



## Studies on different flora, physico-chemical, microbiological properties of rhizospheric and non rhizospheric soils in compartment No. 792 of Gorewada Forest

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### ABSTRACT

Study of Gorewada forest was carried out to find out the various types of flora and the soil properties like physicochemical properties, available total nutrient status as well as soil microbiological properties. It was revealed from the data that the forest present in 792 compartment is of dry deciduous type like tree, shrubs, herbs, climbers and grasses. Soil of the different plant species had clayey texture, porosity and WHC was high. The EC, organic carbon and CEC of pit soil was somewhat high compared to barren soil; however, levels of these chemical properties were lower as compared to the rhizospheric soil samples of dominant plant species. Total and available nutrient content was high in rhizospheric soil as compared to the pit soil and barren. The bacteria, fungi, actinomycetes and nitrogen fixer namely *Rhizobium* and *Azotobacter* and vesicular arbuscular mycorrhizae (VAM) spores were found to be high in pit soil as compared to barren soil. However, the rhizospheric soil samples had comparatively high counts of tested microorganisms. Findings of this particular study will form a basis for developing future plans required for development of forest cover with a diversified variety of plants of high economic value like timber, medicinal and ornamental including even the exotic and rare species by using the biotechnological approach of bioaugmentation.

**KEY WORDS :** Gorewada forest, Flora, Soil and plant analysis, Chemical and microbiological properties

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### INTRODUCTION

Many parts of country are facing problem of forest resources depletion, due to lack of proper physico-chemical and microbiological status of forest soils. This problem can be alleviated by site-specific soil augmentation process which has now been accepted as a tool for the sustainable management of forest resources. Sustainable management of forest practices are many. In forest management practices, high scientific skills are required. However, important steps are proposed herein as preliminary study is based on following aims and objectives. One of the main aims of the proposed study is to study native plant species in and around Gorewada forest. Another aim is to characterize rhizospheric soil of native

plant species with respect to its physico-chemical and microbiological properties. This study will help to generate the basic data required for developing an appropriate bioaugmentation process that can be used to resolve the low nutrient status and less counts of useful micro flora present in forest soil for proper functioning of biogeochemical cycle. Project also aims to isolate site specific biofertilizer strains of *Rhizobium*, *Azotobacter* and Vesicular Arbuscular Mycorrhiza (VAM) and to select a suitable organic amendment for improving the physico-chemical and microbiological properties of soil. Results of above mentioned study will form a platform for future studies in order to define the most supportive and nutritive rhizosphere for the sustainable development of the forest canopy by using bioaugmentation process.

### MATERIALS AND METHODS

The study was carried out on the project entitled, "Studies on different flora, physico-chemical, microbiological properties of rhizospheric and non rhizospheric soils in Compartment No. 792 of Gorewada Forest" by Sevadal Mahila Mahavidyalaya and Research Academy, Nagpur. During the study it was observed that

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