

Urban tree biomass estimation in Universiti Putra Malaysia (UPM) campus.

ABSTRACT

Biomass is a renewable energy source refers to living and recently dead biological materials that can reduce green house effect and clean surroundings. To estimate tree biomass individually from imagery, it is necessary to clarify the relationship between attributes of stand structure obtained by field measurement and remote sensing image. This study was carried out to estimate tree biomass in Universiti Putra Malaysia (UPM) campus. Five plots were established (40 m x 40 m) and all trees with diameters at breast high (dbh) more than 30 cm, tree height and canopy size were measured. Each trees biomass were calculated by non-destructive method. Results show that tree volume is ranged from 1.75 m³ to 24.73 m³, wood density is ranged from 0.99 t/m³ to 14.10 t/m³. The overall wood densities for five plots (30 trees) are 23.35 t/m³. Meanwhile the biomass estimated is 7,644 t/ha. Study demonstrate strong correlations ($p < 0.05$) between field measurement and IKONOS tree canopy estimates ($r^2 = 0.95$). The results obtained from the analysis are encouraging especially canopy measurement where it can be incorporated to the existing mensuration models. Estimating tree biomass through satellite images are recommended because remote sensing through image processing has potential to estimate biomass in large area.

Keyword: Urban tree biomass; Wood density; Canopy measurement; IKONOS.