AGRICULTURAL LAND COVER MAPPING IN MOUNTAINOUS AREA WITH LINEAR MIXTURE MODELING: A CASE STUDY IN PANGALENGAN, WEST JAVA, INDONESIA

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Abstract:

The objective of the study was to identify agricultural land cover types in mountainous area using linear mixture modeling approach with a case study in Margamukti village, Pangalengan, west Java, Indonesia. The study combines spectral reflectance measurement data and spectral bands of IKONOS image. A four-stage approach was conducted for addressing the effects of mountainous area in image processing and the problem of mixed pixels in signature vegetable features estimation. First, IKONOS image was corrected using normalized brightness equation to reduce topographic effect. The equation is as a function of the geometry between the sun, sensor and terrain slope therefore needs the information of sun azimuth and elevation information when the image acquired, as well as digital elevation model (DEM) data. The second step involved analyzing spectral reflectance signatures obtained through ground survey and its relationship to the satellite image. The third step was to define number of end-members used for mixture modeling. The result indicates that linear mixture modeling can be used to identify agricultural land cover types within mixed pixels much better than does traditional classification method.