

**EFFECT OF ARBUSCULAR MYCORRHIZAL FUNGI ON GROWTH AND YIELD OF LOWLAND RICE (*Oryza sativa* L.) INTERCROPPED WITH VETIVER GRASS (*Chrysopogon zizanioides* L.)**

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Rice (*Oryza sativa* L.) is the staple food of more than half of the global population. Conventionally, rice is grown under lowland conditions. Hence, the colonization of arbuscular mycorrhizal fungi (AMF) is rare. Therefore, attempts were made to enhance the AMF colonization by increasing indigenous AMF population in lowland rice with field application of inoculants and intercropping an efficient AMF symbiont [Vetiver grass (*Chrysopogon zizanioides* L.)]. A field experiment was carried out to investigate the effect of enhanced AMF colonization on the growth and yield components of lowland rice grown under two nutrient management systems (NMSs) namely, conventional (CNMS) and organic (ONMS) in the Research Unit of the Faculty of Agriculture, Rajarata University of Sri Lanka. The experimental design used was a split plot with three replicates. Both NMSs were randomly distributed in the main plots. The sub-plots were assigned to four treatments: control (T<sub>1</sub>), AMF inoculation (T<sub>2</sub>), vetiver intercropping (T<sub>3</sub>), and AMF + vetiver (T<sub>4</sub>). Microscopic inspection of rice roots detected a 0-15.8% colonization level irrespective of NMSs. The root colonization rates fluctuated with growth stages, starting from very low at tillering stage, reaching its peak at heading stage and then decreasing at harvesting stage. Results revealed that the yield in T<sub>2</sub>, T<sub>3</sub>, and T<sub>4</sub> of CNMS and T<sub>3</sub>, T<sub>2</sub>, and T<sub>4</sub> of ONMS were significantly higher ( $p < 0.05$ ) than the respective control. However, there was no significant difference between the NMSs. None of the yield parameters, such as panicles m<sup>-2</sup>, spikelets per panicle, percentage of grain filling, and 1000 grain weight were significantly different among the treatments and NMSs. At heading stage of rice plant, only the plant height and number of tillers were significantly different ( $p < 0.05$ ) among treatments and NMSs, respectively. Further, the results concluded that rice yield can be increased by enhancing soil AMF population either through periodical field applications of indigenous AMF inoculants, intercropping of vetiver grass, or practicing both irrespective of the field nutrient management.

**Keywords:** Lowland rice, Growth, Yield, AMF colonization, Vetiver