Six thousand germplasm imports from Armenia, Georgia, Turkmenistan, Azerbaijan, Kazakhstan, Kyrgyzstan and Uzbekistan have taken root in Australia this year and are set to alter the country’s $7 billion grains industry.

In the greatest single importation of international plant germplasm to Australian shores, researchers are revisiting the cradles of modern agriculture to check if ‘genetic relics,’ left idle in the arid middle east, could help modern grain varieties overcome agronomic and disease constraints.

“Traditional land races, and their wild relatives, which could provide resistance to many modern diseases and ecological pressures, are dwindling, so we need to capture them before the opportunity is lost,” Centre for Legumes in Mediterranean Agriculture (CLIMA) Deputy Director, Clive Francis said.

Land races are not wild relatives of contemporary varieties, but are lines which developed from farmer selection over hundreds of years of traditional agriculture.

In a bid to capture these shrinking reserves of potential disease resistance, quality and agronomic adaptation, researchers have followed the footsteps of the famous Nikolai Vavilov, who led several expeditions from 1916 to compile the world’s oldest genetic resources bank in St Petersburg Russia. The collection includes more than 140,000 cereal accessions.

“Apart from 2000 lines of chickpeas, lentils, field peas and faba beans, the collaboration has landed more than 2500 wheat germplasm and their wild relatives in Australia, with most collected from the two major origins of domesticated wheat,” Professor Francis said.

The pulse germplasm have already displayed good ascochyta, fusarium and viral resistance in an Australian Centre for International Agricultural Research (ACIAR) and Grains Research and Development Corporation (GRDC) funded disease nursery at the International Centre for Agricultural Research in Dry Areas (ICARDA).

This is encouraging for Australian pulse growers, as potential new varieties based on this germplasm deliver into the high end of the market to return between $300 and $550 per tonne.
Preliminary screening, at ICARDA, of cereal material originating from central Asia and the Caucus has shown good resistance to stem, leaf and yellow rust.

This highly successful example of international collaboration was managed by Dr Ken Street, who is supported by CLIMA and the GRDC to work at ICARDA and co-ordinate germplasm collection, evaluation and exchange.

The collections, in often very difficult and demanding conditions, were aided by skilled Vavilov Institute and local scientists, supported by a concurrent ACIAR project specific to those regions.

“The goodwill, developed between the Vavilov Institute, CLIMA, ICARDA and gene banks in Australia and other participating countries will benefit the whole grains industry, in Australia and collaborating countries. This is evidenced by the 6,000 accessions of pulses and wheat land races and wild relatives which have arrived, with more to follow,” Professor Francis noted.

“The novel pulse germplasm will help local researchers overcome constraints to lupin, chickpea, field pea, lentil and faba bean production in Australia and help reach CLIMA’s goal of lifting local plantings of those crops by half a million hectares in WA alone.”

ENDS

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