

## **EVALUATION OF SOME NEW INTRODUCED SUGAR BEET VARIETIES IN NEWLY RECLAIMED SOILS**

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### **ABSTRACT**

Six field experiments were carried out in 2007-2008, 2008-2009 and 2009-2010 seasons at the two locations (Experimental Station of Hafeer Shehab El- Din, Dakhlia Governorate and Tamiya, El-Fayoum Governorate) to evaluate some new introduced sugar beet (*Beta vulgaris Sacchanfeta L.*). Varieties in newly reclaimed soils for growth, yield and quality of sugar beet crop. the present work included twenty sugar beet varieties (Mezzanoaupoly, Maghribel, Misribel, Polybelga, Rizobel, FD Egypt-0719, Asmaris, Meridio, Swallow, Saucona, Sirona, Habiba, Farah, Dina, Sarah, Hercule, Dlamand. LP 0701, Belatos and Betamax.). A randomize complete block design with three replications was used at the two locations. The obtained results showed, the following

\*- The highest mean value of root fresh weight/plant was recorded at El-Fayoum location. The varieties statistically differed in the two locations with respect to root fresh weight/plant.

\*- El-Fayoum location. recorded the highest root yield (25.07 tons/fed.) compared with El-Dakhlia location (24.42 tons/fed.). Root yield differed significantly with the examined varieties. Belatos and Betamax varieties attained the highest root yield followed by Meridio, Saucona, Dina Sarah and Hercule.

\*- The differences between the two locations with respect to sugar yield did not reach the level of significance. The differences among the studied genotype with respect to sugar yield were insignificant.

\* The highest extractable sugar % was produced at El- Dakhlia location (16.10 %). Swallow variety recorded the highest sucrose% (16.86 %) at El-Dakhlia location, while at El-Fayoum location recoded the lowest (16.50 %)

In general, it is cleared that variety Betamax followed swallow are favorable for the regions of Hafeer Shehab El- Din, Dakhlia Governorate and Tamiya, El-Fayoum Governorate as well as similar regions having the same environmental conditions in Egypt.

## INTRODUCTION

Sugar beet variety is the corner stone of sugar beet production; therefore the imported varieties annually are evaluated across a wide range of locations and years for their productivity and quality characteristics to select the appropriate ones under the different locations.

Because of the in suitable conciliations for seed production in Egypt, Sugar Company mainly depended upon the imported seeds from the production areas in European countries.

Selection among the imported sugar beet genotypes is done through three experimental types' primary, main and final experiments to select the superior ones characterized with high yield and quality. This shows the importance of genotype x environment interaction in the programmer of evaluation of genotypes in Egypt. The environmental conditions of each governorate are different in respect to weather and soil factors, such as maximum and minimum temperatures, relative humidity, solar radiation, etc. Therefore, it was of great importance to study the effect of varying and location interaction on productivity and quality of sugar beet varieties. **Al-Jbawi, Entessar (2000)** In Egypt, studied the performance of thirteen sugar beet genotypes under different location sugar yield and its contributing traits. She found that root traits (length, diameter and weight), quality traits (total soluble solids, sucrose % and purity %) as well as yield traits (root, top and sugar yields) were significantly different among locations (Giza, Kafr El-Sheikh, El-Mansoura and El-Fayoum). Also **Al-Jbawi, Entessar (2003)** Evaluated twenty sugar beet genotypes at the same four locations in two years. She concluded that Giza location was superior in top, root, recoverable sugar yields and sucrose percentage, while Kafr El-Sheikh location was superior in purity percentage. **Shalaby (2003)** Showed that Kafr El-Sheikh location gave the highest values of root fresh weight, sucrose, purity, extractability percentages and root, sugar yields/fed. El- Dakahlia location gave the highest root length, top weight/plant, and top yield/fed. On the other hand, El-Fayoum location gave the highest root diameter.

**Azzazy (2004)** Indicated that sugar beet varieties differed significantly in root length, sucrose %, root and sugar yields. **Aly (2006)** Found that Kafr El-Sheikh location gave the greatest value of root length, diameter, and fresh weight, purity, extractable sugar, extractability percentages, root and sugar yields/fed, while the lowest values of the above traits top yield impurities gave the greatest value of root diameter, root weight, purity %, extractable sugar %, extractability %, root and sugar yields per feddan, while the lowest values of the above traits were obtained from El-Fayoum location. **Allam et**

