

The effect of application of urea with and without dolomite on soil nitrogen in a coconut growing sandy soil

Urea and dolomite are not applied simultaneously because the presence of dolomite could enhance the rate of release of ammonia from urea. The present study examined the fate of nitrogen content of a sandy soil treated with urea, both in the presence and absence of dolomite during 3 weeks period from the start. This investigation was carried out on a regosol located in IL1 agro-ecological region. The experiment comprised of five treatments viz., T1 - control, T2 - dolomite only (835 kg ha⁻¹), T3 - urea only (666 kg ha⁻¹), T4 - separate application of urea (666 kg ha⁻¹) and dolomite (835 kg ha⁻¹) and T5 - application of 1 : 1.25 urea : dolomite mixture at 1500 kg ha⁻¹. Each treatment had 3 replicates, the plot size was 1.5 m x 1.5 m, and a Complete Randomized Block Design was selected. All fertilizers were broadcasted on the surface and incorporated to the soil up to 4 cm depth. Representative soil samples were drawn from 10 cm depth in each treatment and analyzed for pH, moisture, total nitrogen, ammonical nitrogen and nitrate nitrogen before treatment application and then at every two days interval after the treatment application up to 22 days. Soil temperature was also recorded daily. The moisture content of the soil (wet basis) was 1.4 - 1.8 % and soil temperature was in the range of 29 - 37°C during the study period. The bulk soil pH of the urea only (T3), urea + dolomite (T4 and T5) treatments increased by one unit within ten days and thereafter decreased gradually. The bulk soil pH of the dolomite only (T2) treatment increased only by 0.3 units. The total N of soil showed the maximum increase of 125 ppm in all urea treatments until 4 days after the application and thereafter it decreased gradually to 60% of the difference between the peak and the initial values in 14 days. The above rates of decrease were not significantly different between urea only (T3) and urea + dolomite (T4 and T5) treatments. Despite the decrease of total N, ammonical N content of the soil increased in T3 and T4 treatments by 10 times and in T5 treatment by 13 times in 6 days. No significant effect of dolomite was observed in NO₃-N content. The overall results showed that when soil treated with urea or urea and dolomite, the total soil N rapidly increased and remained for 4 days and thereafter gradually decreased and the rate of decrease was not significantly affected due to dolomite application with urea. However, detail studies are warranted to firmly establish whether or not the mixing of urea and dolomite *in-situ*, at the rates tested, would not affect N use efficiency or loss as ammonia.