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EVALUATION OF SIX SUGAR BEET VARIETIES UNDER THREE HARVESTING DATES

N. M. M. Awad[(1)] , A. Abdeldaiem[(2)] and Sahar M.I. Moustafa[(1)]

[(1)] Sugar Crops Res. Inst., Agric. Res. Center, Giza, Egypt

[(2)] Agronomy Department, Faculty of Agriculture, Kafr El-Sheikh University

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ABSTRACT: *Two field experiments were carried out at Sakha, Kafr El-Sheikh Governorate, Egypt, during 2011/2012 and 2012/2013 seasons. The field experiments were conducted to evaluate yield, yield components and quality of six sugar beet varieties namely (Soltan, Demapoly, Farida , Pleno , Kawemira and Lola) under three harvesting dates (175, 195 and 215 DAS).A split plot design with three replicates was used in both seasons. Results revealed the superiority of Demaploy in root weight/plant, root yield, sugar yield (t/fed.), sucrose % and purity % when it was harvested after 215 days from sowing in the two growing seasons. Harvesting date and sugar beet variety significantly affected all studied traits, except root diameter. Interaction between harvesting date x sugar beet variety had a insignificant effect on all studied traits, in both seasons had significant effects on all studied traits, except root diameter. Interaction between harvesting, except for sucrose % and purity % in the 1st season.*

Under the conditions of this study, Demapoly considered the proper variety for Kafr El-Sheikh Governorate environmental. In addition, use the characteristics of yield component such as (root length, root diameter and root fresh weight/plant) as a morphological characteristics, which affected root yield, besides high sucrose % and low reducing sugar % as tools can be used to evaluate and select sugar beet varieties for highly root yield and sugar production.

Key words: *Sugar beet, harvest date, sugar beet varieties.*

INTRODUCTION

Sugar beet (*Beta vulgaris*, L.) is considered to be a prospective sugar crop in Egypt. Improving its productivity is an urgent demand to meet sugar consumption or at least to decrease the Egyptian gap from sugar. Variety is considered the cornerstone for production process, selecting the superior varieties from the imported one is the main purpose to the breeder, in addition to the recommended package of the agronomical practices. The differences between varieties in gen make up expression may be throwing some light on the relative importance of studying varietals behavior through the growing season. Harvesting age is one of the main factors, which directly affected on maturity, consequently juice quality.

Abo El-Magd *et al*. (2003) tested the effect of three harvesting dates i.e. 180, 195 and 210 days from sowing on sugar beet variety Gloria. The results indicated that harvesting dates significantly affected productivity traits such as root length, root diameter, root and top weight/plant, sugar yield/fed. and root quality, i.e., reducing sugar , TSS, sucrose and juice purity % in both seasons. The highest productivity and quality traits were produced from harvesting after 210 days from sowing. Aly (2006) studied the effect of harvesting dates 170, 190 and 210 days from sowing on sugar beet varieties at three location. He found that delaying harvest date up to 210 days from sowing significantly increased root length, root diameter, root weight, sucrose %, root and sugar yields/fed,. Abd El-Razek (2003 and 2006) and Mahmoud *et al* (2008) reported that the maximum root and sugar yields/fad were obtained when sugar beet was harvested at 180-210 days after sowing date. They also add that varying varieties and harvesting dates affected sucrose and juice purity percentages, root and sugar yields.

Regarding the effect of sugar beet variety, Al-Jbawi (2000) evaluated thirteen sugar beet varieties under different locations (Giza, Kafr El-Sheikh, El-Dakahlia and El-

Fayoum) for sugar yield and its contributing traits. The researcher found that root as well as length, diameter and root weight, TSS%, sucrose %, purity % as well as root, top and sugar yields were significantly differed among location. Azzazy *et al.* (2007) evaluated four sugar beet varieties (Gloria, Sofie, Sumba and Sultan) under two dates of harvesting (180 and 210 days from sowing). The recorded results indicated that the tested sugar beet varieties differed significantly in root and sugar yields, as well as sucrose and purity percentages. Sugar yield showed a significant and positive correlation coefficient with root yield, root length, and sucrose %.

