# INFLUENCE OF CHEMICAL AND NANO-NITROGEN FERTILIZERS ON THE GROWTH AND YIELD OF RICE (*Oryza sativa* L.) CULTIVAR "Bg 250"



By

R. M. NIWANTHAKA NAMAL RATHNAYAKE



DEPARTMENT OF AGRICULTURAL BIOLOGY
FACULTY OF AGRICULTURE
EASTERN UNIVERSITY
SRI LANKA

2017

# ABSTRACT

Fertilizers play an important role where the ancient chemical fertilizers are replaced with nano and bio-fertilizers with their efficiency and environment friendly nature. Primary use of adding Nano fertilizer is fast uptake of nutrients from the soil and giving better and quicker yield. The symbiotic exchange between soil and plant system is very efficient. A pot experiment was conducted at the Rice Research Station, Sammanthurai, Sri Lanka involving the use of NPK fertilizers and Nano-Nitrogen fertilizer to test the growth attributes and yield of rice cultivar 'Bg 250'.

The experiment was laid out in the Randomized Complete Block Design with five treatments and four replications and experiment was conducted in plastic pots (25cm height and 40cm diameter). The seeds were wrapped with net cotton cloth and 3 days after germination, the uniform and healthy seedlings were transplanted in the plastic pots. Number of 10 seedlings were raised in each plastic pot. There were altogether 20 plastic pots. Five treatments viz; $T_1$ – Control (No fertilizer), $T_2$ – 100% recommended chemical fertilizer (Urea, TSP and MOP), $T_3$ – 75% Urea + 25% Nano- Nitrogen fertilizer, $T_4$ – 50% Urea + 50% of Nano- Nitrogen fertilizer and $T_5$ – 100% Nano-Nitrogen fertilizer were applied.

The results revealed that there were significant ($p<0.05$) differences between treatments in the tested parameters. The application of 100% Nano-Nitrogen fertilizer has given the highest growth performance with regard to plant height (57.9cm), number of tillers plant$^{-1}$ (6), flag-leaf length (68.6cm), plant dry weight (9.9g), chlorophyll contents (chlorophyll a - 1.7mgg$^{-1}$, b - 1.4 mgg$^{-1}$ and total chlorophyll – 3.1mgg$^{-1}$), yield and yield components.

# TABLE OF CONTENTS