FEATURES

4 Sugarcane biotechnology CRC research winds up

Autumn Feature – Irrigation

7 Flood slows to a trickle

9 Irrigation software could save 800 gigalitres a year

10 Using vinasse as a fertiliser?

11 Cane to be processed outside traditional milling structure

12 Off-the-shelf fertiliser blends for reef legislation compliance

Reef Rescue improves 500,000 hectares

16 Down to Earth: Achieving more from applied nitrogen in cane

REGULAR SECTIONS

2 Editorial

14 Modern Machinery Matters: In-harvest maintenance comments

29 Marketing: Sugar outlook in the medium term – 2014–15

No messing about, the drip-free tomato is a winner

23 Classic Tractor Tales: The formidable Fitch

26 District Reports including ACFA Comment

32 News & New Products

33 Fishing: Got an itch to go crabbing?
There have been a few changes announced over the past few months. After over 19 years as Canegrower CEO, Ian Ballantyne is stepping down. After over a century at the centre of the Australian sugar industry, CSR – come Sucrogen, come not Bright Food but now, surprise, surprise, come Wilmar – is also on the move.

We are now entering interesting times as the industry ‘digests’ the news and wonders at what changes change will bring.

And as we go to print, details of the new bio pilot plant in Mackay have just been released. The plant is owned and operated by QUT. It was established with $3.1 million in funding from the Queensland Government and $5.2 million in Federal Government funding including $3.4 million under the National Collaborative Research Infrastructure Strategy and $1.8 million under the Super Science Initiative.

And as one would expect the Federal Innovation Minister, Senator Kim Carr, Primary Industries Minister Tim Mulherin and Premier Anna Bligh were there for the opening.

In her address Premier Bligh said diminishing oil reserves and the effects of climate change mean we must develop cleaner, greener, renewable alternatives to petroleum-based products and fuels.

“This pilot plant will road test these technologies and help refine and develop them to prove they can work on a commercial scale,” she said. “One of the plant’s first research projects will focus on turning bagasse into ethanol.”

There’s a lot of ‘clean and green’ in this issue.

In light of the Mackay bio plant announcement our vinasse story in this issue from Brazil is particularly timely.

In Brazil there are concerns with stillage or vinasse – there are millions of litres of this by-product of sugar and ethanol production being used as fertiliser. Cane field fertigation is the preferred disposal option because it’s low cost and technologically very simple. But there are problems with the contamination of water ways and aquifers. Our story comes from a researcher working to address this particular aspect of water quality.

Cane farmers are also under increasing pressure to improve the quality of water running off farms and into lagoons, creeks and into the water table. There are some sugar growing areas that aren’t viable anymore because of salinity.

We take a look at the experiences of a Burdekin farmer who is trialing trickle irrigation on a farm scale.

The trickle block is using a lot less water than the flood blocks but it is a lot more expensive than flood infrastructure.

Funding through the Australian Government’s Reef Rescue program made the conversion much more affordable. This was very important as trickle tape costs $3500 a hectare alone. Other infrastructure, like pumps, filters and computerised timers, is on top of that.

The requirements of the Great Barrier Reef Protection Legislation has also resulted in a new range of fertiliser blends designed to help meet farmers’ needs – both with respect to legislative compliance and agricultural efficiency.

And if meeting water and fertiliser challenges were not enough, on the milling side Biomass Technologies – a partnership between farmers from the Burdekin region and commercial interests from Sydney – has unveiled their BT10 Processor. This unit is designed to separate fresh cut sugarcane into juice and fibre on the spot, without resorting to a traditional mill. It has a custom built shredder, produces clean fresh juice and dry and clean fibre, and, it is claimed, has surprisingly low energy consumption.

The challenges never cease – it’s a hard job but someone has to do it and Phil, our resident fisherman, has left the building. No, not in the sense of Elvis but more in memory of his old mate ‘Gunna’ who was always ‘gunna’ do the big fishing trip to the Top End but never quite got there. Phil’s on the road – and the water of course – but through the marvels of modern technology and Swedish backpackers with technological skills – he will still be regaling us with his fishing and crabbing exploits over the next few months. Now that’s a water issue we would all like to get our teeth into!

**In this issue...**

**Flood flows to a trickle**

Paul Villis grows cane near Ayr and he’s trialing trickle, or drip, irrigation on part of his farm. Trickle irrigation comprises rows of plastic tape buried underground that delivers water directly to the roots of the plant through tiny drippers that regulate water flow...

*See article ........................ Page 7*

**Processing cane outside the square?**

Biomass Technologies is a partnership between farmers from the Burdekin region and commercial interests from Sydney. Their recently unveiled BT10 Processor is designed to separate fresh cut sugarcane into juice and fibre on the spot, without resorting to a traditional mill.

*See article ........................ Page 11*

**The formidable Fitch**

In 1929, horses still remained supreme – they were reliable and providing you didn’t mind rising before dawn in order to firstly catch the things, then feed them, then untangle the harness, then stand on your tippy toes in order to slip the bridle over their heads, and so on. But of course an hour had passed and a furrow had yet to be turned.

*See article ........................ Page 23*
EFFECTIVE ON NUTGRASS

The newly registered solution for control of nutgrass in plant and ratoon cane.
The CRC SIIB wound up its research on June 30, 2010, after seven years of successful biotechnology research for the Australian sugarcane industry.

According to CRC SIIB Chief Executive Officer Dr Peter Twine, the CRC’s research and development outcomes (see ‘Major Outcomes’ table) are proof that a cooperative venture between research, industry, government and commercial groups can make big advances in a short time frame. He said the Centre’s impressive effort would help to improve the long-term commercial and ‘green’ potential of Australian sugarcane.

Peter said the CRC’s research had developed state-of-the-art breeding tools to help breed environmentally friendly and higher performing new varieties. He said the technology will help to achieve a more secure and profitable future for Australian sugarcane.

“The CRC also developed promising new products based on sugarcane such as a basis for numerous health products that could tackle diabetes, and a ‘green’ packaging product which could meet growing national and international demands for recyclable waterproof paper,” Peter said.

“During our seven years, we have

### CRC SIIB MAJOR OUTCOMES

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Background</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Biomass Sugarcane</td>
<td>The CRC SIIB has developed high biomass sugarcane varieties. These have the potential to produce up to 60 per cent more biomass than regular sugarcane.</td>
</tr>
<tr>
<td>Waterproofing technology</td>
<td>The CRC SIIB has developed ‘green’ technology to waterproof cardboard. The plant-based waterproof compound is 100% recyclable and 100% effective.</td>
</tr>
<tr>
<td>Powerful GI lowering compound</td>
<td>CRC research has revealed a GI lowering compound 100 times stronger than the most widely used medicine. The compound has been identified in a readily available form in the sugarcane plant.</td>
</tr>
<tr>
<td>Biodegradable plastics</td>
<td>CRC SIIB scientists have identified how to turn sugarcane into bioplastic by producing PHB, a versatile and durable family of plastics, directly in the plant. Bioplastic provides an excellent alternative to petroleum-based plastic products.</td>
</tr>
<tr>
<td>Education Package</td>
<td>CRC SIIB education research has produced materials that will contribute to a biotechnology education package for Education Queensland. It is envisaged that better access to quality biotechnology education will help engender broad public support for this emerging field.</td>
</tr>
<tr>
<td>Nitrogen Efficient Sugarcane</td>
<td>This CRC helped identify specific genetic traits that may contribute to nitrogen use efficiency in sugarcane. The genetic information will be used by the Australian sugarcane industry to breed future nitrogen-efficient sugarcane varieties.</td>
</tr>
<tr>
<td>DArT</td>
<td>DArT is a DNA mapping tool used by wheat and barley plant breeders. The CRC SIIB developed a version of DArT for sugarcane. This is likely to help Australian sugarcane breeders achieve rapid genetic improvement of sugarcane for future varieties. The BSES-CSIRO Joint Venture has commenced using DArT.</td>
</tr>
<tr>
<td>GM Safety Information</td>
<td>A unique study (supported by CRC SIIB) into the reproduction of wild sugarcane in Panama, Central America, has provided environmentally valuable information for the Australian sugarcane industry. The research will help the Australian industry to safely manage future genetically modified varieties.</td>
</tr>
</tbody>
</table>
With local recommendations, we take the hassle out of calculating your optimum nitrogen and phosphorus application rates.

Nutrient Advantage is the laboratory service from Incitec Pivot Fertilisers which supports local distributors in providing a quality soil analysis service. With ASPAC certification, ISO 17025-2005 compliance and NATA accreditation, the Nutrient Advantage Laboratory meets the ‘suitable laboratory’ proficiency requirements for sugarcane nutrient analysis under Reef Protection Regulations. Monitoring your soil fertility with Nutrient Advantage will also assist you in identifying cost-effective fertiliser solutions to help optimise crop productivity.

To arrange soil testing, contact your participating local Incitec Pivot Fertilisers distributor.
Freecall Nutrient Advantage Laboratory 1800 803 453.
brought together some of the world’s best agricultural biotechnologists to map out a new future for the Australian sugarcane industry. And, many biotechnology students have been given the opportunity to work on real-life projects focused on commercial outcomes.”

The CRC SIIB was established by the Australian Government under the Cooperative Research Centre (CRC) program, and supported by a powerful combination of sugarcane biotechnology expertise and commercial investment.

Since its inception in 2003, the CRC SIIB’s researchers and students have been making great progress towards harnessing the true potential of Australia’s richest energy crop. The CRC SIIB will keep its website active until June 2014 as an industry and science resource covering major achievements in sugarcane biotechnology.

To find out more go to: www.crcsugar.com

NEW BIOTECHNOLOGY COMPANY

To ensure the best possible commercialisation of the Centre’s intellectual property, the CRC SIIB has established Biotechnology Company, Sacron Innovations Pty Ltd. The Australian sugarcane industry and CRC SIIB participants have structured Sacron Innovations to enable strong business opportunities to flow on from the CRC’s major research outcomes.

Core business will include development and commercialisation of outcomes arising from CRC research including waterproofing technology, Barrecote and the powerful GI lowering compound, GI Wise. These are original, Australian innovations that provide positive opportunities for the Australian sugarcane industry to engage in the development of promising new products.

Sacron Innovations’ products will tap into previously unexplored areas of sugarcane biotechnology. In the long-term, Sacron Innovations will ‘grow’ the business outcomes of the CRC SIIB and will consider adopting other bio-based research opportunities that flow on from research groups throughout Australia.

The Sacron Innovations web site is under construction and will be live mid year. Information on Sacron Innovations can be found at the CRC SIIB web site (www.crcsugar.com).

CRC SIIB scientists have identified how to turn sugarcane into bioplastic.

Better education packages will deliver broad public support.

GI Wise – GI lowering compound.
It’s a radically different way to water cane and has neighbours looking over the fence.

It uses far less water, increases yield and really improves the quality of water that runs off farms.

Paul Villis grows cane near Ayr and he’s trialing trickle, or drip, irrigation on part of his farm. Trickle irrigation comprises rows of plastic tape buried underground that delivers water directly to the roots of the plant through tiny drippers that regulate water flow.

Ayr is in the heart of the Burdekin region and all sugar grown here is irrigated. Most farms are irrigated by flooding the inter-rows which is labour intensive but, from an infrastructure point of view it’s cheap.

