SHORT & SWEET OF IT

- Last season the Tableland Mill crushed a record 850,083 tonnes of cane. Average yield across the district was 108t/ph and some growers reaching 140t/ph.
- Growers have upgraded irrigation infrastructure and acted on water application advice calculated using data from water probes and the Bureau of Meteorology.
- Older varieties have been replaced with newer, higher production varieties bred to perform in a hot and irrigated environment.

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RURAL WATER USE EFFICIENCY IRRIGATION FUTURES

Anatomy of a record crush

By Neroli Roocke

The start of the 2014 sugarcane crush is upon us and it's a difficult one to predict. Southern growing areas are feeling the effects of a lack of rain through the growing season while the more northern districts have repair and clean-up work to carry out courtesy of Tropical Cyclone Ita.

With a May start on the cards for this year, it's timely to look back at how and why the tonnage in one particular mill area was at a record high last year.

In the 2013 season, the Tableland Mill crushed the most cane it's ever put through since starting operation in 1998. The record was 850,083 tonnes (89,000 t more than the previous record) and it saw the rollers busy right up until the week of Christmas. The mill area average yield in 2013 was 108t/ph with some growers hitting 140t/ph.

The grower

Jason Salvetti, his wife **Deanne** and their young family live on a farm at Arriga, west of Mareeba and within

Arriga farmer Jason Silvetti

sight of the Tableland Mill. The 2012-13 season saw their farm's productivity improve by 30%. Jason says his good result is due to newer varieties of cane and better irrigation practices.

Jason took over the farm in June 2012 and it's one of five his family has. When he moved in, more than ▶

The runoff dam on Jason Silvetti's farm

half the property was flood irrigated and everything was done by hand.

"It was quite a lot of labour to keep the irrigation going. At first we were changing around 700-800 cups a day. It was taking until about 2 o'clock in the afternoon to do all the changes and by that time I was tired!

"Now we don't change any. We've set it up so there are hydrants so we just open and close taps or we've run a second line of fluming and we use clamps to direct the flow of the water. The whole process takes me less than an hour to do the same work!

"When a job is easier to do, you're more likely to do it so everything is getting watered much more.

"At this stage we haven't replaced any of the flood irrigation. While flood is not the highest water efficiency it's still quite cheap because electricity prices have climbed so high and because of the way this farm is set up."

The run-off water from two thirds of the flood irrigated cane (around 91 hectares) is channelled to a deep dam at a low point on the property and that water is then used to flood irrigate a further 36 hectares, with any runoff from that also making its way back into the dam.

"We don't lose any water, so we use less water, but we are still paying the electricity costs to move the water back up again. It helps when you have the right layout to make it work. We have a low spot that runs right through the middle of the farm."

Jason says while it's possibly cheaper, given the current high electricity costs, to waste the water by using additional water allocation, and therefore save on some pumping costs, he sees the dam system as good insurance for dry seasons.

"It's more expensive for us to re-use the water because the pumping cost is more expensive than the water cost but then it's always better to keep some of your allocation up your sleeve in case you have a dry year like this one. If you're getting close to allocation you'll be glad you saved all that water that you otherwise would've let run down the drain."

The farm also has two overhead irrigators with the longest being 14 spans.

Jason has also begun ploughing out the older varieties of Q172 and Q138 cane.

"They were good in their day but now they're not competitive so we're replacing them with the newer Q208 and KQ228 varieties," he says.

Jason also believes a key to his improved yields has been improved weed control through having a thick trash blanket on the ground. This means fewer chemicals are needed and the cane is not competing with the weeds for water and nutrients.

He grows a soybean fallow on a two year rotation, some of it for seed for a family business NQ Tropical Seeds.

The agronomist

Ask the local CANEGROWERS Tableland agronomist, **Drewe Burgess** how last season's Tableland Mill record was achieved and he says a series of things fell into place over the past few years.

He puts the district's increased yields down to a few key things: more informed irrigation assessment leading to changing attitudes to spending money on irrigation, improved fallow plantings and replacing older cane varieties with newer, more productive ones.

