ESTIMATION OF PADDY CULTIVATED AREA BY USING REMOTE SENSING FOR YIELD FORECASTING: CASE STUDY FROM PALLEPOLA DIVISIONAL SECRETARIAT DIVISION

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Early prediction of paddy yield is very important for planning and policy making. Geographical Information System and Remote Sensing (GIS and RS) which novel technologies provide efficient and effective procedures to monitor and calculate paddy yield on real time basis. Since rice is the staple food and the single most important crop in Sri Lanka, the study was conducted to perform spatial and temporal analysis of the paddy area estimation by using satellite images of the study area through the utilization of GIS & RS.

The study area was selected based on consisting of almost all small scale (< 50 Acres) paddy fields. Landsat multispectral (30 m resolution) and panchromatic satellite images were used. Then, Normalized Difference Vegetation Index (NDVI), supervised and unsupervised image classifications methods were used to extract paddy cultivated areas. Collected GPS locations on paddy cultivated area and paddy land boundaries created from Google Earth as polygon shape file were used for ground verifications and compared with the data from Department of Census and Statistics for further validations.

Resulting total extent of paddy lands was 95% of the actual figure from the Google sketch. Since, NDVI value range of 0.2 – 0.31 was selected for paddy, consequently, 44% paddy of the actual figure were resulted. However, 80% paddy of actual figure was resulted from supervised classification. Anyway, it was difficult to separate paddy with other vegetation when using unsupervised classification due to more noises of the satellite images.

With the observed results, it was realized that there is a possibility to extract the aimed results by noise free images. Moreover, it suggests that high resolution satellite images can use to approach of desired accuracy. Also, by overcoming these emerged limitations, GIS and RS technology can be applied as an early assessment method which is forecasting of paddy in small scale cultivated area, Sri Lanka.