PREFACE

Modern technologies of agriculture as well as other developmental activities of modern society are highly exploitative in nature besides enhancing pollution and causing enormous damage to the environment. Increased doses of nitrogenous fertilizers are polluting water bodies with high levels of nitrates. Pesticide residues in the soil contaminate water bodies. The developmental activities including agriculture hasten the degradation of land, denudation of forest and loss of arable land. Of chemical fertilizer are the soil erosion, water pollution and chemical residues in food.

Organic agriculture is a production system that avoids or largely excludes the use of chemical fertilizers, pesticides and growth regulators. To the maximum extent feasible, organic farming system relies upon crop rotation with leguminous crop, addition of crop residues, animal manures, green manures, biofertilizers and bio pesticides.

Composting has been in vogue from time immemorial and it is the best cost effective and environmentally benign process of reducing/reusing vegetable and animal refuse (rural/urban) to a quickly utilisable condition for crop lands by improving soil fertility.

The present Ph.D thesis work entitled “Reclamation of soil bio – physico and chemical properties by adding composts prepared by various techniques” is highly applicable and socially viable work for the modern world to fulfill the increasing food crisis. The thesis contains seven chapters, which includes, Introduction, Review of literature, Materials and Methods, Results, Discussion, Summary and Bibliography.
In review of literature we have reviewed the following titles which is highly relevant to our present research problem. Each and every title bearing many references which is sufficient for our study. The titles include “Organic agriculture – a historical perspective, Utilization of organic manures, Composting, Organic manures on physical properties of soil, Organic manures on chemical properties of soil, Organic manures on biological properties of soil, Effect of organic manures on crop production”.

The substrates used for our study were Cassia auriculata and Cassia angustifolia. The two substrates were utilized for the preparation of composts by using ten different techniques. The methods were Bangalore method (T1), Chinese method (T2), Biodung method (T3), Padegaon method (T4) vermicomposting (T5) Bio gas method (T6) Trichoderma viride method (T7), Indore method (T8), Phospho composting method (T9) and NADEP method (T10). Among the techniques, the vermicomposting technique is found to be good and effective for compost preparation and maintaining soil fertility.

The field application studies were carried by using ten different composts prepared by various techniques. Arachis hypogaeae (Co-1) and Coleus parviflorus (Variety – Sriranjani) were used for the study at two consequent seasons. The soil samples of all the trial plots were collected periodically. The collected soil samples were taken for bacterial, fungal and actinomycetes count. After enumeration of microbial count and estimation of moisture content the collected samples were dried. This was done to prevent the evaporation of nutrients from the samples. The physicochemical properties like electrical conductivity, pH, bulk density, porosity, water holding capacity, moisture content, NPK and micro nutrients were analyzed.
During the field application studies of ground nut (*Arachis hypogea*) and *Coleus* (*Coleus parviflorus*) for two successive years the following salient features were observed. The physical properties of the soil in the study plots were found enhancing gradually. The depletion rate of the NPK is very less when compared to control (without the application of any manures). The micro flora of the soil was found well flourished. The yield of groundnut and *Coleus* were found to be maximum with the application of vermicompost prepared by both *Cassia auriculata* and *Cassia angustifolia*. 