

## **YIELD AND QUALITY IN RELATION TO SEEDING RATES OF SOME SUGAR CANE VARIETIES**

**Hasan, H. F. M.; Maha M. El-Zeny and Ranya M. Abd ElAziz**  
Sugar Crops Res. Inst., Agric. Res. Centre, Giza, Egypt.

### **ABSTRACT**

This study was carried out in 2007/2008 and 2008/2009 seasons at Mallawi Agric. Res., Station, Minia Governorate, Egypt, to investigate find out the relative response in vegetative and qualitative characteristics of some commercial sugar cane varieties i.e. G.84-47, G.T.54-9 and Phil.8013 at three seeding rates (1.5, 2.0 and 2.5 drills) grown as a spring plant cane .

The results showed that there were significant differences in stalk height and diameter, BRIX% , sucrose%, purity%, reducing sugars%, sugar recovery%, millable cane yield and recoverable sugar yield of the studied sugar cane varieties in the two seasons and their combined, except recoverable sugar yield where the differences among varieties were insignificant in the two seasons and their combined.

Meanwhile, there were significant differences in stalk height, stalk diameter, BRIX%, sucrose%, purity%, reducing sugars%, sugar recovery%, millable cane yield and recoverable sugar yield/fed between the three seeding rates in the two seasons and their combined, except purity% in the first season.

The interaction between Phil8013 variety with 2.5 drills seeding rates well as G.T.54-9 and G.84-47 varieties with 2.0 drills seeding rate can be recommended under the Middle Egypt conditions (Minia Governorate) to produce the highest yield of millable cane and recoverable sugar yields/fed.

**Keywords:** Sugar cane, seeding rate, purity %, sugar recovery % and pol% .

### **INTRODUCTION**

Sugar cane varieties are considered the 1<sup>st</sup> corner stone in sugar production. As a matter in fact, the breeders and the technologists meant by the new varieties distinguished by high yield and quality.

Sugar cane varieties varied genetically in respect to their production capability as a result to their vegetative and qualitative characteristics, it is evident that seeding rate differs widely from variety to the another. Genotypes of sugar cane have highly significant effect on vegetative characters such as stalk height and diameter as well as millable cane and recoverable sugar yields (Mohamed & El-Taib 2007-a). Also, sugar cane genotypes have highly significant effect on all quality traits, i.e. BRIX%, sucrose%, pol%, purity % and sugar recovery% (Mohamed & El-Taib 2007-b).

Seeding rate directly effected on yield and quality of sugarcane. Many investigators revealed that increasing seeding rate increased millable cane yield and juice quality. Total soluble solids percentage cane juice and sugar yield were significantly affected by seeding rates (Yousef *et al.* 1998). In this subject, increasing seeding rate from 18000 to 36000 buds /fed increased gradually values of stalk height, BRIX%, sucrose % and recoverable sugar yields (Saif-Laila *et al.* 1999). Moreover, El-Geddawy *et al.* (2005 ) indicated that the highest seed rate of sugar cane (50400 buds/fed.) gave the highest values of stalk height, BRIX%, sucrose %, sugar recovery %, cane and sugar yields compared with other seeding rates (25200 and 37800 buds/fed).

The present work was conducted to find out the optimum precisely the seeding rate for the studied varieties in order to maximize sugar production minimize production costs.

## MATERIALS AND METHODS

Two field experiments were conducted at Mallawi Agricultural Research Station, Minia Governorate, Egypt, including two plant cane crops in 2007/2008 and 2008/2009 seasons in a silty clay loam soil to study the effect of three seeding rates (1.5 and 2.0 and 2.5 drills, i.e. 34650, 46200 and 57750 buds/fed) on productivity and quality characteristics of three sugar cane varieties (G.T. 54-9, G. 84-47 and Phil. 8013).

