INHERITANCE AND NATURE OF RESISTANCE TO THE COWPEA POD BORER (*Etiella zinckenella*) IN COWPEA

By

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ABSTRACT. Crosses were made between three cowpea cultivars and one forage cowpea line. Plants of the different populations: P_1, P_2, F_1 and F_2 were evaluated for resistance in wire-screen house and in the laboratory using detached pods of these plants (bioassay). Genetic differences were observed between the level of resistance of the different parental cowpea germplasm. The frequency distribution for resistance to the cowpea pod borer in the F_2 population of the different crosses indicated that resistance was inherited quantitatively. The broad sense heritability for resistance ranged from low to above intermediate. Resistance to the insect showed partial dominance. However, in some crosses, the resistance showed complete dominance over susceptibility. Genetic differences were detected among the different parental germplasm concerning the studied quantitative and qualitative components of resistance. The bioassay showed high efficiency in evaluating the resistance. Significant negative correlation was observed between resistance and each of pod wall thickness and pod pubescence number. Also, a significant negative correlation was detected between total fibers content of green pods and each of the two measurements of resistance which used in the bioassay, i.e. number of infested seeds/pod and number of alive larvae. The results of the multiple regression analysis indicated a significant linear relationship between the combined effect of the studied quantitative components of resistance and the final expression of resistance. A significant correlation was found between flower color and resistance to the insect, where the purple flower color was associated with the low level of resistance.

Introduction

Cowpea (*Vigna unguiculata* (L) Walp subsp. *unguiculata*) is considered one of the most popular vegetable crops in Egypt. Cowpea pod borer, *Etiella zinckenella* (Treit) is a very serious insect which causes annual big loss to cowpea cultivation in may parts of the world (Metwally and Mahgoub, 1992). The most common method which is used to control this insect is using insecticdes. Though this method is effective in controlling the insect, it costs a lot of money and causes too much damage to the environment and human being due to its harmful residual effects. Controlling