

Airborne hyperspectral sensor for individual species counting and mapping of Karas (*Aquilaria malaccensis*) in Bukit Nanas F.R, Malaysia.

ABSTRACT

Karas (*Aquilaria malaccensis*) is well known for producing gaharu, a fragrant material which is extremely valuable for cosmetic products manufacturing. Due to its un-permitted harvesting, there is an alarming depletion in the natural forests, which requires some forms of quick monitoring in near real time. A study on the spatial distribution of Karas trees in Bukit Nanas F.R., Federal Territory (FT) was therefore conducted to identify, quantify and map its geospatial distribution using an airborne hyperspectral sensor. Using a Sobel filter and Spectral Angle Mapper (SAM) processing techniques, a digital geospatial distribution map with an accuracy of 89.47% showing 38 individual Karas trees was developed. This study demonstrated that individual Karas trees can be easily counted and mapped with an airborne hyperspectral sensor which may lead to possible estimation of gaharu production for its future sustainable management and conservation efforts in FT, Malaysia.

Keyword: Airborne hyperspectral sensor; Karas (*Aquilaria malaccensis*); Individual tree; Mapping; Precision inventory; Conservation