**Estimation of Paddy Productivity Using Hyperspectral Data (Hymap) at Booting Stage Based on Spectral Mixture Analysis (SMA)**

**Ketut Wikantika1,2, Alia Saskia Puspitasari2,3, Muhammad Evri3 , Agung Budi Harta1,2, Yoke Faizal3**

1Remote Sensing and GIS Research Division, Faculty of Earth Science and Technology, Ganesha No 10, Bandung 40132 Indonesia

ketut@gd.itb.ac.id, +6285846936050

2Centre for Remote Sensing, ITB, Ganesha No 10, Bandung 40132 Indonesia

agung@gd.itb.ac.id, +628122166186

3University of Suryakancana, Pasir Gede Raya Cianjur 43216 Indonesia

alia.saskia@gmail.com, +6282123609958

4Centre of Technology for Natural Resources Inventory (P-TISDA), Agency for the Assesment and Application of Technology (BPPT), BBPT Bldg 2, Jakarta 10340, Indonesia

evri.jp@gmail.com, +6282122225111

yoke.faizal@gmail.com, +6285280245456

**Abstract**

Rice is a stapple food for Indonesia. Therefore a good agricultural planning requires estimation of paddy productivity. To predict rice productivity is not an easy thing because it often occurs miscalculation of areas, time of harvest and it’s production that affecting in making decision related to food security policies. To solve that problem is needed an alternative approach that able to provide information quickly, continuously and accurately. Hyperspectral remote sensing technology is one of geospatial technology which providing detailed information to distinguish the growth stage of rice crop and its production. This study uses Ciherang varietas that growing at Karawang area, West Java, Indonesia. Hymap data acquired by airborne sensor are used for this study. This paper discusses booting growth stage monitoring of paddy. The Hymap data are processed using spectral mixture analysis method (SMA) to identify and determine spatial proportion called endmember. It uses reference endmember and image endmember as an input for SMA method thus providing two image classification in booting stage based on image endmember and reference endmember. The data has been classified are used to estimate harvest productivity. The Results showed that a classification model to distinguish the growth stage of paddy at booting phase can be used to estimate harvest productivity.

**Keywords** *: Rice, Hyperspectral, Hymap, Spectral Mixture Analysis (SMA), Booting Stage.*