sup>3</sup>/fed. alone, Equip 750 cm<sup>3</sup>/fed. tank mixed with Divest 500 cm<sup>3</sup>/fed. gave the highest increments in

Maize characteristics. These treatments increased plant height by (13.6, 12.3, 11.7, 12.7, 12.2, 9.6 and 10.9%), maize ear length by (36.2, 34.5, 35.9, 36.3, 37.5, 32.9 and 35.0%), maize ear diameter by (59.0, 55.5, 46.2, 52.8, 48.3, 44.1 and 40.3%), no. rows/ear by (14.3, 13.0, 11.0, 13.9, 12.4, 8.3 and 9.0%), no. of grain/ear by (75.5, 66.3, 66.4, 67.8, 66.2, 53.5 and 55.5%), ear weight by (63.2, 59.5, 60.2, 58.1, 58.6, 53.8, and 54.3%), grain weight/ear by (63.6, 61.0, 60.8, 60.0, 59.5, 56.8 and 55.1%), 100-grain weight by (21.3, 18.5, 14.3, 18.8, 11.6, 11.6 and 14.3%). Whereas, the increment percentages of the grain yield were (85.5, 82.8, 82.5, 81.6, 81.1, 78.0 and 76.0%) in the first season, respectively. Meanwhile, Maister Power 750 cm<sup>3</sup>/fed. tank mixed Divest 500 cm<sup>3</sup>/fed., Equip1 125 cm<sup>3</sup>/fed. tank mixed with Divest 500 cm<sup>3</sup>/fed., Maister Power 500 cm<sup>3</sup>/fed. tank mixed Divest 500 cm<sup>3</sup>/fed. and hand hoeing twice gave the best maize yield and its component in the second season. These treatments increased plant height by (16.9, 16.1, 15.6 and 15.5%), maize ear

length by (47.3, 44.8, 43.1 and 45.2%), maize ear diameter by (71.4, 64.8, 68.1 and 59.0%), no. rows/ear by (18.6, 17.3, 16.9 and 16.1%), no. of grain/ear by (81.4, 70.9, 70.8, and 69.0%), ear weight by (75.1, 68.9, 69.2 and 70.1%), grain weight/ear by (77.5, 74.4, 74.2 and 69.5%), 100-grain weight by (30.1, 27.9, 26.9 and 19.2%). Whereas, the increment percentages of the grain yield were (102.3, 92.4, 92.3 and 85.1%), respectively over the control treatment in the second season. These results are coincided with those reported by Ivanovic *et al.*, (1998); Waligora *et al.*, (2008); Stefanovic *et al.*, (2010); Ali *et al.*, (2011); Sepahvand *et al.*, (2014) and Mobarak and Eid (2017).

**3.Effect of interaction between maize hybrids and weed control treatments:**

**Effect on weeds characters:**

Data presented in Table (5) revealed that grassy, broad leaved and total annual weeds differed significantly in 2018 season only.

**Table 5. Effect of interaction between maize hybrids and weed control treatments on dry weight of grassy, broad-leaved and total annual weeds g/m<sup>2</sup> in 2018 and 2019 seasons.**

