

Mexico trials develop Aust wheat

By NEIL LYON

THE 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 in the Yaqui Valley.

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 millimetres to 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 for some of the stresses important in different parts of the world, particularly Australia "where we know way too much about drought and heat stress".

But in the past 10 years CIMMYT had purposefully refocused its trials to target a range of different sowing times and moisture regimes.

"They still have early-sown, full

KeyPoints

- Yaqui Valley farmers focus on durum
- Drought conditions put to the test
- Investment yielding double return

irrigation with 7 tonnes or 8t a hectare yield potential. But now they also sow late crops, with water, which forces the wheat to develop in late spring/summer heat stress. It is not drought stressed, just heat stressed," he said.



CIMMYT can generate the different conditions year-in, year-out

— ANDREW BARR

"They also have early sowing, but instead of a full irrigation system they put in drip lines and modify the water to get 4t/ha, and also modify it to get 2t/ha.

"So now at the one station we have trials that yield 8t/ha, 4t/ha and 2t/ha, have drought and heat, 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.

"You have a drought every four or five years, but in the Australian environment it becomes difficult for a breeder because you make progress in a drought year but the next one is a bumper crop, whereas in Mexico there is no rain to get in the way.

"CIMMYT can generate the different conditions year-in, year-out."

The dry climate and capacity to control crop development through irrigation have also enabled Mexican farmers in the Yaqui Valley modify the type of crops they produce.

Mexican wheat specialist and CIMMYT Conservation Agriculture Program principal scientist Ivan Ortiz-Monasterio said that where the valley was once a major bread wheat producing area, today the emphasis was on durum wheat supplying both the domestic market and lucrative niche markets around the world.

"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 rainfed. 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 quality year after year and the industry loves that."

Unusually, durum yields in the

Yaqui Valley were higher than bread wheat yields – sometimes 0.5 tonne/hectare or more.

And over the past two years, thanks to the introduction of a new variety, Cirnio, 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 production.

"They ask why the farmers are using so much valuable water to grow wheat and not higher-value crops," he said

"It is a good question, but if you start to grow vegetable crops you start to saturate markets we have access to, very quickly.

"Wheat is a very easy crop to manage. And farmers have been making very good money growing wheat. The better farmers investing \$US1000/ha are getting back \$US2000/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

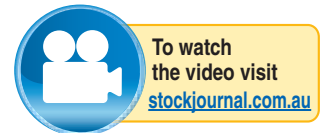


SA TIES: CIMMYT Board of Trustees chairman and Mid North farmer Andrew Barr says the advantage of a research station – located in an irrigated desert in Mexico – for developing Australian-suited varieties is that researchers can tightly control water and growing conditions.

Pakistan from famine in the mid 1900s.

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.

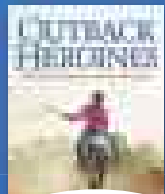
• Neil Lyon travelled to Mexico with the assistance of the Crawford Fund and the Department of Foreign Affairs and Trade's Council on Australia Latin America Relations. This is the first of a two-part series.



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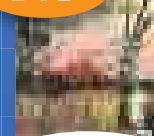


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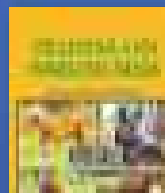
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MEXICAN WANDERERS: Cattle grazing cropping stubble paddocks in the irrigation area near Obregon, Mexico. Under a long-standing statute Mexican stockmen – known as vaquero – are allowed to graze their sheep and cattle herds on privately-owned stubble paddocks or irrigation banks without requiring the permission of the farm owners.

Cattle cause crop issues

By NEIL LYON

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 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.

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