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DOWNWARD MOVEMENT AND TRANSFORMATION OF PHOSPHORUS AFTER LONG-CONTINUED FERTILIZER APPLICATION TO COCONUT.

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Available phosphorus ($NaHCO_3$ extraction) measurements in the profile of a sandy loam soil down to 105 cm depth, after 7 and 8 years of fertilizer application to coconut in the Semi-Dry Lowland of Sri Lanka showed that the surface soils (0-15 cm) of concentrated superphosphate tratement had higher P values (60 and 89 ppm) than the rock phosphate treatment (3 and 16.5 ppm). At 40 cm depth conentrated superphosphate treatment had 6 and 30 ppm P whereas the rock phosphate treatment had almost zero P at and below 40 cm depth.

Phosphorus in the soil profile after 8 years of fertilizer application was fractionated by the method of Chang and Jackson. The results showed that the concentrated superphosphate treatment increased the Al-P fraction and to a lesser degree Fe-P and Ca-P. Rock phosphate treatment increased the Ca-P fraction and to a lesser extent Fe-P and Al-P. Sodium bicarbonate extractable P was shown to be very highly correlated with Al-P fraction.

$\frac{\text{Al-P}}{\text{Fe-P}}$ decreased with increase in soil depth suggesting that, with time, Al-P gets transformed into Fe-P by refixation or is removed by the tree.

Based on the P movement and transformation results it is proposed to use concentrated superphosphate as the P fertilizer for cocnut soils of the Dry Zone in Sri Lanka in place of the presently used rock phosphate.