Hybrids	Weed control treatments	Rate cm <sup>3</sup> /fed	Grassy weeds (g/m <sup>2</sup> )		Broad leaved weeds (g/m <sup>2</sup> )		Total annual weeds (g/m <sup>2</sup> )	
			2018	2019	2018	2019	2018	2019
SC 168	Maister Power	750	20.00	14.33	15.67	18.00	35.67	32.33
	Maister Power	500	23.67	28.33	21.33	24.00	45.00	52.33
	Maister Power	250	95.33	48.33	67.67	101.33	163.00	149.66
	Maister Power + Divest	750 + 500	13.67	10.00	7.00	11.33	20.67	21.33
	Maister Power + Divest	500 + 500	17.33	21.33	14.00	17.00	31.33	38.33
	Maister Power + Divest	250 + 500	90.00	43.00	31.00	48.33	121.00	91.33
	Equip	1125	12.67	16.67	44.67	25.67	57.34	42.34
	Equip	750	17.00	30.00	58.33	33.33	75.33	63.33
	Equip	375	59.00	55.67	78.00	126.33	137.33	182.00
	Equip + Divest	1125 + 500	10.67	20.00	17.00	14.33	8867	34.33
	Equip + Divest	750+ 500	15.00	24.33	34.00	21.33	49.00	45.66
	Equip + Divest	375+ 500	64.00	67.00	43.67	41.67	107.67	108.67
	Divest	500	63.00	99.00	55.33	48.67	118.33	147.67
	Hand Hoeing twice		23.33	45.33	31.33	44.67	54.66	90.00
Untreated			269.33	326.33	464.00	580.00	733.33	906.33
SC 131	Maister Power	750	34.67	23.00	16.00	29.66	50.67	52.66
	Maister Power	500	47.00	34.33	44.33	35.00	91.33	69.33
	Maister Power	250	56.67	61.33	75.67	102.67	132.34	164.00
	Maister Power + Divest	750 + 500	36.67	23.33	7.33	14.00	44.00	37.33
	Maister Power + Divest	500 + 500	44.67	37.33	15.33	19.33	60.00	56.66
	Maister Power + Divest	250 + 500	55.00	48.33	51.67	27.00	106.67	75.33
	Equip	1125	30.67	22.33	38.67	35.33	69.33	57.66
	Equip	750	43.33	35.00	57.00	44.00	100.33	79.00
	Equip	375	67.67	64.67	73.33	131.67	141.00	196.33
	Equip + Divest	1125 + 500	24.67	31.67	23.00	14.67	47.67	46.33
	Equip + Divest	750+ 500	42.00	33.00	28.33	25.00	53.00	58.00
	Equip + Divest	375+ 500	64.00	76.33	56.33	31.67	120.33	108.00
	Divest	500	77.33	115.00	70.00	38.33	147.33	153.33
	Hand Hoeing twice		30.67	47.33	35.33	51.67	66.00	99.00
Untreated			293.67	361.00	476.67	624.33	770.33	985.33
TC 324	Maister Power	750	10.67	9.33	21.00	11.67	31.67	21.00
	Maister Power	500	18.00	18.67	32.67	21.33	50.67	40.00
	Maister Power	250	74.00	42.67	67.67	93.33	141.67	136.00
	Maister Power + Divest	750 + 500	9.67	6.67	16.67	9.67	26.34	16.33
	Maister Power + Divest	500 + 500	15.00	15.67	22.00	12.67	37.00	28.33
	Maister Power + Divest	250 + 500	78.33	41.67	43.67	51.67	122.00	93.33
	Equip	1125	9.33	16.67	53.33	19.67	62.66	36.33
	Equip	750	15.00	21.00	65.67	32.00	80.67	53.00
	Equip	375	51.33	64.00	101.67	99.00	153.00	163.00
	Equip + Divest	1125 + 500	9.67	11.33	23.00	12.33	32.67	23.36
	Equip + Divest	750+ 500	12.67	16.67	29.33	17.33	42.00	34.00
	Equip + Divest	375+ 500	56.00	69.00	55.00	47.67	111.00	116.67
	Divest	500	55.00	69.33	40.00	49.67	95.00	119.00
	Hand Hoeing twice		22.33	27.67	25.00	54.00	47.33	81.67
Untreated			257.33	286.00	410.00	538.6	667.33	824.60
F-test			**	NS	*	NS	*	NS
LSD at 0.05			22.2	-	25.15	-	35.72	-

\*, \*\* and N.S. indicate statistically significant at 0.05 and 0.01 levels and insignificance of differences, respectively.

The lowest weight of grassy weeds of 9.33 g/m<sup>2</sup> was obtained by TC324 with Equip at 1125 cm<sup>3</sup>/fed. followed by Equip at 1125 tank mixed with Divest at 500 cm<sup>3</sup>/fed. and Mister Power at 750 cm<sup>3</sup>/fed. tank mixed with Divest at 500 cm<sup>3</sup>/fed. with TC324 (9.67g/m<sup>2</sup>). Moreover, favorable grassy weeds weight of 6.67g/m<sup>2</sup> occurred by TC324 with Mister Power at 750 cm<sup>3</sup>/fed. tank mixed with Divest 500 cm<sup>3</sup>/fed. followed by TC324 × Mister Power at 750 cm<sup>3</sup>/fed. (9.33g/m<sup>2</sup>) with not significant differences in 2019 season. Meanwhile, the lowest broad leaved and total annual weeds of 7.00 and 20.67 g/m<sup>2</sup> were detected by the application of Mister Power at 750 cm<sup>3</sup>/fed. tank mixed with Divest at 500 cm<sup>3</sup>/fed. with SC168 in the 1<sup>st</sup> season. These results are in harmony with those obtained by Hucl (1998); Rapparini *et al.*, (2001) and Farhadi-Afshar *et al.*, (2009) and Zargar *et al.*, (2017). Meanwhile, Silva *et al.*, (2010) demonstrated that

there was no difference in the dry biomass above-ground part of the weeds in the plots of the evaluated cultivars.

