

Semi-automatic detection and counting of oil palm trees from high spatial resolution airborne imagery

ABSTRACT

Plantation inventory and management require a range of fine-scale remote-sensing data. Remote-sensing images with high spatial and spectral resolution are an efficient source of such information. This article presents an approach to the extraction and counting of oil palm trees from high spatial resolution airborne imagery data. Counting oil palm trees is a crucial problem in specific agricultural areas, especially in Malaysia. The proposed scheme comprises six major parts: (1) discrimination of oil palms from non-oil palms using spectral analysis, (2) texture analysis, (3) edge enhancement, (4) segmentation process, (5) morphological analysis and (6) blob analysis. The average accuracy obtained was 95%, which indicates that high spatial resolution airborne imagery data with an appropriate assessment technique have the potential to provide us with vital information for oil palm plantation management. Information on the number of oil palm trees is crucial to the ability of plantation management to assess the value of the plantation and to monitor its production.

Keyword: Forestry; Image resolution; Remote sensing; Airborne imagery