

**USE OF REMOTE SENSING AND GIS TO ESTIMATE AREA
UNDER PADDY CULTIVATION**

A PROJECT REPORT PRESENTED BY
D.N. KARUNARATNE
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D.N. KARUNARATNE
Postgraduate Institute of Science
University of Peradeniya
Peradeniya
Sri Lanka

ABSTRACT

Rice is the staple food in Sri Lanka and it is cultivated by farmers on a small-scale in the rural regions principally in the Northern and Eastern plains. The principal cultivation season, known as "Maha", is from October to March. During this season, there is usually enough water to sustain the cultivation of all rice fields. The subsidiary cultivation season, known as "Yala", is from April to September. The crop production is usually estimated as a product of area under the crop and the average yield per unit area. Therefore, it is vital to estimate the area under paddy as accurately as possible. Statistics on area under paddy are collected each season on the basis of parcel wise complete enumeration in the island and this method of crop acreage estimates are tedious, time consuming and subjective. Hence, use of satellite data (image based data) for estimation of crop acreage, considering spatial variability of crop area distribution is worth to be considered. GIS technology can be used as a potential tool for handling remotely sensed data and has capability to support spatial statistical analysis.

The main objective of this study is to examine the suitable remote sensing methods to identify paddy crops and measure the acreages of area under paddy in order to advance the paddy area estimations.

Polonnaruwa district is a major rice growing area in Sri Lanka and for this study Medirigiriya, Hingurakgoda, Lankapura and Welikanda DS divisions of Polonnaruwa were selected as study area. Landsat TM data of 1999 pertaining to the "Maha" season is used in this study to assess and map the rice crops using remote sensing and GIS technique. Area under paddy obtained based on the classification methods of NDVI, supervised and unsupervised classification were compared with the existing census data of that year.

Results show that, areas under paddy obtained from NDVI values are very much similar to census data of the same year than the results obtained from other two methods. According to the findings, the NDVI -based paddy rice mapping could potentially be applied at large spatial scales to monitor paddy rice agriculture on a timely and frequent basis.