Estimation of 12 Biomass Parameters Using Terrestrial Laser Scanner

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SUMMARY

Biomass has an important role to control the earth's climate and the mitigation of the climate change. Indonesia is one of the countries with rich biomass resources, especially in forestry, plantation, and agriculture sectors. The technology to measure the 12 biomass parameters to calculate the biomass potential in the forestry sector continues to develop. One of the new methods that are being developed is by using Terrestrial Laser Scanner (TLS). In this research, the TLS is applied to measure the 12 biomass parameters, which consist of the parameters of the trunk, crown, and the parameters between trees. The methodology of this research consists of literature study, measurement planning, acquisition data, processing the TLS data, calculating the value of the desired parameters, and validating the TLS measurements by comparing them with the measurement results using measuring tapes. The objects of this research were 2 mahogany trees (Swietenia mahagoni). The result of this research is the measured 12 biomass parameters which are related to the competition between tress. The validation result shows that the difference between the measurement and the measurement using tapes is 1 mm – 7.73 cm. The TLS can be applied in forestry and analyze the complex 3 dimensional shape of the trees, especially the growth plasticity of the crown of the trees. The measurement using TLS has obstacles in areas with the high wind intensity, which causes the shape of the object to be inconsistent.