The objective of this study is to determine the most suitable dates for the harvesting of six varieties of sugar beet.

MATERIALS AND METHODS

This work was carried out at Sakha, Kafr El-Sheikh Governorate, Egypt, during 2011/2012 and 2012/2013 seasons to evaluate six sugar beet varieties (Soltan, Demapoly, Farida , Pleno , Kawemira and Lola) under three harvesting dates (175, 195 and 215 DAS). Means of temperature degree relative humidity % in both seasons are presented in Table (1).

A split plot design with three replicates was used in both seasons. Harvesting dates were arranged in the main plots, while sugar beet varieties were randomly allocated in the sub plots. Plot area was 21 m^2 (1/200 fed.), which consisted of 6- ridges each 7 m in length and 50-cm in width with 20-cm spacing between hills. Sugar beet plants were cultivated on the first week of Oct. in both seasons.

Nitrogen fertilizer at the recommended dose was applied in the form of urea (46.5% N) in two equal doses after thinning and 30 days later. Phosphorus was added before sowing at the rate of 30 kg P_2O5/fed. in the form of superphosphate (15.5% P_2O5).

Potassium was applied at the rate of 24 kg K_2O/fed. as potassium sulfate (48% K_2O). Boron was sprayed as Boric acid (17% B) in two equal doses at age of 65 and 80 days after sowing.

Other agricultural practices were applied as recommended for growing sugar beet in the region.

Table (1) Means of temperature degree and relative humidity% in both seasons.

Month	2011-2012 season						2012-2013 season					
	Temperature (C°)			Relative humidity%			Temperature (C°)			Relative humidity%		
	Max	Min	Aver	Max	Min	Aver	Max	Min	Aver	Max	Min	Aver
September	34.2	21.4	27.8	87.0	35.0	61.0	34.5	20.3	27.4	83.0	29.0	56.0
October	33.1	19.4	26.2	86.0	32.0	59.0	32.8	19.3	26.1	82.0	28.0	55.0
November	28.7	16.5	22.6	89.0	41.0	63.0	29.1	14.7	21.9	81.0	30.0	55.5
December	23.4	10.3	16.9	81.0	37.0	59.0	22.2	9.2	15.7	82.0	37.0	59.5
January	22.2	9.8	16.0	83.0	36.0	59.5	22.1	8.6	15.3	78.0	34.0	56.0
February	24.8	9.6	17.2	86.0	36.0	61.0	22.0	7.9	14.9	87.0	36.0	61.5
March	28.2	13.4	20.8	82.0	32.0	57.0	26.2	10.4	18.3	79.0	29.0	54.0
April	30.7	14.1	22.4	81.0	24.0	52.5	31.1	14.0	22.5	77.0	25.0	51.0
May	31.2	15.7	23.5	80.0	23.0	51.5	32.7	15.6	24.2	76.0	23.0	49.5

Source: Agro-meteorological station, Sakha, Kafr- Elsheikh, Agric. Res. Center, Gizza, Egypt.

Recorded data:

A sample of ten plants was taken at random from each treatment to estimate the following growth and quality parameters:

1. Root length (cm.).
2. Root diameter (cm.) in the middle part of the root.
3. Root fresh weight (g/plant).
4. Total soluble solids percentage (TSS %): It was determined by hand refract meter.
5. Sucrose percentage: It was determined according to Le Docte (1927).
6. Purity percentage: It was estimated according to the following equation;
7. Purity percentage =(Sucrose % x100)/ TSS %.
8. Root yield (t/fed.) and Sugar yield (t/fed.) It was amounted by using the following equation.
   Theoretical sugar yield = Root yield (t/fed.) x sucrose %.

