

Variability of some Important Soil Chemical Properties of Rainfed Low Land Paddy Fields and its Effect on Land Suitability for Rice Cultivation

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ABSTRACT: Available soil Phosphorus, exchangeable soil Potassium, soil pH and soil Electrical Conductivity are some of the important soil chemical properties that effect on rice production. These properties are highly variable in nature mainly due to variation in water availability. Therefore, experiments were conducted to find out the variability of some important soil chemical properties of rainfed lowland paddy fields and their effect on land suitability for rice cultivation in rainfed paddy fields of Dry (Mahananeriya), Intermediate (Ibbagamuwa) and Wet (Alawwa) regions of Kurunegala district. Randomly collected soil samples from the above three areas were analyzed for available soil Phosphorus, exchangeable soil Potassium, soil pH (1:2.5) and Electrical Conductivity (1:5). Thematic maps for each parameter were prepared using Inverse Distance Weighted interpolation technique. Weighted sum technique was used to overlay maps to prepare suitability map as Marginally Suitable, Moderately Suitable, Suitable and Highly Suitable. Results showed that soil available Phosphorus and Electrical Conductivity levels were preferable for rice cultivation in all three regions. Even with this situation, the potential productivity of the lands cannot be obtained due to variability of soil pH and exchangeable Potassium contents. Soil pH and exchangeable soil Potassium in all rainfed paddy areas of Alawwawas far below the optimum levels for paddy cultivation. In terms of these soil chemical properties, 42% and 32% of rainfed paddy fields in Ibbagamuwa and Mahananeriya regions were either highly suitable or suitable but 79% land extent of rainfed paddy in Alawwawas marginally suitable for rice cultivation. Therefore, blanket recommendation of remedial measures cannot be introduced to improve productivity of rainfed paddy fields in all three region and site specific remedial measures will help to overcome the problems of specific soil chemical properties.

Keywords: Lowland rainfed rice cultivation, soil chemical properties, suitability

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