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PRODUCTIVITY OF SOME EGGPLANT CULTIVARS UNDER DIFFERENT SYSTEMS OF WEED CONTROL

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ABSTRACT

Two field experiments were conducted in Ras Sudr Experimental Station, D.R.C. during 2009/2010 and 2010/2011 seasons to evaluate eight treatments for weed control, i.e. plastic mulch with two colors white or transparent and black and post-emergence herbicides, namely Clethodim 12.5 %EC, 1.0 L/Fed, Sethoxydim 12.5% EC, 1.5 L/fed. and Bentazon AS 48% (w v-1) 1.5 L/fed as a single and dual mixture on two eggplant cultivars (Keem and Petra). Fresh and dry weight of narrow and broad leaved weeds, growth characteristics total chlorophyll, dry matter and yield of eggplant were recorded at harvest stage. Obtained results showed that dry weight of narrow leaved weed were reduced with Clethodim plus Bentazon in dual mixture application by 80.6%, 82.6% also same treatment reduced dry weight of broad leaved weed by 72.7% , 80.7% in both growing seasons respectively, these results were true with Keem cultivar. The same trend was observed with Petra cultivar, with Clethodim with Bentazon in dual mixture reduced narrow leaves weed by 89.4% and 90.3%, also broad- leaved weed was reduced by 76.7%, 85.5% through the two growing seasons respectively. All characteristics of eggplant vegetative growth, yield and its components showed higher values with transparent plastic mulch than black plastic mulch treatment for Keem and Petra cultivars in both growing seasons. Plant height, number of branches, dry matter % and fruit weight gave the highest values with Clethodim with Bentazon treatment, while number of fruits per plant and total yield realized the highest values with Sethoxdim plus Bentazon when compared with other herbicides treatments. This treatment achieved 15.1 -16.3 ton per fed. of yield with Keem cultivar and 23.9 and 24.2 ton per fed. with Petra cultivar in both growing seasons. On the other hand total chlorophyll was increased with control treatment when compared with other treatments for the two cultivars under study. .

Keywords: Eggplant, Cultivar, Weed control, Transparent mulch, Black mulch and Herbicides.

INTRODUCTION

Eggplant (*Solanum melongena*, L.) is one of the most important vegetable crops grown in A. R. Egypt for consumption. The rapid consumption increasing of vegetables demands both horizontal and vertical agriculture extension in arid and semi arid lands. These areas are characterized by weeds which have harmful effects on plant growth, productivity and quality of fruits. Such weeds may be reduced by application of some treatments, as well as, plastic mulch. Eggplant is a perennial, but grown commercially as an annual crop. Asia accounts for about 94 percent of the world eggplant area, with about 92 percent of world output (FAO 2007).

In Egypt , the cultivated area with Eggplants was suffer from a number of problems, including diseases and insects, which were brought on by weather and other environmental factors. Eggplant is one of the initially

slow growing crops which are incapable of competing with the aggressive weeds. Weed infestation also increases insect pests and diseases of eggplant. Therefore, the weeds should be controlled at the "critical period" when the maximum weeds are tolerable, but without affecting the crop yield. Weeds are controlled either by physical/mechanical methods or chemical control. Physical methods, such as hand weeding, use of tools (hoe), cultivation and mulching, are quite common in small vegetable farms. Mulching with black polyethylene will effectively control weeds and greatly lessen labors. Natural organic mulches not only help conserve moisture, but also add organic matter to the soil. Chemical weed control is also popular in places where labor is very expensive or not readily available. Herbicides, Lasso (1.5 kg a.i./ha), Enide 50WP (dil. 1:300), Sancor 7OWP (dil. 1:4,000), Paraquat 24EC (dil. 1:250), etc. are recommended for use in eggplant production.

The cultivars of *Solanum melongena L*. display a wide range of fruit shapes and colors, ranging from oval or egg-shaped to long club-shaped; and from white, yellow, green, through degrees of purple pigmentation to almost black. Black plastic, cassava peel, and giant star grass and guinea grass straw soil mulches were compared for field-grown vegetables under varying rates of nitrogen fertilization. Black plastic mulch was most effective in weed control and resulted in more crop growth and higher fruit yield. Low weed control and a high incidence of fungal disease with cassava peel depressed yields, thus rendering cassave peel unsuitable for mulching. There was no advantage in applying fertilizer N beyond 80 kg N ha^{-1}, irrespective of mulching or the type of mulch (Asiegbu, 1991). Eggplant contains nutrients such as dietary fiber, folate, ascorbic acid, vitamin K, niacin, vitamin B6, pantothenic acid, potassium, iron, magnesium, manganese, phosphorus, and copper (USDA 2009); the nutrients that it contributes to the diets of the poor are especially important during times when other vegetables are in short supply. The objective of this work was to study the production and quality of two eggplant cultivars as affected by some weed control treatments under saline conditions.