Alpha amino nitrogen, sodium and potassium contents: It's were estimated according to the procedure of S. C. by Auto analyzer as describe in AO AC, 2005, the results calculated as milleq /100 g beet.

Sugar recovery % was calculated using the following equation according to Cooke and Scott, 1993.

Sugar recovery % = sucrose, % - [0.29 + 0.343 (K + Na) +<α - N (0.094)], Where, K, Na and α - N were determined as milleq /100 g beet.

The collected data were statistically analyzed according to procedures out lined by Snedecor and Cochran (1981). Least significant differences test (LSD) at 5% level of probability was used to compare means. Soil samples were taken before sowing for determination the physical and chemical properties for the experimental soil, illustrated in Table (2) that carried out according to A.O.A.C (1995).

Table (2): Physical and chemical properties of tested soil during 2011/2012 season.

Soil analysis	2011/2012	2012/2013
Particle size distribution		
Sand%	14.2	11.4
Silt%	29.0	30.3
Clay%	56.8	58.3
Texture class	Clay	Clay
Soluble ions (mq l-1)		
Ca++	17	23
Mg++	8	4
Na+	14	24
K+	17	13
Cl-	20	16
SO4-	8	18
Hco3-	28	30
Co3-	-	-
EC d Sm-1 (soil paste)	5.6	6.2
PH (soil paste)	8.2	8.0
Available nutrients (ppm)		
N	135	131
P	20.8	23.1
K	288	256
B	0.46	0.41

RESULTS AND DISCUSSION

1. Root diameter and length:

Data in Table (3) show the effect of harvesting date and sugar beet variety on the root dimension in both seasons. The available data cleared that root diameter and root length of sugar beet were insignificantly influenced by plant age at harvest. These results were true in both growing seasons. In addition, there was insignificant affect among tested varieties in root diameter in both seasons. However, they differed significantly in their root length, in both seasons. The differences among varieties may be due to their gene make up. Demapoly variety had the longest root, while, Kawemira had the shortest one followed by Farida then Soltan. The interactions between harvesting dates and sugar beet variety had insignificant effect on both characters in both seasons.

2. Root fresh weight/plant and root yield:

Results given in Table (4) pointed out the positive response in root fresh weight/plant and root yield, this response was significantly in both traits for the 1st season. Meanwhile, the differences between harvesting dates on both trait did not reach the level of significance in the 2nd season. Delaying harvest date up to 215 days attained a gradual and significant effect on root fresh weight/plant and root yield in the 1st season, also it is worth mentioned that the difference between 175 and 195 days was negligible in this respect. The increase in fresh root weight associated with the increase in plant age at harvest time may be attributed to the increase in dry mater accumulation, which positively reflected on root yield. Similar results were obtained by jozefyova *et al* (2003) and Al-Jbawi (2000).

Table (3): Root diameter (cm) and root length (cm) of sugar beet variety as affected by harvesting date in 2011/12 and 2012/13 seasons.

Sugar beet variety	2011/2012 season							
	Root diameter (cm)				Root length (cm)			
	Harvest date (Days after sowing)				Harvest date (Days after sowing)			
	175	195	215	Mean	175	195	215	Mean
Soltan	11.8	11.7	12.0	11.8	24.2	21.4	21.1	22.2
Demapoly	12.3	11.3	12.2	11.9	24.2	25.3	25.7	25.0
Farida	10.9	9.40	12.7	11.0	23.1	22.0	26.6	23.9
Pleno	12.0	12.4	11.9	12.1	21.9	21.4	22.2	21.8
Kawemira	12.3	11.9	11.3	11.8	18.9	22.9	21.1	21.0
Lola	10.9	11.1	10.3	10.8	21.8	18.1	25.1	21.7
Mean	11.7	11.3	11.7	11.6	22.3	20.7	23.6	22.6
L.S.D at 0.05 % level for:	Harvest date (A)			NS				NS
	Variety (B)			NS				2.50
	A x B			NS				NS
2012/2013 season								
Soltan	14.43	14.29	14.71	14.48	29.99	26.52	26.06	27.52
Demapoly	15.12	13.87	14.99	14.66	29.99	31.31	31.79	31.03
Farida	13.32	11.51	15.54	13.46	28.60	27.21	32.97	29.59
Pleno	14.71	15.27	14.57	14.85	27.07	26.51	27.42	27.00
Kawemira	15.13	14.57	13.88	14.52	23.39	28.32	26.10	25.94
Lola	13.30	13.60	12.63	13.18	26.93	22.35	31.10	26.79
Mean	14.33	13.85	14.38	14.19	27.66	27.04	29.24	27.98
L.S.D at 0.05 % level for:	Harvest date (A)			NS				NS
	Variety (B)			NS				3.12
	AxB			NS				NS

