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EFFECT OF POTASSIUM FERTILIZER LEVELS ON FLOWERING PERCENTAGE, SOME PHYSICAGRONOMICAL CHARACTERISTICS AND POPULATION DENSITY OF MAJOR INSECTS ON SUGARCANE BREEDING VARIETIES

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ABSTRACT: ***Two field experiments were conducted at El-Sabahia Agricultural Research Station, Alexandria, Sugar Crops Research Center during two successive seasons 2005/2006 and 2006/2007 in order to evaluate the effect of potassium fertilizer (0, 24, 48 and 72kg of K_2O/fed) on some morphological and technological characters in addition to improve the resistance to infestation using four varieties sugarcane (GT54-9, F153, Bo19 and Co413).***

The data indicated that the four varieties of sugarcane varied significantly in the most studied characters under all treatments. GT54-9 variety produced the highest values in all characters under study. In addition, the third level of potassium fertilizer (48kg.) found to be more effective on most characters under this investigation. On the other hand, GT54-9 variety of sugarcane found to be resistance to infestation by mealy bug , Pseudococcus sachari CKII., soft scale insect Aclerda takashii Kuwane and pink stem borer , Sesamia cretica Led, while Co413 variety was susceptible in two seasons . The treatment with 48Kg of potassium decreased the population of sugar cane insects under test in all varieties.

Key words: ***Sugarcane. Potassium fertilizer. Flowering percentage. Varieties. Mealy bug. Stalk soft scale. Pink stem borer.***

INTRODUCTION

Sugarcane (interspecific hybrids of *Saccharum spp.*) is by far the important industrial and cash crops in Egypt and many countries of the world. Sugarcane is growing is not less than 105 countries and presently it covers a total average of about 19 million hectares for approximately 1.3 billion metric tones of cane and 127 million tones of sugar (Malavolta 1994). It is grown in tropical and sub-tropical regions in a range of climates from hot dry environment near sea level to cool and moist environment at higher

attitude. Beside sugar production, sugarcane produces numerous valuable by products such as alcohol used by pharmaceutical industry, bagass[1] used for paper, ethanol used as fuel, and chip board manufacturing and press mud used rich source for crops nutrition.

In Egypt, sugarcane is considered the first for sugar production, the gap between production and consumption represents 23.8% (National Council for sugar Crops, Ministry of Agricultural and Land Reclamation, 2006). It is cultivated in Upper Egypt in two seasons. The increase of sugarcane could be achieved through the vertical extension since the horizontal extension is difficult because of the big amount of irrigation water required for sugarcane cultivation. The improvement of agricultural practices and development of new desired varieties characterized with high yield, high sugar content and resistance to major insects could be considered as method of vertical sugarcane extension (El-Taweel *et. al.,* 2007). Consequently, plant nutrition has played a key role in increase of sugarcane production through the use of commercial man-made fertilizers (Schultz *et al*., 1995). In other word, the demand for vertical increased in such crop can be met by simultaneous in nutrient supply to the plant and thus requires a much higher concentration of nutrients including potassium in soil (El-Maghraby *et al*., 1997).Unfortunately sugarcane attacked by major insects in Upper Egypt. The pink stem borer, *Sesamia cretica* Led., mealy bug, *Pseudococcus sachari* CKII. and the soft scale insect *Aclerda takashii* Kuwane caused losses annually for sugarcane crops at upper Egypt (Abou –Dooh , *et.al*., 1999).

The main purpose of the present investigation is to evaluate the capability of potassium levels to affect the flowering percentages of four varieties of sugarcane in addition to some morphological and technological characters and improve the resistance varieties to infestation by previous insects.