A split plot design with four replicates was used, sugarcane varieties were arranged in the main plots, while seeding rates were allocated in the sub plots. Sugarcane was planted on the 14<sup>th</sup> and 18<sup>th</sup> of March, and harvested after 12 months in the 1<sup>st</sup> and 2<sup>nd</sup> seasons, respectively. Sub-plot was 42m<sup>2</sup> (six ridges of 100-cm width and 7- m long). Phosphorus fertilizer was broadcasted after ridging and before planting in form of calcium super-phosphate (15.5% P<sub>2</sub>O<sub>5</sub>) at a rate of 60 kg/fed. Potassium 48% K<sub>2</sub>O was added at the rate of 48 kg/fed after two months from planting as potassium sulphate. Nitrogen fertilizer as Ammonium Nitrate (33.5% N) at a rate of 210 kg/fed was added in two equal doses as side dressing in cane rows the 1<sup>st</sup> after full emergence of cane plants and 2<sup>nd</sup> one month later.

### Recorded data :

At harvest time 10 guard plants were taken from each subplot to estimate the following characters:

1. **Stalk height (cm)** was measured from land surface to the top visible dewlap.
2. **Stalk diameter (cm)** was measured at the middle part of cane stalks.
3. **Brix percentage:** was determined using "Brix hydrometer" standardized at 20 °C as shown by A.O.A.C. (1995).
4. **Sucrose %** was determined using Sacharemeter according to A.O.A.C (1995)
5. **Purity%** was calculated according to Satisha *et al.* (1996) using the following equation: Purity % = Sucrose % x 100 / BRIX%
6. **Reducing sugars %** was determined according to A.O.A.C. (1995)
7. **Sugar recovery% or rendement** was calculated according to the procedures outlined at Sugar and Integrated Industries Co using the following equation:  
**Sugar recovery %** = {Pol% - 0.8 / Purity% juice x Purity% juice - 40 / 100 - 60} x 100  
Where; Pol% of cane stalks was calculated by the following equation  
**Pol % = {brix% - (brix% - sucrose %) 0.4} 0.73.**
8. **Millable cane yield (ton/fed):** cane stalks of the four guarded ridges were harvested, topped, cleaned, weighed and cane yield was calculated as ton/ fed.
9. **Recoverable sugar yield (ton/fed):** was estimated according to the following equation reported by Mathur (1981):  
Recoverable sugar yield (ton/fed) = Millable cane yield (ton/fed) x sugar recovery.

**Statistical analysis:**

The proper statistical analysis of the recorded data was carried out according to Gomez and Gomez (1984). The differences between means of the treatments were compared using the least significant difference (LSD) at 5% level.

**RESULTS AND DISCUSSION**

**1. Stalk height**

Results in Table 1 showed that there were significant differences among the tested sugarcane varieties with regard to stalk height in the two growing seasons and their combined analysis. It could be noted that sugarcane variety G.84-47 gave the highest value of stalk height, while the lowest value of this trait was recorded by the commercial variety G.T54-9. This result might be due to gene make-up effect which plays an important role in plant growth. These results are in accordance with those reported by El-Sogheir *et.al.*(2006), Mohamed & El-Taib (2007-a) and Abd El-Aziz (2008)) who reported that sugarcane varieties differed significantly in stalk height.

Results given in Table 1 indicated that seeding rates had a significant effect on stalk height in the two seasons and their combined. The combined analysis showed that the increase in seeding rates from 1.5 to 2.0 and 2.5 drills increased stalk height by 7.89 and 17.0 cm, respectively. This result was mainly due to an increase in the competition among plants for growth elements in terms of space, Solar radiation and nutrients with increasing seeding rate which led to stalk elongation. These results are in accordance with those obtained by Saif-Laila *et al.* ( 1999) and El-Geddawy *et al.* (2005 ).

A significant interaction effect between varieties and seed rates on stalk height was detected in the two seasons and their combined. It could be noticed that planting sugar cane variety G.84-47 variety with 2.5 drills of cane setts produced the highest value of stalk height, while the shortest stalk value was given by the growing Phil 8013 with 1.5 drills.

**Table 1: Effect of seeding rates on stalk height (cm) of three sugarcane varieties.**

Varieties (A)	Combined of 2007/08 & 2008/09 seasons			
	Seeding rates (B)			
	1.5 drills	2.0 drills	2.5 drills	Mean
<b>G.84-74</b>	297.83	304.33	315.67	305.94
<b>G.T.54-9</b>	283.83	283.83	292.33	283.33
<b>Phil.8013</b>	278.33	285.50	293.00	285.61
<b>Mean</b>	283.33	291.22	300.33	291.35
<b>LSD at 0.05</b>	A=1.60	B= 1.01		AB=1.75

**2. Stalk diameter**

Stalk diameter of the studied sugarcane varieties differed significantly in the two seasons and their combined as shown in Table 3.