*al* (2007) Evaluated ten-multigerm sugar beet varieties (Gloria, Panther, Toro, Amelia, Aventure, FD 9993, FD 9992, Ravel, Del 938 and Demapoly) in some Egyptian locations. The result cleared that the exhibited a satisfactory root and sugar yield (ton/fed) under Kafr El-Sheikh condition FD 9993, FD 9992 and Del 938 varieties and under El-Fayoum condition were Gloria, Panther, Toro, Del 938 and Demapoly meantime. **Ismail et al** (2007) Found that ten sugar beet varieties; German Vaz (Gloria, Monte Bianco and Corollas), French Vaz (Desprez poly-N and LP13), Holland Vaz (Farida, pleno and Samba) and Sweden Vaz (Baraca and Shems). The tested sugar beet varieties differed significantly in root length and diameter, sucrose, extractable sugar, extractability percentages and sugar yield/fed. Also, significant differences among varieties in root yield as well as potassium percentages. **Enan et al** (2009) Showed that Farida and Samba used as tested sugar beet varieties in Tamiya location, El-Fayoum governorate differed significantly in yield components and juice quality expect for traits total soluble solids, in both seasons. They added that Farida variety gave the highest values for root length, diameter, weight and yields but Samba variety surpassed in sugar yield and juice quality. Some sugar beet genotypes have been promoted as high sugar content ones and adapted for environment wide genotype differences. **Khalil, soha .R.** (2010) Evaluated six genotypes namely Lp11, Lp12, Lp13, Desprez poly-N, Gloria and Toro under two locations. of Sakha Experimental Station Kafr El-Sheikh Governorate and Tamiya district El-Fayoum Governorate the genotypes showed significant differences. Toro genotype surpassed all genotypes in root length, diameter, fresh weight, top and sugar yields/fed, sucrose and sugar percentages. On the contrary, Lp11 genotype recorded the lowest values in root length and diameter, root fresh weight, root, top and recoverable sugar yields/fed **Enan et al.** (2011) raveled that Cleopatra, Florima and Heracule sugar beet varieties differed significantly in their yield potential. Cleopatra variety recorded the highest sucrose %, while Florima and Heracule varieties produced the highest root and sugar yields/fed.

The objective of this study was to evaluate, twenty sugar beet varieties under two locations as affected on yield and quality of sugar beet varieties.

## **MATERIALS AND METHODS**

Six field experiments were carried out in three growing seasons (2007-2008, 2008-2009 and 2009-2010) at two locations of (Hafeer Shehab El, Din, El.Dakhlia Governorate, and Tamiya, El.Fayoum Governorate) to evaluate twenty new introduced sugar beet varieties (Mezzanoaupoly, Maghribel, Misribel, Polybelga, Rizobel, FD Egypt-0719, Asmaris, Meridio, Swallow, Saucona, Sirona, Habiba, Farah, Dina, Sarah, Hercule, Dlamand. LP 0701, Belatos and Betamax.) in newly

reclaimed lands on growth, yield and quality of sugar beet crop (*Beta vulgaris* Sacchanfeta L.,) The tested sugar beet varieties are shown in Table (1).

Randomize complete block design in three replications was used at the two locations. The unit area was 21 m<sup>2</sup> (1/200 fed.) included 6 - ridge, of 7- m in length, and 50 cm in width. The Spacing between hills was 20 cm.

Chemical and physical properties of the experimental soil at the two locations shown in Table (2) were done according to **Piper (1955)**.

Monthly temperature and relative humidity of locations in Table (3)

In each season, seeds were sown at the 17<sup>th</sup> of October at the two locations. Sugar beet was harvested from 210 days. From planting.

Nitrogen fertilization in the of urea (46% N - 90 kg N fed) was applied in two equal doses; after thinning, and 4 weeks later. Moreover, 15 kg P<sub>2</sub>O<sub>5</sub>, fed was added at sowing in the form of super phosphate (15.5% P<sub>2</sub>O<sub>5</sub>) and 24 kg K<sub>2</sub>O per fed was applied after thinning in the form of potassium sulfate (48 % K<sub>2</sub>O) at the two locations. Other agronomic practices were carried out as recommended in sugar beet fields.

Moreover, top, root and sugar yields in (ton/fed.) Were determined.  
Sugar yield (ton/fed.) = Root yield (ton/fed.) x sugar extractable %.

At harvest, sugar beet plants from each plot were up-rooted, topped, cleaned and weighed to determine the root traits in terms root fresh weight (kg/ plant) , as well as root Quality traits in terms of sucrose percentage (Pol. %),  
Which was polar metrically determined according to sugar beet **Le-Docte (1927)**.

