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## Potential Causes for Rice Plant Yellowing in “Maha” Cultivation Season in Year 2023 in Anuradhapura District, Sri Lanka

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### Abstract

Rice (*Oryza sativa*) is the most consumed cereal food in the world and is mostly grown in Southeast Asia. It is a major staple food of Sri Lankans as well. Rice cultivation continues to occupy a vital place in the Sri Lankan economy. Yellowing of rice plants was a major challenge in the "Maha" cultivation season in 2023, and this condition was spread across significant rice-growing areas in Sri Lanka, including Anuradhapura, Polonnaruwa, and Hambantota. Although farmers have used different types of chemical fertilizers and pesticides, the problem has not been overcome. The main visible symptoms of this disease were yellowing, stunting, and inhibiting the growth of the rice plant. Some studies have revealed that the yellowing of rice plants is mainly due to nutrient deficiency, inadequate nutrient uptake, an increase in rice root knot nematode population, a decrease in soil microbial population, and soil acidity. In this study, the soils of Kawarakkulama and Nelumkanniya affected paddy fields from Anuradhapura district, and unaffected paddy fields in Yatihalagala and Barigama from Kandy district were sampled. Affected and unaffected soil samples of each paddy field located in Anuradhapura and Kandy districts were analyzed for nutrient status, nematode population, and microbial population to identify potential causes for rice yellowing. Nitrogen, phosphorus, and potassium contents of soil samples were significantly different in affected and unaffected sites. Phosphorous and potassium were limited in the affected sites of Anuradhapura paddy fields. Yellowing could be related to a deficiency of potassium and phosphorus.

**Keywords:** Nutrient deficiency, nematode population, soil acidity, microbial population

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