



# AUSTRALIAN Sugarcane

## AUSTRALIAN SUGARCANE ANNUAL 2017

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**COVER:** We as a nation and an industry are a small player on the world's agricultural stage – it's vital that our reputation for BMP in the field, in the research lab and in the marketplace be maintained.

#### Australian Sugarcane

P.O. Box 766, Toowoomba, 4350. Phone (07) 4659 3555, Fax (07) 4638 4520, E: sugar@greenmountpress.com.au

DELIVERY ADDRESS: 120 Herries Street, Toowoomba, Queensland, 4350

EDITOR: Brian O'Connell Phone (02) 6778 3255, Fax (02) 6778 3256, Mobile 0413 130 777

ASSOCIATE EDITORS: Lloyd O'Connell & David Dowling Phone (07) 4659 3555, Fax (07) 4638 4520

PRODUCTION MANAGER: Mick Allan

GROUP SALES MANAGER: Michael Cook

ADVERTISING: Michael Cook

Phone (07) 4659 3555, Fax (07) 4638 4520, Mobile 0428 794 801

Email advertising@greenmountpress.com.au

Brian O'Connell Phone (02) 6778 3255, Fax (02) 6778 3256, Mobile 0413 130 777

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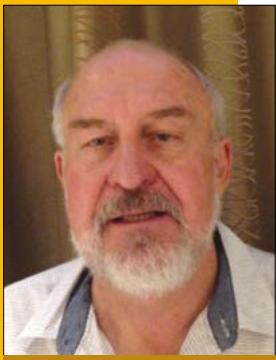
# OVERVIEW

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**Brian O'Connell.**

# Foreword

■ By Brian O'Connell, Editor, *Australian Sugarcane*

**W**HEN reflecting on the year gone by in sugar, there are a number of standouts – marketing choice; the threat to the sugar marketing code of conduct and a few other ‘little things’ like a cyclone innocuously called Debbie and a record breaking flood in Northern NSW.

On balance – from my blatantly biased view point – I think it’s been a pretty good year – apart from the cyclone and the flood.

Common sense and a national predisposition toward ‘a fair go’ would suggest that marketing choice should to be here to stay – until the next threat that is. And a code of good conduct should be about readily recognisable ‘good conduct’ – which the majority of senators (who probably hold only Australian citizenship) agreed it was.

And with regard to that cyclone and the flood? Their direct impact on me was in the nature of being disappointing rather than devastating – being prevented from flying into the Next Gen Conference in Mackay and having to cope with road closures due to flooding around Murwillumbah. But for those in their

path, the consequences were – as always – considerable damage; significant financial loss; and severe disruption to their lives.

But – as always – the response of the vast majority of these people seems to be along the lines of ‘this happens when you want to live in paradise’ and they just get on with it.

On a happier note for all in the industry, QSL reports that dollar returns for the 2018, 2019 and 2020 seasons have all recovered to levels above the long term average. One reason given for this is the increase in oil price – Brazil’s millers are making the switch to ethanol.

Again – as always – the Industry in Figures section of this Annual highlights the immense importance of Brazil when it comes to the global sugar market.

We as a nation and an industry are a small player on the world’s agricultural stage but we bring to the party a commitment to doing it well and doing it right. Our reputation for BMP in the field, in the research lab and in the global marketplace across all commodity sectors has – as always – been reinforced this past year.

Mill area 2016–17	Harvested area (hectares)	Tonnes of cane per hectare
Mossman	12,939	101.4
Tableland	4,371	92.7
Mulgrave	12,174	103.5
South Johnstone	22,309	88.9
Tully	29,168	100.7
Herbert River Mills	56,167	85.7
Burdekin Mills	68,755	126.7
Proserpine	20,853	95.9
Mackay Sugar Mills	63,083	88.1
Plane Creek	16,471	81.7
Bundaberg Sugar South	19,535	93.4
Isis	14,180	95.4
Maryborough	10,984	72.1
Rocky Point	1,118	98.6
<b>Queensland</b>	<b>352,109</b>	<b>97.7</b>
Condong	4,688	119.2
Broadwater	6,606	128.1
Harwood	4,759	146.2
<b>New South Wales</b>	<b>16,054</b>	<b>130.9</b>
<b>Total/average</b>	<b>368,162</b>	<b>99.2</b>

Source: SRA.



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Whilst preparing the Southern Region's District Report for this Sugarcane Annual, ACFA Director Mike Hetherington came across an Australian Sugar Year Book from 1967. So, as you do, he decided to report on the changes in the south over the past 50 years. As a district report it's a tad long – as an Australian cane farmer's candid and, at times, colourful view of 50 years of living, breathing and, I suspect, loving the industry – it's exactly long enough.

## Fifty years on – a cane farmer's view

■ By Mike Hetherington, cane farmer – Farnsfield, Childers

I'VE had 60 hours of thought – except for sleep and a nanny nap after Sunday lunch. Well isn't that what you do when you're not on weekend harvesting. And I watched the offshore powerboat racing at Mackay on SBS Speedweek. Why am I telling you all this in a cane farmer's report? It's because of Professor Tim Flannery. Myself and a friend, who is a viticulturist, were attendees at a public lecture given by the Prof to open the Hervey Bay Marine Festival – offshore powerboats, right?

Again, what relevance to cane farmers? The Great Sandy Biosphere is not all that often heard of in public, but it's the ocean



**Mike Hetherington**  
– farmer and  
campfire  
philosopher.

end of the Southern Region sugar production system – massive tourism dollars are earned in and around this area. Anything degrading this biosphere will be harshly dealt with in the future. Tim gave agriculture a 'high five' for implementing changes to production practices which go a long way to containing this threat.

So what changes have we implemented when it comes to production practice in the cane fields?

Well, since having found a copy of the 1967 *Australian Sugar Year Book* I've had great difficulty in composing a report covering the changes of just the past 12 months. I decided I'd use the 1967 year book as a guide and look at the separate parts of a year's sugar industry activity – as seen from an Australian cane farmer's on-farm point of view. At least I hope to – this is how it appears in the Southern Region.

### Capital

Fifty years ago, the human capital was changing from hand cutters to "Employees involved in Mechanical Harvesting". Last year's change has been from many individual farmers to many family companies. Families staying in the business have a couple of generations involved to keep the operation running 24/7. Harvesting and irrigation are relentless. The family business can cover a seven day working week through a collective approach.

The reason for the continuous operation is debatable, but not here. Perhaps to keep the unit cost of finance down? Every dollar borrowed has to work faster?

During the 1960s sugar industry expansion was backed by Government. Lately the expectation of paying out a debt has become fuzzy. 'Interest only' has become a lifestyle – a frightening and contentious observation.

### Science of growing

The 'Field Day' – that's my earliest memory of 'Science' and the paddock getting together. A pie and a beer for Dad and a pie and a soft drink for me.

And all those glass bottles and things on



**The Great Sandy Biosphere offers natural beauty and diversity. In fact, it has greater fish diversity than the Great Barrier Reef.**

benches and a lot of standing still when these old blokes made speeches. Usually with a valve powered PA system which always honked and whistled and the microphone always slipped down its stand – the presenter was then faced with the difficult choice of ‘A’ – being remembered as the mumbling hunchback or, ‘B’ – being seen to fail to cope with the height ‘adjusterer thingamajig’. Such was the 1960s version of a Webinar.

Was it worth it? See page 123 of the 1967 Sugar Year Book – Mr. N.J. King, Director of BSES certainly thought so. His address to the QCGA Conference was reported with the headline “Relationship of the Bureau to the Grower”. He pointed out that the economic benefit to everyone was measurable. But some of the benefits took longer than others to be realised.

### Science of communicating

Mr King was also keen to assure the conference that ‘all regions were in the loop’.

Over the last year, Internet communication has given anyone with mobile phone signal the possibility of never seeing advisory staff in person again. Why bother, it’s all on the iPhone? That’s a dilemma.

Certainly a few hours of the afternoon presentation delivered locally last year by SRA was poorly attended. But for those there – the

content was all relevant, the venue excellent and the time for personal contact was appreciated.

Local Productivity Boards seem to do better with bus trips.

But without science/staff to steer the industry through the complexity and the worry of the increasingly difficult environmental compliance ‘minefield’, farmers will find they face a wall of community resistance – which will jeopardise their survival.

The last year has seen increasing discussion in the Southern Region about the ‘when’, not ‘if’, of something similar to Reef Regulations being brought down here.

### Ground preparation

Rotation is worth more to the world than farmers will ever be credited for. Fifty years ago, much of the sugar cane producing land was still relatively new and certainly a lot of it was still being cleared and planted for the first time. Burning prior to harvest was a given. Over the past year or so pre-harvest burning has become a management decision which allows management flexibility for some situations.

Trash has become a valuable by-product of green cane harvesting and many farmers have coordinated their harvest and planting times with the baling teams. This must be a change for the better overall.

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## Growing

Nutrition and water are not left behind, technology wise. Liquid fertiliser at planting has become normal. Fifty years ago, many and varied types of granular were available. Over the years, planting fertiliser seemed to become one size fits all. DAP was once the only considered option – who does that now? Liquids have opened a flood of new types of soil conditioning as well as simple NPK to planting formulations.

And the ease of handling has seen many going liquid for this spring planting.

## Irrigation

Now it's just a daily change. Energy cost is the driver in irrigation, but the added gain in water efficiency is a great bonus. It is of note that African nations who never had the infrastructure for overhead big-gun type irrigation were ahead in terms of flood irrigation efficiency.

Many of the lessons from Africa have appeared in our sugarcane farming because of the need to reduce electricity cost, even though we have adequate supply. The large electricity suppliers may have moved closer to breeding their own 'white elephants' as farmers reduce dependence on the power stations.

## Harvesting

Or the 'slow down' in harvesting? Speed limits imposed on the more powerful harvesters are now in place. After last year's 'demos' of extraneous matter and stool damage this year has brought voluntary 'groundspeed control' into vogue.

It's not without fuel and time penalties but the rise in sugar production per hectare is

making up for, and can exceed, this penalty. And not to forget that 'wear and tear' at the sugar mill is reduced.

The improved ratooning of the cane stool is a longer-term benefit that is less quantifiable.

Those that stick with the groundspeed control will be the test case for the rest who might only last the one season.

## Milling

Not that I understand a lot of this, but it can be deduced from statistics that:

- In 1915, 8.20 tons of cane produced one ton of sugar.
- In 1965, 7.11 tons of cane produced one ton of sugar.
- In October 2017, 6.23 tonnes of cane produced one tonne of sugar (ISIS Central Mill).

With this trend is it possible a future generation will not need cane farmers at all? Just joking, but it is a trend and every year this figure has an important part to play in variety selection.

## Marketing

Any farmer out there who can keep up with their fieldwork and the sugar marketing arrangements is a better man than me – or Gunga Din for that matter. We have become absolutely reliant on good advice from the administration. How and why would be worth understanding, if we had the time – and a documentary writer.

The Southern Region mills have reasonably harmonious relations with their farmers. cooperation on irrigation issues seems to keep everyone in the same tent. Bundaberg Sugar suppliers have had a lot of coaching; ISIS is still grower owned and has made every effort to give farmers both a clear picture and explain options; and MSF has worked hard at all aspects of keeping farmers and their mill viable.

This relationship would seem a blessing to the Southern Region.

Now, where was I? That's right Professor Tim Flannery – I'm sure he gives farmers a 'fair go' in an environmental debate. Seems he's right into seaweed.

Seaweed is apparently capable, on paper, of reducing global CO<sub>2</sub> levels and saving the world. I know we farmers don't have the sea, but we do have a lot of farm dams. Is there a freshwater seaweed?

He certainly gives providing for our future and our families top priority – and I reckon he spends a lot of effort finding the true numbers for agricultural activity rather than just emotive argument.

Look him up, give him a call. Anyone who has Sir Richard Branson cold call him to invite him over to discuss how to make CO<sub>2</sub> reduction profitable must be somebody to have on side.

And besides, he seems like a bloke you could have a beer at the campfire with. ■



**Powerboat in the great Great Sandy – anything or anyone degrading this biosphere will understandably be harshly dealt with in the future.**

# World Sugar Outlook 2017–18

■ By Benjamin K Agbenyegah, ABARES

## AT A GLANCE...

- World raw sugar prices are forecast to fall by 24 per cent in 2017–18 as a result of increased world supplies.
- Returns to Australian cane growers are forecast to average around \$44 a tonne of cane cut for crushing in 2017–18.
- Australian sugar production is forecast to remain largely unchanged in 2017–18 despite a fall in cane production.

## Record world sugar supply to drive prices down in 2017–18

The world indicator price for raw sugar (Intercontinental Exchange, nearby futures, no. 11 contract) is forecast to fall by 24 per cent in 2017–18 (October to September) to

average US13 cents a pound. This is a 13 per cent downward revision from the *Agricultural commodities: June quarter 2017 forecast and*

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**FIGURE 1: World sugar production, consumption, stocks and price, 2009–10 to 2017–18<sup>a</sup>**



<sup>a</sup> Production, consumption and stocks are raw value equivalent and years are from October to September.  
<sup>f</sup> ABARES forecast.

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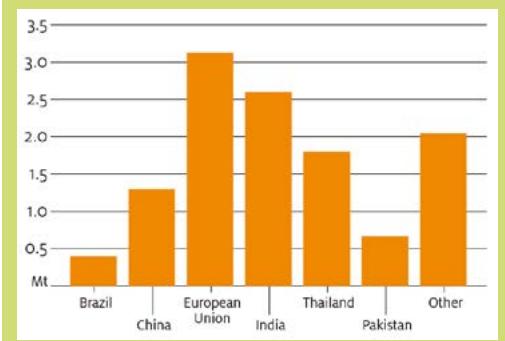
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**FIGURE 2: Forecast changes in world sugar production, by country, 2017–18**



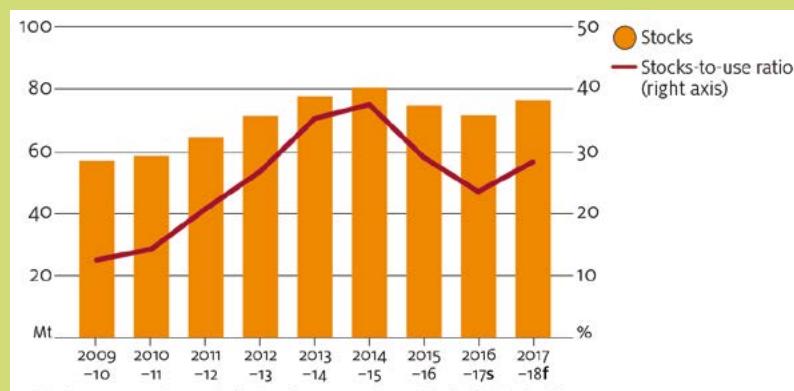
reflects world sugar production increasing at a faster rate than previously expected. Most forecast production growth is expected to occur in Asia and Europe. Global supply is expected to grow faster than demand during 2017–18, leading to this significant fall in price.

In the 2016–17 marketing year, sugar prices are estimated to have increased by two per cent to average US17 cents a pound. This reflects lower sugar production in India and the US due to unfavourable weather.

**FIGURE 3: Sugar and high fructose corn syrup prices, monthly, January 2010 to August 2017**



**FIGURE 4: World sugar stocks, 2009–10 to 2017–18<sup>a</sup>**



## Record world sugar production forecast for 2017–18

World sugar production in 2017–18 is forecast to increase by seven per cent to a record 190 million tonnes, slightly higher than the June 2017 forecast. Production is forecast to increase in Brazil, China, the European Union, India, Thailand and other smaller producing countries.

In 2017–18 sugar production in Brazil—the world's largest producer—is forecast to increase by one per cent to 40 million tonnes. This is in response to relatively high sugar prices compared with ethanol and despite a forecast three per cent decline in cane production. Around 47 per cent of cane crush is expected to be allocated to sugar production in 2017–18, up from 46 per cent in 2016–17.

In China and Thailand, production is expected to increase in 2017–18 in response to higher relative returns, increased yields and a return to average monsoon rains during the 2016 planting season. Chinese sugar production is forecast to be 12 million tonnes in 2017–18 (June to May), up by 15 per cent year-on-year. Thai sugar production is forecast to be 12 million tonnes, up by 18 per cent.

In India, increased prices and a return to average monsoon rains and higher yields are expected to drive sugar production up by 10 per cent to around 27 million tonnes in 2017–18. The Indian Government increased its 'fair and remunerative price' for cane in 2017–18 by around 11 per cent to 255 rupees a quintal (around US4 cents a kilogram).

Increased beet plantings in the European Union in 2017–18 ahead of the abolition of EU production quotas in October 2017 are estimated to increase EU sugar production by 18 per cent to around 20 million tonnes (raw value equivalent). If realised, EU sugar production would be its highest since 2005–06.

In 2017–18 world sugar exports are forecast to increase by three per cent to 70 million tonnes, consistent with the forecast increase in global sugar production. Higher exports from Brazil and Thailand are expected to meet strong import demand from Algeria, Bangladesh, Indonesia, Malaysia, Nigeria, the United Arab Emirates and the US.

## Lower prices to boost world sugar consumption in 2017–18

In 2017–18 world sugar consumption is forecast to rise by around two per cent to 185 million tonnes. Consumption is forecast to increase in non-OECD countries including Brazil, China, India, Indonesia, Pakistan, the Russian Federation and Ukraine due to falling sugar prices and rising consumer incomes.

Consumption is expected to continue to fall in the European Union and the US because of long-term declines in the population growth rate, as well as trends in diet and nutrition policies driven by health concerns.

Relatively low sugar prices compared with the prices of alternatives (high-fructose corn syrup and isoglucose) have widened the price gap between these commodities in recent years. This is expected to help sugar maintain its share of world sweetener consumption in 2017–18.

## World sugar stocks to increase in 2017–18

In 2017–18 world stocks of sugar are forecast to increase by seven per cent to around 76 million tonnes as a result of world sugar production rising at a faster rate than world consumption. The world stocks-to-use ratio is expected to increase to 41 per cent in 2017–18 from around 39 per cent in 2016–17.

## Australian sugar production largely unchanged in 2017–18 despite lower crush

In 2017–18 cane crush is forecast to fall by five per cent to 35 million tonnes. Reduced cane production is expected as a result of continued dry seasonal conditions (July 2016 to March 2017) in southern Queensland, particularly in

the Maryborough mill area. In March 2017 Tropical Cyclone Debbie caused damage to cane in the northern Queensland regions of Burdekin, Mackay and Proserpine. But a five per cent rise in commercial cane sugar content is expected to offset an assumed 6 per cent fall in average cane yields and to result in total sugar production being largely unchanged at around 4.8 million tonnes.

Returns to Australian cane growers are forecast to average around \$44 a tonne in 2017–18. This is down from \$48 a tonne in 2016–17 due to lower forecast world prices.

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**FIGURE 5: Sugar production, exports and returns to cane growers, Australia, 2009–10 to 2017–18<sup>a</sup>**



<sup>a</sup> Production and exports are in raw value equivalent. f ABARES forecast.



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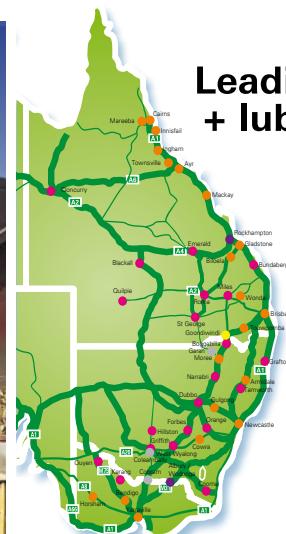
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Australian sugar exports are forecast to remain largely unchanged at 4.1 million tonnes in 2017–18. But the value of Australian sugar exports is forecast to fall by 12 per cent to around \$2 billion, reflecting lower world prices.

Drawn from World Sugar Outlook ABARES Agricultural Commodities – September Quarter 2017.

