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Influence of Delivery Delay on Quality of Some Promising Sugar Cane Varieties under Aswan Condition

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THE PRESENT work was conducted at Kom Ombo Agricultural Research Station, (latitude of 24° 28′ N and longitude of 32° 57′ E), Aswan Governorate, in the two seasons of 2015/2016 and 2016/2017 to study the effect of storage period before crushing for (0, 2, 4 and 6 days) on juice quality characteristics of three promising sugar cane varieties (G.84-47, G.2003-47 and C.57-14) in addition to the commercial variety G.T.54/9 (C9). The experimental design was randomized complete block design (RCBD) with three replications.

Results indicated that brix and reducing sugars percentages tended to increase as storage periods increased up to six days before crushing. On the other hand, juice extraction, sucrose, purity, richness and sugar recovery percentages were decreased as the storage period was prolonged.

Sugar cane varieties significantly differed in all studied traits. In both seasons G.T.54-9 variety recorded the highest values of juice extraction and richness percentages, while G.84-47 and G.2003-47 varieties gave the highest brix and purity percentages, respectively. Means while G.84-47 and G.T.54-9 varieties recorded the highest values of sucrose percentages in 1st and 2nd seasons, respectively. Interaction between the two factors markedly affected the rate of deterioration in all studied traits.

These results might be helpful to decrease sucrose losses when delivery delayed of sugar cane, with assessment of optimum storage period. It is recommended that cane meantime should be delivered as early as possible to sugar mill to minimize sugar losses.

Keywords: Sugar cane, Storage period, Delivery delayed.

Introduction

Post harvest deterioration of sugar cane crop, is one of the most vexing problems of sugar industry. Cane is a perishable commodity and must be processed into sugar quickly after it is harvested. In Upper Egypt, sugar cane is the main resource as a raw material for sugar industry, however it suffers heavy losses in recoverable sugar due to post harvest deterioration of stale cane. Cane quality represents the main priorities in post harvest management which is deteriorated in field, harvest to crush delay, during transportation, other factors such as ambient temperature, humidity, varieties, period of storage. Many investigators proved an evidence of the effect of crush delay on sugar cane quality (Rizk & Normand, 1966; Besheit et al., 2003; Uppal, 2003; EL-Maghraby et al., 2009; Priyanka et al., 2010; Verma et al., 2012 and Sagar & Joshi, 2015).

Now, the commercial variety G.T.54-9 occupies most of the area planted with sugar cane in Egypt. Recently, Sugar Crops Research Institute released some promising varieties of sugar cane among them G. 84-47 and G. 2003-47. Differences among varieties in juice quality traits were reported by Shukla & Singh (2011), Mequanent & Ayele (2014), Mehareb & Abazied (2016), Mequanent (2016), Ahmed (2017), Mohamed et al. (2017), Abazied & El-Bakry (2018) and Mehareb et al. (2018).

Therefore, the present work was carried out to study the effect of delaying cane crushing on quality of three promising varieties compared to commercial variety grown under Aswan conditions.

Materials and Methods

The present study was conducted at Kom Ombo Agricultural Research Station (latitude

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of 24° 28′ N and longitude of 32° 57′ E), Aswan Governorate, in the two seasons of 2015/2016 and 2016/2017 including plant cane and first ratoon crops, respectively. This investigation aimed to study the effect of storage periods before crushing (0, 2, 4 and 6 days) on juice quality characteristics of three promising sugar cane varieties (G.84-47, G.2003-47 and C.57-14) in addition to the commercial variety G.T. 54-9. This study included sixteen treatments which were the combination of four sugar cane varieties and four storage periods. The experimental design was randomised complete block design with three replications.

The meteorological data at Kom Ombo during the study period (11th-17th April in 2016 and 2017) were recorded in Table 1.

At harvest in 11th April, a sample of 240 millable canes was collected at random for each variety. These millable canes were divided into separate three piles under direct sun light. In the three piles the millable canes were placed as piles in three replications each containing four bundles, with each bundle having 20 millable cane. bundles were weighted and then crushed after storing for 0, 2, 4 and 6 days after harvest time.