MATERIALS AND METHODS

Two field experiments were conducted at Desert Research Center, Ras Sudr Experimental Station, South Sinai governorate during 2009/2010 and 2010/2011 seasons to evaluate the effects of different weed control systems including plastic mulch (transparent and black), beside un mulched treatment, Also, six post-emergence applications for three herbicides namely Clethodim 12.5 %EC, 1.0 L/Fed., Sethoxydim 12.5% EC, 1.5L/fed. and Bentazon AS 48% (w v-1) 1.5 L/fed. as a single or dual mixture on weeds control of two eggplant cultivars and to identify the best transactions in weed suppression without the negative effects and with a high productivity of eggplants.

The mechanical and chemical analysis of soil and the irrigation water are presented in Tables (1, 2 and 3) according to Piper (1950), Jackson

(1958) and Richards (1954) respectively. All replicates received similar agricultural practices as regards of cultivation, fertilization, irrigation, and pest disease control as recommended by Horticulture Research Institute, Agriculture Research Center Ministry of Agriculture (1997). Compost at 5 ton/fed., 100 kg calcium super phosphate (15.5% as P_2O_5) and 100 kg agricultural sulfur / fed, were added one month before planting. Ammonium sulfate (20.6% N.) at 300 kg, potassium sulfate (48% K_2O) at 150 kg per feddan and 15 kg phosphoric acid (85%) were added weekly after dividing the quantities to small portions through the drip irrigation system.

Table (1): Mechanical properties of the experimental soil.

Soil depth (cm)	Ca CO3 %	Coarse sand (0.5-1 m m)	Fine sand (01-0.25 m m)	Silt (0.002- 0.05 m m)	Total sand (0.1- 1)	Clay (0.-002)	Class texture
%							
0-30	56. 99	53. 68	27. 60	8.05	81.28	10.79	Sandy loam
30-60	52.48	23.74	62.34	7.59	86.08	6.33	Sandy loam

Table (2): Chemical analysis of the experimental soil

Soil depth (cm)	Saturation soluble extract									
	pH	EC	Soluble anions (meq/ L				Soluble cations (meq/ L			
			Co3	HCo3	So_4	Cl	Ca++	Mg++	Na++	K+
0-30	7.7	4.77	0.00	6.00	10.50	31.20	24.00	11.00	10.52	2.18
30-60	7.4	4.16	0.00	3.00	16.10	22.50	16.83	6.00	17.80	0.09

Table (3): Chemical analysis of irrigation water

Soluble cations (meq/ L)				Soluble anions (meq/ L)						Salinity (ppm)
K+	Na++	Mg++	Ca++	Cl	So4	HCo3	Co3	Ec dS/m	pH	
0.51	56.66	19.18	23.65	16.22	81.23	2.50	0.00	5.47	8.4	3500

Weed species density in the experimental field prior to weed control treatments.

Weed species composition were recorded in the eggplant field before application of weed control treatments the narrow leaved weeds were; *Zygophyllum sp*, *Suaeda sp*, *Stellaria media*, *Cynodon dactylon L*., *Polypogon monspeliesis L*. *Setaria gluaca*, and *Cyperus rotundus* with individual mean densities that reached, 4, 3, 2, 2, 2, 3 and 1 plants/m^2 respectively. The broad leaved species were *Chenopodium murale*, *Convolvulus arvensis*, and *Medicago hispida*, with individual mean densities reached, 7, 2 and 2 plants/m^2 respectively. *Oxalis corniculata*, *Emex spinosa*, *Conyza aegyptiaca*, *Phragmites Communis* and *Imperata cylindrical* was very rare while *Imperata cylindrical* spreading in some spots around the field.

Experimental treatments

The experiment included 54 experimental unit included 9 weed control treatments with two cultivars and three replicates. The experimental plot area was 10.5 m^2 consisted of one row each of 1 m width and 10.5 m length. The plant distance was 50 cm apart. The treatments were supplied by BASF

Company as a single treatment and incorporate as mixtures with the same dose (1:1) after transplanting at the 4- leaf stage of eggplant as a direct spray between rows and beneath plants. The weed control treatment conducted by hand (one weeding regime was occurred after one month form transplanting throughout the experimental period).

Drip irrigation system was used. Seedling of the cultivar Keem and Petra were transplanted to the field 40 days after sowing, in 15th of October and 1st of November of the two growing seasons respectively. Transplanting occurred in staggered double rows with rows and plants spaced 50 cm apart on pores at the plastic sheet with 20 plants per plots. It was laid out in a randomized complete block design for each cultivar with three replications.

