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EVALUATION OF SOME SPRING PLANTED SUGARCANE GENOTYPES UNDER DIFFERENT GROWING SEASONS: 2- YIELD COMPONENTS, CANE AND SUGAR YIELD PERFORMANCE

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Abstract: The present study was carried out at Kom-Ombo Agricultural Research Station farm during 2004/2005 and 2005/2006 growing seasons to evaluate the yield components, cane and sugar yield of fourteen sugarcane genotypes under six growing seasons (GS1 to GS6) representing the combination of two planting dates with three harvesting dates. The two planting dates were the 26th March (recommended date) and the 26th April (late date), while the three harvesting dates were 26th Feb., 26th March and 26th April, where the ages of the plants at harvest were 11, 12, 13 and 10, 11, 12 for the recommended and late dates, respectively. The used genotypes were GT54-9, Ph8013, G99-80, G99-103, G99-122, G99-160, G99-165, G99-208, G99-217, G2000-4, G2000-8, G2000-157, G2000-171 and G2000-176.

The experimental design was randomized complete blocks with three replications arranged in split-plots arrangement of treatments.

The results indicated that: genotypes, growing seasons and their interaction had significant effect on all studied traits. Furthermore, for all evaluated genotypes it is possible to produce higher cane and sugar yield all over the milling season by selecting proper growing season for each genotype. Among the tested genotypes, G99-103 recorded the highest cane and sugar yield (55.88 ton/fed.) and (6.521 ton/fed.). Its performance was good under all used growing seasons. None of the tested genotypes matched it in high production of sugar yield at GS1. however, was similar to G99-217 and G2000-157 at GS2; Ph8013 and G99-217 at GS3; GT54-9, G99-165 at GS4; GT54-9, G2000-4 and G2000-157 at GS5; Ph8013, G2000-157 and G2000-171 at GS6. Each group of these genotypes could be recommended to specific growing seasons in which they should produce their maximum sugar yield. However, reducing the growing season by delaying planting date reduced sugar yield as a results of reduction in cane yield throughout the reduction in number of millable cane. The increase in sugar yield as a result of extending growing season by delaying harvesting did not compensate for the reduction resulted from late planting date.

G99-103, G99-217 and G2000-157 genotypes proved to have the potential to be commercial cultivars according to their high cane and sugar yield.

Key words: sugarcane, genotypes, sugar yield, cane, Yield components.

Introduction

In Egypt, cane sugar industry depends on the commercial sugarcane cultivar GT54-9 which occupies 96%* for the cultivated area. This cultivar is classified as a medium maturity cultivar (El-Taib *et al.*, 2005). As a result, it is harvested throughout milling season which extends from mid December to mid May. This causes reduction in it yielding ability and the total produced sugar at early or late months of milling season. This is caused by early harvesting before the variety complete of repening in addition to deterioration when it is harvested at late months of the milling season (Mohamed and Abo Dooh, 2001). However, these losses could be acceptable because of the lack of alternative cultivars. However, varietal decline of this cultivar is unacceptable and cane industry could face hard times.

An approach developed to help overcoming this problem is to breed cane cultivars that can perform better under specific growing season conditions which is determined by planting and harvesting dates (Patel *et al.*, 1993; Mehla *et al.*, 1997; Singh *et al.*, 1997; Singh and Singh, 1998; Singh and Singh, 2002; Sogheir and Besheit, 2003 and Gilbert *et al.*, 2006). Thus, the study of genotypes and growing season interaction is of great importance to the Egyptian sugarcane breeding programe not only for defining the proper genotype for each growing season but also for overcoming the problem of late spring planting date which being is becoming a common practice by sugarcane growers who tend to delay planting of spring sugarcane after harvesting early winter crops or the last sugarcane ratoon crop. The study of genotypes x growing season interaction is essential for promising sugarcane genotypes to determine their optimum growing season (planting and harvesting date) as reported by El-Taib, 1999; Gilbert *et al.*, 2004 and Kadam *et al.*, 2004.

The objective of this study was to evaluated some spring planted promising sugarcane genotypes under several growing seasons to determine the optimal growing season for each genotype in terms of the high cane and sugar yield.

Materials and Methods

The present study was carried out at Kom Ombo Agricultural Research Station Farm during two successive plant cane crops (2004/2005 and 2005/2006 growing seasons) to estimate yield components, cane yield and sugar yield performance of 14 sugarcane genotypes under six growing seasons representing the combination of two planting dates with three harvesting dates.

