



EFFECT OF ORGANIC AMENDMENTS ON THE BIO CHEMICAL TRANSFORMATIONS UNDER DIFFERENT SOIL CONDITIONS

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ABSTRACT

In recent investigations, the addition of organic amendments is a best and cheapest source for the soil to counteract the toxicity of soil. During this work, it was explained briefly about how the organic manures provide benefits for the soil. The experiments were conducted with three soils each treated with four treatments of organic amendments representative samples were drawn on 0, 10, 20 and 30 days after incubation analyzed for pH, EC, organic carbon N, P & K. Instead of chemical fertilizer using organic amendments prevents hazards in soil Environment; improve soil multiplication protection of human being from environmental pollution.

KEYWORDS: organic amendments, different soil, chemical fertilizer, soil multiplication, electrical conductivity, pH etc.

INTRODUCTION

Integrated nutrient management and organic waste are the latest alteration among the soil scientists, biotechnologists and biochemist of the universe. Organic manuring in one of the cheapest and best method of improving the biological, physical and chemical properties of the soil (Ravikumar and Krishnamoorthy, 1980). The efficiency of these organic amendments is more prominent under saline, alkali and saline-alkali soil conditions than in a normal soil. Usage of the organic wasters not only improves the soil multiplication of fauna and flora these by the soil health but also paves the environmental pollution.

The objectives of the practical contained in this manual is to provide an overall knowledge on soil testing and the ways of working out fertilizer recommendations to the crop by important procedure the purpose of soil testing is not only this it helps to identify soil hazards like soil acidity salinity alkalinity. Hence procedures for identifying these hazards are also presented in this manual in addition to the procedure for testing the soil for its macronutrient availability status collection of a representative soil sample from the field for obtaining maximum precision in the analysis in of greater importance in a soil treating programmed. The addition of organic amendments in soil not only improves the physical properties. But also improves the availability of nutrients, organic carbon and certain exchange capacity of the soil (Singh *et al.*, 1980, Salviakumari, 1981).

Organic amendments like poultry manure farmyard manure and composted coir pith and press mud were superior to improving the physical property of soil. Using chemical fertilizer poses problem like toxicity due

to high amount of salts as a residue of fertilizers. Impairing the aeration and soil water plant relationship is resulting in decrease productivity (Babhulkar *et al.*, 2000). Organic wastes especially coir waste was attributed to the improvement of soil physical condition by improving the soil structure and also soil salinity research center. Trichy clearly proved that coir waste can be used for problematic soil for improving the soil and for conserving moisture application (Ramasamy and Sreeamulu, 1983) of farmyard manure increased physical structure continuous application of (FYM) farmyard manure influenced the physical and chemical properties of soil as well as crop yield (Kumaresan *et al.*, 1984). Keeping in mind the above points, an experiment was carried out to find out the effect of organic amendments on the pH and EC, of normal alkali and saline alkali soils. To study the variations in the available nutrients status as influenced by imposition of organic wastes. In addition to this to find out the effect of amendments on the soil by organic amendments and its effect on the organic carbon content under different soil conditions.

MATERIALS & METHODS

A laboratory experiment was carried out to assess the effect of organic amendments on bio chemical change under different soil conditions. Collection of normal soil from field, Alkali soil and Saline - alkali soil. Collection of organic amendments from difference industries *i.e.* Farmyard manure, Poultry manure, Composted coir pith and Press mud.

Estimation of available n in soils by alkaline KMNO₄ method

20gm soil was weighed and transferred in to a distillation flask then 20ml of distilled water, 100ml of 2.5% NaOH were added the contents distilled a steady rate collecting the liberate ammonia in a 250ml beaker containing with double indicator the distillation was continued for about 30 minutes until 100ml distillate was collected in the beaker.

Estimation of organic carbon

One gram of soil was weighed (finely powdered and sieved in 0.2mm sieve) in to a 500 conical flask. Add to 10ml of $\text{K}_2\text{Cr}_2\text{O}_7$ and swirled the flask. The flask was kept on an asbestos mat or on a wire gauze. Added 20ml of concentrated H_2SO_4 and swirled the flask. It was allowed to stand for 30 minutes and then 200ml of distilled H_2O (to arrest further oxidation) and 10ml of orthophosphoric acid (85%) (to stabilize the oxidation potential of FeSO_4 during titration) were Then 1 ml of dihenyl amine indicator was added with ferrous ammonium sulphate (0.5N) or ferrous sulphate (0.5N) solution till the blue colour turns green. A blank (without soil) also run simultaneously.

Estimation of available phosphorus in soil

The five gram of soil was weighed and transferred in to a 100 ml of polythene shaking bottle (Run a blank side by side). Then add a pinch of dargo G.60 (or activated adjusted to 8.5) shaken in a reciprocating mechanical shaker. For 30 minutes. Then beaker or test tube (the filtrate should be clear and colorless). From that 5 ml of the filtrate was pipetted out into a 25ml of volumetric flask. The solution was diluted in the 25ml of volumetric flask to about 20ml of distilled water. Then 4ml of reagent b was added and made the volume to 25ml after waiting for 10 minutes for color to develop the intensity the blue color (percent transmittance of the solution) was measured in a photo electric using a red filter (660 nm wave length) and adjusting the matter to 100% transmittance with the blank. From the standard curve for p, the concentration of (ppm) in the solution was found out against the percent transmittance observed in the above step.

