Combination of LiDAR and ground survey estimates of the stand volume

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ABSTRACT: The use of airborne LiDAR data with multiple echo, high resolution and high-density point cloud characteristics. It can be solved Digital Terrain Model (DEM) and Digital Surface Model (DSM). Then deduced stand height, crown diameter, stand density and canopy density indicators. After that combined with ground survey data analysis of the reasonableness of the LIDAR data derived stands indicators. It is also evaluated these forest parameters for airborne LiDAR stand volume estimate. Finally, for different conifers establishes a timber volume estimation model.

In this study, we used the average height of the stand CHM, spectral transmittance and the ratio of the maximum number of echoes (stand vertical structure) to establish the volume estimated regression formula. It also used the regression model to derive Taiwan's central mountains of pine, cypress and fir, cedar and hemlock survey area of regression push valuation. The contrast ground field survey of volume correlation coefficients were respectively 0.79, 0.85 and 0.90.

KEY WORDS: LiDAR, Canopy Height Model (CHM), stand height, stand volume