

## **The use of multi-temporal landsat imageries in detecting seasonal crop abandonment**

### **ABSTRACT**

Abandonment of agricultural land is a global issue and a waste of resources and brings a negative impact on the local economy. It is also one of the key contributing factors in certain environmental problems, such as soil erosion and carbon sequestration. In order to address such problems related to land abandonment, their spatial distribution must first be precisely identified. Hence, this study proposes the use of multi-temporal Landsat imageries, together with crop phenology information and an object-oriented classification technique, to identify abandoned paddy and rubber areas. Results indicate that Landsat time-series images were highly beneficial and, in fact, essential in identifying abandoned paddy and rubber areas, particularly due to the unique phenology of these seasonal crops. To differentiate between abandoned and non-abandoned paddy areas, a minimum of three time-series images, mainly acquired during the planting seasons is required. For rubber, multi-temporal images should be examined in order to confirm the wintering season. The study demonstrates the advantages of using multi-temporal Landsat imageries in identifying abandoned paddy and rubber areas wherein an accuracy of 93.33%  $\pm$ 14% and 83.33%  $\pm$ 1%, respectively, were achieved.

**Keyword:** Multi-temporal satellite imagery; Seasonal crop; Land abandonment; Remote sensing