The primary juice was extracted by electric pilotmill (Sabri, 1966) screened and mixed thoroughly, weighted and juice extraction percentage was calculated. One liter of juice was taken in glass cylinder to determine the following juice quality characteristics:

1. Juice extraction percentage: Was calculated according to the following formula:

   J. E. P = juice weight/cane weight X 100.

2. Brix percentage (total soluble solids, TSS %): Was determined by using Brix Hydrometer according to A.O.A.C. (2005).

3. Sucrose percentage: Was determined by using Saccharemeter according to A.O.A.C. (2005).

4. Purity percentage: Was calculated according to the following formula of Singh & Singh (1998).

$$\text{purity percentage} = \frac{\text{sucrose percentage}}{\text{brix percentage}} \times 100$$

5. Richness percentage: Was calculated according to the following formula described by Anonymous (1981):

   Richness = % (sucrose % gm juice x richness factor)/100.

   where, Sucrose % gm juice= (sucrose % cm^3 juice)/juice density and Juice density was taken from Schibler's Tables.

   Richness factor = 100 - (fiber % X 1.3).

6. Sugar recovery percentage was calculated according to the following formula described equation as shown by Yadav & Sharma (1980).

   Sugar recovery % = [sucrose % - 0.4(brix % - sucrose %)] x 0.73.

7. Reducing sugars percentage: Was determined using Fehling method according to A.O.A.C. (2005).

TABLE 1. Meteorological data from 11th -17th April in 2016-2017 in Kom Ombo.

	2016				2017			
Day	**Temperature °C**		**Humidity %**		**Temperature °C**		**Humidity %**	
	Min	**Max**	**Min**	**Max**	**Min**	**Max**	**Min**	**Max**
11 th	27	35.4	39	53	19.2	38.6	24	50
12 th	19.6	32.0	35	52	20.0	42.4	24	59
13 th	14.2	30.8	39	64	26.0	35.4	35	60
14th	9.2	31.4	37	79	20.4	26.8	32	47
15th	13.4	35.0	37	82	17.2	30.0	28	50
16th	16.2	38.2	25	79	11.2	31.8	26	61
17th	17	39.2	27	62	11.8	33.8	23	63

Source: Agricultural meteorological station in Kom ombo sugar factory at Aswan.

Obtained data were statistically analyzed according to the method described by Snedecor & Cochran (1981). Treatment means were compared using LSD at 5% level of difference as outlined by Steel et al. (1997).

Results and Discussion

Juice extraction percentage (J. E %)

Results in Table 2 indicated that juice extraction percentage significantly and gradually decreased with the increase in the time elapsed between cutting and processing in the two seasons. The decreases were 1.63, 5.21 and 6.73 at 2, 4 and 6 days after harvesting compared to the control in plant cane crop, while in first ratoon crop the decreases were 1.75, 5.99 and 7.51% at the same post harvested period compared to control. These results may be due to the loss in evaporation or/ and the increase the fiber percentage in millable cane. These results are in agreement with those obtained by Besheit et al. (2003), Uppal (2003) and EL-Maghraby et al. (2009) who found that extracted juice % was decreased as the period after sugar cane cutting was prolonged.

Results also indicated that the evaluated cane varieties significantly differed in extracted juice % in the plant and first ratoon crops. In general, J. E % of G.T.54-9 was significantly higher than other varieties in both seasons. While the G.84-47 cane variety gave the lowest one in first and second seasons. Varietal differences may be attributed to the genetic constitutes of varieties and its interaction with environmental conditions. Similar findings were reported by EL-Maghraby et al. (2009) who found that sugarcane cvs. significantly differed in juice extracted percentage.

