

COVER STORY

A CANE HARVESTER AND HAULER AT WORK ON A FARM NORTH OF BUNDABERG. SINCE 1979 ALL SUGAR CANE IN AUSTRALIA HAS BEEN MECHANICALLY HARVESTED. **ALL PHOTOGRAPHS BY GREG FOYSTER.**



BitterSweet



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TOXIC, POISONOUS, DEADLY – IN THE LAST FEW YEARS, SUGAR HAS ATTRACTED SOME LESS-THAN-SWEET COMMENTARY BOTH HERE AND OVERSEAS. BUT AUSTRALIA REMAINS ONE OF THE WORLD’S BIGGEST SUGAR EXPORTERS. GREG FOYSTER HEADS NORTH TO DISCOVER WHAT EFFECT, IF ANY, THE RECENT CONTROVERSY IS HAVING ON THE INDUSTRY.

BRIAN COURTICE COMES from a long line of cane growers. His grandfather started cutting cane in 1910 and farming it in 1922. Two of his grandfather’s brothers formed the Sugar Workers Union in Bundaberg and organised a canecutters’ strike in 1911. Brian’s father, also a cane grower, was a member of the board for the local sugar mill.

For three generations the Courtice men have lived and worked at Sunnyside, a nearly 50-hectare farm in the Woongarra region southeast of Bundaberg. And for almost all of those days, sugar has been a mainstay of life. Now 64, Courtice remembers school holidays spent cutting green cane in the fields. In the mornings he’d put a mound of sugar on his cornflakes, and three sugars in his tea.

But Courtice doesn’t put sugar in his tea anymore. Sitting on his front veranda and nursing a mug of Bushells sweetened only with honey, he explains that as he got older he became increasingly concerned about the relationship between sugar consumption and dental cavities.

Courtice has the weathered skin of a farmer – his hands are tanned and calloused, with crescents of dirt under the fingernails – but his teeth have suffered worse deterioration. “I’ve got a mouth full of fillings from when I was a kid from using too much sugar,” he says.

He soon realised cavities were the least of his concerns. As the research rolled in, Courtice became convinced that eating too much refined sugar was also linked to diabetes and weight gain. Cane plants are no longer welcome at Sunnyside farm; the last crop was ploughed out in November 2005, and the red-soil paddocks are now dedicated to growing potatoes. “The sad fact is it’s an industry that our family were involved in since 1900, but it’s an industry that was founded on slavery, both here and in the Americas, and it’s an industry like tobacco that causes more harm than good,” Courtice says.

This comparison between sugar and proven toxins like tobacco or alcohol has gained prominence in the last few years. It was popularised in the United States by Robert Lustig, a professor of paediatric endocrinology at the University of California, whose YouTube video *Sugar: The Bitter Truth* has clocked up more than five million views.

If Lustig is right, then everything you thought you knew about obesity and dieting is wrong. Typified by catchphrases like “fat makes you fat” and “calories in, calories out”, the message has been that to stop gaining weight you should avoid high-fat foods and try not to eat more calories than your body burns.

Lustig’s lecture, based on new research in the field of biochemistry, upsets the status quo. His message is not that all calories are equal: some calories have toxic effects on the body. He says sugar, not fat, is the main culprit in obesity, type 2 diabetes, heart disease and even some cancers. “It has nothing to do with the calories,” argues Lustig, because sugar “is a poison by itself”.

To understand this argument, we need to delve into the chemical composition of society’s favourite sweetener. Table sugar is a combination of two sugars, glucose and fructose. Glucose is common in nature, and

all our cells are equipped to use it for energy. But fructose, the much sweeter part of the substance, is relatively rare in nature, found mainly in honey and ripe fruit, and is metabolised almost exclusively in the liver. Lustig and others are concerned about the fructose part of sugar, which they say we haven’t evolved to process in large quantities.

Human trials into the health effects of fructose consumption are continuing – including in Australia at the University of Newcastle – and the verdict is still out. But there’s no doubt sugar is under increased scrutiny.

In 2013, Australia’s new dietary guidelines included for the first time advice to limit added sugar. In 2014, the World Health Organization’s draft guidelines proposed halving the recommended sugar consumption from 10% to 5% of daily energy intake. Meanwhile, there’s been a flurry of books on the topic, including Australian bestsellers *Sweet Poison* by David Gillespie and *I Quit Sugar* by Sarah Wilson. And, of course, there’s been the recent release of actor Damon Gameau’s indie doco, *That Sugar Film* (see the feature on page 32).

All this media attention has focused on the health effects of sugar while largely overlooking the industry that produces it. In Australia, about 4000 cane farms are spread across 2100km of coastal plains from Grafton in New South Wales to Mossman in Far North Queensland. Australia is the world’s third-largest raw sugar supplier, and the industry is worth an estimated \$1.5–\$2 billion to the local economy. What effect, if any, are these criticisms having on that industry? What role is the government playing in the unfolding saga? And if sugar is really as damaging to health as tobacco or alcohol, should it be taxed in the same way?