"The background is that with the low prices of the mid-2000s growers tried to cut costs because they were not generating much revenue. They cut back on planting, and tried to grow older ratoons and reduced other inputs like fertiliser and irrigation. So, we've been trying to get growers to start to improve their inputs in those areas again.

"It started with an assessment I did a few years ago where I looked at the difference between the top yielding 20% of producers and the bottom 20%. I looked at farm size, crop classes, varieties, amount of irrigation and fertiliser applied. That comparison identified that there were a number of ▶

CANEGROWERS Tableland Extention Agronomer Drew Burgess

Catch cans measure irrigation and rainfall

key things that the top 20% of producers were doing that the others weren't.

"They were planting more frequently, planting a bigger proportion of their farm each year and it was fallow plant. They were tending to grow the newer, more productive varieties and they were also tending to irrigate more," he says.

Think of costs as generating revenue

"My experience has been that growers often fixate on costs. They'll get an electricity and bill and think 'I'm going broke!' so they'll cut back on pumping. But as soon as you stop spending money, particularly with some of the key things like irrigation in this environment, it has a negative impact on productivity which is the key to profitability.

"I try to get them to think of it in terms of generating revenue. I tell them that every time they run that pivot around and put 25mm of irrigation on, instead of thinking of it costing $1,000, think of it in terms of how much revenue it's going to generate for you."

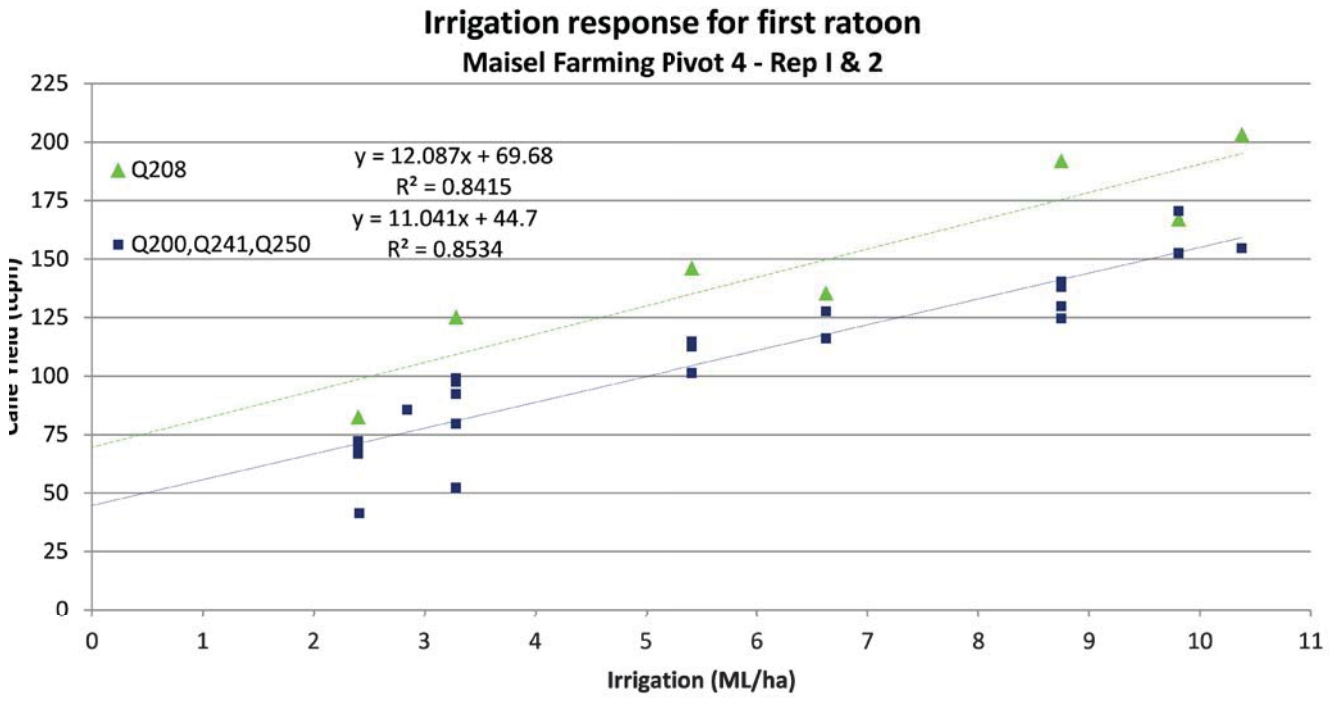
Drewe has run experiments on farms where he's caught and measured the water applied (either through irrigation or rainfall) and then hand cut and weighed the cane to prove his point. He says his general rule of thumb is 10 tonnes of cane gained per 100mm of irrigation per hectare.

