The Search for Appropriate Urea Fertilizer Formulations for Oil Palm at the Main Nursery Stage

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Nursery experiment to evaluate urea fertilizer formulations on oil palm

Raising robust oil palm seedlings requires adequate moisture and nutrient supply especially that of N. However, high N losses severely restrict the use of urea as a source of nitrogen. Urea-based compound formulations incorporating K, Ca and/or Mg have the potential of enhancing urea-N utilization, but information on their efficacy is scanty. Compound (15:15:15) and bulk blended urea–based NPK and a bulk blend of gypsum urea were evaluated with 3-months old oil palm seedlings on a Typic Kandiudult (Rengam series) over a 7-months period. The normal recommended N rate and half of it were used for the urea NPK fertilizers, and only the normal rate for gypsum urea. Nitrogen uptake and utilization from the fertilizers was quantified by the ^{15}N isotope dilution technique. Dry matter yield was not significantly different among the fertilizer treatments independent of the rate applied, but nitrogen utilization was markedly greater at the half rate of application (60% versus 33-38%). Much higher N concentration, uptake and N utilization efficiency (%NUE) was obtained with gypsum urea most likely because of Ca minimizing volatilization of urea-N. There were no differences in N uptake between bulk blend urea and urea-based NPK for both rates of application. Overall, gypsum urea showed greater potential as a source of N as well as Ca for oil palm seedlings on this soil.

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