**Effect on maize characters:**

Concerning, the effect of interaction between maize hybrids and weed control treatments on maize yield and its components in 2018 and 2019 seasons. It was concluded from Tables (6 and 7) that ear diameter, no. rows/ear in both seasons and ear length in the second season only were significantly affected by the interaction between maize hybrids and weed control treatments. Maister power at 750 cm<sup>3</sup>/fed. tank mixed with Divest at 500 cm<sup>3</sup>/fed. with maize hybrid SC 168 gave the highest values of ear diameter and no. of rows/ear (4.9 and 15.33) respectively in the first season, and ear length and no. of rows (22.97 and 14.73) in the Second season respectively. Whereas, Equip at 1125 cm<sup>3</sup>/fed. tank mixed with Divest at 500 cm<sup>3</sup>/fed. with maize hybrid SC 168 gave the best value of ear diameter (5.03) in the second season.

**Table 6. Effect of interaction between maize hybrids and weed control treatments on maize yield and its components in 2018 season.**

Hybrids	Weed control treatments	Rate cm3 /fed	Plant height (cm)	Ear length (cm)	Ear diameter (cm)	No. of rows /ear	No. grains /ear	Ear weight (g)	Grain weight/ ear (g)	100-grain weight(g)	Grain yield (ardab/fed.)
SC 168	Maister Power	750	258.00	21.63	4.83	15.10	683.13	248.77	166.33	31.03	24.22
	Maister Power	500	254.00	21.07	4.73	14.73	606.07	244.57	164.00	30.80	23.88
	Maister Power	250	241.00	19.30	3.90	14.60	509.87	215.60	149.33	27.92	18.64
	Maister Power + Divest	750 + 500	264.00	21.23	4.90	15.33	715.90	254.87	173.97	32.79	25.33
	Maister Power + Divest	500 + 500	257.00	21.03	4.83	15.20	648.07	251.33	171.00	31.78	24.90
	Maister Power + Divest	250 + 500	243.00	20.20	4.03	14.40	531.33	229.33	155.33	29.87	22.61
	Equip	1125	251.00	20.20	4.37	14.57	561.47	239.67	163.00	30.80	23.74
	Equip	750	248.00	20.03	4.03	14.50	533.07	235.00	158.67	30.08	23.10
	Equip	375	242.00	19.80	3.87	14.13	461.90	210.00	141.00	29.73	17.80
	Equip + Divest	1125 + 500	261.00	21.90	4.87	14.80	664.47	251.20	170.67	32.08	24.85
	Equip + Divest	750+ 500	256.00	21.60	4.70	14.53	617.00	242.67	166.67	31.52	24.27
	Equip + Divest	375+ 500	249.00	20.10	4.63	14.27	539.37	232.83	158.33	30.16	22.31
	Divest	500	245.00	18.90	3.90	14.30	533.50	214.80	146.33	29.25	19.61
	Hand Hoing twice		256.00	22.10	4.23	14.77	635.77	239.93	164.00	31.96	23.88
Untreated		238.00	16.37	2.93	14.10	401.37	154.47	107.13	26.93	12.22	
SC 131	Maister Power	750	245.00	21.03	3.10	13.97	616.67	230.67	160.67	35.08	23.39
	Maister Power	500	241.00	20.57	3.93	13.73	591.60	227.53	156.67	34.40	22.81
	Maister Power	250	234.00	19.63	3.63	12.93	485.70	201.47	134.67	32.01	19.07
	Maister Power + Divest	750 + 500	246.00	21.43	4.70	14.20	639.17	238.20	162.33	38.29	23.63
	Maister Power + Divest	500 + 500	242.00	21.07	4.60	13.97	620.80	230.87	160.73	37.89	23.40
	Maister Power + Divest	250 + 500	236.00	20.17	4.03	13.87	535.80	217.00	147.00	32.84	21.40
	Equip	1125	241.00	20.90	3.83	12.77	519.07	222.47	152.67	36.11	22.23
	Equip	750	235.00	20.53	3.63	12.67	497.60	220.80	145.33	35.35	21.16
	Equip	375	231.00	19.40	3.43	12.30	425.00	190.07	127.67	31.16	17.84
	Equip + Divest	1125 + 500	244.00	21.03	4.26	14.43	616.23	224.87	156.67	37.54	22.81
	Equip + Divest	750+ 500	238.00	20.97	4.07	13.47	565.73	218.80	150.00	36.32	21.84
	Equip + Divest	375+ 500	233.00	19.73	3.93	13.30	484.60	201.07	139.00	32.43	20.24
	Divest	500	229.00	19.33	3.83	13.13	457.10	183.33	128.87	30.87	18.77
	Hand Hoing twice		243.00	21.07	4.43	14.16	625.33	234.60	158.33	33.54	23.06
Untreated		218.00	15.23	2.80	12.13	338.13	139.83	92.93	33.69	11.74	
TC 324	Maister Power	750	278.00	20.20	4.20	12.83	525.27	223.80	151.67	37.36	22.08
	Maister Power	500	271.00	19.83	3.87	12.43	485.93	203.07	146.27	35.88	21.29
	Maister Power	250	267.00	18.93	4.48	12.27	438.80	185.57	127.13	31.71	18.51
	Maister Power + Divest	750 + 500	284.00	20.33	4.23	13.63	569.93	223.20	150.67	38.77	21.94
	Maister Power + Divest	500 + 500	286.00	20.13	4.10	13.50	555.50	217.93	147.67	37.61	21.50
	Maister Power + Divest	250 + 500	269.00	19.43	3.83	13.37	489.00	190.00	128.00	32.76	19.83
	Equip	1125	274.00	19.83	3.77	13.83	518.83	209.00	141.33	33.28	20.58
	Equip	750	267.00	19.47	3.67	12.60	465.23	195.90	134.47	31.45	19.58
	Equip	375	262.00	17.97	3.30	12.03	418.87	184.00	125.53	31.58	18.28
	Equip + Divest	1125 + 500	283.00	20.13	4.17	13.77	560.13	217.67	149.00	37.91	21.70
	Equip + Divest	750+ 500	281.00	19.87	3.97	13.13	522.80	215.93	145.00	35.69	21.11
	Equip + Divest	375+ 500	275.00	19.13	3.63	12.83	460.93	186.17	128.67	31.83	19.76
	Divest	500	254.00	19.47	3.50	12.97	477.23	200.00	136.00	33.12	19.80
	Hand Hoing twice		285.00	20.13	4.23	13.50	562.30	221.53	152.53	35.51	22.21
Untreated		243.00	14.67	2.97	11.50	357.60	144.60	97.67	29.93	14.22	
F-test			NS	NS	**	**	NS	NS	NS	NS	NS
LSD at 0.05			-	-	0.46	0.55	-	-	-	-	-

