



## Thesis Abstract

### **Extraction of Paddy Rice Field by Applying Tasseled Cap, NDVI, RVI, of Landsat TM7, A Case Study in Karawang, West Java, Indonesia**

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Early prediction of paddy field area under cultivation is vital to forecasting rice production, rice consumption, rice shortage, and in policy decision making and government budget planning, especially in countries where rice is a staple food. Many countries use the conventional technique of data collection for crop monitoring and yield estimation based on ground-based visits, farmers' reports to village leaders, visual estimates by field officers, and number of seeds planted per hectare. These methods are subjective, very costly, and time consuming.

The aim of this study is to extract the paddy field during rice season, use the supervised classification, the classifying NDVI, RVI and three tasseled cap (brightness, greenness, wetness).

This research used single satellite imagery, Landsat TM7 to predict paddy field based on combining methods in rice irrigation area: supervised classification of original image, supervised classification of tasseled cap transformation, rule base based on NDVI value, rule base based on RVI value, rule base based on brightness, greenness, wetness of Tasseled cap.

Pre-image processing consists of preparing image data from HDF format into ERS format, radiometric correction, and geometric correction. Study area was taken in Karawang district, Tempuran sub-district. Field survey was carried out since 15 to 21 July 2003. Data collection such as date transplanting, date harvesting was done by interviewing farmers.

The statistic analysis method (ANOVA, LSD) was used for supporting distinguish digital number between classes of training area. The results of each method shows that the accuracies of defining paddy field are 99.74% of supervised classification in original image, 99.87% of supervised classification in Tasseled cap transformation, 97.75% of classifying paddy field by NDVI, 98.84% of classifying paddy field by RVI, 0.25% of classifying paddy field by brightness, 98.71% of classifying paddy field by greenness, 64.78% of classifying paddy field of wetness. The supervised classification of the original image and the supervised classification of the tasseled cap image are the good method to identify paddy field. The transformation bands such as NDVI, RVI, and DN of greenness are the fast method and the best method to identify paddy field area. Their accuracies are not less than 97%.