



INTRODUCTION

Among different plant groups, grasses perhaps form the most important plant group, from the point of view of survival of human race on this planet. Since all the cereals which provide food grains to human beings belong to this group. Besides food for human beings, the grasses have also provided forage for animals. Apart from this universal role, some grasses have occupied a special position in human culture. Vetiver grass is one such grass. Vetiver grass is an economically important, perennial grass of family Poaceae, native to tropical Asia and introduced into South Africa for its thick fragrant roots. This grass species was described for the first time by Linnaeus (1771) and it was named as *Phalaris zizanioides* Linn. Later on this name was changed to *Vetiveria zizanioides* (L.) by Nash in 1903 and this name remained accepted for several years. This name has been changed recently to *Chrysopogon zizanioides* (L.) Roberty by Veldkamp (1999).

The name Vetiver is derived from Tamil word 'vetti' means khus-khus or cus-cus and 'ver' means roots. Its aromatic roots form large clumps from stout rhizome. Plant is bisexual with hermaphrodite spikelet (Grass Genera of the World- *Vetiveria* Bory)

As mentioned earlier the name Vetiver is native to Tamil language. Old Tamil literature describes the medicinal uses of Vetiver grass. But Vetiver has traditionally utilized for both purposes as medicinal and aromatic plant since ancient time, especially in India, Indonesia, Pakistan, Senegal, Sri Lanka, Thailand etc. In beginning of 20th century, it was found that the local people obtained essential oils from the roots of Vetiver grass, which were ingredients of sherbets. The roots were woven into screens and hung over doors or windows in hot weather. The roots in powdered ^{form} state were used in composition of Abir or perfumed powder which ^{is} was used by Hindus since time immemorial. Thus the root is the main component ^{of} grass which has attracted human attention. Now a day's Vetiver grass is cultivated on large scale due to its importance in

perfumeries. CIMAP (Central Institute of Medicinal and Aromatic Plants) carried out detailed work on improvement and agrotechnology of Medicinal and Aromatic plants of India among which *Chrysopogon zizanioides* (L.) Roberty is included (Patra *et al.*, 2004).

Now a days, the Vetiver grass is used on large scale for phytoremediation purpose, to combat the soil erosion and in waste water treatment in different parts of World. It is grown as a hedge plant and also used as a fodder plant. The Vetiver roots and leaves are used to make different types of handicrafts. The screens (parda) and hats woven from roots are very popular in some parts of Maharashtra.

In this way the grass is well known and highly useful grass. The review of literature on different aspects of Vetiver indicates that very little attention has been paid to the physiology of this important essential oil crop. Apart from the discovery of C4 pathway in this species, no major attempts have been made to understand physiological aspects such as mineral nutrition, nitrogen metabolism, phosphorus metabolism, carbohydrate metabolism in the plant in general and root system in particular. Further attempts are only started recently to study effects of application of plant growth regulators. Chlorocholine chloride is a well known plant growth retardants and its action is mainly mediated through the effect on Gibberellin biosynthesis. Although it causes decrease in above ground shoot elongation, it is reported to cause increase in root growth and stress resistance. Vipul is a commercial plant growth promoter which contains a long chain alcohol triacontanol. Salicylic acid is phenolic acid which involved in thermogenic respiration, flowering process and systemic acquired pathogen resistance. Hence, it is thought worthwhile to study these responses of Vetiver grass to the three popular plant growth regulators in terms of fate of various metabolites and few enzyme activities. For this purpose, besides local cultivar of Vetiver, an improved and promising variety of Vetiver KS1 developed by CIMAP has also been employed.

The literature on different aspects of Vetiver grass has been extensively revised and it is included in the chapter Review of Literature. The methodology followed for the investigation is described in the second chapter Materials and Methods. The findings of the present investigation are presented and discovered at length in the chapter Results and Discussion. The significant findings are summarized under the chapter Summary and Conclusion. The literature cited in the literature is systematically presented in the part Bibliography.