The two planting dates i.e. 26 March (recommended date) and 26 April (late date) and three harvesting

* Report of Sugar Crops Council, Ministry of agriculture, 2005.

dates i.e. 26 Feb., 26 March and 26 April were used forming six growing seasons combinations. The combinations were planting at 26 March & harvest at 26 February (GS1), planting at 26 March & harvest at 26 March (GS2), planting at 26 March & harvest at 26 April (GS3), planting at 26 April & harvest at 26 February (GS4), planting at 26 April & harvest at 26 March (GS5) and planting of 26 April & harvest at 26 April (GS6).

The averages of minimum and maximum monthly temperature of the growing seasons were shown in table (1).

Table(1): The minimum & maximum monthly temperature at the experimental region (seasons 2004 – 2005 and 2005 – 2006).

Month	Minimum		Maximum	
	Season 2004 – 2005	Season 2005 – 2006	Season 2004 – 2005	Season 2005 – 2006
April	16.0	16.2	35.8	35.9
May	20.6	17.7	41.7	38.2
June	20.8	21.0	41.3	40.8
July	21.7	20.3	43	42.0
August	20.9	22.0	41.1	42.5
September	19.3	18.4	39.8	40.6
October	19.0	17.1	37.1	35.7
November	12.9	10.1	29.9	29.0
December	6.6	9.3	24.9	27.6
January	5.9	7.4	23.1	25.1
February	9.5	8.7	26.9	28.1
March	11.0	11.2	31.1	31.6
April	--	14.4	--	34.8

The genotypes used in this study were: GT54/9 (the commercial variety) while the second genotype Ph8013 was which introduced from Philippine. The other twelve genotypes are promising genotypes in Egyptian sugarcane breeding program namely G99-80, G99-103, G99-122, G99-160, G99-165, G99-208, G99-217, G2000-4, G2000-8, G2000-157, G2000-171 and G2000-176.

The experimental design was randomized complete blocks with three replications arranged in split plots system. The growing seasons were randomly alocated in the main plots, while genotypes were randomly assigned to the sub-plots. The sub plot was 5 rows, 7 meter long and one meter apart and each row was planted using 24-three buded cane setts. The recommended cultural practices of sugarcane production were adopted throught the growing season. Irrigation stopped one month before harvest. The soil texture was clay loam containing 0.07% total nitrogen, 5.11 ppm available P and 516 available K.

At each harvesting date one row from each sub-plot was chosen at random, a sample of clean cane was used for quality analysis and the following traits were measured:

1- Stalk length (cm) was measured from soil surface up to the top visible dewlap and the average length of all stalks in the row was recorded.

2- Number of millable stalks/feddan was calculated on plot basis.

3- Stalk weight (kg), it was calculated by dividing the

$$\frac{\text{Weight of clean cane in the measured row}}{\text{Number of millable stalks in the measured}}$$

Furthermore, cane yield (ton/fed.) was calculated based on sub plot basis. Sugar yield (ton/fed.) was calculated using the following equation according to Yadava and Sharma (1980): Sugar yield (ton/fed.) = Cane yield (ton/fed.) xsugar Recovery ÷ 100

The homozygosity error test of the data indicated the homozygosity of data that is needed before the combined analysis of variance was done. Revised LSD at 5% and 1% probability was used for means comparison of studied traits were performed as outlined by Federer (1963).

Results and Discussion

1- Stalk length (cm):

Data shown in tables (2) indicated that the differences in stalk length among tested genotypes were highly significant. GT54-9 and G99-103 genotypes recorded statistically similar stalk length which were significantly taller than those of the other evaluated genotypes over all growing seasons. Highly significant differences in stalk length among sugarcane genotypes were widely reported (El-Taib, 1999; Jamro *et al.*, 2000 and Mohamed and Ahmed, 2002).

Changing the growing seasons significantly increased stalk length from 224.1 cm to 294.4 cm. The tallest stalks were produced from GS3 formed by early planting and late harvest. Prolonging the growing season is known to increase stalk length particularly in the wearm weather available in spring.

The effect of the interaction of genotypes x growing seasons was highly significant indicating that the response of the genotypes differed within each growing season. This could be used as a base to select proper genotype for proper growing season. Most of tested genotypes recorded the highest stalk length at GS3 which could be attributed to length of this growing season which extended to 13-months from 26 March to 26 April.

