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Influence of fertiliser and organic manures on the yield attributes and yield of cassava (*Manihot esculenta* Crantz.)

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ABSTRACT
Field experiments were conducted to find out the effect of poultry manure on yield attributes and yield of cassava at Veterinary College and Research Institute Farm, Namakkal during 2001 and 2002. The popular hybrid of cassava H 226 was tried as test crop. Two fertiliser levels viz., 100 per cent recommended NPK (60:60:150 kg/ha^{-1}) and 75 per cent recommended NPK (45:45:112.5 kg/ha^{-1}) were assigned to main plots. Six organic manurial treatments viz., FYM (25 t/ha^{-1}), Poultry manure (10 t/ha^{-1}), composted poultry manure (10 t/ha^{-1}), FYM (12.5 t/ha^{-1}) + poultry manure (5 t/ha^{-1}), FYM (12.5 t/ha^{-1}) + composted poultry manure (5 t/ha^{-1}) along with control (no organic manure) were assigned to sub plots. The results indicated that 100 per cent recommended NPK had better yield parameters than 75 per cent recommended NPK. All the yield parameters such as number of tubers, tuber length, and tuber girth and ultimately the tuber yield were positively influenced by the application of organic manures especially composted poultry manure.

Key words : Organic manure, Poultry manure, Compost, Cassava, Yield attributes.

INTRODUCTION

Among cassava growing countries, India ranks twelfth in area, but it is the seventh largest producer of cassava with a production capacity of 5.4 million tonnes from an area of 0.24 million hectares. However, India tops in productivity with 22.1 t/ha^{-1} which is the highest for any country in the world (Chadha and Nayar, 1994).

Application of organic manures has various advantages like increasing soil physical properties, water holding capacity, organic carbon content apart from supplying good quality of nutrients. Poultry manure is rich organic manure since solid and liquid excreta are excreted together resulting in no urine loss. In fresh poultry excreta uric acid or urate is the most abundant nitrogen compound (40-70 per cent of total N) while urea and ammonium are present in small amounts (Krogdahl and Dahlsgard, 1981). The nutritional value of unprocessed poultry manure deteriorates rapidly. Hence, the immediate processing of poultry manure to prevent its rapid decomposition and save its nutrient properties is, thus essential.

Composting or the biological degradation of poultry manure produces a material with several advantages with respect to handling by reducing volume, mass of dry matter, odours, fly attraction and weed seed viability (Sweeten, 1980). Composting poultry manure under anaerobic conditions helps for greater recovery of final product and negligible loss of nutrients particularly nitrogen (Kirchmann and Witter, 1989).

Even though poultry manure contains more amount of nutrients than other manures, the research work on poultry manure is less, since poultry population is concentrated only in certain areas and hence the manure availability also. Moreover poultry manure containing more nutrients, if applied to cassava, may even help to reduce the application of inorganic fertilizers. With these ideas in view, the present study was formulated.

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MATERIALS AND METHODS

Field experiments were conducted to find out the effect of fertiliser levels and organic manures on the quality of cassava tubers at Veterinary College and Research Institute Farm, Namakkal during 2001and 2002. The popular hybrid of cassava, H 226 was tried as test crop. Two fertiliser levels viz., 100 per cent recommended NPK (60:60:150 kg/ha^{-1}) and 75 per cent recommended NPK (45:45:112.5 kg/ha^{-1}) were assigned to main plots. Six organic manurial treatments viz., FYM (25 t/ha^{-1}), Poultry manure (10 t/ha^{-1}), composted poultry manure (10 t/ha^{-1}), FYM (12.5 t/ha^{-1}) + poultry manure (5 t/ha^{-1}), FYM (12.5 t/ha^{-1}) + composted poultry manure (5 t/ha^{-1}) along with control (no organic manure) were assigned to sub plots. The treatments were fitted in split plot design replicated thrice.

Disease free setts of 20 cm length were prepared and planted at a spacing of 90 x 90 cm. Manures were applied as per treatments and thoroughly incorporated at the time of forming beds and channels.

The entire dose of phosphorus, 50 per cent of recommended dose of nitrogen and 50 per cent of potassium were applied basally at the time of planting and the remaining 50 per cent of the recommended dose of nitrogen and potassium were top dressed in two equal splits at third and fifth month, respectively, as per the treatments. After initial and life irrigation on third day, subsequent irrigations were given to the experimental field at an interval of ten days. Three hand weeding on 30th, 60th and 90th day after planting and an earthing up at 120 DAP was given commonly for all the plots.

Composting of poultry manure was initiated using poultry manure and chopped sorghum straw. The bits of sorghum straw were mixed with poultry manure at the rate of 1:10 and packed in dug pits and closed with mud plaster. To maintain optimum moisture, water was sprinkled before it is being packed and left under anaerobic conditions for 75 days as suggested by Sims *et al.* (1992) for composting