Data recorded:

A-Six plants were randomly taken from each experimental plot after 60 days from transplanting to determine plant height, number of branches /plant, fresh and dry weight/plant.

B-Fruits were harvested after 70 days from transplanting to determine number of fruits /plant, early yield /plant, total yield / plant and / feddan, and average fruit weight. All harvested fruits from all pickings during the entire season were weighed and total yield / plant as well as per feddan was calculated.

C- Plants were dried in an oven at 70c0 until constant weight, then dry matter percentage and total chlorophyll were estimated according to A.O.A.C.(1990).

Data were analyzed using ANOVA according to Snedecor and Cochran (1990). Effects were considered significant for P=0.05 from the F-test. Least significant differences LSD analysis and Duncan multiple range test were conducted for mean comparison.

RESULTS AND DISCUSSION

A- Weed population in eggplants fields at Ras Sudr Experimental Station.

The survey indicated that 15 weeds were spreading in the experimental soil that includes 7 narrow-leaved and 3 broad-leaved weeds and 4 annual weeds and 5 perennial weeds, in addition to 5 weeds in lower and varied density while the weed density after 60 days from transplanting in both mulched and herbicides treatments corresponding to the control treatments (one weeding regime was done after one month form transplanting throughout the experimental period by hand), arranged from 9.3 to 25.1plants/m^2. Data in Table (4) showed that both transparent and black mulch had a significant effects on both narrow and broad leaved weed number than using herbicides treatments which did not appear any effect. In this respect transparent mulch in both Keem and Petra cultivars gave the highest reduction effect in both narrow and broad leaved weeds than the black plastic mulch

B-Weed biomass affected by mulch and herbicides treatments in eggplant cultivars.

Corresponding to keem cultivar (Table, 5)**,** total biomass fresh and dry weight of narrow and broad leaved weeds were reduced significantly by the application of all weed control treatments as compared with the check treatment. The result indicated that, using transparent plastic sheet after 60 days from transplanting Keem cultivar was more efficiencies than black plastic in reducing total narrow and broad leaed weeds fresh and dry weight as compared with hand weeding control.

Table (4): Effect of weed control treatments on weed type and population density/m^2 in eggplant cultivars at Ras Sudr experimental Station during 2009/2010 and 2010/2011 seasons.

	CV. Keem				CV. Petra			
Treatments	**(2009/2010)**		**(2010/2011)**		**(2009/2010)**		**(2010/2011)**	
	Narrow leaved	**Broad leaved**	**Narrow leaved**	**Broad leaved**	**Narrow leaved**	**Broad leaved**	**Narrow leaved**	**Broad leaved**
Transparent plastic	20.00	7.50	17.67	6.00	15.67	6.00	13.33	5.67
Black plastic	21.00	8.67	27.00	8.00	23.00	6.00	14.67	5.33
Sethoxydim	25.00	11.80	17.20	8.00	12.20	8.00	16.30	8.70
Sethoxydim + Clethodim	27.30	18.60	21.30	17.00	22.00	12.30	16.60	10.80
Clethodim	25.00	13.80	19.20	10.00	14.20	10.00	18.30	11.70
Sethoxydim + Bentazon	30.30	22.60	25.30	21.00	26.00	16.30	20.60	11.80
Clethodim + Bentazon	24.00	9.80	15.20	6.00	10.20	9.00	18.30	8.70
Bentazon	26.30	17.60	20.30	16.00	21.00	11.30	19.60	11.80
Check(control)	27.00	11.00	19.00	8.33	16.00	10.00	21.67	9.33
LSD $_{(0.05)}$ Treatments	5.00	3.5	NS	2.80	NS	3.50	5.70	3.00

While, applying post emergence herbicides in a single or dual mixture had higher efficacy in reducing the fresh and dry weight of narrow and broad leaved weeds than both plastic sheets except the desert herb *Zygophyllum* sp*, Suaeda* sp (data not shown) which was affected by mulch than the herbicide treatments. In keem cultivar, application of Sethoxydim plus Bentazon and Clethodim plus Bentazon treatments provide the highest reduction in total fresh and dry weight of narrow and broad leaved weeds as compared with one hand weed control regime. Also, in the first year application of sethoydim or clethodim with bentazon in dual mixture reduced narrow leaved weed fresh and dry weight by 78.2 and 75.2% and 80.6and 82.6%, respectively and broad leaed weeds fresh and dry weight by 76.4 and 76.4% and 58.5 and 72.7%, respectively as compared with the control (Figure 1). Meanwhile, in the 2nd year, application of clethodim plus bentazon mixture poses the highest reduction in narrow leaved weed total weeds fresh and dry weight by 81.8% and 83.8%, respectively and broad leaved weeds fresh and dry weight by 82.8% and 80.7%, respectively as compared with the control check treatment.

