Mexico trials develop Aust wheat

By NEIL LYON

T HE Yaqui Valley in north-western Mexico is an oasis of irrigated agriculture surrounded by a vast desert – an environment surprisingly ideal for breeding and developing wheat varieties suited to Australian conditions.

Many of Australia's wheat varieties have been developed by the Mexico-based International Maize and Wheat Improvement Centre (CIMMYT) to suit different moisture regimes.

Key to the research is one of its largest research stations, the Norman E Borlaug Experimental Station, which sits in the middle of the valley's 220,000-hectare irrigation scheme where the average annual rainfall is only 250-300mm.

CIMMYT Board of Trustees chairman and SA (Mid North) farmer Andrew Barr said the advantage of the station for developing Australian-suited varieties was that it was in an irrigated desert where researchers could tightly control water and growing conditions.

He said that in earlier years researchers would fully irrigate the trial crops which masked genetic variation in some conditions, and that one of the stresses important in different parts of the world, particularly Australia “where we know way too much about drought and heat stress”, was that researchers could tightly control water and growing conditions.

But in the past 10 years CIMMYT has purposefully re-focused its trials to target a range of different sowing times and moisture regimes.

“They still have early-sown, full irrigation with 7 tonnes or 8t a hectare yield potential. But now they have to do this with water, which forces the wheat to develop in late spring/summer heat stress”, he said.

“Africa is very different from Australia “where we know way too much about drought and heat stress”, he said.

“So now at the one station we have trials that yield 8t/ha, 4t/ha and 2t/ha, have drought and heat alone, or full-potential crops.”

It was more difficult to run such a range of different climatic scenarios, including testing for drought, under Australian conditions.

“In Australia, the irony is that rain always gets in the way of a good drought, from a breeder's perspective,” he said.

“Another major advantage of the station is the irrigation system they put in drip lines and modify the water to get 4t/ha, and also modify it to get 2t/ha.

“Where we have a comparative advantage in terms of producing very high-quality durum is because we have a very dry climate and irrigation,” he said.

“The type of durum people have access to in Europe, for instance, varies a lot from year to year because it is rained. The variation in quality is a hassle for the industry.

“But here we can produce very consistent quality year after year. With good fertiliser management we can produce the same yield year after year and the industry loves that.

“Unusually, durum yields in the Yaqui Valley were higher than broad wheat yields – sometimes 0.5 tonne/hectare or more.

And over the past two years, thanks to the introduction of a new variety, Cirino, irrigated durum yields had risen from an average of 5.6t/ha to 6.7t/ha.

“That is something that hasn’t happened over the last 35 years,” he said.

With such a focus on wheat production in the valley, the World Bank and Mexican government had been trying to diversify producing crops.

“They ask why the farmers are using so much valuable water to grow wheat, when they have trials that yield 8t/ha, 4t/ha and 2t/ha. We have access to very, very quickly.

“Australia ‘where we know way too much about drought and heat stress’.

“Weather is a very easy crop to manage. And farmers have been making very good money growing wheat. The better farmers growing US$1000/ha are getting back US$2000/ha.”

The average usage of irrigation water for a wheat crop over a whole growing season in the Yaqui Valley is 7.5 megalitres over four waterings.

On another note, the world’s leading wheat scientists gathered in Mexico last week for a special Borlaug Summit to mark the 100th anniversary of renowned wheat breeder Norman Borlaug.

Dr Borlaug, who died in 2009, spent much of his working life with CIMMYT, and is credited with developing wheat varieties that saved Mexico, India and Pakistan from famine in the mid 1960s.

He was awarded the Nobel Peace Prize in 1970 and became known as the ‘Father of the Green Revolution’.

The week-long summit with conferences and field visits was held at Obregon in the Yaqui Valley in Mexico’s north-west where Dr Borlaug conducted much of his work.

• Neil Lyon travelled to Mexico with the assistance of the Crawford Fund and the Department of Foreign Affairs and Trade’s Australia Latin America Relations. This is the first of a two-part series.

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Cattle cause crop issues

By NEIL LYON

MEXICAN graingrowers attempting to run their farms under conservation farming principles are none-too-happy about the right of the country’s herdsmen to run their stock on farmers’ crop-stubble country.

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

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 residues.

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

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"We're happy to have the cattle benefits of the increased fertiliser value in the manure," said Mr Lyon. "But the residue has to be left. It is a problem that is growing as more and more farmers are moving to conservation agriculture systems and like the US there is no way that you can have the cattle and conservation agriculture systems in the same paddock at the same time."