Table (1): Germ number and origin of the examined sugar beet varieties

No.	sugar beet Varieties	Type of Seeds	Origin	
			Company	Country
1	Mezzano aupoly	Multigerm	KUHN	Netherland
2	Maghribel	Multigerm	KUHN	Netherland
3	Misribel	Multigerm	KUHN	Netherland
4	Polybelga	Multigerm	KUHN	Netherland
5	Rizobel	Multigerm	KUHN	Netherland
6	Dina	Multigerm	KUHN	Netherland
7	Sarah	Multigerm	KUHN	Netherland
8	Hercule	Multigerm	KUHN	Netherland
9	Dlamand	Multigerm	KUHN	Netherland
10	Asmaris	Multigerm	DELITZCH	Germany
11	Meridio	Multigerm	DELITZCH	Germany
12	Swallow	Multigerm	DELITZCH	Germany
13	Habiba	Multigerm	KWS	Germany
14	Farah	Multigerm	KWS	Germany
15	FDEgypt0719	Multigerm	DESPREZ	France
16	Saucona	Multigerm	DESPREZ	France
17	Sirona	Multigerm	DESPREZ	France
18	Belatos	Multigerm	DESPREZ	France
19	Betamax	Multigerm	DESPREZ	France
20	LP 0701	Multigerm	SEMENCES	France

Table (2): Physical and chemical properties of the experimental soils

Location	El-Dakahlia			El-Fayoum		
	2007	2008	2009	2007	2008	2009
Seasons	2008	2009	2010	2008	2009	2010
<b>Mechanical Analysis</b>	<b>Partial soil distribution</b>					
Sand %	40.53	35.36	35.35	26.10	21.90	23.60
Silt %	22.79	28.05	28.78	27.10	39.90	29.90
Clay %	36.68	36.59	35.87	46.80	38.20	46.50
Soil texture	<b>Loamy sandy</b>			<b>Loamy</b>		
<b>Chemical Analysis</b>						
PH	8.28	8.35	8.41	7.30	7.80	7.50
E.C.mohs/m3	2.96	3.20	1.85	3.10	4.60	2.40
CO3 %	3.30	3.10	3.20	2.18	2.60	1.41
Available N	29.50	30.10	29.80	21.10	13.50	12.20

Table(3)l: Monthly temperature and relative humidity of locations

Month	Temperature °C				Relative Humidity %	
	Maximum		Minimum		El-Dakahlia	El-Fayoum
	El-Dakahlia	El-Fayoum	El-Dakahlia	El-Fayoum		
<b>2007-2008</b>						
Sep.	29.3	32.2	22.7	18.5	73.0	63.0
Oct.	27.4	29.8	19.9	15.0	75.3	66.9
Nov.	22.5	25.2	15.3	11.7	69.0	61.0
Dec.	17.7	21.4	10.6	6.9	69.0	63.0
Jan.	15.3	18.0	2.3	4.7	72.0	65.0
Feb.	17.6	17.7	2.9	7.1	71.0	63.0
Mar.	19.8	25.7	6.0	7.5	69.0	59.0
Apr.	23.8	27.7	8.3	10.9	66.0	52.0
May.	27.9	29.8	14.5	15.3	64.0	53.0
<b>2008-2009</b>						
Sep.	33.6	35.7	15.0	22.3	69.0	59.0
Oct.	28.9	30.0	11.1	18.4	67.1	59.0
Nov.	26.1	27.2	8.3	14.6	70.0	60.0
Dec.	22.4	23.0	7.1	11.5	73.0	62.0
Jan.	20.5	23.2	7.1	12.0	69.0	62.0
Feb.	21.4	22.9	7.2	9.8	68.0	58.0
Mar.	29.3	24.1	7.2	13.0	70.0	58.0
Apr.	27.1	29.3	11.0	15.2	65.0	53.0
May.	29.7	31.0	13.0	18.4	61.0	49.0
<b>2009-2010</b>						
Sep.	32.4	34.5	18.9	22.6	67.1	59.0
Oct.	31.2	32.8	16.7	20.3	69.0	59.0
Nov.	25.7	25.4	10.8	14.0	71.0	63.0
Dec.	22.9	23.2	9.1	12.0	66.0	62.0
Jan.	22.3	22.5	7.9	10.9	68.0	53.0
Feb.	23.0	25.0	8.7	11.5	72.0	65.0
Mar.	25.0	27.1	10.3	13.9	64.0	52.0
Apr.	28.3	29.6	10.8	16.0	65.0	53.0
May.	30.6	33.9	14.9	19.2	67.1	62.0

## **RESULTS AND DISCUSSION**

### **1. Root fresh weight (kg/plant):**

Results in Table (4) clear the varieties performance in terms of root fresh weight for three seasons under two locations (El-Fayoum-Tamiya and El- Dakhlia- Hafeer Shehab El, Din Governorates).

The collected data in showed that root fresh weight significantly affected by the locations. El- Fayoum location recorded higher root fresh weight than that of El-Dakahlia location.

The highest mean value of root weight was (1.119) kg was obtained from El-Fayoum location; while the lowest mean value of root weight was (1.103) kg resulted from El-Dakahlia location. These differences in root weight/plant among the three seasons under two locations may be due to the meteorological factors in these locations or soil properties (Table 2 and 3).

