

**EVALUATION OF NUTRIENT RELEASING
PATTERN FROM NANO FERTILIZER COMPARED
TO CONVENTIONAL FERTILIZER APPLIED FOR
COCONUT**

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ABSTRACT

Coconut is well grown in sandy soils with high water infiltration rates and low nutrient retention capacity, such as sandy textured soils with low organic matter contents. Conventional fertilizers applied to supply nitrogen and potassium for coconut are readily soluble and prone to leach. Fertilizer with slow release properties would be beneficial because of the ability to provide nutrients throughout the year. The objective of this experiment was to study the releasing pattern and to quantify the leaching losses from nitrogen and potassium nano fertilizer in comparison with conventional fertilizer.

The experiment was conducted as a pot trial with Madampe soil series (Aquic Quartzipsamments). The treatments were control (no fertilizer), conventional fertilizer (as recommended by Coconut Research Institute) and nano nitrogen fertilizer at total replacement of N and 50% replacement of N and nano potassium fertilizer with full replacement and 50% replacement of K requirement. The soil samples were collected at two weeks intervals and leachate was collected at monthly intervals. Soil was analysed for nitrate nitrogen, total nitrogen, exchangeable potassium and leachate was analysed for potassium, nitrate nitrogen and ammonium nitrogen.

The results indicates that nano fertilizer applied treatments to supply N has the ability to maintain higher nitrate level in soil even the 8th week after treatment application while the conventional fertilizer (Urea as N source) has lowered its nitrate levels to the condition of control which has had no fertilizer applied. This was also lower than that of 50% of N supplied from nano fertilizer. The highest N leaching was observed in the conventional fertilizer applied treatments.

Potassium leaching from conventional muriate of potash (MOP) compared with the nano K fertilizer indicates that leaching from MOP was significantly higher (4194.46 mg) than that of nano fertilizer applied (2500.72 mg) at same level. However, by the 8th week, there were no difference in soil K levels among MOP applied (0.79 meq/100g) and nano fertilizer (100%) applied treatments (0.8 meq/100g).

These results show that nano fertilizer has potential to reduce nutrient losses through leaching in coconut plantations. However, before giving any recommendations, results has to be verified under field conditions.

Key words: leaching; nutrient releasing pattern; fertilizer use efficiency