Concerning the interaction effect, it could be noted that the effect of the interaction between sugar cane varieties and storage periods after harvest in the two seasons was significant. It means that the examined varieties did not behave the same at the different storage periods after harvest. In plant cane crop, extracted juice percentage of G.T.54-9 varieties was insignificantly decreased by increase in the time elapsed from 0 to 2 days but this was not the case with the other three sugar cane varieties. In general the highest extracted juice percentage was recorded by crushing G.T.54-9 variety at processed immediately (in harvest same time).

Brix percentage

Data recorded in Table 3 showed that the effect of storage period after harvest on total soluble solids percentage (brix%) was significant in the two seasons. In this connection brix percentage increased gradually by increasing storage period up to 6 days to reach its maximum value (23.95 and 24.59%) after six days from cutting day in 1st and 2nd seasons, respectively. These results may be due to water evaporation losses as well as changing sucrose to glucose and fructose during storage. These results are in harmony with those obtained by Besheit et al. (2003), Priyanka et al. (2010) and Sagar & Joshi (2015) who reported that total soluble solids percentage increased during storage periods.

TABLE 2. Effect of storage period after harvest on juice extraction percentage of sugar cane varieties in plant and first ratoon crops, during 2015/2016 and 2016/2017.

Varieties	Plant cane					Ratoon crop				
	Storage period after harvest (day)				Mean	Storage period after harvest (day)				Mean
	0	2	4	6		0	2	4	6	
C.57-14	67.54	65.96	62.29	60.83	64.16	66.41	64.69	60.51	59.02	62.66
G.2003-47	66.10	64.41	60.66	59.10	62.57	64.7	62.93	58.69	57.12	60.86
G.T.54-9	69.60	68.11	65.06	63.69	66.62	67.11	65.48	61.35	59.95	63.47
G.84-47	61.12	59.37	55.51	53.83	57.46	60.22	58.35	53.93	52.30	56.20
Mean	66.09	64.46	60.88	59.36		64.61	62.86	58.62	57.10	
LSD at 0.05 levels of significance										
Varieties (A)					0.74					1.00
Storage period (B)					0.74					1.00
Interaction A x B					1.53					2.01

TABLE 3. Effect of storage periods after harvest on brix percentage of cane varieties in plant and first ratoon crops, during 2015/2016 and 2016/2017.

Varieties	Plant cane					Ratoon crop				
	Storage period after harvest (day)				Mean	Storage period after harvest (day)				Mean
	0	2	4	6		0	2	4	6	
C.57-14	20.82	21.19	22.05	22.12	21.54	21.11	21.95	22.16	23.53	22.19
G.2003-47	22.18	22.86	23.31	23.79	23.04	22.33	22.84	23.56	23.98	23.18
G.T.54-9	22.35	22.94	23.17	23.73	23.05	23.14	23.75	24.13	25.22	24.06
G.84-47	23.31	24.53	24.75	26.18	24.69	22.60	23.75	24.63	25.64	24.15
Mean	22.16	22.88	23.32	23.95		22.29	23.07	23.62	24.59	
LSD at 0.05 levels of significance										
Varieties (A)					0.16					0.17
Storage period (B)					0.16					0.17
Interaction A x B					0.33					0.35

Also data revealed that brix percentage was significantly affected by the examined sugar cane varieties in the two seasons. The highest values were obtained from G. 84-47 variety in both seasons which exceeded the other varieties by 3.15%, 1.65%, 1.64 (in the plant cane crop) and 1.96%, 0.97%, 0.09% (in the 1st ratoon crop) over C.57-14, G.2003-47 and G.T.54-9 sugar cane varieties, respectively. Differences between the tested varieties in brix % may be due to the defferences in the genatic mak up of varieties. The differences among sugar cane varieties in brix percentage were early reported by Shukla & Singh (2011), Mequanent (2016), Ahmed (2017) and Abazied & El-Bakry (2018). They found that significant differences among evaluated sugar cane varieties in brix %.

Concerning the interaction effect, it noted that interaction between the two factors was significant in the two seasons, but the effect of storage period was not the same. In the 1st season the increase in brix percentage of G. 84-47 was about double of that obtained with G.T.54-9 variety due to increasing the storage period from 2 to 6 days. Generally, the highest values of brix percentage (26.18 and 25.64 %) were obtained from crushing G. 84-47 variety at 6 days after harvesting in 1st and 2nd seasons, respectively.