The results in Table (4) pointed out that the differences between varieties were significant, whether in the same location and/or in the two locations. In general, there was no fixed trend of the examined varieties in the two locations in the three years; however, Meridio and serino varieties almost attained the highest root fresh weight.

With respect the interaction between locations and sugar beet varieties, the results revealed that root fresh weight of sugar beet differed significantly by the combination between the two locations and the twenty varieties.

The variance among varieties could be attributed to the difference in their gene make-up and soil structure of the two locations. These results are in harmony with those of Aly (2000), Shalaby *et al* (2008), Khalil .S. R. (2010), and El-Sheikh (2012).

Table (4): Mean root weight (kg) plant of twenty sugar beet varieties as affected by location conditions in 2007/2008(1), 2008/2009(2) and 2009/2010(3) seasons and the combined analysis

location Verities	El-Dakahlia( Hafeer Shehab El, Din)			Mean	El-Fayoum ( Tamiya )			Mean	Mean of year			Mean
	season				season				season			
	1	2	3		1	2	3		1	2	3	
Mezzano aupoly	1.065	1.089	1.110	<b>1.088</b>	1.093	1.197	1.220	<b>1.170</b>	1.079	1.143	1.165	<b>1.129</b>
Maghrib el	1.072	1.053	1.051	<b>1.059</b>	1.047	1.214	1.267	<b>1.176</b>	1.059	1.133	1.159	<b>1.117</b>
Misribel	1.094	1.173	1.060	<b>1.109</b>	1.044	1.127	1.099	<b>1.090</b>	1.069	1.150	1.080	<b>1.100</b>
Polybelga	1.070	1.074	1.068	<b>1.071</b>	1.074	1.209	1.157	<b>1.147</b>	1.072	1.141	1.112	<b>1.109</b>
Rizobel	1.007	1.055	1.131	<b>1.065</b>	1.014	1.216	1.166	<b>1.132</b>	1.010	1.136	1.149	<b>1.098</b>
FDEgypt 0719	0.993	1.079	1.281	<b>1.118</b>	1.028	1.164	1.199	<b>1.131</b>	1.011	1.122	1.240	<b>1.124</b>
Asmaris	1.021	1.087	1.233	<b>1.114</b>	1.047	1.199	1.131	<b>1.126</b>	1.034	1.143	1.182	<b>1.120</b>
Meridio	1.185	1.153	1.285	<b>1.208</b>	1.038	1.132	1.113	<b>1.094</b>	1.111	1.143	1.199	<b>1.151</b>
Swallow	1.024	1.141	1.292	<b>1.153</b>	1.049	1.115	1.165	<b>1.110</b>	1.037	1.128	1.229	<b>1.131</b>
Saucona	1.125	1.045	1.134	<b>1.101</b>	1.040	1.197	1.203	<b>1.147</b>	1.083	1.121	1.169	<b>1.124</b>
Sirona	1.051	1.097	1.233	<b>1.127</b>	1.144	1.170	1.146	<b>1.154</b>	1.098	1.134	1.189	<b>1.140</b>
Habiba	1.001	1.139	1.004	<b>1.048</b>	1.037	1.174	1.191	<b>1.134</b>	1.019	1.157	1.097	<b>1.091</b>
Farah	1.015	1.105	0.979	<b>1.033</b>	1.055	1.148	1.049	<b>1.084</b>	1.035	1.127	1.014	<b>1.058</b>
Dina	1.094	1.055	1.197	<b>1.115</b>	1.041	1.140	1.153	<b>1.112</b>	1.068	1.098	1.175	<b>1.114</b>
Sarah	1.049	1.064	1.188	<b>1.100</b>	1.042	1.185	1.138	<b>1.122</b>	1.045	1.124	1.163	<b>1.111</b>
Hercule	1.044	1.055	1.157	<b>1.085</b>	1.025	1.114	1.122	<b>1.087</b>	1.034	1.084	1.140	<b>1.086</b>
Diamond	1.032	1.094	1.231	<b>1.119</b>	1.095	1.177	1.102	<b>1.124</b>	1.064	1.135	1.166	<b>1.122</b>
LP 0701	0.975	1.067	1.186	<b>1.076</b>	1.016	1.164	1.059	<b>1.080</b>	0.995	1.115	1.123	<b>1.078</b>
Belatos	0.989	1.161	1.216	<b>1.122</b>	0.988	1.165	1.119	<b>1.091</b>	0.989	1.163	1.168	<b>1.106</b>
Betamax	1.076	1.124	1.228	<b>1.143</b>	0.991	1.169	1.079	<b>1.080</b>	1.033	1.146	1.153	<b>1.111</b>
Mean	<b>1.049</b>	<b>1.095</b>	<b>1.163</b>	<b>1.103</b>	<b>1.045</b>	<b>1.169</b>	<b>1.144</b>	<b>1.119</b>	<b>1.047</b>	<b>1.132</b>	<b>1.154</b>	-

L.S.D at 0.05%

Year (Y)

0.017

Location (L)

0.014

Verities (V)

0.044

LxY

0.024

YxV

0.075

LxV

0.062

YxLxV

0.106



Results in Table (5) show the values of root yield (tons/fed.) as affected by the studied sugar beet varieties for three seasons under two locations (El-Fayoum-Tamiya and El- Dakhliya- Hafeer Shehab El, Din Governorates).

