IDENTIFICATION OF PADDY FIELD FROM VERY HIGH RESOLUTION IMAGE USING OBJECT BASED IMAGE ANALYSIS METHOD.
(A CASE STUDY IN RANCAEKEK, BANDUNG, WEST JAVA, INDONESIA)

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Abstract:

There has been a marked increase in availability of high-resolution remotely sensed datasets over the past eleven years. The ability to extract accurate and meaningful information of land-cover from these datasets is crucial if the full potential of these datasets is to be harnessed. The calculation of existing land of food is very important to estimate the national food security. In this case remote sensing can be used as better alternative method in the paddy field identification. The study focuses on paddy field identification using very high resolution imagery, Quickbird imagery acquired in 2008, and applying OBIA (Object Based Image Analysis) as a method for analysis of paddy field in Rancaekek, Bandung, Indonesia. To identify an object, this method not only analyzes the value of a pixel but also to consider the neighbor pixels. A Quickbird image was segmented at three different scales, resulting in a hierarchical network of image objects representing the image information in different spatial resolutions. This allowed for distinguish paddy fields, paddy phase, rivers, trees at coarser scale and paddy's border at fine scale. OBIA identifying wetland by considering many parameters such as land form (shape), soil characteristics (spectral), land texture, and the relationship between wetland and other objects around them (contextual). Drawing on our experience in applying OBIA techniques we found that this method can be used to identify fields of raw land, generating a clear delineation of fields and also classified wetland according to the characteristics of paddy growth phase (water phase, vegetative, generative, and harvest phases) with 86.5 % overall accuracy. Finally, the calculation of paddy fields either whole area or harvest area can be estimated from the results of image classification.

KEY WORDS: Identification, OBIA, Hierarchical Image Object, Paddy field, Paddy growth phase.