For more information visit:  
[www.agriculture.gov.au/abares/publications](http://www.agriculture.gov.au/abares/publications)

**TABLE 1: Sugar outlook<sup>a</sup>**

Category	Unit	2015–16	2016–17 <sup>s</sup>	2017–18 <sup>f</sup>	%change
<b>World<sup>b</sup></b>					
Production	Mt	174.0	178.0	190.0	6.6
–Brazil	Mt	38.1	39.6	40.0	1.0
Consumption	Mt	180.0	182.0	185.0	2.0
Exports	Mt	58.5	68.0	70.0	2.9
Closing stocks	Mt	74.8	71.6	76.4	6.7
Stocks-to-use ratio	%	41.6	39.4	41.3	—
Price	USc/lb	16.7	17.0	13.0	-23.5
<b>Australia<sup>c</sup></b>					
Area	'000 ha	381	372	380	2.2
Production	Kt	4920	4804	4800	-0.1
Exports	Kt	4140	4049	4051	0.0
–value	A\$m	1823	2191	1929	-12.0
Return to cane growers	A\$/t	37.3	48.2	44.0	-8.3

a Volumes are raw value equivalent. b October–September years. c July–June years. f ABARES forecast. s ABARES estimate.

Sources: ABARES; Australian Bureau of Statistics; F.O. Licht, International Sugar and Sweetener Report, World Sugar Balances, Ratzeburg, Germany; F.O. Licht, International Sugar and Sweetener Report, Ratzeburg, Germany; United States Department of Agriculture

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In recent years, Big Tyre has led the way in switching from the use of rubber to polyurethane on rebuilding mid-rollers (to handle the high loading) whilst still maintaining the use of rubber on the drive and idler wheels to maximise grip. In the last couple of months, Big Tyre has also released its own new and



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improved version of the 8RT mid-roller, which stands to significantly reduce the chances of premature failure with a 60% improvement in the load carrying capacity per wheel (compared to the original design built in polyurethane).

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## AREA ROUNDUP

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### OVERALL COMMENT

*The Area Roundups are drawn from reports supplied by growers over the past year. As per usual the weather has been challenging – as was the prolonged negotiations on marketing choice and the threat to the sugar marketing code of conduct.*

## SECTION 2 AREA ROUNDUP

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# Mossman/ Tableland

■ By Gerard Puglisi,  
Northern Director

## Summer 2016–17

Mossman Mill tipped its last bin for the 2016 season on November 18. The Mossman Mill processed a total of 898,645 tonnes in a 24-week season, with the majority of the sugar produced as Japanese (JA) specification sugar.

The 2016 season saw the culmination of the past three years of work with the mill reliability and crushing rates returning to rates not seen since 2002.

The Coastal and Atherton growers supplied around 710,000 tonnes of cane, for a seasonal Mill average CCS of 11.03 and Mareeba supplied just over 602,000 tonnes with a seasonal average CCS of 13.42.

With Mossman having a November finish and favourable weather conditions in December most farmers have completed their fertiliser programs and are well over half way through their spraying programs.

**Crops looking good:** The crops in the Mossman and Tablelands regions are looking good and if weather conditions remain favourable, with some rain before the end of



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2016, the signs are there for another reasonable crop for 2017.

Ratooning blocks in the North are looking quite good, while the plant and re-plant blocks in the drier parts of the mill area are starting to show the effects of the dry weather.

The end of December 2016 was the start of this year's wet season, with over 600 mm of rain falling from the end of December to late January causing minor flooding in some areas. In saying that, 2017 is shaping to be another good year and through January most of the northern region had ideal weather with good growing conditions. Most of the rain received was at night, with very hot and very humid days. These favourable conditions also enabled farmers to continue with most of their weed management programs.

Driving through the area I have noticed some yellowing of cane and I feel that Yellow Canopy Syndrome (YCS) may again be present in the Mossman region. But it is important to remember that there are many reasons for cane going yellow – drought stress, herbicide damage, insect attack, disease, nutrient deficiency or natural maturing to name a few. It is important to understand how symptoms that are commonly observed differ from YCS.

## Autumn 2017

May is here and the weather has been relatively kind to us in the north compared to our fellow farmers that were hit by Cyclone Debbie in the Central region. I was in Mackay for the Next Gen Conference for the whole week of Cyclone Debbie's trip down the east coast of Australia and I had the opportunity to see the damage first hand – my thoughts and prayers go out to everyone effected by this terrible event. We can only hope that the worst is now behind us and we can have a relatively event free 2017 harvest.

The wet season has been pretty much a typical wet season and the northern crop has generally handled the start of the year well. With the recent rain and at times wild winds, small areas of lodged cane have appeared. These areas are very isolated and I expect they will have a minimal effect on the 2017 crop.

The big news is the discussions regarding Mackay Sugar's Strategic Plan and report from Kidder Williams. The recommendation to transfer some ownership of the Mossman Mill back to growers and a \$2/t Mill improvement charge are the hot topics for the Mossman and Tableland farmers. Mossman and Tableland representatives are currently exploring further the ability of the Mossman Mill to operate independently.

Local farmers are eager for some dry weather so they can start their planting programs; to date there has not been any early planting carried out.

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Up conference was to be held March 27–29 in Mackay. The arrival of Cyclone Debbie on the same dates in the Central region meant the conference had to be postponed. It has been rescheduled to be held in Mackay, March 2–28, 2018.

### Winter 2017

The 2017 harvest season began a lot better than last year's with only a little rain falling each day for the week before the start. This did not delay the Mossman Mill's start date of June 5 – the Tableland Mill had started on May 30.

Local farmers are eager for some dry weather so they can start their planting programs; to date there has been no early planting carried out.

We passed week eight with over 296,000 tonnes crushed compared to the 181,135 tonnes we had at the same time last year.

By then, most farmers were well into their planting programs.

### October–November 2017

The 2017 crush is drawing to an end with the Mossman Mill aiming to be finished by the middle of November.

We have reached another milestone for the Mossman Mill with this year being the 120th year of operation. On August 23, 1897, operations began at the Mossman Mill, with a total of 27,905 tonnes of cane crushed from a total of 33 growers, producing 2965 tonnes of raw sugar.

The toll-crushing agreement of around 300,000 tonnes of Mossman cane from the Tableland area through the Arriga Mill has progressed well. The Arriga Mill is due to complete its season a couple of weeks after the Mossman Mill finishes.

This year's planting saw a slight reduction in the forecasted planted area due to the dry weather and the uncertainty of the future of

the Mossman Mill ownership. For the cane that has been planted, it has been a relatively good growing period with a dry start and a decent amount of rain in mid-September to help kick it along.

With most of the 2017 planting nearing completion in the region, most farmers have now shifted their focus to starting their fertiliser and spraying routines.

The signs are there for another decent crop on the coast for 2018. But if we don't receive a normal wet season, then our Tableland farmers will be having to make some major decisions regarding their water use – Tinaroo Dam is at a very low level.

All in all, the 2017 crush has been good and the Mossman/Tableland regions are looking good for next year's crop. We are, as always, very dependent on the weather and mill reliability when it comes to putting another decent crop through the rollers in 2018.

### NORTHERN REGION 2016 HARVEST SUMMARY

Mill area	Tonnes	Tonnes per hectare	Average CCS
Tableland	405,000	92.7	13.51
Mossman	1,312,000	101.4	11.56
Mulgrave	1,260,000	105.5	11.16
South Johnstone	1,983,000	88.9	11.12
Tully	2,936,000	100.7	12.02
<b>Northern Region production: 7,896,000 tonnes</b>			

## South Johnstone/ Mulgrave/Tully

■ By Michael Camilleri,  
Northern Director

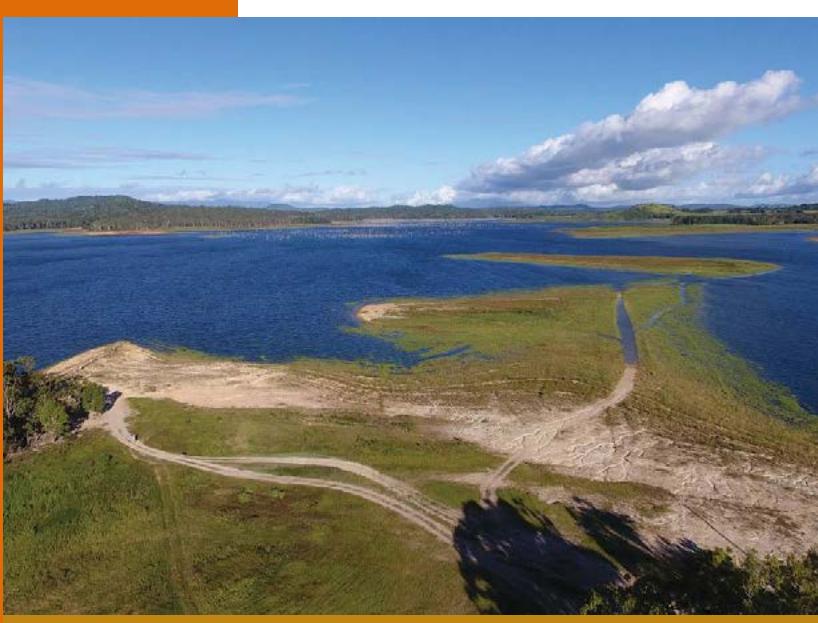
### Summer 2016–17

With the wet start there was concern that we wouldn't get the crop off. In the wet tropics it's hard to get all the ducks lined up! We had an excellent sugar price and an above average crop, yet farm returns were washed out with too much rain in the front end of the crush; eroding out the CCS.

With the high yields there was the prospect of another Christmas Eve finish but a great effort by harvesting crews and mill staff moved the end of the season forward.

South Johnstone, Mulgrave and Tully all had record cane crushes and Tully Sugar has embarked on more than \$8 million worth of upgrades to push things along going forward.

The 2017 crop is shaping up well, due to early rains and with the current and future investments from the local milling companies, and the uplift in the sugar price, sugar growing is currently looking positive.



Tinaroo Dam is at a very low level.



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### Autumn 2017

We have had good early rain – at times, seemingly too good – and the cane crops on the red soils are shaping up to be promising again.

In January we all felt doomed, dark and wet with the sun behind the clouds. Then the sun came out hot and steamy and we could all get back in the fields. The plant crop came off the worst and the erosion will see some bumpy harvesting.

After the heavy rain the growth kicked in, the cane doubled its size in two weeks and now the once clean inter-rows were full of weeds – as soon as all the fertilising was done we got straight into hi-rise spraying.

The latest areas harvested in soggy low soils will be poorer crops due to the rain. But all of the early cut cane is growing well.

### Winter 2017

Rain in the northern regions with lingering clouds threatened to push the start date back but Mulgrave and South Johnstone mills were ready to accept cane on June 13.

By August the crush seemed to be shaping like 2016 with considerable delays in harvesting and planting due to annoying, drizzly showers.

Mulgrave received 72 mm of rainfall during crush and South Johnstone has had a little more (as usual) this season with 210 mm.

Farmers welcomed the fine August weather as it provided a chance to start planting.

### October–November 2017

Just two days of rain in September and October has been extremely helpful for both harvesting and raising the CCS level.

Harvester teams have been under pressure with high mill crushing rates – the season length is also expected to be much shorter than last year with a finish date toward the end of November. The teams are working hard to keep up with the constant supply of bins from the mill and fatigue management is of utmost importance.

## Herbert River Region

■ By Carol Mackee,  
Herbert Director

### Summer 2016–17

Mid-December and CCS levels were holding at season highs in the Herbert, at around 13.3 units. The Herbert mills crushed a total of 4.36 million tonnes of cane which is close to 93 per cent of the total estimate.

But cane purity was starting to fall, which was impacting crushing rates. Rat damaged cane on certain rakes was also causing

processing difficulties, due to high fibre and low-purity juice.

Crushing in the Herbert finished at the end of December with a total of 4,812,090 tonnes in the district. Unfortunately, not all the cane was crushed with 30,000 to 40,000 tonnes left in the paddock. The sugar average for the district was 12.30 CCS – well below the Herbert District long term average.

**Rat damage:** There were approximately another 40,000 tonnes lost because of rat damage, so the crushing could have been around the 4.9 million tonne mark if everything had been 'spot on'.

The low CCS disadvantaged a lot of farmers in the district and many missed out on being paid in January as their statements had minus balances. In some cases, this will carry through into February. Not a great start to 2017.

Farmers need to be ever vigilant with ongoing rat problems, feral pigs and Yellow Canopy Syndrome which has started to show in the crop.

Another problem in the Herbert is smut and there is quite a bit of it around. SRA 3 is also showing some signs of smut.

### Autumn 2017

'April Showers' as the saying goes, saw a wet Easter break and just two fine days for the month. It would be nice to see the sunshine for a few days – the ground is one big slop.

### Winter 2017

The forecast sugar crop in the Herbert is approximately 4.7million tonnes for the 2017 season. We are experiencing a cold snap with figures in single digits from three to seven degrees. We haven't had the winter woollies out for the past three years and we are certainly noticing the change. If the cold snap continues we should have some good sugar in the cane – after last year it is sorely needed.

Standover cane will be difficult to manage – 40,000 tonnes were left in the field following the extremely wet conditions at the end of 2016.

Aerial rat baiting has been carried out in some areas and reports have been good with an immediate reduction in damage over the areas baited.

Cockatoos are a problem at the moment, more so than rats. They are causing havoc with some paddocks and always go for the sweeter varieties.

The marketing chaos is almost over with farmers soon being able to sign CSAs – hopefully very soon as the mill is to start crushing on June 14.

In August the two Herbert mills were powering away, sending plenty of steam into the atmosphere. We had only mediocre scattered rainfall with some good falls nearer to the coast while the western areas were lucky to receive more than a millimetre or two.

Planting got underway and everyone was flat out getting blocks ready and putting cane in the ground for next season.

The district forecast was updated to an estimate of 4.9 million tonnes of cane for crushing this year.

## October–November 2017

It has been a bit of a topsy turvy year so far. The first five months saw us experiencing good rainfall which then this tapered off in the second half of the year. The coastal areas welcomed the rain while the rest of us on the western boundaries have missed out. We feel a bit like Townsville (which is nick-named Brownsville) at present. There have been water restrictions in Townsville all year.

All the usual pests have given farmers a hiding – feral pigs, cockatoos, rats in abundance. And diseases are forever present – smut, YCS, nematodes to name a few.

Then there was the marketing choice debacle. Negotiations were at a standstill as farmers took a stance – they didn't want a monopoly marketer as well as a monopoly miller.

We are now nearing the end of another year with another couple of months to finish harvesting the crop. The sugar content of the cane has been better this year with a district average of 13.30 ccs season to date.

At the time of this report the total of cane

crushed so far stands at 3,407,923 tonnes. There is approximately another six weeks before the season ends.

As the year is drawing to a close I wish each and every one a Healthy, Happy Christmas and a hope that 2018 is a better year for all.

### HERBERT 2016 HARVEST SUMMARY

Mill area	Tonnes	Tonnes per hectare	Average CCS
Herbert River Mills	4,812,000	85.7	12.26
<b>Herbert production: 4,812,000 tonnes</b>			

## SECTION 2 AREA ROUNDUP

This section brought to you in association with



## Burdekin Region

Compiled by the editor

### Summer 2016–17

Early December 2016, the Burdekin mills passed the eight million tonnes crushed milestone and have reached 92 per cent mark with average CCS levels tracking at around 14.75.

Invicta Mill in the Burdekin was set to crush out on December 17.

Mid-February and the On Supply Agreement (OSA) negotiations between QSL and Wilmar were dragging on.

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### Autumn 2017

The Burdekin crop looks quite good, with most growers keeping up with irrigation over the unseasonably dry wet season. Some of the late cut ratoons are a little behind, but the early plant and early cut ratoons are fine. District wide, effects from Cyclone Debbie were negligible, although some small areas reported some damage. Delayed planting this year means plant cane sources are more advanced and many growers' plant supplies are down – this has been challenging.

### Winter 2017

Kalamia Mill commenced crushing on June 14, with Pioneer, Inkerman and Invicta Mills expected to follow a week later. Some 200 mm of rain across the region in May delayed the start of the harvest.

Wilmar has estimated a crushing tonnage of 8,400,000 for the season. To handle this, they have carried out a significant capital and maintenance program. Steam trials were completed at all four mills and loco repairs at Invicta and Inkerman were on track for completion by the start of harvest.

Ongoing dry weather meant few harvest interruptions and at the beginning of August, the Burdekin mills had completed 25 per cent of the 2017 forecast.

### October–November 2017

Rain saw harvesting suspended for most of week 19 but work resumed at the end of October, with harvesters moving in the Invicta area.

Whilst the Pioneer Mill was operating in cogeneration mode during the weather-induced stoppage, the other mills carried out maintenance.

Wilmar Sugar reported that the Proserpine Mill crushed out on 9 November, making it the first of Wilmar Sugar's eight mills to finish the 2017 season. It was also the first mill to crush out in Australia.

Proserpine Cane Supply Manager Tony Marino said the season total was about 1.43 million tonnes of cane, well down on last year's high of two million tonnes, but was better than expected after Cyclone Debbie.

Wilmar's Plane Creek Mill at Sarina is expected to finish the season on November 16; the Burdekin region on December 3; and, the Herbert region on December 10.

### BURDEKIN 2016 HARVEST SUMMARY

Mill area	Tonnes	Tonnes per hectare	Average CCS
Burdekin Mills	8,710,000	126.7	13.97
<b>Burdekin production: 8,710,000 tonnes</b>			

## Central Region

■ By Steve Fordyce,  
Central Region Director

### Summer 2016–17

Rain in the early part of December brought the crushing to a halt. There were general falls of around the 100 mm mark but Plane Creek recorded falls of up to 300 mm.

By mid-December, Mackay Sugar had processed 85 per cent of the forecast crop. The declining trend in cane purity had accelerated into December and growers were asked to select varieties with higher purities, for harvest.

The crushing season finished at the end of the first week of January as harvesting conditions deteriorated due to the continuing wet weather. The cane quality also deteriorated with PRS and purity rapidly falling away. There was approximately 450,000 tonnes of stand over cane left in the field.

About 5.5 million tonnes was crushed with a PRS of 12.96 units.

With the high prices available at the time, growers were extremely disappointed that they couldn't finish the harvest, capturing all the available cane. The transport issue, which placed restrictions on wide loads, also affected many contractors and didn't make things any easier over the Christmas period.

The outlook for the 2017 season appeared to be good – the wet weather had progressed ratoons with very good falls through November, December, and January. There will be an issue with late cut ratoons harvested in wet field conditions.

Fertilising and spraying have been challenging, while waiting for things to dry out. The fallow crop areas of soybeans and other legumes are well down. Rice, which is in early stages of developing as a break crop, was so affected that only one crop in the region was planted.

### Autumn 2017

Cyclone Debbie brought havoc to the Central districts in the last week of March. The crop in the Proserpine area was severely affected and growers think the hoped for good crop will be downsized.

The tramline system in the Mackay area has been affected by flooding after falls of over 1000 mm. The necessary repairs will delay the start of harvesting in these areas.

Cane damage hasn't been fully determined – early estimates indicate up to 15 per cent lost. The cane quality will be reduced because of lodging and the harvesting conditions in some areas will be difficult due to washouts and debris from flooding.

The proposal for the restructuring of Mackay Sugar is still ongoing without a resolution being achieved.

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ON THE  
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Queensland Biosecurity reported that Red Witchweed had not spread beyond the area where it was originally identified. Appears the measures which had been put in place to contain the weed pest have worked.

### Winter 2017

Mackay Sugar commenced crushing on June 5. Cane supply has been hampered from rain towards the end of May. Farleigh started on June 5. Marian commenced crushing with one train in the next week followed by Racecourse Mill.

Sugar is averaging 10.5 PRS. The big issue of stand over cane being supplied at under 7.0 has made it hard for planning where to harvest.

Rain in late May brought falls of 150 to 200 mm across the area. Following Cyclone Debbie most of the area had received small falls of rain. Some areas had started irrigating to finish off the crop.

The state government has approved the funding for the feasibility study and potential construction of BPA's bioprocessing facility in Mackay.

