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Insight confirms need for irrigation efficiency

A South Australian farmer has dived into water-use efficiency changes on-farm, following a study tour spent investigating irrigation

By Rebecca Thyer

A passion for irrigation, and consequently water-use efficiency, led South Australian farmer Damien Smart on a journey of discovery this year. Via a Landmark-supported Nuffield Australia Farming Scholarship, Mr Smart was able to pursue his interest in world's best practice irrigation.

However, in travelling from his family's 3400 hectare farm at Keith, in south-eastern SA, to North America, South America, Asia and Europe, he discovered that some of the best water-use efficiency practices are found at home.

He says that California – the first stop on his individual Nuffield tour – has an “amazing production volume” even though most of the state's agricultural production occurs in San Joaquin where an average annual rainfall of 178mm means it is technically a desert.

But through a plentiful aqueduct system and a mostly unregulated well system, the area achieves an annual agricultural GDP of US\$3.33 billion. “To achieve this, they use 30 million megalitres of water – about 80 per cent of California's water supply – for four million hectares of an extremely wide crop range,” Mr Smart says.

This equates to a water-use efficiency of 7.5MI a hectare. In comparison, the south east of South Australia uses 547,185 MI over 80,000ha or 6.9MI/ha. Mr Smart will discuss his Nuffield Tour findings at the Nuffield Spring Tour, being held in Fremantle, WA, from 4-7 October.

Like most Australian farmers, Mr Smart says water is close to his heart. At his family's farm at Keith, water is predominantly used to grow lucerne for seed, as well as fodder, and grazing the farm's cattle and sheep. A small part of the farm's grain enterprise is also irrigated.

Mr Smart says although farmers might not be able to control how much water they receive, they can control how well it is used. It is why the family is taking the plunge and moving from flood irrigation to under-canopy pivot irrigation and sub-surface drip irrigation.

It is a move that was reinforced by Mr Smart's visit to California Polytech State University's Irrigation Training and Research Centre, where he met chairman Charles Burt.

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“Charles’ key message was that you can irrigate any soil if you can match water to crop needs,” Mr Smart says. “And water delivery is easier to control than most other factors such as soil type and topography.”

He says the centre’s ‘More crop per drop’ research hit home. “It confirmed that we needed to control moisture conditions in the crop and strive for the same goal.”

Mr Smart says that, globally, other large irrigators are doing the same but this move is not entirely due to water security. “Californian irrigators are largely unregulated and the supply and quality for the most part is secure. You can drop a bore anywhere, which was a bit of an eye-opener for me.”

Instead, the drive to invest in more efficient systems is occurring to allow greater cropping options, such as double cropping (two crops in the one year). “Sub-surface drip irrigation allows them to grow one-and-a-half to two crops instead of the usual one, through better efficiencies.”

Mr Smart says the only irrigators he visited who were pressed for water were those in California’s Salinas Valley. “They were the only ones I noticed using more efficient systems because of dwindling supply and quality. This area grows market vegetables and with land prices about US \$40,000 an acre (\$121,500/hectare) growers generally could afford to invest in more efficient sub-surface drip irrigation systems.”

MARKETING EDGE

Irrigation was not the only subject Mr Smart looked into on his Nuffield tour – he also investigated prescription livestock feeding to make better use of his farm’s byproducts.

He explains that the 620 hectares devoted to lucerne seed production creates 80-100 tonnes of screenings a year – with a 30 per cent protein level – plus straw. When combined with straw and screenings from the 1000ha of continuously cropped land, the farm has a massive feedstock at hand.

“Together they could give our red meat enterprise a consistent, low-cost feed structure,” he says. “The most important factor in marketing red meat is consistency. Many Australian farmers can deliver this by combining byproducts with a protein source.”

He found a good example of this working well was at Welsh-based Wynnstay Feeds which supplies feed rations exclusively to the Celtic Pride beef brand. Mr Smart says this arrangement allows Celtic Pride to source beef from any background (within the UK) and finish them on the same ration for the same time period before slaughter. “This undoubtedly ensures one of the most important aspects of marketing – consistency,” he says.

However, Wynnstay Feeds is also working on adding ingredients – such as Omega 3, selenium and vitamin E – to its feed to express specific traits in meat.

Omega 3, among other benefits, has been shown to reduce the incidence of coronary heart disease. Although the most widely available source of Omega 3 is cold water oily fish, European producers and supermarkets are adding value to other food products by increasing Omega 3 content, or marketing it more cleverly.

“Omega 3 as a marketing tool is well advanced in Europe, especially the UK,” Mr Smart says. “And egg, milk, pork and chicken producers are marketing their products as Omega-3-enriched to gain an edge over competitors.”

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Selenium and vitamin E are being considered because selenium, a trace element, is also important for human health, while vitamin E increases meat's colour and shelf life.

Mr Smart says that opportunities to add beneficial traits to meat via prescribed feeding could ensure that his sheep and beef can compete with other protein sources such as chicken and pork. However, before spending money on new product development, extensive marketing research is needed.

To that end, the family company has employed a Welsh Nuffield scholar – Nicola Raymond. “While I’ve been looking at marketing from a world scale, our business has been looking at it from an Australian scale,” Mr Smart says. “The results of our research will aid in any future decisions on marketing our own red meat,” Mr Smart says.

He does, however, question whether the Australian consumer is ready to pay more for value-added meat. “The marketing opportunities are well advanced in Europe, but I’m not sure if the Australian market is big enough or will absorb premiums for red meat. In North America and Europe, only a small percentage of the population needs to buy the product to achieve necessary sales.

“Hence the need for market research,” he says. “We know that we can add value to beef through Omega 3, although it is more difficult in ruminants than it is in chicken, pork and eggs. It’s also another expense and there are no guidelines yet on how much Omega 3 needs to be in a product to claim it is Omega 3 enriched.”

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