Pivot fan lists benefits of careful change

After using centre pivots on crops including cotton for more than 20 years, Narrabri farmer Allan Goode is a fan of pressurised sprinkler irrigation.

He says centre pivots can save water, time and money while boosting yield and protecting the environment.

Allan manages the 460 hectare farm Little Mollee on the southern bank of the Namoi River, 23 km west of Narrabri.

After decades growing cotton and other crops under pivots, the farm was purchased in 2001 by Cotton Seed Distributors (CSD) to seed-increase new varieties of cotton developed at the cotton research institute across the Namoi.

Little Mollee also grows standard cotton varieties and crops including wheat and beans.

As well as saving water and time, Allan says pressurised irrigation has advantages including:

- Preventing waterlogging;
- Doubling seed germination;
- Containing runoff; and,
- Enabling smaller irrigations to more accurately match crop needs.

They thought it was a hobby farm

Allan still remembers how the neighbours looked when he began installing a centre pivot at Little Mollee in 1982.

The property had then just been bought by a company from Cowra on the NSW southern slopes which sold and installed pressurised irrigation systems.

"All the neighbours thought it was just a hobby-farm type idea," says Allan.

"They watched inquisitively over the fence, and they realised that — yes — we could grow cotton."

"And we could grow more bales of cotton per megalitre of water."

The farm now has four pivots. The machines are up to 450 metres long, and irrigate circles up to 60 hectares. Little Mollee also has a 12-span lateral-move irrigator 370 metres long which waters an 80 hectare rectangular block.

Allan says CSD asked for an independent advice on its irrigation development options in 2003, and a study by Narrabri's Aquatech Consulting compared the costs and benefits of drip, lateral, pivot and furrow irrigation.

Aquatech's Jim Purcell says the area studied had already been used for centre-pivot irrigation, and 'replacing the pivot turned out to be the most cost-effective option'.

He says that in general, the best irrigation depends on factors including soil types and topography. Because the area studied was undulating land close to the river, it would have been costly to develop for surface irrigation.

OPEN MIND ON OPTIONS

'We would have had to shift a lot of dirt,' says Jim. "But everyone should keep an open mind about irrigation options — surface is usually the cheapest, followed by pressurised irrigation using a pivot or lateral. Subsurface drip is usually the most expensive.

The results were different at Little Mollee. Allan says surface irrigation was estimated to cost about $3200 per hectare to develop, and drip about $4500 per hectare.

But with the infrastructure and a strong Australian dollar, a new pivot worked out at only $2000 per hectare.

Allan was happy with this recommendation for another pivot which also suited the needs of crops which each year include about 30 experimental lines of cotton.

Allan Goode with cotton grown under centre pivot irrigation.

"We do incur a yield penalty by growing all these different varieties," he says, "but that's just part and parcel of what we do."

"The next year, we might take maybe 10 of them through to the basic stage. From that, we might make a selection of maybe two or three that will then be seed increased again, and then be commercially released."

Pivots versus drought

Allan says Little Mollee's pressurised irrigation had no problems keeping up with crop demands — until there was no in-crop rainfall during the drought peak two seasons ago.

One of the pivots was only delivering nine mm of water per day, but evapotranspiration was using up to 13 mm per day.

So Allan looked carefully at the specifications of this pivot, and realised that it could deliver more water without decreasing distribution uniformity.

"The system could be 'specked up' to have a capability to 14–15 mm a day," he says. "We just had to spend the dollars on changing the sprinkler package."

Little Mollee has no furrow irrigation, but Allan does compare water use efficiency with his neighbours. "We are using around 60–65 per cent of the amount of water they are using per bale of cotton," he says. "It they were looking at using around seven ML (per hectare) per year in a cotton crop, we'd be looking at around four to 4.5."

Pressurised irrigation is covered in cotton's WATERpak irrigation manual. For more information, contact NSW DPI Narrabri irrigation officer Mitchell Carter on 6799-1537. WATERpak is available as a free download at: *www.cotton.crc.org.au/publicat/water/waterpak.htm*

Surveys of Australian cotton growers' experiences with pressurised irrigation have been conducted by Steven Raine and Joseph Foley of the University of Southern Queensland and the National Centre for Engineering in Agriculture (NCEA). Link to their publications at *http://www.usq.edu.au/users/raine/#Publications*

NCEA's David Wiggington and Joseph Foley have developed a one-day course module oversighting use of centre pivot and lateral move irrigation in the cotton industry. Contact them on 07-4631-1871.