

A 'C-Change' for Australian farming

Long term strategies for adapting to climate change will result from a collaborative project between researchers at the Institute of Agriculture (IOA), The University of Western Australia (UWA) and Lanzhou University (LU) in west China.

Professor Kadambot Siddique, IOA's Director, said the Institute was invited by LU to become a partner in a '111 Project' on sustainable development of agricultural systems in dry and cold ecosystems of the Loess Plateau, Gansu Province, west China.

"The project's overall objective is capacity building, by training researchers and postgraduate students in characterising dry and cold ecosystems and improving crop and pasture production technologies, land management and animal husbandry practices.

"Long term it offers us strategies to deal with climate change in Australia. Loess Plateau was once desert, but increased demand for food led to its successful transition to arable, productive land.

"Water shortage has increased environmental risks such as wind erosion and dust storms, with large scale airborne dust storms of past decades mostly arising from newly cultivated soils in arid and semi-arid regions of China," Siddique said.

The project would assess how such soil attributes as soil organic carbon and soil aggregation changed when uncultivated soil became arable and it would determine what practices promote long-term sustainability of agricultural use of these soils and improved water harvesting and water use efficiency.

Another important aspect of the collaboration would be assessing the impact of rural to urban migration on farming systems and farm livelihoods.

Siddique said UWA valued the opportunity for the IOA to interact with LU and learn more about agricultural constraints in west China and, potentially, climate change.

"The collaboration will also identify postgraduates to enrol at UWA or LU, continue delivering lectures and seminars at LU, and encourage staff visits and sabbaticals between the universities, all with the aim of building capacity, developing large joint projects, publishing scientific papers and improving agricultural productivity and sustainability in both countries," Siddique said. ■



Collaborating on sustainable development of agricultural systems in China's Loess Plateau: Dr Xiangwen Fang, Dr Giujan Yun, Professor Kadambot Siddique (UWA), Ms Li Lihua, Professor Neil Turner (UWA), Dr Yu Jia, Professor Wang Yong and Professor Mathew Tonts (UWA) viewing a drought study on chickpea at the Institute of Agriculture, UWA.



CROP DOCTOR
With Peter Reading

SOUTH

HELPING GROWERS MANAGE THEIR CHANGE

The 2008 season was a challenging one for grain growers, with crops planted on record grain prices and high fuel and fertiliser costs and then harvested on falling grain prices, with some being downgraded to feed due to unseasonal rain.

We live in a fluid world characterised by constant change, where grain marketing is no longer through a single desk, fuel prices are down, with crude oil close to \$US40 per barrel and the grain bulk-handling majors have consolidated into four companies.

At the GRDC, we're trying to encourage and implement R&D programs to last 10–15 years in a market best described as volatile. Also, our budget for research is directly linked to harvest success and this is always difficult to predict.

But, irrespective of market and climatic conditions, GRDC's core strategy remains unchanged: Helping Australian grain growers effectively compete in global grain markets.

When we look at grain productivity since 1980, we know major productivity gains, measured by output and yield, have been made with less rainfall.

Productivity growth has been one per cent per year for the 20th century until 1980, but since then has been almost four per cent per year. Dr Senthod Asseng, GRDC supported CSIRO researcher, attributes one per cent to better cultivars and three per cent to better agronomy.

During the 2006 drought, Australia produced 11 million tonnes of wheat and if growers had used farming practices from the 1980s, production would have been more like three million tonnes.

It is heartening that growers are adopting new technologies, such as precision agriculture and learning how to best use limited rainfall.

While climate change is often spoken of as a recent event, Australia's growers have been successfully adapting to it for 20 years.

Climate change is a major driver for research in the grains industry and GRDC is supporting water use efficiency to determine how every one millimetre of rainfall can best be converted into one kilogram of grain.

One way to assess the industry-wide impact of GRDC's corporate strategies is to look at broadacre farm financial performance and total factor productivity growth.

This value varies from year to year, but was 2.4 per cent for the GRDC's Western Region in the years 1977–78 to 2005–06. Productivity growth is similar in the Southern and Northern Regions, but what drives it is different.

The key point is this – change and challenge is inevitable, but thanks to research and new technology Australian grain growers are doing more with less rainfall and succeeding in a way that enables them to remain major and competitive players in the world grains market.

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