Non-Destructive, Real-Time Tracking of Relative Water Content and Stress Responses in Plants

The University of New Mexico
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Background

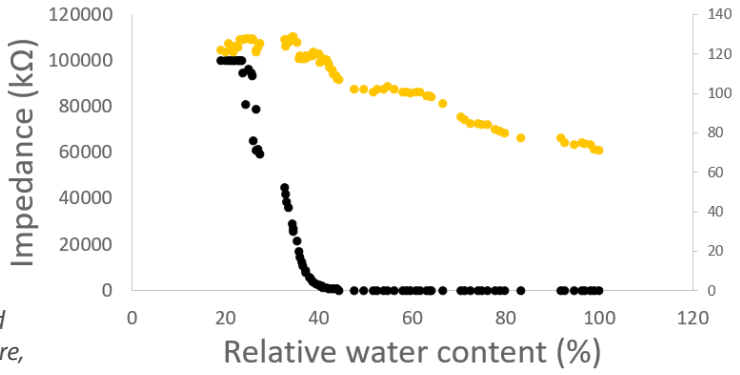
Plant water potential has long been recognized as a central regulator of plant physiology and growth. An accurate measurement of plants and their water status is essential in order to understand the effects of different types of water supply on plants in the irrigation and agricultural industries. Understanding plant water status is also important for the breeding of drought-tolerant plants, management of irrigation systems, and reviewing the mechanistic effects of water deficits on plants. Current classic methods for measuring water potential and relative water content are destructive to the foliage and time consuming. In addition, existing methods generally require users to apply complex algorithms and model equivalent circuits to understand the results. There exists a present need for more reliable techniques of measuring and monitoring plant water status to provide a powerful tool for crop management.

Technology Breakthrough

Researchers at the University of New Mexico have developed non-destructive, real-time tracking system to measure the water content and stress responses in plants. Sensors are used for real-time assessment of plant water potential and relative water content, offering unparalleled ability to monitor plant water use and demand. The small size, low power consumption, and potential for wireless communication make this system ideal for field use. Applications could include using the signal to control irrigation systems for home users (indoor and outdoor), in agricultural settings from small to large scales, monitoring of plant function in natural and experimental environments, and testing the efficacy of controlled environment systems.

Key Advantages

- *Non-destructive and real-time tracking of relative water content of plants and plant tissues*
- *Improved precision and efficiency during monitoring*
- *Potential to be early warning surveillance system for plant water status monitoring*
- *Real-time monitoring of metabolic events without significant damage to the plant*
- *Low-cost and easily applied*
- *Increases ability to monitor plant water use and demand*
- *Applications in plant monitoring for irrigation, agriculture, home use, etc.*



Impedance tracking relative water content at two frequencies.

Intellectual Property

Filed Provisional Application

Contact

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