MATERAILS AND METHODS

The experimental work was carried out during 2005/ 2006 and 2006/2007 sugarcane growing seasons in El-Sabahia Agricultural Research Station, (Alexandria Governorate). Sugarcane varieties (*Saccharum spp*) (GT54 -9, F153, Bo19 and Co413) were used in the present investigation. All varieties were planted in the third week of September 2005. The experimental area was divided into 48 plots (4 varieties x 4 treatments x 3 replicates). Each plot measured 6x7 meters was equaled 1/100 Fadden. Each variety was replicated in three plots, Physical, mechanical and chemical properties of experimental soil were analyzed according to the method described by Jackson (1976) and Page (1982) (table 1). The randomized complete block design was used. The

[1] The thirty Conference of Egypt sugar technology Association, 2006.

levels of potassium fertilizer were 0, 24, 48, and 72 Kg K_2O/fedan, applied as potassium sulfate (48%). The nitrogen fertilizer was added by low dose (50 Kg / fadden) to induce the examined sugarcane varieties to flowering. dded as urea (46%N) was given at two equal doses, the 1st after two months from planting date and the 2nd after two months later. Irrigation was applied at 10-15 days and the recommended agronomic practices for growing sugarcane were followed. In the end of growing seasons (12 month) the randomly sampled were chosen 50 plants from each plots to study the effect of potassium levels on flowering percentage, Stalk diameters number of internodes, number of leaves , stem height before peeling meter/plant, stalk height after peeling meter / plant, stem weight before peeling kg/plant stalk weight after peeling kg/plant , technological characters Total soluble solid (T..S.S. %) Sucrose % and juice weight kg/plant and accounted the major insects as, mealy bug, the soft scale insect and the pink stem borer, *S. cretica* which were considered as susceptible varieties to this insects .

Table (1):-Physical and chemical properties of experimental soil analyzed for the 2005/2006 and 2006/2007 seasons.

Soil character		Season 2005	Season2006
Mechanical analysis	Clay	42.30	43.10
	Silt	43.10	42.80
	Sand	14.60	14.10
Texture class		Clay loam	Clay loam
Organic matter (%)		1.38	1.25
$PH_{1.25}$		7.78	8.02
$Caco_3$ (%)		5.80	6.90
E.C.dSm^{-1}		4.75	4.62
Total N(%)		5.80	0.13
	K	27.12	25.00
	Cl	1.25	0.96
Soluble	Ca	17.25	16.31
Cations	Mg	11.30	10.20
(meq.L-1)	Na	4.60	13.90

The main purposes of this investigation were detected the response of flowering percentage, character yield and population density of sugarcane insects to potassium fertilizer levels. The experiments were arranged in complete block randomized design with four replicates to each plot. Statistical analysis was done according to Steel and Torrie (1981).

RESULTS AND DISUSSION

1. Morphological characters:-

Table (2) represents the effect of potassium levels on flowering percentage , stalk diameter , number of internodes and number of leaves of sugarcane varieties (GT54 -9, F153, Bo19 and Co413) in El-Sabahia Agricultural Research Station, during the two successive seasons 2005/2006 and 2006/2007. The results showed that flowering was significantly affected by the treatments and varieties in both seasons. In both seasons , GT54 -9 variety produced the highest flowering percentage since it was 27.95 , 68.53 , and 44.81%in the first season and was 16.4 , 67.18 , 27.87 % in the second seasons for K24 , K48 and K72 treatments compared with control (K0), 23.58% in the first season and 8.42%in second season On other hands , F153 variety gave the lowest values of flowering percentage in both seasons since it was 20.12 , 42.17 and 15.3 % for K24 , K48 and K72 treatments in the first season and was 4.14, 21.82 and 17.43% in the second, respectively. However, these results were significantly differed from those obtained by control groups (6.47 in the first season and 6.26%in the second season). These results are in accordance with those obtained by Bedford (2006) and El-Taweel *et. al.,* (2007) found that the flowering percentage was observed for all studied varieties of sugarcane at application of high levels of potassium.