As for, the influence of the studied sugar beet varieties on root fresh weight/plant as well as root yield/fad., the collected data reveled significant and distinct differences between varieties with respect to their effect on this traits. Sugar beet Demapoly surpassed the other varieties in this respect followed by Soltan variety. This effect was fairly true in both growing seasons. The differences among varieties on root yield mainly due to varietals performance of the individual root for these varieties.

The interaction between harvesting date and sugar beet variety had insignificant effect on root fresh weight/plant and root yield in both seasons, Table (4).

3. Reducing sugar, Total Soluble Solids and Purity percentages:

Data presented in Table 5 revealed that delaying harvesting dates gradually and significantly reduced reducing sugar %, this observation means that the plant reach to full growth and in turn full maturity than that had been harvested early. This observation was completely true in both seasons. Similar results were obtained by jozefyova *et al* (2003) Data also revealed that Soltan and Kawemira varieties recorded the highest values of RS % in the 1st and 2nd seasons compared with the other verities. This variation may be due to the gene make up.

Results indicated that the interaction between variety and harvesting dates insignificantly influenced RS% in both seasons.

Table (4): Root weight (g) and root yield of sugar beet variety (t/fed.) as affected by harvesting date in 2011/12 and 2012/13 seasons.

Sugar beet variety	2011/2012 season							
	Fresh root weight (g)				Root yield (t/fed.)			
	Harvest date (Days after sowing)				Harvest date (Days after sowing)			
	175	195	215	Mean	175	195	215	Mean
Soltan	876.3	885.4	1070.5	944.1	33.1	33.4	34..3	33.6
Demapoly	968.7	977.8	1257.3	1067.9	34.5	35.9	37.3	35.9
Farida	778.5	790.8	881.5	816.9	29.4	29.9	33.3	30.9
Pleno	810.5	827.1	923.0	853.5	30.6	31.3	34.8	32.2
Kawemira	739.4	777.2	839.8	785.4	28.0	29.4	31.7	29.7
Lola	838.2	854.8	909.7	864.6	31.7	32.0	34.3	32.6
Mean	835.2	850.7	980.3	888.7	31.2	32.0	34.3	32.5
L.S.D at 0.05 % level for:	Harvest date (A)			71.62				2.67
	Variety (B)			76.76				2.87
	AxB			NS				NS
2012/2013 season								
Soltan	876.3	902.7	993.1	924.0	34.34	35.38	38.92	36.21
Demapoly	932.9	959.7	1018.1	970.4	35.60	37.61	39.89	38.04
Farida	826.6	815.5	902.2	848.1	32.46	32.04	35.39	33.30
Pleno	870.4	854.8	928.2	884.5	34.16	33.56	36.42	34.71
Kawemira	748.6	754.3	790.3	764.4	29.50	29.72	31.92	30.38
Lola	853.5	813.7	879.3	849.0	33.55	32.02	34.58	33.39
Mean	851.4	850.1	918.7	873.4	33.44	33.39	36.19	34.33
L.S.D at 0.05 % level for:	Harvest date (A)			NS				NS
	Variety (B)			60.74				2.33
	AxB			NS				NS

Concerning TSS % shown in Table 4 showed that harvesting dates significantly affected TSS % in both seasons. Harvest at 215 days from sowing surpassed the other harvesting dates by 0.60 and 0.28% in the 1st seasons respectively, corresponding to 0.45 and 0.22 % in the 2nd season. This superiority may be due to increase growth period let to full mature consequently high TSS %. In addition it was noticed that the difference among varieties were significant in both seasons. Pleno variety exhibited the highest TSS % as compared with the other verities. On the other hand, Soltan attained the lowest TSS% in both seasons.

