1- INTRODUCTION

Maximum level and stability of performance are two features desired in an agricultural variety. Therefore , many investigators suggested different methods for measuring performance stability for different genotypes over varied environments . The method outlined by Eberhart and Russell (1966) was widely applied for different field crops . Tai (1971) suggested an accurate and easy method for defining stability level for each genotype,an extended method of Eberhart and Russell . Therefore , this method was chosen since 1978 , to be applied in the Egyptian cotton breeding program .

Both of these methods use the linear regression approach to analysing genotype - environment interaction . Westcoll (1986) reviewed and evaluated different stability methods . He concluded that methods involving the linear regression approach and related stability parameters cannot be recommended , because the defects of these methods cannot be overcome by the use of either cluster analysis or principal components analysis .

In the last two decades , many investigators emphasized the importance of Additive Main Effects and Multiplicative Interaction (AMMI) method as a tool for measuring stability in yield trials. Gauch (1992) , proposed the advantages of AMMI method compared with other methods. Moreover, he explained the statistical procedures.

Therefore , the present investigation was designed to compare three methods for measuring stability to define the accurate method which should be applied to the Egyptian cotton breeding program . The three methods were AMMI , Tai and Eberhart and Russell .