C H A P T E R - III

SUMMARY AND CONCLUSION

Genus Crotalaria of family Fabaceae has 550 species distributed in the tropical and subtropical countries of the world. Crotalaria juncea commonly known as sunnhemp is priced for its fibre yield and green manure. It is economically important for pulp, paper, alkaloids and silage too.

The survey of previous literature shows that much of the work is on cytotaxonomy, anatomy, embryology, paleonology also on bacterial association and alkaloids. While there are very few attempts to obtain interspecific hybrides in the genus. Reviewed literature also indicates that there is very little work on mutation breeding. Germplasm is also not comprehensively collected and varieties with predictable qualities are not available, consequently yields remain low compared with kenaf, a non legume competitor for which cultivars exists. Yet sunnhemp has a crop deserves research attention not only to benefit the countries and farmers that now produce it, but also to enable its cultivation to expand into new regions. Therefore it was thought advisable to undertake induced mutation studies in Crotalaria juncea to generate the mutants in order to broaden the genetic base of presen population and to screen for desirable features.

In the present investigation the seeds of C. juncea were obtained from College of Agriculture,

Kolhapur. Seeds were treated with chemical and physical mutagens, Diethyl sulphate (DES) and √-irradiation respectively. The effects of these mutagens on germination survival, growth and development leaf area, stomatal density, pollen fertility, moisture percentage, total chlorophylls, and nitrogen content was carried out.

Chemical mutagen, DES induced some drastic changes at higher concentrations in C. juncea, where as mutations induced by √-irradiation are not lethal, however the maximum dose administered was 40 KR and it was observed that C. juncea and in general genus Crotalaria is radioresistant. The variants obtained after DES treatment are studied in M_2 generation and found true breeding. It is important to note here that C. juncea is a self-pollinated plant and in this context results obtained in M_2 generation are significant. Variants obtained after 0.1% and 0.2% DES treatment are vigorous in growth, where as other features are unaltered much with compared to control. Similarly after √-irradiation variants were obtained in M_1 generation that grow vigourously and differing marginally in other feature with control except that of nitrogen content. The pollen fertility reduced as dose increased, where as nitrogen content increased up to 30 KR and dropped at 40 KR. The results obtained in the present

investigation require further generation studies to procure a desirable mutant of C. juncea.

Thus from foregoing account it can be concluded that higher concentrations of chemical mutagen (0.25, 0.3% DES) are lethal to C. juncea, where as radioresistant is higher in the same. The variants obtained from both the treatments are of similar nature e.g. having vigours growth. The stimulation of germination and higher content of nitrogen in irradiated plants is note worthy feature w which must be considered for the improvement of legumes like Crotalaria. In general C. juncea responds well to chemical and physical mutagens and thus mutation breeding has some access to improve C. juncea.