Concerning purity percentage delaying harvesting dates had insignificant effect on the values of purity % in 1st season only. On the other hand, data showed that Demaploy and Kawemira varieties exhibited the highest and the lowest purity percentage in both seasons (Table 5). As for, the interaction between harvest dates x varieties was significantly affected purity % in 1st season only. Meantime, harvested sugar beet variety Demapoly at 215 days from sowing produced the highest values in this respect. Similar results were reviewed by Azzazy *et al* 2007 and Mirvat (2001).

It is clearly shown that the results obtained in Table 4 assured that the measurements of quality in sugar beet crop in terms of RS%, TSS % and purity % mainly affected by gen make up in addition to the prevailing environments.

Table (5): Reducing sugar, TSS and purity percentages of sugar beet variety as affected by harvesting date in 2011/12 and 2012/13 seasons..

Sugar beet variety	2011/2012 season											
	Reducing sugars percentage				TSS percentage				Purity percentage			
	Harvest date (Days after sowing)				Harvest date (Days after sowing)				Harvest date (Days after sowing)			
	175	195	215	Mean	175	195	215	Mean	175	195	215	Mean
Soltan	1.33	0.79	0.54	0.89	21.46	21.89	22.36	21.90	74.65	75.33	75.20	75.06
Demapoly	2.74	2.52	1.20	2.16	22.34	22.55	23.10	22.66	79.74	80.78	80.52	80.35
Farida	1.66	1.08	0.67	1.13	22.95	23.07	23.32	23.11	62.32	68.44	68.91	66.56
Pleno	2.94	1.83	1.06	1.94	23.46	23.76	24.03	23.75	72.01	72.71	74.79	73.17
Kawemira	1.21	0.86	0.62	0.90	22.67	22.94	23.08	22.90	56.21	70.23	69.36	65.27
Lola	2.21	1.27	0.90	1.46	23.06	23.68	23.64	23.46	70.39	73.90	75.86	73.38
Mean	2.02	1.39	0.83	1.41	22.66	22.98	23.26	22.96	69.22	73.57	74.11	72.30
L.S.D at 0.05 % level for:	Harvest date(A)			0.26				0.17				NS
	Variety (B)			0.40				0.51				3.26
	AxB			NS				NS				5.64
2012/2013 season												
Soltan	1.61	1.13	0.79	1.18	22.41	22.29	22.72	22.47	74.79	78.89	78.28	77.32
Demapoly	2.94	2.60	1.68	2.41	23.02	23.42	23.78	23.41	81.74	80.99	80.76	81.16
Farida	2.07	1.33	1.09	1.50	23.40	23.47	23.65	23.51	63.75	68.47	70.12	67.44
Pleno	3.21	3.09	1.60	2.63	23.83	24.13	24.24	24.07	73.58	74.17	77.77	75.17
Kawemira	1.38	1.08	0.95	1.14	22.36	22.49	22.65	22.50	65.52	76.70	76.27	72.83
Lola	2.22	1.61	1.29	1.70	23.13	23.71	23.76	23.53	74.37	76.32	79.03	76.58
Mean	2.24	1.80	1.23	1.76	23.02	23.25	23.47	23.25	72.29	75.92	77.04	75.08
L.S.D at 0.05 % level for:	Harvest date(A)			0.26				0.10				2.12
	Variety (B)			0.45				0.60				5.32
	AxB			NS				NS				NS

