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Estimates of stability parameters for yield and its components in cucumber (*Cucumis sativus* L.)

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Abstract: Stability analysis was done in cucumber with twenty genotypes grown over four environments *viz*., E_1 (*kharif* season sowing), E_2 (*kharif* season sowing with pinching of main vine after tenth node), E_3 (summer season sowing) and E_4 (summer season sowing with pinching of main vine after tenth node) for six characters, namely, fruit length, fruit diameter, fruit weight, specific gravity of fruit, number of fruits per plant and fruit yield. The genotype × environment was significant for all characters except fruit length. One genotype for fruit diameter, three genotypes for fruit weight, three genotypes for specific gravity of fruit, four genotypes for number of fruits per plant, three genotypes for fruit yield were desirable and stable. On over all basis, the desirable and stable genotypes for fruit yield were PCUC 202, PCUC 45 and PCUC 101 × PCUC 83. The mean value was found higher (62.14 q/ha) in pinched vines as compared to non pinched vines in kharif season. The mean value for fruit yield was found higher in non pinched vines (194.52 q/ha) as compared to pinched vines (168.94 q/ha) in summer season.

Key words: Stability analysis, Cucumber, *Cucumis sativus*

Introduction

Cucumber (*Cucumis sativus* L.) is a major vegetable crop worldwide. Many local (land races) types of cucumber are grown in Uttarakhand with less yield potential. The ultimate aim of any plant breeding programme is to develop cultivars with high yielding potential with stable performance over a wide range of environments. Genotype stability for trait performance is a direct measure of presence and effect of G × E interaction, which results from the differential performance of a genotype or cultivar across all the environments (Campbell and Jones, 2005). The studies on genotype × environment interaction are an important biometrical tool to access the performance of varieties/hybrids in a particular location. Genotypes grown in multi-environmental trials may react differently to a range of climate conditions, soil characteristics or technical practices (Lacaze and Roumet, 2004). These differential responses of genotypes in different environments are collectively known as the genotype × environment interaction. The science of quantitative genetics and biometry has been largely developed to the study of gene action with less emphasis on the environment and genotype × environment interaction. Keeping all the above facts in view, this investigation was carried out to identify cucumber genotypes suitable for specific or wider environmental condition.

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Materials and methods

Ten pure lines and ten hybrids were selected on the basis of morphological, protein profile and geographical diversity, ten pure lines and ten hybrids including Pant Sankar Khira-1 as check were selected and used as experimental materials for studying genotype × environment interaction. The experimental material was evaluated under four different environments *viz Kharif* season sowing (E_1), *Kharif* season sowing with pinching of main vine after tenth node(E_2), Summer season sowing (E_3), Summer season sowing with pinching of main vine after tenth node (E_4).

The experiment was conducted in randomized block design with three replications under each of four environments during 2004-05 in two growing season viz *Kharif* 2004 and summer 2005 at Vegetable Research Centre of the Govind Ballabh Pant University of Agriculture and Technology, Pantnagar. The first evaluation of the ten parental lines and ten crosses in two environments (E_1 and E_2) was observed during *kharif* season 2004. Ten pure lines and F_1 seed of ten crosses were randomly allocated to plot in each replication. Each treatment had one row of 2.5 meter