Considering the stalk diameter, the results obtained showed no significant difference among varieties and treatments. In other words, this character was not affected in all varieties and treatments. It appeared that, number of internodes character was significantly affected by the treatment with potassium and such character increased by increment with treatments, while there were no significant differences among varieties and seasons. As shown in Table (2), it could be mentioned that the potassium treatments increased significantly the number of leaves in all treatments and through out the two seasons. The highest values of leaves number were recorded by (Co413) variety since they were 71.67 , 94.67 and 65.92 in the first season and 72.00 95.67 and 67.08 in the second season for K24, K48, and K72 treatments, respectively. Also, it can be noticed that there were significant differences among varieties and treatments, while there were no significant differences between seasons. These results are in harmony with those obtained by Jones and Leigh (2000) and Bedford (2006).

Table (2):The flowering percentage and sugarcane character yield of sugarcane varieties which treated by potassium fertilizer in two successive seasons 2005-2006 and 2006/2007.

Varieties	Potassium levels	Flowering %			Stalk diameters /cm.			No. of inter node			Leaves No.		
		1St	2nd	Mean	1St	2nd	Mean	1St	2nd	Mean	1St	2nd	Mean
GT54-9	K0	23.58	8.42	16.00	1.89	1.72	1.81	12.17	14.73	13.45	43.00	43.00	43.00
	K24	27.95	16.4	22.18	2. 32	2.44	2.38	13.83	13.93	13.88	68.67	68.67	68.67
	K48	68.53	67.18	67.86	2.54	2.44	2.49	14.73	11.83	13.28	61.33	58.33	59.83
	K72	44.81	27.87	36.34	2.27	2.52	2.40	16.27	14.83	15.55	56.33	56.33	56.33
Means		41.22	29.97	35.59	2.23	2.28	2.27	14.25	13.83	14.04	57.33	56.58	56.96
F153	K0	6.47	6.26	6.37	2.44	2.52	2.48	8.23	12.60	10.42	76.67	76.67	76.67
	K24	20.21	4.41	12.31	1.99	1.79	1.89	13.47	13.73	13.60	58.67	58.67	58.67
	K48	42.71	21.82	32.27	2.07	2.10	2.09	16.33	14.07	15.20	61.00	52.33	56.67
	K72	15.31	17.73	21.63	2.31	2.43	2.37	16.9	16.27	16.59	69.33	76.67	73.00
Means		21.18	12.56	16.87	2.20	2.21	2.21	13.73	14.17	13.95	66.42	66.09	66.25
Bo19	K0	0.00	4.15	2.08	2.19	1.83	2.01	10.53	13.83	12.18	68.67	68.67	68.67
	K24	38.61	6.09	22.35	2.28	2.11	2.20	12.77	13.63	13.20	71.67	71.67	71.67
	K48	68.33	36.54	52.44	2.39	2.39	2.39	12.77	15.03	13.90	60.33	71.00	65.67
	K72	7.98	6.09	7.04	2.08	2.40	2.24	15.43	16.17	15.80	58.33	58.33	58.33
Means		28.73	13.22	20.97	2.24	2.18	2.21	12.88	14.67	13.77	64.75	67.42	66.09
Co413	K0	5.21	3.84	4.53	2.05	2.52	2.29	11.04	11.67	11.04	43.33	43.33	43.33
	K24	4.25	9.56	6.91	2.26	2.52	2.39	14.5	13.83	14.50	54.00	57.33	55.67
	K48	23.67	22.02	22.85	2.50	3.06	2.78	13.43	14.17	13.43	71.67	72.00	71.84
	K72	63.83	3.47	33.65	1.81	1.82	1.82	15.6	13.78	15.60	94.67	95.67	95.17
Means		24.24	9.72	16.98	2.16	2.48	2.32	13.64	13.36	13.50	65.92	67.08	66.50
LSD 0.05		14.71	17.273	15.99	0.291	0.144	0.215	1.03	1.29	1.16	8.796	0.116	8.456

1st = first season 2nd = second season

The results presented in Table (3) showed that stem height /meter and stalk weight /Kg before and after peeling were not affected by the treatment with potassium fertilizer and there were no significant difference among varieties and seasons. Considering leaves weight, the same results were obtained but there were significant differences among varieties.

