

**VARIATION IN AVAILABLE PHOSPHORUS CONCENTRATION IN SOIL
SAMPLES COLLECTED FROM PADDY LANDS IN SRI LANKA**

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Phosphorus (P) is an essential macronutrient required for the growth and development of plants. Plant-available P concentration in the soil varies due to the differences in soil mineralogy, physical and chemical properties such as texture and pH. It is also affected by agronomic practices adopted by the farmers. Knowledge on plant-available P concentration in soils is urgently needed to achieve sustainable P management. Rice (*Oryza sativa* L.) is the primary crop grown in Sri Lanka, covering many soils. Therefore, the objective of this study was to investigate the effects of the agro-climatic zone (ACZ), major water sources used for rice cultivation (major irrigation, minor irrigation or rainfed), and other crops grown in paddy fields on the variation of available P concentration in rice fields. A total of 1,200 soil samples were collected after harvesting the crop in *Yala* season 2019 and before the beginning of land preparation for *Maha* season 2019/2020, representing paddy lands across the country. Phosphorus concentration in soil samples was determined using the Olsen method. Available P concentration in soil samples varied from 2.1 to 220.1 mg kg⁻¹. More than 25% of soil samples displayed P concentration less than 10 mg kg⁻¹ and 12% of soil samples exhibited P concentration more than 30 mg kg⁻¹. Intermediate Zone soils had higher available P concentration (21 mg kg⁻¹) than that in the Dry Zone (18 mg kg⁻¹) and Wet Zone (15 mg kg⁻¹) soils ($p < 0.05$). Available P concentration in soils among major water sources used for cultivation was similar ($p > 0.05$). Paddy fields used to cultivate vegetables in the previous season (*Yala* 2019) had a higher available P concentration (46 mg kg⁻¹) than the fields used to grow other crops ($p < 0.05$). The ACZ and crop rotation-based variation in soil P availability must be considered when managing P application to rice fields.

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