PERFORMANCE OF THREE OKRA (*Abelmoschus esculentus* (L) Moench) GENOTYPES OF DIVERSE ORIGIN AND THEIR CROSSES IN THE FIRST FILIAL GENERATION (F_1).

BY

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ABSTRACT.

A field experiment was planned to evaluate the heterotic effect for selected characteristics, which are primarily of agronomic importance, in the crosses between the parental genotypes belonging to different agro-ecological regions and possessing a wider genetic diversity. And also to estimate the correlation and establish relationship among those characters in okra.(*Abelmoschus esculentus* (L.) Moench).

This experiment in a RCBD with three replications, was carried out at the Eastern university Sri-lanka, Vantharumoolai, located in the Eastern Sri-lanka, during the period of March to June 1996.

Palvendi from Vavuniya district, Batticaloa local from Batticaloa district and HRB-10 from India were the parents used in this study. Along with the F 1 hybrid of the crosses between Batticaloa local X HRB-10, Palvendi X HRB-10, those of their reciprocal crosses and the F 1 hybrid of the cross between Palvendi X Batticaloa local were also included.

Data collection commenced with the initiation of field emergence of the seedlings and terminated with the last harvest. The agronomic characters included in this study were emergence rate, days to initial flowering, plant height at first flowering, number of pods per plant, pod girth, pod length, pod weight, leaf area, pod yield, number of branches, plant height at last harvest, and number of leaves at last harvest. The data on these characters were subjected to statistical analysis (ANOVA) and a correlation analysis between these characters were also performed.

A high heterotic effect (heterobeltiosis) was observed in the F 1 hybrid of the cross between Palvendi X Batticaloa local in characters such as number of pods per plant, pod length, pod girth, plant height at last harvest, advancement in number of days to first flowering, number of branches, leaf area, pod weight, pod yield and number of fully expanded leaves at last harvest.

And were found to be statistically significant over the parents. Thus, justifying the concept that inter-varietal hybridization of genotypes with wider genetic diversity leads to hybrid vigour.

The crosses between Batticaloa local X HRB-10 showed the above phenomenon for pod girth, HRB-10 X Palvendi showed hybrid vigour in terms of advancement in days to flowering and emergence rate. HRB-10 X Batticaloa local showed hybrid vigour in number of branches, pod yield and number of leaves at last harvest.

A highly significant correlation and direct relationship were observed between yield and yield components such as pod weight, pod number and pod length. Yield also was significantly correlated with number of leaves at last harvest.

It is also evident that the choice of appropriate female parent is important to exploit hybrid vigour effectively. This study reveals, that in most cases the genotypes with superior characters are to be used as female parents to achieve hybrid vigour successfully.

Among the morphological characters studied, the leaf shape of all F 1's produced belong to an intermediately lobed type. The colour of the pod of the F 1 hybrid of the cross between Palvendi (yellowish white) X HRB-10 (green) and Palvendi X Batticaloa local (dark green) produced pods of yellowish white indicating a dominant effect over green and a similar effect was reported earlier.

The number of branches produced by the F 1 hybrid between Palvendi X Batticaloa local was the highest which may be a derivative of the branching habit of both parents. The branches started bearing when the main stem was reaching it's maximum height.

The F 1 hybrids of the cross between Batticaloa local X HRB-10 and Palvendi X Batticaloa local, produced highly dense prickly hairs. Which was found to be the character of the parent Batticaloa local. Hybrids between HRB-10 X Batticaloa local and HRB-10 X Palvendi did produce hairs of medium density and less prickly. Which was the character found in the parent HRB-10. The cross between Palvendi X HRB-10 was observed with sparse and prickly hairiness. Which was the character of Palvendi.

Resistance to yellow vein mosaic virus disease was apparently seen only in the F 1 hybrid of the cross between HRB-10 X Batticaloa local and HRB-10 X Palvendi under field conditions, however further investigation is needed using inoculation techniques, to confirm their level of resistance. It has to be mentioned that HRB-10 had been proven to be resistant to YVMV.

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