Recently Mackay Sugar sought to implement a restructure plan to increase mill performance and reduce debt. This plan was presented in consultation with Kidder Williams. Part of this restructure involved a deferred payment of \$2 a tonne of cane. The bargaining agents, after consultation with Mackay Sugar, agreed to the deferred payment plan being reviewed after two years before committing any further.

The restructure plan has not been well accepted.

By August, the crop was cutting at 99.5 per cent of estimate with 31.3 per cent of the crop harvested. Season-to-date non-stand over cane is cutting at 98 per cent and stand over at 101 per cent with 67 per cent of the stand over cut.

The majority of the cane is showing a slight downward trend against estimate. If the weather forecast holds, the trend would not worsen significantly. But it is evident that the budgeted 5.30 million tonnes is at risk. The working crop estimate has therefore been revised down to 5.20 million tonnes.

PRS and purity are increasing with the drying out of the cane, and this allows the factories to produce more consistent sugar. Bagasse production has been slightly under target for the start of the season, but has improved greatly and will soon be on budget.

### October–November 2017

Cyclone Debbie in March destroyed any hope of improvement on last year. The wind damage over nearly two days resulted in very little growth of the crop after the blow. Flood damage in areas caused further damage to property and infrastructure on farms.

There have been issues regarding insurance claims. The QRAA Category C became accessible to help conduct repairs. This facility was to

conclude in early October. Due to the demand, suppliers and contractors have not been able to complete works required. The cut-off date for claims has now been extended to early January 2018.

This season started with an estimate of 5.3 million tonnes which included 460,000 tonnes of stand-over cane. Since the start of harvesting there has been no reasonable rain event to help maintain that estimate. Consequently, the estimate was revised down to 5.1 million tonnes of cane and will decline further if it keeps drying out.

Mackay Sugar to date has processed 3.5 million tonnes of cane averaging 13.45 PRS. The sugar make is anticipated to be about the same as last year, but the price of sugar has fallen from last year. Crushing is anticipated to be completed by the end of November.

Looking forward to next season, a reasonable rain event is needed. Plant cane and ratoons are being severely stressed and, although farmers are irrigating, Mackay is a supplementary irrigation area, rain is needed to assist these efforts.

### CENTRAL REGION 2016 HARVEST SUMMARY

Mill area	Tonnes	Tonnes per hectare	Average CCS
Proserpine	2,001,000	95.9	12.69
Mackay Sugar Mills	5,556,000	88.1	12.71
Plane Creek	1,346,000	81.7	12.96
<b>Central Region production: 8,903,000 tonnes</b>			

## Southern Region

■ By Michael Hetherington,  
Southern Director

### Summer 2016–17

Bundaberg was all agog with the local paper headline "BUNDABOOM!" – in 2016 Bundy Sugar crushed over a million tonnes at Millaquin and has expanded their cane planting program.

Isis had the best tonnage for years and a record crush rate of over 70,000 tonnes for one week, during the peak CCS period. Maryborough had the biggest crush for years and is looking good for next year.

Storm rains have been very picky as to who's in and who's out, with variations of 100 mm within a few kilometres.

Irrigation water shutdowns are again upsetting. As necessary as it is, the shutdown of water a week before Christmas means that most farmers will be on the catch-up over Christmas.

### Autumn 2017

An increase of 210 per cent is the figure quoted in a rural news article referring to the average rise in cost of powering the average

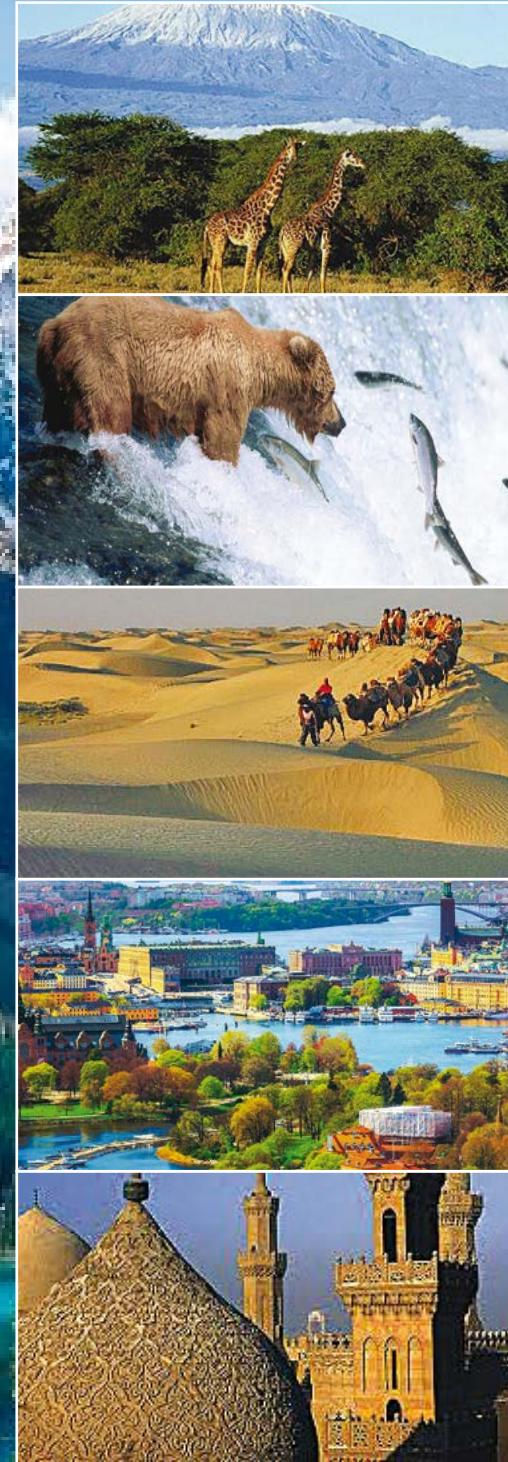


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- ★ Silk Road (Western China/Kazakhstan/Russia)

are farm study tours being offered in 2018. Space is limited on all tours but particularly Africa, Iceland and Slovenia – so be quick. Detailed itineraries can be found at [www.greenmounttravel.com.au](http://www.greenmounttravel.com.au)

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## SECTION 2 AREA ROUNDUP

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electric high-pressure irrigation system compared to a few years ago. That's per any time period (per hour or per quarter in a dry spell).

Farms without low pressure systems will be left behind, therefore a new industry is forming round farms with centre pivots, hexagonal farms with walking booms or any shape if you can flood efficiently.

**Rain:** Well our little corner had half a year's rainfall in three weeks and not a lot of wind from Cyclone Debbie. Absolutely life-saving! And now 'April showers'.

### Winter 2017

When the local Greensill boys have a go at a project there is no room for the faint of heart. Their latest challenge – to bring a tract of abandoned land back into sugar cane production – is inspirational. The difference is scale – 100,000 tonnes plus is the goal.

The reason for all this? Energy use reduction! And significant savings are being achieved – from \$140 per megalitre of water applied down to around \$42.

ISIS Mill will start June 26 with an estimated 1.3 million tonnes to crush. The region, in general, recovered strongly from the severe dry of summer. My particular personal best was 29 mm from end-November 2016 to April 2017. Low pressure irrigation systems sprang up like mushrooms over Christmas and this was the saving grace.

How will any farmer who is unable to install low pressure systems for whatever reason, be placed in five years?

Apart from some pea soup fog mornings in August and a single light thunderstorm, nothing was holding up the harvest in the region.

Great for harvesting but a little dry for spring planting, but then the Bundaberg-Isis System had plenty of irrigation water available. Farmers are pre-watering to make cultivating much easier on the gear, if not the pocket.

'Climate change' is leading to 'decision change' here. Planting is starting in August; irrigation is becoming the norm, rather than supplementary; and, harvesting is going toward preparing for less frequent but bigger rain events and 'must have' wet weather capability – which means a whole set of 'just in case' machinery.

These are the sorts of problems non-agricultural administrators do not understand, so practice your spiel for whenever you get the chance to put sound argument up in the public arena.

### October–November 2017

And to a summary of the changes this past year has seen. I could go on for pages with the amount of change all around but...

The growing corporatisation of farming is, I believe, the single most significant change to sugarcane farming in the south.

As mentioned above, earlier this year I had

the opportunity to visit the local Greensill Project which is bringing a tract of abandoned land back into sugar cane production. It was inspirational!

Aggregation of several smaller plots is allowing efficiency gains in water, energy and sustainability.

The latest in GPS technology allows earthworks to be affected from the tractor cab rather than having a mob of blokes darting 'to and fro' with notched sticks. Real time elevations and precise location makes the land levelling seem so simple.

All harvest planning is as best as can be with a locally produced, new generation harvester to give a lower fuel burn per tonne. The design of the haulage roads to delivery points is simple and straight forward and hence cheaper. And to finish the wrap, there are native timber plantings to complement the runoff control system by slowing the across-ground flows. This project seems to have the lot.

Planning and achieving a return on investment of this scale is almost like holistic medicine – the meshing of all the cogs achieves the best outcome. Most impressive.

In years past, the south was the stronghold of the small independent farmer – mostly due to the geography of the land. Now modern machinery has gone clean through the old boundary markers and brought small blocks together. This has allowed the investors to back bigger machinery and therefore bigger entities.

Debt to equity ratios may well be better and this year of huge investment surely indicates that bigger and presumably better, more efficient sugarcane farming will be continuing in the Southern Region for some time to come.

### SOUTHERN REGION 2016 HARVEST SUMMARY

Mill area	Tonnes	Tonnes per hectare	Average CCS
Bundaberg Sugar South	1,825,000	93.4	14.09
Isis	1,352,000	95.4	14.09
Maryborough	791,000	72.1	14.01
Rocky Point	110,000	98.6	13.79

**Southern Region production: 4,078,000 tonnes**

## NSW

■ By Robert Quirk,  
NSW director and senior Vice Chair

### Summer 2016–17

While 2016 was not a record year for NSW, with the higher prices it will most certainly be one to put a few dollars back in the pockets of growers.

Harwood crushed over 690,000 tonnes with a CCS of 12.15 and finished on November 24.

## SECTION 2 AREA ROUNDUP

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Broadwater crushed around 840,000 tonnes with a CCS of 11.76 and finished on November 28.

Condong crushed a little lower than the forecast at around 580,000 tonnes with above average sugar of 12.10. Around 20,000 tonnes of this came from Rocky Point.

The three mills had a combined crush of around 2.1 million tonnes a – long way up from the flood years when this was only 900,000.

Condong was still crushing cane from Rocky Point and was to continue to help those growers until December 21, all being well and weather permitting.

The weather has seen below average rainfall, so some areas are looking for rain; but we never pray for rain on the Tweed because it is much easier to get too much than not enough and we grow our best crops in the dust.

The crop in NSW has the potential to produce an average crop for the 2017 season. The weather at this time of the year can produce large amounts of rain in a short period. But at the time of writing, there has been a rainfall deficit for the summer in NSW.

**Soy beans:** Many growers have taken the opportunity to reduce the amount of fallow/soy bean cropping to take advantage of the better sugar cane pricing, at least for the coming year.

**Bonsucro:** The NSW Sugar cane industry had another successful audit to the Bonsucro Standard – we are still the only industry in the world with all growers certified along with the mills and refinery.

**Harvesting and SRA:** The SRA harvest losses projects are making many sit up and take notice. A 38 per cent reduction in juice losses can only increase the industry's bottom line. My own harvesting group will install the new chopper system this year and we should get a return on investment in the first two months of the harvest.

### Autumn 2017

The Tweed sugar cane crop had been suffering like much of the rest of the Australian crop from lack of rainfall but we received good rain from March 14 to 21.

**Record flooding:** On March 30–31 some parts of the district measured falls in excess of 900 mm for the two days. The closer to the coast the less rain – only 200–300mm.

This was one of the largest floods ever recorded in this area. The Condong mill was built in the late 1880s and had never before had water over the sugar floor – this time about 1.3 metres flowed through the mill.

The main damage to the Tweed crop is from the debris that has flattened the cane. With the help of the SRA drone, we got some visuals of fridges and other household items that had been washed into the fields. The scary ones are the gas bottles and petrol cans that may be of danger to those growers who will find

it essential to burn this year – and it looks like that will be everyone.

**Yield reductions:** In general, we have lost three to four weeks of growth and with some varieties with dead heart, we are looking at around 10–15 per cent reduction in yields in some areas.

### Winter 2017

If anyone doubted that the climate is changing, I think the past six months may have answered that question. One of the driest summers on record, followed on the Tweed by the largest recorded flood at the end of March – then dry again for April.



The depth of scour shows the speed that the water was traveling as it entered Rob's farm. Some growers have gravel deposited in drains and are looking at thousands of dollars to repair roads and hauling tracks.



Rob has a 100 hectare block which is 10 per cent covered with debris. He hopes that some of the cane under the debris will survive – if not there will be a massive replanting program. Some growers are reporting cattle fences across fields and dead cattle in the cane along with household gas bottles and truck, tractor and car tyres.

## SECTION 2 AREA ROUNDUP

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The crop damage from such a major flood was surprisingly minor – particularly when we consider the 2017 flood was one to two metres higher than the crop devastating 2013 flood. Growers are saying they have never seen a flood come and go so quickly.

All the soy beans on the Tweed were lost but some of the higher ground on the Richmond will be able to harvest their bean crops.

NSW will be harvesting an average crop this year while our friends where the cyclone hit north of Mackay will have a very dismal harvest – we feel for them and wish them all the best for a recovery.

August saw the weather continuing to be very kind and the harvest 40 per cent completed. Despite the floods the crop is harvesting around estimate and will be close to the five-year average.

### October–November 2017

The season so far has been a challenge to say the least. Like most of the sugar cane industry in Australia, it's been generally dry interspersed with large amounts of rain fall to break the droughts – truly a 'land of droughts and flooding rains'.

Northern NSW had one of the driest summers on record followed by the largest flood since European settlement on March 30

this year in the Tweed Valley. Then back into drought with one of the driest winters on record.

Is the climate changing? I think so. If this is the 'new' normal then there are difficult times ahead.

In early September we had a high tide which was 40 cm above the predicted level – this breached the weir where the Tweed shire draws our drinking water from. The sceptics on climate change/sea level rise saw what a rise of just 40 cm could mean to not only local agriculture but also the council's infrastructure.

A 74 year old farmer in the upper part of the Tweed valley has been on the same property for 70 years and this is the first year he has not had a frost on the property.

All soy beans on the Tweed and parts of the Richmond and Clarence crops were lost during the flood, but hopefully the beans had done their job and produced enough nitrogen to help the new plantings of cane. Deep core drilling by DPI (down to one metre) has shown that some farms have up to 300 kg of ammonium N distributed through the soil profile at depth.

The planting of cane had been stalled due to the dry. A few recent showers between 20–60 mm have allowed planting to start again on all rivers. Much of the cane is already up on the Tweed with very good strikes. With further showers we could have a good crop for the coming year.

Sugar cane must be one of the most resilient crops on the planet. We have had two prolonged drought periods, a major flood and still we will harvest reasonable crops.

The upside from the dry weather is that the sun has shone most days give many of us record sugar on our farms with one farmer achieving 16 ccs last week.

While this may be common in the northern regions it does not happen here very often.

The stand out variety was once again Q208 – provided the crop had achieved a good height that kept the growing point from being submerged for only 24 hours or less during the flood, the damage was minimal. I have a block of Q183 – on the ridge the cane is at 3.0 metres. On the lower end of the field the cane did not grow on after the flood and is only at 1.5 metres.

I do hope that the harvest is as good as what can be expected under the circumstances and that all cane gets some good rain, not floods, to make a harvest in 2018. ■

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### NSW 2016 HARVEST SUMMARY

Mill area	Tonnes	Tonnes per hectare	Average CCS
Condong	559,000	119.2	12.06
Broadwater	846,000	128.1	11.76
Harwood	696,000	146.2	12.16
<b>NSW production: 2,101,000 tonnes</b>			



# THE FUTURE

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*It seems the 'future' is already upon us – or it's sneaking up very close for many of us at least. When 'futuristic buzz words' become part of everyday business for not only researchers but farmers and ag suppliers, you know that the 'innovators/early adopters' are on the move and the 'wait a bit and let's see' guys will be along shortly.*

## Precision farming in the NQ cane industry

**R**OBOTICS, automation, Differential Global Positioning System (DGPS), image processing, data analytics and the IoT (Internet of Things – a system of interrelated computing devices that automatically talk to each other).

Whilst these buzzwords might sound futuristic, in truth, they are now common place terms in the world of precision farming, and we are starting to see this in the cane industry too.

"Honeycombes have been leading the way in precision farming in the cane industry for over ten years now" says John Obern, Honeycombes' Group Sales Manager. "We took the plunge back in 2005 and started to establish a network of RTK base stations to assist with GPS accuracy. We now have 38 base stations, covering 90 per cent of our region, which gives farmers the convenience of being able to use more than one station in a particular area."

In addition to infrastructure, Honeycombes have invested heavily in resources and training for their staff. Their Precision Ag team now has specialists throughout far north Queensland who can install, train and support new equipment. Des Carroll, Honeycombes' Group Service Manager said "The entire business is now really across the technology and the hardware – it has become almost 100 per cent mainstream."

### Missing piece of the puzzle

"We're very excited to finally get the missing



New age of crop monitoring emerges from the mists of time – or at least the new JD Trash and Cane Yield monitor (mounted mid-way on the elevator) being trialled in the Herbert on a foggy day.

piece of the puzzle – a factory John Deere cane yield monitor. This uses stereographic cameras mounted on the harvester elevators to measure crop biomass in real-time, to monitor trash and cane yield", said Des. Honeycombes are currently trialling the monitor, one of only nine in the world, at a large cane farm in the Herbert region. "This monitor, combined with wireless data transfer over the cellular networks, will provide the first real-time field operation data to cane farmers, accurate to within four per cent."

Craig Gilbert, Honeycombes' Precision Ag Project Manager, explained the other emerging technology where Honeycombes is concentrating its efforts – drones. "Honeycombes are now agents for DJI drones and we supply drone packages to farmers which include the drone and all equipment, plus training, insurance and a maintenance contract. We are starting to see farmers really get to grips with what this tool can bring to the table."

The latest developments involve new cloud-based image processing software such as using orthomosaic technology (image geometrically corrected so that the scale is uniform and the



Honeycombes are currently trialling a John Deere cane yield monitor, one of only nine in the world. This uses stereographic cameras mounted on the harvester elevator to measure trash and cane yield in real-time.



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### Peace of mind for Ingham grower

"I like the idea that by using ENTEC, the nitrogen stays in the soil for longer and whether the cane is cut early or late, I am giving the crop the best possible chance to make the most of the nitrogen."

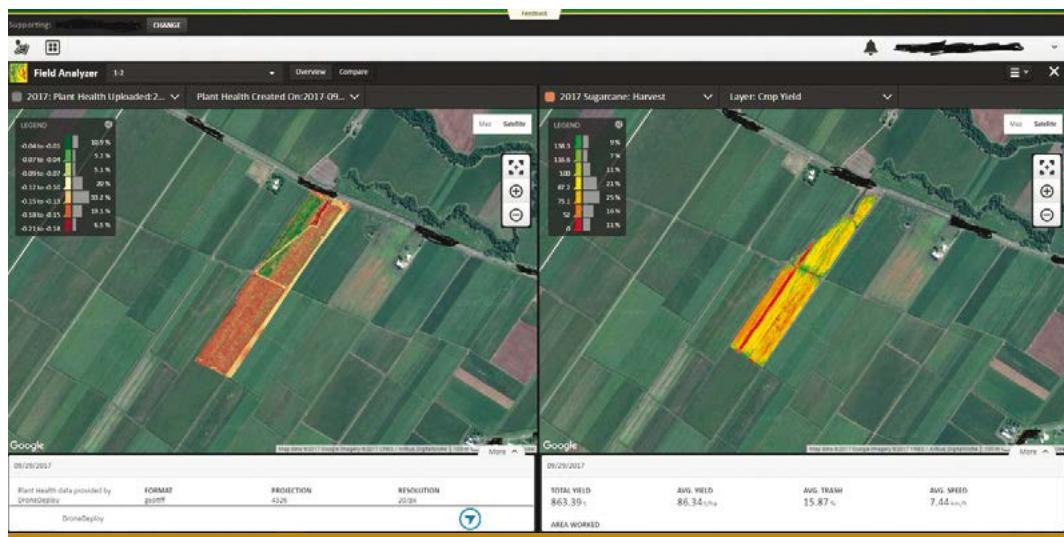
"Cane growers can use ENTEC with confidence and they don't have to worry about where their fertiliser is going."

