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Liquid organic manure is a boon for organic cultivation of crops

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ABSTRACT

Low concentration of nutrients in organic manures can not over come the problem of nutrient deficiencies. The foliar application of mineral nutrients by means of spray offers a method of supplying nutrients to higher plants more rapidly than root application. Foliar application seems essential part of cultivation when available water in top soil is scarce and there is decline in nutrient availability during growing season. Mineral nutrients become growth limiting factor. Conditions are more prevailing in high calcium carbonated soil (calcareous soil) where nutrient availability especially Fe is restricted. In limited phloem mobility of calcium, repeated sprays of calcium can mitigate the problem of calcium in growing crops. Thus enriched liquid organic manure were prepared by different locally available materials like HGPR(34/74) gypsum, pyrite, neem leaves, nimboli, aloe vera, dhatura, aak, non edible cakes and cow urine. These naturally available bio degradable wastes were allowed to decompose by earthworm *(Eisenia foetida)*. Vermicomposted enriched material were analysed for different nutrient content. Enriched manure was dissolved in water and cow urine in different ratio. The nutrient value was found highest in enriched vermicompost to traditional composting. Total water soluble nutrients were higher with dilution to 1:30 (enriched organic manure and water).Addition of cow urine appreciably increased all nutrients. Total water soluble calcium was higher in gypsum treated organic manure. Nitrogen, phosphorus, sulphur and iron content were high in enriched liquid organic manure. Higher concentration of calcium in liquid organic manure inhibits the incidence of disease. Most of the parasitic fungi invade the apoplasm by releasing pectolytic enzymes which dissolves the middle lamella. The activity of these enzymes is strongly inhibited by liquid enriched organic manure. This enriched liquid manure can easily be prepared by farmers, is eco-friendly and helpful in organic production and protection of crops.

Key words : Coriander, Enriched vermicompost, Gypsum, Pyrite

INTRODUCTION

The gravity of the environmental degradation and human health hazards have drawn the attention of the researchers and planners towards findings out ecologically sound, viable and sustainable organic farming systems. The progress of organic farming will largely depend on generation of new technology (Dahama, 1997). Soil application of organic manures alone can not fulfill the nutrient requirement of crops so, for additional supply of nutrients. There is a need to develop enriched liquid organic manure which can supply adequate nutrients as well as have insecticidal/ fungicidal property.

An attempt has been made to prepare liquid organic manure (All purpose organic vermicompost wash) using cow dung, non-edible cakes, neem leaves, nimboli, aloe vera, dhatura, aak, HGPR (34/74), gypsum, pyrite and cow urine and was analyzed for different nutrient contents.

MATERIALS AND METHODS

For preparation of all purpose enriched vermicompost raw materials like fresh cow dung, neem leaves, aak leaves, aloe vera, dhatura, tobacco leaves were chopped and HGPR (34/74), gypsum, pyrite were collected and mixed in the ratio of 25:10:5:1:3:1:1 + crop residues (Total for 100 kg material) on wt./wt. basis. This material was allowed to decompose for 20-25 days till the temperature of the degraded material becomes suitable for vermicomposting. Earthworm (*Eisenia foetida*) and bioinoculants were introduced in this material for vermicomposting. After 60-65 days the fully decomposed all purpose organic vermicompost is harvested and was used as base material for preparation all liquid organic manure. The material was diluted in different ratios with water and mixed with 20% cow urine and analyzed for their nutrient contents. The analysis was done by the standard procedures as given by Jackson (1973). The determination of potassium was done by flame photometer and micronutrients were analyzed by using AAS (Lindsay and Norvell 1978).

RESULTS AND DISCUSSION

Nutrients compositions and active ingredient of raw materials *viz*. cow dung, non-edible cakes, neem leaves, aak leaves (*Calotropis* sp.), aloe vera, dhatura (*D. innoxia*), tobacco, cow urine are presented in Table 1. The data showed that nitrogen contents of different raw material used varied from 0.35 to 5.8%. The highest nitrogen contents was in neem leaves and neem cakes *i.e.* 5.8% and 5.2%, respectively. The P_2O_5 per cent varied from traces to 1.9%. Similarly K_2O% varied from 0.30 to 1.50 per cent. Neem leaves, neem cake and cow urine were found to be rich source of potash, N and P_2O_5 the active extracts or ingredients responsible for biocidal

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