Table (3): Effect of potassium fertilizer levels on sugarcane varieties and their agronomic characters in the two seasons 2005/2006 and 2006/2007 and their combined.

Varieties	Potassium Levels	Stem height before peeling meter /plant			Stalk height after peeling meter /plant			Stalk weight before peeling meter /plant			stalk Weight after peeling kg/ plant			Leaves Weight /kg		
		1st	2nd	Mean	1st	2nd	Mean	1st	2nd	Mean	1st	2nd	Mean	1st	2nd	Mean
GT54-9	K0	2.41	2.09	2.25	1.52	1.18	1.35	2.89	1.69	2.29	4.29	2.34	3.32	1.40	0.65	1.03
	K24	2.21	2.38	2.30	1.57	1.19	1.38	2.97	2.07	2.52	4.75	2.94	3.85	1.78	0.87	1.33
	K48	2.71	2.62	2.67	1.54	1.37	1.46	2.81	1.01	1.91	4.73	1.69	3.21	1.92	0.68	1.30
	K72	1.91	2.06	1.99	1.60	1.41	1.51	2.42	2.07	2.25	4.85	4.74	4.80	2.43	2.67	2.55
Mean		2.31	2.29	2.30	1.56	1.29	1.42	2.77	1.71	2.24	4.66	2.93	3.79	1.88	1.22	1.55
F153	K0	1.12	2.08	1.60	1.57	1.32	1.44	1.12	2.08	1.60	2.32	2.43	2.38	1.20	0.35	0.78
	K24	2.4	1.20	1.80	1.37	0.69	0.53	2.40	1.20	1.80	3.08	1.78	2.43	0.68	0.58	0.63
	K48	1.67	1.60	1.64	1.39	0.80	0.60	1.67	1.60	1.64	2.59	2.30	2.45	0.92	0.70	1.30
	K72	1.66	2.19	1.93	0.88	1.54	1.06	0.66	2.19	1.43	1.63	2.81	2.22	0.97	0.62	2.55
Mean		1.71	1.77	1.74	1.30	1.09	0.91	1.46	1.77	1.62	2.41	2.33	2.37	0.94	0.56	1.31
BO19	K0	2.53	2.50	2.52	1.33	1.31	1.32	0.78	1.14	0.96	2.43	2.31	2.37	0.76	0.52	0.64
	K24	2.15	2.53	2.34	1.21	1.27	1.24	0.81	1.46	1.14	2.26	2.44	2.35	0.63	0.55	0.59
	K48	2.77	2.29	2.53	1.41	1.33	1.37	1.47	1.80	1.64	2.18	2.47	2.33	0.58	0.85	1.30
	K72	2.48	2.63	2.56	1.31	1.25	1.21	0.92	1.88	1.40	2.32	2.39	2.35	0.58	0.48	2.55
Mean		2.48	2.49	2.49	1.32	1.33	1.33	1.00	1.57	1.28	2.30	2.40	2.35	0.64	0.60	1.27
Co413	K0	2.29	2.36	2.33	1.25	1.31	1.28	1.28	1.27	1.28	2.11	1.90	2.01	0.83	0.63	0.73
	K24	2.26	2.33	2.30	1.34	1.41	1.38	0.99	1.88	1.44	1.56	2.42	1.99	0.57	0.54	0.56
	K48	2.79	2.59	2.69	1.75	1.03	1.39	1.10	1.79	1.45	1.87	2.42	2.15	0.77	0.63	1.30
	K72	2.27	2.10	2.19	1.22	1.18	1.20	0.62	1.19	0.91	4.62	3.53	4.08	4.00	2.34	2.55
Mean		2.40	2.35	2.37	1.39	1.23	1.31	1.00	1.53	1.27	2.54	2.57	2.55	1.54	1.04	1.28
LSD 0.05		0.124	0.115	0.119	0.14	0.15	0.153	1.01	0.57	0.84	0.01	0.02	0.01	0.75	0.31	0.524