\*,\*\* and N.S. indicate statistically significant at 0.05 and 0.01 levels and insignificancy of differences, respectively.

**4- Correlation analysis:**

Data in Table 8 showed that the correlation between studied weed characteristics and maize yield components characteristics - except plant height in both seasons and 100-grain weight the first season- were significant in both seasons. Results indicated that grain yield ardab/fed. were positively and highly significantly correlated with maize yield and its components namely ear length (cm), ear diameter (cm), No. of

rows/ear, No. of grains/ ear, ear weight (g), grain weight /ear (g) and 100-grain weight (g), while it was negatively and highly significantly correlated with grassy , broad leaved and total annual weeds. These cleared that weed population in the experimental field exhibited severe effects of competition to maize crop. These results are in harmony with those obtained by Mobarak and Eid (2017).

**Table 7. Effect of interaction between maize hybrids and weed control treatments on maize yield and its components in 2019 season.**

Hybrids	Weed control treatments	Rate cm <sup>3</sup> /fed	Plant height (cm)	Ear length (cm)	Ear diameter (cm)	No. of rows /ear	No. grains /ear	Ear weight (g)	Grain weight/ ear(g)	100-grain weight (g)	Grain yield (ardab /fed.	
SC 168	Maister Power	750	265.67	22.17	4.97	14.43	683.00	260.00	190.60	33.38	26.25	
	Maister Power	500	261.40	21.47	4.83	14.03	570.30	255.67	182.43	33.06	23.84	
	Maister Power	250	247.67	19.33	3.90	13.90	492.93	230.33	159.33	30.56	19.34	
	Maister Power + Divest	750 + 500	271.67	22.97	5.03	14.73	680.93	276.33	195.33	35.02	27.78	
	Maister Power + Divest	500 + 500	264.67	21.83	4.97	14.57	603.97	265.33	192.33	34.05	25.52	
	Maister Power + Divest	250 + 500	249.67	20.47	4.03	13.63	494.17	242.20	166.33	32.51	20.84	
	Equip	1125	258.33	21.23	4.43	13.83	517.53	252.67	176.33	33.39	22.31	
	Equip	750	255.00	20.27	4.03	13.73	491.00	249.00	170.33	32.26	21.11	
	Equip	375	248.67	20.03	3.87	13.33	424.27	215.40	148.67	31.31	18.26	
	Equip + Divest	1125 + 500	268.67	22.57	5.03	14.10	625.00	271.00	193.33	34.56	26.14	
	Equip + Divest	750+ 500	263.33	22.07	4.83	13.77	528.03	261.67	182.97	34.14	23.21	
	Equip + Divest	375+ 500	256.33	20.40	4.73	13.47	492.20	237.20	167.33	30.97	20.56	
	Divest	500	252.00	18.97	3.90	13.50	498.30	227.00	149.67	31.40	19.63	
	Hand Hoeing twice			263.33	22.77	4.30	14.07	582.17	257.00	185.33	34.60	24.65
	Untreated			244.67	15.93	2.77	13.27	362.17	147.93	109.50	29.69	13.07