Sugarcane Phil.8013 variety surpassed the other two varieties in this respect, however, G.84-47 variety recorded the lowest value. These results are indeed a reflection of the different genetical structures among varieties. These results are in line with those reported by Abd El-Latif *et al.*(1998), El-Sogheir *et al.* (2006) and Abd El-Aziz (2008) they found that sugarcane varieties differed significantly in stalk thickness.

Seeding rates had a significant effect on stalk diameter of sugar cane in the two seasons and their combined (Table 2). The combined over the two seasons showed that as seeding rates increased from 1.5 to 2.0 and 2.5 drills stalk diameter decreased by 0.06 and 0.10 cm, respectively. These findings are in good agreement with those obtained by Saif-Laila *et al.* (1999) and El-Geddawy *et al.* (2005). Who reported that millable cane stalks resulted from the lowest seeding rate (25200 buds/fed) had the thickest stalks than those planted by high seeding rates (37800 and 50400 buds/fed).

Significant interaction effect was found between sugarcane varieties and seeding rates on stalk diameter as shown in the combined analysis only. It could be noticed that planting Phil 8013 variety with 1.5 drills of cane cuttings recorded the highest value of stalk diameter, while growing G.84-47 variety with 2.5 drills resulted in the lowest value of stalk diameter.

**Table 2: Effect of seeding rates on stalk diameter (cm) of three sugar cane varieties.**

Varieties (A)	Combined of 2007/08 & 2008/09 seasons			
	Seeding rates (B)			
	1.5 drills	2.0 drills	2.5 drills	Mean
<b>G.84-74</b>	2.52	2.44	2.41	2.46
<b>G.T.54-9</b>	2.63	2.58	2.51	2.58
<b>Phil.8013</b>	3.00	2.96	2.93	2.96
<b>Mean</b>	2.72	2.66	2.62	2.67
<b>LSD at 0.05</b>	A=0.01		B=0.02	
				AB=0.03

**3. Brix percentage:**

Results in Table 3 cleared that BRIX% of cane juice differed significantly among the evaluated sugarcane varieties in the two seasons and their combined. It could be noted that Phil 8013 variety had the highest value of BRIX% followed by G. 84-47, while G.T.54-9 variety recorded the lowest value. These findings are in the same line with those observed by El-Sogheir *et al.* (2006) and Abd El-Aziz (2008) they found that significant differences among G.T.54-9, G. 84-47, G.99-103, G.98-28, G.98-87 and Phil.8013, varieties in BRIX %.

Data in Table 3 showed significant differences among the examined seeding rates with respect to BRIX% in the two seasons and their combined. The combined analysis pointed out that the increase in seeding rates from 1.5 to 2.0 and 2.5 drills was accompanied by increasing in BRIX% amounted by 0.36 and 0.62, respectively. These findings are in

agreement with those obtained by El-Geddawy *et al.* (2005) who found that an increase in BRIX% with increasing seeding rates from 25200 to 37800 and 50400 buds/fed.

The interaction between sugarcane varieties and seed rates with respect to BRIX% in the 2<sup>nd</sup> season and the combined. The combined analysis showed that growing Ph8013 variety with 2.5 drills of cane cuttings scored the highest value of this trait, while planting G.T.54-9 variety with 1.5 drills resulted in the lowest value.

**Table 3: Effect of seeding rates on BRIX% of three sugar cane varieties.**

Varieties (A)	Combined of 2007/08 & 2008/09 seasons			
	Seeding rates (B)			
	1.5 drills	2.0 drills	2.5 drills	Mean
<b>G.84-74</b>	22.18	22.55	22.97	22.57
<b>G.T.54-9</b>	21.35	21.78	21.95	21.69
<b>Phil.8013</b>	22.62	22.90	23.10	22.87
<b>Mean</b>	22.05	22.41	22.67	22.38
<b>LSD at 0.05</b>	A=0.11		B=0.08	

**4. Sucrose%:**

The results in Table 4 showed that the tested varieties varied significantly in values of sucrose% in both seasons and their combined. The combined analysis cleared that the highest value of sucrose% was attained for Phil8013 variety, while G.T.54-9 variety scored the lowest one. This result may be due to the value of BRIX% of these varieties. These findings are in line with those observed by El-Sogheir *et al.* (2006) and Abd El-Aziz (2008).