Sucrose percentage

Results in Table 4 showed that increasing storage period after harvesting date to 2, 4 and 6 days led to a significant decreases in sucrose percentage by 0.54, 1.13, and 1 .69% compared to control in plant cane crop, being 0.41, 0.69 and 1.15 in the 2nd season. These results may be due to the higher rate of sucrose inversion and due to increasing activity of degrading enzymes and higher rate of respiration with increasing storage period after harvest. Similar results were recorded by Rizk & Normand (1966), Besheit et al. (2003) and Verma et al. (2012) who found that significant differences in the reduction of sucrose % during storage.

Furthermore, results showed that sucrose % was significantly affected by sugar cane varieties. Generally, the highest mean value of this trait was recorded by the varieties G. 84-47 and G.T.54-9 in the first and second seasons, respectively, while variety of C.57-14 gave the lowest values in the two seasons. The differences among varieties in sucrose percentage depend on the interaction between varieties and environmental factors during growth and maturing stage. This result is in agreement with those obtained by Shukla & Singh (2011), Mequanent & Ayele (2014) and Mehareb et al. (2018) who found that sugar cane variety G.T.54-9 gave the highest sucrose % value compared to other varieties.

Moreover, data in the same table showed that sucrose percentage was significantly affected by the interaction between the studied factors in both seasons, this means that the cane varieties did not behave the same under the different storage preiods. Generally the highest values of sucrose percentages were obtained from crushing G. 84-47 and G.T.54-9 varieties after harvesting immediately, in 1st and 2nd seasons, respectively.

Purity percentage

Results in Table 5 showed that increasing storge period from 0 to 2, 4 and 6 days led to significant and gradually decrease in purity % by about 5.17,

9.33 and 14.27 in the plant cane crop and 4.76, 7.86 and 13.01 in the 1st ratoon corp. This result may be due to the decrease in sucrose and/or increase in brix % where purity is calculated from both traits. Such effect may be attributed to the higher rate of sucrose inversion caused by degrading enzymes under delay in crushing. These results in the same line with that reported by Besheit et al. (2003) and Priyanka et al. (2010), they found that purity% rapidly deteriorated after 24h.

Data in the same table showed that purity percentage in juice was significantly affected by the sugar cane varieties. Generally, in first and second seasons, purity percentage of (G.2003-47) was significantly higher than other varieties and the variation between G.2003-47 and G.T.54-9 was insignificant.

The varietal differences may be attributed to the genetic constitutes of varietis. The results of the present investigation are in line with those obtained by Shukla & Singh (2011), Mequanent (2016) and Mohamed et al. (2017) who found that studied varieties differed significantly in purity percentage.

The interaction between the studied factors in both seasons had a significant effect on purity%. In general, the maximum values were obtained from crushing immediately in the two seasons, but the effect of storage period after harvest was not the same with the studied varieties. In 1st season, the decrease in purity percentage of C.57-14 variety was about double of that obtained with G.2003-47 variety due to delaying the crushing from 2 to 4 days.

Richness percentage

Results presented in Table 6 revealed that richness percentage was significantly affected by storage period, after harvest. Data showed that a gradual and significant decreases in richness percentage as cane processing delayed for 2, 4 and 6 days from harvest time. The reduction in Richness percentage amounted 0.68, 1.31 and 1.95 in the 1st season, and 0.49 ,0.97 and 1.6% in 2nd season corresponding to the delay in processing for 2, 4 and 6 days as compared to cane processed immediately at harvest time.

Data in the same table showed that richness percentage was significantly affected by the examined sugar cane varieties.

The highest mean values of richness percentage were scored by G.T.54-9 variety in both seasons. The lowest mean values of richness percentage were obtained from C.57-14 variety in the two seasons. The variation in richness % between varieties could be correlated to the variation in their sucrose and fiber contents. The obtained results are in accordance with those of Mehareb & Abazied (2016) and Abazied & El-Bakry (2018). They reported that richness % was significantly affected by varieties.

