GENERAL INTRODUCTION

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In India about 100 - 120 MT of diosgenin is required annually to meet the demand of the country ; whereas the area under present cultivation, even on the basis of very liberal estimation, would hardly exceed 150 ha(courtsey - Prof. S.K.Chatterjee, D.C.O.M.P.; Govt. of West Bengal, India, 1985). Consequently fears on an early depletion of natural resources due to ruthless and indiscriminate exploitations might be ruled out.

It would be clear from the review of works done in Dioscoreas that though different aspects of agrotechnic, growth and diosgenin formation in the genus Dioscorea have been undertaken from time to time, detailed analytical studies on climatic and soil factors in eastern Himalayan hilly regions of West Bengal affecting the growth and development of the species are limited.

Keeping all these facts in the forefront the Directorate of Cinchona & Other Medicinal Plants, West Bengal has taken up production of diosgenin from its own plantation. In recent years the Directorate has stressed on the replacement of Dioscorea composita plantation by D. floribunda in this region with a view of producing high quality diosgenin and further downstream products of diosgenin. It has been noted that agronomic practices for successful cultivation of D. deltoidea are yet to be worked out for this region. D. prazeri though naturalised in the North Eastern Himalayan regions but percentage & quality of diosgenin stand to be very poor in comparison to other species. In D. composita, though the yield of tubers is the highest than the other species, its commercial cultivation is rather expensive. Whereas in

D. floribunda, though the tuber yield is lower than D.composita but the content and quality of diosgenin is much higher.

Detailed experimental studies are not available on standarised agrotechnics for the commercial cultivation of Dioscorea floribunda Mart. & Gall., especially in Darjeeling hills though the species has been found to grow very well in this region on pilot-scale cultivation at the lower foot/hills.

The present thesis has dealt with studies on Dioscorea floribunda Mart. & Gall. (as introduced species) aiming to standardize agrotechnic for successful commercial cultivation of the species as well as to analyse developmental patterns of growth & development as related to different yield attributes and production of diosgenin under varying experimental conditions. Experiments undertaken in the present study have included varying conditions of planting time, size of planting materials, spacing and use of fertilizer & lime at altitude of 500-600 metres in Darjeeling hills. It is hoped that the present study will help to ascertain details of agronomic behaviour of the crop including its developmental physiology as reflected during commercial cultivation & replacement of other Dioscorea species in commercial venture by Dioscorea floribunda Mart. & Gall. under low altitude Eastern Himalayan conditions.