

ABSTRACT

The genetics of plant height was studied in a pigeonpea cross using two mathematical models. The additive-dominance model proved inadequate to explain the genetics of plant height. The non-allelic interaction model with six parameters produced more information with respect to the type of allelic interaction involved in plant height. Other agronomic characters were also tested using the six parameter model. The test showed that not all the characters have similar mode of inheritance.

The inheritance of plant height and its components was studied in the F_2 populations derived from crosses involving dwarf genotypes as one of the parents. Similar inheritance was observed for number of nodes and average length of internode but not plant height.

The effect of photothermal environment on plant height, mode of growth and flowering was studied in five dwarf pigeonpea and *Atylosia sericea*. Three temperature and photoperiods were used in this evaluation. With respect to plant height all genotypes responded to the high temperature regime coupled with extended light. However, the response differed between genotypes for extended line alone. Three genotypes flowered under the three treatments whereas two flowered under ambient conditions only. The third genotype failed to flower in the three treatments.

The screening technique used here might be useful in the tropics for screening pigeonpea genotypes for photothermal effects. The advantages of the technique were discussed.

The results of this study indicate that both photoperiod and day temperature influenced plant height and flowering, hence any screening procedure for these characters should take into account both factors.