Data given in Table 4 showed that sucrose% was significantly affected by the studied seeding rates in both seasons and their combined. It could be noticed that increasing seeding rates led to significant increase in sucrose%. These findings are in accordance with those obtained by Saif-Laila *et al.* (1999) and El-Geddawy *et al.* (2005 ). They revealed that the highest values of sucrose% were recorded by using 1.5 and/or 2.0 drills.

**Table 4: Effect of seeding rates on sucrose% of three sugar cane varieties**

Varieties (A)	Combined of 2007/08 & 2008/09 seasons			
	Seeding rates (B)			
	1.5 drills	2.0 drills	2.5 drills	Mean
<b>G.84-74</b>	18.86	19.22	19.57	19.22
<b>G.T.54-9</b>	17.91	18.30	18.47	18.23
<b>Phil.8013</b>	19.51	19.86	20.03	19.80
<b>Mean</b>	18.76	19.13	19.36	19.08
<b>LSD at 0.05</b>	A=0.14		B=0.07	

It could be noticed that the combination between Phil8013 variety with 2.5 drills seeding rate recorded the highest value of this trait (20.03 %).

**5. Reducing sugars%:**

Data in Table 5 showed that reducing sugars% was statistically affected by the tested varieties in both seasons and their combined. It is well known that there is inverse relationship between juice quality and the values of reducing sugars. Sugar cane variety phil8013 recorded the lowest value of reducing sugar.

Data given in Table 5 indicated that seeding rates had a significant effect on reducing sugar %. It could be noticed that drilling seed setts in 1.5 and 2.0 drills had the lowest value of reducing sugar % (0.30 %), however, increasing drilling rate to 2.5 drills recorded the highest value (0.32%). These findings are in agreement with Saif-Laila *et al.*( 1999) .

**Table 5: Effect of seeding rates on reducing sugars % of three sugar cane varieties.**

Varieties (A)	Combined of 2007/08 & 2008/09 seasons			
	Seeding rates (B)			
	1.5 drills	2.0 drills	2.5 drills	Mean
G.84-74	0.30	0.28	0.31	0.29
G.T.54-9	0.33	0.34	0.35	0.34
Phil.8013	0.27	0.28	0.30	0.28
Mean	0.30	0.30	0.32	0.0.31
LSD at 0.05	A=0.14		B=0.01	

**6. Purity%:**

Figures in Table 6 cleared that purity% of sugar cane juice was significantly affected by the examined varieties in both seasons and their combined. The highest value of purity % was recorded for Ph8013 variety while G.T.54-9 variety scored the lowest value (84.02%). This is to be expected because it might be due to the highest values of BRIX% and sucrose%of cane juice were recorded for Phil8013 variety, while G.T.54-9 variety recorded the lowest value. The superior value of purity for phil8013 sugar cane variety mainly due to its superior in sucrose value and reduction in reducing sugar percentage for it which led to high purity. These findings are in line with that observed by El-Sogheir *et al.*(2006) and Abd El-Aziz (2008).

Data given in Table 6 showed that purity% was significantly affected by the evaluated seeding rates in the combined over the two seasons. Increase seeding rates from 1.5 to 2.0 and 2.5 drills led to increase purity % by 0.27 and 0.31, respectively. These findings are in agreement with those obtained by Saif-Laila *et al.* (1999) and El-Geddawy *et al.* (2005) .

The interaction between sugarcane varieties and seed rates with respect to purity % in the combined over two growing seasons was not significant.

