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Category	: International Rice Research Conference
Select Theme	: Climate change and environmental sustainability
Endorsement email	:
Keyword 1	: Soil, water, and air pollution
Keyword 2	: Environmental sustainability
Keyword 3	: Mitigation of climate change
Title of Entry	: Nutrient Dynamics and Uptake of Rice in Lowland Soils of Agusan del Norte Subjected to Episodic Flooding
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Select only one type of presentation	: 15 minute oral presentation
Abstract	: The dynamics of NPK and other essential elements in irrigated lowland soils subjected to episodic flooding and uptake of these nutrients at different growth stages were evaluated in Agusan del Norte, Philippines to address the recurring and persistent problems of nutrient deficiencies resulting in poor crop growth due to less tiller production and root growth, higher percentage of unfilled grains and lighter grain weight. Unlike N and P, K is the most dynamic in the soil when subjected to flooding. The medium to high level of exchangeable K inherent in the soil can drop to a critical level during flooding but could rise to optimum level after the flooding episodes. Soil total N is high and can support N requirement of rice to produce up to 4.6 t ha-1. It is the most stable nutrient that is less affected by flooding incidents. Soil available P is high but slightly decreases with episodic flooding. Findings of the study confirm the importance of cation ratio in the soil. The abundance of exchangeable Ca and Mg resulted in a very wide (Ca + Mg):K ratio of 170:1 which resulted in low availability of K . The wide ratio of K:Mg also reduced Mg uptake in rice. Magnesium concentration in rice grain and straw was found to be very low (0.05 to 0.06 %) at all growth stages of the crop, way below the critical limit for deficiency in rice. Despite high Mg concentration in the soil, plants were not able to utilize Mg possibly due to high K and Ca in soils, which was further aggravated by the high application rates of other cations, especially K. Thus, Mg appears to be an important nutrient that is limiting production in the area. Further study on soil K and Mg interactions and their management should be prioritized in the area since this problem is expected to worsen as more intense rainfall and frequent flooding are being experienced due to climate change. Read Less»

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