INTRODUCTION
The word mutation owes its origin to de Vries (1909) who had postulated that phenotypic variations arise due to the sudden and distinct changes in the germplasm. As such mutations are the changes in the genetic material which get reflected in the phenotype. For some time the term mutation was used for all the changes in the chromosomes like polyploidy, structural aberrations and intragenic alterations. However, at present this term, in strict sense, is used only for the intragenic changes.
Since time immemorial natural mutations have primarily been responsible for evolution by providing raw material for the production of variability through recombination between different forms of the genes. This variability has not only been helpful in evolution but has also provided the plant breeders material for improvement work.

Till the work of Muller (1928) and Stadler (1928) on Drosophila and barley respectively, showing that the mutation rate can be enhanced at will, plant breeders were dependent only on the variability available in nature. However, the discovery that mutations can also be induced with the help of a number of physical and chemical agents, opened avenues for mutation breeding. At present mutation breeding is a very important part of any improvement programme.

Mutation is basically a hit and trial method. As such, in any mutation breeding programme the first prerequisite is the raising of a large population from which the plants exhibiting desirable changes can be selected. Once such plants are isolated it becomes easier for a plant breeder to introduce genes for these characters into the other types which otherwise are deficient in them. Although this goal can easily be achieved in sexually fertilized plants through crossings, there is always a risk of loosing the desirable character combinations, acquired by this method in amphimictic plants because of recombination.
On the other hand alterations induced in the vegetatively propagated plants can be of immense importance. In these plants any change once attained can be maintained and perpetuated without any fear of its getting lost. In purely vegetatively propagated plants induction of mutations also provide means for enlarging the variation spectrum which otherwise is nearly absent in them.

Keeping in view the above facts, it was decided to try to induce somatic mutations in two obligate apomictic species of *Allium* namely *A. sativum* (garlic) and *A. cepa* var. *viviparum* (pran), grown extensively in the valley of Kashmir. Of these, the former is cultivated throughout the world while the cultivation of *A. cepa* var. *viviparum* is more or less limited to certain specific regions only. In Kashmir, *A. cepa* var. *viviparum* is cultivated and consumed mostly by the muslim population. Although the apomictic nature of *A. cepa* var. *viviparum* can be explained on the basis of its triploid nature (Singh, Ved Brat and Khoshoo, 1967 and Koul and Gohil, 1971), the situation in *A. sativum*, a diploid species, is very interesting. Except for some recent reports by Etoh (1983 a,b) of the formation of seed in one of the collections made by him, this species does not set seed anywhere in the world. (Jones and Mann, 1963; Koul and Gohil, 1970, 1972 and Gohil and Koul, 1971). In both these species the inflorescences are of mixed type comprising of flowers and bulbils.
In 1970, Koul and Gohil, while describing the meiotic division in the microspore mother cells of *A. sativum* for the first time, had remarked that the total sterility in this species is rather difficult to explain in view of the normal course of meiosis. At that time they (Koul and Gohil, 1970) were of the opinion that sterility in this species is due to the presence of large number of bulbils in its inflorescences which rob off the food material destined for the flowers. Later, after conducting various experiments Gohil (1973) came to the conclusion that sterility in this species is due to a block in some genes which are responsible for the normal development of microspores (Koul, Gohil and Langer, 1979).

In the present work attempts were made to induce somatic mutations in *A. sativum* and *A. cepa* var. *viviparum* mainly to (i) try to hit the genes which are blocking the normal development of flowers in *A. sativum*, (ii) to increase the variability in these two apomictic species and (iii) to determine the LD$_{50}$ dosage for these two species. Besides, the effects of these mutagens on the chromosomes of these two taxa have also been studied.