1st = first season 2nd = second season

2- The quality character:

As regard to varieties influence, data indicate that total soluble solids % (T.S.S.) was significantly affected by varieties in(Table 4).The GT54-9 variety scored the highest values of T.S.S. %23.00 and 21.43%) in both seasons respectively for K48 treatment while F153 variety showed the lowest value of T.S.S. % at K24 treatment (17% in the first season and 16.67% in the second season). It can be observed that the treatment with 48Kg of potassium increased the T.S.S. %in all varieties under study in both seasons and there were no significant differences between seasons. These results are in harmony with those obtained by Dong and Verma (1996) and Chatterjee *et. al.,* (1998).

Table (4):- Effect of potassium fertilizer levels on the quality characters of sugarcane variety in two successive seasons (2005/2006 and 2006/2007).

Varieties	Potassium Levels	T.S.S.%			Sucrose%			Juice weight kg/plant		
		1st	2nd	Mean	1st	2nd	Mean	1st	2nd	Mean
GT54-9	K0	20.67	20.33	20.50	17.07	13.59	15.33	1.75	1.08	1.42
	K24	20.00	18.17	19.09	17.08	13.75	15.42	1.73	1.12	1.43
	K48	23.00	19.67	21.34	17.23	14.37	15.80	2.52	1.13	1.79
	K72	21.67	18.40	20.04	15.88	13.54	14.71	1.37	1.06	1.25
Mean		21.34	19.14	20.24	16.82	13.81	15.31	1.84	1.10	1.47
F153	K0	18.33	19.12	18.73	15.83	15.25	15.54	1.67	1.16	1.42
	K24	17.00	16.67	16.84	14.00	12.05	13.03	1.87	1.06	1.47
	K48	21.00	17.53	19.27	15.92	17.93	16.93	1.38	1.14	1.26
	K72	19.33	19.67	19.50	14.50	12.97	13.74	1.37	1.10	1.24
Mean		18.92	18.25	18.58	15.06	14.55	14.81	1.57	1.12	1.34
Bo19	K0	20.67	17.83	19.25	14.99	13.37	14.18	1.52	1.08	1.30
	K24	20.00	18.10	19.05	16.08	13.58	14.83	1.53	1.08	1.31
	K48	20.33	19.67	20.00	16.10	11.72	13.91	1.57	1.11	1.34
	K72	19.67	19.17	19.42	14.75	14.37	14.56	1.67	1.14	1.41
Mean		20.17	18.69	19.43	15.48	13.26	14.37	1.57	1.10	1.34
Co413	K0	18.00	18.33	18.17	18.00	18.00	18.17	0.65	0.11	0.38
	K24	18.33	18.27	18.30	18.33	18.33	18.30	0.78	0.08	0.43
	K48	20.33	19.03	19.68	20.33	20.33	19.68	1.52	0.17	0.85
	K72	19.33	17.50	18.42	19.33	19.33	18.42	0.8	0.12	0.46
Mean		19.00	18.28	18.64	19.00	19.00	19.00	1.69	1.13	1.41
$LSD_{0.05}$		1.02	1.06	1.21	0.418	0.416	0.398	0.23	0.02	0.65

Considering sucrose percentage, the data showed significant varitions among varieties in the two investigated seasons. The GT54-9 variety recorded the highest value of sucrose % than other variety. It was 17.23% in the first season and 14.37 % in the second one for third level (K48) of potassium. Such results were in the same trends with that were obtained from T.S.S. % and there were no significant differences between treatments and seasons as well.

Regarding to juice weight, it was observed that the treatment with 48kg of potassium fertilizer increased significantly this character in all varieties. However, (GT54-9) was found to be more effective than other variety since it gave the highest value of juice weight in both seasons (2.52 Kg/ stalk in the first season and 1.13 Kg / stalk in the second season).