Data also revealed that the richness percentage was significantly affected by the interaction between sugar cane varieties and their storage period in the two seasons. This means that the varieties did not behave the same at the different storage period. Richness % of G.2003-47 variety in 1st ratoon crop, was insignificantly decreased by delaying crushing from 0 to 2 days but this was not the case with the other varieties. Generally, the best richness % were recorded with the variety G.T.54-9, when it was crushing at the harvesting time in both seasons.

Sugar recovery percentage

The obtained results in Table 7 indicated that sugar recovery percentage was significantly and gradually decreased with the increase in the storage period after harvest. The sugar recovery percentage decreased from 13.70 and 13.65% in harvest day to 11.44 and 11.79% after six days. The decrease in sugar recovery is mainly due to the increase in Brix % and decrease in sucrose % (Tables 3 and 4). These results are in harmony with those reviewed by Besheit et al. (2003) and Verma et al. (2012). They noted harvest-to-mill delays are responsible for decline in sugar recovery.

Data in the same table showed that sugar recovery percentage was significantly affected by the examined sugar cane varieties. The highest mean values of sugar recovery percentage (13.27% and 13.43%) were scored by G. 84-47 and G.T.54-9 varieties. While, the lowest values were obtained from C.57-14 variety (10.98 and 11.58%) in the plant cane and first ratoon crops, respectively. The variation in sugar recovery % between varieties could be correlated to the variation in their sucrose content (Table 4). These results are in agreement with those mentioned by Mequanent & Ayele (2014), Mequanent (2016) and Ahmed (2017) who found that sugar recovery percentage was markedly affected by tested sugar cane varieties.

TABLE 4. Effect of storage periods after harvest on sucrose percentage of sugar cane varieties in plant and first ratoon crops, during 2015/2016 and 2016/2017.

Varieties	Plant cane					Ratoon crop				
	Storage period after harvest (day)				Mean	Storage period after harvest (day)				Mean
	0	2	4	6		0	2	4	6	
C.57-14	18.56	17.24	16.30	15.49	16. 90	18.39	17.84	17.57	16.90	17.68
G.2003-47	19.66	19.59	19.26	18.67	19.21	19.78	19.40	19.30	19.05	19.38
G.T.54-9	20.02	19.65	19.11	18.57	19.33	20.63	20.31	19.89	19.57	20.10
G.84-47	20.70	20.21	19.75	19.45	20.05	20.18	19.78	19.43	18.84	19.56
Mean	19.73	19.19	18.60	18.04		19.74	19.33	19.05	18.59	
LSD at 0.05 levels of significance										
Varieties (A)					0.17					0.19
Storage period (B)					0.17					0.19
Interaction A x B					0.31					0.38

TABLE 5. Effect of storage periods after harvest on purity percentage of sugar cane varieties in plant and first ratoon crops, during 2015/2016 and 2016/2017.

Varieties	Plant cane					Ratoon crop				
	Storage period after harvest (day)				Mean	Storage period after harvest (day)				Mean
	0	2	4	6		0	2	4	6	
C.57-14	89.14	81.34	73.95	70.04	78.62	87.13	81.28	79.27	71.82	79.88
G.2003-47	88.64	85.71	82.63	78.50	83.87	88.56	84.92	81.93	79.70	83.78
G.T.54-9	89.56	85.66	82.46	76.25	83.48	89.14	85.51	82.44	76.95	83.51
G.84-47	88.80	82.75	79.78	74.28	81.40	89.16	83.26	78.90	73.49	81.20
Mean	89.04	83.87	79.71	74.77		88.50	83.74	80.64	75.49	
LSD at 0.05 levels of significance										
Varieties (A)					0.91					0.35
Storage period (B)					0.91					0.35
Interaction A x B					1.82					0.71

TABLE 6. Effect of storage periods after harvest on richness percentage of sugar cane varieties in plant and first ratoon crops, during 2015/2016 and 2016/2017.

