WESTERN SYDNEY UNIVERSITY

Nanoscale Organisation and Dynamics Group

The application of MRI and micro-CT to understanding Plant Structure and Function

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Abstract The non-invasive 3D imaging of plant structures is still in its infancy but has the potential to enrich and extend our knowledge of how plants interact and adapt to their ever-changing environment. The ability to study intact living plant tissues is now possible through high resolution MRI. The morphology and anatomy of opaque tissues can be imaged simultaneously with an analysis of its biochemical composition. The plant's vascular system is particularly sensitive to any perturbations and therefore we have limited knowledge on how water and which suite of metabolites traverse the long distances between a root, stems, leaves and fruit. MRI can overcome these limitations as it allows flow to be monitored *in vivo*. Similarly, micro-CT has the capacity to rapidly assess the spatial relationships between tissues in any plane. The characterisation of air and gas spaces in tissues that are difficult to section is also now possible. This seminar will outline some of the applications that these imaging techniques can offer to plant science. Advances in resolution and the application of appropriate contrast agents will open a new exciting chapter for resolving questions plant scientists have pondered since Robert Hooke first discovered the presence of cells in 1665.

Profile Suzy Rogiers is a principal research scientist with the NSW Department of Primary Industries and adjunct Professor with WSU. She has researched fruit development and plant water relations for the last 15 years and has a particular interest in plant responses to abiotic stresses. She has published on topics such as cell senescence, fruit split, source-sink relations, water-use efficiency, night-time transpiration and root-zone temperature effects on grapevine physiology and berry development. Her work relies on a combination of field based and controlled environment studies. She has been collaborating with Prof. Bill Price and the Nanoscale Organisation and Dynamics Research Group at UWS for the past 5 years. Currently she is involved in an ARC Industry Transformation Training Centre project in conjunction with WSU and the University of Adelaide exploring vascular transport in grapevines.

Staff and students at all levels are welcome to attend.

Venue and Time:
This talk will be held at 2 pm on Friday September 22 at the Campbelltown Campus in Building 21, Lecture Theatre 5 (CA.21.G.03).

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