These results are in agreement with those obtained by (Nasser *et al.,* 2005) since they found that GT54-9 varieties gave the highest values of juice weight. Finally, it could concluded that four varieties varied significantly due to treatments. The GT 54-9 gave the highest value in all characters under study .These results are in harmony with those obtained by Ahmed (2003) .In addition the third level of potassium fertilizer (48Kg) found to be more effective on most characters under this investigation.

3- Assessment of susceptibility of sugarcane varieties to infestation by some economic sugarcane insects.

3.1. Population density of mealy bug Pseudococcus sachari CKII

Sugarcane attacked by three major insects causing serious of damage to this important crop such as mealy bug, soft scale insect and pink stem borer. Mealy bug feed on the soft tissues of many plant species and injects phototoxic saliva that causes curling and contortion of leaves (Hoy *et .al.,* 1995). Data in Table (5) and figure (1) showed the population densities sugarcane insects which were surveyed on the sugarcane breeding field. This part of investigate was to evaluate population densities of sugarcane insects and measured the effect of potassium fertilizer levels on these population. Data in Table (5) were indicated that the GT54-9 variety was found to be resistant to infestation by mealy bug (96.67and 103.67 insects / stem) *Pseudococcus sachari* CKII, while Co413 verity was susceptible to infested by mealy bug in both seasons. Population density of mealy bug decreased in the two successive seasons that was effected by using potassium fertilizer from K0 to K48 kg / fedan. The population of mealy bug decreased in all varieties in the third treatment K48 in the first season (15.00, 32.00, 4.33 and 9.33 insects/stalk) than other treatments. In the second season, the third treatment gave the same trend but population increased in the second season than the first season. On other hand, the effect potassium levels

could be arranged in the following descending order according to number of mealy bug which were affected by potassium fertilizer levels as follows: K48 (15.00 , 32.00 , 4.33 and 9.33 insects /stalk) , K72gk /fadden (65.00, 42.00, 0.33 and 4.33 insects /stalk) , K24 Kg/fedan (92.67, 49.33 , 49.00 and 51.00 insects /stalk). In regard to sugarcane varieties, Table (5) revealed that all tested sugarcane varieties were infested by mealy bug which treated by potassium levels and were susceptible to these insects. There were significant differences among treatments and varieties in both seasons. The high susceptible sugarcane variety was Co413, while GT54-9 verity was tolerant. This results are in obtained by Abou-Dooh, *et al*., (1999) who reported that GT54-9 was middle susceptible to infested by mealy bug .

Fig (1):- Mealy bug *Pseudococcus sachari* CKII on stalk of sugarcane.

3.2 Population density of stalk soft scale *Aclerda takashii* Kuwane.

The stalk soft scale pest attacking sugarcane (*Saccharum Spp*.) recently was recorded in Egypt. Concerning the stalk soft scale in Table (5) and figures (2) showed that GT54-9 variety was tolerant to infestation by stalk soft scale in two seasons (36.33 & 65.33 insect /stalk), while Co413 was susceptible (206.67 & 583.33 insect/stalk) to infested by this insects. These

results agreed with (Maareg *et.al.,* 1992) who found that sugarcane were attacked by four spices of scale insects belonged to three families. There were significant differences among varieties during two seasons. Potassium level K48 Kg /fed was more effective on population of stalk soft scale where the population reduced than the other population which applied by different potassium levels in the two successive seasons. The two levels K24 and K72 kg / fedan were differed in their effect on population density of stalk soft scale.

Fig (2):-The stalk soft scale *Aclerda takashii* Kuwane on sugarcane stalk.

There were significant variations among varieties which affected by potassium levels in the two studied seasons. Considering population density, it was found that, there were significant differences among potassium levels during the two seasons.

3.3:-Population density of the pink stem borer *Sesamia cretica* Led .