Not all irrigation systems in the Burdekin are metered, making water quite inexpensive for some growers. Paul’s channel water is metered. Burdekin farmers are

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**Demonstration of Black Urea® at 73% application of usual granular urea on Sugar Cane in Nth QLD**

<table>
<thead>
<tr>
<th></th>
<th>Black Urea®</th>
<th>V</th>
<th>Urea</th>
<th>Variance</th>
<th>Comment</th>
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</thead>
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<tr>
<td>Production Units per Ha</td>
<td>1404.47 V</td>
<td>1342.04</td>
<td>62.43</td>
<td>Increase in units per ha</td>
<td></td>
</tr>
<tr>
<td>Income per ha (@$4/u)</td>
<td>$5617.88 V</td>
<td>$5368.16</td>
<td>$249.72</td>
<td>Increase in income per ha</td>
<td></td>
</tr>
<tr>
<td>Fertiliser cost per ha</td>
<td>$178.40 V</td>
<td>$223.30</td>
<td>-$44.90</td>
<td>Decrease in input costs per ha</td>
<td></td>
</tr>
</tbody>
</table>

**TOTAL BENEFIT BY USING BLACK UREA® $294.62 INCREASE IN PROFIT PER HA**

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under increasing pressure to improve the quality of water running off farms and into lagoons, creeks and into the water table. There are some sugar growing areas that aren’t viable anymore because of salinity.

The trickle block is using a lot less water than the flood blocks but they don’t know how much less at this stage.

Paul’s comfortable with the idea of trickle irrigation because he used to grow corn and beans in Bowen. Most of his cane blocks are flood irrigated but he installed trickle on a small area because the shape and form of the blocks weren’t suited to flooding - he was getting unreliable watering. He has seven hectares under trickle with potentially more to come.

Trickle irrigation is a lot more expensive than flood infrastructure. Paul weighed up spending the money laser leveling the problem blocks or installing trickle, both costs were comparable.

MORE EXPENSIVE

Trickle tape costs $3500 a hectare alone. Other infrastructure, like pumps, filters and computerised timers, is on top of that. Paul says, “It’s a 10 year project really. You’ve got to look at the life of it. The life of the tape is 10 years plus.”

Funding through the Australian Government’s Reef Rescue program made the conversion much more affordable. NQ Dry Tropics administers the program’s funding throughout the Burdekin Dry Tropics region. Reef Rescue is about helping landholders make the changes that will improve the quality of water running into the Great Barrier Reef.

From the initial small trial block, yields increased from 160 tonnes a hectare under flood irrigation to 195 tonnes a hectare under trickle. Paul thinks that if the results of the small trial are consistent, the cost of trickle tape will be paid for in less than three years. Paul says it’s difficult to translate these gains to larger blocks because the trial was so small. He thinks they’ll have a better idea about the benefits after the completion of the 2010 harvest.

He’s stuck to the same fertiliser rates as he would use under flood and he says there are potential savings in fertiliser requirements. Trickle isn’t as demanding on labour as flood is. One of the other big differences between the two is the irrigation frequency. Paul used to water the blocks once a week under flood, under trickle he’s watering every day. The system is controlled by a computerised switchboard which schedules timing, something a local extension business helps determine.

Steve Attard from CSIRO thinks trickle has the potential to be applied to a number of fields in the Burdekin. He’s helping Paul with irrigation scheduling.

He says, “There’s scope for more drip irrigation in the Burdekin especially in small paddocks that are hard to furrow [or flood] irrigate and have soils that have high infiltration rates, like sandy soils.”

MORE PRECISION

Trickle irrigation enables you to increase the precision of irrigation scheduling and nutrient application. Steve says it’s the combination of these things that allows farmers to maximise their production and reduce inputs.

Trickle irrigation also allows you to apply nutrients each time you irrigate in small amounts and more frequently than flood. By applying smaller amounts more often there’s less chance of losing nutrients through rainfall events and you’re not saturating soils and causing denitrification – something that happens when nitrogen fertiliser converts into nitrogen gas and is lost from the soil profile.

The downsides to trickle are the risks of the tape and drippers clogging, cane roots getting into drippers and rats damaging the
tape. So far, one season on from installation, none of these things have happened.

The farm is in a poor water quality area in terms of promoting algal build up so Paul flushes the trickle tape out with hydrogen peroxide every two months or so. Paul is doubtful whether anyone who isn’t using channel water or who has high iron concentrations can use trickle because of its tendency to clog up. Water with high iron content is common around the Burdekin.

Trickle irrigation is green trash friendly. Paul says they’ve tried cutting the cane green instead of burning it a number of times but it doesn’t work because, under flood irrigation, they can’t get the water to run down the rows. With trickle that’s not a problem since the tape is underground and it feeds water directly to root zone.

**ECONOMICS BIG FACTOR**

Steve Attard thinks there are opportunities to examine trickle systems across other farms but the economics is the big factor. He says, “Paul has shown there are substantial production benefits but we need to look at how the benefits accrue over the lifecycle of a crop system. We need proof of performance over five to 10 years.”

A point to consider with trickle is electricity bills. Evan Shannon has worked with BSES and a number of farms in the Burdekin that have installed trickle irrigation. He says one of the biggest issues with this type of irrigation is that it uses a lot of energy due to its pressure demands. Electricity is an ongoing and ever increasing cost. He says, “It will cost you considerably more per megalitre in electricity compared to furrow but you should use significantly less water in total.”

Rats can also hinder watering but Evan says rats can be managed with good hygiene and baiting.

This is the course another farmer in the Burdekin takes. He’s used trickle for 15 years in cane and says he’s had no problems with it but he uses a lot of bait to keep rats at bay. The cane and vegetable grower prefers to remain nameless.

He says he gets 15 per cent improvement in yields from blocks that are trickle irrigated and he’s in the process of converting more blocks from flood to trickle. But he doubts he would put in the investment of trickle if the blocks were solely used for cane and not horticulture as well.

Evan Shannon points out that emitter blockage can be caused by root intrusion or precipitates of soil and/or fertilisers. They can be recognised by strict monitoring of flow rates and paddock pressures and strategic maintenance programs.

Paul Villis says they’re not rushing in to convert other blocks to trickle unless there are good incentives to do so like water restrictions or price increases in future. He says they’ll be the driving influences as to whether trickle is affordable.

“Trickle has the potential to deliver the best water quality outcome in the area. Everyone’s sitting on the fence waiting to see if it works or not.” he says.

### Irrigation software could save 800 GLs a year

A Queensland water scientist has received a prestigious international award for his role in developing software that saves 20 percent of water used to irrigate over a million hectares of crops such as cotton, grains and sugar cane in Australia.

Dr Malcolm Gillies, a hydrologist with the Cooperative Research Centre for Irrigation Futures, won the Young Professional Award presented recently in New Delhi by the International Commission on Irrigation and Drainage.

Malcolm, part of the CRC team, said the software can be used to monitor the performance of furrow, bay and basin irrigation, which are the main methods to irrigate crops in Australia.

“Water savings averaging 20 per cent, and as high as 50 per cent, can be achieved through improved flow rates and scheduled irrigation times suited to various field layouts and soil types. Potential total water savings in Australia are estimated at over 800,000 ML (800 GL) a year.

“The saving is potentially applicable to farming systems in Australia which use more than four million megalitres (4000 GL) of irrigation water,” he said.

Malcolm developed three new software tools to improve current irrigation efficiency procedures. The tools are calibrated to field conditions using measurements such as inflow rates, water travel times, flow depths and runoff.

The measurements are used to produce a model that evaluates the performance (efficiency and uniformity) of the irrigation system. The tools can also be used to conduct ‘what if’ scenarios and help farmers identify strategies to improve crop watering.

The new tools will be integrated into an existing suite of irrigation technology called Irrimate, developed primarily by scientists at the University of Southern Queensland.

The Irrimate service is currently being delivered to Australia’s cotton industry by a network of registered consultants. To date, it has provided $36 million in benefits to the industry in terms of water and energy savings, and productivity improvements.

The CRC for Irrigation Futures is a partnership of universities, state and federal government agencies, water service providers and industry. It exists to provide tools and knowledge for better decision-making about irrigation in Australia. Further information: www. irrigationfutures.org.au

The International Commission on Irrigation and Drainage was established in 1950 as a scientific, technical and voluntary organisation to enhance the worldwide supply of food and fibre for people by improving water and land management: http://www.icid.org/awards.html#watsave

**Contact:**
Malcolm Gillies, University of Southern Queensland, ph: (B) 07 46311715 (M) 0429 662 802.
Ian Atkinson, CEO, Irrigation Futures CRC, ph: (B) 08 8272 4444 (M) 0427 039 304.
The growing demand for renewable fuels has seen a significant increase in sugarcane production in many countries around the world such as Brazil, India, China and others.

In Brazil there are concerns with stillage or vinasse – a by-product of sugar and ethanol production – being used as a fertiliser. There are 15 litres of vinasse produced per litre of alcohol.

Although other methods of disposal – including processing for fuel generation – have been looked at, cane field fertigation continues to be the preferred disposal option – it’s low cost and technologically very simple.

But there are problems with the practice of fertigation using vinasse. These include the possibility of contamination of aquifers by potassium; salinisation of agricultural land; and eutrophication (water bodies receive excess nutrients that stimulate excessive plant growth).

**Using vinasse as a fertiliser?**

Vinasse is composed of water (89 to 94 per cent), organic substance (about five per cent) and minerals – especially potassium, phosphorus, nitrogen and magnesium – (about 1.7 per cent).

This research was undertaken to deliver a precise, real-time measurement of the potassium level in natural vinasse. The potassium content has become the bottleneck for the amount of vinasse that can be safely applied per hectare of crop.

The development of a ‘virtual’ sensor will provide the sugar and alcohol industries and the environmental monitoring agencies with more precise information about what is being applied in the field. In this way there will be improved farming efficiencies with greater cane production and still ensuring that the soil will not be saturated with potassium.

For the environment monitoring agencies this system can deliver continuous information on the potassium content in the vinasse during the entire period of alcohol production.

**METHODOLOGY**

The virtual sensor was developed using “artificial neural networks” (ANN) – computational techniques that are able to solve problems through simple circuits that simulate the operation and behavior of the human brain. They acquire knowledge through experience – learning, making mistakes and making discoveries.

Two artificial neural networks were tested: multilayer perceptron (MLP) and radial basis functions (RBF). It was found that the RBF results were good when using a small database but for an extensive database – required in the vinasse testing – the MLP networks were more efficient.

Commercially available industrial transducers were used to collect the data – they measure on-line conductivity and hydrogen potential. The artificial neural network technology estimates the potassium ions (K+) present in the stillage from this data (Table 1).

To test for accuracy the virtual estimation was compared with the results from physical testing. Extensive sampling of the vinasse was undertaken and the samples collected were taken to the laboratory for analysis.

**RESULTS**

The virtual/computer system was considered a success as it performed its function satisfactorily – the average error was 3.26 per cent in the 35 samples tested (compared to the physically collected reference data).

From the results presented it was concluded that the method developed was efficient and accurate. The advantages of the online measurement of potassium levels in vinasse are the precision and convenience.

