

# Digging deep to drought-proof Australian barley

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PhD student Hannah Robinson

In a world first, researchers from The University of Queensland have identified a key gene in barley that enables the plant to access water stored deep in the soil during droughts.

Queensland Alliance for Agriculture and Food Innovation's Dr Lee Hickey said the gene promoted narrow root growth, which allowed the plant to grow roots that penetrate down to [water](#) stored deep within the soil.

"This may be one of the most exciting research findings to ever come out of my lab," he said.

"PhD student Hannah Robinson has undertaken the first study of its kind that aims to connect root architecture to [yield](#) in [barley](#). Her findings will impact everything from predicting yield to modelling.

"Even in a drought, there is water deep underground and to be able to breed plants with the type of root system to access this water means growers can maintain barley yields in drought conditions."

A former medical student turned plant scientist, Ms Robinson has identified the gene across the barley and wheat species.

"Our latest findings demonstrate that the gene for narrow root growth provides a significant yield advantage throughout Queensland and New South Wales," Ms Robinson said.

"Even before the harvesters hit the paddock, the lack of rain caused by the current El Niño has stripped around half a billion dollars in yield from the wheat industry and looks set to also have a major impact on the barley industry," she said.

"While barley crops on the Australian east coast enter the critical grain filling period, there appears to be no relief in sight as the next few months are forecast to be drier than average."

Australia is the 8th largest barley producer worldwide, producing around 7.5 million tonnes of barley annually.

Most barley in Australia is used for animal feed and beer production, but in North Africa and Southwest Asia, barley is a main staple food.

"Worldwide, the largest limitation on barley production is water," said Ms Robinson.

"Dry seasons mean lower yield and less profit for farmers. The effect is more severe in droughts and El Niño weather events."

Provided by University of Queensland

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