The results pointed out a significant difference between years in the values of root yield.

These results indicated that the examined varieties significantly, affected by the prevailing conditions.

This finding was true not only in the same location but also in the three studied seasons.

Once more, the collected data in Table (5) revealed that root yield was significantly affected by the examined locations, El-Fayoum location recorded higher root yield than that of El- Dakahlia location.

The highest mean value of root yield was (25.07) ton/fed, obtained from El-Fayoum location and (24.42) ton/fed, from El-Dakahlia location, These differences in root yield among the three seasons under two locations may be due to the meteorological factors in two locations or the properties of soil.

The higher temperature at El- Fayoum location may be exhibited faster seed germination and consequently rapid growth which positively reflected on root yield.

Concerning varieties influence on root yield, the available data cleared that root yield differed significantly according to the used variety.

The highest root yield was recorded by sowing with Betamax and Belatos followed by Saucona, Meridio, Hercule, Sarah, and Dina sugar beet varieties.

As for the interaction between location and varieties, the illustrated data showed that root yield of sugar beet statistically affected by the combination between the two locations and the twenty varieties.

The pronounced effect of gene expression was more interact with El- Dakahlia location than that at El- Fayoum with respect to the influence on the root yield of the tested varieties. **Al-Jbawi, Entessar (2003); Aly (2006), Enan et al. (2011), and Hozayn, et al. 2013** found that El- Fayoum location gave the highest in root yield.

Table (5): Mean root yield (ton/fed) of twenty sugar beet varieties as affected by location conditions in 2007/2008(1), 2008/2009(2) and 2009/2010(3) seasons and the combined analysis

location	El-Dakahlia( Hafeer Shehab El, Din)			Mean	El-Fayoum ( Tamiya )			Mean	Mean of year			Mean
	season				season				season			
	1	2	3		1	2	3		1	2	3	
Mezzano aupoly	26.83	24.00	21.67	24.17	25.25	24.50	23.50	24.42	26.04	24.25	22.59	24.30
Maghribel	27.08	22.83	21.08	23.66	24.25	24.42	25.58	24.75	25.67	23.63	23.33	24.21
Misribel	27.17	24.33	21.17	24.22	26.25	24.42	23.75	24.81	26.71	24.38	22.46	24.52
Polybelga	26.67	24.58	21.58	24.28	26.33	25.00	23.75	25.03	26.50	24.79	22.67	24.66
Rizobel	24.83	23.17	21.75	23.25	25.17	24.83	23.67	24.56	25.00	24.00	22.71	23.91
FDEgypt0719	24.08	24.83	23.33	24.08	24.42	24.58	24.83	24.61	24.25	24.71	24.08	24.35
Asmaris	24.42	24.08	24.33	24.28	24.58	25.08	24.25	24.64	24.50	24.58	24.29	24.46
Meridio	27.42	24.17	24.50	25.36	26.42	24.25	24.00	24.89	26.92	24.21	24.25	25.13
Swallow	26.00	23.58	25.17	24.92	26.00	23.67	24.92	24.86	26.00	23.63	25.05	24.89
Saucona	26.42	23.00	24.67	24.70	27.25	24.75	25.00	25.67	26.84	23.88	24.84	25.19
Sirona	25.17	23.75	25.17	24.70	24.25	24.92	24.75	24.64	24.71	24.34	24.96	24.67
Habiba	23.42	22.92	21.50	22.61	25.50	24.42	24.25	24.72	24.46	23.67	22.88	23.67
Farah	25.25	24.50	19.67	23.14	25.67	24.67	23.08	24.47	25.46	24.59	21.38	23.81
Dina	26.17	23.58	24.17	24.64	26.17	25.00	25.25	25.47	26.17	24.29	24.71	25.06
Sarah	24.33	23.50	25.75	24.53	26.00	25.00	25.83	25.61	25.17	24.25	25.79	25.07
Hercule	26.33	24.00	25.25	25.19	26.58	23.42	25.08	25.03	26.46	23.71	25.17	25.11
Diamand	26.00	23.58	23.83	24.47	26.42	24.50	25.08	25.33	26.21	24.04	24.46	24.90
LP 0701	25.25	23.67	23.67	24.20	25.67	24.83	24.75	25.08	25.46	24.25	24.21	24.64
Belatos	27.25	25.08	25.42	25.92	27.42	25.25	26.17	26.28	27.34	25.17	25.80	26.10
Betamax	27.42	25.50	25.50	26.14	27.50	25.50	26.33	26.44	27.46	25.50	25.92	26.29
Mean	25.88	23.93	23.46	24.42	25.85	24.65	24.69	25.07	25.87	24.29	24.08	-