For more information: Paulo Toledo  
Email: pauloht@gmail.com

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**TABLE 1: Comparison between neural networks and bench top equipment**

<table>
<thead>
<tr>
<th>Item</th>
<th>Neural networks</th>
<th>Bench top measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Error percentage</td>
<td>Less than 4%</td>
<td>Less than 5%</td>
</tr>
<tr>
<td>Response time</td>
<td>Instant</td>
<td>Few seconds</td>
</tr>
<tr>
<td>Total time for results</td>
<td>Greatly reduced</td>
<td>Large, because it depends on physical collection of vinasse samples</td>
</tr>
<tr>
<td>Practicality</td>
<td>Does not depend on physical collection and measurement.</td>
<td>Depends on chemical sample preparation for the apparatus to measure Bench</td>
</tr>
</tbody>
</table>

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Paulo Toledo, University of São Paulo looking to develop an efficient on-line measurement of potassium levels in vinasse.
Biomass Technologies is a partnership between farmers from the Burdekin region and commercial interests from Sydney. Their recently unveiled BT10 Processor is designed to separate fresh cut sugarcane into juice and fibre on the spot, without resorting to a traditional mill. It has a custom built shredder, produces clean fresh juice and dry and clean fibre, and has surprisingly low energy consumption. It is currently designed to process at a rate of 10 to 15 tonnes per hour, with future units likely to target around 50 tonnes per hour.

**Relocatable units**

With harvesters currently at work each cutting around a thousand tonnes of cane a day, the through-put to me looked a little on the low side. Chairman of Biomass Technologies, Mark Diamond explains that the initial concept was developed to process cane immediately it was harvested.

“The thought was to pair the processor with the harvester – basically a unit on the back of a truck. But then it was decided to go for a relocatable unit that could be brought to a central position to receive cane that was hauled only a minimal/visible distance. And when we did the sums, the 50 tonnes per hour capacity unit hit the ‘sweet spot’ for economy of scale.”

**Application in Australia and abroad**

Mark Diamond believes that the technology has significant application in two areas:

- Where there is a potential to grow cane but there is no mill – this is of particular interest to countries like Indonesia, Thailand and China; and,
- Where there is an existing cane industry with a mill but haulage distances etc make traditional processing unviable – the unit was unveiled on the Sunshine Coast where viability is of particular concern for cane producers and processors alike.

The unit is powered from the grid and the company believes that their energy cost per tonne of cane processed is very competitive – an independent analysis has been commissioned and the results should be available within a few weeks.

The overall cane processing cost is also believed to be very competitive.

“The processor unit incorporates leading edge IT that has delivered a technology that is neither land nor labour hungry,” explains Mark. “It also delivers both juice and fibre in a pure state ready for value adding.”

This first unit was built for KFSU – a Queensland company with a processing plant in Home Hill. The plant will deliver various food ingredients derived from sugarcane – Fibacel “dietary fibre” will be the first product to market.

“We believe the technology is cutting edge, highly efficient and affordable,” says Mark Diamond. “Our goals are to get the technology taken up as widely as possible within the sugar industry, as well as broader applications in sweet sorghum and other crops, and to keep it Australian owned.”

For further information visit www.biomasstech.com.au

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**THE CONCEPTS OF BIOMASS PROCESSING**

The BT10 technology was first developed and patented by Trevor Cullinger in 1997. The company is 100 per cent Australian owned and is a partnership between Trevor Cullinger, Sydney investors and members of the Burdekin Irrigation Group from Home Hill in Far North Queensland.

The concepts of biomass processing are as follows:

- Biomass processing uses shredding, mincing and spinning to process the crops and plant matter (either on the spot or in a relocatable unit) rather than the cutting and crushing devices used in a traditional mill.
- Biomass processing uses high end technology so that net water use is low. It minimises the rehydration and chemical additive processes currently utilised in many traditional milling processes.
- The technology can be supplied to accept a wide variety of feedstock in various differing formats. For instance in the sugarcane industry the technology can accept whole stick cane or harvested billets. The feedstock is then minced before applying centrifugal force to extract the juice or oil and separate the plant fibre.
- The biomass processor separates juice, oil or other fluid from the fibre or other solid components to produce a clean fluid with demonstrably high rates of purity and extraction.
- Fibre is obtained in a clean dry condition.
- Energy usage has been calculated to be significantly less than traditional milling relative to matching amounts of crops or plant matter processed.

**BT10 Processor.**
Aiming to reduce nutrients and pesticides flowing into the Great Barrier Reef, the Queensland Government’s new Great Barrier Reef Protection Legislation has resulted in greater demand for customisable fertiliser blends to meet specific soil nutrition requirements.

In response, independent Australian fertiliser company, Hi Fert, has announced a new range of fertiliser blends called ReefChoice designed to help meet cane growers’ new fertiliser needs – both with respect to legislative compliance and agricultural efficiency.

As cane farmers are well aware, the Reef legislation regulates amongst other things the growers’ use of fertiliser and pesticides - putting greater onus on growers to keep detailed records of applications on their properties.

Growers are also required to undertake soil testing more regularly on their properties. The results will then be used to calculate the maximum amount of nitrogen and phosphorous that can be applied.

Hi Fert has been involved at an advisory level in exploring how the new legislation might be applied equitably for growers. The company’s Market Development Agronomist (Sugar and Horticulture), Andrew Olley was invited to take part in the Technical Task Group (TTG) to provide input on the practicalities of grower compliance, and provide industry guidance on regulation implementation.

Andrew then designed and formulated the ReefChoice product range to meet the needs of the ReefWise program - and to deliver grower savings in time and resources. More than 200 off-the-shelf blends that meet over 80 per cent of fertiliser requirements are now available to growers immediately.

Hi Fert dealers can now also employ a new Product Selection Tool to interpret grower’s soil test results, inputting their nitrogen and phosphorous requirements to see which blend provides the optimum nutrients and is the most cost efficient product per hectare to suit their needs.

For more information contact hifert.com.au

Reef Rescue improves 500,000 hectares

Mike Berwick, Chair Queensland Regional NRM Groups Collective believes Reef Rescue, which has only been running for two years, has already resulted in significant change. The partnership approach to improving water quality flowing to the Great Barrier Reef lagoon, has resulted in improved management practices over half a million hectares of land. That’s the equivalent area of one million football fields.

Reef Rescue, a partnership between Queensland’s Regional Natural Resource Management Groups and Industry Bodies is a $200 million, five-year initiative, funded by the Australian Government’s Caring for Our Country Program. The Program aims to improve the quality of water flowing into the Great Barrier Reef Lagoon.

Six Regional Natural Resource Management Groups and four Industry Groups are partners in Reef Rescue. These organisations are: Burnett Mary Regional Group for Natural Resource Management, Cape York Sustainable Futures, Canegrowers, Growcom, Queensland Dairyfarmer’s Organisation, NQ Dry Tropics, Terrain NRM, Reef Catchments Mackay-Whitsunday, Fitzroy Basin Association and AgForce.

REEF RESCUE OUTPUTS

July 1 2008 – March 30 2010

Queensland’s peak industry groups, in partnership with Queensland’s Regional Natural Resource Management Groups are working to improve water quality flowing to the Great Barrier Reef lagoon. In less than two years, we have:

- Trained and engaged with at least 2000 land owners around improved practice;
- Entered into contracts with more than 1480 land managers;
- Helped land managers improve their practices over 500,000 hectares;
- Distributed $27 million worth of incentives and negotiated for an additional $46 million to be contributed by land managers;
- Worked with graziers to erect 700 kilometres of new fencing to minimise bank, gully and hillslope erosion;
- Supported 490 graziers who improved ground cover on more than 344,000 hectares of land;
- Worked with the cane, dairy, grain and horticulture industries to improve fertiliser application over more than 102,000 hectares;
- Worked with industries to improve pesticide and herbicide application over more than 174,000 hectares; and,
- Improved soil management and tillage over 280,000 hectares.
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BUNDABERG
Michael Brown
07 4153 6011

GOLD COAST
Ross Inglis
07 5553 8914
Once again our very own “Top Gear” contact is Ian Gallard. Ian has had a lot of years servicing and maintaining cane harvesters in Northern NSW. He worked as the Manager of Noel Graham Farm Machinery at the Case IH dealership’s Wardell Branch and is now Operations Manager for the Lower Richmond River Cane Harvesting Co-operative Ltd, formed following the merger of four harvesting groups.

A reduction in cane area over recent years saw the group sell one unit to cut back to three Case IH 7700 tracked harvesters. After a successful year running as a joint venture of the four harvesting groups the amalgamation has now been finalised. The new Co-operative has purchased a new Case IH 8800 series track machine, standing their oldest machine down.

For Ian, effective in-harvest maintenance begins with the operators.

“Like everybody else in the industry, we are keen to find – and to hang on to – good operators,” explains Ian. “We have one driver now on the verge of retirement – at 67!”

“Good operators keep their eyes and ears open, watching for the early tell tale signs of wear and listening for subtle changes in operating sounds. They pick up on those relatively minor things that, if not attended to, can become major issues.”

Ian believes that good operators take a degree of personal pride in getting the best out of the gear they operate. Their harvest routine is a proven one that he believes would be familiar to many:

- Before start up in the morning we check engine oil and coolant levels, gearcase oil level, and do a visual check of the chopper and basecutter box.
- The elevator chain is given a push to see if OK.
- The turntable pivot is checked and greased every day.
- The basecutter blades are checked every day – this is important – particularly with cane growing in abrasive soil. After cutting up to a 1000 tonnes of cane each day the blades wear and may well have to be rotated. Ian’s crews use double ended blades that are rotated end for end and side for side. They expect to get around a week of harvesting from each blade, depending on ground conditions.
- The chopper blades are checked for gaps and they usually change a blade every few days depending on trash conditions. They expect about 10,000 tonnes out of a set of blades but have seen a set do 25,000 tonnes without being changed – but they were understandably well worn.
- Air cleaners and engine belts are visually checked.
- The elevator pivots are greased every day.
- The elevator chains are oiled. Ian notes that some operators prefer to run chains dry, believing that the oil leads to dust collecting on the chain and this oil/dust mixture acts like a cutting paste and actually exacerbates wear.
As the harvester is warming up (important to get some temperature into the hydraulic oil before harvesting) we do a walk around checking for such things as leaks and chaffed hoses etc.

Machines are given a quick clean down at the end of the day, again looking for any possible problems.

Elevator flights are checked for tightness after the first few weeks and are shifted to another link half way through the season.

Track joiner links are also checked for tightness after a few weeks and again later on.

FROM THE CASE IH A8000 OPERATOR’S MANUAL

To maximise harvester efficiency prepare your machine before the harvest and keep it in the best condition possible before, during and after the working period. Failure to do this will lead to unnecessary costs and losses. For example:

- **Machine not prepared beforehand**
  Dirt and trash in machine; poor inspection; poor lubrication; defects not found; oil leaks not found; heavy wear; blunt blades – leads to: dirty and damaged cane in the bin; machine unreliable; time lost in late starts and breakdowns.

- **Machine neglected during the day**
  Blades not sharp; choked rollers; choked extractors; blocked elevator floor; blocked cooling air screens – leads to: damaged cane; dirty cane; overheating; breakdowns; increased fuel consumption.

- **Topper very high**
  Leads to too much leaf in the bin; leafy tops not cut cleanly; topper gets choked.

- **Topper very low**
  Leads to good cane thrown to waste.

- **Topper blades blunt**
  Too much leaf in the bin; chokes in topper – leads to slow harvesting; extra fuel consumption; cane not cleanly cut.

- **Basecutter too high**
  Leads to dirty cane left in the field.

- **Basecutter too low**
  Leads to dirty cane; blades not sharp; damaged cane; dirt in the machine; increased fuel consumption.

- **Incorrect basecutter angle**
  Leads to high wear on basecutter discs; damaged stools; cane left in field.

- **Basecutter blades not sharp**
  Leads to damaged cane; cane not gathered; damaged stools.

- **Cropdividers too low**
  Leads to dirt in the cane; heavy wear on point; increased fuel consumption.

