

MINERAL COMPOSITION OF A RESERVE FOREST SOIL

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ABSTRACT

Soil samples collected from varying depths in Victoria Park Reserve Forest near Bhavnagar (Gujarat) in three different seasons were analysed for determining phosphorus, calcium, magnesium, nitrogen and carbon contents. The soil was clayey but poor in mineral status. It was alkaline and the pH decreased from upper to lower layers at 30, 40 and 50 cms from summer to monsoon and winter. pH also varied in different seasons at the same depths. With a decrease in the pH there was an increase in phosphorus, calcium and magnesium in the soils of same depths from summer to winter. Nitrogen, however, decreased with the fall in pH. Carbon content was highest during summer.

INTRODUCTION

Assessment of major nutrients in soil serves as an indicator of their availability to the plants. It also provides good information regarding nutrient and bio-geochemical cycles in the soil-plant eco-system. However, their dynamics in different seasons and at varying depths, which have profound influence on the success of any forest plantation, deserve special attention. Results of one such study on the mineral composition in the soils of Victoria Park Reserve Forest of Bhavnagar (Gujarat) are reported and discussed in the present.

MATERIAL AND METHODS

The climatic condition of Reserve Forest under study was of Fourth mega thermal type (Patel, 1982) with no surplus water throughout the year. Soil samples were collected in summer, monsoon and winter from three depths (30, 40 and 50 cm) at different localities representing various plant communities. After air drying, the samples were passed through a 60 mm mesh and stored till use for chemical analysis. Physical analyses were done at the time of air drying and filtering. Soil pH, texture and water holding capacity (WHC) were recorded by the methods given by Chopra and Kanwar (1976) and Piper (1966). For soil colour the Munsell colour chart was used.

The available phosphorus was analysed spectrophotometrically by Olson's method as described by Chopra and Kanwar (1976), and calcium and magnesium by quantified titrimetry used with EDTA after Piper (1966). Nitrogen was determined using Microkjeldahl following method of Walkely and Black as described by Pandeya et al. (1968) and Sankaran (1965).

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