Table (5): Effect of weed control treatments on fresh and dry weight (gm/m^2)of weeds growing in fields of eggplant Keem cultivar at Ras Sudr Experimental Station during 2009/2010 and 2010/2011 seasons.

Treatments	(2009/2010)				(2010/2011)			
	Narrow leaved weeds		Broad leaved weeds		Narrow leaved weeds		Broad leaved weeds	
	Fresh weight	Dry weight	Fresh weight	Dry weight	Fresh weight	Dry weight	Fresh weight	Dry weight
Transparent plastic	905.6	180.2	213.5	36.4	892.03	165.57	215.10	31.53
Black plastic	985.1	227.4	231.4	39.2	931.50	224.20	225.33	37.23
Sethoxydim	583.0	126.8	152.0	43.7	575.87	108.77	159.87	40.73
Sethoxydim + Clethodim	587.0	86.7	143.0	39.1	544.33	87.84	152.33	39.43
Clethodim	611.6	119.2	181.7	39.5	603.20	112.73	168.23	39.80
Sethoxydim + Bentazon	427.0	94.6	56.0	30.3	447.37	87.10	53.37	27.10
Clethodim + Bentazon	487.0	84.6	56.0	14.8	456.00	72.57	55.33	11.57
Bentazon	523.0	134.1	76.0	19.9	624.00	120.97	70.60	17.41
Check (control)	1959.9	487.3	237.6	73.0	2504.67	447.73	321.33	60.04
LSD (0.05) Treatments	35.8	23.5	8.4	10.9	44.5	22.7	8.5	8.5

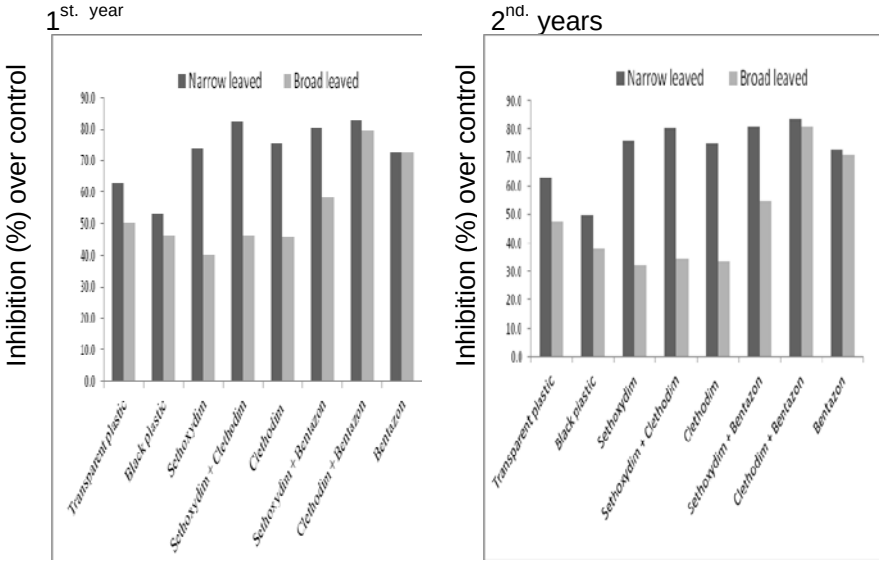

Figure 1: Total weed biomass dry weight reduction in keem cultivar

Effect of weed treatments on eggplant, fields of Petra cultivar presented in Table (6) was similar to that of keem cultivar. Plastic mulch system have a significant effect on reducing total biomass of wild herb (*Zygophyllum* sp*, Suaeda* sp) than the selected herbicides, during the two

growing years, transparent plastic sheet was more effective on weed suppression than black plastic sheet on narrow leaved weeds than broad leaved weeds. Both of Sethoxydim plus Bentazon and Clethodim plus plus Bentazon mixtures gave the highest reduction in fresh and dry weight of weeds, followed by Sethoxydim plus Clethodim mixtures with for the narrow and broad leaved weeds when compared with one hand weeding regime after one month from transplanting throughout the experimental period. In the first year application of Clethodim plus Bentazon in dual mixture on Petra cultivar, reduced narrow leaved fresh and dry weight by 73.4% and 89.4%, respectively Broadleaf weeds fresh and dry weight reduced by 82.6% and 76.7 %, respectively, as compared with the control. Meanwhile, in the second year, application of Clethodim plus Bentazon in dual mixture reduced fresh and dry weight of narrow leaved weeds by 73.7% and 90.3%, respectively, also fresh and dry weight of broad leaved weeds by79.8% and 85.5 %, respectively as compared to the control (Figure 2).