SC 131	Maister Power	750	252.00	21.47	3.20	13.13	577.73	252.33	173.67	38.62	24.99	
	Maister Power	500	247.67	20.90	3.93	12.83	541.63	241.67	169.30	37.22	23.62	
	Maister Power	250	240.33	19.83	3.60	11.90	424.43	203.67	140.33	33.74	18.33	
	Maister Power + Divest	750 + 500	253.00	21.93	4.77	13.37	593.40	253.33	175.67	40.55	26.69	
	Maister Power + Divest	500 + 500	248.67	21.46	4.67	13.13	574.77	244.63	169.00	39.35	25.70	
	Maister Power + Divest	250 + 500	242.64	20.47	4.00	13.00	490.13	222.27	156.33	35.33	21.10	
	Equip	1125	247.67	21.37	3.83	11.73	468.20	234.13	161.83	36.80	21.95	
	Equip	750	241.67	24.17	3.57	11.60	446.20	226.00	153.00	34.36	20.62	
	Equip	375	237.33	19.53	3.33	11.17	371.03	187.67	130.00	32.33	16.31	
	Equip + Divest	1125 + 500	251.00	21.43	4.31	13.67	563.90	234.40	173.20	39.65	25.55	
	Equip + Divest	750+ 500	244.67	21.40	4.07	12.53	515.80	227.80	167.33	37.52	23.56	
	Equip + Divest	375+ 500	239.33	19.93	3.93	12.33	432.40	209.73	152.43	35.45	19.45	
	Divest	500	235.33	19.50	3.83	12.13	411.10	182.00	126.80	32.52	16.86	
	Hand Hoeing twice			249.67	21.47	4.50	13.37	581.77	251.83	173.40	36.44	24.50
	Untreated			223.67	14.60	2.63	10.93	314.40	147.23	95.33	31.22	11.71
TC 324	Maister Power	750	286.67	20.47	4.20	11.77	468.87	235.30	148.00	35.49	21.45	
	Maister Power	500	279.33	20.03	3.83	11.30	437.47	210.57	132.33	34.41	19.23	
	Maister Power	250	275.33	18.97	3.40	11.13	379.97	188.53	117.33	30.41	15.80	
	Maister Power + Divest	750 + 500	292.67	20.63	4.27	12.73	513.37	233.10	149.33	38.12	23.07	
	Maister Power + Divest	500 + 500	295.00	20.37	4.13	12.56	504.53	227.00	149.33	36.67	22.52	
	Maister Power + Divest	250 + 500	277.33	19.56	3.83	12.40	441.77	190.33	137.73	30.87	18.79	
	Equip	1125	282.33	20.03	3.77	11.80	426.17	215.13	134.33	30.32	18.35	
	Equip	750	275.33	19.60	3.60	11.53	406.87	208.80	127.67	33.42	16.97	
	Equip	375	269.67	17.83	3.23	10.83	350.90	185.33	116.67	30.50	15.09	
	Equip + Divest	1125 + 500	291.67	20.40	4.17	12.87	494.83	230.47	144.67	37.60	22.08	
	Equip + Divest	750+ 500	289.67	20.10	3.93	12.13	464.33	227.67	142.33	33.46	20.45	
	Equip + Divest	375+ 500	283.33	19.20	3.57	11.77	406.70	185.10	119.00	30.07	16.48	
	Divest	500	261.33	19.60	3.43	11.93	407.57	209.67	130.67	32.60	17.65	
	Hand Hoeing twice			294.00	20.40	4.23	12.57	506.73	232.33	149.33	33.09	21.82
	Untreated			249.67	13.97	2.80	10.23	308.80	140.50	88.33	26.50	13.57
F-test			NS	**	**	**	NS	NS	NS	NS	NS	
LSD at 0.05			-	0.75	0.40	0.45	-	-	-	-	-	