**Robert Silvini Ingham**



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(Left hand side) NDVI versus (right hand side) Crop cane yield (image from the new monitor).

photo can be used to measure true distances as with a map) which assists farmers with field surveys and weed/pest management; or developing NDVI maps (a measure of plant health and vigour for each pixel in a satellite or aerial/drone image).

### Next big thing

Honeycombes see the next big thing being robotics and automation, combined with the Internet of Things to facilitate data collection and data analytics. An example would be utilising soil sensors, communicating real-time over a cellular network, providing a huge amount of data, which will be analysed, with

results provided to third party agronomists to assist with decisions around spraying and irrigation and so on.

Whilst embracing all of this technology may seem a way off for some farmers, there are tangible benefits to be gained right from the outset. In order for cane farmers to become accredited in the Canegrowers' Smartcane BMP program, they must be able to provide accurate records of where fertilisers and products are applied. The simplification of data collection and record keeping brought about by the technology, really assists with the accreditation process.

Contact your local Honeycombes branch for further information – [www.honeycombes.com.au](http://www.honeycombes.com.au)



Innovative products like John Deere's Remote Display Access (RDA) allows operators to remotely control machine functions and record key performance data.

# New concept tractor – powered by methane, same grunt as diesel but much cheaper to run

## AT A GLANCE...

- Pushing the boundaries of innovation to pioneer alternative fuels solutions.
- Methane powered concept tractor – the performance and durability of its diesel equivalent with up to 30 per cent running cost savings.
- The vital link in the CO<sub>2</sub> – neutral Energy Independent Farm concept.
- Reimagined tractor design.

**N**EW Holland Agriculture recently presented the latest development in its vision for the sustainable future of farming: a methane powered concept tractor that reimagines the design of this machine and reveals a connected future. The brand imagines the farm of the future as being completely energy independent: a farm that produces not only food, but also the biomass it needs to

generate the energy it uses to run its operations and power its tractors and other machinery. New Holland believes it has the technology to make a self-sufficient future achievable today.

### **Pushing the boundaries of innovation to pioneer alternative fuels solutions**

New Holland has been pushing the boundaries of innovation in clean energy solutions for more than a decade through its Clean Energy Leader strategy. It was the first manufacturer to offer 100 per cent compatibility with Biodiesel back in 2006.

- In 2009 it developed the world's first hydrogen tractor concept, NH<sup>2</sup> proving the feasibility of this zero-emission technology for the future. This was a key element of the brand's Energy Independent Farm concept, launched at the same time.
- In 2012, it created its first propane fuelled tractor prototype and is now developing the



**Stylish, methane powered concept tractor – the performance and durability of its diesel equivalent with up to 30 per cent running cost savings.**

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T6 Propane Power tractor in partnership with the Propane Education & Research Council (PERC).

- In 2013, New Holland presented its first T6 Methane Power tractor prototype, which it has been developed further and tested with customers

### Performance and durability of its diesel equivalent, with up to 30 per cent running cost savings

The new methane powered concept tractor features a powertrain that uses a ground-breaking efficient combustion technology specifically developed for agriculture applications by FPT Industrial, a brand of CNH Industrial that has pioneered natural gas traction for more than 20 years.

The six-cylinder NEF methane engine delivers 180 hp and 740 Nm – the same power and torque as its standard diesel equivalent. It has the same durability and service intervals, and generates up to 30 per cent running cost savings. The innovative tank design, using a composite layered tubular structure, enables a full day's autonomy in line with an equivalent diesel model.

The powertrain of the methane powered concept tractor has the added benefit of quiet operation, with engine noise level reduced by up to 3 dBA. This translates to around 50 per cent reduction in drive-by-noise, which makes it ideal for municipality, yard and transport operations.

In real field conditions, the methane powered concept tractor produces at least 10 per cent lower CO<sub>2</sub> emissions and reduces overall emissions by 80 per cent compared to a standard diesel tractor. Its environmental performance further improves when fuelled by biomethane produced from crop residues and waste from farm-grown energy crops, which results in virtually zero CO<sub>2</sub> emissions.

### The methane powered concept tractor, vital link in the energy independent farm's virtuous cycle

The methane powered concept tractor, forms a vital link in the virtuous cycle that delivers CO<sub>2</sub> neutral production, where the energy independent farm produces the energy it needs to power its operations, heat farm buildings, and run its equipment. Biomethane as a sustainable fuel is particularly well suited to farms, as they have the raw materials and the space to house a biodigester to produce the gas.

The biodigester is fed with specifically grown energy crops, animal waste, food waste or crop residues. It can use waste collected from food factories, supermarkets and restaurants in addition to the materials gathered at the farm.

The biogas produced in the biodigester is transferred to a refining station where it is transformed into fuel-grade methane to power the farm's vehicles and machinery. The methane can also be used to fuel a generator to produce electricity that can be used on the farm with any extra fed into the electricity grid to power local communities. The by-products of digestion can be used as natural fertilisers on the farm's fields.

### The new concept reimagines tractor design

CNH Industrial's design team reimagined tractor styling, taking inspiration from automotive design, to create a fully integrated body look with the hood, front and rear fenders, and the fuel tank creating a flowing, stylish look. Wrap-around glazing provides 360-degree visibility, with a 20 per cent increase in the glazed area compared to a standard tractor. The floating glass domed roof with fully integrated Precision Land Management receiver provides a completely panoramic design – an agricultural first – and offers an unobstructed view of the loader at all times, facilitating operations, from loading digestate to feeding cattle. ■



**The NH concept autonomous tractor, operated through a tablet interface, was on-show this year at major Australian Field Days. This unit is able to work 24 hours a day, seven days a week delivering higher levels of productivity and efficiency. In the future, it could be methane powered.**

# Agriculture – leader in autonomous mobility?

■ By Dr Khasha Ghaffarzadeh, Research Director, IDTechEx

ROBOTS are becoming uncaged, mobile, collaborative and increasingly intelligent and dexterous, moving beyond their traditional strongholds to bring automation to previously inaccessible tasks. Agriculture is also no exception and is being quietly transformed by this rising new robotics. In this article, we will consider the evolution and the long-term impact of autonomous mobility in farm vehicles.

## Evolution towards full navigational autonomy

Agriculture is the leading adopter of autonomous driving technology despite all the hype around driverless cars. Real time kinematic GPS (RTK-GPS) forms the backbone of this outdoor navigational technology with its centimetre level positional accuracy.

First came tractor guidance, helping drivers drive more accurately and relieving some of the pressure of maintaining driving accuracy. Next came autosteer, giving the operator the ability

to programme a map into the tractor and let it navigate autonomously.

In agriculture, more than 210 thousand (k) RTK GPS receivers were sold last year. We project that this number will rise to 335 k by 2023.

Autosteer will be the fastest growing use case, variable rate equipment will also see accelerated growth. This trend will be boosted as receiver prices continue to fall. The receiver technology is becoming increasingly commoditized. The uptake will also be helped by increased uptake in precision agriculture practices. The full ecosystem is finally coming together with more reliable variable rate equipment such as seeders, spreaders and sprayers. We project that some 330 k VRT units will be sold in 2023, up from a mere 40 k or so in 2015.

## Master-and-slave

Technology is now evolving towards full autonomy. Master-and-slave (or follow-me)

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systems are being trialled, enabling one driver to guide a fleet, thus boosting the driver's productivity. Next will come manned yet fully autonomous tractors (level 5). This has already been technologically demonstrated. Here, the vehicle's sensing suite has to be expanded to enable it to avoid collision and operate even when the GPS signal is lost.

The next stage will potentially be unmanned autonomous tractors. In fact, this year, we saw the first public demonstrators for such vehicles. But currently the farmers want to stay in charge, thus the cab is likely to be kept in the design. But in the long term, the meaning of staying in charge will change, transiting from driving the vehicle to, for example, remote fleet operation/management.

In general, agriculture is well suited to autonomous mobility: farms are semi-structured, sparsely-populated environments and are thus simpler to autonomize than general driving on congested roads. There is also commercial incentive: reducing the wage bill.

But the challenge is to convince the farmers to pay for the technology and to adopt it. Indeed, farmer conservatism and the general characteristic of the agriculture market will turn this potentially revolutionary technology into an evolution.

#### What happens when we take the driver out of the equation?

Taking the driver out of the equation can have profound consequences for the way we envisage agricultural machinery. The well-established notion that bigger is better has its origins in the need to enhance the productivity of the driver but this notion loses some of its relevance if farm vehicles become autonomous and unmanned.

Navigational autonomy could initiate a major transition from large, heavy, fast and expensive vehicles towards fleets of agricultural

robots. These agrobots would move slowly, giving extra attention to plants; and they would be light weight, eliminating soil compaction. They would also have to be inexpensive in order to compensate for their lower individual productivity through fleet operation.

#### Not a 'done deal' – yet

Many small robots have been developed at the research level and a few have been commercially launched and sold. The machine designs are not the done deal yet. In fact, there is still some way to go:

- These robots often only work on highly structured farms and on crops with limited height;
- They take action using mechanical means which can be slow otherwise they will need to carry tanks of water and chemicals which adds to size and weight; and,
- The cost of data capture is relatively high compared to other methods such as drones given their high unit current unit costs and slow pace and so on.

But we are only at the beginning of the beginning of here. Indeed, the rise of small mobile robots is not limited to just agricultural machinery. Take, for example, vehicles used in material handling. Here, small robots are being commercially developed to carry loads inside facilities.

These mobile robots can autonomously navigate with no reliance on guiding infrastructure (eg. magnetic tapes). They will become increasingly able and authorized to share spaces with humans, intelligently navigating their way and avoiding objects. They will enter new spaces to ferry items around, diffusing from highly controlled and structured environments towards increasingly less structured ones.

For more see [www.IDTechEx.com/agri](http://www.IDTechEx.com/agri)

**FIGURE 1: The battle between the big and the small in the design of farm vehicles. Can a major change take place with the rise of autonomous unmanned mobility?**





**ENTEC  
PROTECTED**

## GROWER TESTIMONIAL

### Consistent yields the key for Proserpine grower

**ENTEC is delivering impressive yields for Proserpine cane grower, Peter Muller.**

After trialling the nitrogen fertiliser treatment in 2011, Mr Muller says ENTEC has improved nitrogen efficiency across his entire operation.

"ENTEC has been an impressive tool for us," he said.

"It has allowed us to produce 95 – 100 tonnes/hectare on a consistent basis, even though we are growing cane in light sandy loams which are prone to leaching from heavy rain."

Mr Muller runs Wandarra Farming and Grazing with his wife, Linda, son Addison and Ian Staniland, up river between Proserpine and Bowen.

They farm 460 hectares and manage another 70 hectares in what Mr Muller describes as marginal country.

"Not only are our light soil types susceptible to leaching, but green cane trash blanketing coupled with our flood irrigation practices probably means our applied nitrogen is subject to losses resulting from denitrification in waterlogged fields," Mr Muller said.

He was one of the first cane growers to try ENTEC after hearing about it from Farm HQ advisor, Paul Rogers back in 2011.

ENTEC is a treatment that keeps nitrogen stabilised in the ammonium form and available in the soil for weeks or months longer than untreated urea, promoting more efficient plant uptake and reducing the risk of leaching and denitrification.

In the six years since he first tried ENTEC, Mr Muller said the improved nitrogen efficiency has led to consistent yields while he has been able to reduce nitrogen rates at the same time.

"Without ENTEC treated blends in our light sandy soils, I think the nitrogen just goes straight through the soil profile and the plants don't have time to take it up," he said.

"ENTEC has led to huge changes here and as the saying goes, if something works, you stick to it."

Paul Rogers is the agronomic advisor and joint proprietor of Farm HQ with his sister Donna.

"Peter was one of the first growers around Proserpine to trial ENTEC and the consistent yields in adverse conditions speak for themselves," Mr Rogers said.

"ENTEC helps growers protect their nitrogen in the ammonium form, so there's less nitrate in the soil, less risk of leaching and more nitrogen available to the crop.

"Conditions here create the perfect storm for nitrogen losses – a light topsoil over a sodic clay subsoil, long relatively flat paddocks that are flood irrigated soon after harvest coupled with a heavy trash blanket, so waterlogging can be a constant enemy. ENTEC stabilised urea is a no brainer for growers with these soil types.

"As Cyclone Debbie proved once again, the seasons vary from year

to year, but with ENTEC, growers can reduce the risk of nitrogen losses and have another tool to help them comply with best management practices."



Proserpine district cane grower, Peter Muller, says ENTEC urea blends have allowed him to produce more consistent yields on his light sandy loams.

**Paul Rogers** | 0407 476 328 | paulrogers@farmhq.org





## A flexible solution to enhanced efficiency

By Rob Dwyer, Tropical Systems Agronomist, Incitec Pivot Fertilisers

**Matching nitrogen supply with demand is seen by some as the holy grail of enhanced efficiency fertilisers, but I tend to disagree.**

In cane systems, where we can have extremely variable rainfall and weather conditions, it's practically impossible to track the growth of the crop on paper and design a product that will match this demand exactly with supply, year in, year out.

While we're reasonably good at predicting a wetter or drier season no-one can pinpoint exactly when individual rainfall events will occur or how much each will deliver.

It only takes a single downpour to upset nitrogen management and cause yield losses.

For example, in a 2013-14 nitrogen trial at Ingham in ratoon cane<sup>1</sup>, conditions were quite dry for two months from fertiliser application until Boxing Day, when a significant rainfall event occurred.

At the end of the season, where ENTEC treated urea was used at 150 kg/ha of nitrogen, 81.5 t/ha of cane was cut

for a sugar yield of 11.2 t/ha. The same rate of urea yielded only 53.7 t/ha of cane and a sugar yield of 8.4 t/ha. This shows the value of ENTEC in providing better nitrogen management for cane.

### Protection...

Research shows that protecting against only one of the nitrogen loss pathways increases the likelihood of nitrogen being lost via another pathway.<sup>2</sup>

To successfully improve nitrogen use efficiency, cane growers must protect against each of the major loss pathways at the same time.

And no matter what happens after you've applied your fertiliser, it is better protected from leaching and denitrification with ENTEC.

If it has been appropriately incorporated into the soil with 10 cm of compacted soil coverage, it is also protected against volatilisation and possible runoff.



### ...whatever the season brings

ENTEC offers the flexibility to protect against nitrogen losses, whatever the season brings, while maintaining nitrogen availability to the crop.

1. In rainfed cane systems, during those long dry spells while the cane is unable to take up the nitrogen applied, ENTEC is stabilising the nitrogen in the ammonium form.
2. When the rain hits (and it sometimes hits hard) or in irrigated situations, there's less nitrate nitrogen in the soil to be lost to leaching and denitrification. The ammonium stays put and is available to the crop for growth.
3. By the time the crop is approaching the out-of-hand stage, it has often been vigorously growing and acquired a significant proportion of its nitrogen requirement.
4. ENTEC works in all of the many and varied unpredictable seasonal conditions cane growers face. It helps get more of the nitrogen applied into the crop, where it can help grow more cane.

For more information about using ENTEC this season, see your local ENTEC accredited fertiliser Dealer.

<sup>1</sup> 'Effects of polymer- and nitrification inhibitor-coated urea on N<sub>2</sub>O emission, productivity and profitability in a wet tropical sugarcane crop in Australia' by Weijin Wang et al, published in the Proceedings of the 2016 International Nitrogen Initiative Conference in Melbourne.

<sup>2</sup> Prasertsak P, Freney JR, Denmead OT, Saffigna PG, Prove BG, Reghennani JR (2002) Effect of fertiliser placement on nitrogen loss from sugarcane in tropical Queensland. Nutrient Cycling in Agroecosystems 62, 229-239.

# GROWER TESTIMONIAL

## Less nitrogen lost is more gain in cane

**On the Kolan River north of Bundaberg, cane farmers Glenn and Susy Robertson are taking steps to change their fertiliser management for the better.**

In addition to long-standing best management practices like soil testing, trash blanket farming and banding fertiliser into the soil, they have recently started using ENTEC and split fertiliser applications.

They're finding the changes especially good for protecting against leaching losses and keeping nitrogen available to the crop for longer on their lighter soils.

The farm has a mix of soil types, with river loam soils, grey forest country and sandy soils.

According to Mr Robertson, the most difficult soils to manage are the sands, with leaching a real problem.

"To get crop yields to lift on the sandy soils normally takes a wet year or a lot of watering, but with that comes leaching," he said.

That's why three years ago, they trialled ENTEC with their cane fertiliser blend on half a block of sandy soil. At the same time, they cut the fertiliser rate by about 20%.

ENTEC was recommended to the Robertsons by Nathan Kay, an agronomist with BGA AgriServices in Bundaberg. He explained that it worked to stabilise nitrogen as ammonium in the soil for a period of time after application, protecting

it from leaching and denitrification losses.

"I figured I could cut rates because I would be getting more than 20% extra from the fertiliser if it wasn't leaching away," Mr Robertson said.

The result was a difference of around 35 cm of cane growth and around 15% extra yield, which was enough to see him adopt ENTEC on all the sandy country.

"I use it on all the sandy soils now and have started using it in the grey forest country as well with similar results," he said.

"It just holds the nitrogen better in the lighter country, so that if you get a major rain event, you haven't lost everything," he said.

While rainfall is unpredictable, Mr Robertson generally receives his heaviest falls and most significant rain in summer, a month or so after the year's fertiliser is applied.

"This year I was irrigating until March, but then we had 410 mm in three days," he said.

"If you're going to have rain like that, you've got to have some sort of protection for the fertiliser," he said.

Mr Robertson also splits his fertiliser applications on the lighter country to further reduce the potential for losses.

In the first pass, one third of the total fertiliser requirement is applied.

"I let it go for about two months, until the cane gets to be about a metre high and then sidedress it with the balance of its fertiliser, treated with ENTEC so it holds on for as long

as possible," he said.

This season, Mr Robertson is planning to reduce fertiliser rates again.

"I'm already using less than the local cane board's recommended fertiliser rates and I'll be going further this year," he said.

"With ENTEC we're getting better use of the nitrogen, so I don't have to put as much on."

Cane is usually grown on at least 40 hectares of the farm at any time, with the rest of the ground given over to a long fallow.

As well as giving him time to eradicate any problem weeds, the fallow is also used to improve the soil with a range of green manure crops such as mungbeans and soybeans.

"I've found one of the most important things that you can do is to spell the ground," Mr Robertson said.

"You can't afford not to fallow if you want to get good yields, and we're seeing that again this harvest with a 95 t/ha average so far."

Mr Robertson arranges each block to be soil tested before planting, giving him solid soil test records across the whole farm, dating back no longer than four years.

"I'm not a big cane farmer," he said.

"I'm growing somewhere between 3,000 and 5,000 tonnes each year. We have our costs and challenges the same as everyone, but it's a sustainable family business and we're in charge of our own destiny."



Nathan Kay, agronomist with BGA AgriServices, Bundaberg, recommended ENTEC to Glenn Robertson three years ago for his cane. He's used it ever since.

# Don't let leaching be a drain on yields

By Rob Dwyer, Tropical Systems Agronomist, Incitec Pivot Fertilisers

## Leaching is the movement of nitrate nitrogen with water beyond the plant root zone.

This dreaded drain can happen any time the amount of rainfall or irrigation on the block is more than the soil can hold internally.

Soil types vary in their capacity to hold and store moisture. Sandy, lighter soil types are renowned for being 'leaky', while clay or loam based soils have a higher water holding capacity.

Of course, the largest losses occur when there are large

amounts of nitrate nitrogen in the soil, such as in the weeks after the application of a traditional urea based fertiliser blend.

Large storms or days of rain at this time can cause significant losses – enough to set back crop growth and even result in yield reductions.

