

Evaluation of Ground Serpentine Rock and Ground Magnesium Limestone as Magnesium Sources for Oil Palm Nursery Seedlings

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Treatment of ground magnesium limestone and ground serpentine by boiling in 5 ml of concentrated nitric (HNO₃) acid and 10 ml of concentrated hydrochloric (HCl) acid for 1, 2, 4, 8 and 16 hours in the laboratory showed mean magnesium oxide (MgO) content of 18.2 and 29.20 per cent, respectively. The experiment for the two sources of magnesium (Mg) was carried out on oil palm nursery seedlings grown in large polybags with coarse river sand as the medium of growth. The rates were 5, 10, 20 and 30 g of MgO, applied in planting holes at the time of transplanting of three-month-old pre-nursery seedlings. Initially, up to four months, the leaf 3 Mg levels were slightly higher in ground serpentine treatment, although the difference in values was statistically not significant when compared to the rest of the treatments. As the age of the seedlings increased, there was a continuous decline in leaf Mg levels for all treatments. At the eighth month, the Mg levels of oil palm leaves grown with ground magnesium limestone were significantly higher than the control treatment with no Mg. The source of Mg had no influence on the vegetative growth of seedlings, as all the treatments including control showed no significant differences for the measured growth parameters. In conclusion, ground serpentinite rock is comparable to ground magnesium limestone as a source of Mg. The rate of 30 g MgO per plant, when placed in the planting hole, is insufficient to meet the oil palm needs after the fourth month of application. Higher rates or different methods of application may be needed and to be studied in subsequent trials.

Keywords: *Ground serpentine, serpentinite rock, ground magnesium limestone, ultrabasic igneous, ultramafic, oil palm seedlings*