

PHENOTYPIC AND GENOTYPIC STABILITY FOR SOME SUGAR BEET GENOTYPES

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ABSTRACT

Two field experiments were conducted in two successive seasons of 2004/05 and 2005/06 at tow locations (Belkas, Dakahlia governorate and Sakha, kafr El-Sheikh). Each trial included twelve sugar beet varieties . Genotypic and phenotypic stability studies were done on the root yield of sugar beet at harvest. The collected results showed that:

*- Wide range of environmental index for root yield ranged from -3.90 to +2.67 which indicated significant variation between environments. However, Kawemera variety had the widest rang of environmental index (-5.77 to +3.82), while Sofi variety had the closest one (-2.88 to +2.58).

*- The environmental indices were negative for all environments which untreated with Set or Nitrate compounds at two locations in both seasons, while the environmental indices were positive for all environments treated with either Set or Nitrate compounds at Kafr El-Sheikh location .

*-The environments were the most important source of variation, explaining (94.9%) of the variance in root yield,followed by the genotypes (3.58 %) and the interaction of genotypes x environments (1.52 %).

*- The linear proportion of variance was 99.63 % from the total variance.

*- The b_i statistics were significant for the varieties namely Marathon, Univers, Invermono, Sofi, Helma, Montipianco, Athospoly and Del 937. Univers, Sofi, Montipianco and Del 937 varieties had (b_i) values of 1.302, 2.398, 1.541 and 2.611, respectively, indicating higher production potential in favorable environments. On the other hand, Marathon, Invermono and Athospoly varieties had (b_i) values of 0.657, - 0.612 and 0.272, respectively, which appeared to be more adapted to poor environments.

*-Del 936 and Sultan varieties had better stability and broader adaptability than the others tested from the phenotypic stability point of view.

*- Del 936 and Sultan varieties are desirable varieties because its mean yield are high, its α_i values are zero and its deviation from linearity (0.079 and - 0.029) stability from genotypic stability point of view.

Key Words: Phenotypic, genotypic Stability, Sugar Beet, Environmental Inde.