L.S.D at 0.05%

Year (Y)	0.13
Location (L)	0.11
Verities (V)	0.34
LxY	0.18
YxV	0.58
LxV	0.48
YxLxV	0.82

#### **4. Sugar extractable %:**

Table (6) recorded varieties performance in terms of sucrose percentage for three seasons under two locations (El-Fayoum-Tamiya and El- Dakhliya- Hafeer Shehab El, Din Governorates).

Results illustrated in Table (6) showed that the differences among the mean values of sugar extractable percentage of the twenty sugar beet varieties were significant. Swallow variety recorded the highest Sugar extractable % (16.86 %)At El-Dakhliya location ,mean while Misrable variety recorded the highest value of sugar extractable percentage (16.50 %) at El- Fayoum location

The highest mean value of sugar extractable percentage was (16.10 %) obtained from El- Dakahlia location followed by (15.77 %) obtained from El- Fayoum location Table (6) These differences in sugar extractable percentage among the three seasons under two locations may be due to the meteorological factors in these locations or the soil properties.

The pronounced effect of gen expression was more interact with El- Dakahlia location than that at El- Fayoum with respect to the influence of the tested varieties on sugar extractable %. Reported by **Aly (2000)**, **Al-Jbawi, Entessar (2003)**, **Sahlaby (2003)**, and **Mohamed *et al* (2012)**

Table (6): Mean sugar extractable (%) of twenty sugar beet varieties as affected by location conditions in 2007/2008(1), 2008/2009(2) and 2009/2010(3) seasons and the combined analysis

location Verities	El-Dakahlia( Hafeer Shehab El, Din)			Mean	El-Fayoum ( Tamiya )			Mean	Mean of year			Mean
	season				season				season			
	1	2	3		1	2	3		1	2	3	
Mezzano aupoly	14.81	17.65	16.21	<b>16.22</b>	16.74	16.03	15.70	<b>16.16</b>	15.78	16.84	15.96	<b>16.19</b>
Maghribel	14.89	18.52	17.09	<b>16.83</b>	15.80	15.92	15.80	<b>15.84</b>	15.35	17.22	16.45	<b>16.34</b>
Misribel	15.19	17.67	16.43	<b>16.43</b>	16.52	16.38	16.59	<b>16.50</b>	15.86	17.03	16.51	<b>16.46</b>
Polybelga	14.97	18.81	16.54	<b>16.77</b>	16.64	15.10	15.59	<b>15.78</b>	15.81	16.95	16.07	<b>16.27</b>
Rizobel	15.27	18.23	15.83	<b>16.44</b>	16.88	14.98	16.12	<b>15.99</b>	16.08	16.60	15.97	<b>16.22</b>
FDEgypt0719	14.68	17.49	15.39	<b>15.85</b>	17.75	15.13	15.83	<b>16.24</b>	16.22	16.31	15.61	<b>16.05</b>
Asmaris	14.80	19.33	13.03	<b>15.72</b>	15.70	15.63	16.32	<b>15.88</b>	15.25	17.48	14.67	<b>15.80</b>
Meridio	14.49	18.21	14.10	<b>15.60</b>	16.24	15.38	15.54	<b>15.72</b>	15.37	16.80	14.82	<b>15.66</b>
Swallow	14.48	19.45	16.65	<b>16.86</b>	15.62	15.56	16.27	<b>15.82</b>	15.05	17.51	16.46	<b>16.34</b>
Saucona	13.73	18.19	14.60	<b>15.51</b>	15.98	15.37	15.72	<b>15.69</b>	14.86	16.78	15.16	<b>15.60</b>
Sirona	14.41	18.07	14.78	<b>15.75</b>	15.90	15.75	15.30	<b>15.65</b>	15.16	16.91	15.04	<b>15.70</b>
Habiba	15.33	18.22	15.22	<b>16.26</b>	17.03	15.58	15.60	<b>16.07</b>	16.18	16.90	15.41	<b>16.16</b>
Farah	14.41	18.24	15.45	<b>16.03</b>	17.04	16.25	15.37	<b>16.22</b>	15.73	17.24	15.41	<b>16.13</b>
Dina	14.92	17.91	15.10	<b>15.98</b>	15.63	15.48	15.92	<b>15.68</b>	15.28	16.70	15.51	<b>15.83</b>
Sarah	14.87	18.14	15.79	<b>16.26</b>	15.65	15.34	16.02	<b>15.67</b>	15.26	16.74	15.90	<b>15.97</b>
Hercule	14.93	18.50	15.59	<b>16.34</b>	16.19	16.94	14.72	<b>15.95</b>	15.56	17.72	15.16	<b>16.15</b>
Dlamand	14.16	17.60	15.38	<b>15.71</b>	16.26	14.83	15.07	<b>15.39</b>	15.21	16.21	15.23	<b>15.55</b>
LP 0701	14.41	17.96	13.96	<b>15.44</b>	16.45	14.21	16.07	<b>15.57</b>	15.43	16.08	15.01	<b>15.51</b>
Belatos	15.27	17.88	14.75	<b>15.97</b>	13.87	14.42	16.19	<b>14.83</b>	14.57	16.15	15.47	<b>15.40</b>
Betamax	15.38	18.44	14.42	<b>16.08</b>	13.66	13.82	16.81	<b>14.76</b>	14.52	16.13	15.62	<b>15.42</b>
Mean	<b>14.77</b>	<b>18.23</b>	<b>15.32</b>	<b>16.10</b>	<b>16.08</b>	<b>15.40</b>	<b>15.83</b>	<b>15.77</b>	<b>15.43</b>	<b>16.81</b>	<b>15.57</b>	<b>-</b>