Table(2): Effect of the growing seasons, genotypes and their interaction on stalk length (cm)

Genotypes	GS1	GS2	GS3	GS4	GS5	GS6	Mean
GT 54-9	282.8	307.7	325.8	268.1	273.2	280.5	289.7
PH 8013	288.3	304.0	323.7	220.0	230.3	249.8	269.4
G. 99-80	264.7	272.7	292.3	226.3	237.5	251.8	257.6
G. 99-103	286.0	307.2	318.3	240.3	280.5	297.2	288.3
G. 99-122	267.5	271.7	278.5	234.8	251.2	254.3	259.7
G. 99-160	240.5	262.8	272.7	180.3	188.5	201.3	224.4
G. 99-165	276.5	295.2	306.7	244.0	251.2	260.5	272.3
G. 99-208	221.3	250.5	252.5	171.7	177.7	196.8	211.8
G. 99-217	231.0	240.5	254.3	166.5	179.2	184.2	209.3
G. 2000-4	277.2	284.8	299.3	241.3	254.3	264.8	270.3
G. 2000-8	263.8	274.7	301.3	235.0	240.0	257.7	262.1
G.2000-157	278.8	288.2	300.7	235.7	242.7	242.7	264.8
G.2000-171	275.8	280.8	296.5	234.2	249.7	274.5	268.6
G.2000-176	272.0	291.0	299.8	239.0	248.3	264.8	269.2
Mean	266.2	280.8	294.5	224.1	236.0	248.6	258.4

Revised LSD at	0.05	0.01
Growing seasons	4.86	6.64
Genotypes	6.12	8.05
Growing seasons x Genotypes	14.98	19.73

2 - Number of millable stalks per feddan:

Growing seasons, genotypes and their interaction had highly significant effect on number of millable stalks. Number of millable stalk varied according to growing season. Maximum values were reported from GS2, GS3. Late planted GS4, 5 and 6 were less in number of millable stalks as the capacity of tillering is reduced where warm weather dominants the early stage following cane germination (Table 1). This means that planting date was the effective factor in determining number of millable cane while the length of the growing season was not.

GT54-9 and G2000-157 genotypes had statistically higher and similar number of millable cane and are significantly higher than those of other evaluated genotypes. These genotypes could be useful as a parents in Egyptian cane breeding programe for developing high cane yield cultivar since it is the one of two major components determining cane yield. El-Taib *et al.* (2005) reported differences in stalk number among sugarcane genotypes. Furthermore, it is advisable that the highest cane yield could be obtained by the highest number of millable stalk and/or stalk weight (Kang *et al.*, 1983).

Highly significant differences were reported for the interaction between growing seasons and genotypes. Changing of seasons affected the performance of genotypes differently (Table 3). El-Sogheir and Besheit (2003) reported differences in number of millable stalk among sugarcane genotypes at various growing seasons.

Table(3): Effect of the growing seasons, genotypes and their interaction on number of millable stalks/feddan.

Genotypes	GS1	GS2	GS3	GS4	GS5	GS6	Mean
GT 54-9	33700	41500	42000	39600	38600	37600	38833
PH 8013	33100	39400	43300	35200	34000	32900	36316
G. 99-80	34300	37000	38200	40400	37400	36900	37366
G. 99-103	36900	38700	40200	31800	34700	37100	36566
G. 99-122	37900	37700	38500	35500	38600	39700	37983
G. 99-160	38500	39600	41900	35300	29900	29100	35716
G. 99-165	34200	38800	40000	41000	38400	34300	37783
G. 99-208	38600	38400	40300	30700	38300	40000	37716
G. 99-217	41400	41300	39300	32700	34600	37200	37750
G. 2000-4	34300	39200	40100	43100	36200	29200	37016
G. 2000-8	35800	38100	40900	31900	37900	39200	37300
G.2000-157	35000	42300	40600	35800	40700	43500	39650
G.2000-171	30900	34800	36100	30300	36400	40600	34850
G.2000-176	34500	38900	40600	35800	34600	32400	37213
Mean	35650	38978	40142	35650	36450	36407	37331

Revised LSD at	0.05	0.01
Growing seasons	908	1241
Genotypes	1109	1460
Growing seasons x Genotypes	2716	3576

3 – Stalk weight (kg):

Data presented in table (4) indicated that stalk weight significantly responded to the growing seasons, genotypes and their interaction. Long growing seasons (GS3 and GS2) had significantly higher stalk weight compared to that of cane plants at the other growing seasons. This is mostly due to longer periods of warm weather that enhance photosynthesize. G99-103 genotypes produced significantly the highest stalk weight values. For each growing season, the best genotype in stalk weight varied. In general, G99-103 maintained higher weight in 5 out of the 6 growing seasons. Within varieties, it was evident that most genotypes were better under early planting long season GS3. However, some genotypes performed better under that growing season at late planting date harvest (GS6). Ph8013 and G99-217 recorded the best stalk weight. Once more, this is important in diversifying the varieties that should be available at the end of the milling season of the sugar cane factories.