**Chopper blunt (‘dull’) – Chopper knives**
Leads to cane billets not cleanly cut; cane liable to deteriorate before reaching the mill; reduced weight of cane in a full container; dirty sample in container.

**Roller slats worn, bent or choked with dirt**
Leads to blockages; damaged cane; dirty cane; short billets.

**Speed too fast**
Leads to blockages; damaged cane; short billets; poor trash extraction; engine overloaded.

**Speed too low**
Leads to harvesting taking too long.

**AT THE END OF SEASON**

- **CLEAN** the machine completely, removing all dirt. Take care not to subject bearings and retainers (seals) to high pressure from hoses or cleaning vapour.

- **INSPECT** the machine meticulously.

- **CORRECT** any wear, damage or defect which could impair the performance or reliability of the machine during the coming harvest.

- **CARRY OUT** all maintenance routines.

- **APPLY** rust inhibitor oil to all unpainted metal parts.

- **RETRACT** all the hydraulic cylinders and cover their exposed shafts with either grease or corrosion inhibitor to protect them against damage.

**DURING THE PERIOD BETWEEN SEASONS**

- **RUN** the machine for a minimum of 1 Hour at least once every month, operating all drives and controls.

- **KEEP** the battery charged when not in use.

- **PROTECT** the tires from exposure to sunlight.

- **REST** the front suspension frame on a block of wood.

- **INSPECT** all spare parts and tools. Replace stocks if necessary. Consult your authorised Case IH Austoft Dealer.

---

Greasing elevator pivot.

---
With industry-wide management improvements, average nitrogen rates in cane crops have now fallen below the baseline rates specified in the Six Easy Steps nutrient management guidelines. As a result, fertiliser nitrogen use efficiency is near its highest level in 40 years.

But there are still opportunities for further improvements. These were reviewed in a paper presented in Bundaberg, at the Australian Society of Sugar Cane Technologists (ASSCT) Conference in May.

The following is an extract from the paper by Andrew Wood from Sucrogen Cane Products, Bernard Schroeder from BSES Limited, and Rob Dwyer from Incitec Pivot Fertilisers titled ‘Opportunities for improving the efficiency of use of nitrogen fertiliser in the Australian sugar industry’.

**RECENT TRENDS IN NITROGEN**

Across the sugarcane industry, application rates of nitrogen fertiliser have declined steadily from 206 kg per hectare of nitrogen for the 1997 crop to 164 kg per hectare of nitrogen for the 2008 crop. A further reduction to 148 kg per hectare of nitrogen occurred for the 2009 crop, which was probably influenced by the high world fertiliser prices in 2008.

No clear trends in fertiliser nitrogen use efficiency occurred during the period 1997–2003 due to adverse seasonal conditions and fluctuating crop yields.

But in 2004, nitrogen use efficiency exceeded 0.5 tonne cane per kg nitrogen for the first time and has remained above this level since then.

It reached its highest levels of 0.56 in 2005, with a high yielding crop and a favourable growing season, and 0.55 in 2009 with lower crop yields, but reduced fertiliser application rates (Figure 1).

A number of factors have contributed to improvements in fertiliser nitrogen use efficiency during the past 13 years. These include:

• Growers adopting the BSES Six Easy Steps nitrogen guidelines, rather than using generalised industry nitrogen guidelines.

• Increased attention to using the optimal form, application method, rate, placement and time of application of nitrogen fertiliser in each block and soil type.

• Increased use of soil and leaf testing to better predict soil and crop nutrient requirements.

• Increased capacity to apply different rates of nitrogen to each block.

**FIGURE 1: Fertiliser nitrogen use efficiency (tonnes cane per kg nitrogen) for sugarcane production in Queensland – 1997–2009**
• Improved awareness of nitrogen inputs from other sources.
• A trend towards using a wider range of nutrients and a focus on balanced nutrition, leading to higher yields.
• Increased awareness of the different ways in which nitrogen can be lost.
• Increased cost of nitrogen relative to sugar revenues.
• A perception by growers that many years of green harvesting and trash retention has led to an increase in soil organic matter levels, which results in greater amounts of nitrogen being recycled.

MORE EFFICIENT CROP UPTAKE

There appears to be potential to develop sugarcane crops with enhanced nitrogen use efficiency through cane breeding, variety selection and genetic modification.

In short, some sugarcane varieties differ in their responses to nitrogen application and research is underway to identify those varieties which can acquire and use nitrogen more efficiently.

Research has also been conducted on potential nitrogen contributions from nitrogen-fixing bacteria living freely in the soil, in the rhizosphere of sugarcane and in the stems of certain varieties.

Although an improvement in nitrogen use efficiency has been achieved in Brazil through biological N-fixation, it remains to be seen whether this can be successfully applied to sugarcane production in Australia.

MORE EFFICIENT NITROGEN FERTILISERS

Surface applications of urea to a sugarcane trash blanket can, under certain conditions, result in substantial losses of nitrogen by ammonia volatilisation.

Researchers have found that ammonia volatilisation losses are greater when urea is mixed with muriate of potash and lower when urea is mixed with ammonium sulphate. This is due to the added products respectively raising and lowering pH in the microsite around the urea granules.

Cane growers have seen the commercial development of alternative products with lower volatilisation potential, such as mixtures of calcium ammonium nitrate and ammonium sulphate.

Liquid nitrogen-based fertilisers are also available and can be rapidly applied using multi-row applicators.

Controlled-release fertilisers have the potential to reduce nitrogen losses, improve nitrogen use efficiency and yields, but are generally expensive.

Trials in Australia have shown polymer-coated urea products to be effective in reducing nitrous oxide emissions from sugarcane soils and reducing ammonia losses when applied to the surface of sugarcane trash blankets.

Urease inhibitors are widely used for slowing down the rate of urea hydrolysis and inhibiting nitrogen losses by ammonia volatilisation. In cane research, two types have been found effective (CHPT and NBPT based on their chemical names). But research in Brazil found that the effects of NBPT with urea were short-lived and relatively ineffective during long dry periods in winter.

Nitrification inhibitors maintain nitrogen in the soil as ammonium and slow down its conversion to nitrate. These have the potential to reduce nitrogen losses by denitrification and leaching.

One nitrification inhibitor (DMPP based on its chemical name) was found to be relatively ineffective in reducing nitrous oxide emissions in field plots at both Murwillumbah and Mackay, but significantly reduced emissions in chambers placed over bands of treated fertiliser (Wang et. al 2008). Further evaluation is occurring in trials located in the Tully, Burdekin, Proserpine, Bundaberg, Maryborough and northern New South Wales regions.
MORE EFFICIENT MANAGEMENT PRACTICES

A range of management strategies can be employed that may assist in reducing nitrogen losses.

To reduce nitrogen volatilisation losses:
- Apply urea into the soil beneath the trash blanket.
- If urea is to be applied to the soil or trash surface:
  - apply it on or near the cane row,
  - apply it just prior to rain or irrigation,
  - consider using a mix of urea and ammonium sulphate,
  - consider using a urease inhibitor,
  - delay application until the cane is around 50 cm tall, and
  - consider sources of nitrogen less prone to volatilisation loss than urea.
To reduce denitrification losses:
- Improve surface drainage;
- Consider using moulded rows;
- Consider splitting nitrogen applications where waterlogging occurs frequently; and,
- Take note of climate and weather forecasts to adjust nitrogen application strategies.
To reduce leaching losses:
- Minimise tillage;
- Use plants such as fallow legume crops to store nitrogen;
- Consider splitting nitrogen applications on permeable soils; and,
- Take note of climate and weather forecasts to adjust nitrogen application strategies.

While splitting nitrogen fertiliser applications represents a sensible strategy for reducing nitrogen losses by leaching and denitrification, very little yield benefit has been measured in sugarcane crops.

Site-specific nitrogen management is a sound strategy where soil tests are available for each cane block or where growers have access to a soil map and reference booklet containing soil specific management guidelines.

Precision farming technologies and variable rate fertiliser application are available to vary nitrogen fertiliser applications continuously across a field. This raises the possibility of achieving similar yields to those obtained with standard uniform management with a reduced amount of nitrogen fertiliser, or achieving higher yields with the same amount of fertiliser. These technologies are available, but are not yet widely used.

Trickle irrigation trials conducted near Bundaberg have shown that it may be possible to reduce nitrogen application rates to around 75 per cent of the industry standard.

Leaf analysis is widely accepted as a means of improving the effectiveness of fertiliser use through better recommendations. An alternative approach to assist nitrogen fertiliser decision-making is to monitor the nitrogen composition of shredded cane at sugar mills using rapid NIR analysis.


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TAKE HOME MESSAGES

- Nitrogen losses can have an impact on the environment and can also represent a serious economic loss to farmers.
- Cane growers have reduced application rates in recent times, but generally sustained long-term crop yields, significantly improving the efficiency of their nitrogen use.
- The potential exists for further improvements in nitrogen use efficiency in cane through more efficient uptake of nitrogen by the crop, but these methods are not currently available. Research is under-way to identify helpful plant traits and investigate potentially beneficial nitrogen-fixing bacteria.
- Fertiliser products are being developed and trialled in sugarcane to limit the potential for nitrogen losses through volatilisation, denitrification and leaching. Past experience suggests that these may be more expensive than conventional fertilisers.
- Growers can also use management techniques to limit the potential for nitrogen losses and improve efficiency and these have the potential to deliver immediate benefits. These techniques range from applying urea into the soil beneath the trash blanket to variable rate fertiliser application.
Sugar outlook in the medium turn – 2014–15

From the report by Max Foster – ABARE

WORLD SUGAR PRICES TO DECLINE FROM HIGHS

Over the medium term, the world sugar indicator price is projected to decline from the high of 2009–10, as world carryover stocks of sugar gradually recover. Continued strong growth in world sugar consumption, fuelled by strongly growing incomes in developing countries such as India and China, is not expected to be sufficient to offset increased production.

Nevertheless, the sugar indicator price in real terms is projected to still remain above the lows that occurred in the period 1997 to 2003.

The concern with the current high world sugar prices is that they will lead to overinvestment in sugar production capacity throughout the world. Once planted, a sugarcane crop can be harvested annually for up to six years in some countries.

While there is a relatively high cost with the initial plantings, the cost of harvesting in subsequent years is relatively low and explains why there has been a history of relatively short price spikes in the world sugar market, followed by longer periods of lower prices.

WORLD SUGAR PRODUCTION TO INCREASE OVER THE MEDIUM TERM

World sugar production is projected to increase to 185 million tonnes by 2014–15, which is 18 million tonnes higher than the record of 167 million tonnes produced in 2007–08.

The key determinant of world sugar production over the medium term is likely to be Brazilian cane sugar production and its allocation between sugar production and ethanol production.

Government policies in India and the European Union will be important determinants of sugar production in those countries.

Demand for ethanol as a replacement for oil-based fuels is increasing rapidly and being encouraged in a number of countries through a range of government policies. These policies include targets for biofuel use and tax concessions for producers.

The feedstocks for ethanol are primarily corn, sugarcane and molasses.

Brazil

Brazil has been encouraging the use of sugarcane for ethanol production for more than 30 years. As well as meeting a growing domestic demand for ethanol as a vehicle fuel, Brazil also accounts for around 40 per cent of world trade in ethanol.

Research is underway around the world into using cellulosic sources such as switchgrass or cane trash to produce ethanol, but ethanol production from these sources is unlikely to be significant over the outlook period.

Brazil is expected to remain the dominant player in the world sugar market over the medium term. Given relatively low production costs and the potential to bring substantial areas into cane production, Brazilian production of sugarcane is projected to be 36 per cent higher in 2014–15 than in 2009–10 (Figure 1).