L.S.D at 0.05%

Year (Y)	0.25
Location (L)	0.21
Verities (V)	0.66
LxY	0.36
YxV	N.S
LxV	N.S
YxLxV	1.61

#### **4. Sugar yield (tons/fed.):**

Data in Table (7) show sugar yield/fed of twenty sugar beet genotypes as affected by the two locations (El-Dakhliya- Hafeer Shehab El, Din and El-Fayoum -Tamiya).

The results showed significant differences between the three experimental years in their effect on sugar yield/fed. Growing sugar beet under of El-Dakhliya conditions attained (4.48) tons/fed compared with that sown at El- Fayoum (4.53) tons/fed, however this difference did not reach the level of significance between the two locations.

The results showed insignificant between the examined varieties in effect on sugar yield/fed. The highest average of genotypes was Betamax, followed by Swallow in El-Dakhliya location while the highest average of genotypes was Misrable followed by Saucona in El-Fayoum location.

Results given in Tables (5 and 7) appeared a significant difference among the evaluated sugar beet genotypes in root yield/fed. On the contrary, insignificant difference was detected among genotypes in sugar yield/fed.

Sugar yield was significantly affected by the interaction between locations and years. The highest value of yield obtained by the second season at El- Dakhliya location while the highest value obtained by the first season at El- Fayoum.

The results showed significant differences between the three experimental years and genotypes. The results showing differences among sugar beet genotypes in the three seasons but the highest value of sugar yield obtained by second, first and third years respectively.

The results in Table (7) indicated that sugar yield was significantly affected by the interaction between locations X genotypes. The result cleared that the highest value of sugar yield obtained by Betamax and Swallow at the two locations. This finding is in accordance with **Shalaby, (2003), Camas, et al (2007), Enan et al (2009), and Abd El-Razek, A.M ;( 2012)**

Table (7): Mean sugar yield (ton/fed) of twenty sugar beet varieties as affected by location conditions in 2007/2008(1), 2008/2009(2) and 2009/2010(3) seasons and the combined analysis

