202/B

Residual effect of applied organic manure on crop performance of coconut

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Organic coconut cultivation has rapidly gained popularity due to many advantages including the premium price paid for the products and increasing demand for fresh and processed products in the world market. Although there are numerous advantages of organic cultivation of coconut, continuous supply of nutrient through organic manure is still challenging due to lack of availability of required input material. Therefore, growers tend to apply organic manure from time to time depending on availability of manure. However, changes in palm nutritional status and nut yield of coconut after discontinuation of organic manure application are not well understood. Therefore, this study is aimed at assessing the residual effect of applied organic manure, compared with green manure and conventional fertilizer. A field experiment was carried out on coconut, on a long-term (10year) basis, with three organic manures applied as separate treatments, namely, goat manure, cattle manure,and poultry manure,as well as a green manure (Gliricidia), against conventional fertilizer (adult palm mixture). After termination of manure and fertilizer application, palm nutritional levels and nut yields were evaluated for all five treatments up to five years.

Index leaf nutrient levels as an indicator of palm nutritional status shows that three years after termination of manure application, only potassium was below the critical levels in control and conventional fertilizer treated palms (0.72% and 0.95%, respectively) while organic manure treated palms had all major nutrients (N, P, K and Mg) at sufficient levels. However, by 5 years after termination of nutrient supply from fertilizer/manure, nitrogen and potassium, the two major essential nutrients had dropped below the critical levels irrespective of the treatments. Nut yield shows that the poultry manure applied treatment has given significantly higher ($P<0.05$) nut yield up to four years after stopping manure application while control treatment (no fertilizer)gave the lowest nut yield throughout the experimental period. After termination of fertilizer application there was a declining trend in yield of all treatments. However, the rate of yield decline has been lower in organic manure applied treatments compared to conventional fertilizer applied treatments. It indicates that manure applied palms have resilience to hindered supply of nutrients even five years after termination of manure application.

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