In fact, the timing and distribution of rainfall is thought to be one of the most significant influences on cane yields, according to research by Barry Salter from Sugar Research Australia.<sup>1</sup>

## Managing leaching

For a long time, leaching losses have been largely unmanageable for cane growers.

The strategies available included splitting nitrogen applications and using fallow legumes to store nitrogen.

Mostly, growers just hoped to be able to get crops up to a height of around 1.2 to 1.5 metres before a big leaching event, so that most of the nitrogen applied was already taken up by the crop.

And while we still can't turn off the rain when crops have had enough, we now have a tool to manage leaching in cane – ENTEC®.

ENTECA stabilises fertiliser nitrogen in the ammonium form, so that large pools of nitrate nitrogen are not sitting in the topsoil at risk of leaching. Because ammonium is positively charged, it sticks to the soil rather than moving with water flows through the soil.

Ammonium is also sugar cane's preferred source of nitrogen<sup>2</sup>. Even if both ammonium and nitrate are available in the soil, the crop will take up the ammonium first.

This means growers using ENTEC are giving their crops a strong start with a good supply of nitrogen, while protecting against leaching losses.

## Taking action

Growers can assess the risk of leaching on individual blocks with soil tests from the Nutrient Advantage® laboratory. Soils most at risk of leaching losses will be those with a cation exchange capacity of less than four cmol (+)/kg.

On these blocks, use ENTEC to reduce the potential for leaching losses.

For more information about using ENTEC to manage leaching (and additionally denitrification) see your local ENTEC accredited fertiliser Dealer. Don't let leaching be a drain on your cane yields this coming season!



<sup>1</sup> Salter, B and Schroeder, BL (2012) "Seasonal rainfall and crop variability in the Mackay region" published in the Aust Soc Sugar Cane Technol Vol. 34.

<sup>2</sup> "Nitrate fertiliser wasted on sugarcane" (2011) UQ News, The University of Queensland Australia ([www.uq.edu.au/news/article/2011/05/nitrate-fertiliser-wasted-sugarcane](http://www.uq.edu.au/news/article/2011/05/nitrate-fertiliser-wasted-sugarcane))



\*Nutrient Advantage is a registered trademark of Incitec Pivot Limited.

[www.entecfertilisers.com.au](http://www.entecfertilisers.com.au)



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# INDUSTRY IN FIGURES

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# Australian production

## SECTION 4 INDUSTRY IN FIGURES

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### Australian cane production



Source: SRA Mill Stats 2016 Season

**ABOVE:** The upward trend in Australian cane production over the past few years was maintained in 2016. At over 36 million tonnes, this was our best result in a decade.

**BELOW:** Wet weather towards the end of the harvest saw a lot of cane left in the field. As a result, sugar production was slightly back on last year but still very respectable at just under five million tonnes.

### Australian sugar production



Source: SRA Mill Stats 2016 Season

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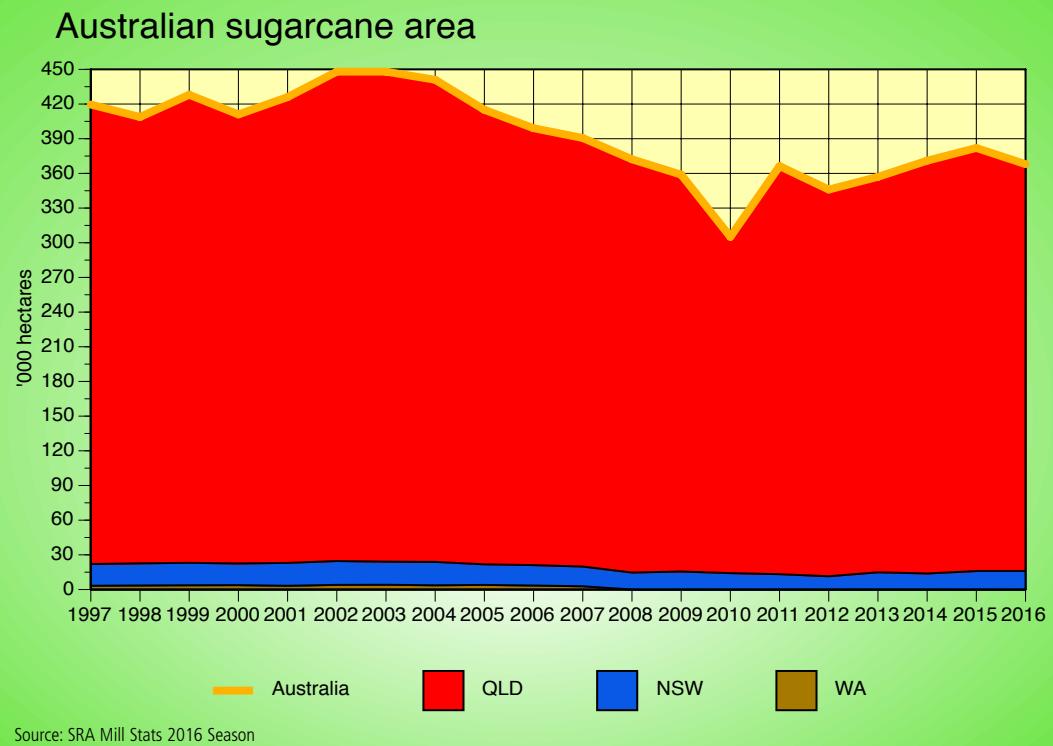
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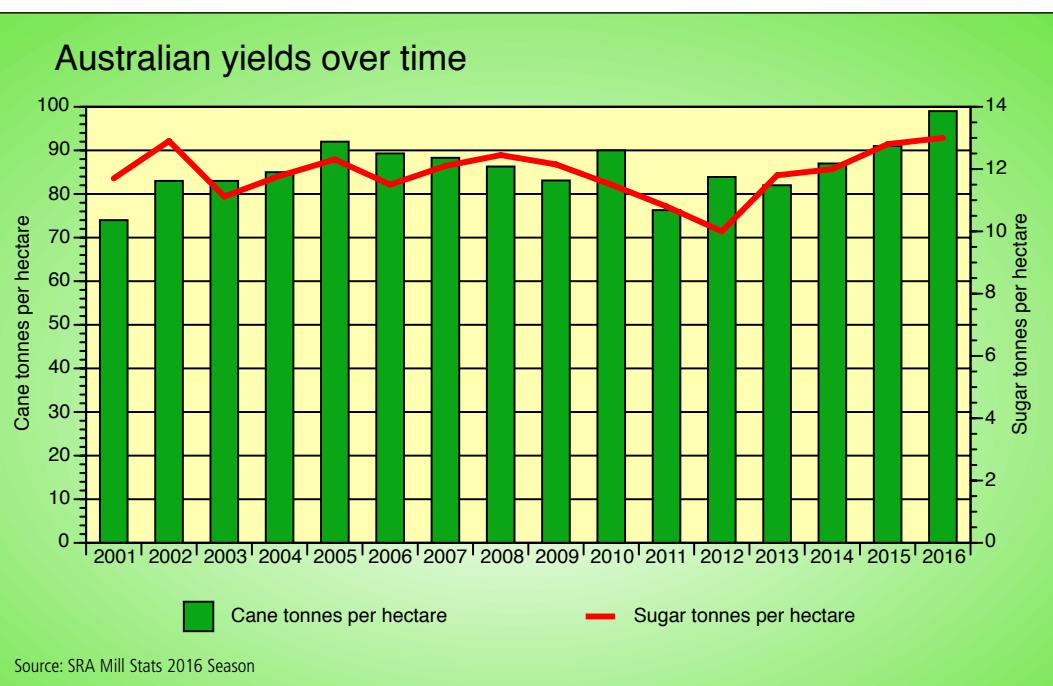
## SECTION 4 INDUSTRY IN FIGURES

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**ABOVE:** The mills continued the push to expand the area planted to sugarcane but the very wet conditions at the end of the season saw the first reduction in harvested area for five years.

**BETWEEN:** Both cane and sugar yields have maintained their upward trend of past seasons – a trend the industry is determined to maintain, if not accelerate.





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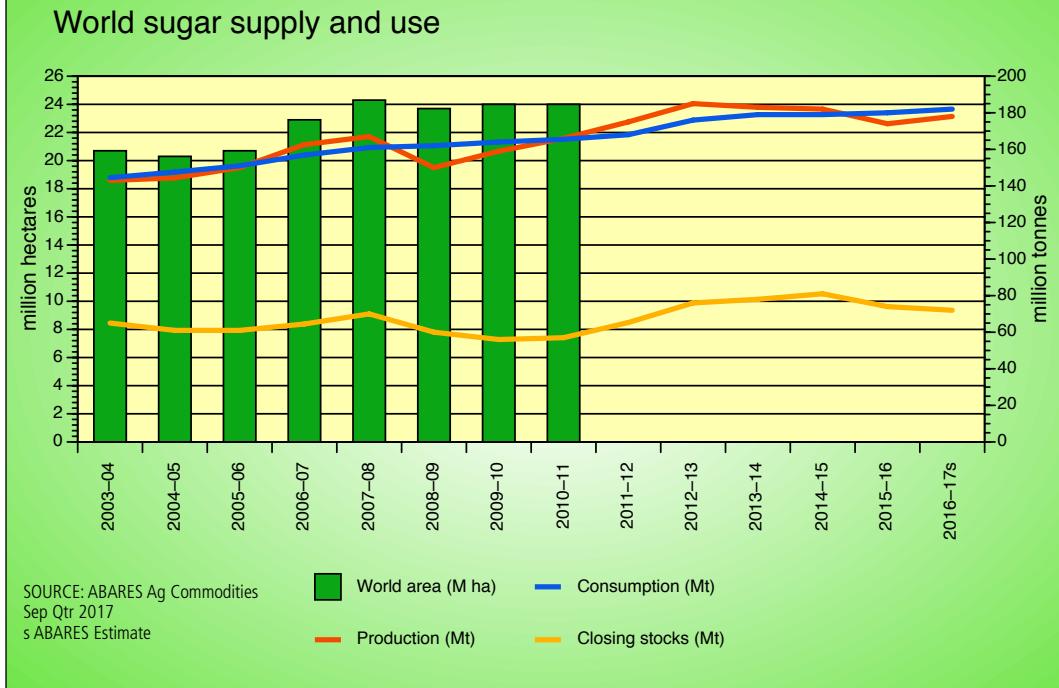


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# World production

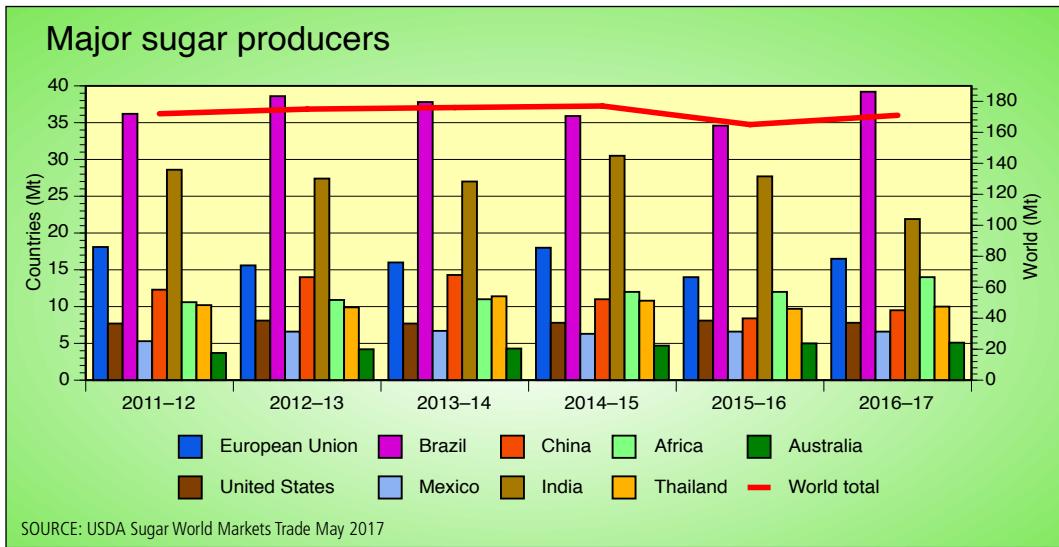
## SECTION 4 INDUSTRY IN FIGURES

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**ABOVE:** Despite an increasing amount of 'bad press' world sugar consumption continues its upward trend and production increased reflecting higher world sugar prices on offer in early 2016-17.

**BELOW:** Brazil continues its production dominance. At nearly 40 million tonnes, Brazil's sugar production was at its highest level in five years, double that of world number two – India.



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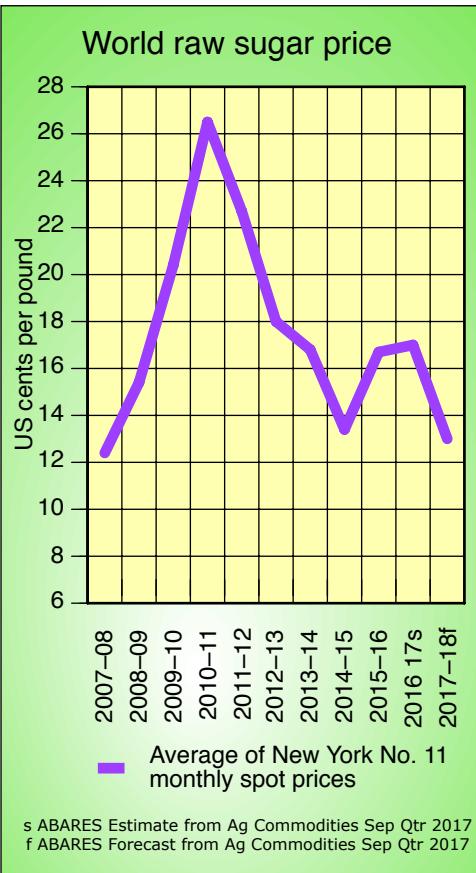
# The international scene

## SECTION 4 INDUSTRY IN FIGURES

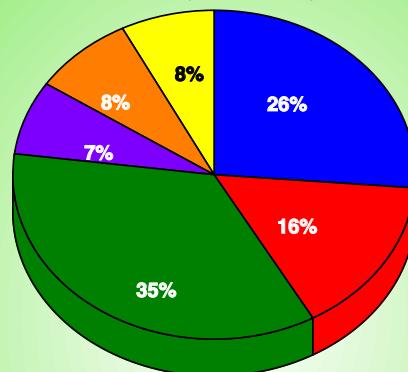
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**World Sugar Price:**  
ABARES statistics indicate Australian growers had their best returns per tonne of cane harvested for over five years.



Major importers of Australian sugar (2015–16)



2015–16 Total tonnage all sugar exports = 3,774,000 tonnes

2015–16 Total value of sugar exports = A\$1.922 billion

■	Indonesia (992,000 t)
■	Japan (587,000 t)
■	Korea (1,328,000 t)
■	Malaysia (275,000 t)
■	China (308,000 t)
■	Other countries Including Taiwan, United States and New Zealand (284,000 t)

Source: Australian Commodity Statistics 2016

**Major Importers:** Once again our reputation for sustainably producing and reliably delivering high quality sugar, coupled with our geographical proximity, has seen our major market destinations all located in Asia.

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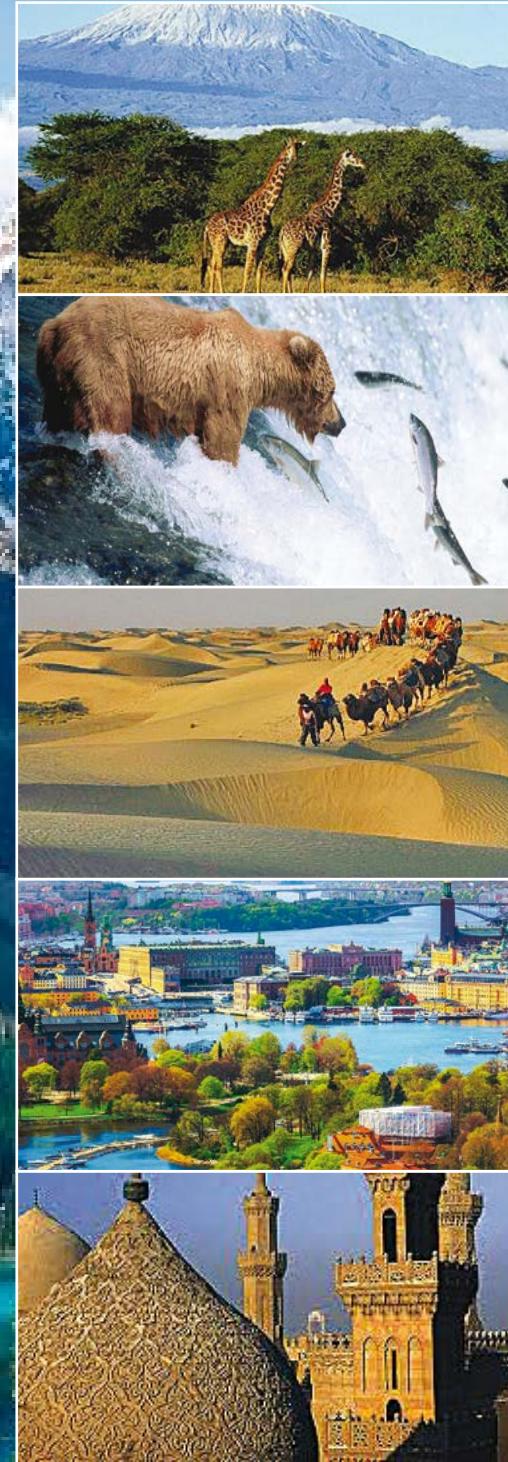


# What's on the *Greenmount Travel* radar for **2018?**

- ★ Southern Africa
- ★ Iceland/Scandinavia
- ★ Canada/US (Kropping the Klondike)
- ★ Germany/Austria/Slovenia/Italy
- ★ India
- ★ Japan
- ★ Silk Road (Western China/Kazakhstan/Russia)

are farm study tours being offered in 2018. Space is limited on all tours but particularly Africa, Iceland and Slovenia – so be quick. Detailed itineraries can be found at [www.greenmounttravel.com.au](http://www.greenmounttravel.com.au)

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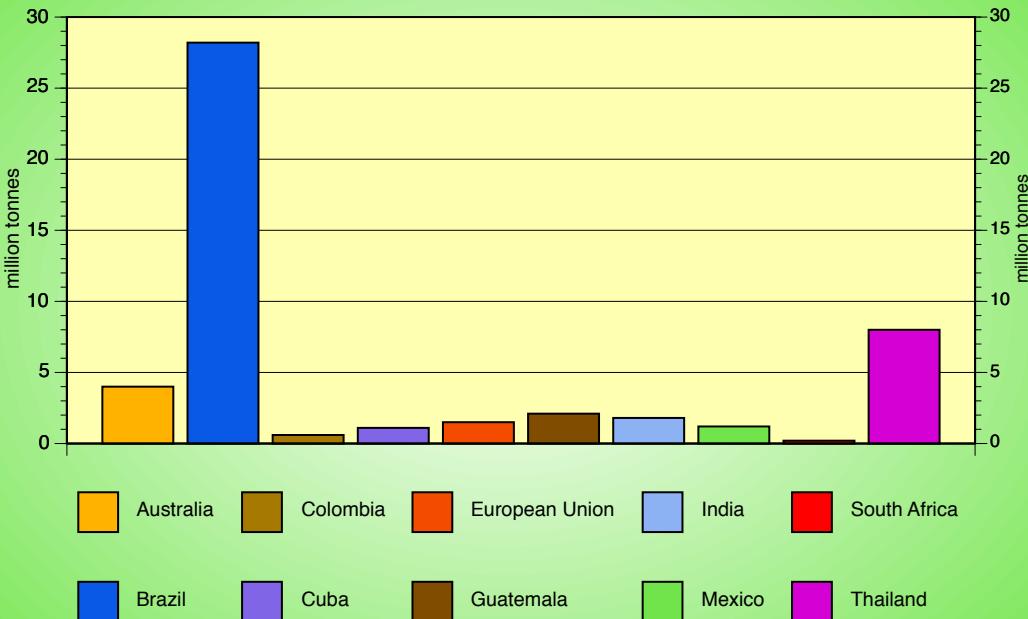
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## SECTION 4 INDUSTRY IN FIGURES

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### Sugar exports by major producers (2016–17)

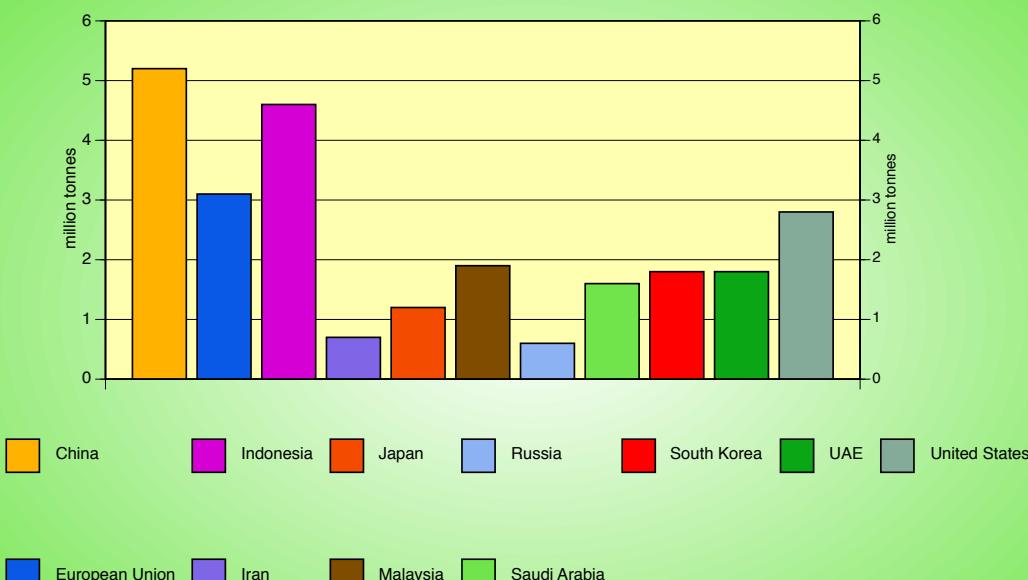


**NOTE:** Includes exports of both raw and white sugar measured in raw sugar equivalents.  
**SOURCE:** USDA Sugar World Markets Trade May 2017

**ABOVE:** In terms of exports, Australia (4 mt) is again ranked third in the world behind Brazil (28 mt) and Thailand (8 mt).

