

Research to improve resistance to costly wheat fungal disease

November 30 2015, by Jo Manning

Research is underway that will pave the way for new, improved wheat varieties that are more resistant to a significant fungal disease that costs Western Australian growers \$108 million each year.

Stagonospora nodorum blotch (SNB) is widespread across the Wheatbelt, especially the high rainfall zone, which results in shrivelled grain and average yield losses of nine per cent.

Department of Agriculture and Food is using new genomic technology from its counterparts in Victoria to identify and track gene combinations that produce resistance to SNB, for future use in breeding new commercial [wheat varieties](#).

The research is funded by the Grains Research and Development Corporation's (GRDC) Effective Genetic Control of SNB project, with [wheat](#) gene and DNA marker analysis from the State Agricultural Biotechnology Centre at Murdoch University.

Department senior research officer and Adjunct Professor at Murdoch University Michael Francki said the project drew on previous GRDC funded research to identify the sources of resistance to SNB.

"We have searched for wheat lines from across Australia and overseas to source germplasm that will allow us to develop wheat plants with high levels of SNB resistance," Dr Francki said.

"It is quite a complex process, as it is the accumulated effect of several [genes](#) that creates resistance to the fungal disease, but we have now targeted the genes to deploy into breeding wheat suitable for WA growing regions."

The research has benefitted greatly from the recent sequencing of the wheat genome, effectively providing a DNA map of the structure and function of genes that provide resistance to SNB.

Dr Francki said it was important to test the new SNB resistant germplasm in field trials to evaluate its suitability for WA production environments.

"We need to find the best combination of genes from different sources that give a suitable level of resistance in varieties for WA," he said.

"This will give crop breeding companies more confidence about the environmental influence on [resistance](#) levels when they choose germplasm and use DNA markers to select these genes in breeding."

If the field trials are successful, suitable germplasm is expected to be made available to Australian wheat breeding companies in 2017, after which it will take at least five years to develop new commercial varieties.

Provided by Murdoch University

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