

Scientists unveil new way to grow quality wheat faster

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Dr Lee Hickey, from UQ's Queensland Alliance for Agriculture and Food Innovation, has helped identify a fast way of developing a new strain of wheat that is resistant to stripe rust and pre-harvest sprouting.

University of Queensland scientists have discovered a fast way to develop a new strain of wheat that is resistant to stripe rust and pre-harvest sprouting.

The research team developed the [wheat](#) product using a new breeding strategy that slashes development time from more than 10 years to just

two-and-a-half years.

Dr Lee Hickey from UQ's Queensland Alliance for Agriculture and Food Innovation, said the technology was set to benefit farmers in the next couple of years with field trials being grown in Victoria and New South Wales.

"Pending the performance of the [wheat lines](#), we reckon that this new wheat variety with high-yield potential, resistance to [stripe rust](#) and pre-harvest sprouting tolerance could be available to southern growers in less than four years," Dr Hickey said.

In collaboration with his PhD supervisor Dr Mark Dieters, the research duo used a novel approach to transfer multiple genes for resistance to stripe rust and grain dormancy into the Australian wheat cultivar H45.

The UQ [geneticists](#) are working with the Ballarat, grower-owned, seed company GrainSearch.

"We developed 84 wheat lines, each 90 to 95 per cent genetically similar to the H45 variety, but with multiple genes for resistance to rust and pre-harvest sprouting," Dr Hickey said.

"There are no [wheat varieties](#) available to Australian growers that offer adequate protection against pre-harvest sprouting, so this would be a first.

"The population also displays useful variation in [physiological characteristics](#), including days to flowering, maturity, spike length, leaf width, seedling vigour, and grain size.

"These characters will be important for determining which line becomes the new wheat variety."

The UQ team has used the same techniques to rapidly produce disease-[resistant strains](#) of barley.

Dr Hickey will be presenting the work at the Australian Barley Technical Symposium in Melbourne this week.

The researchers are working with breeding companies and seed companies across Australia and overseas to speed-up grain improvement techniques.

More about H45

Released in the 1990s, H45 was a successful wheat variety with fast maturity and high yield potential adopted by growers in Victoria and NSW. It has since been abandoned by most growers because it is susceptible to the current strains of stripe rust present along the east coast of Australia.

As with all wheat varieties in Australia, H45 also lacks adequate grain dormancy to protect against pre-harvest sprouting, i.e. where germination of grain in the spike that occurs in response to rainfall at crop maturity, resulting in grain crops being downgraded resulting in less money for growers.

GrainSearch

Initially formed in 2002 by a small group of innovative grain growers, GrainSearch has grown to be the largest grower-owned seed company in Australia, with more than 200 grower-based shareholders. Their primary objective is to seek out, through the latest research and development techniques, new varieties of seed that significantly improve the productivity of shareholders, farming businesses and agricultural

enterprises.

More information: grainsearch.net.au/

Provided by University of Queensland

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