Table (6): Effect of weed control treatments on weed fresh and dry weight (gm/m^2)eggplant of Petra cultivars vegetables at Ras Sudr Experimental Station during 2009/2010 and 2010/2011 seasons.

Weed control treatments	(2009/2010)				(2010/2011)			
	Narrow leaved weeds		Broad leaved weeds		Narrow leaved weeds		Broad leaved weeds	
	Fresh weight	Dry weight	Fresh weight	Dry weight	Fresh weight	Dry weight	Fresh weight	Dry weight
Transparent plastic	875.7	223.0	200.4	43.9	802.73	206.00	189.40	31.90
Black plastic	1252.0	273.9	212.0	38.2	1239.00	256.87	191.00	32.20
Sethoxydim	456.0	58.8	131.0	26.7	451.07	51.10	128.87	31.03
Sethoxydim + Clethodim	450.0	37.9	122.0	24.1	441.67	41.12	133.67	26.77
Clethodim	555.0	70.1	120.7	29.7	540.67	45.07	136.23	29.77
Sethoxydim + Bentazon	488.0	48.3	55.0	16.4	390.70	32.77	418.03	16.52
Clethodim + Bentazon	428.0	44.8	45.0	13.0	392.67	30.37	50.00	17.40
Bentazon	464.0	74.7	55.0	14.7	559.00	83.30	41.93	16.88
Check (control)	1608.1	421.0	258.5	55.8	1495.1	313.97	247.47	39.83
LSD $_{(0.05)}$ Treatments	49.8	43.5	23.4	3.9	88.3	53.0	39.4	7.5

Data represented that both type of plastic mulch have a significant activation effect on both eggplant cultivars yield and yield components than the selected herbicides, Otherwise the selected herbicides have a pronounced weed control than using plastic mulch, except for the wild herbs.

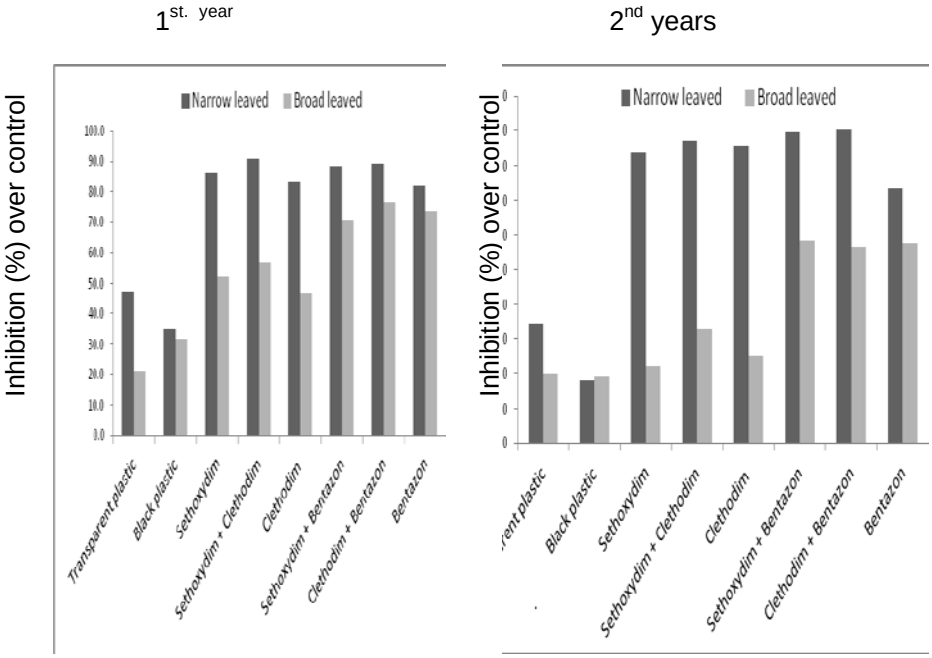

Figure 2: Total weed biomass dry weight reduction in Petra cultivars regardless of weed control treatments in 1 st and 2nd years.

C- Growth characters of eggplant as affected by mulch and herbicides treatments

Data presented in Tables (7and8) showed that plant growth parameters as plant height and number of branches per plant of the two cultivars were significantly increased by application of transparent plastic sheets and black compared to all treatments. While check control treatment gave the highest values of total chlorophyll compared to ether treatments regardless of cultivars. On the other hand, data indicated that using herbicides gave good weed control efficiency but it had adversely effect on eggplant growth. This may be due to the slight injury after application of herbicides (Clethodim plus Bentazon) gave the highest growth values of Keem cultivar,

D- Yield and its components.

