



Soil fertility status as influenced by integrated nutrient management in mustard – cowpea – rice cropping sequence in lateritic soils of Konkan

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ABSTRACT

The field experiment was conducted to study the effect of integrated nutrient management on nutrient content and uptake in mustard – cowpea – rice cropping sequence in lateritic soil of Konkan. The soil fertility parameters viz., bulk density, porosity, organic carbon content, microbial count (bacteria, fungi, actinomycetes) and content of available nutrients (NPK) in soil showed significant improvement with the application of organic, inorganic and organic + inorganic sources of nutrients compared to control treatment. The highest microbial count in soil was contributed under INM T_7 treatment and its effects were significantly superior over to those of chemical fertilizers alone (T_3) or use of organic manure alone (T_2). The content of available nutrients in soil was also slightly higher with T_7 treatment compared to use of only chemical fertilizers (T_3). It is therefore, in lateritic soil of Konkan for mustard – cowpea – rice cropping sequence the integrated nutrient management practice i.e. application of 50 per cent recommended dose of N, P_2O_5 and K_2O be applied through chemical fertilizers and the remaining 50 per cent recommended dose be applied through manure for each crop in the cropping sequence for soil fertility sustenance and saving of chemical fertilizers. For mustard and cowpea FYM be used as manure and for rice, glyricidia green leaf manuring be used.

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Key words : Lateritic soil, Mustard, Cowpea, Rice, Available N, P and K, Organic carbon

INTRODUCTION

The basic concept underlying the INM is maintenance of soil fertility and plant nutrient supply to an optimum level for sustaining the desired crop productivity through optimization of benefits from all possible sources of plant nutrients in an integrated manner. The appropriate combination of mineral fertilizers, organic manures, crop residues, compost, N fixing crop / biofertilizers varies according to the system of land use, ecological, soil and economical conditions. The INM has assumed great importance because of the present negative nutrient balance and secondly, neither the chemical alone nor organic sources exclusively can achieve the production sustainability of soil as well as crop under highly intensive cropping systems.

The INM helps in restoring and sustaining soil fertility and crop productivity. It also helps in arresting

the emerging deficiency of macro, secondary and micro nutrients favourably by optimizing the physical, chemical and biological environment of soil and achieving economy and efficiency in fertilizer use. In view of shrinkage of land resources for cultivation, short supply and escalating cost of chemical fertilizers, environmental pollution and ill effects on soil, animals, and human health there is a need to adopt INM concept for achieving the objective of environmentally and economically sustainable agriculture.

MATERIALS AND METHODS

The field experiment was conducted on Research Farm, Department of Agronomy, College of Agriculture, Dapoli, during *Rabi*, summer and *Kharif* season 2005-06. The field experiment was carried out in Randomized Block Design comprising three replications and eight

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