Table(4): Effect of the growing seasons, genotypes and their interaction on stalk weight (kg).

Genotypes	GS1	GS2	GS3	GS4	GS5	GS6	Mean
GT 54-9	1.405	1.207	1.174	1.044	1.131	1.220	1.197
PH 8013	1.447	1.330	1.447	0.981	1.124	1.474	1.300
G. 99-80	1.036	1.077	1.122	0.930	1.053	0.975	1.032
G. 99-103	1.674	1.707	1.565	1.435	1.379	1.401	1.527
G. 99-122	1.219	1.181	1.103	1.072	1.116	1.153	1.141
G. 99-160	1.051	1.175	1.206	0.765	0.872	0.841	0.985
G. 99-165	1.262	1.178	1.258	1.139	1.159	1.212	1.201
G. 99-208	1.070	1.257	1.306	0.904	0.894	1.026	1.076
G. 99-217	1.059	1.283	1.462	0.967	1.037	0.989	1.133
G. 2000-4	1.137	1.383	1.419	0.855	1.272	1.568	1.272
G. 2000-8	1.179	1.271	1.190	1.104	1.038	1.071	1.142
G.2000-157	1.346	1.362	1.385	1.248	1.280	1.242	1.310
G.2000-171	1.352	1.299	1.487	1.081	1.084	1.226	1.255
G.2000-176	1.239	1.169	1.266	1.061	0.993	1.228	1.159
Mean	1.248	1.277	1.314	1.042	1.102	1.187	1.195

Revised LSD at	0.05	0.01
Growing seasons	0.047	0.064
Genotypes	0.048	0.063
Growing seasons x Genotypes	0.117	0.154

4 – Cane yield (ton/fed.):

Cane yield of each genotype is expected to vary according to season. However, compensation is needed to diversity the varietal map of each cane sugar factory. Data shown in table (5) revealed that growing season, genotypes and their interaction had highly significant effect on cane yield. The best average yield resulted from GS3 (early planting and late harvest). Overall seasons, G99-103 scored the highest cane yield of 55.88 ton/fed. The major point of view is the performance of genotypes within growing season that cane assist in selecting genotype to be grown in a certain location. G99-103 seemed to perform well under most seasons. Furthermore, G2000-157 seemed to

Table(5): Effect of the growing seasons, genotypes and their interaction on cane yield (ton/fed.).

Genotypes	GS1	GS2	GS3	GS4	GS5	GS6	Mean
GT 54-9	47.52	49.92	48.97	40.97	43.44	45.89	46.12
PH 8013	47.98	51.58	61.88	33.03	37.78	48.34	46.76
G. 99-80	35.52	39.57	42.81	38.68	39.31	35.96	38.64
G. 99-103	61.66	66.32	61.83	45.39	47.69	52.42	55.88
G. 99-122	45.69	44. 30	42.45	38.09	42.97	45.49	43.16
G. 99-160	41.38	46.84	50.85	26.92	26.12	24.94	36.18
G. 99-165	43.10	45.12	49.91	46.19	44.48	41.38	45.03
G. 99-208	40.74	48.15	52.61	27.73	34.05	40.87	40.69
G. 99-217	43.90	52.74	56.37	31.46	35.77	36.61	42.81
G. 2000-4	39.00	54.17	56.74	36.49	46.17	45.20	46.29
G. 2000-8	42.18	47.87	48.18	35.68	39.26	41.46	42.44
G. 2000-157	47.17	57.48	56.05	44.63	51.10	53.62	51.67
G. 2000-171	41.09	44.87	53.71	32.61	39.43	49.05	43.46
G. 2000-176	43.04	45.44	50.80	37.84	34.24	40.10	41.91
Mean	44.28	49.60	52.37	36.84	40.13	42.95	44.36

Revised LSD at	0.05	0.01
Growing seasons	1.26	1.72
Genotypes	1.31	1.73
Growing seasons x Genotypes	3.22	4.24

fit better under planting seasons GS4, 5 and 6. Such superiority could be explained based on stalk weight and number of millable stalks of the corresponding seasons. This mainly attributed to the high values of G9-103 stalk weight (1.527 kg) in table 4, followed by G2000-157 genotype which recorded 51.67 ton/fed. and relatively recorded high number of millable stalks (39650) compared to other genotypes. It is obvious from these values that increasing the number of millable stalk did not always compensate for the reduction in stalk weight to achieve high cane yield. Differences in cane yield among sugarcane genotypes were reported by El-Taib *et al.* 2005 and Gilbert *et al.*, 2006.