Eggplant yield for cumulative harvests was greatest by the application of transparent plastic mulch compared to any treatments with Keem and Petra cultivars in both growing seasons as shown in Tables (7,8). Using Bentazon dual mixture with sethoxydim gave the highest yield compared to other herbicide treatments and control in both growing seasons. The highest number of fruits/plant was obtained in the two seasons by using transparent plastic mulch followed in decreasing order Sethoxydim plus Bentazon. This was true for the two cultivars. and total yield with the two cultivars under study. While, average fruit weight gave the highest values

with duel mixed treatment (Clethodim plus Bentazon) for Keem and Petra cultivars in both growing seasons.

Table (7): Eggplant Keem cultivar growth and productivity at Ras Sudr Experimental Station during 2009/2010 and 2010/2011 seasons.

Treatments	Plant height (cm)	No. of branches/ plant	No. of fruits/ plant	Total chlorophyll (SPAD unit)	Plant Dry matter (%)	Average fruit weight (g./plant)	Total yield (ton/fed)
(2009/2010)							
Transparent plastic	60.00	13.00	11.00	39.50	28.17	134.00	15.10
Black plastic	55.00	10.70	10.00	38.10	26.97	134.00	12.30
Sethoxydim	51.00	9.80	9.60	32.00	23.60	132.00	9.48
Sethoxydim + Clethodim	50.00	9.90	8.00	35.20	25.35	120.00	8.95
Clethodim	50.00	11.90	8.40	33.50	22.38	119.00	8.97
Sethoxydim + Bentazon	51.00	12.00	10.00	33.90	24.38	132.00	13.91
Clethodim + Bentazon	58.00	12.40	7.40	35.00	25.50	135.00	13.16
Bentazon	48.00	11.20	8.40	36.00	22.17	119.00	8.90
Check (control)	56.00	10.00	8.00	40.00	24.03	104.00	8.50
LSD (0.05) Treatments	3.14	0.64	1.32	6.24	NS	3.42	1.32
(2010/2011)							
Transparent plastic	62.00	10.5	12.1	39.10	27.27	135.00	16.34
Black plastic	56.67	8.4	10.13	39.00	25.82	129.00	13.07
Sethoxydim	57.33	7.27	8.57	28.30	22.53	125.33	10.74
Sethoxydim + Clethodim	53.00	7.57	7.33	38.50	24.31	118.67	8.71
Clethodim	52.33	7.8	7.4	32.80	21.17	115.00	8.51
Sethoxydim + Bentazon	55.33	9.67	11.07	33.10	23.69	126.67	14.01
Clethodim + Bentazon	59.33	10.23	8.73	36.10	24.34	129.00	11.26
Bentazon	53.67	8.03	9.2	41.50	21.27	117.67	10.82
Check (control)	56.33	8.27	8.4	47.70	20.33	104.67	8.80
LSD (0.05) Treatments	4.13	2.58	1.50	5.34	NS	5.18	0.97

Concerning, eggplant keem cultivar yield as shown in table (7), mulching with transparent plastic sheets produced reached, 15.10 and 16.31 tons / fed, whereas Sethoxydim + Bentazon realized yields of 13.91 and 14.0 tons / fed., respectively when compared with the control treatment gave 8.5 and 8.8 tons / fed., in the first and second seasons. Tables (7 and 8), Fig. (3).

As regard, to the yield of eggplant Petra cultivar, using transparent plastic sheets caused the highest yield reached, 23.87 and 24.2 tons / fed,. Whereas Bentazon mixed with Sythoxydim provides yields reached to, 20.0 and 19.97 tons / fed., and the control treatment produced 12.8 and 15.1 tons / fed., in the first and second growing seasons respectively.

Table (8): Eggplant Petra cultivar growth and productivity at Ras Sudr Experimental Station during 2009/2010 and 2010/2011 seasons.

