Free rein in world wheat gene bank

By NEIL LYON

LEFT: University of Sydney Plant Breeding Institute professor of plant breeding Richard Trethowan inspects a wheat trial at the Norman Borlaug Experimental Station, Obregon, Mexico, with Universities of Sydney and Queensland CAIGE co-ordinator Sandra Micallef, Brisbane, Qld, Australian Grain Technologies senior wheat breeder Meiqin Lu, Narrabri, and Edstar Genetics principal Ian Edwards, Perth.

FOR Australian wheat breeding specialist Richard Trethowan, having access to the largest wheat genebank in the world through the International Maize and Wheat Improvement Centre (CIMMYT) in Mexico is akin to giving a child free rein in a lolly shop.

The University of Sydney Plant Breeding Institute professor, who was a wheat breeder at CIMMYT for 13 years, now heads a team of Australian wheat breeders who travel to Mexico every two years to select potential breeding lines for the Australian wheat industry.

It's a trip Australians have been making since the first wheats from CIMMYT were introduced to Australia in 1973.

Today it is a fine-tuned process run under a partnership agreement called CAIGE, which links Australia not only to CIMMYT but to another major wheat centre, the international Centre for Agricultural Research in the Dry Areas in Syria.

On a recent trip to Mexico, which coincided with the Borlaug Summit on Wheat for Food Security, Professor Trethowan and the team chose promising lines with traits they believed the Australian wheat industry needed.

"We are looking firstly for yield. Beyond that we are looking for white grained, short statured types, a range of resistance to diseases, and also diversity," he said.

"We look carefully at the pedigrees of the different lines – we're after pedigrees that are very different to what we have in Australia because that is new diversity.

"If we pick up a rust-resistant line in the field and take it back to Australia and it has the same genes for resistance as the lines we currently have we are not going to make a lot of progress.

"But if we pick up a line that has a very different pedigree and origin there is a much higher probability it will bolster the defence against rust diseases in Australia."

The lines that make it through the selection process will be brought to Australia where they will be evaluated by breeders and provided to breeding companies to cross with other lines.

Professor Trethowan said the reason CIMMYT didn't release them directly was because of quality issues.

"Here at CIMMYT the focus is on the developing world where they need volume in their wheats," he said.

"Most people there turn CIMMYT wheats into flat bread so they don't need premium quality."

"In Australia we have a segmented export market and distinct quality classes.

"The basic quality you find in the CIMMYT wheats doesn't fit those quality classes, so there needs to be a cycle of breeding that takes advantage of the yield and disease resistant traits of the CIMMYT material and the quality of the Australian material. That is what the plant breeders do in Australia."

Dispute over herdsmen's rights

MEXICAN graingrowers attempting to run their farms under conservation farming practices are none too happy about a traditional right of the country's herdsmen to run their stock on farmers' crop stubble country.

Under the long-standing statute, Mexican stockmen – known as vaquero – are allowed to graze their sheep and cattle herds on privately-owned stubble paddocks or irrigation banks without requiring the permission of the farm owners.

While the herdsmen are obliged to prevent their stock straying onto the fields where crops are growing, they have open slather on fallow and stubble country.

Farmer groups have been lobbying to have the right rescinded, but so far to no avail.

For those trying to run conservation agriculture or zero till systems where they want to leave crop residues on the ground, the problem is that the grazing mobs move in and remove the crop residues.

In addition to compaction issues caused by the stock trampling the ground, another problem is that the manure they bring in often contains weed seeds that germinate in the fields.