Also, the data indicated that G99-103 genotype significantly recorded the highest cane yield at five of the six tested growing seasons (Table 5), in addition to G2000-157 (53.61 ton/fed.). However, at fourth, fifth and sixth growing season G2000-157 significantly recorded the highest cane yield (51.10 ton/fed.). The commercial GT54-9 genotype recorded significantly the highest cane yield at second growing season compared to their cane yield at the other used growing seasons indicating the necessity to develop new cultivars to join GT54-9 genotype at the other growing seasons in which the GT54-9 yielding potential was reduced.

5 - Sugar yield (ton/fed.):

Sugar yield is the final outcome for sugarcane. It could increase as a result of cane tons or quality. Data presented in table (6) indicated that growing season, genotypes and their interaction had highly significant effect on sugar yield. Maximum sugar yield resulted for longer season GS3 and was based on cane yield. This results suggested that extended growing season either for recommended planting or late planting dates increased sugar yield throught increased cane yield. G99-103 genotype significantly recorded the highest sugar yield (6.52 ton/fed.). The differences in sugar yield among sugarcane genotypes were reported by Mohamed and Abo-Dooh, 2002 and Gilbert *et al.*, 2006 and attributed to the differences in cane yield and/or sugar recovery. The superiority of G99-103 genotype in sugar yield is mainly attributed to its high cane yield (55.88 ton/fed.) compared to the other evaluated genotypes.

Oppositely, at the late plating early harvested seasons (GS4) several genotypes were similar though their average sugar yield and were less than the remained longer seasons such as G99-103.

Table(6): Effect of the growing seasons, genotypes and their interaction on sugar yield (ton/fed.).

Genotypes	GS1	GS2	GS3	GS4	GS5	GS6	Mean
GT 54-9	5.892	6.706	6.128	4.709	5.544	5.488	5.745
PH 8013	5.910	6.988	7.925	3.695	5.225	6.045	5.965
G. 99-80	4.225	5.333	5.369	4.187	4.753	4.067	4.656
G. 99-103	7.508	7.797	7.464	4.461	5.831	6.065	6.521
G. 99-122	5.375	5.768	5.418	4.296	5.220	5.251	5.221
G. 99-160	4.939	6.194	6.615	3.296	3.517	3.281	4.640
G. 99-165	4.774	4.786	5.576	4.439	4.742	4.102	4.736
G. 99-208	4.966	6.600	7.001	3.134	4.436	5.428	5.261
G. 99-217	5.559	7.278	7.860	3.362	4.645	4.884	5.598
G. 2000-4	4.761	6.969	6.675	4.340	5.800	5.294	5.640
G. 2000-8	5.162	6.158	5.920	4.259	5.061	5.231	5.299
G. 2000-157	5.219	7.275	7.345	4.232	5.708	5.693	5.912
G. 2000-171	5.271	6.202	6.821	4.028	4.997	6.444	5.627
G. 2000-176	5.194	6.284	6.513	4.368	4.437	5.017	5.302
Mean	5.340	6.453	6.616	4.058	4.994	5.164	5.437

Revised LSD at	0.05	0.01
Growing seasons	0.149	0.204
Genotypes	0.207	0.273
Growing seasons x Genotypes	0.509	0.670

In general, for all evaluated genotypes, and based on these data under the conditions of the experiment site is possible to increase sugar productivity at all used growing seasons by selecting proper genotypes for the appropriate planting and harvesting dates. G99-103 recorded high sugar yield in 5 out of the 6 growing season. In addition, for the early planting-late harvest (GS3) for Ph8013 and G99-217 genotypes are better. This indicates that these two particular genotypes could perform better under these condition. Similar studies should be conducted in the major cane producing locations.