**BELow:** China and Indonesia, both major clients of the Australian sugar industry, are again the largest importers in the world sugar market.

### Sugar imports by major consumers (2016–17)



**SOURCE:** USDA Sugar World Markets Trade May 2017



2017

**SECTION 5**  
**AUSTRALIAN**  
**CANE FARMERS**  
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# The Australian Cane Farmers Association

## ORGANISATIONAL STRUCTURE

### NORTHERN REGION

**Don Murday**

**Director Chairman**

**Ph: 0418 774 499**

**E: mangopk@bigpond.net.au**



**Gerard Puglisi**  
**Deputy Chairman (Junior) & Next Gen Officer**

**Ph: 0428 988 136**

**E: gtpuglisifarming@bigpond.com**



**Michael Camilleri**

**Director**

**Ph: 0419 738 702**

**E: maalakaneng@bigpond.com**



### HERBERT REGION

**Carol Mackee**

**Director**

**Ph: 07 4777 4957**

**E: cjmackee@activ8.net.au**



## CENTRAL REGION

**Steve Fordyne**  
**Director**  
Ph: 0408 883 907  
E: stevefordyne@bigpond.com



## NSW REGION

**Robert Quirk**  
**Deputy Chairman (Senior)**  
Ph: 0413 677 727  
E: rgquirk@bigpond.com



## BURDEKIN REGION

Appointment pending

## SOUTHERN REGION

**Michael Hetherington**  
**Director**  
Ph: 0407 621 694  
E: randomdudesfarming@hotmail.com



# ACFA HEAD OFFICE

**Stephen Ryan**  
**General Manager**  
Ph: 07 3303 2020  
Freecall: 1800 500 025  
Fax: 07 3303 2024  
E: StephenRyan@acfa.com.au



**Alicia Opajdowska**  
**Administrator**

Ph: 07 3303 2020  
Freecall: 1800 500 025  
Fax: 07 3303 2024



## Australian Cane Farmers Association Ltd

Level 3, 447, Upper Edward St  
Spring Hill, Brisbane 4000

### Postal address:

GPO Box 608, Brisbane QLD 4001  
Ph: 07 3303 2020  
Freecall: 1800 500 025  
Fax: 07 3303 2024  
E: admin@acfa.com.au  
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## SECTION 5 AUSTRALIAN CANE FARMERS 2017

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**Don Murday, Chairman.**

# Chairman's comment

■ By Don Murday – ACFA Chairman

**G**ROWER choice has narrowly survived another blatant attack. This time from a NSW Senator who has no responsibility for Qld. The constant pressure from the milling sector to attack and repeal the Sugar Code of Conduct and the *Sugar Industry (Real Choice in Marketing) Amendment Bill 2015*, is short-sighted and self-destructive. It makes growers question the good faith of their milling companies and does harm to confidence.

We often hear from the milling sector about how much they have invested in our industry. What they seldom acknowledge is that the growing sector has twice as much invested; and going by recent mill valuations, balance sheet slips and shareholder ructions, that ratio could increase.

The fight for marketing independence has cost growers dearly; as while negotiations laboured, the price slowly sank. The result illustrates the significance of the issue.

The success of Queensland Sugar Limited (QSL) in gaining grower support for the marketing of GEI sugar is to be commended. It demonstrates the appetite for transparency and an independence from the grower-miller relationship, when it comes to valuing the product. It illustrates that while sound contracts between growers and their mills are vital for operational matters such as cane supply and services; the relationship for marketing services and pricing products is best served by a third party, in order to bestow confidence and transparency for growers. This decreases trust issues between growers and mills, by separating remuneration from operational matters and it removes the tendency to unnecessarily conflate these issues.

The most important thing that will drive investment is a confident grower sector, which supplies the critical mass and beyond, to keep mills profitable. This is more important than ever as global businesses have invested in our milling

infrastructure; where agendas and commitment to convention and a singular industry policy have diverged into regional preferences.

These 'partings of the way' are liveable, providing that growers can retain independence from natural monopolies, when it comes to GEI sugar. It is not acceptable for those who have sought deregulation of sugar marketing and to dismantle the Qld 'single face marketer', to replace it with their own regional monopoly single-desks.

Cane farmers in Queensland have relied on Grower Choice to:

- Prevent farmers from being discriminated against by powerful global sugar millers and traders;
- Balance the regional monopoly power of sugar millers who dictate the terms of contract to farmers;
- Enable farmers to continue to have a choice of marketer for their share of the raw sugar (GEI sugar); and,
- Implement a dispute resolution system, which can be accessed by either party, in order to agree on fair terms and conditions for cane supply contracts.

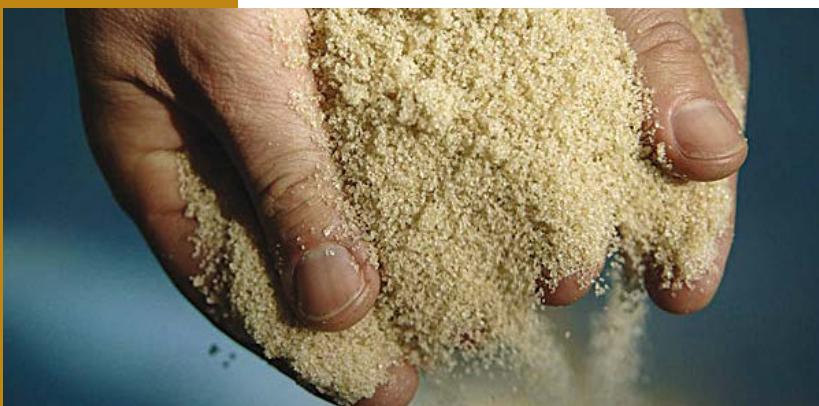
The industry as we know it has been built on the foundation that farmers are paid for the sugar that is in their sugarcane; and which is marketed by the jointly-owned marketing company, Queensland Sugar Limited (QSL). This system of marketing gives farmers the confidence to continue to supply sugar mills with sugarcane.

Grower Choice is necessary and very fair because it:

- Allows choice, so that farmers can choose between their mill and the farmers' marketer of choice;
- Freely allows farmers and millers to find agreement on matters of contention, without automatically needing to use the dispute resolution system; and,
- Takes effect, only if and when mills cannot effectively negotiate appropriate supply agreements with growers.

The most important thing that will drive farm-side investment is a confident grower sector. As always, there are many challenges ahead, from world sugar markets and subsidies to environmental pressures. We will not benefit from internal, sectorial conflicts. We need stable Governments that recognise the value of the rural sector and our communities; who support us to get on with creating jobs and investing in our communities.

Wishing you all a safe and profitable conclusion to the 2017 season.





## MILLING & MARKETING

Photo by: M. S. Gomes

# Milling in the Australian sugar industry

In Australia there are approximately 4000 cane farming entities growing sugar cane on around 380,000 hectares annually, supplying 24 mills, owned by seven separate milling companies. The vast majority of cane farms are owned by sole proprietors or family partnerships. The mill ownership structures are a combination of publicly owned entities, privately held companies limited by guarantee, and co-operatives.

## Major products

The industry's major product is raw crystal sugar, which is sold to refineries both domestically and abroad. Approximately 95 per cent of Australian sugar produced comes from Queensland with the balance from Northern New South Wales.

The Australian sugarcane industry is one of Australia's largest and most important rural industries with sugarcane being Queensland's largest agricultural crop. The industry directly employs about 16,000 people across the growing, harvesting, milling and transport sectors.

Up to 35 million tonnes of sugarcane is grown on about 380,000 hectares annually. This sugarcane crop can produce up to 4.5 million tonnes of raw sugar, 1 million tonnes of molasses and 10 million tonnes of bagasse annually. Approximately 85 per cent of the raw sugar produced in Queensland is exported, generating up to \$2.0 billion in export earnings for Queensland. Production from the New South Wales sugar industry is refined and sold into the domestic market.

## Green energy

Sugar mills are self-sufficient in energy, burning the sugar processing by-product bagasse, (which is a renewable fuel) to generate electricity and steam for factory operations. In addition, more than half of the electricity generated (around 500 GWh in 2014) is exported to the electricity network supporting electricity infrastructure and reducing greenhouse gas emissions from power generation. The use of renewable bagasse for the production of 'green' energy reduces the nation's greenhouse gas emissions by over 1.5 million tonnes annually.

## The Australian Sugar Milling Council

The Milling Council's purpose is to drive a profitable and sustainable sugar industry through dynamic industry leadership, strong and effective advocacy and creating new opportunities for the sugar industry. Milling Council staff work with our members, other industry organisations and government to enhance the commercial development and build the value of the sugar industry in Australia.

## ASMC Board

The Milling Council Board currently consists of nine directors. Board members are nominated by our represented member companies..



# Heavy Duty Series

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**HD Heavy Duty  
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The **HD Hi-Torque** is a combination of the 300 planetary / HDO bevel helical and has been selected specifically for Pressure Feeder applications, delivering torques ratings up to 1,280,000Nm.

Advanced design technologies and a meticulous attention to detail, place these units at the top of their class. The HD Hi-Torque is also supported by an extended warranty.

Bonfiglioli offers unprecedented support with a dedicated Drive Service Centre, local Design, Application & Engineering services. Commissioning & Installation supervision and On-site qualified technicians are also available 24/7 post installation.

High levels of local warehoused stock are held to ensure quicker turnarounds. All is underpinned by a team of highly qualified technicians, safe-guarding HD assembly, quality control and on-time deliveries.

### Technical key characteristics

Series:	300 / HD Hi-Torque
Size:	311/HD to 325/HD
Torque Ratings:	48kNm to 1,280kNm
Power Ratings:	Up to 1155kW
Output Shaft Options:	Solid shaft + Rigid coupling, Female spline + Locking ring.
Accessories	Forced lubrication, Cooling systems, Condition Monitoring, Taconite seals.
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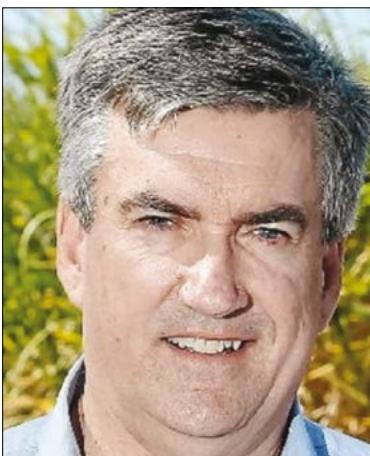
**SECTION 6**  
**MILLING AND MARKETING**

**John Pratt** (Wilmar Sugar) Chairman  
**Mike Barry** (MSF Sugar) Deputy Chairman  
**Barry Dun** (Tully Sugar)  
**Shayne Rutherford** (Wilmar Sugar)  
**Jason Lowry** (Mackay Sugar)  
**Andrew Cappello** (Mackay Sugar)  
**John Gorringe** (Isis Sugar)  
**Guy Basile** (Bundaberg Sugar)  
**Paul Heagney** (MSF Sugar)

**ASMC members**

Members of the Australian Sugar Milling Council are:

- Bundaberg Sugar Limited
- Wilmar Sugar Australia Limited
- Isis Central Mill Company Limited
- Mackay Sugar Limited
- MSF Sugar Limited
- Tully Sugar Limited



**ASMC Chairman John Pratt.**

**At Dinner Plain the pace is easy going...**

A collage of several photographs illustrating life in Dinner Plain. It includes a waterfall, people walking along a trail, a person on a motorcycle, a view of the village with mountains in the background, and the interior of a restaurant with tables and chairs.

Dinner Plain is the place where the family can be together by the fireside or miles apart exploring the cross-country trail network.

Where you stroll the treelined streets simply for the sights or to meet friends for a restaurant dinner or drinks at the bar. The village itself helps set the community atmosphere; natural building materials and earthy tones blur the line between man made and alpine environment. Over 200 lodges and chalets with all the conveniences of a modern resort.

**Dinner Plain is the place for your next holiday.**

Explore our website at [www.dinnerplain.com](http://www.dinnerplain.com) or call our info number 1300 734 365 or email to [info@dinnerplain.com](mailto:info@dinnerplain.com)

 **Dinner Plain  
Visitor Information  
Centre**

**ASMC CEO to finish at the end of 2017**

Australian Sugar Milling Council Chairman, John Pratt, has announced the resignation of the Council's Chief Executive Officer Dominic Nolan, effective from the end of December 2017.

John praised Dominic Nolan's leadership during his time as CEO of the Milling Council since February 2009, identifying his key role in the restructuring of the industry's R&D activities and funding arrangements as a highlight delivered through the formation of Sugar Research Australia in 2013. He also highlighted

Dominic's contribution to the ongoing work to build and protect the industry's social licence to operate as a major area of influence that will remain a priority for the organisation.

"Dominic's capacity to work collaboratively with diverse stakeholders during challenging issues, and maintain a united milling sector are key attributes that the ASMC board will seek to identify in an incoming CEO.

"While we are disappointed to see someone of Dominic's experience and knowledge leave the industry, we appreciate his service and dedication over the past almost nine years, and wish him every continued success."

Dominic stressed the importance of strong and binding relationships across the industry sectors as being fundamental to the industry's success.

"The past eight and a half years representing sugar millers during a period of significant change has been both rewarding and, at times, frustrating. There is more work to be done around marketing arrangements and commercial structures to maximise returns for growers and mills.

"The ongoing collaboration between mills and growers on key opportunities and challenges for the future through environmental sustainability, sugar and nutrition, and areas broadly under the social licence to operate umbrella is heartening.

"I am grateful for the personal and professional experience I've had and I wish all in the industry well for the future."

"But for the next three months it is business as usual as I work to leave the organisation and the milling sector in as strong a position as possible for the incoming CEO".

Dominic is leaving the Milling Council to take up a senior position in the corporate sector in early 2018.



**ASMC Chief Executive Officer, Dominic Nolan resigns.**

Contact: Jim Crane – M: 0400 991 931.

# MSF shows the right 'spirit' and takes a 'shot' at providing base load energy using agave

SECTION 6  
MILLING AND MARKETING

## FAST FACTS...

- When completed, the biorefinery project will produce 110,000 tonnes of raw sugar, 200,000 megawatthours of green electricity and 55 megalitres of ethanol biofuel annually. The green electricity will be base load generation operating 12 months per year using the fibre from the sugar cane and blue agave.
- Biofutures refers to the sector that develops and manufactures products from sustainable organic waste resources, rather than using fossil fuels.

**A**GAVE tequilana, commonly called blue agave, is native to the hot and arid regions of Mexico and the Southwestern United States. Australians living in similar climes will be familiar with the plant – it often appears in low maintenance farm gardens and along the road side.

Australians living in all climatic regions will be familiar with its most famous by-product – tequila.

It's generally acknowledged, if not always remembered the morning after, as powerful stuff. That power is about to be exploited for more than just a good night out – MSF is looking to power many a good night in!

### A biofueled vision

MSF Sugar, Australia's largest sugarcane grower and owner of four mills in Far North Queensland (FNQ) and the Wide Bay region, believes its biofuels vision – the cornerstone of which is a \$75 million green energy power plant currently under construction on the Atherton Tablelands – could hold the key.

MSF Sugar General Manager Business Development Hywel Cook said MSF Sugar's plans would deliver a biofutures legacy for FNQ that will have far-reaching benefits for the national baseload power industry.

"Our green energy power plant will turn bagasse into electricity and is our first foray into the exciting biofuels space," Hywel said.

"The plant is currently under construction, and will have 24 megawatts of generating capacity – enough to power 26,280 homes when it comes online in June next year.

"Our green power plant will produce the same amount of electricity as 28,097 homes with solar panels.

"But the difference is our plant will produce this power 24 hours a day, as opposed to homes with solar panels that produce electricity for around six hours a day.

"Once operational, the plant will be driven by bagasse, with a second crop called blue agave being investigated to supplement the cane to ensure reliable, 12 month operations.



MSF Sugar was awarded \$250,000 in State Government Funding to continue its research into the viability of producing bioethanol and green electricity from agave.

### Agave for additional biomass

MSF Sugar plans to develop 4000 hectares of farmland into agave – a new crop to Australia but grown extensively in Mexico to produce tequila – as a source of biomass material.

In Mexico, agave grows in a climate similar to the dry tropic part of the Atherton Tablelands.

It produces around 400 tonnes per hectare of biomass in five years, does not need irrigation, and provides a high amount of fermentable juice and fibre, the latter which would be used to support the 12 month operation of the green energy power plant.

With construction of its first green energy power plant underway and planning for plants at its three other sugar mills, subject to funding, MSF Sugar is forging ahead with its biofuels vision.

Building on its green energy power plant, MSF Sugar has launched a biorefinery project, a world first initiative that will see the company produce sugar, green baseload electricity and ethanol from one location, with all three products manufactured through the effective and efficient use of biomass materials grown locally on the Atherton Tablelands.

Considered a project of state significance having attracted funding support from the Queensland Government for market feasibility, the MSF Sugar Biorefinery Project will be an enhanced sugar mill consisting of four sections – sugar mill, agave juice mill, the green power station and a distillery.

MSF Sugar plans to commence construction of the distillery required to round-out the project in 2020.

Hywel said while agriculture was traditionally known as the source of food products in Australia, smart technology in biofutures was supporting a shift into diversified outputs such as electricity.

"Once the process is proven, the model can be easily replicated in other locations of Australia, essentially feeding the electricity grid with biofuel-based energy sources," Hywel said.

