Frost, drought tolerant canola on way
By Felicity Pritchard

It’s a rather unsavoury topic, but it seems there’s no doubt we are hearing the ‘F’ word more and more with each passing year – frost, that is. And although their project’s name doesn’t roll off the tongue, if the pre-breeders in the GRDC-funded National Brassica Germplasm Improvement Program (NBGIP) have their way, Australia’s canola growers will find life easier with varieties having better tolerance to frost, as well as drought, shattering and disease. The scientists based in the Victorian Department of Primary Industries at Horsham and NSW DPI at Wagga Wagga are working hard at selecting canola plants from a range of sources with the desirable agronomic attributes. And no doubt canola growers will be keen to get their hands on varieties with better frost and drought tolerance once they become available, after yet another challenging season - particularly for eastern Australia.

NSW DPI canola pre-bred, Neil Wratten, who has bred some of the most popular canola varieties in Australia, said that the work to find frost and drought tolerant canola varieties was showing promise.

Frost tolerance research
“We selected 15 canola varieties on the basis of their different backgrounds. Rod Bambach, a technical officer with NSW DPI, put them into a frost chamber at Tamworth, where the plants experienced a minus three degree temperature for 16 hours during the podding stage,” said Mr Wratten. “Last year, we had a range of reactions in the experiment, ranging from sensitive to maybe tolerant,” he said. The experiment is being repeated this year and if the same results are found, the research may move to a more sophisticated frost chamber at the Australian Genomic Research Facility in Adelaide. “We plan to take two of the frost-sensitive varieties and two tolerant ones to the Adelaide chamber where the temperature regime can be programmed to simulate the field situation,” said Mr Wratten.

Drought tolerance research
The work on drought tolerance is led by Mr Neil Wratten and performed at the Wagga Wagga Agricultural Institute by Dr Sergio Moroni of NSW DPI. Dr Moroni said the aim is to find genetic diversity suitable to integrate in future cultivars. “It is a long road ahead but based on examples of improved performances of other crops under water-limited environments the future for ‘climate-proofing’ canola is bright, he said. “In essence, we want to ‘embed technology’ in the canola cultivars,” said Dr Moroni. The drought tolerance research is being complemented by the Horsham team of the Victorian DPI, headed by Wayne Burton with trials in Beulah in the Mallee, being harvested today. “We should get reasonable data from the Mallee site,” said Dr Burton.

Blackleg and shatter tolerance
The shatter tolerance research is also being undertaken by the Horsham DPI, where trials this year failed due to drought – but provided good information on drought tolerance in canola. Research into development of blackleg (disease) resistance germplasm is being undertaken in both States, using different approaches.

“HATS OFF TO THEM: Seeking frost, drought and shatter tolerance and blackleg resistance in canola are, from left, Wayne Burton, Neil Wratten and Sergio Moroni.”