ABSTRACT

Wafaa Wahba Mohamed Shafie, Stability analysis for yield characteristics of some soybean genotypes under different environments, Unpublished Master of Science Thesis, Agronomy Department, Fac. of Agric., Ain Shams University, 2002.

Eleven soybean genotypes (7 cvs. + 4 lines) were evaluated for mean performance and stability of seed yield and some other agronomic traits under two sowing dates: mid-April and mid-May and five fertilization levels including biological fertilizer as inoculation with *Bradyrhizobium japonicum* and mineral nitrogen fertilizer during 1998 and 1999 growing seasons. In the first season, a field experiment was conducted at Benha Agriculture Research Station, Kalubia Governorate. The second experiment in1999 was carried out at Kotour in the north of Gharbia Governorate. Split plot design with four replications for each sowing date was used. Fertilization levels and genotypes were allocated to main and to sub-plots, respectively. Single and combined analysis of variance was achieved for data obtained in each season. Phenotypic stability of genotypes across 20 environments was computed according to Kang and Magari (1995).

The results confirmed the existence of wide variation among the soybean genotypes and their performance reflected the significant effect of changes in sowing dates and fertilizer levels as well as the interaction between them for the studied traits with some exceptions.

Delaying sowing date from mid-April to mid- May hastened flowering initiation and reduced days to maturity and plant height in one season but number of pods/plant was increased. On the contrary, 100-seed weight, number of branches and seed yield per plant were higher in

the early mid- April date- Fertilization levels showed slight effect on days to flowering and maturity with no definite trend on plant height, number of branches and seed index .Rhizobium inoculation only produced the highest pod number and seed yield per plant in fertile soils at Benha site, while applying starter N of 15 kg /fed. in addition to inoculation resulted in higher yields in soils of poorer nutrient elements and higher salinity at Kotour site. Applying high levels of N (30 and 60 units) to inoculated plants caused reduction in pod number and seed yield. The second order interaction, genotype x sowing date x fertilizer levels revealed that the line L29 gave the best seed yield when treated with inoculation only in 1st season and when treated with inoculation +15 kg N/fed in the 2nd season. The line L29 proved to be the best stable genotype with higher yield across the 20 environments and thus recommended to be propagated and distributed as a good commercial variety.

Key words: *Soybeans, sowing dates, inoculation, N-fertilizer, stability*

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