Varieties	Plant cane					Ratoon crop				
	Storage period after harvest (day)				Mean	Storage period after harvest (day)				Mean
	0	2	4	6		0	2	4	6	
C.57-14	15.18	13.99	12.89	11.97	13.51	14.93	14.38	13.80	12.99	14.02
G.2003-47	16.16	16.00	15.46	14.76	15.59	16.13	15.74	15.40	15.00	15.57
G.T.54-9	16.50	15.87	15.48	14.89	15.69	16.93	16.66	16.03	15.34	16.24
G.84-47	16.31	15.60	15.08	14.75	15.43	15.93	15.16	14.81	14.20	15.02
Mean	16.04	15.36	14.73	14.09		15.98	15.49	15.01	14.38	
LSD at 0.05 levels of significance										
Varieties (A)					0.12					0.17
Storage period (B)					0.12					0.17
Interaction A x B					0.24					0.36

TABLE 7. Effect of storage periods after harvest on sugar recovery percentage of sugar cane varieties in plant and first ratoon crops, during 2015/2016 and 2016/2017.

Varieties	Plant cane					Ratoon crop				
	Storage period after harvest (day)				Mean	Storage period after harvest (day)				Mean
	0	2	4	6		0	2	4	6	
C.57-14	12.89	11.43	10.23	9.37	10.98	12.63	11.82	11.48	10.37	11.58
G.2003-47	13.62	13.35	12.88	12.14	13.00	13.66	13.13	12.83	12.46	13.02
G.T.54-9	13.93	13.38	12.76	12.05	13.03	14.27	13.76	13.24	12.43	13.43
G.84-47	14.35	13.58	12.95	12.21	13.27	14.03	13.31	12.70	11.91	12.99
Mean	13.70	12.93	12.21	11.44		13.65	13.01	12.56	11.79	
LSD at 0.05 levels of significance										
Varieties (A)					0.13					0.16
Storage period (B)					0.13					0.16
Interaction A x B					0.27					0.32

Concerning the interaction effect between the two studied factors was significant in both plant cane and 1st ratoon crops. The varieties did not behave the same under the four storage periods after harvest. This means that the cane varieties did not behave the same at the different storage period, in the 2nd season, sugar recovery percentage of G. 2003-47 variety was insignificantly decreased by delaying crushing from 2 to 4 days but this was not the case with the other varieties. In general, the highest values of sugar recovery percentage were recorded with the sugar cane varieties G. 84-47 and G. T.54-9 crushed at the same time of harvesting in 1st and 2nd seasons, respectevely.

Reducing sugars percentage

Reducing sugars are one of the most important juice quality parameters which could be utilized to predict the loss in commercial cane sugar. The results in Table 8 revealed that reducing sugars values were significantly and gradually increased by delaying millable cane processing. The percent of increase reached (738 and 328%) when millable cane processed after 6 days as compared to those processed immediately after harvest in 1st and 2nd seasons, respectively. The increasing in reducing sugars may be due to sucrose inversion. Rizk & Normand (1966), EL-Maghraby et al (2009) and Sagar & Joshi (2015) reported that gradual increase in reducing sugars was noticed from 2 to 72h.

Furthermore, results in the same table showed that reducing sugars percentage of cane juice was significantly affected by cane varieties in both seasons. C.57-14 and G.T.54-9 varieties was considerably lower in reducing sugars contents (0.903 and 0.945) than the other varieties in both plant cane and first ratoon crops, respectively. The variation of reducing sugars content between the studied varieties may be due to varietal genetic mak up. The obtained results are in line with those found by Uppal (2003) and Mehareb & Abazied (2016). They found that reducing sugars % was significantly affected by the tested sugar cane varieties.

Moreover, data showed that reducing sugars % of the two seasons was significantly affected by the interaction between the two factors, this means that the cane varieties did not behave the same at the different storage period.