**Table 6: Effect of seeding rates on purity% of three sugar cane varieties.**

Varieties (A)	Combined of 2007/08 & 2008/09 seasons			
	Seeding rates (B)			
	1.5 drills	2.0 drills	2.5 drills	Mean
<b>G.84-74</b>	85.00	85.23	85.21	85.15
<b>G.T.54-9</b>	83.90	84.00	84.15	84.02
<b>Phil.8013</b>	86.26	86.73	86.71	86.57
<b>Mean</b>	85.05	85.32	85.36	85.24
<b>LSD at 0.05</b>	A=0.28		B=0.25	
	AB=NS			

**7. Sugar recovery% (Rendement%):**

Results in Table 7 showed that sugar recovery % was significantly affected by the tested varieties in the two seasons and their combined . It could be noticed that the highest value of sugar recovery % was recorded for Phil8013 variety followed by G. 84-47 while G.T.54-9 variety recorded the lowest value. This is to be expected as a result of the high quality of phil8013 compared with GT54-9. These findings are in accordance with those observed by El-Sogheir *et al.* (2006); Mohamed & El-Taib (2007-b) and Abd El-Aziz (2008). They indicated that sugar cane varieties significantly differed in sugar recovery %.

Data in Table 7 showed that sugar recovery % was significantly affected by the studied seeding rates in the two seasons and their combined. The combined analysis pointed out that the increasing seeding rates from 1.5 to 2.0 and 2.5 drills increased sugar recovery% by 0.27 and 0.46, respectively. These findings are in disagreement with those obtained by Ahmed (1998) and El-Geddawy *et al.* (2005). They revealed that sugar recovery% was insignificantly affected by seeding rate.

**Table 7: Effect of seeding rates on sugar recovery% of three promising sugar cane varieties.**

Varieties (A)	Combined of 2007/08 & 2008/09 seasons			
	Seeding rates (B)			
	1.5 drills	2.0 drills	2.5 drills	Mean
<b>G.84-74</b>	12.73	12.99	13.24	12.99
<b>G.T.54-9</b>	12.04	12.30	12.43	12.25
<b>Phil.8013</b>	13.23	13.50	13.68	13.47
<b>Mean</b>	12.66	12.93	13.12	12.90
<b>LSD at 0.05</b>	A=0.09		B=0.06	
	AB=0.06			

Significant interaction effect was found between sugarcane varieties and seeding rates on sugar recovery %. It could be noticed that the combination between Phil8013 variety and 2.5 drills seeding rate recorded the highest value of this trait (13.60 %), while G.T.54-9 variety with 1.5 drills seeding rate gave the lowest value (11.98%).

**8. Millable cane yield (ton/fed):**

Results in Table 8 pointed out that millable cane yield (ton/fed) was significantly affected by the studied varieties in the two seasons and their

combined. It could be noticed from combined analysis that the highest value of millable cane yield (ton/fed) was recorded for G.T.54-9 variety (51.29 tons/fed.) while Phil8013 variety attained the lowest value (48.04 tons/fed.). These findings are in accordance with those observed by El-Sogheir *et al.* (2006), Mohamed & El-Taib (2007-a) and Abd El-Aziz (2008), they indicated that the tested sugar cane varieties significantly differed in millable cane yield (ton/fed).

**Table 8: Effect of seeding rates on millable cane yield (ton/fed) of three sugar cane varieties.**

Varieties (A)	Combined of 2007/08 & 2008/09 seasons			
	Seeding rates (B)			
	1.5 drills	2.0 Drills	2.5 Drills	Mean
G.84-74	46.20	51.47	49.42	49.03
G.T.54-9	47.67	53.92	52.28	51.29
Phil.8013	42.55	49.15	52.43	48.04
Mean	45.47	51.51	51.38	49.45
LSD at 0.05	A=0.41		B=0.43	
			AB=0.74	

Results in Table 8 showed that millable cane yield (ton/fed) was statistically affected by the tested seeding rates in the two seasons and their combined. The combined analysis cleared that increasing the seeding rates from 1.5 to 2.0 and 2.5 drills at planting increased millable cane yield (ton/fed) 6.04 and 5.91, respectively. These results might be due to led to increase millable cane stalks with increasing seeding rate from 1.5 to 2.0 or 2.5 drills and consequently cane yield (ton/fed). These findings are in agreement with those obtained by El-Geddawy *et al.*(2005), they revealed that millable cane yield (ton/fed) was significantly affected by the seeding rate.

Once more results in Table 8 indicated that the effect of interaction between sugarcane varieties and seeding rates on millable cane yield (ton/fed) in the two seasons and their combined. The results cleared that the highest cane yield was obtained through planting GT54-9 variety with 2.0 drills seeding rate.