**For more information please contact: Wendy Hughes, MSF Sugar Communications Manager, Mob: 0417 043 954.** ■



**Key components for MSF Sugar's \$75 million Green Energy Power Plant arriving in Cairns en-route to their final destination at the Tableland Mill.**

# 'Sugar Code of Conduct' disallowance motion fails

### ■ Statement by the ASMC – released October 18, 2017

THE Australian Sugar Milling Council (ASMC) is disappointed that a disallowance motion seeking to remove the Competition and Consumer (Industry Code – Sugar) Regulation 2017 has failed in the Australian Senate.

The regulation was rushed in to effect on April 4 without any consultation and without a Regulatory Impact Statement.

It was claimed at the time that the new regulation was urgent to fix a 'dispute' in the Queensland Sugar Industry.

ASMC's Chief Executive Officer, Dominic Nolan, says that when the Code was introduced the 'dispute' between QSL and a milling company had already been resolved commercially with agreement in principle over the marketing arrangements for raw sugar.

"We applaud Senator David Leyonhjelm for his efforts through the disallowance motion to highlight poor parliamentary process and political intervention that negatively impacts business and investment.

"We also acknowledge the support for the motion by Labor Senators and some of the crossbench, particularly their concern that the sugar industry has become a political pawn in Queensland.

"The Queensland sugar industry needs ongoing capital investment and re-investment to remain internationally competitive.

"While current mill owners purchased or invested significantly since the 2006 deregulation of the sugar industry, the uncertainty that arose initially as a result of the Queensland legislation, and now a new federal regulation, has created real concern amongst the current Australian and international sugar mill owners.

"It makes the prospect of investment of capital by any new entrants extremely difficult, and the level of political interference sets a concerning precedent for all Australian agricultural businesses." ■



**ASMC applauds Senator David Leyonhjelm's efforts.**



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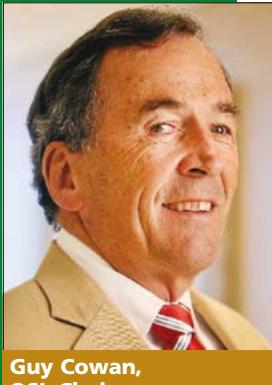
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## QSL MARKETING

# Marketing choice for cane growers is now a reality

■ By Guy Cowan – Chairman's Report, QSL AGM 2017



Guy Cowan,  
QSL Chairman.

THE past financial year has been a seminal one for Queensland Sugar Limited (QSL).

After three years of industry debate, multiple State and Federal Government reviews and enquiries and extended, often heated commercial negotiations, Marketing Choice for Queensland cane growers is now a reality, and as a result, QSL took its first steps into a fundamentally different business landscape.

For some growers, the transition came with minimal changes to their existing contractual arrangements and processes, and were primarily marked by the arrival of a wider range of pricing choices. For others, Marketing Choice has ushered in a new direct relationship with QSL that in turn has brought completely new processes for accessing QSL's pricing and marketing services.

### More pricing and marketing options than ever before

Throughout the course of the Marketing Choice debate we steadfastly believed that competition was integral to innovation, and I'm pleased to say we've already seen this come to pass.

Queensland cane growers now have access to more pricing and marketing options than ever before. After what has been an extended period of uncertainty and falling business confidence, the thousands of small businesses that make up the Queensland sugar industry and underpin regional economies now have more resources than ever before at their disposal to not only remain viable, but to grow.

This improved industry confidence was further cemented by the finalisation of QSL's new Strategic Operating Agreement with Sugar Terminals Limited (STL). The new operating arrangements address the commercial

sensitivities associated with the implementation of a multiple marketer environment and ensure that these important assets remain in QSL's safe hands for the next phase of the development of our industry.

For me personally, what the past 12 months has illustrated is that QSL can and will rise to the challenge in a period of great industry upheaval while also delivering solid returns confirming commercial agility, and ongoing relevance and importance to the industry we serve.

### Choice – there was no gain without pain for growers

This is more than just corporate speak – it is a truth that was acknowledged by thousands of cane growers who were prepared to forego pricing opportunities to stand up for the principles of choice and competition, and the right to access our services. To these growers, I say thank you for your support. QSL is focused on repaying the faith that you have placed in us. Rest assured that we appreciate your business must be earned, and are focused on the results required to secure your business in the future.

I'd also like to thank our continuing miller partners – Bundaberg Sugar, Mackay Sugar Limited and Isis Central Sugar Mill – for their continuing custom and support. We look forward to working closely with you to provide ongoing and new benefits to your businesses.

And of course, I cannot conclude a review of the past year without acknowledging the efforts of the entire QSL team. It has been a long and wearing three years since Wilmar first announced it would withdraw from the Raw Sugar Supply Agreement, ushering in an historic period of industry upheaval and uncertainty. The staff at QSL have not only weathered this uncertainty, but done so in a way that is both a testament to them and an integral part of our ongoing success.

As we work to embed and refine the new marketing choice arrangements which now shape our industry, QSL remains committed to maximising the value we deliver, not just to those who use our services but the wider Queensland sugar industry. We have learned much from the trials of the past three years and we intend to put those lessons to good use to ensure we remain not only the most significant marketer of Queensland sugar, but the best. ■



## ABOUT QSL

Queensland Sugar Limited (QSL) is a not-for-profit, income tax-exempt organisation owned by the Queensland sugar industry.

Its membership is structured to have equal representation between growers and millers, with all net value returned to the industry we serve.

QSL has seven Mill Owner Members and 23 Grower Representative Members who represent 4000 growers across the state.

We provide four main value offerings: pricing, financing, marketing and logistics.

### Pricing

QSL offers a range of pricing products to millers and growers tailored to different risk appetites.

These options include QSL-managed pools, individual forward pricing and miller-managed pricing pools.

Our professional pricing team actively monitors the sugar futures and foreign exchange markets and has a track record of outperforming market benchmarks.

### Financing

QSL provides financing to participating millers and growers throughout the season via the advances payments program.

Advances payments are often made in advance of the sugar being sold or the payment being received from the customer.

Incremental payments are made throughout the season.

### Marketing (selling)

QSL's marketing strategy is based on developing long-term and sustainable relationships with high-returning customers.

QSL is the largest marketer of Australian raw sugar, selling the majority of Queensland's export raw sugar into the Asian market.

### Logistics

QSL's Operations Division manages the highly effective storage, handling and shipping of bulk raw sugar at Queensland's six BSTs.



## KEY ACHIEVEMENTS FOR 2016–17

- Achieved a Total Recordable Injury Frequency Rate (TRIFR) of zero, surpassing our five-year target.
- Extended the existing Raw Sugar Supply Agreements with Bundaberg Sugar, Isis Central Sugar Mill and Mackay Sugar Limited to 30 June 2020.
- Secured new On-Supply Agreements with MSF Sugar, Tully Sugar and Wilmar.
- Successfully implemented new Marketing Choice arrangements.
- Established the new QSL Direct online grower portal and began direct payments to Wilmar Growers.
- Signed a new Strategic Operating Agreement with Sugar Terminals Limited to remain the operator of Queensland's six Bulk Sugar Terminals.
- Secured enhanced marketing returns above the FOB (Free On Board) physical market premium average and delivered the highest pool results in five years for the in season pools and for the overall average pool result.
- Successfully negotiated the extension of our long-term supply contract (LTC) with South Korean sugar refiners CJ Corporation, Samyang Corporation and TS Corporation.
- Continued our long track record of logistics excellence, with 98 per cent of shipments delivered in full and on time.
- Delivered the Mourilyan Shed re-roofing project on time and under budget, and upgraded the special-purpose Lucinda Jetty Maintenance Vehicle for improved efficiency of marine structure maintenance.
- Opened up Australian sugar sales opportunities in Japan through the use of Near Infrared Spectroscopy in export quality management.
- Retained cost effective, flexible financing by restructuring our \$A500 million committed syndicate facility.
- Provided increased flexibility of payment options for Queensland cane growers, with accelerated advances rates for the Guaranteed Floor Pool and the option of accelerated advances for the Fixed Price Forward Contract and Target Price Contract pools.
- Increased grower-managed pricing options by reducing the Target Price Contract Pool's minimum order size to 10 tonnes and extending the In-season Fixed Price Forward Contract Pool's pricing window by seven months.

# Milling

## Australian Sugar Milling Council

### HEAD OFFICE

IBM Building  
Level 3/348 Edward Street,  
Brisbane QLD 4000  
Ph: +61 7 3231 5000 Fax: +61 7 3112 5013  
E: asmc@asmc.com.au

### POSTAL ADDRESS

GPO Box 945, Brisbane QLD 4001  
Website: www.asmc.com.au

# Refining

## Sugar Australia

### HEAD OFFICE

265 Whitehall Street, Yarraville VIC 3013  
Ph: +61 3 9283 4558 Fax: +61 3 9689 7450

## Wilmar Sugar Australia

### HEAD OFFICE

Wilmar Sugar Australia  
Townsville Head Office  
Level 1, 5-21 Denham St, Townsville Qld 4810  
Ph: 07 4722 1972 E: info@wilmar.com.au

## Mackay Sugar

### CORPORATE OFFICE

Mackay Sugar  
PO Box 5720, Mackay Mail Centre  
Mackay Queensland 4741 Australia  
Ph: +61 7 4953 8300 Fax: +61 7 4953 8340  
E: info@mky sugar.com.au

## NSW Sugar Milling Cooperative

### CORPORATE OFFICE

NSW Sugar Milling Cooperative  
Suite 1, Level 1, Cnr River and Martin Streets  
Ballina NSW 2478  
Ph: 02 6681 2700 Fax: 02 6681 2799  
E: ballina@sunshinesugar.com.au  
Website: www.sunshinesugar.com.au

### HARWOOD MILL & REFINERY

Harwood Island NSW 2465  
Ph: 02 6640 0400 Fax: 02 6646 4550  
E: harwood@sunshinesugar.com.au

# Marketing & terminals

## Queensland Sugar Ltd

### HEAD OFFICE

Level 14 348 Edward Street  
Brisbane Queensland 4000  
Ph: +61 7 3004 4400 Fax: +61 7 3004 4499  
Email info@qls.com.au  
www.qls.com.au

### POSTAL ADDRESS

GPO Box 891, Brisbane Queensland 4001  
Australia

## Sugar Terminals Ltd

### HEAD OFFICE

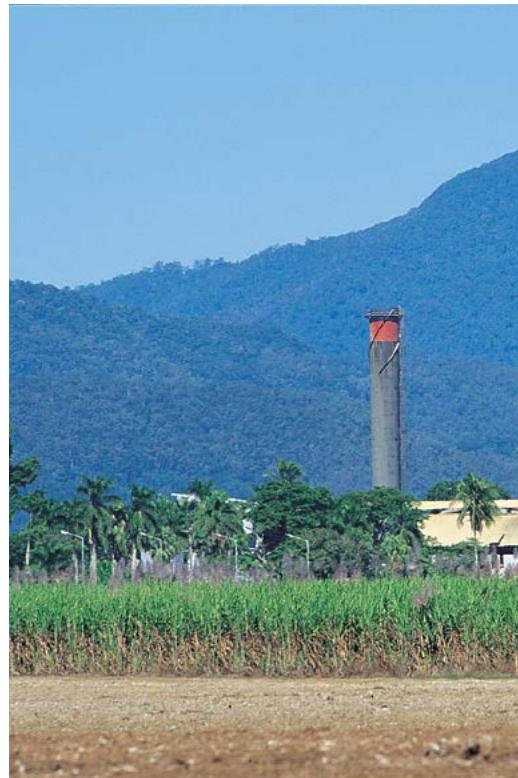
Level 3, IBM Building  
348 Edward Street, Brisbane QLD 4000  
Ph: 07 3221 7017 Fax: 07 3221 5593  
E: info@sugarterminals.com.au  
www.sugarterminals.com.au

### POSTAL ADDRESS

GPO Box 945, Brisbane QLD 4001

### BULK SUGAR TERMINALS

**Cairns, Mourilyan, Lucinda,  
Townsville Mackay, Bundaberg**





# RESEARCH, DEVELOPMENT & ADOPTION

THIS SECTION BROUGHT TO YOU  
IN ASSOCIATION WITH



**SECTION 7**  
**RESEARCH**  
**DEVELOPMENT &**  
**ADOPTION**

This section  
brought to you in  
association with



**SRA CEO Neil Fisher.**

# New five-year Strategic Plan – SRA

In mid-2017 Sugar Research Australia (SRA) released its new five-year Strategic Plan, following an extensive development and consultation process with growers, millers, government investors, and other stakeholders.

SRA CEO Mr Neil Fisher said SRA has listened to its investors and is responding to their call for SRA to deliver research that has a real impact on-farm, at-mill and in the communities and environment in which the sugarcane industry operates. This brand new Strategic Plan allows SRA to address the challenges and opportunities facing the Australian sugarcane industry with a focus on research where SRA can have the most impact. In short, SRA aims to deliver research that has a transformational impact on the profitability, sustainability, and resilience of the industry.

"Through our consultations, our investors were clear that they need SRA to be delivering tangible outputs and outcomes for sugarcane growers and millers," Neil said. "Our investors, through the Strategic Plan, have identified particular areas of attention and investment for SRA in coming years, which includes improving the efficiency of the sugarcane breeding program, improving adoption and communication, enhancing soil health while minimising nutrient run-off, and continuing to work on the yellow canopy syndrome dilemma.



**Improving adoption and communication.**

## Back pocket bottom line

"The bottom line is that SRA exists to help put more dollars in the back pocket of growers and millers, who underpin regional jobs and economies in large areas of Queensland and NSW.

"SRA is committed to being accountable for our investment, and we do that through measuring and reporting on our performance. Our Strategic Plan has clear measures of success, and we are accountable to these measures through an annual Performance Report, and an Independent Performance Review every three years.

"SRA has also consulted widely with our Commonwealth and State Government investors, and our Strategic Plan aligns with the National Sugarcane Industry Research, Development and Extension (RD&E) Strategy, the Commonwealth Government's Science and Research Priorities and Rural Research, Development and Extension Priorities, and the Queensland Government's Strategic Objectives for investment in the sugarcane industry.

"What sets this Strategic Plan apart from our previous plan is the establishment of four goals that underpin our research investment. These are: drive profitability, improve sustainability, enhance capability, and strengthen organisational excellence."

The Plan also has nine specific Key Focus Areas (KFAs) for SRA's investment:

- Optimally adapted varieties, plant breeding and release;
- Soil health, nutrient management and sustainability;
- Pest disease and weed management;
- Farming systems and harvesting;
- Milling efficiency and technology;
- Product diversification and value addition;
- Knowledge and technology transfer and adoption;
- Collaboration and capability development; and,
- Organisational effectiveness.

"Each year, our Strategic Plan is enacted through an Annual Operational Plan, which has also now been released for 2017–18," Neil said.

"These plans ensure SRA is positioned to lead, partner and invest in research, development and adoption activities that will enable growers and millers to remain profitable and our industry resilient over the long-term."

The Strategic Plan and the 2017–18 Annual Operational Plan have been approved by the SRA Board and the Commonwealth Government. They are available on the SRA website: [www.sugarresearch.com.au](http://www.sugarresearch.com.au)

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# SRA's Performance Report outlines its achievements

SUGAR Research Australia (SRA) has released a comprehensive report on its performance for the 2016–17 financial year, with this publication explaining how SRA has delivered return on investment for its industry and government investors.

In releasing the new 2016–17 Performance Report, SRA CEO Mr Neil Fisher said that SRA was committed to keeping all investors, research partners, collaborators and other stakeholders informed regarding the value that is provided by SRA.

"Our annual Performance Report details the achievements of SRA and how they align to our Annual Operational Plans and our five-year Strategic Plan," Neil said. "We continue to enhance this annual publication with more robust, quantifiable and meaningful data that articulates how SRA is creating impacts and outcomes for sugarcane growers and millers."

## Impacts and outcomes for growers

For example, the Performance Report outlines that in the last year the harvesters of 14 sugarcane harvesting groups have been optimised in line with SRA's harvesting best practice recommendations, increasing shared industry value through reduced sugar loss.

Another example from 2016–17 includes the SRA diagnostics laboratories analysing over 1000 pachymetra, 150 nematode, and 20,000 ratoon stunting disease samples to support

industry pest and disease management and limit these diseases' impact on profitability.

SRA is also delivering sustainability outcomes through innovative research and adoption projects that are creating water quality outcomes through improved nutrient management and nutrient efficiency.

This includes innovative research such as the incorporation of climate forecasting into decision tools to improve tactical on-farm application of nutrients and to reduce nutrient losses.

"Our Performance Report aligns with the conclusion of our first Strategic Plan, and we look forward to continuing to report on our outcomes and impacts against our new Strategic Plan for 2017–18 to 2021–22."

SRA is the industry-owned company for research, development and adoption for the Australian sugarcane industry.

"SRA has listened to our investors and their need for us to demonstrate how we are providing value," Neil said. "Our new Strategic Plan has set this out with the four goals of: driving profitability; improving sustainability; enhancing capability; and, strengthening organisational excellence."

"The bottom line is that our grower and miller investors want more dollars in their back pocket."

"Our Performance Report is one tool we use to communicate how SRA is delivering for our investors against these overarching goals."

The Performance Report is available on the SRA website – [www.sugarresearch.com.au](http://www.sugarresearch.com.au) ■

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# Steps forward in YCS research investigation

SECTION 7  
RESEARCH  
DEVELOPMENT &  
ADOPTION

This section  
brought to you in  
association with



**R**ESEARCHERS have taken steps forward in their understanding of the yellow canopy syndrome (YCS) dilemma that is affecting parts of the Australian sugarcane industry.

YCS was first observed in 2012 in Far North Queensland, and it has been confirmed in cane-growing regions from the Wide Bay north. Since then, there has been a concerted effort by Sugar Research Australia (SRA) to understand the cause – and management – of this mysterious syndrome. This involves four major integrated research projects, including two led by SRA, one led by Western Sydney University, and another led by the University of Queensland. Researchers have recently made the following observations based on the last 12 months of experiments and analysis:

- YCS severity is influenced by plant growth rate and canopy size. YCS is more prevalent after a crop has been slowed in growth followed by good rainfall or irrigation. Late crops are more susceptible to YCS in the early months of the year.
- Researchers have analysed the sugarcane genome and can rule out a group of viruses that hide within the DNA and later emerge to cause disease. This confirms that YCS is not caused by this type of endogenous virus. This breakthrough was made possible thanks to a separate SRA-funded project on the sugarcane genome.
- Analysis of all current data would suggest it is unlikely that any virus is causing YCS.
- Phytoplasmas have been identified as requiring further investigation. Phytoplasmas are a type of bacteria that can block the plant phloem.
- There are always elevated levels of sugars and starch in YCS affected leaves. This can only occur when sugar production exceeds the export rate. Investigations are continuing around the disruption to supply and demand between the source (leaves) and sink (stalk), and whether symptom expression is triggered by abiotic (nonbiological) stress.
- Gene expression and proteome data confirm that YCS is distinctly different to water stress and senescence.

## Cause of YCS remains undetermined

Researchers said that while there has been significant progress, the cause remains undetermined.

Researchers now have a very clear understanding of the mechanism that culminates in YCS leaf yellowing. This insight has been achieved through the SRA project led

by Gerard Scalia, called Leaf sucrose: the link to diseases, physiological disorders such as YCS and enhancement of sugarcane productivity.

According to Gerard, the yellowing is the result of an export problem in the leaf. YCS-affected plants continue to build up sugars and then starch in their leaves, which isn't normal. Sugars should move out of the leaf to other parts of the plant and starch should breakdown overnight.

"Our results show elevated sucrose and starch in the leaves even very early in the morning," he said. "This leads to reduced chlorophyll content and photosynthetic rates in the leaf. The downside of this is that the leaf chloroplasts are unable to use all the light entering the leaf and this culminates in leaf yellowing and cell death. It is like it's burning up from the inside. So the parts of the leaf that are exposed to the most light and do most of the photosynthesis are most vulnerable to yellowing."

"Sucrose build-up starts well before symptoms appear and this occurs in all parts of the leaf."

"This indicates that it is not the sugars per se that directly cause the yellowing but rather the inability to export sugars that results in the yellowing."

