

THE RESPONSE OF RICE (Oryza sativa L) TO NITROGEN  
AND PHOSPHORUS IN DIFFERENT LAND CLASSES  
IN THE KANDY DISTRICT

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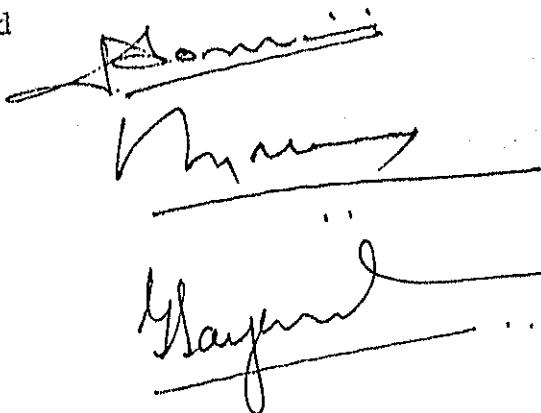
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## ABSTRACT

Studies carried out on the response of rice in three different land classes of an inland valley in Kandy District indicated contrasting differences in growth as well as responses for added nitrogen and phosphorus.

The rice fields of the inland valley were classified into a well drained, moderately drained and poorly drained fields on the basis of physical environment of which, the moderately drained field was found to have suitable soil and hydrological conditions for crop growth during both the wet and dry seasons. However, significant seasonal response in this field indicated the need to limit nitrogen to  $80 \text{ kg. ha}^{-1}$  and  $40 \text{ kg. ha}^{-1}$  for the dry and wet seasons respectively, whereas phosphorus at  $80 \text{ kg. ha}^{-1}$  was beneficial during both seasons.

In the well drained field, nitrogen need be limited to  $40-60 \text{ kg. ha}^{-1}$  during both seasons and applied early during the tillering stage. Grain yields were consistently lower than those in the moderately drained field during both seasons and indicated severe limitations of sink capacity. Microclimate too, was less favourable at this site and under such circumstances, it is unlikely that heavy applications of phosphorus would be beneficial.

The poorly drained field showed seasonal fluctuations in grain yield, lowest being produced during the wet season. Poor growth in this field was related to poor root development. Nitrogen application produced no beneficial effect whereas phosphorus at  $80 \text{ kg. ha}^{-1}$  encouraged root growth. These results would therefore form a useful basis for the formulation of strategies for breeding varieties and fertilizer management practices for the different land classes on the basis of physiological considerations.