The proportion of sugarcane used in Brazil for ethanol production is forecast to

FIGURE 1: Brazilian sugarcane production and allocation

![Graph showing Brazilian sugarcane production and allocation](image-url)
decline in 2009–10, because of high sugar prices in relation to ethanol prices, but is projected to resume rising throughout the remainder of the outlook period, as ethanol prices respond to higher oil prices and increasing demand for ethanol for use in Brazil’s growing fleet of flexifuel cars.

Brazilian sugar production is projected to reach around 50 million tonnes by 2014–15, compared with a forecast 41 million tonnes in 2009–10.

India

Indian sugar production is expected to rebound in 2010–11, following two poor harvests in 2008–09 and 2009–10. By 2014–15, Indian sugar production is projected to be 30 million tonnes, compared with the record output of 31.7 million tonnes in 2007–08.

European Union

Reforms to the Common Market Organisation for sugar in the European Union are largely complete. The measures include lower guaranteed minimum prices to beet growers, lower market intervention (guaranteed) prices and reduced quotas to which the guaranteed prices apply.

The sugar quota is set at 14.5 million tonnes but there is the possibility of increased out of quota sugar beet production over the next few years in response to high world sugar prices.

Some of this out of quota sugar is expected to be used to make ethanol but most is expected to be exported, subject to the European Union’s World Trade Organisation annual sugar export subsidy limit of 1.37 million tonnes.

Increased sugar production is expected in many other smaller producing countries over the outlook period. For example, Indonesia has recently announced plans to increase domestic sugar production to bring its domestic sugar consumption and production into balance by 2014.

**STRONG GROWTH IN WORLD SUGAR CONSUMPTION**

World sugar consumption has increased at an average rate of 2.5 per cent a year over the 10 years to 2008–09, faster than the rate of world population growth rate of 1.2 per cent.

Reflecting higher sugar prices, world sugar consumption is projected to grow at an average rate of only 2.1 per cent a year over the medium term (Figure 2).

Consumers in a number of countries are partially insulated by government policies from movements in world sugar prices. For example, in the United States, domestic sugar prices have usually been maintained well above world sugar prices by tariff quotas on raw and refined sugar imports.

India is another example that has sought to stabilise domestic prices through various import and export policies.

Factors affecting the demand for sugar are:

- Population growth;
- Consumer incomes;
- The prices of alternative sweeteners, particularly high fructose corn syrup; and,
- Increasingly, a range of low calorie artificial sweeteners.

A characteristic of world sugar consumption is that per person consumption of sugar is declining in developed countries, but increasing in less developed countries. This trend reflects, in part, that consumers can afford to choose more costly (and perceived to be healthier) food alternatives as income increases.

**WORLD SUGAR STOCKS TO REBUILD OVER THE MEDIUM TERM**

World carryover stocks of sugar are projected to recover gradually over the medium term. By 2014–15 the sugar stock-to-use ratio is projected to be nearly 38 per cent, compared with 33.6 per cent in 2009–10.

**RETURNS TO CANE GROWERS TO EASE OVER THE MEDIUM TERM**

Reflecting the forecast decline in world sugar price, the average return to Australian cane growers is projected to decline in real terms over the medium term.

The return to Australian cane growers is projected to average $33.50 a tonne of cane in constant (2009–10) dollar terms over the medium term, but this is still higher than the average of $31.78 a tonne received in the five years to 2008–09.

Australian marketers of sugar are in-
creasingly giving Australian cane growers the opportunity to lock in forward prices for their cane, based on the use of ICE sugar futures contracts.

For example, at February 1, 2010, the Proserpine Cooperative Sugar Milling Association Limited was quoting cane prices to growers for 2010–11 production of $46.65 to $48.73 a tonne of average quality cane at:

- 14.34 per cent contained content of sugar (CCS);
- $40.01 to $40.33 a tonne for 2011–12 production; and,
- $38.20 to $38.53 for 2012–13 production.

2010–11 will be the first year since 2002–03 that Australian sugar area harvested has increased. A range of factors contributed to the decline from 2002–03, including poor prices, drought, cyclones, sugarcane smut, urban encroachment, increased use of rotation crops (mainly soybeans and peanuts) and higher returns from production alternatives, particularly plantation forestry.

Sugar production in the Ord River Irrigation Area (ORIA) also ceased in November 2007. At its peak, there were more than 4000 hectares of sugarcane harvested annually in the ORIA.

The area harvested of sugarcane in Australia is projected to stabilise at around 402 000 hectares by 2014–15, still 46 000 hectares less than the record harvest in 2002–03. Modest growth in Australian cane and sugar yields is also projected for the medium term. Australian sugar production is projected to increase to around 4.9 million tonnes by 2014–15, compared with 4.5 million tonnes in 2009–10 and the record of 5.4 million tonnes in 2002–03.

At the farm level, it is expected that the number of growers in Australia will continue to decline and cane farms will increase in size. The number of cane growers in the Australian sugar industry has declined from around 6300 in 2000 to less than 4000 in 2010.

Commonwealth legislation on renewable energy targets (RET), enacted in August 2009, has the potential to boost cogeneration of electricity in sugar mills. The RET scheme legislation (to be supported by complementary legislation in the states and territories) establishes a target of 20 per cent, or 45 000 gigawatt-hours, of Australia’s electricity supply by 2020 be derived from renewable resources.

This represents a fourfold increase over the previous Mandatory Renewable Energy Target (MRET) set legislatively in 2001. The RET scheme (and previously the MRET scheme) guarantees a market for additional renewable energy generation, using a mechanism of tradeable Renewable Energy Certificates (REC).

But the enhanced RET scheme will not necessarily see planned electricity cogeneration projects in the Queensland sugar mill industry go ahead in the short run. This is because the price for RECs fell from around $50 a certificate in the first half of 2009, to only $33 a certificate in mid-January 2010, as the supply of RECs on the market increased, mainly because of increased uptake of solar hot water and photovoltaic cells.

From: Sugar Outlook by Max Foster – ABARE Publication: Australian commodities • vol 17 no 1 • March quarter 2010

**SUGAR OUTLOOK**

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a October–September years.  
b Historical estimates of closing stocks are based on individual country estimates of production, consumption, trade and stocks. Given possible under/over reporting of statistics in individual countries, changes in world closing stocks from year to year may not necessarily equal the difference in world production and world consumption.  
c In 2009–10 US dollars.  
d July–June years.  
e Raw tonnes actual.  
g In 2009–10 Australian dollars.  
f ABARE forecast.  
z ABARE projection.

Sources: Australian Bureau of Statistics; International Sugar Organisation; ABARE.

Australian sugar production is projected to increase to around 4.9 million tonnes by 2014–15.
Bundaberg vegetable grower Andrew Philip of SP Exports won the vegetable industry’s Innovative Marketing Award this week at the AusVeg National Awards for Excellence Gala Dinner, following the success of the ‘drip-free’ tomato in the Australian market.

The award, sponsored by the Brisbane Produce Market, was presented to Andrew Philip at a sold out Gala Dinner at Jupiters Hotel Casino on the Gold Coast in front of almost 400 industry leaders.

AusVeg CEO, Richard Mulcahy, said that Andrew had achieved recent success with a revolutionary new field-grown tomato variety, called Intense, which has now become popular with fast food outlets such as McDonalds, KFC and Hungry Jacks and is also stocked by Coles. Originally commercialised by Nunhems, the drip-free tomato is the world’s first full flesh and non-leaking tomato.

“Andrew’s success with this relatively new tomato variety in Australia is to be commended and I wish to congratulate him on the sterling success his company SP Exports has had in the Australian market,” Richard said.

“The Intense variety of tomato grown by Andrew is a great success story which other vegetable and potato growers in Australia can learn from. As a value-added product, it shows the benefits which can be enjoyed by innovative businesses in the horticulture industry if they are willing to push the boundaries and respond to consumer needs.”

“This award recognises the commercial success of the drip-free tomato in Australia, but not only that, it serves to highlight the importance of key vegetable growing areas such as Bundaberg to the national food economy,” Richard said.

AusVeg is the national peak industry body representing 9000 vegetable and potato growers around Australia.

The Innovative Marketing Award, sponsored by the Brisbane Produce Market, is presented to an individual or business which has created an innovative marketing solution, process or program.

The Intense tomato variety has had a significant impact on the industry, with long term positive effects through sales, awareness and reach, delivering tangible measurable results.

“Consumers expect that vegetable growers in Australia will deliver on similar innovations which are happening overseas. We are proud to say that Australian growers are moving to the forefront in adopting contemporary varieties and growing practices, which are based on the latest science available to them,” Richard said.

“It is vital that vegetable and potato growers continue to respond to the needs of consumers, food service outlets and retailers, and SP Exports has demonstrated just that with their adoption and promotion of the drip-free tomato.”

Contact Hugh Tobin, Communications Manager, AusVeg Ph: 03 9822 0388, Mob: 0431 939 920, Email: hugh.tobin@ausveg.com.au
THE FARM HORSE

In 1929, horses still remained supreme on Australian farms. After all – they were reliable and providing you had no objection to rising before dawn in order to firstly catch the things, then feed them, then untangle the harness, then stand on tippy toes in order to slip the bridle over their heads, plus wrestle the inverted weighty collar over their necks before screwing it around the right way up – then that was OK. But of course an hour had passed and a furrow had yet to be turned.

Certainly most of the big draught horses had gentle temperaments and were quite docile. Mind you, in every team there was always the fella who flattened his ears and showed the whites of his eyes! He would exhibit a set of yellow teeth, seemingly capable of biting through an iron bar, and featured a gigantic iron shod hoof at each corner, proficient at striking out with the speed of a red bellied black.

But in the main, farmers were comfortable with their horses, they understood them and anyway the farm had always been worked with horses.

However there were exceptions. A growing number of farmer’s sons were in fact becoming a bit browned off with this early morning horse routine. After emerging from church on Sundays, they would stand around in groups and out of earshot of their fathers, discuss the merits of these new tractor things that were starting to appear with increasing frequency around agricultural regions.

Tractors started trickling in to Australia during the first decade of the 1900s. But their initial acceptance suffered a serious setback following a dramatic and ill-informed statement by the South Australian Honourable Minister for Agriculture on August 12, 1909, to the effect that – “These new tractors that are disturbing the tranquility of our countryside have proven to be utterly useless and inefficient and will never replace the horse.”

Of course this egregious pronouncement was proved to be totally wrong! The penetration of indigenous and imported tractors was gradual but irreversible. By 1929, despite the fact that horse teams still far outnumbered tractors, the latter had ceased to be a novelty.
Mr Bishop’s Fitch

The most accepted tractor brands in Australia in 1929 included Fordson (the most popular), International, Lanz, Twin City, Hart Parr and Case. So when the progressively minded Mr F E Bishop of Bando Station, Mullaley, NSW decided to purchase a tractor, the odds were he would settle on one of these, but if not then maybe a Wallis, Ronaldson Tippett or a John Deere.

But the astute Mr. Bishop could see flaws in all of the aforementioned tractors. They were only two wheel drive and he had seen a persuasive advertisement in ‘The American Agriculturist’ for the Fitch Four Drive tractor which, as its name suggested, featured four wheel drive!

The soil in the Mullaley district consists of sticky black clay and Mr. Bishop, who had observed neighbour’s tractors becoming constantly bogged, could appreciate the advantages of having of four wheels propelling a tractor. Accordingly, an order was placed with the Australian Fitch agents, The Sydney Auto Truck Company of Bowen Street, Brisbane, for the supply and delivery of one only Fitch Model D4.

