

Integrated Effects of Organic and Inorganic Fertilizer on Growth and Yield of Papaya (*Carica papaya* L)

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Abstract

Papaya is valued mainly as a fresh fruit. In addition, the papain content of the fruit is used as a tenderizer and beer clarifier. Until recently, its cultivation as a commercial crop has not been well organized in many tropical countries. Recently, sustained increase in the demand for papaya fruits, especially those organically produced, suggests the need for intensification of papaya production and an upgrade of production to medium or large scale orchards. Moreover, the expansion of the poultry industry in many of these countries has given rise to a lot of poultry waste that needs to be converted. To this end, a study was conducted with the aim of determining the response of papaya to varying rates of organic poultry manure, alone or in combination with inorganic fertilizer. The experimental design was a randomized complete block design with four replications. The treatments were: (1) organic fertilizer alone (OF), (2) inorganic fertilizer alone (IF), (3) half organic and half inorganic fertilizer (HOF + HIF), (4) half organic fertilizer (HOF), (5) half inorganic fertilizer (HIF), and (6) no fertilizer (NF).

The results revealed that application of inorganic fertilizer gave higher stem height than other treatments. This was only significant when compared with the control. Other morphological parameters (stem girth, leaf area, and days to 50% flowering) were better in treatments with organic fertilizer. The highest papaya fruit yield of 83.5t/ha/yr obtained with OF was 16 and 34% higher than HIF and NF respectively. The results further revealed that while some soil properties like potassium remain unchanged, elements like Nitrogen and organic matter slightly increased with an increase in organic manure, but not with inorganic fertilizer. The use of organic fertilizer has the potential of being a good material for production of papaya and improvement of soil properties. It may serve as a better alternative to inorganic fertilizer and soil amendment material for resource poor farmers.

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