

Comparative study of organic and conventional farming of pineapple

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ABSTRACT

A comparative study on conventionally (NPK fertilized) and organically grown pineapple cultivated in the soil containing its own ratoon waste was carried out. No differences between the treatments were observed in the growth rate of the plants while fruit characteristics like total weight, weight of fruit without crown, length and breadth of the fruit was significantly lower from compost treated plants. The pH of the soil, a factor that could adversely affect the fruit yield was to be maintained near neutral value. 'D' leaf N and K levels of the plants from conventional treatment exceeded those from organic one but N seemed only to influence yield. There was significant difference between the two treatments in total weight of fruit, weight of fruit without crown, length and breadth of fruit, whereas TSS of the fruits was not significantly influenced. Organic fertilization of pineapple with its own ratoon compost based on current N doses needs to be standardized so that there should not be shortage of nutrients and reduction in yield. However, organic farming using pineapple ratoon compost improved the soil condition and fertility.

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Organic agriculture is a production system, which excludes the use of synthetic fertilizers, pesticides, growth regulators and other chemicals. It relies on crop rotations, crop residues, composting, legumes, green manures and use of natural insecticides or fungicides to maintain soil productivity and tilth, supply plant nutrients and control of insects/pests and weeds. Generally yields of conventionally grown foods are similar or slight higher than those from organic agriculture (Knorr and Vogtmonn, 1983; Hodges, 1983). However, availability of the nutrients from the soil remains more or less the same under both cultivation systems (Alvarez *et al.*, 1988) but organic agriculture improves soil conservation, soil ecology and environment (Rubina *et al.*, 1999; Shiv shankar, 2000; Ram and Rajput, 2000).

Pineapple crop is taken for two or three ratoons, after which the new planting is preferred. The ratoon waste instead of thrown out or destroyed can be made into compost and recycled in the field to add nutrients. Although much research about yields, soil fertility and nutrition of pineapple has been done in recent years (Moreau *et al.*, 1991; Singh *et al.*, 1983; Neog *et al.*, 1995), there is no data related to this fruit when organically grown on its own ratoon waste. However, there is little data relating to this fruit when organically grown on soil from banana plantation (Alvarez *et al.*, 1993).

To understand response of pineapple when organically grown on its own ratoon waste compost, a comparative study of its cultivation by conventionally (NPK fertilizers) and organically (ratoon waste compost) has been carried out. The present investigation discusses

its impact on growth and development of pineapple var. Kew, grown under rainfed conditions of Andaman and Nicobar Islands, India (10° 31' and 13° 42' North latitude and 32° 14' and 94° 16' East longitude, receiving annual rainfall 3180 mm; maximum temp. 31. 18° C and minimum temp. 23.36° C and 82% RH).

MATERIALS AND METHODS

The experiment was conducted in cemented beds with pineapple (*Ananas comosus* L. Mers.) var. Kew. The plants were grown in a soil prepared with a mixture of soil and sand (2:1) in 3.75 x 0.60 m size cemented beds, containing 30 plants/ bed. The chemical characteristics of initial soil mixture are given in Table 1.

Table 1 : Chemical characteristics of initial soil

pH	6.0
EC	0.02 dms
OC	0.20 %
Total N	0.017%
Average N	91.97 (Kg/ha)
Average P	10.0 (Kg/ha)
Average K	50.0 (Kg/ha)

Suckers uniform in shape and size (350g) were planted in cemented beds under rainfed conditions with standard spacing of 25 x 60 cm. The plants received uniform irrigation only during acute dry season *i.e.* Dec.-May. The experiment was laid in CRD with five