WHEN ACOUSTIC TOMOGRAPHY MEETS RESISTOGRAPH

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ABSTRACT

The paper presents an integrated approach to assessing the health and structural integrity of trees and wooden logs by combining acoustic tomography with resistograph measurements. Traditional methods are extended through the fusion of data from two complementary diagnostic tools. The first, an acoustic tomograph, detects internal decay and structural anomalies by measuring the propagation delay of elastic waves through wood. The second, a resistograph, assesses the mechanical properties of wood by recording the force required to drill into the material. A set of custom Python scripts has been developed to synchronize and merge data from both devices, enabling a more comprehensive and precise interpretation of internal wood conditions. This combined methodology offers improved diagnostic accuracy and has potential for application in forestry, arboriculture, and wood quality assessment.

Keywords: acoustic tomography, resistograph, wood quality assessment.