Treatments	Plant height (cm)	No. of branches/ plant	No. of fruits/ plant	Total chlorophyll (SPAD unit)	Dry matter (%) (for plant)	Average fruit weight (g./plant)	Total yield (ton/fed)
(2009/2010)							
Transparent plastic	58.00	13.00	10.80	37.00	30.38	225.00	23.87
Black plastic	55.00	11.20	7.40	36.00	28.84	209.00	15.34
Sethoxydim	44.00	10.40	6.50	34.00	26.95	190.00	13.93
Sethoxydim + Clethodim	53.00	10.00	6.00	35.00	26.88	180.00	13.70
Clethodim	50.00	9.80	6.40	33.00	26.02	175.00	14.60
Sethoxydim + Bentazon	51.00	11.40	9.00	33.00	27.08	205.00	20.20
Clethodim + Bentazon	46.00	12.80	7.50	33.00	27.30	209.00	14.52
Bentazon	44.00	9.60	7.50	35.00	24.82	189.00	15.78
Check (control)	46.00	11.50	7.50	42.00	24.30	190.00	12.80
LSD $_{(0.05)}$ Treatments	6.32	1.43	3.20	3.40	NS	5.43	3.21
(2010/2011)							
Transparent plastic	56.33	11.50	11.13	37.00	30.32	217.67	24.24
Black plastic	55.00	9.33	8.63	37.00	28.51	200.67	17.32
Sethoxydim	43.00	8.17	7.33	46.00	26.45	182.33	13.38
Sethoxydim + Clethodim	53.00	8.10	7.00	36.00	26.75	177.67	12.44
Clethodim	52.33	7.83	7.47	34.00	25.26	173.00	12.92
Sethoxydim + Bentazon	50.00	9.47	10.00	31.00	26.37	199.67	19.97
Clethodim + Bentazon	44.00	10.70	8.00	34.00	27.11	202.67	16.21
Bentazon	43.33	7.63	8.40	35.00	24.31	187.33	15.73
Check (control)	45.00	8.53	7.97	40.00	22.76	190.00	15.14
LSD $_{(0.05)}$ Treatments	6.50	2.70	1.19	4.21	0.83	3.57	2.42

Table (7 and 8) indicted that Petra cultivar characters gave the higher values than Keem cultivar in the two growing seasons under Ras Suder conditions as affected by mulch and herbicide treatments.

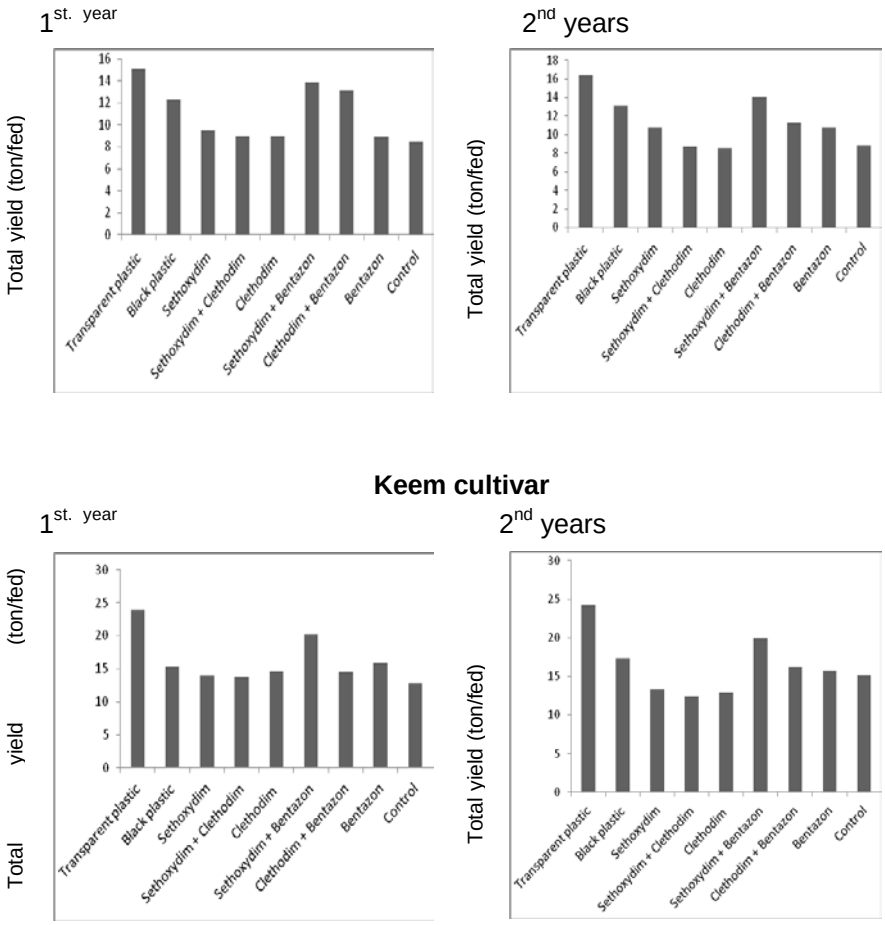

Figure 3: Productivity of eggplant cultivars regardless of weed control treatments by Total yield (ton/fed) after10 times harvesting.

