

Suggestions for Receiving Reliable Results on Acoustic Emission Testing in Plants

Sabine ROSNER *

* Institute of Botany, University of Natural Resources and Applied Life Sciences,
BOKU Vienna, Gregor Mendel Str. 33, A-1180 Vienna, Austria
sabine.rosner@boku.ac.at

Abstract

During the past decade acoustic emission (AE) equipment developed a lot and single channel systems became quite affordable. In plant physiology, there is a trend to apply AE testing to quantify drought stress of trees by means of AE feature analysis. On contrary to other AE applications, such as pressure vessel testing, no standards or guidelines for handling of the equipment exist. Non-proper handling of the hardware and software can lead to wrong interpretations of the data received. Herein nine suggestions which might be helpful for receiving reliable results on AE testing in plants are presented:

- (1) How to produce a smooth surface in plant stems?
- (2) Contact pressure has a significant influence on the results.
- (3) Mounting media and sealing wounds.
- (4) How can be proper sensor coupling tested on a stem?
- (5) Is attenuation associated with moisture content?
- (6) Pre-testing for sensor coupling in leaves is necessary.
- (7) Hardware setup: Detection threshold and waveform setup.
- (8) Information on background noise is necessary.
- (9) Data analysis: Getting rid of scrap.

The presentation should initiate a discussion including AE companies, AE experts in traditional applications as well as plant physiologists about the possibilities and limitations of the application of AE technology in plants. The outcome should result in some kind of manual for AE applications in plants.