location	El-Dakahlia( Hafeer Shehab El, Din)			Mean	El-Fayoum ( Tamiya )			Mean	Mean of year			Mean
	season				season				season			
	1	2	3		1	2	3		1	2	3	
Mezzano aupoly	4.58	4.79	4.00	4.47	4.83	4.50	4.23	4.52	4.71	4.65	4.12	4.50
Maghribel	4.66	4.76	4.08	4.53	4.40	4.45	4.62	4.49	4.53	4.62	4.36	4.51
Misribel	4.75	4.86	3.95	4.53	4.96	4.56	4.48	4.67	4.86	4.71	4.21	4.60
Polybelga	4.59	5.21	4.05	4.63	4.99	4.35	4.25	4.53	4.80	4.78	4.16	4.58
Rizobel	4.34	4.76	3.92	4.34	4.85	4.28	4.37	4.50	4.60	4.53	4.14	4.42
FDEgypt0719	4.06	4.90	4.11	4.35	4.93	4.28	4.50	4.57	4.50	4.59	4.30	4.46
Asmaris	4.16	5.23	3.69	4.37	4.44	4.49	4.50	4.48	4.30	4.87	4.10	4.42
Meridio	4.60	4.96	3.99	4.53	4.91	4.28	4.28	4.49	4.76	4.62	4.14	4.51
Swallow	4.36	5.15	4.75	4.77	4.66	4.23	4.63	4.50	4.51	4.69	4.69	4.64
Saucona	4.22	4.71	4.15	4.39	4.98	4.37	4.52	4.62	4.60	4.55	4.34	4.51
Sirona	4.18	4.83	4.27	4.44	4.43	4.49	4.23	4.38	4.31	4.67	4.25	4.41
Habiba	4.12	4.72	3.74	4.19	4.95	4.37	4.34	4.55	4.53	4.55	4.04	4.37
Farah	4.21	5.04	3.47	4.23	4.99	4.58	4.07	4.54	4.60	4.81	3.77	4.39
Dina	4.48	4.75	4.19	4.48	4.70	4.45	4.59	4.58	4.59	4.61	4.39	4.53
Sarah	4.16	4.78	4.65	4.54	4.67	4.41	4.74	4.60	4.41	4.61	4.69	4.57
Hercule	4.51	4.98	4.49	4.67	4.93	4.51	4.28	4.58	4.72	4.74	4.39	4.63
Dlamand	4.26	4.67	4.18	4.39	4.91	4.19	4.36	4.48	4.59	4.44	4.27	4.43
LP 0701	4.19	4.80	3.81	4.27	4.82	4.08	4.55	4.48	4.50	4.45	4.17	4.38
Belatos	4.77	5.06	4.30	4.72	4.42	4.21	4.85	4.50	4.60	4.64	4.57	4.61
Betamax	4.81	5.31	4.24	4.79	4.38	4.09	5.04	4.51	4.60	4.70	4.63	4.65
Mean	4.40	4.91	4.11	4.48	4.76	4.36	4.47	4.53	4.58	4.64	4.29	-

L.S.D at 0.05%

Year (Y)	0.07
Location (L)	N.S
Verities (V)	N.S
LxY	0.10
YxV	0.30
LxV	0.25
YxLxV	0.42

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تقييم بعض أصناف بنجر السكر المستوردة حديثاً في الأراضي حديثة الاستزراع

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أجريت ستة تجارب حقلية خلال المواسم الزراعيه ( ٢٠٠٧/٢٠٠٨ ، ٢٠٠٨/٢٠٠٩ ، ٢٠٠٩/٢٠١٠ ) في منطقتين حفير شهاب الدين ( محافظة الدقهلية ) و مركز طامية ( محافظة الفيوم ) وذلك بزراعة عشرين صنف عديد الأجنه من بنجر السكر المستورده حديثاً وذلك لتقييمها في أراضي حديثة الأستصلاح وتلك الأصناف هي

(Mezzanoaupoly, Maghribel, Misribel, Polybelga, Rizobel, FDEgypt-0719, Asmaris, Meridio, Swallow, Saucona, Sirona, Habiba, Farah, Dina, Sarah, Hercule, Dlamand. LP 0701, Belatos and Betamax.)

بهدف مدي ملائمة الأصناف للظروف السائدة في منطقة حفير شهاب الدين بالدقهلية ومنطقة طامية بالفيوم حيث من المتوقع أن تتفاوت في نموها وإستجابتها تبعاً لهذه الظروف. وقد أستخدم تصميم قطاعات كاملة العشوائية في المنطقتين .

\* - تشير النتائج إلى أن أعلى القيم لمتوسط الوزن الغض للجنر/نبات نتجت بمحافظه الفيوم ، وأن هناك اختلافات معنوية بين الأصناف في الموقعين في تلك الصفة .

\* - سجل موقع الفيوم اعلى قيم لمحصول الجنور (٢٥,٠٧ طن / فدان) مقارنة بموقع الدقهلية (٢٤,٤٢ طن/فدان) وأن هناك اختلافات معنوية بين الأصناف في صفة محصول الجنور حيث سجل كلاً من الصنفين Meridio Hercule, Sarah, Dina, Betamax and Belatos أعلى محصول للجنور تلاهما الأصناف Saucona, في حين لم تصل الإختلافات بين المنطقتين في نسبة السكر المستخلص إلى مستوى المعنوية ' كما لم تصل الفروق بين الأصناف إلى مستوى المعنوية لصفة النسبة المئوية للسكر المستخلص .

\* - سجلت محافظة الدقهلية أعلى نسبة في نسبة السكر المستخلص ( ١٦,١٠ % ) وقد سجل الصنف Swallow أعلى قيمه في نسبة السكر المستخلص (١٦,٨٦ %) مقارنة بالفيوم (١٦,٥٠ %).

مما يتضح أن الصنف Betamax يليه الصنف Swallow تلائمه ظروف منطقتي حفير شهاب الدين بالدقهلية و طامية بالفيوم وجميع المناطق المتمثلة معهما في الظروف الجوية والبيئية في جمهورية مصر العربية .