It emerged that this was to be the first of only a handful of these tractors to be sold in Australia. Bank managers, who had never experienced the frustrations of digging out a tractor bogged to the axles, were not enamoured by the high cost of the unit and usually suggested to a prospective buyer that investing in a Fordson, at a third of the price, made more sense.

Specifications

The Fitch Four Drive Model D4 was indeed an amazing tractor. It was manufactured in Big Rapids, Michigan by the Four Drive Tractor Company Inc. The firm first released its visionary tractors in 1916. The Model D4 was not introduced until 1920, when it became apparent there was a
need for a more robust and powerful unit. The new model was powered by a Climax K Series four cylinder engine made by the Climax Engineering Co. of Clinton, Iowa. The engine had its four cylinders of 5 x 6.5 inch bore and stroke cast in pairs.

The tractor had a dry weight of 3.5 tons when equipped with the cast wheels and solid rubber tyres (36 x 7 inch front and 40 x 7 inch rear) and including the grader blade. Although not confirmed by a Nebraska Test, the engine in the Fitch was claimed by the manufacturers to develop 20 drawbar and 35 belt hp at 800 rpm, which was delivered to the gearbox via a Borg & Beck clutch. The three forward gears were rated at 1.5, 2.5 and 4 mph and reverse at 1.5 mph.

The power to the rear axle was delivered by a Timken worm drive (similar to the Fordson Model F). The front axle was driven by a clever patented design using a bevel gear principal, so arranged to eliminate any power loss whilst steering into a curve. (It is worth noting that the entire axle turned as distinct from the fixed axle of modern four wheel drives with conventional steering and tie rods, necessitating universal or bevel drive at each wheel). The Fitch transmission was custom designed by The Cotti Transmission Co of Rockford, Illinois.

The steering wheel was connected by the shaft to a worm gear in the steering box. The lateral shaft and pulley extending from the steering box acted as a windlass for the chain connected to the front axle. Unlike most chain windlass steering systems, the Fitch used an intermediate pulley between the steering box and the axle, which served to render the steering considerably more positive.

Mr Bishop ordered the big tractor complete with a set of the optional solid rubber tyred wheels, in addition to the more conventional agricultural type 42 inch by 12 inch steel wheels with diagonal bar treads. He also specified the under belly grader blade. The all up weight of 3.5 tons presented him with a well balanced highly mobile grader for maintaining the roads in and around Bando Station.

In standard trim, the Fitch completely lived up to the visionary expectations of Mr Bishop. It was able to plough and cultivate the black soil, without the tiresome problems associated with bogging.

Following many seasons of relatively trouble free service, Mr Bishop’s Fitch (No. 1640) has quite remarkably survived the rigors of the passing years and remains today in excellent condition. It is on display as part of a comprehensive vintage tractor collection at The Gunnedah Rural Museum, NSW – a treasure house brimming with rare machinery artifacts, depicting farming as it used to be.

But – and it has to be said – in a nearby paddock there is a wise old Clydesdale. He is frequently observed gazing in the direction of the museum, with a superior and disdainful expression upon his countenance. And so he might, for after all his ancestors were around long before the old tractors in the museum were ever thought of, and Clydesdales have always been four hoof drive!

The Fitch logo says it all! (PHOTO: IMJ)

The engine of the Fitch is a Climax K Series. The 4 cylinder are cast in pairs. Note the magneto with the twin magnets in the foreground. (PHOTO: IMJ)

IAN’S MYSTERY TRACTOR QUIZ

**Question:** Giant tractors are not a recent phenomenon. This seven ton heavyweight, belonging to Norm Bates of WA, is a classic! Can you identify it?

**Clue:** It is as British as Rule Britannia.

**Degree Of Difficulty:** Easy if you marshall your thoughts.

**Answer:** See page 34.
TABLELANDS

The 2010 harvest season is in full swing with crushing at the Tableland mill starting on May 31. It is expected that the estimated crop of 640,000 tonnes will take 24 weeks to crush. Sugar content for the first three weeks although encouraging at 12.89 units was down slightly on the previous two seasons by about 0.25 units.

The new variety Q231A has produced excellent early ccs (as predicted from BSES trials) and after three weeks of crushing is 0.67 units higher than mill average (see Table 1). The two Burdekin varieties (Q183A and Q208A) are also performing well against the existing early season varieties such as Q96, Q151 and Q174A.

<table>
<thead>
<tr>
<th>Variety</th>
<th>% Crop (STD)</th>
<th>Relative ccs (STD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q231A</td>
<td>19.3</td>
<td>13.56</td>
</tr>
<tr>
<td>Q183A</td>
<td>1.6</td>
<td>13.37</td>
</tr>
<tr>
<td>Q208A</td>
<td>5.5</td>
<td>13.03</td>
</tr>
<tr>
<td>Q151</td>
<td>24.2</td>
<td>12.94</td>
</tr>
<tr>
<td>Q96</td>
<td>5.2</td>
<td>12.85</td>
</tr>
<tr>
<td>Q200A</td>
<td>21.7</td>
<td>12.63</td>
</tr>
<tr>
<td>Q174A</td>
<td>4.6</td>
<td>12.55</td>
</tr>
<tr>
<td>Q135</td>
<td>4.2</td>
<td>12.13</td>
</tr>
</tbody>
</table>

The wet season was relatively short and sweet this year with the Tinaroo dam catchment not receiving quite enough rain to refill the dam. By mid-May the dam reached 89 per cent capacity. But with no rain since early March, water use for irrigation has seen the level drop gradually to 85 per cent by mid June.

With the highest demand period for irrigation water between now and Christmas, the dam level will drop considerably and a good wet season is essential to prevent water allocation restrictions during the 2011–12 water year.

With the second best cane price expected this season (the best being last year) since the Tableland mill first started crushing 12 years ago, growers are busy getting this years plant crop in the ground. For many growers this past two years has provided the best opportunity in quite a few years to get rid of older poor performing ratoons and replace them with newer varieties that are not only better performers but also smut resistant.

Damage from grey back cane grub is becoming noticeable as growers dry blocks off for harvest. In a number of cases, damage would have been far more severe if treatment with an imidacloprid insecticide hadn’t taken place last year. With advantageous cane prices and further price competition, treating with imidacloprid insecticides to prevent grub damage has never been so affordable.

Figure 1 depicts the steady improvement in ccs this year of clean whole stalks collected at fortnightly intervals from six varieties of sugarcane. The average ccs of the six varieties increased by 0.8 units per week throughout April to June despite the crop receiving 25 to 30mm of irrigation each week.

This example clearly demonstrates that sugarcane crops have the ability to accumulate sugar while still actively growing and do not need to be dried-off for this to happen.

The only reason to dry-off before harvest is to ensure ground conditions are sufficiently dry for harvester trafficability.

Drewe Burgess,
BSES Tablelands
June 28, 2010

MOSSMAN

The 2010 Mossman crushing season commenced on June 16.

The first week crushed a stop-start 13,000 tonnes. At June 24 mill average was 12 CCS, with the crop coming in heavier than estimate in some areas and lighter than estimate in others. Occasional...
light showers have not affected the harvest.

The ERMP roll-out is going to present a problem as farmers are busy with harvesting and planting. The mandatory nutrient calculator is also causing difficulties in the Mossman area.

Maximum nutrition allowances are coming in ‘way’ under the expected levels that farmers know is needed to run a profitable industry. This needs to be remedied urgently!

Don Murday, Northern Region Director, June 28, 2010

INNISFAIL/TULLY

Bundaberg Sugar’s Tableland mill has been the first mill in the far north to commence the 2010 crush. Skies are very heavy with little of no rain falling. A dry start would be welcome after continuous heavy with little of no rain falling. A dry mence the 2010 crush. Skies are very

June–July 2010

John Blankenshee
ACFA Innisfail Director
June 28, 2010

HERBERT

Crushing commenced in the Herbert on June, 2001. Tonnes crushed to June 22 were 10,000 with a district average CCS of 12.6. There are no variety results available to date.

The weather conditions have seen farmers getting ground ready with some early planting. At the present time we have overcast windy conditions, with very little rain. A bit of a shock after the lovely days we have been experiencing.

Grubs are causing concern in the Herbert and farmers need to continue the recommended treatment.

At the present time mobs of pigs have been moving around and farmers need to be ever vigilant. It is a never ending battle to control these feral pests. Cockatoos have also been giving the cane a hiding as it has matured, with some paddocks ‘sweeter’ than others.

The abandoned MIS (tree plantations) in the Herbert have left behind an environmental disaster for local landholders. These plantations have become a breeding ground for pests and weeds, including the declared, environmentally damaging grass, hymenachne, along with feral pigs, etc.

While farmers are facing Environmental Risk Management Plans and other constraints, just what is the Government doing with regard to fixing this mess? So far it has been left to farmers who have faced over 10 years of tough economic times trying to defend their boundaries from declared weeds and pests that are breeding on public and derelict sites. Farmers are not being treated fairly and the Environment Minister needs to look at the big picture, not penalise farmers.

Carol Mackee
ACFA Herbert Director
June 28, 2010

BURDEKIN

The Burdekin harvest had an eventful early start, with an early start to mill performance issues, including Kalamia being out of action, resulting in cane transfers to Invicta mill (despite its own share of performance issues) and a mill worker’s strike in time for Kalamia’s return to production.

A strike by QR over the State Government’s planned assets sale added to the mix. Localised rain has resulted in some supply delays, but these have not been widespread or prolonged.

District CCS began poorly, rising to an average of 12.7 over the district, to date (June 23). The total crush over the four Burdekin mills, to date, is in excess of 400,000 tonnes.

The Australian Cane Farmers Association Collective met ahead of the season to finalise negotiation issues for the Cane Supply Agreement for 2010 and to discuss relevant issues.

The commencement of the 2010 harvest, with only interim contracts in place for all collectives, again confirms the failure of the so-called ‘deregulation’ process put in place by the Queensland government. Cane farmers are again supplying the 2010 harvest with the prospect of no bargaining power to negotiate a fair contract as their bargaining power has already been signed away under the interim agreements.

With cane continuing to be harvested, the whole process is shown up as a complete farce. It is now immaterial to CSR/Sucrogen whether they continue negotiations, or whether the grower bodies approve the generic agreements that CSR/Sucrogen have submitted to them. District collective groups or individual growers have little difference between agreements and suffer the same difficulties in their negotiations for proposed changes.

The Annual General Meeting of the Australian Cane Farmers Association, Burdekin Branch has overwhelmingly supported the re-election of Frank Scarabel as Chairman, Ian Shepherdson as Secretary and has elected Enzo Arboit as Vice-Chairman for the coming year.

Discussion centred around the QCA review of water prices and members resolved to form an Australian Cane Farmers Association water committee to represent growers’ interests across the state, on irrigation issues. Membership would be paid at 1cent per tonne and membership would be extended to both members and non-members alike. A membership form has
been drawn up and is now available from the local director, Margaret Menzel.

Burdekin Productivity Services has advised growers to ensure that all hygiene procedures are followed with machinery movements and planting and harvesting equipment, within and between farms. Failure to follow the procedures can be a costly exercise – prevention is still better than cure.

Advice from Burdekin Productivity Services has confirmed that “Q183 continues to exhibit good field tolerance to smut under heavy infestation pressure on the BSES research farm in the Bundaberg region. BSES intends to trial Tellus under similar conditions in the near future.”

