Genetic research breakthrough to boost barley production

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Grain growers are celebrating a recent breakthrough by Murdoch University researchers that will lead to a boost in future barley production.

Professor Chengdao Li, Director of Murdoch's Western Barley Genetics Alliance, said the exciting development would see new lines of barley bred without blue aleurone – a blue tinge to the grain – which is not desired by the market.

This is a significant issue for local growers who need barley seed that can withstand Western Australia's acidic soils. However, some of these varieties are often susceptible to blue aleurone.

The Alliance is a partnership between the Murdoch University and the Department of Primary Industries and Regional Development, supported by the Grains Research and Development Corporation (GRDC).

Professor Li used the recently mapped barley genome to develop new genetic material – or germplasm.

"We were able to use the barley reference genome sequence to identify molecular markers to pinpoint the genes that control acid soil tolerance and blue aleurone in barley, which are closely linked and have a high tendency to be inherited together," he said.

"The team then combined molecular marker technology and

conventional breeding methods to break the link between the two genes to develop a new base germplasm that combines acid soil tolerance with white aleurone, from which new, superior barley lines can be developed."

Professor Li expects new, improved barley varieties to be available commercially within five years and help maintain Western Australia's access to valuable international barley markets.

Murdoch University Vice Chancellor Eeva Leinonen said the breakthrough demonstrated the power of collaborative science.

"The Alliance has built on its achievements with mapping the barley genome to address a significant constraint to production in WA," Professor Leinonen said.

"This will not only improve production potential but will generate broader benefits to plant breeding worldwide."

Provided by Murdoch University

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