

**IMPACT OF SLOW RELEASING FERTILIZER ON  
NUTRIENTS LEACHING AND GROWTH PERFORMANCE  
OF CHILLI (*Capsicum annuum* L.) IN SANDY SOIL**



**BY**

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## ABSTRACT

Over use of inorganic fertilizer leads to the loss of soil fertility especially on sandy soil and Proper fertilizer management can reduce nutrients leaching while enhance the sustainability of crop production. The present experiment was carried out to study the influence of multi - nutrients (NPK) slow release fertilizer on the nutrients leaching and soil fertility status of Chilli in sandy soil at soil science laboratory, Eastern University, Sri Lanka during June to November 2017. This slow release fertilizer was tested in comparison with split application of inorganic fertilizer and farmyard manure in a complete randomized design. These four treatments including control (without fertilizer) were replicated in to four times. In the first part of the experiment leaching column study was conducted. In two weeks interval leachates were analyzed for Nitrogen, Phosphorus and Potassium content.

The results revealed that slow release fertilizer improved the soil fertility through reducing the total leaching loss of Phosphorus (0.557 mg/l) and potassium (0.866 mg/l) from soil columns. Split application of inorganic fertilizer recorded higher total Phosphorus (0.836 mg/l) and Potassium (1.03 mg/l) concentration in leachates. Total leached Phosphorus (0.399 mg/l) and Potassium content (0.63 mg/l) of farm yard manure was lower than slow release fertilizer and split application of inorganic fertilizer. Regarding to leaching loss of Nitrogen, slow release fertilizer recorded the higher total Nitrogen concentration in leachates (0.775 mg/l) than split application of inorganic fertilizer (0.719 mg/l) and farmyard manure (0.393 mg/l). Control, without any fertilizer

or manure recorded least Nitrogen (0.137 mg/l), Phosphorus (0.189 mg/l) and Potassium (0.099 mg/l) leaching.

At the second part of the study field experiment was conducted and the growth and quality parameters were analyzed. According to results growth and quality parameters of Chilli plants were not significantly increased when slow release fertilizer compared with split application of inorganic fertilizer. But highest Nitrate (1.11 mg/g), Phosphorous (7.27 mg/g) and potassium (0.84 mg/g) content were detected in Chilli plants which treated by slow release fertilizer. At harvest highest soil Nitrogen content recorded by slow release fertilizer treated soil (0.455 mg/g) and was followed by farmyard manure (0.300 mg/g) and inorganic fertilizer (0.248 mg/g). Among all the treatments Phosphorus availability was higher in farmyard manure treated soil (9.325 mg/g) and slow release fertilizer treated soil ranked second (8.435 mg/g).



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