PHENOTYPIC AND GENOTYPIC STABILITY OF SOME FABA BEAN (*VICIA FABA* L.) GENOTYPES

A. A. El-Hosary[1]; S. A. Sedhom[1]; M. M. El-Hady[2]; S.M. Attia[2] and E. H. EL-Harty[2]

1- Fac., Agric. Moshtohor, Benha Univ., Egypt.
2-Food Legumes Res. Dep., ARC, Giza, Egypt.

ABSTRACT Twenty five faba bean (*Vicia faba* L.) genotypes were used in this study. The field experiments were conducted during 2000/01, 2001/02 and 2002/03 seasons at three locations i.e. two experiments under naturally heavily infested soil with *Orobanche* (sick plots) at Giza and Sids Agricultural Research Stations in addition to *Orobanche*-free one at Sids Station, ARC. The pooled analysis indicated the genotype, environment and genotype X environment interactions mean squares were highly significant and the highly significant of pooled deviation for number of pods, seeds and seed yield/plant, indicated that the major components differences for stability were due to deviation from the linear function. It was concluded from the data that Faba bean new lines i.e. 843/41/2000, 843/190/2000, Misr 1/116/2000, Misr 1/121/2000, Misr 1/122/2000 and Misr 1/139/2000 are genetically average stable, also these genotypes gave highest mean values for all traits and significantly more than their original cultivars.

INTRODUCTION Faba bean (*Vicia faba* L.) is an important crop which can be used as pulse, vegetable, fodder, green manure and as a cover crop. Faba bean crop is essential in farming system to increase soil fertility where it is an important protein supplier to the soil. Broomrape (*Orobanche crenata* Forsk.) is obligate holo root parasite. This parasite is one of the major constraints to faba bean production in the Mediterranean basin. The losses in faba bean seed yield due to broomrapes infection in Mediterranean area were 5 – 33 % in Egypt, 50 – 100% in Malta, 12 – 63% in Morocco and 30 – 70% in Turkey as reported by **Sauerborn and Saxena 1986**. In Beni-Suef and Ismailia Governorates **Muller-Stover et al. (1999)** found that half of the interviewed farmers considered *Orobanche* to be a problem on their farmers. Producing varieties with high yielding ability has always been the first and the foremost among plant breeders objectives but, such high yielding varieties have to be characterized by relative resistance to biotic and abiotc stress, hence, the genotypic stability for seed yield is predominant importance in faba bean especially when genotypes are tested over a series of environments, locations and years. Genotype X environment interaction play a significant role in the phenotypic performance of a variety and in the success of any breeding programmes for the development of genetic stocks adapted to wide range geographical areas. **Comstock and Moll (1963)** have shown statistically the effect of large genotype X environment interactions in reducing progress from selection. To overcome this problem, there are two possible strategies for plant breeder to develop varieties showing low genotype X environment interaction, namely (a) the subdivision of heterogeneous area, for which the varieties are being bred, into smaller regions, each of them has a more homogenous environment and its own characteristic varieties, and (b) the introduction of varieties which show a high degree of stability in performance over a wide range of environments. The first strategy is not likely to be very effective since large interactions of genotypes with locations could still exist even in a subregion and