"The marginal costs are roughly $50 per 100mm to irrigate a hectare (electricity for pumping plus usage fee for water), if that lifts yield by 10 tonnes of cane, after harvest costs and fees it's worth $250. This means that for every dollar spent on irrigation you get a $5 return."

Make informed irrigation decisions

Drewe sends an irrigation text message each week to growers in the Tableland district. Two key items of data inform his irrigation advice.

The first is evapotranspiration data from the Bureau of Meteorology (*http://www.bom.gov.au/watl/eto/*). This parameter is calculated using information from automatic weather stations including wind speeds, relative humidity and temperatures. Using appropriate crop coefficients, Drewe converts this reference evapotranspiration (known as ETo) which is for a grass swathe into a number that indicates the amount of water a sugarcane crop would use. By subtracting the rainfall, he can advise how much irrigation is required for crops at different stages of growth. ▶



Data depicted in this graph from Drewe Burgess was collated by hand-harvesting two metre long sections of rows and relating yield to the amount of irrigation applied to each plot. It shows that Burdekin variety Q208 was more responsive to irrigation than other varieties originating from the wet tropics.

Secondly, Drewe also monitors a series of 20 soil moisture probes located in fields scattered around the district. Information from these probes is used to validate the data being sent out weekly in the text message. Costing around $5,000 each, around 15 moisture probes were subsidised by a previous round of Rural Water Use Efficiency grants.

Drewe has been sending out the text message for a number of years but says more and more growers are now acting on them.

"When we first started doing it, growers were a bit sceptical but that's changing," he says.

Plant newer, more productive varieties

"Another big change in the past few years is that the area growing fifth and sixth ratoon cane has diminished in this district. They may have been left because they were the better performing fields but there is a drop-off in yield as the plants get older."

Drewe says the past few years has seen a substantial increase in the area in the Tableland region planted to the newer varieties of Q208, KQ228 and Q183. All three were initially selected and released for the Burdekin.

"They're all doing very well here and it's not surprising when you look at the climatic conditions of the Burdekin and here they are very similar in that they are hot and utilise irrigation. In fact the month to month ETo data from the weather bureau are very similar."

Drewe pulls together performance and yield reports which he shares with growers.

"It's about gathering evidence to support what I'm advocating. I'm not a farmer so it's important for me to be able to substantiate that what I'm promoting is backed by evidence."

The miller

Pat Ryan is the Tableland Mill Superintendent. He says the record crush was a result of bigger volumes of cane from more growers and followed a concerted effort by Tableland Sugar Services and others to encourage more irrigation.

"Many growers had come from a tobacco background and just didn't have enough water. For years their infrastructure was lacking for them to use enough water on their sugarcane.

"Now this result is proof of the benefits of buying and using extra megalitres of water," he says.

The mill's owner, MSF Sugar Limited, also contributed to the record as a grower. It has 2,000 ha under cane in the region, run as a separate business unit. Three managers are employed and Pat says improvements have been made on all of the properties the mill has purchased.

As well as the record, the 2013 season saw the mill produce its first crystallised sugar after 16 years of producing syrup. An 18 month, $40 million upgrade also increased the milling train capacity to 250 t/hr. Last season it averaged 210 t/hr.

While some growers are planning to divert their cane to the Mossman mill when the 2014 crush starts, Pat is still confident of a substantial volume through the Tableland Mill. He says other farmers have put more land under cane and are making improvements which are increasing their yields. ■

Tableland Mill superintendent Pat Ryan