4. Sucrose percentage and sugar yield:

Data in Table (6) revealed that sucrose percentage and sugar yield positively and significantly responded to the increase in the plant age. Delaying harvesting date from 175 to 195 and up to 215 days attained additional increase in the values of sucrose percentage amounted to (1.6 %) and (0.3 %) in the 1st season, corresponding to (1.42 %) and (0.81 %) in the 2nd. Similar results were shown with respect to the effect of harvesting dates on sugar yield. Prolonging growing season from 175 to 195 and to 215 days increased sugar yield by 0.54 ton/fed (11.02%) and 0.49 ton/fed (9.0 %) in the 1st season, corresponding to 0.32 ton/fed (5.71%) and 0.63 ton/fed (10.64 %) in the 2nd season. Similar results were obtained by Abd El- Razek (2003 and 2006) ,Mahmoud *et al* (2008) , Abo El-Magd *et al* (2003) , Awad (2000), Awad *et al* (2012), Osman, *et al* (2003) and Enan *et al* (2009).

Results in Table 6 showed that there were significant differences among the examined varieties in sucrose percentage and sugar yield. Demapoly variety, regarded the highest sucrose percentage followed by both of Pleno and Lola varieties. This observation was true in both seasons (Al-Jbawi, 2000 and Azzazy *et al,* 2007), Osman *et al* (2010), Nafei *et al* (2010) and awad *et al* (2012).

Table (6): Sucrose and sugar recovery percentage of sugar beet variety as affected by harvest dates.

Sugar beet Variety	2011/2012 season							
	Sucrose percentage				Sugar yield (ton/fed)			
	Harvest date (Days after sowing)				Harvest date (Days after sowing)			
	175	195	215	Mean	175	195	215	Mean
Soltan	13.1	16.6	16.9	16.5	4.34	5.54	5.80	5.54
Demapoly	17.9	18.3	18.7	18.3	6.17	6.57	6.97	6.57
Farida	14.4	15.9	16.1	15.5	4.23	4.75	5.36	4.79
Pleno	17.0	17.3	18.0	17.4	5.20	5.41	6.26	5.60
Kawemira	12.8	16.2	16.1	15.0	3.58	4.76	5.10	4.455
Lola	16.3	17.6	18.0	17.3	5.17	5.63	6.17	5.64
Mean	15.7	17.0	17.3	16.7	4.90	5.44	5.93	5.43
L.S.D at 0.05 % level for:	Harvest date (A)			0.57				0.41
	Variety (B)			0.67				0.56
	AxB			1.15				NS
2012/2013 season								
Soltan	16.86	17.69	17.89	17.48	5.79	6.26	6.96	6.33
Demapoly	18.89	19.02	19.27	19.06	6.72	7.15	7.69	7.25
Farida	15.00	16.17	16.68	15.95	4.87	5.18	5.90	6.07
Pleno	17.63	17.99	18.94	18.19	6.02	6.04	6.90	6.31
Kawemira	14.83	17.35	17.42	16.54	4.37	5.16	5.56	5.29
Lola	17.37	18.19	18.87	18.14	5.83	5.82	6.52	6.27
Mean	16.76	17.73	18.18	17.56	5.60	5.92	6.55	6.02
L.S.D at 0.05 % level for:	Harvest date (A)			0.40				0.35
	Variety (B)			1.10				0.54
	AxB			NS				NS

Moreover, there was a close and distinct relationship between its sucrose, sugar recovery % and recoverable sugar yield (t/fed). In other words, the superiority in recoverable sugar yield for the above mentioned varieties was mainly attributed to the highest root yield (Table 4) and the highest sucrose and sugar recovery % (Table 6). These findings may throw some light on the relative importance of such characteristics which are the cornerstones for the breeder in his selection program.

The interaction between the studied factors had a significant effect on sucrose and sugar recovery % in the 1st season only. In general and regardless the significance, it could be noticed that sucrose, sugar recovery % and recoverable sugar yield (t/fed) tended to increase with delaying harvesting dates from 175 up to 215 days, this result was true with all studied varieties (Table 7).