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تقييم بعض التراكيب الوراثية لقصب السكر المزروعة فى الربيع تحت مواسم زراعية مختلفة ٢- سلوك صفات مكونات المحصول ومحصول القصب والسكر

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تـم إجراء هذه الدراسة فى مزرعة محطة بحوث كوم أمبو الزراعية خلال موسمى ٢٠٠٤/٢٠٠٥ ، ٢٠٠٥/٢٠٠٦ لـتقدير صـفات مكونات المحصول(طول الساق – عدد العيدان القابلة للعصر/فدان وزن العـود / كجم) محصول القصب(طن/ فدان) محصول السكر(طن/ فدان) . مواسم النمو تمثل التوافـيق بين ميعادين زراعة وثلاث مواعيد حصاد . وكانت مواعيد الزراعة هى ٢٦ مارس (الميعاد الأمـثل) و ٢٦ أبريل الميعاد المتأخر ٢٠٠٣ ، ٢٠٠٤ على التوالى وكانت مواعيد الحصاد ٢٦ فبراير ، ٢٦ مـارس و ٢٦ أبريل ٢٠٠٤ ، ٢٠٠٥ على التوالى وكان عمر الأصناف عندها ١١ ، ١٢ ، ١٣ لمـيعاد الـزراعة الأمثل و ١٠ ، ١١ ، ١٢ لميعاد الزراعة المتأخر وكان تصميم التجربة فى قطاعات كاملة العشوائية وتم ترتيبها فى نظام القطع المنشقة مرة واحدة .

وكانـت التراكيب الوراثية التى تم تقييمها هى: جيزه-تايوان ٥٤/٩ والفلبينى ٨٠١٣ وجيزه ٩٩-٨٠ وجيزه ٩٩-١٠٣ وجيزه ٩٩-١٢٢ وجيزه ٩٩-١٦٠ وجيزه ٩٩-١٦٥ وجيزه ٩٩-٢٠٨ وجيزه ٩٩-٢١٧ وجـيزه ٢٠٠٠-٤ وجـيزه ٢٠٠٠-٨ وجيزه ٢٠٠٠-١٥٧ وجيزه ٢٠٠٠-١٧١ وجيزه ٢٠٠٠-١٧٦.

وقد أوضحت النتائج الآتى :

١- كان تأثير التراكيب الوراثية ومواسم النمو والتفاعل فى ما بينها معنويا فى جميع الصفات المدروسة

٢- أوضـحت النـتائج أيضـا أنه من الممكن زيادة محصول القصب والسكر لكل التراكيب الوراثية باختـيار موسـم النمو المناسب . سجل التركيب الوراثى جيزه ٩٩-١٠٣ أعلى محصول من القصب السـكر (٥٥,٨٨ طن/فدان و ٦,٥٢١ طن/فدان) وكان سلوكه جيداً تحت جميع مواسم النمو ولم يشاركه أى مـن التراكيب الوراثية المقيمة فى موسم النمو الأول فى محصول السكر العالى بينما شاركه كل من التراكيـب جـيزه ٩٩-٢١٧ وجـيزه ٢٠٠٠-١٥٧ فى موسم النمو الثانى والتركيب الوراثى الفلبينى ٨٠١٣ وجـيزه ٩٩-٢١٧ فى موسم النمو الثالث والتركيب الوراثى جيزه تايوان ٥٤-٩ ؛ جيزه ٩٩-١٦٥ فـى موسم النمو الرابع والتركيب الوراثى جيزه تايوان ٥٤-٩ وجيزه ٢٠٠٠-٤ وجيزه ٢٠٠٠-١٥٧ فـى موسـم النمو الخامس والفلبينى ٨٠١٣ وجيزه ٢٠٠٠-١٥٧ وجيزه ٢٠٠٠-١٧١ فى موسم الـنمو السـادس . ويمكن التوصية بزراعة كل مجموعة من هذه التراكيب الوراثية فى مواسم الزراعة التى تعطى بها أعلى محصول من السكر .

٣- تقصـير موسم النمو بتأخير ميعاد الزراعة أدى إلى نقص محصول السكر كنتيجة لنقص محصول القصـب مـن خـلال النقص الحادث فى عدد العيدان القابلة للعصير وأن زياد محصول السكر كنتيجة لإطالة موسم النمو بتأخير ميعاد الحصاد كانت أقل كثيراً من النقص الحادث بتأخير ميعاد الحصاد كانت أقل كثيراً من النقص الحادث فى محصول السكر بسبب تقصير موسم النمو بتأخير ميعاد الزراعة .

٤- التراكيـب الوراثـية جـيزه ٩٩-١٠٣ وجيزه ٩٩-٢١٧ وجيزه ٢٠٠٠-١٥٧ أثبتت أنها تمتلك القدرة لتكون أصناف تجارية طبقاً لإنتاجهم العالى من محصول القصب والسكر .