\*,\*\* and N.S. indicate statistically significant at 0.05 and 0.01 levels and insignificance of differences, respectively



**Table 8. Correlation analysis between the studied traits in 2018 and 2019 seasons.**

Traits	Grassy weeds (g/m <sup>2</sup> )	Broad leaved weeds (g/m <sup>2</sup> )	Total annual weed (g/m <sup>2</sup> )	Plant height (cm)	Ear length (cm)	Ear diameter (cm)	No. of rows /ear	No. grains /ear	Ear Weight (g)	Grain weight/ ear (g)	100-grain weight (g)	Grain yield (ardab /fed.)
2018												
Grassy weeds (g/m <sup>2</sup> )	1.00	0.93**	0.974**	-0.429**	-0.791**	-0.574**	-0.346**	-0.579**	-0.705**	-0.701**	-0.319**	-0.757**
Broad leaved weeds (g/m <sup>2</sup> )		1.00	0.990**	-0.344**	-0.816**	-0.601**	-0.374**	-0.584**	-0.703**	-0.707**	-0.278**	-0.761**
Total annual weed (g/m <sup>2</sup> )			1.00	-0.382**	-0.819**	-0.600**	-0.369**	-0.592**	-0.715**	-0.716**	-0.299**	-0.771**
Plant height (cm)				1.00	0.173*	0.234**	0.009 <sup>NS</sup>	0.161 <sup>NS</sup>	0.147 <sup>NS</sup>	0.188*	0.303**	0.249**
Ear length (cm)					1.00	0.675**	0.550**	0.740**	0.763**	0.796**	0.275**	0.784**
Ear diameter (cm)						1.00	0.596**	0.660**	0.645**	0.695**	0.086 <sup>NS</sup>	0.663**
No. of rows/ear							1.00	0.732**	0.650**	0.680**	-0.170*	0.548**
No. grains/ear								1.00	0.730**	0.782**	0.228**	0.719**
Ear weight(g)									1.00	0.774**	0.162 <sup>NS</sup>	0.939**
Grain weight/ ear(g)										1.00	0.219*	0.754**
100-grain weight(g)											1.00	0.238**
Grain yield (ardab/fed.)												1.00
2019												
Grassy weeds (g/m <sup>2</sup> )	1.00	0.926**	0.969**	-0.435**	-0.780**	-0.592**	-0.323**	-0.544**	-0.589**	-0.696**	-0.442**	-0.635**
Broad leaved weeds (g/m <sup>2</sup> )		1.00	0.991**	-0.368**	-0.794**	-0.610**	-0.346**	-0.555**	-0.593**	-0.687**	-0.458**	-0.624**
Total annual weed (g/m <sup>2</sup> )			1.00	-0.399**	-0.803**	-0.614**	-0.344**	-0.561**	-0.602**	-0.702**	-0.460**	-0.639**
Plant height (cm)				1.00	0.150 <sup>NS</sup>	0.227**	-0.013 <sup>NS</sup>	0.138*	0.016 <sup>NS</sup>	0.182*	0.031 <sup>NS</sup>	0.160 <sup>NS</sup>
Ear length (cm)					1.00	0.707**	0.557**	0.744**	0.800**	0.803**	0.558**	0.800**
Ear diameter (cm)						1.00	0.701**	0.783**	0.787**	0.783**	0.386**	0.782**
No. of rows/ear							1.00	0.809**	0.790**	0.706**	0.263**	0.703**
No. grains/ear								1.00	0.856**	0.834**	0.528**	0.924**
Ear weight(g)									1.00	0.846**	0.507**	0.896**
Grain weight/ ear(g)										1.00	0.484**	0.849**
100-grain weight(g)											1.00	0.660**
Grain yield (ardab/fed.)												1.00

\*, \*\* and N.S. indicate statistically significant at 0.05 and 0.01 levels and insignificance of differences, respectively.