**9. Recoverable sugar yield (ton/fed) :**

Table 9 showed that the evaluated cane varieties significantly affected on recoverable sugar yield (ton/fed). This finding was true in the combined over the two seasons. T is clearly show that the highest value of recoverable sugar yield (ton/fed) was obtained from Phil8013 variety, whereas, G.T.54-9 variety recorded the lowest value (6.29 tons/fed.). The major point of view is the superiority of Phil8013 variety mainly be attributed to the highest value of BRIX%, sucrose% and sugar recovery% over the other varieties. These results are in accordance with that observed by Abd El-Aal *et al.* (2007), who indicated that the sugar cane varieties significantly differed in sugar yield (ton/fed).

Data obtained in Table 9 demonstrated that recoverable sugar yield (ton/fed) was significantly affected by the examined seeding rates in the two seasons and their combined. It could be noted from combined analysis that sugar yield ascendingly raised with increasing in seeding rates from 1.5 to 2.0

and 2.5 drills at planting which led to increase in recoverable sugar yield (ton/fed) amounted by 0.9 and 0.97, respectively. These results may be due to increase in millable cane yield (ton/fed) as well as sugar recovery % with increasing seeding rate, consequently recoverable sugar yield (ton/fed). These findings are in agreement with those obtained by El-Geddawy *et al.* (2005). They revealed that recoverable sugar yield (ton/fed) was significantly affected by the seeding rate.

**Table 9: Effect of seeding rates on recoverable sugar yield (ton/fed) of three sugar cane varieties.**

Varieties (A)	Combined of 2007/08 & 2008/09 seasons			
	Seeding rates (B)			
	1.5 drills	2.0 drills	2.5 drills	Mean
<b>G.84-74</b>	5.88	6.69	6.48	6.35
<b>G.T.54-9</b>	5.74	6.63	6.50	6.29
<b>Phil.8013</b>	5.63	6.64	7.18	6.48
<b>Mean</b>	5.75	6.65	6.72	6.37
<b>LSD at 0.05</b>	A=0.10		B=0.07	AB=0.12

Significant interaction was noted in Table 9 between sugarcane varieties and seed rates on recoverable sugar yield (ton/fed) in the two seasons and their combined. It could be remarked that planting Phil8013 variety in 2.5 drills seeding rate recorded the highest value of sugar yield (7.18 tons/fed.), while the same variety with 1.5 drilling gave the lowest value (5.63 tons/fed.).

It could be concluded that Phil8013 variety with 2.5 drills seeding rates and/or G.T.54-9 and G.84-47 varieties with 2.0 drills seeding rate may be more suitable under the Middle Egypt conditions (Minia Governorate) for the highest values of millablecane and recoverable sugar tons/fed) .

## REFERENCES

- Abd El-Aal, A.M ; K.S. El-Soghier and A. M. Abd El-Razek (2007). Yield stability of some sugarcane (*Sccharum spp.* L.) genotypes across seasons and locations. Egypt J. Appl. Sci.,
- Abd El-Aziz, Y.M. (2008 ). Evaluation of some new sugar varieties as affected by harvesting dates under Middle and Upper Egypt conditions. M.Sc. Thesis, Agron. Dept.,Fac. Agric. El-Minia Univ., Egypt.
- Abd El-Latif,F.A.; Nour El.Hoda; M. Taha and A.M.A. El-Shafai (1998): Performance of some sugarcane varieties grown under different row spacing.J.Agric. Sci. Mansoura Univ., 23 (7): 3041-3051.
- Ahmed, Z.A. (1998). Evaluation of some sugarcane varieties under nitrogen fertilization levels and seeding rates. Ph.D. Thesis, Fac. of Agric., El-Minia Univ., Egypt.
- A.O.A.C. (1995): Association of Official Analytical Chemists. Official methods of analysis, 16<sup>th</sup> Ed. AOAC International, Washington, D.C., USA.

