

## **Understanding rat occurrences in oil palm plantation using high-resolution satellite image and GIS data**

### **ABSTRACT**

Rats are an important vertebrate pest of oil palm in Malaysia. This damage translates into substantial economic loss to the oil palm plantation sector. We used habitat factors derived from GIS data to develop a logistic regression model to predict rat occurrence in a FELDA oil palm plantation in Sabah, Malaysia. Our logistic regression results predicted a high occurrence of rats in young palms areas (<3 years) and in areas near the plantation roads. The rat occurrence areas were further examined using a detailed land cover types generated from a high-resolution satellite image (GeoEye, spatial resolution: 0.5 m). Our results showed that the combination of bare or open areas bushes mixed with partial shades of young palms is important to the survival of *Rattus rattus diardii*, a highly adaptable rat species that dominated the plantation. The combined use of GIS and high-resolution satellite remote sensing techniques enhanced our understanding of rat occurrence in oil palm plantation. Our results suggest these techniques can be used to predict rat occurrence and can be used to guide the rat baiting program in the oil palm plantation.