Estimation of available potassium in soils

Five gram of soil was weighed and transferred in to a 100ml polythene shaking bottle. Then 35ml of neutral NH_4OAC was added and shaken in a mechanical reciprocating shaker for 5 minutes. Filtered through dry what man no. 40 filter paper collecting the filtered in a dry test tube or beaker. The amount of K in the filtered was measured in the flame photometer.

Determination of pH and EC

20 gram of soil was weighed and transferred in to a 100ml of beaker and 40ml of distilled water was added. It was stirred with glass rod and allowed it to stand for 1/2 hr with stirring. Adjusted pH meter with buffer solution, washed electrodes with a jet of water and carefully wiped dry with a piece of filter paper. Immersed the electrodes in the beaker contained soil and water suspension and changed the function switch to the particulars pH range (0.7 or 7-14). The meter readings corresponding to the pH value of the sample were recorded.

Estimation of electrical conductivity

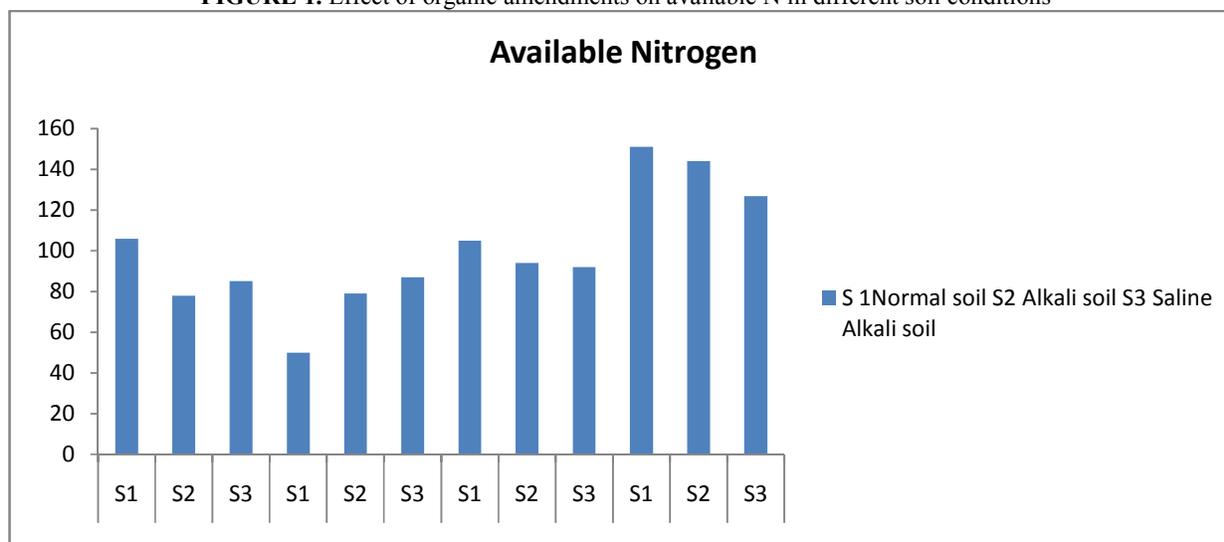
20 gram of soil was weighed and transferred in to a 10ml of beaker. Added 40ml of water, stirred it well and allowed to stand for help an hour alternatively, the soil water suspension prepared in pH determination was used switched on conductivity bridge checked the interest with saturated CaSO_4 solution and 0.01N KCl solution (E.C.2.2m.m. hos/cm respectively) before proceeding with the sample washed the electrodes with distilled water. Immersed them in to the soil suspension. The multiplier switch was set at an intermediated position and rotated the main dial control, until the magic eye of the null indicator was at its widest. The multiplier was set switch at another position and repeated. The readings of the scale at this position multiplied by the value of the multiplier switch position indicate the electrical conductivity. This was multiplied by the cell constant noted on the cell itself, to get specific conductivity

RESULTS

The results obtained by the effect of organic amendment on biochemical changes in three different soil conditions. pH – During the period of incubation from 0, 10, 20, and 30 days, no appreciable change in pH could be observed. EC - in an indicator of salt concentration in the soil solution. Among the organic amendments all the four manures were effective in reducing EC value in all soils when compare with control. Organic carbon organic carbon content increases the addition of organic manures in all the soil. Available N – is a most important major nutrient highly essential for all crops in the present investigation application of organic amendments significantly increased the available nitrogen when compared to the control was shown in the figure.

Available phosphorus it is a 2nd important essential element for successful crop growth the period of incubation has got little effect on 30th day of incubation the effect was more prominent with press mud.

Available K in a most important key element which is essential for strength to crop in the experiment results, it was not affected by the any of the amendment.

FIGURE 1. Effect of organic amendments on available N in different soil conditions

DISCUSSION

In prevailing, organic manure are receiving much attention because of their sustained soil health in terms of fertility survival new field of preparing organic manure very often initiated its contribution to the field of agriculture and it pollution control its far reaching organic waste attributed to the improvement of soil physical condition by improving the soil structure and also influenced the physical and chemical properties of soil as well as crop yield. Economically it paves way for small Scale industries for production of organic manure.

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