

Robert Furbank, Ph.D.

Wednesday, September 25, 2:15-3:00 p.m.

Phenotyping photosynthesis, biomass and growth from the pot to the paddock

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Annual improvements in yield potential of the two major cereal crops rice and wheat have been declining for the last two decades. Yield improvements have historically been based on spectacular green revolution improvements in harvest index and grain number. The potential for further improvement in these parameters is largely exhausted. It is widely believed that a quantum improvement in yield must now come from increased biomass through improved radiation use efficiency and photosynthesis.

This paper describes the use of a range of phenotyping tools developed at the High Resolution Plant Phenomics Centre for selecting germplasm for enhanced photosynthetic performance and growth from seedling stage to mature canopies in the field. These phenomics platforms use a combination of color imaging, Lidar, thermal, hyperspectral, and pulse modulated chlorophyll fluorescence imaging in 2-D, 3-D and 4-D.