Growers are advised that the Reef Wise compliance record books are now available for use. Reef Rescue grant recipients for Round 2 should have completed a Farm Productivity Assessment (FPA), the 6 easy steps and chemical accreditation courses. I recently held a workshop for growers to complete their FPA on 25th May at the Synergy Offices in Queen Street, Ayr. Dave Millard conducted the course and it received a ‘thumbs up’ from all participating growers. Further courses can be held if required by contacting me on 0407 779 700.

Growers have requested more workshops to discuss industry events and requirements as a group environment provides an ideal avenue for discussion and response to any difficulties encountered by the participants.

Margaret Menzel
ACFA Burdekin Director
June 28, 2010

CENTRAL REGION

The crushing season is progressing well with good harvesting conditions. CCS continues to increase and with a recent strengthening in the world sugar price the outlook is encouraging. But it does appear that initial tonnage estimates may not be achieved, which is disappointing.

Ross Walker
Central Region Director
June 28, 2010

SOUTHERN REGION

Crushing is under way. Sunday, June 20 saw most harvesting operations setting out on their shake down runs with trucks on the roads around Maryborough and papers printing photos of mills puffing a bit of trial run smoke.

Rainfall has been well below average for May and June, at one tenth of the average! This has allowed much of the water-logged ground to pick up a little. In fact we have irrigated continuously from mid-May to mid-June and then only stopped to make ready for the harvest. When the Sunshine Coast has a few millimetres it must have been a dry session.

2010 Water Allocations are 100 per cent, thanks to a wet summer, so July will be a busy month for irrigation equipment maintenance. The reasoning behind this is, from looking at the records, the last dry May–June preceded the 1982 drought.

Arrowing of some varieties has growers wondering when to cut these varieties. It has been many years since such prolific arrowing has occurred in the region and so management issues will need to be revisited.

The Irrigation water pricing policy debate has gone quiet, but will reappear with the next phase of the QCA enquiry.

Producer pricing has been brought for-
ward with mills actively encouraging growers to become involved in some form of ‘owner-driver’ pricing.

Bundy Sugar and ISIS Cane Services have struck a deal to swap cane tonnage from their respective areas to reduce transport costs. Cane grown on ISIS Cane Services land and cane growing on Bundy Sugar land is being sent to the nearest mill. Individual growers are not involved. The deal is between corporations.

Rightly or wrongly, sentiment is still strong with individual growers as to who crushes their cane, so none of the 40,000 tonnes is from privately grown farms. Cane from the Bullyard area, north of Bundaberg is going to Bundy Sugar on rail and cane in the Farnsfield area south of Bundaberg is going to ISIS Mill on rail. Road transport is therefore reduced. Comical if it hadn’t cost us all so much!

Milliquin has had a few million spent on modifications to extract more sugar. This has the benefit of reducing the amount of crop required to fill orders and counters the effect of urban sprawl eating into the crop.

ISIS Board structure has changed again. Mark Hochen has been elected Independent Chairman of the Board. From a farmers point of view this could be seen as a loss of the ability of farmers to run their own business.

Historically this owner operator system is what has kept the ISIS Mill alive. Modern times may have created an environment where farmers no longer have the skill/ability/education to manage a sugar mill. Time will tell! Got to go, bins are not self-filling!

Mike Hetherington
ACFA Southern Region Director
June 28, 2010

The three cane grower’s executives in NSW have been organizing chemical accreditation courses for their growers to renew their certificates and for the few who have not done the course at all. The course runs for two days and in NSW farmers must renew their certification every five years.

Let us hope that the season is a productive one for all our growers and that we have an early finish without too many stoppages, at the mill or by wet weather. That is a big call but we can only hope!

Robert Quirk
ACFA New South Wales Director,
June 28, 2010

All mills in NSW have kicked off the 2010 crush. Condong Mill started on June 21, Broadwater July 1 and Harwood June 29. While the crush will not be a record, the tonnages per hectare will be respectable.

The NSW Sugar Milling co-op has engaged a member of staff to work towards bringing some of the land that has been lost to production over the last several years back into sugarcane. With acceptable sugar prices expected over the next several years we think the project will be successful.

There is an air of optimism in the industry that has not been present for some time.

Our three mills all started the season on burned cane this year. From August 4, Condong mill will move to green cane harvesting for a trial of 100,000 tonnes. During the period of the trial no burned cane will be accepted at the mill for crushing. The local cane grower’s executive will assist the mill staff to organize the trial and to ensure equity of harvest during the trial period.

The trial will start with growers providing cane with about 50 per cent of the available extraneous matter (no topper running and extractors running at 600 rpm).

If this still causes problems at the mill then we will increase extraction until the mill can handle (crush and make sugar) what we send in.

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NEW SOUTH WALES

June–July 2010

Australian Sugarcane — 29
HISTORIC HANDOVER OF AUSTRALIA’S OLDEST AND LARGEST SUGAR BUSINESS

CSR Limited’s announcement to sell its Sugar and Renewable Energy business, Sucrogen, to Wilmar International Limited is a historic and industry changing move in the Australian industry. The sale value of A$1.75 billion is the largest transaction ever in our industry. The deal closed after rival bidder Bright Foods Group lowered its bid from A$1.75 billion to A$1.65 billion, after a fall in sugar prices.

The market has been divided on whether a demerger or a straight sale would be better for shareholders.

Wilmar is one of the largest listed agribusinesses in the Asian region, with a market capitalisation of approximately A$31 billion.

Under the sale agreement between CSR and Wilmar, CSR has agreed to defer its demerger of Sucrogen until 31 December 2010.

CSR says that Wilmar does not anticipate any significant changes in the short term to Sucrogen’s management and operations. This includes its milling and refining operations and its export contract with QS Energy business, Sucrogen, to Wilmar, CSR

Mackay Sugar has a strong interest in the outcome as they hold a 25 per cent stake in Sugar Australia and NZ Sugar, which are both 75 per cent owned by Sucrogen.

Sucrogen’s sugar mills crush just under 50 per cent of Australia’s sugarcane while their sugar refineries hold a majority of refining capacity.

Likewise farmers supplying Plane Creek mill will be very interested in how Wilmar will approach future business arrangements. All sectors of the Australian industry could be affected.

REEF PROTECTION PACKAGE

ERMP and CRMP

The Sugarcane Environmental Risk Management Plan (ERMP) was mailed mid-June to cane farmers from Ingham north.

ACFA has warned Government that the delay in the production of the ERMP will make it very difficult for farmers to comply with the 30 September 2010 deadline. This effectively allows farmers only just over 90 days to complete and lodge the document. Unless Reef Protection Officers (RPOs) will be available seven days a week, there will only be about 80 business days to assist farmers with understanding and completing the document.

The launch of the ERMP has converged with the busiest time of the year and ACFA will be keenly monitoring progress.

Farmers in the Mackay and Burdekin regions are not required to complete an Environmental Risk Management Plan (ERMP). They may, however, elect to complete a Chemical Risk Management Plan (CRMP) as an alternative to the strict requirements of 20m no-spray zones for certain herbicides.

A CRMP is a voluntary plan that may be prepared and submitted as an alternative to meeting strict requirements placed on the use of the herbicides atrazine, ametryn, diuron and hexazinone under the Chemical Usage (Agricultural and Veterinary) Control Regulation 1999 (Chemical Regulation).

Alternately, farmers may rely on identifying or establishing Effective Vegetated Treatment Areas (EVTA) on their farm. Existing areas on farms such as grassed headlands, spoon drains or grassed swales may already meet the requirements of an EVTA.

Farmers will receive information on this from DERM and I encourage farmers to discuss this with their Reef Protection Officer (RPO).

Soiling testing and the nutrient calculator

Under the Reef Regulations, Soil needs to be sampled and tested, as a minimum, within the 12 months prior to the commencement of a new plant cane crop.

Farmers and fertiliser suppliers have been surprised by some soil test results with the subsequent maximum nutrient recommendations coming in at a lower than expected level.

Farmers may now be unwittingly under-nourishing their cane crops.

While many farmers have traditionally tested soil and used nutrition methods and services including the BSES Six Easy Steps and agronomists to schedule crop nutrition, the Reef Regulations make soil-testing and nutrient calculation mandatory. They are no longer mere guidelines.

This means that soil testing is now a critical control point and the function of ‘garbage in – garbage out’ can render a soil test useless and severely limit the amount of fertiliser allowed.

It is important that farmers know how their soil test is being conducted and make sure that it is representative of the paddock. It is crucial that the sample is taken at the correct depth and site; to avoid any cane trash and to keep away from previous fertiliser bands.

Note that the greater the number of cores taken to form a composite sample, the more reliable the analytical results for that sample will be.

Farmers should refer to the booklet provided by DERM; The method for soil sampling and analysis for sugarcane properties regulated under the Environmental Protection Act 1994.

If farmers have any questions or difficulties they should contact their RPO.

AUSTRALIA’S ENERGY SECURITY

Martin Ferguson, Minister for Resources and Energy, recently announced a national trade deficit in crude oil, refined products and LPG of $16 billion per year and estimated to be $30 billion by 2015.

The national energy resource assessment released earlier this year says that, in the absence of major oil discovery, domestic crude oil production will continue to decrease while consumption is forecast to increase by an average of 1.3 per cent per annum out to 2030.

Australia has moved from oil self sufficiency in 2000 to being currently less than 50 per cent self sufficient, to a projected 20 per cent self sufficiency by 2030.

Renewable energy is clearly a major opportunity for Australia and the sugar industry. It requires a consistent and steady hand on policy settings to ensure the realisation of that potential and not the erosion of it, which has unfortunately been the experience to date.
New Zealand:  
Farming The Rugby World Cup Tour (October 7–24, 2011)

China & Mongolia:  
The tour will travel into Mongolia and fascinating far western areas of China to see large-scale grain and cotton production along the Old Silk Road. We will also inspect the Three Gorges Dam and other farming and cultural sights in eastern China.

South America:  
South America is always a popular destination for Australian farmers – and with very good reasons. Not only is the continent home to arguably the world’s most diverse, interesting and stunning array of cultures and landscapes, South America is booming agriculturally.

Scandinavia:  
The Vikings struck terror into the hearts of the citizens of the known world a thousand years ago, but these days they are much friendlier. In fact they welcome tourists – and fact finding farmers – and do their best to help them enjoy this wonderful part of the world.

Southern Africa:  
Southern Africa is home to arguably the world’s most diverse, interesting and stunning array of cultures, wildlife and landscapes. And much of southern Africa shares agricultural challenges and opportunities very similar to our own.

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Mark and Andrew Deguara aren’t afraid to try anything new on their Pinevale cane farms. Their father led the way with that farming philosophy and they’re following in his footsteps.

“If it’s going to save you work it’s worth trying,” Mark said.

“We’re definitely not perfect farmers; we’re always willing to learn,” Andrew said.

That ‘give it a go’ attitude has paid off this season with their switch to the pre-emergent herbicides Soccer and Balance.

“We put the Soccer/Balance mix on the plant cane and Balance on all our ratoons and we’ve had no grass,” Mark said.

Mark grows around 24,000 tonnes of cane a year, so he doesn’t have much time to spare.

Under his new weed control regime he only has to spray once to guarantee long-term coverage against convolvulus and guinea grass.

“The amount of time you save makes it worthwhile using these,” Mark said.

“When we’ve used other chemicals we’d be out spraying every day practically.”

Mark applied the mix in plant cane at the out-of-hand stage.

He waited for the storms after Christmas and started spraying as soon as he could get on the paddock.

Soccer works best when it’s well watered in within seven days of spraying.