In 1st season, reducing sugars % of G.2003-47 and G.T.54-9 varieties were insignificantly increased by increase the storage period from 2 to 4 days but this was not the case with the other varieties. In general the lowest reducing sugars percentage was recorded by G.84-47 and G.T.54-9 varieties when crushed at the same time of harvesting in 1st and 2nd seasons, respectevely.

Conclusion

The study led to the conclusion that these results helpful to decrease sucrose losses when delivery delayed of sugar cane, with assessment of optimum storage period. It is recommended that cane meantime should be delivered as early as possible to sugar mill to minimize sugar losses.

TABLE 8. Effect of storage periods after harvest on reducing sugars percentage of sugar cane varieties in plant and first ratoon crops, during 2015/2016 and 2016/2017.

Varieties	Plant cane					Ratoon crop				
	Storage period after harvest (day)				Mean	Storage period after harvest (day)				Mean
	0	2	4	6		0	2	4	6	
C.57-14	0.240	0.680	1.037	1.657	0.903	0.297	0.917	1.170	١.510	0.974
G.2003-47	0.230	0.623	0.830	1.967	0.912	0.480	0.677	0.717	2.067	0.985
G.T.54-9	0.247	0.700	0.840	1.867	0.913	0.280	0.667	0.907	1.927	0.945
G.84-47	0.190	0.917	1.333	2.117	1.139	0.730	1.007	1.520	2.140	1.349
Mean	0.227	0.730	1.010	1.902		0.447	0.817	1.079	1.911	
LSD at 0.05 levels of significance										
Varieties (A)					0.131					0.062
Storage period (B)					0.131					0.062
Interaction A x B					0.263					0.136

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تأثير تأخير توريد قصب السكر على صفات الجودة لبعض الأصناف المبشرة تحت ظروف أسوان

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اجريت هذه الدراسة بمزرعة محطة البحوث الزراعية بكوم أمبو (دائرة عرض 24,28 شمال و خط طول 57,32) محافظة أسوان، خلال موسمى 2016/2015 (غرس) و 2017/2016 (خلفة أولى) و ذلك لدراسة تأثيرفترات ما قبل عصر قصب السكر(0, 2, 4 و 6 يوم) على صفات الجوده لثلاثة اصناف قصب سكر مبشرة (جيزة84-47، جيزة 2003-47 و كوبا 57-14) بالإضافة إلى الصنف التجارى جيزة تايوان54-9 (س9). و قد تم ستخدام تصميم قطاعات كاملة العشوائية مع ثلاث مكررات.

أظهرت النتائج اتجاه المواد الصلبة الذائبة الكلية (البركس%) و السكريات المختزلة للزيادة بزيادة فترة التخزين قبل العصر حتى ستة أيام. بينما اتجهت النسب المؤية لاستخلاص العصير، السكروز، النقاوة، الحلاوة، ناتج السكر النظرى للنقص بزيادة فترة التخزين قبل العصر. وقد ظهرت فروق معنوية بين الأصناف فى جميع الصفات محل الدراسة. وقد تفوق الصنف جيزة تايوان54-9 (س9) فى النسبة المئوية لإستخلاص العصير و النسبة المئوية للحلاوة. فى حين أعطى الصنفان جيزة84-47 و جيزة2003-47 (جيزة3) أفضل قيم للمواد الصلبة الذائبة الكلية و النسبة المئوية للنقاوة على التوالى.

فيما تفوق الصنفان جيزة84-47 وجيزة تايوان54-9 (س9) فى النسبة المئوية للسكروز فى موسمى الغرس و الخلفة الأولى على التوالى. وكان التفاعل بين عاملي الدراسة مؤثراً فى معدل التدهور لجميع الصفات محل الدراسة.

هذه النتائج مفيدة ويمكن استخدامها لتقليل النقص فى السكروز بسبب تأخر عصر عيدان قصب السكر مع تحديد فترة التخزين المثلى لكل صنف. و يوصى البحث بعدم تأخير توريد القصب للمصانع للحصول على أفضل صفات جوده.