The pink stem borer *Sesamia cretica* is one of the major insect attacking sugarcane in Egypt. The GT54-9 verity was(2 67 &3.33 holes/ stalk) less infested but Bo19 verity was susceptible to infested by (12.00 & 13.00 holes /stalk) *S. cretica* in two seasons 2005/2006 and 2006 / 2007. These results agree with (Abo El Ftooh *et al* 2008) and the number of holes was counted to measured susceptibility to *S. cretica*. As shown in Table(5)and Figure (3) data showed that potassium levels were effected on the numbers of holes, where, the third level (K48kg / fed) decreased number of holes in all varieties .There were significant effects among treatments in two successive seasons. This result agreed with Parrella *et al.*, (2003) who reported that the addition of potassium associated with increasing a plant's ability to withstand attack by pests.

Table (5): Populations densities of three economic insects attacked sugarcane varieties during the two successive seasons 2005/2006 and 2006/2007.

varieties	Potassium levels	Mealy bug /stalk			Stalk soft scale insect			The pink stem borer (hole/stalk)		
		1st	2nd	Mean	1St	2nd	Mean	1St	2nd	Mean
GT54-9	K0	96.67	103.67	100.17	36.33	65.33	50.83	2.67	3.33	3.00
	K24	49.33	160.57	104.95	20.33	39.00	29.67	4.00	6.00	5.00
	K48	32.33	45.33	38.83	1.37	24.00	12.69	1.67	2.67	2.17
	K72	42.00	54.67	48.34	24.67	20.00	22.34	3.00	3.00	3.00
Means		55.08	91.06	73.07	20.68	37.08	28.88	2.84	3.75	3.29
F153	K0	167.00	147.33	157.17	56.33	194.00	125.17	5.00	23.33	14.17
	K24	92.67	92.00	92.34	36.33	30.67	33.50	1.33	16.33	8.83
	K48	15.00	18.33	16.67	9.33	35.33	22.33	0.00	5.33	2.67
	K72	65.00	22.43	43.72	23.00	24.00	23.50	3.67	11.00	7.34
Means		84.92	70.02	77.47	31.25	71.00	51.12	2.50	14.00	8.25
Bo19	K0	166.3	160.67	163.49	77.33	68.33	72.83	12.00	13.00	12.50
	K24	49.00	59.67	54.34	11.00	18.00	14.50	5.00	11.33	8.17
	K48	0.33	7.67	4.00	20.67	32.33	26.50	0.67	4.67	2.67
	K72	4.33	4.67	4.50	8.33	22.67	15.50	1.33	2.67	2.00
Means		54.99	58.17	56.58	29.33	35.33	32.33	4.75	7.92	6.33
Co413	K0	167.67	183.33	175.50	206.67	583.33	395.00	4.75	7.92	6.33
	K24	51.00	168.33	109.67	177.00	152.00	164.50	5.00	24.00	14.50
	K48	9.33	25.33	17.33	167.67	21.70	94.69	3.00	11.67	7.34
	K72	33.33	21.00	27.17	250.00	490.70	370.35	2.00	6.00	4.00
Means		65.33	99.50	82.42	200.34	311.93	256.13	3.75	13.34	8.54
LSD 0.05		2.503	3.647	2.165	15.573	5.502	7.952	1.828	1.254	1.201

