EFFECT OF COIR DUST ON MINERALISATION OF UREA NITROGEN IN COCONUT GROWING RED SANDY LOAM SOIL (Arenic Paleustults)

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Heavy leaching loss of nutrients, particularly nitrogen, consequent to high precipitation is common with laterite and lateritic soils in humid tropical regions of India. Simulated leaching studies revealed this loss to be as high as 70 per cent (Anonymous 1985). Regulated supply and controlled release of nutrients, and attempts to retain the applied nitrogen in effective root zone of perennial crops call for agencies to immobilise and/or retard nitrification of the applied source to reduce the losses. In view of earlier investigation on effect of coir dust on performance of coconut seedlings in coastal sand (Nambiar, Wahid and Pillai, 1978) and on efficient use of fertilizers (Nambiar et al. 1983), an attempt was made to test this material for its immobilising inhibiting properties.

250 g. soil enriched to contain 200 ppm N using urea alone and urea in combination with retted and unretted coir

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dust in two propertions (1:1 and 9:1) was incubated for 110 days at 25 ± 2°C. Samples were drawn at 10 day interval and analysed for NH_4^+ - N and NO_3^- N. The moisture content was maintained at 80 per cent of field capacity throughout the incubation period. The corrections for control were made and the data is presented as per cent of soluble applied N.

The results showed that blending of urea with unretted coir dust (1:1) resulted in accumulation of NH_4^+ - N and retted coir dust in the same proportion led to lowest production of NH_4^+ - N. The other combination of retted and unretted coir dust (9:1) showed trend closer to urea in combination with retted coir dust (1:1). Viewing the NO_3^- - N production in reference to NH_4^+-N production, revealed that NO_3^- - N appeared to be withdrawn from the system during incubation period when urea was used in combination with unretted coir dust (1:1). The other combination of coir dust produced lower No_3^- - N than urea. On considering the total mineralised N, it was seen that the production was consistently lowest when urea was blended with retted coir dust (1:1). Unretted coir dust (1:) produced lower mineralised N than urea alone and other combinations (9:1) showed intermidiate behaviour. The results showed that blending of urea with coir dust was helpful in controlled and regulated gradual release of applied nitrogen. The variable behaviour in cutting down mineralisation of different stages can be explained based on release of different organic contituent. (tannins/quinds/phenols and unidentified degraded

compounds). The coir dust contains around 30 per cent legnin and 35 per cent cellulose and it can be said that immobilisation due to this material is not as high as it can be with other organic sources. The effect of regulated release may be accounted due to combined effect of immobilization and inhibition in nitrification.