

## **Combination of Alos Palsar and Landsat 5 imagery for rubber tree mapping**

### **ABSTRACT**

Rubber tree has become an important part in global warming mitigation plan because of its capability to produce biomass and to preserve carbon element. Therefore, mapping rubber trees distribution is essential to provide baseline information in rubber tree biomass calculation. This study focused on generating rubber tree map by using combination of passive and active remote sensing data sets. The objectives were to analyze the spectral signature of water, built-up and vegetation covers from remote sensing imageries and to map the distribution of rubber tree. This study utilized ALOS PALSAR and Landsat TM imageries. Five combinations of bands were extracted from PALSAR polarizations, while six vegetation indices (NDVI, GNDVI, EVI, LAI, LSWI and OSAVI) were generated from Landsat TM bands. The spectral signatures obtained from band combinations were used as thresholds in decision tree classification. The results showed that integration between ALOS PALSAR and Landsat image has been successfully applied with accuracy mapping of 87.56%. Combination of ALOS PALSAR bands provides some backscatter value that is capable of separating bare-land from built-up, forest and water-body. LSWI has been able to differentiate between built-up, forest and water-body, while LAI and LSWI have been successfully applied to separate rubber from oil palm and the other vegetation.

**Keyword:** Rubber tree; Alos palsar; Landsat 5; Image separation; Rubber distribution