

## ABSTRACT

The present investigation was carried out on six sugar beet genotypes during the two growing seasons *1999-2000 and 2000-2001* in three planting dates i.e **20<sup>th</sup> Sept.**, **20<sup>th</sup> Oct.** and **20<sup>th</sup> Nov.** to study genotype × environment interaction.

The six sugar beet genotypes were Del 937(N), Desprezpoly N (N), Demapoly(E), Del 939(E), Del 938(Z) and 936(Z). This investigation were conducted in three locations **Kafr El-Sheikh** governorate (Sakha Experiment Station); **Dakahlia** governorate, Balkas province and **El-Fayoum** governorate, (Tamea district of Sugar Crop Research Institute ,ARC). Phenotypic stability for sugar yield and its contributing traits hence under 18 environments (three planting dates, three locations and two years). An experiment with three replications was used for each sowing date using the six studied genotypes. The area of each plot was **21 m<sup>2</sup>** (1/200 feddan) and consisted of 6 ridges 7 meter in length, **50 cm**, in width and space between hills were **20 cm**. Agronomic cultural practices were carried out as usual. Beet roots were harvested after **210 days** from sowing ±2 days between locations.

Results obtained showed significant effect of planting dates on sugar beet, root yield and quality. Planting in September gave the best root diameter, root length, and weight and also technological characteristics TSS %, Sucrose %, Purity %, Na, Sugar extractable and extractability percentages. The third date of sowing i.e Nov. gave the highest values in top weight , alpha amino-N percentage , sugar loss to molasses percentage and top yields.

Concerning location **Kafr El-Shiekh** gave significantly in root weight, root diameter, TSS %, sucrose %, root yields ton/fed, sugar yield ton/fed. **Dakahlia** gave

%, root yields ton/fed, sugar yield ton/fed. Dakahlia gave the highest means in root length, top weight, alpha amino-N percentage and top yield.

The results showed that Demapoly variety surpassed over all in root characters, root and top yields while Del 939 variety surpassed overall in sugar yield. Significant difference was found among the genotypes in this study. Del 938 variety gave the highest means in TSS %, sucrose %, purity % and sugar extractability percentage.

The interactions; location  $\times$  genotypes, location  $\times$  planting date, genotype  $\times$  planting date and location  $\times$  genotypes  $\times$  planting date were highly significant for root and sugar yield.

#### Genotype $\times$ environment interaction and stability analysis:

The results obtained are important points for Stability analysis based which on the criteria set in **Kang (1993)** examines the behavior of each genotypes using the Location  $\times$  Year  $\times$  Genotypes means.

Three genotypes of Del 937, Del 939 and Demapoly were stable for root length, root diameter and root weight. Where Demapoly was the highest. So, this genotype could be recommended for commercial production in Egypt.

The genotypes of Del 936, Del 937, Del 939 and Demapoly were stables for top weight.

Concerning quality traits (sucrose %, purity % and sugar extractable %), the genotype Del 938 surpassed over all genotypes followed by Del 936, Desperzpoly N and Del 937 were the last in the stability.

Regarding yield contributing traits (root yield, sugar yield and top yield ton /fed.) the genotypes of Del 937, Del 939 and Demapoly were stable beside genotypes Del 938, Desperzpoly N in sugar yield and Del 936 in top yield . The favorite genotype was Demapoly for root yield and Del 939 for sugar yield and top yield.



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