- El-Geddawy, I. H.; A. Z. Ahmed and A. M. Ahmed (2005). Seeding rates and number of hoeings in relation to yield and quality of sugar cane variety G.85-37. Egypt. J. of Agric. Res.,83(3): 1225-1235.
- EL-Sogheir, K.S.; M.A. Bekheet and H. Ferweez (2006). Performance of some sugarcane varieties grown under three different locations. Egypt J. Appl. Sci., 21 (6 b) : 579-596.
- Gomez, K.A. and A.A. Gomez (1984): Statistical procedures for agricultural Research , Second Edition. John Willey and Sons, New York, pp.680.
- Mohamed, B.D. and A.B.A. El. Taib (2007 a). Evaluation of some spring planted sugar cane genotypes under different growing seasons : 2- Yield components ,cane and sugar yield performance . Assiut. J. of Agric.Sci. , 38 (1): 17-29.
- Mohamed, B.D. and A.B.A.El. Taib (2007 b). Evaluation of some spring planted sugar cane genotypes under different growing seasons : 1- Quality traits performance . Assiut. J. of Agric.Sci. , 38 (1): 1-15 .
- Mathur, R. B. (1981): Handbook of cane sugar technology. Oxford & IBH Publishing Co.
- Saif -Laila, M.; Nour EL-Hoda, M. Taha and Mona, M. Shehata (1999). Effect of plant density and nitrogen fertilizer on yield and quality of sugarcane varieties. Egypt. J. Appl. Sci.; 14(11) 115-127.
- Satisha, G.C.; M Krishnappa and K.Srikanth (1996): Input of sulphur on yield and quality of sugar cane . Indian Sugar 45( 9): 397-401
- Yousef, M. A.; E. M. Taha and A. Z. Ahmed (1998). Effect of nitrogen fertilizer and seeding rates on quality of sugar cane varieties.Proc 8<sup>th</sup> ,Agron., Suez Canal Univ., Ismaillia , Egypt .

### علاقة المحصول والجودة لبعض أصناف قصب السكر بمعدل التقاوي

حسين فرويز محمد حسن ، مها محمد الزيني و رانيا محمد عبدالعزيز  
معهد بحوث المحاصيل السكرية ، مركز البحوث الزراعية ، جمهورية مصر العربية

- أقيمت تجربتان حقليتان بمحطة البحوث الزراعية بملوى، محافظة المنيا خلال موسمى ٢٠٠٧/٢٠٠٨ ، ٢٠٠٨/٢٠٠٩ م ، لدراسة تأثير ثلاثة معدلات تقاوي (صف ونصف، صفين و صفين ونصف) ، لثلاثة أصناف من قصب السكر (G.T.54-9 ، G. 84 - 47 and Phil. 8013) في تصميم قطع منشقة مرة واحدة على الصفات الخضريّة ، الإنتاجية و الجودة في قصب السكر الغرس الربيعي .
- أوضحت النتائج المتحصل عليها في هذه الدراسة الاتي :
- ١ - اختلفت أصناف قصب السكر تحت الدراسة معنويا في ارتفاع وسك العود ، نسب المواد الصلبة الكلية ، السكروز ، النقاوة، السكريات المختزلة ، نسبة استخراج السكر و ناتج العيدان القابلة للعصر عدا ناتج السكر القابل للاستخراج في كلا الموسمين .
  - ٢ - أدت زيادة معدل تقاوي القصب من الصف والنصف الى الصفين والصفين ونصف الى زيادة تدريجية معنوية في ارتفاع العود ، نسب المواد الصلبة الكلية ، السكروز ، النقاوة ، نسبة استخراج السكر ، ناتج العيدان القابلة للعصر و ناتج السكر القابل للاستخراج في كلا الموسمين .
  - ٣ - توصى الدراسة باستخدام التفاعل بين معدل التقاوي صفين ونصف لصنف قصب السكر Phil. 8013 و الصفين لصنفى القصب G.T.54-9 و G. 84 - 47 تحت ظروف مصر الوسطي (ظروف محافظة المنيا) لإنتاج السكر لأنها تعطى النواتج الأكبر من العيدان النظيفة (٥٢,٤٣ ، ٥٣,٩٢ و ٥١,٤٧ طن / فدان) و السكر القابل للاستخراج (٧,١٨ ، ٦,٦٣ و ٦,٦٩ طن / فدان) على التوالي .

### قام بتحكيم البحث

كلية الزراعة – جامعة المنصورة  
مركز البحوث الزراعية

أ.د/ محسن عبد العزيز بدوى  
أ.د/ ابراهيم حنفى محمود الجداوى