Table 7: Recoverable sugar yield (t/fed) of sugar beet variety as affected by harvest dates.

	2011/2012 season			
sugar beet variety	Recoverable sugar yield (ton/fed)			
	Harvest date (Days after sowing)			
	175	195	215	Mean
Soltan	3.072	4.174	4.466	4.152
Demapoly	4.169	4.560	5.302	4.953
Farida	2.793	3.394	4.058	3.434
Pleno	3.467	3.759	4.709	4.050
Kawemira	2.071	3.436	3.823	3.201
Lola	3.727	4.082	4.668	4.055
Mean	3.310	3.902	4.496	4.052
L.S.D at 0.05 % level for:	Harvest date (A)			0.41
	Variety (B)			0.56
	AxB			NS
	2012/2013 season			
Soltan	4.169	4.733	5.458	4.761
Demapoly	4.562	5.026	5.785	5.186
Farida	3.292	3.716	4.426	3.800
Pleno	3.916	3.957	5.101	4.312
Kawemira	3.026	3.696	4.019	3.600
Lola	4.022	4.148	4.848	4.338
Mean	3.839	4.204	4.948	4.318
L.S.D at 0.05 % level for:	Harvest date (A)			0.35
	Variety (B)			0.54
	AxB			NS

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تقييم ستة أصناف بنجر سكر تحت ثلاث مواعيد حصاد

نبيل مرسى محمد عوض[1] ، أيمن عبد الدايم [2] ، سحر مأمون إبراهيم مصطفى[1]

[1] معهد بحوث المحاصيل السكرية – مركز البحوث الزراعية – جمهورية مصر العربية

[2] قسم المحاصيل –كلية الزراعة بكفر الشيخ– جمهورية مصر العربية

الملخص العربى

أقيمت تجربتان حقليتان بسخا– محافظة كفرالشيخ– مصر خلال موسمى الزراعة 2012/2011–2013/2012 لتقييم ستة أصناف من بنجر السكر هي (Soltan, Demapoly, Farida , Pleno , Kawemira and Lola) تحت ثلاث أعمار حصاد (175و 195و215) يوما من الزراعة واستخدم تصميم القطع المنشقة مرة واحدة حيث وضعت مواعيد الزراعة في القطع الرئيسية والأصناف تم توزيعها عشوائياً فى القطع المنشقة.

أظهرت النتائج وجود تأثير معنوى لمواعيد الحصاد و الأصناف على جميع الصفات المدروسة فيما عدا صفة قطر الجذر حيث لم يكن لها تأثير معنوى على هذه الصفة فى كلا الموسمين. كما أن التفاعل بين مواعيد الحصاد و الأصناف لم يكن له تأثير معنوى على جميع الصفات المدروسة فيما عدا صفات النسبة المئوية للسكروز والنقاوة حيث أظهرت النتائج وجود تأثير معنوى للتفاعل بين مواعيد الحصاد و الأصناف المستخدمة فى الموسم الأول فقط.

أشارت النتائج إلى تفوق الصنف Demapoly فى صفات وزن الجذر ومحصول الجذور ومحصول السكر و النسبة المئوية السكروز و النسبة للمئوية النقاوة عند حصاده بعد 215 يوم من تاريخ الزراعة فى كلا الموسمين.

من خلال النتائج المتحصل عليها وتحت ظروف التجربة يوصى البحث بزراعة الصنف Demapoly تحت ظروف منطقة سخا بمحافظة كفرالشيخ ، كما يوصى البحث بالتركيز علي الصفات المحصولية المؤثرة علي المحصول (طول– قطر– وزن الجذر/ نبات) كأحد الصفات المورفولوجية المؤثرة علي المحصول وكذلك التركيز علي نسبة السكر وانخفاض قيمة السكريات المختزلة كأدوات عند الانتخاب لأصناف عالية في إنتاج السكر.