DROUGHT RESEARCH

ACPFG
AUSTRALIAN CENTRE FOR PLANT FUNCTIONAL GENOMICS PTY LTD

DROUGHT IS A TOUGH TRAIT TO STUDY;

to place it into perspective there are over 100,000 genes in a wheat plant

AND OVER 1000 ARE ACTIVATED IN RESPONSE TO DROUGHT.

THE COMPLEXITY OF the drought response is due to the many different types of drought that a plant must face, and the numerous strategies that plants use to minimise the effects of drought (which often involves lack of water, high temperatures and high light).

THESE STRATEGIES INCLUDE:

- Having decreased numbers of stomata (holes in the plant tissue where water escapes) on the leaf surface, therefore allowing less water to escape from the plant
- Changing the leaf angle so leaves are not facing direct sunlight
- Increasing the waxiness of the leaf surface
- Improving root structures so more water can be accessed
- Producing antioxidants that help buffer the plant against the stress.

OUR MAIN GOAL now is finding new sources of drought tolerant plant material and creating a genetic map or gene library of all the genes involved. This gene library will be used as a reference point for helping understand drought tolerance.

MONITORING ROOT GROWTH

THE NEXT STEP is to introduce these tough genes into breeding lines. This can be done through transgenic technologies or through conventional breeding programs where elite parent plants are selected and molecular markers are used to track the genes through the program.

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ACPFG Research

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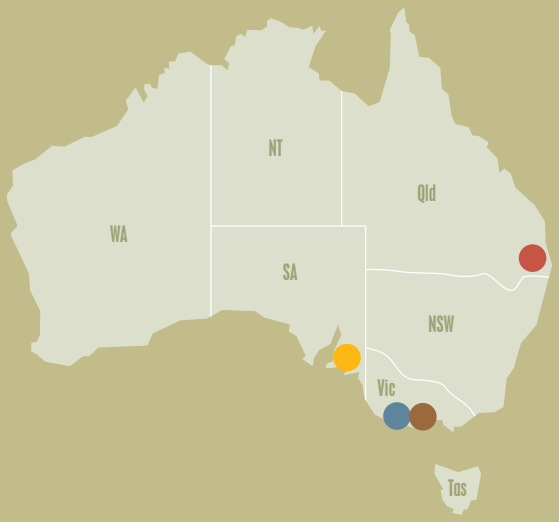
The Australian Centre for Plant Functional Genomics (ACPFG) uses functional genomics to improve the resistance of wheat and barley to hostile environmental conditions such as drought, salinity, frost and mineral deficiencies or toxicities. These stresses, known as abiotic stresses, are a major cause of cereal crop yield and quality loss throughout the world.

To meet our mandate of delivering research outcomes nationally, ACPFG has four nodes throughout Australia. The headquarters is at the University of Adelaide's Waite Campus, with other major research nodes at the University of Melbourne, the University of Queensland and the Department of Primary Industries (DPI) at La Trobe University.



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Grains Research & Development Corporation

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