## Priorities for investigation

SRA Executive Manager, Technology, Dr Frikkie Botha, said that understanding the physiology of how YCS affects plants is crucial to moving closer to understanding the cause, with this work in the lab complemented by extensive field trials conducted by SRA's Davey Olsen.

"Moving forward, the research teams have identified a number of priorities for investigation over the next six months that will help them understand key questions," Frikkie said.

Drawn from SRA YCS Update – September 2017. ■



Yellow Canopy Syndrome in sugarcane in a field of sugarcane.  
(Image: Sugar Research Australia)

# Targeting two per cent annual gain – better varieties for growers and millers

In late September SRA announced new enhancements to its process for creating sugarcane varieties, which will target improved profitability for sugarcane growers and millers.

"SRA has set the ambitious goal of delivering a two per cent improvement in annual genetic gain for new sugarcane varieties," said SRA CEO, Mr Neil Fisher.

"To put that goal into context, the global average gain for wheat breeding is one per cent per annum, and the global average for sugarcane is less than one per cent.

"But we have set this two per cent target based on feedback from the industry that new

varieties must continue to offer meaningful improvements and improve profitability for our grower and miller investors."

Neil said this process will be led by Key Focus Area Leader, Dr Jason Eglinton, who is one of Australia's leading plant breeders and was recently appointed at SRA. Jason reviewed the current breeding program and the SRA Board has endorsed his recommendations for a series of enhancements.

These include:

- Reducing the number of parent plants and crosses that are used to create new varieties. This will allow an increase in the size of high leverage (high value) populations of plants, but reduce the total number of populations;
- Decreasing the proportion of original seedlings with defective traits by using modern breeding tools such as molecular markers;
- Increasing variety trial precision;
- Applying earlier screening for smut and Pachymetra;
- More precisely select for sugar content by measuring sugarcane maturity;
- Piloting fast-track selection schemes including the use of tissue culture in place of traditional propagation;
- Using wild relatives of sugarcane to focus on challenging traits with the first target being ratoon crop performance;
- Improving the efficiency and effectiveness of research engagement and adoption; and
- Establishing lead indicators as the basis for performance measures and developing a dashboard appropriate for regular management and Board reporting.

Neil said that this represented a significant investment of an additional \$4 million over the next seven years, which reinforced the development of new commercial varieties as the single largest investment that SRA makes on behalf of investors.

"By setting the two per cent goal, and defining a clear strategy to target that goal, we are laying the foundation for ongoing improvement in the breeding program, ultimately leading to a more sustainable Australian sugarcane industry and more profitable growers and millers."

For more information: [www.sugarresearch.com.au](http://www.sugarresearch.com.au)



**Searching for better varieties – shed full of tissue culture plantlets.**  
(PHOTO: SRA)

# CSIRO working on better sugarcane varieties

DRAWING upon our expertise in genetics, molecular biology and management we work closely with the Australian sugar industry to produce better sugarcane varieties.

Our efforts are mainly focused on improving sugar yields to help support Australia's \$1.5 billion sugar industry. Our sugarcane research is undertaken in close collaboration with Sugar Research Australia (SRA) and the Australian sugar industry.

## Harnessing sugarcane genetic diversity

Modern commercial sugarcane varieties are derived from two species. One, the 'original sugarcane' (*Saccharum officinarum*), has brought the genes for high sugar content. The other, a wild relative of sugarcane (*Saccharum spontaneum*), provides hardiness to harsh environments and the ability to ratoon or produce additional profitable crops from re-growth after harvest.

But there are many varieties of these two species, and other related species that may be crossed with sugarcane, that have not yet been

used in breeding programs. These species are expected to provide a rich source of untapped genes for breeding programs and may provide beneficial traits to cultivated sugarcane.

Our sugarcane researchers are now

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Using cultivated and wild varieties, we are developing new sugarcane varieties with increased yield, sugar content and smut resistance.

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evaluating plant material produced in collaboration with SRA and research institutes in China. The aim is to identify favourable traits and genes such as:

- Resistance to pests and diseases, including sugarcane smut;
- Biomass yield, offering potential for renewable energy production in the future; and,
- More efficient water use, which is important for the sustainable production of sugarcane.

### DNA markers for better sugarcane varieties

DNA markers can flag the presence and location of useful genes or detrimental genes and help breeders to select the best combinations of genes. We have identified a number of DNA markers associated with smut resistance, high sugar content and cane yield. Along with SRA, we are now testing the reliability of these markers for speeding up progress in the breeding program.

The markers have also been used to produce a detailed map of the sugarcane genome that shows how the genes are linked to each other. CSIRO is part of an international consortium to sequence the entire genome of sugarcane. This exciting initiative makes use of cutting-edge technologies and will eventually revolutionise sugarcane breeding.

### Faster flowering for new genetic tools

Under natural conditions, sugarcane plants flower only once a year and only at some locations, which reduces opportunities

for crossing. We are studying flowering in sugarcane to identify ways of controlling the process.

Making the plants flower more often would enable traits to be combined faster. Understanding the triggers for flowering may also identify ways to prevent flowering in commercial fields, as this can reduce sugar yields.

### Increasing sugar accumulation

Sugarcane leaves produce sugar using carbon dioxide and sunlight, and transport it to the storage tissue in the stalk. The sugar is extracted from the stalks at the sugar mill.

By studying the unique features of the sugarcane stalk that allow it to store very high concentrations of sugar, we aim to identify ways of increasing the yield. A model for the pathways of sugar movement into the storage tissue has been developed and is now being tested to identify control points.

We have also discovered new ways of directing proteins into this storage tissue using experimental genetically modified sugarcane plants.

### Baselines to aid regulation of GM sugarcane

As in many other crop species, genetically modified (GM) varieties of sugarcane are forecast to improve profitability by reducing input costs, increasing sucrose yield or introducing novel products. GM sugarcane is being developed by a number of Australian and international research organisations and companies.

Before the products from these varieties can be used, they will need approval from the Office of the Gene Technology Regulator, which ensures GM plants are safe for humans and the environment and from Food Standards Australia and New Zealand which regulates food safety. We are conducting research to provide baseline information on sugarcane that will be used for assessing GM varieties.

For food safety approval, we have analysed the nutritional content of the sugarcane stalk from current commercial varieties. The work will enable GM sugarcane to be compared against this baseline for regulatory purposes.

Research to ensure that future GM sugarcane varieties will be released without any detrimental environmental effects is focussed on the reproductive biology of sugarcane and related species. We have measured pollen flow to form hybrid seeds and the likelihood that seeds can grow and establish plants outside cultivation.

We are also studying why wild canes are a weed problem in some parts of the world. This information will help Australia to safely manage GM sugarcane in the future.

For more information visit: [www.csiro.au](http://www.csiro.au)



**Sucrose is produced in the sugarcane plant's leaves and transported to storage tissue in the stem.**

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# Mega-mergers – more or less agricultural R&D?

**R**ECENT proposed mergers could see a few massive international farm-businesses dominate agricultural research. The three mega-deals are expected to be finalised by the end of 2017:

- ChemChina's (China) \$43 billion bid for Syngenta (Switzerland and US).
- Bayer's (Germany) \$66 billion bid for Monsanto (US).
- The DuPont-Dow \$60 billion merger of equals (both US).

All three mergers appear as though they will soon be approved by the regulators. The likely outcome of these mergers and whether the combined research and development (R&D) efforts will be smaller than the additive sums of the individual enterprises needs to be considered.

## ChemChina-Syngenta

Syngenta recently accepted the \$43 billion offer from ChemChina, making it the most expensive foreign takeover in Chinese history. This deal requires regulatory approval in Europe and the US.

ChemChina Chairman, Ren Jianxin says the merger will "increase global crop yield while conserving scarce natural resources," and adding that the merger would provide growth opportunity in China, "where there is rapid modernisation driven by the need to increase grain productivity and increase food quality." It's also now expected that ChemChina's ownership of Syngenta will help speed China's process of evaluating new biotech seeds.

The opinion on the impact on research is divided. Some researchers suggest that it will improve the quality of research while others have said that research may become too specific to the areas ChemChina and Syngenta operate in. There is also concern that because of the lack of competition, research won't have varying points of views and may lack contention.

## Bayer-Monsanto

If the Bayer-Monsanto merger goes ahead, it will make Bayer-Monsanto the largest seed and farm chemical company with a strong presence around the world. The combined company would own 37 per cent of the market for corn seed and 30 per cent of the market for soybean seed.

Bayer says that combining R&D as well as various product lines will make the two companies worth more together than separately because of their shared knowledge and resources. Others take a less optimistic view and believe that the merger will reduce the research and innovation in the industry. Researchers are also suggesting that less competition will result in less R&D.

Sources state that the Bayer-Monsanto merger has planned to spend \$16 billion on R&D worldwide over six years – an average of \$2.67 billion per year. Their current research and development budgets show together that the two companies already spend \$2.59 billion per year. Seems the merger will deliver a small increase in R&D spending.

Many companies are not releasing their R&D funding statistics or providing R&D projections. Martin Grueber, a research leader at Battelle Memorial Institute, has suggested that this is because investors don't have a good grasp of how hard R&D is. Companies have decided, Grueber said, that "if you can get away without saying something, it raises fewer questions."

Chemical and Engineering News (C&EN) says that Robb Farley, Monsanto's CEO, has acknowledged the steady decline spent on R&D.

Alternatively, it's suggested that the amalgamation will result in a more effective and targeted R&D team, and the original combined amount of funding is not required. Also once the mergers have been finalised, profits will increase and more R&D will be conducted.

## Dow-DuPont

The Dow-DuPont merger has also received criticism because of the predicted hit that the R&D team will take.

Dow-DuPont's restructuring program includes eliminating 10 per cent of its 54,000 employees and cutting costs by \$700 million in advance of the merger. According to C&EN sources, those cuts included the dismissal in January of more than 200 scientists at DuPont's Central R&D team.

C&EN says DuPont's R&D spending fell 8.2 per cent in 2015 to \$1.9 billion and in 2016, it fell by 13% to between \$1.6 billion and \$1.7 billion. R&D in these industries has not increased since 2015.

On the contrary, it is suggested that Dow-DuPont will become a powerhouse of innovation. Allowing their R&D departments to work together will generate more innovative products.

## Key takeaways

Some researchers suggest that resources will be pooled and will be more effective and targeted.

Without these mergers research may become targeted to one organisation; siloed to a specific part of that company; and, will lack contention. Regardless of how R&D is affected, it appears all three mergers are going ahead.

Drawn from the article by Felicity Iredale, Russell Kennedy Lawyers posted on Lexology, 18 September 2017.

For more information visit: [www.lexology.com](http://www.lexology.com)



Felicity Iredale, Russell Kennedy Lawyers.

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# Strong public R&D systems grow private-sector R&D investment

In an era when government funding of agricultural research and development (R&D) is declining in real terms (especially at the state government level) the role of the private sector in funding agricultural R&D is, by definition, becoming more important. A recently completed research project carried out by the Australian Farm Institute aimed to examine ways to encourage increased private-sector investment in agricultural R&D in Australia.

The study included extensive interviews with leaders of some of the largest agribusiness organisations in Australia and internationally, a survey of private-sector agricultural R&D managers in Australia, and an extensive review of Australian and international literature.

## One encourages the other

One of the first points to emerge from the research was that there is growing evidence from both the literature and from the interviews conducted for this research that relatively strong public-sector investment in agricultural R&D is an important factor in encouraging private-sector investment.

This is somewhat contrary to the recommendations of the Productivity Commission, which conducted a review of Australia's agricultural R&D system in 2011. It recommended halving the level of Australian Government investment in agricultural R&D, on the basis that public investment was 'crowding

out' investment by the private sector, and reducing government investment would result in compensatory growth in private-sector investment.

But international evidence is that nations that have maintained a relatively strong public agricultural R&D system are also the ones that have a strong and growing private-sector agricultural R&D sector. The two sectors tend to be complementary, in that the public sector focuses more basic research and issues which have a substantial 'public good' element, while the private sector tends to focus on applied research and commercial development. The public sector also plays an important role in maintaining R&D capacity via the development of personnel and the management of research infrastructure (laboratories and field stations) which attract private-sector commissioned research.

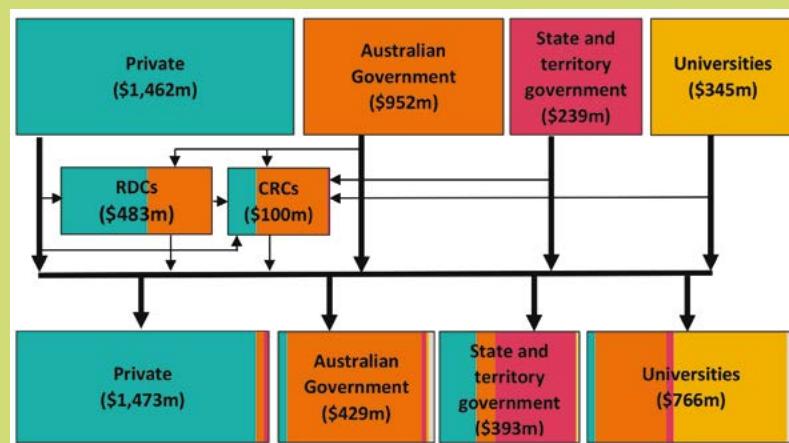
The importance of Australia maintaining strong public-sector agricultural R&D investment is further reinforced by developments that have been occurring in agribusiness at the global scale. The ever-increasing regulatory cost of progressing new chemicals and technologies from discovery to commercialisation is part of the reason for the major consolidation that has occurred in the global agrichemical sector in recent years. But as the Australian R&D managers of these organisations explained, this means the R&D agendas of these organisations are driven by opportunities in global markets, rather than by opportunities that might be much more specific to Australian agriculture.

## Research relevant to Australian ag at risk

The risk for Australian agriculture is that in the absence of a strong public agricultural R&D system (and the ability to use this to leverage private-sector investment in areas of importance to Australian agriculture) the flow of innovation of particular relevance to Australian farmers and agribusiness will shrink to a trickle, slowing productivity growth and reducing the sector's international competitiveness.

An important issue to emerge from the interviews with private-sector R&D managers was the difficulties they experience arising from the culture that prevails amongst many university researchers in Australia. A number of the interviewees commented that Australian researchers tend to not have any commercial experience, and therefore often have a poor understanding of the effort required to convert

**FIGURE 1: Simplified overview of investment through the Australian rural R&D system, 2014–15 ABARES**



Note: Excludes funding for extension. For the rural R&D performers and intermediaries (RDCs and CRCs), the diagram shows the shares of funding they each received from the various funding sources. R&D performers also received funding from 'other' sources that could not be included in the funding estimate.  
Sources: Authors estimates; ABS 2015a, 2016a,b.

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new discoveries into commercial products. As a result, they have unrealistic expectations about the outcomes of collaborations, and some universities can also be very slow and unresponsive when it comes to negotiating commercial arrangements.

That said, private-sector R&D managers were generally very complimentary about the capabilities of individual Australian researchers, and considered this to be an important factor that encouraged them to increase the level of investment they make in Australia.

### **Comprehensive research data base required**

A further issue raised by many research managers was the difficulties they face in obtaining information about research that is currently being undertaken, and identifying the public-sector expertise relevant to their particular

research interests. The lack of a comprehensive national database of research being undertaken and research expertise acts as a disincentive for the private sector, but also seems likely to increase the risk of unnecessary duplication in the Australian system.

Ultimately, the private sector will continue to be more prominent in agricultural R&D in Australia, but that does not mean the public sector is no longer important. Better access to information about the R&D activities of both sectors seems likely to improve the complementarity of the two systems, as does a stronger focus by universities and other public-sector institutions on measures to facilitate collaboration with the private sector.

**For more information:**  
Australian Farm Institute: [www.farminstitute.org.au](http://www.farminstitute.org.au)  
Rural RD&E investment in Australia –  
[www.agriculture.gov.au/abares/publications](http://www.agriculture.gov.au/abares/publications)



## **R&D organisations contact details**

### **ASSCT**

Australian Society of Sugar Cane Technologists: Secretariat

#### **POSTAL ADDRESS**

PO Box 5596  
Mackay Mail Centre QLD 4741  
Ph: 07 4954 3956  
Fx: 07 4954 3956  
E: assctadmin@ozemail.com.au  
Website: [www.assct.com.au](http://www.assct.com.au)

### **SRA**

#### **HEAD OFFICE**

Sugar Research Australia  
(50 Meiers Road), PO Box 86  
Indooroopilly QLD 4068  
Ph: 07 3331 3333  
Fax: 07 3871 0383  
E: [sra@sugarresearch.com.au](mailto:sra@sugarresearch.com.au)  
Website: [www.sugarresearch.com.au](http://www.sugarresearch.com.au)

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#### **Broadwater**

Ph: 02 6620 8257

#### **Condong**

Ph: 02 6670 1745

#### **Harwood**

Ph: 02 6640 0479





## INDUSTRY ORGANISATIONS

# Peak bodies

### Australian Cane Farmers Association

#### HEAD OFFICE

Level 3, 447, Upper Edward St  
Spring Hill, Brisbane 4000  
GPO Box 608, Brisbane QLD 4001  
Ph: 07 3839 1900  
Freecall: 1800 500 025  
Fax: 07 3839 1911  
E: admin@acfaf.com.au

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Canegrowers Building  
Level 6, 100 Edward Street, Brisbane  
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E: info@canegrowers.com.au  
www.canegrowers.com.au

#### STATE OFFICES

##### New South Wales

NSW Canegrowers Association  
239 River Street, Maclean  
PO Box 140 Maclean NSW 2463  
Ph: 02 6645 2515  
Fax: 02 6645 3250

##### Queensland

Queensland Canegrowers  
Organisation  
Canegrowers Building  
GPO Box 1032  
Level 6, 190 Edward Street  
Brisbane QLD 4000  
Ph: 07 3864 6444  
Fax: 07 3864 6429  
E: info@canegrowers.com.au

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Fax: 07 4098 3567

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##### Innisfail

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Ph: 07 4063 2477 Fax: 07 4063 2488

##### Tully

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Ph: 07 4068 4900 Fax: 07 4068 2351

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11–13 Lannercost Street  
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Ingham QLD 4850  
Ph: 07 4776 5350 Fax: 07 4776 5380

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141 Young Street (PO Box 933)  
Ayr QLD 4807  
Ph: 07 4790 3600 Fax: 07 4783 4914

##### Home Hill

68 Tenth Street  
Home Hill QLD 4806  
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Fax: 07 4945 2721

### Mackay

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Mackay QLD 4740  
Ph: 07 4944 2600  
Fax: 07 4944 2611

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### Bundaberg

32 Bourbong Street (PO Box 953)  
Bundaberg QLD 4670  
Ph: 07 4151 2555  
Fax: 07 4153 1986

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48 Churchill Street (PO Box 95)  
Childers QLD 4660  
Ph: 07 4126 1444  
Fax: 07 4126 1902

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106 Bazaar Street (PO Box 172)  
Maryborough QLD 4650  
Ph: 07 4121 4441  
Fax: 07 4121 6115

### Rocky Point

1214 Stapylton/Jacobs Well Road  
Woongoolba QLD 4207  
Ph: 07 5546 1481  
Fax: 07 5546 1481

## NSW Canegrowers Association

239 River Street  
PO Box 140 Maclean NSW 2463  
Ph: 02 6645 2515  
Fax: 02 6645 3250



## Government bodies

### Department of Agriculture and Water Resources

Ph: 1800 900 090  
Website: [www.agriculture.gov.au](http://www.agriculture.gov.au)

### NSW Department of Primary Industries

Ph: 1800 808 095  
Website: [www.dpi.nsw.gov.au](http://www.dpi.nsw.gov.au)

### Queensland Department of Agriculture and Fisheries

Ph: 13 25 23  
Website: [www.daf.qld.gov.au](http://www.daf.qld.gov.au)

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Ph: 13 74 68  
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Ph: 13 74 68  
Website: [www.dnrm.qld.gov.au](http://www.dnrm.qld.gov.au)

### Queensland Department of Science, Information Technology and Innovation

Ph: 13 74 68  
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