“We were lucky because there was enough moisture in the paddock to absorb the chemical,” Mark said.

Months later it’s still clean – he says they haven’t had to touch it at all.

In ratoons, Mark sprayed Balance just after harvest and Soccer as the crop was closing over.

**Vine control January to March**

The formula has been so effective that he no longer needs to use the high-clearance spray rig to control vines from January to March.

For Andrew, who grows 16,000 tonnes of cane a year and does contract harvesting, the beauty of Balance is that it’s freed him up to do other things.

“When it rains I’m usually flat out spraying, whereas now I’m planting soybeans,” he said.

“When weather conditions alter your spraying program, it’s good to know you’ve got a chemical down that’s going to do the job,” Andrew said.

He likes the fact that with Balance it’s a simple waiting game.

You harvest, wait for the cane to come up, spray then wait for the rain to come.

“Because it’s UV-stable you don’t have to water it in, which is good, and it doesn’t activate until it rains, which is when the weeds are going to generate anyway,” Andrew said.

The Deguara brothers admit they were too impatient to apply Balance in ratoons because of their prior experience with imazapic.

“With Flame (imazapic) we were taught that we couldn’t spray over any green leaf so we weren’t game to leave it, but we’ve learnt that you can get away with spraying Balance at the two-leaf stage,” Andrew said.

“That was our biggest mistake – we just applied it too early,” Mark said, “But this year we know we’ve got plenty of time, so we’ll wait.”

That will allow the trash blanket to compact and settle before spraying.

On Andrew’s farm, Balance has kept problem grasses at bay for three crucial months.

He thinks it has the potential to work even better under more favourable weather conditions.

Last year was an exception because it didn’t rain for several months.

“It was a hard year for any chemical because it was so dry for so long then so wet after Christmas until April,” he said.

This year Andrew is also keen to give Soccer a shot after seeing how well it has worked on his brother’s farm.

“It’s as effective, if not better than the diuron/hexazinone mix I was using,” he said.

Mark and Andrew are looking at ways in which they can play their part in protecting the future of the Great Barrier Reef Marine Park.

The future is something the Deguara brothers can’t afford to ignore. They’re both still in their thirties and took over the family farm eighteen months ago.

“Our uncle has got two boys on the farm with him and we talk about things a lot,” Mark said, “Someone’s got to try everything.”

For more information about Balance and Soccer and how to use these products in sugarcane, contact your local Agchem supplier.
Late one balmy Sunday afternoon in early December a young constable knocked on the front door of a modest dwelling in the bay side suburb of Wynnum. The young bloke who answered the door was a typical Queensland suburbanite at this time of the day at this time of the week at this time of the year.

Boxers, singlet, unshaven, TV remote in one hand, stubby in the other and the footy blaring in the background, this fine specimen of Oz manhood looked at the young officer with a mixture of surprise and guilty bewilderment. The constable took off his cap, introduced himself and asked if our friend was the person who knocked on the front door of a modest dwelling in the bay side suburb of Wynnum. The young bloke who answered the door was the person who lodged the missing person’s report on his mother-in-law. He was.

The constable looked a little uncomfortable, like a wet sheep dog caught sleeping on the lounge. He explained that the person in question had been located. “Good!” said our friend, peeking over the officer’s shoulder, trying to see if she was in the police car parked in the street. “I’m sorry sir”, said the young officer “I’ve got some sad news”. “I’m afraid your mother-in-law is deceased”.

“Struth, when, where, how?” exclaimed our friend trying to grasp the enormity of the situation. “Drowned” replied the constable, “mouth of the river”. “Struth” replied our friend. “We found her in the mangroves, bit of a mess”. “How come” asked our friend. “Crabs got to her I’m afraid, did a bit of damage” “Crabs, what sort of crabs” “Muddies” replied the officer. “How many” asked our friend? “Six – four bucks and two jennies” – the officer was obviously a fisherman. “Any size” queried our friend? The spread fingers of the officer’s hands scribed a reasonable arc. “Not bad for this part of the bay” commented our friend.

Suddenly the young constable realised they had lost the solemnity of the situation. “What would you like us to do with the lady’s remains” asked the officer solemnly? “Well”, said our friend thoughtfully “how about we split the catch and you reset the bait”!

An exaggeration perhaps, but some of us take our crabbing very seriously. I love crabbing, especially mud crabs, and it’s all thanks to my grandfather, of happy memories.

Let me give you some little known facts about crabs. There are five edible types of crab in Queensland: Mud crab, sand crab, chilli crab, crab and avocado salad, crab sandwiches on brown bread with onions and salt and pepper.

Crabs also respond to a variety of baits. Apart from the commonly used fish frames and chicken heads it’s my pleasurable experience that they are also attracted to white wine, cold beer and more recently, dry sweet cider.

My love of all things piscatorial – diving, under water photography, marine biology and particularly my love of fishing and crabbing has opened the doors to many interesting and rewarding opportunities in my short but eventful life. These activities of course were usually undertaken for scientific reasons, but interesting none the less. One of these opportunities involved catching crabs in some of the most wildly remote and beautiful parts of God’s own country.

**CRABS ARE FULL OF IT!**

The old adage ‘you are what you eat’ really does apply to crabs and this knowledge can save millions of dollars and a huge amount of environmental damage if you’re into mineral exploration. Very basically this is how it works.

Weathering in the mountains – that’s heat, cold and rain – breaks down the geology – the rocks – and washes the sediment down onto the coastal plain where it breaks down further to form rich dark alluvial soil. It’s on these coastal plains that hard working, long suffering and unappreciated cane farmers strive to make a meager living by supplying an essential commodity to an ungrateful world.

Further weathering causes erosion and sediment to be carried out into the estuaries and tidal foreshores to create the perfect environment for mangroves, which – coincidentally – is ideal for mud crabs.

Now, this process of weathering and erosion concentrates the trace elements that made up the alluvial soil and it’s these elements that host the algal growth that is consumed by zooplankton and other microbial life. These life forms are the basis of the food chain that nourishes the small fish and crustaceans that become the staple diet of mud crabs, which happen to be very territorial and spend most of their life cycle in the same general area.

These trace elements are concentrated, through the food chain, into the exoskeleton of the crab just as calcium from the milk you drank when you were young concentrated in your bones. So, instead of drilling expensive test wells and digging environmentally damaging trenches all over the country side, all you have to do is grind up crab shells and analyse them through a Gas Chromatography Mass Spectrometer, (GCSM) and you can identify the trace elements in the surrounding geology. Simple – but first you have to catch your crabs.

As they say in the classics, it was a rough job but someone had to do it, and besides, I did it for the environment. So, next time you pull a mature muddy from your trap you are actually looking at a living repository of millions of years of geological history.

You don’t see too many hand-made cane crab pots in Queensland waters these days. And I’ve got to admit that the modern collapsible aluminium and netting traps are a far cry from the heavy cane half dome baskets I’d spend my adolescent weekends making – and my holidays struggling to drag into the dingy.

Those were the days when people limited their catch – not because we were eco friendly but because refrigeration was limited, especially at the beach shack, so crabs were kept alive as long as possible.

The chook pen was the ideal location to keep any excessive catch with an old bath-

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**Got an itch to go crabbing?**

By Phil Jackson — *Fly, Tye and Tackle*
tub set into the ground and a dripping tap to providing the water supply. Any decent size crab a bit light on in weight was fattened up on overripe pumpkin.

The secret to keeping crabs alive is to keep them cool and the only legal reason for breaking branches off a mangrove in this state is to shade your crabs. Mind you, I haven’t used mangrove branches since last century, not since the Eva Cool came on line.

Let’s talk about traps. My beloved “Enterprise” can hold about 500 collapsible crab traps but luckily legislation only allows four per person. An effective crab trap is anything that traps crabs, obviously, but not all commercial traps are created equal.

A few years ago a radically new trap design was released through a chain of major sports store here in Queensland. Outwardly they looked the part but the crabs knew better, the word soon got around, sales dried up and the traps disappeared.

Trap design and construction will depend a lot on where you fish. Down here in the South East I’m happy with collapsible netting traps but up north in croc country acquaintance of mine, who will remain anonymous, have been known to liberate stainless steel shopping trolleys to make “swamp dog proof” traps. These custom made creations are veritable works of art and have become the prized hand-me-downs of multiple generations. Necessity truly is the mother of invention.

I’m a traditionalist when it comes to trap design and colour. I prefer dark colours such as dark blue or black. I think the darker colours make the crabs feel more comfortable and secure so you’re more likely to get more big crabs in the same trap at the same time. As in all things, size is important and small traps may be handy in the boat but less productive in the catch. As a rule of thumb my traps are at least a metre across and thirty centimetres deep with four entrances – no need to make it hard for the little buggers to get in.

**HINTS TO SUCCESSFUL CRABBING**

Set your traps on the rising tide and check them on the falling tide so you don’t leave your traps exposed to the sun.

Set your traps on the drop off in deep water. Crabs scavenge in the shallows on the rising tide and retreat over the drop off as the tide recedes. A dark, friendly, comfortable trap with a tasty morsel makes an ideal place to wait out the tide change.

Use fresh bait. Don’t expect crabs to eat anything you wouldn’t. But if a particular type of bait is productive leave it there, crabs can be choosy. Use oily fish and never use the head of a species that eats crabs, especially Cod.

But always abide by the law, in some out of the way places locals can get a bit possessive when it come to other people’s traps, if you know what I mean. It may be worth your while to be discrete where and when you set your traps and how you mark their location.

If the area is heavily fished, especially as you get further north. If you’re setting your traps out in the estuary, drop them in the clear patches in the sea grass. Crabs hide in the cover and ambush the clearings.

Above all be flexible. If one area or type of location isn’t producing try somewhere else and keep records. Records like date, time, water temperature, barometric pressure, tidal run, moon phase, cloud cover, turbidity, species and gender of your catch. You don’t need a lot of sophisticated equipment to get all this, just the local paper or www.bom.gov.au and you’ll have all the records you need. If you’re into Excel a simple spreadsheet is the answer to fishing and crabbing success. I know it sounds like a hassle but everyone from the Pharaohs to the ATO have proven the value of records, so don’t knock it.

What are you going to do with them when you catch them?

**CHILI CRAB ACCORDING TO PHILTHY PHIL**

2 x tablespoon’s of mild chili
1 x tablespoon of crushed ginger
1 x teaspoon of coriander
6 x Mud crabs (or 8 sand crabs)
1 x red onion diced
1 x small tin cocoanut cream

Steps:
Clean then cook crabs in boiling salt water, then start on sauce.
Fry chili, garlic, ginger and onion in a hot wok.
Once the garlic starts to colour add cocoanut milk or cream and bring to boil.
Take the crab out of the water and cut into pieces.
Add crab to the wok, turn down the heat and simmer for 15 minutes.
Roughly chop coriander and toss through the crab.

Now, if I was a politician or on commercial TV, I’d take this opportunity to stress that the above recipe is tried and proven. But it isn’t necessarily the only option so if you have a recipe that you favour I’d be happy to add it to my new cook book – with appropriate credits of course.

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**ANSWER TO IAN’S MYSTERY TRACTOR QUIZ**

The Mystery Tractor is a 1911 Marshall Class C, manufactured by William Marshall Sons & Co. of Gainsborough, Lincolnshire. Its massive two cylinder engine developed a mere 35 bhp.

[PHOTO: IMJ]

This second photo is of an identical unit which is on display at the fabulous Swan Hill Pioneer Settlement Village, in Western Victoria.

[PHOTO: IMJ]