### CONCLUSION

It concluded that all weed control treatments decreased the dry weight of total annual weeds as compared with the unweeded treatment, SC 168× Mister Power at 750 cm<sup>3</sup>/fed. tank mixed with Divest at 500 cm<sup>3</sup>/fed. gave the lowest dry weight of total annual weeds and greatest yield (ardab/ fed.) under Minia governorate condition.

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## تأثير بعض معاملات مكافحة الحشائش على بعض هجن الذرة الشامية والحشائش المصاحبة

مي حسين محمد العطار<sup>1</sup> وسامي رمسيس نجيب<sup>2</sup>

<sup>1</sup>المعمل المركزي لبحوث الحشائش - مركز البحوث الزراعية- الجيزة- مصر

<sup>2</sup> قسم المحاصيل - كلية الزراعة - جامعة المنيا- المنيا- مصر

أقيمت تجربتان حقليةتان بالمزرعة البحثية- محطة البحوث الزراعية - ملوى- محافظة المنيا خلال موسمي 2018/2019 لدراسة تأثير خمسة عشر معاملة مقاومة حشائش (مايستر باور 750 سم<sup>3</sup>/ف، 500 سم<sup>3</sup>/ف و 250 سم<sup>3</sup>/ف منفردا ، مايستر باور 750 سم<sup>3</sup>/ف، 500 سم<sup>3</sup>/ف و 250 سم<sup>3</sup>/ف مخلوطاً مع دايفست 500 سم<sup>3</sup>/ف، إيكويب 1125 سم<sup>3</sup>/ف، 750 سم<sup>3</sup>/ف، 375 سم<sup>3</sup>/ف، إيكويب 1125 سم<sup>3</sup>/ف، 750 سم<sup>3</sup>/ف، 375 سم<sup>3</sup>/ف، مخلوطاً مع دايفست 500 سم<sup>3</sup>/ف وكذا دايفست 500 سم<sup>3</sup>/ف منفرداً، العزيق مرتين، الكنترول) على صفات الحشائش والمحصول ومكوناته، لثلاثة هجن من الذرة شامية (هجين فردي 168، هجين فردي 131، هجين ثلاثي 324) وكانت أهم النتائج المتحصل عليها: أظهرت هجن الذرة الشامية فروق معنوية فيما بينها في تأثيرها على الحشائش الحولية النجيلية والكلية في كلا الموسمين، كما تفوق الهجين الفردي 168 على بقية الهجن في جميع صفات محصول الحبوب ومكوناته ماعدا صفة وزن ال100 حبه حيث اعطى الهجين الفردي 131 أعلى القيم لهذه الصفة. أظهرت النتائج ان جميع معاملات الحشائش احدثت خفضاً معنوياً في الوزن الجاف للحشائش الحولية النجيلية وعريضة الاوراق والكلية في كلا الموسمين. كذلك أظهرت معاملات الحشائش تأثيراً على محصول الة الشامية ومكوناته في كلا الموسمين. أظهر التفاعل بين هجن الذرة الشامية ومعاملات الحشائش تأثيراً معنوياً في الموسم الاول فقط لكل من الوزن الجاف للحشائش الحولية النجيلية والعريضة الاوراق والكلية. بينما تأثر قطر الكوز وعدد صفوف الكوز وطول الكوز معنوياً بالتفاعل بين هجين الذرة الشامية ومعاملات الحشائش في الموسم الثاني فقط. ارتبط محصول الحبوب بالأردب/ف ارتباط طردي قوى مع كل من طول وقطر الكوز، عدد صفوف الحبوب/كوز، عدد الحبوب/كوز، وزن الكوز، وزن الحبوب/كوز، وزن ال100 حبة، بينما ارتبط ارتباط عكسي قوى مع كل من الوزن الجاف للحشائش ضيقة وعريضة الاوراق والحشائش الكلية.