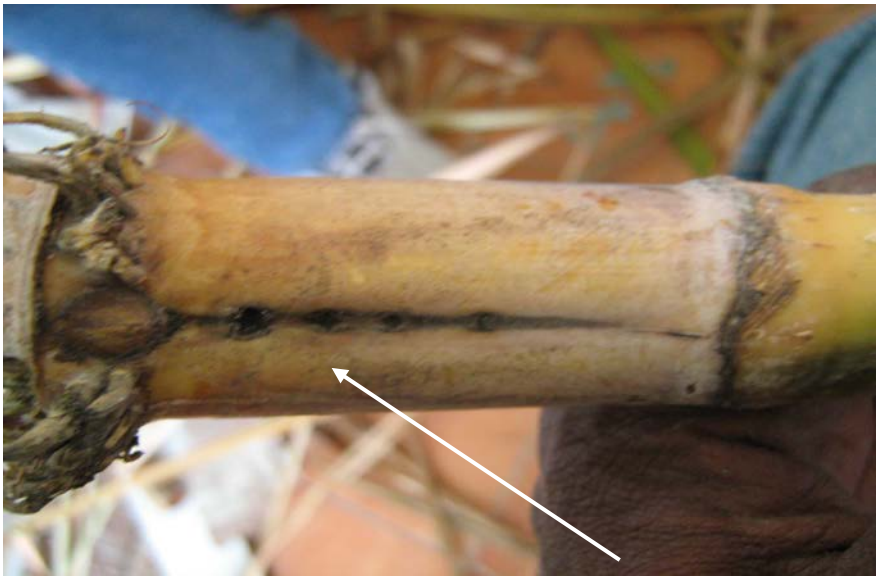

Fig (3):- Holes caused by the pink stem borer *S. cretica*.

In fact, potassium plays an important role in activating enzymes in plant metabolism such as photosynthesis, protein synthesis, starch formation and translocation of proteins and sugars. Analysis of cellular constituents under potassium treatment provides a useful tool to assess their physiological conditions. In addition it is known that, the oxidase activity of plant peroxideasees is modulated by certain phenolics and the treatment with different levels of potassium increased the activity of peroxides isozymes and consequently increasing phenolice (Anstacia-Mata 2000 and El-Taweel *et. al*., 2007). Thereby, the resistance may be due to the increasing of phenolics as a result of peroxdases.

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تأثير معدلات التسميد البوتاسى علي النسبة المئوية للتزهير والصفات الطبيعية المحصولية والكثافة العددية لحشرات القصب المهمة لأصناف التربية لقصب السكر

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الملخص العربي

أجريت تجربتان حقليتان خلال الموسمين ٢٠٠٦/٢٠٠٥ و ٢٠٠٧/٢٠٠٦ بمزرعة محطة بحوث بالصبحية – معهد بحوث المحاصيل السكرية مركز البحوث الزراعية بهدف دراسة تأثير التسميد البوتاسى (٠ و ٢٤ و ٤٨ و٧٢ كجم / فدان) علي النسبة المئوية للتزهير وبعض الصفات المحصولية الطبيعية وكذلك دراسة حساسية أربعة أصناف من فصب السكر (GT54-9 و Bo19 و F153 و Co413) للإصابة بالبق الدقيقي و الحشرة القشرية للساق و دودة القصب الكبيرة و قد أظهرت النتائج ان المعاملة بالوتاسيوم أدت إلي زيادة معنوية في اغلب القياسات . وقد وجد إن اعلي القيم المتحصل لعيها كانت باستعمال التركيز ٤٨ كجم للصنف GT54-9 وأظهرت الدراسة وجود اختلافات معنوية بين الأربعة أصناف في معظم الصفات المدروسة وأن هناك اختلافات معنوية أيضا" بين المعاملات المختلفة من البوتاسيوم مقارنة بالكنترول وكان معدل التسميد البوتاسى(K_2O) ٤٨ كجم / فدان أكثر المعدلات خفضا" لتعداد البق الدقيقي والحشرة القشرية للساق و دودة القصب الكبيرة و زيادة مقاومة أصناف القصب للإصابة بهذه الحشرات للصنف GT54-9 الأقل إصابة بهذه الحشرات . و يمكن القول بان مثل هذه النتائج قد تكون عونا" لمنتج قصب السكر لاختيار الأصناف التي تتناسب مع معدلات التسميد المتاحة و يمكن للمربي الاستعانة بهذه النتائج لانتخاب التراكيب الوراثية التي تتميز بصفات جودة من حيث نسبة السكر العالية و أيضا" من حيث المقاومة لحشرات القصب(البق الدقيقي والحشرة القشرية للساق ودودة القصب الكبيرة).