

Miniature probes help tackle climate change

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Promising research on the use of miniature pressure probes to gauge the water status of wheat leaves could ultimately help farmers adapt to the effects of climate change.

Researchers from the University of Western Australia's Institute of Agriculture (IOA), working with the CSIRO and [German scientists](#), have trialled the ZIM-probes, invented by German Professor Ulrich Zimmerman for use in irrigation scheduling of horticultural crops.

They wanted to find out if the tiny probes, which measure 10mm in diameter and weigh only 5.5g, would work with [agricultural crops](#) - especially wheat, which has more delicate leaves than the kinds of plants the probes were originally designed for.

Their results, published this month in *Plant and Soil*, an international journal on plant-soil relationships, show that the probes can be used to successfully measure how well [wheat plants](#) maintain the [water](#) balance of their leaves, particularly when challenged by poor water supply.

The research is expected to pave the way for breeders to identify more drought-resistant genotypes and in turn offer farmers stronger strains of wheat to help cope with [changing climate](#) conditions.

The pressure probes are clamped to leaves using small magnets and connected to transmitters, which radio detailed continuous data on the water status of plants to a nearby control box. The control box uses [mobile phone technology](#) to convey the real-time data to a server, enabling the data to be accessed anytime, from anywhere in the world, via the internet.

Dr Helen Bramley, a research associate with IOA, said previous measurement methods had been time-consuming and destructive to plants while providing only limited information. In contrast, the Zim-probes were non-invasive, quick to set up, and could be safely left on the plants for weeks at a time.

The probes, along with the continuous monitoring, also provided far more detailed information at a resolution not previously achievable - an unexpected but welcome development which has paved the way for new research into plant water use.

"In addition to the potential for screening more drought-tolerant germplasm in a range of crops, there are a lot of things I want to do now because it has opened up new avenues to explore in terms of the physiology and the mechanisms controlling water use and leaf hydration," Dr Bramley said.

The research is part of a wider focus on researching the impacts of the predicted future climate on cereal crops, particularly wheat, to adapt to future conditions and ensure a sustainable future for the production of wheat, which is Australia's most important agricultural crop.

Provided by University of Western Australia

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