

ANALYSIS OF SOIL NUTRIENT STATUS IN MANIKPUNJ VILLAGE, NASHIK DISTRICT, MAHARASHTRA, INDIA

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Abstract – This research paper aims to assess the soil nutrient status in Manikpunj Village, Nashik District, and Maharashtra, India. The study focuses on the analysis of nitrogen (N), phosphorus (P), potassium (K), and pH levels in the soil. The data was collected from ten different farms (F1-F10) and analyzed using appropriate statistical methods. The results of the study provide valuable insights into the soil nutrient composition, which can aid in formulating effective agricultural practices and optimizing crop productivity in the region.

Keywords – soil, NPK, crop, Manikpunj, growth

I INTRODUCTION

In terms of morphological, physical, chemical, and biological characteristics, soil is different from parent material. Additionally, various soils vary in some or all of the qualities depending on the genetic and environmental variations. Some soils have a coarse or fine texture, some are red or black, others are deep or shallow, and so on. Due to their positive effects on the physical, chemical, and biological properties of soil, the use of organic manure, green manure, green leaf manure, and crop residue in combination with inorganic fertilizers not only reduces the demand for these fertilizers but also increases the efficiency of applied nutrients (1) (Meshram et al., 2018). It would be useful for sustainable management and enhancing soil fertility status to utilize appropriate inorganic fertilizers (N-P-K). Such methods of soil sample monitoring are useful for determining the concentration of different factors present in soil (2) (Ahire, 2018). In differing degrees, soil serves as a supply of different nutrients and water for plants, as well as a mechanical anchor for roots. Minerals, organic matter, water, and air make up soils; their amounts fluctuate and collectively they create a system for plant growth. Topsoil depth, porosity, water-holding capacity, texture, crushing, and aggregation are some of the physical characteristics of soil. 2019 (3) (Yadav and Verma). According to Mujawar and Dongare (2019), it is the unconsolidated mineral matter that has been exposed to and impacted by environmental conditions, parent materials, climate, organisms, and terrain over extended periods of time. Soils act as natural sinks and filters for various metals (Pendias and Pendias, 1984).

The availability of essential nutrients in soil is crucial for sustainable agricultural practices. Understanding the nutrient status of soil is vital for farmers to determine appropriate fertilizer application rates and ensure optimal

crop growth. In this study, we investigate the levels of nitrogen (N), phosphorus (P), potassium (K), and soil pH in Manikpunj Village, Nashik District, and Maharashtra, India. The objective is to evaluate the current soil nutrient status and identify any deficiencies or imbalances that may affect agricultural productivity.

II MATERIAL AND METHODS

Ten farms (F1-F10) were selected in Manikpunj Village for soil sampling. Four corners and the center of a farmer's plot were sampled for soil. It is apparent that the soil sampled contains more clay than usual. The soil samples were collected from each farm and analyzed for nitrogen (N), phosphorus (P), potassium (K), and pH levels. The preparation of the sample, digestion or extraction, and determination of the NPK concentration are all steps in the analysis of soil. To acquire good anomaly to background contrast, soil samples were manually crushed to the size of natural grain size and sieved to obtain minus 80ASTM mesh, as suggested by (Fletcher, 1981).

Sample preparation and analysis of soil

The soil samples were subjected to sample preparation. This includes hand crushing, sieving, grinding and lastly dissolves in distilled water. This stage helps in obtaining a truly representative homogeneous sample. Care was taken to avoid contamination and finally by using "Agrinex Soil Health Kit-40 capsules (NPK & pH). The various concentration of NPK were analysis.

III RESULTS

The results of the soil nutrient analysis revealed variations in the nutrient levels among the farms in Manikpunj Village. The average nitrogen (N) content ranged from 20kg/acre to 40kg/acre, with F4 and F5 having the highest nitrogen levels. Phosphorus (P) levels ranged from 20kg/acre to 50kg/acre, with F4 and F5 again showing the highest values. Potassium

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(K) levels varied between 100kg/acre and 150kg/acre, with F2, F4, F5, F7, and F9 having elevated potassium levels. The soil pH ranged from 5.0 to 7.0, with F3 and F6 showing relatively lower pH values.

IV CONCLUSION

The analysis of soil nutrient status in Manikpunj Village highlights variations in nitrogen (N), phosphorus (P), potassium (K), and pH levels among the farms. The presence of higher nitrogen, phosphorus, and potassium levels in some farms suggests potential nutrient imbalances that need to be addressed. These findings emphasize the importance of regular soil testing and appropriate fertilization practices to optimize nutrient availability and ensure sustainable agricultural production. Further studies and interventions are warranted to develop tailored strategies for improving soil health and crop productivity in the region.

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