In general, transparent mulch gave the highest activation in the vegetative characteristics and productivity of eggplant during the two seasons than other weed control treatments, The Sethoxydim plus Bentazon mixtures provided the highest increase in eggplant growth characteristic and productivity as compared with the check control, than other herbicide treatments. Except chlorophyll content this increased with control treatment than treatments. The beneficial effects of these treatments on plants occur through increasing the absorbing potential of plant roots and improving the nutritional status within the subsequent plant tissues which reflected in better

growth and higher yields of plants. This satisfactory influence may be attributed the favorable effect of such treatments on inhibiting weed growth and development. Farmers in Egypt conducting weed control in their eggplant fields by hand weeding or herbicides from three to five times in the cropping season to increasing weed control inputs up to 15-20% of production costs, this result was in agreement with obtained by (Mohmoud, 2000, Rizk, 2002, Rizk, *et al.,* 1997). Plastic mulch system had a significant effect on weed control especially for wild herbs than the selected herbicides in the two eggplants cultivars. The result**s** obtained are in the same line with those obtained by Valdaz-Fields *et al*., (2002), they reported that plastic mulch reduced the number of days for eggplant to flower. The two cultivars were similar to weeding regime, while yields differ much between the two cultivars. Chemical weed control has developed rapidly and gained importance in vegetable production because of the selective properties of herbicides which were destroy some plants but do not harm others. Our data provide that plastic mulch or Sethoxydim plus Bentazon and Clethodim plus Bentazon mixtures during the cropping seasons controlled weeds as efficiently as hand weeding throughout the seasons, which are reduced weed control costs and resulted in net profits many times higher than that of the farmers' practice. The data suggested that the use of herbicides and mulching practices suppressed the fast growth of weeds.

The most suitable eggplants cultivar for the South Sinai under salinity soil and water condition was Petra cultivar in growth and production and also for efficiency weed compatibility than keem cultivars. These results are supported by Chartzoulakis *et al*., (1997). Covering the soil with black and transparent plastic sheet was also used in many vegetable Grey *et al.,* (2007), to increase the yield regardless of keeping soil moisture and weed suppression under new reclaimed land. This is the cheaper agroecological approach to reduce weed populations, weed total biomass and increasing eggplant productivity as well as reduce production costs.

Conclusion

Transparent plastic mulching or Sethoxydim plus Bentazon mixture gave the best growth characters and the highest yield of eggplant than other treatments and reduce growth of weed under Ras Sudr conditions also, Petra cultivar surpassed Keem cultivar in yield under these conditions.

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إنتاجية بعض أصناف الباذنجان تحت نظم مختلفة لمقاومة الحشائش

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أجريت تجربة حقلية بمحطة بحوث رأس سدر مركز بحوث الصحراء خلال موسمي الزراعة 2010/2009 ، 2011/2010 وذلك بهدف دراسة تقي يم تأثير تغطية التربة بالبلاستك الشفاف أو الأسود او بدون تغطية، و دراسة تأثير المعاملة ب 6 معاملات من مبيدات الحشائش 3 مبيدات فردية او في مخاليط متبادلة للحد من انتشار الحشائش باستخدام نظم مختلفة من المقاومة وفي محاولة لإنتاج محصول مرتفع ، بازجران (Bentazon AS 48%) نابوأس 12.5% (Sethoxydim EC) سلكت سوبر (Clethodim 12.5%). صممت التجربة في قطاعات كاملة العشوائية و اشتملت التجربة علي9 معاملاتة تم تكرارها في ثلاث مكررات.

وتتلخص أهم النتائج المتحصل عليها في الأتي:

أنخفض الوزن الجاف للحشائش ضيقة الأوراق عند المعاملة بالسلكت سوبرمع بازجران بنسب بين 82.6,80.6% وكذلك انخفض الوزن الجاف للحشائش عريضة الأوراق بنشب 72.7, 82.6% وهذة النتائج كانت واضحة في موسمي الزراعة في كلا الصنفين. عند أستخدام الخلط بين مبيد سلكت سوبر مع بازجران انخفضت الحشائش ضيقة الأوراق بين (89.4, 90.3%) وكذلك انخفضت الحشائش عريضة الأوراق بين 85.5,76.6% في موسمي الزراعة.

أظهرت صفات النمو والمحصول ومكوناتة للباذنجان أعلى القيم عند أستخدام البلاستك الشفاف عن البلاستك الأسود في كل من الصنف كيم وبترا في موسمي الزراعة. أظهرت صفات ارتفاع النبات، عدد الأفرع، النسبة المئوية للمادة الجافة ووزن الثمار أعلى القيم عند المعاملة بالخليط بين سلكت سوبرمع بازجران. بينما أظهرت صفات عدد الثمار والمحصول الكلي أعلى القيم عند المعاملة بالبازجران مع نابوأس وتراوح المحصول بين 16.3,15.1 طن للفدان في الصنف كيم، (24.4,23.9) طن للفدان للصنف بترا في كلا موسمي التجربة.

وعلى الجانب الأخر أظهرت معاملة الكنترول أعلى قيم الكلورفيل في صنفي الدراسة مقارنة بباقي المعاملات في كلا موسمي الزراعة.

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