CHAPTER - 1

INTRODUCTION

Cowpea (*Vigna unguiculata* (L.) Walp.), a member of Fabaceae, is one of the most important food crops of India. It is an ancient pulse crop cultivated in tropical and sub-tropical regions of the world. The cowpea occupies the pivotal position of India and the Mediterranean. The cowpea is the third most important pulse crop and makes up for 58% of the world pulse production. It is grown especially in dry lands. Being predominately a self-pollinated crop, the extent of genetic variability is limited and narrow (Ahmed John, 1991 and 1995).

The effect of gamma rays on Cowpea parents and their hybrid. In the present finding an attempt has been made to investigate the effect of gamma rays on two parents of different genotypes (Paiyur 1 and CO 7) and their hybrid (Paiyur 1 x CO 7) of cowpea. Several morphological parameters were used. The possibility of inducing macro-and micro-mutants was also explored.

The applied mutagenesis is a potential tool in bringing genetic variability, besides the conventional breeding methods such as selection and hybridization in order to develop the improved varieties. Bringing together of the gene complexes of parents in the hybrids, and subjecting the heterozygous
material to irradiation may produce considerable variability providing much scope for selection. (Ahmed John, 1991).

Therefore, the present finding was undertaken with the physical mutagen gamma rays, over a wide range of doses on the two parents of different genotypes (Paiyur 1 and CO 7) and their hybrid (Paiyur 1 x CO 7) of cowpea in order:

- to analyze the sensitivity of the different genotypes to the mutagen.
- to assess the relative effectiveness and efficiency of the mutagen.
- to study the extent of variability generated in quantitative traits by
  a) Irradiating varieties,
  b) Hybridization and
  c) Irradiation of hybrid.

- to estimate the protein, carbohydrate and phenol content of the mutant seeds.

The enlargement of polygenetic variations and stabilization of different traits. M₁ to M₃ have been made. The experiment data have analyse by (Panse and Sukhatme, 1985) for M₁ generation and by Allard (1960) for M₂ and M₃ generations. The irradiation of hybrid by gamma rays created significant genetic variability and segregate of high order with better yield. The research findings are presented in the thesis and discussed.