THE AUSTRALIAN SUGAR industry was built on the indentured labour – some say slave labour – of South Sea Islanders (see ‘Sugar: An Ugly History on p21). But since 1979, all Australian sugar cane has been mechanically harvested, and machines are also used

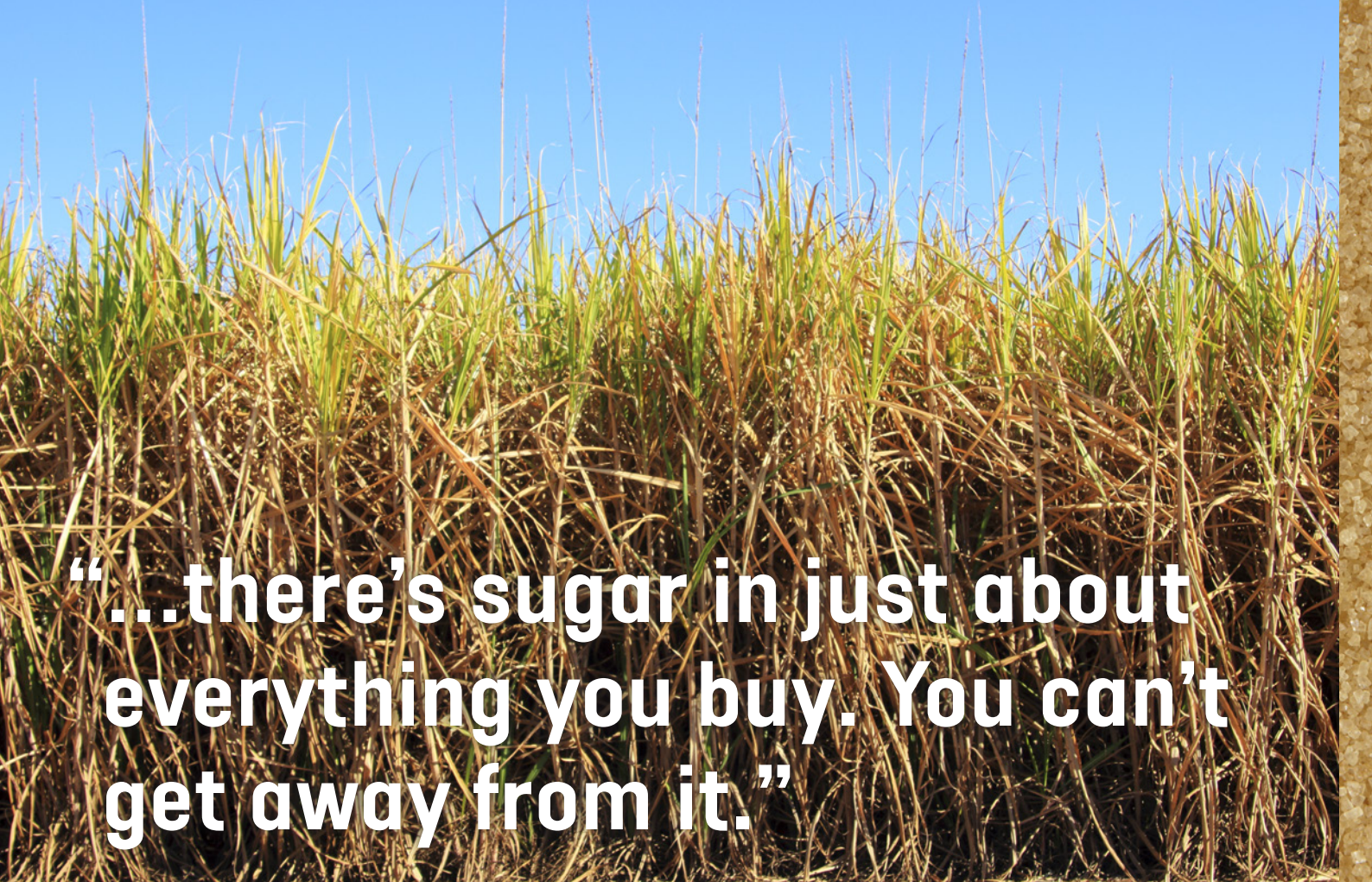
to plant and fertilise. To get an overview of the process, I arrange a ‘paddock to plate’ tour of cane farming around Bundaberg, about 400km north of Brisbane. My guide is Tony Castro, a 55-year-old cane farmer wearing a khaki shirt and blue stubby shorts, his tanned thighs like slabs of toffee with hair stuck to the outside. He picks me up in his white ute and we drive to the river flats north of town. First stop is a dirt field, where we’re greeted by a man in a high-vis top and polarised sunnies: 33-year-old planting contractor, Jason Wheeler.

Wheeler explains that sugar cane is grown by replanting a cutting of mature cane (known as ‘billet’ or ‘sett’). It looks like a short length of bamboo, and, once it’s in the soil, new buds sprout from the joints. Each cutting can shoot up to 12 stalks, forming a ‘stool of sugar cane’. In sunny Queensland it takes between nine and 16 months to grow a crop; cooler climates can take up to 24 months.

In another field, I watch as a cane harvester roars into view. Castro explains that only the stalk, which stores the sugar, is sent to the mill. Twenty



AFTER HARVESTING, THE CANE IS
POURED INTO BINS



“...there’s sugar in just about everything you buy. You can’t get away from it.”

years ago the unwanted leaves were burned before harvesting and cane fires lit up the night sky around sugar towns like Bundaberg. But nowadays the cane is cut green and the leaves are left to blanket the ground, helping to retain moisture and suppress weeds.

After harvesting, the cane is poured into bins towed by a narrow train, nicknamed a ‘loco’. I hitch a ride and we clatter past irrigated fields of incandescent green. Sugar cane has to be transported to a mill within 16 hours of harvest, so the industry maintains nearly 4000km of narrow-gauge rail lines.

At Bundaberg Sugar’s Millaquin Mill, I meet general manager David Pickering. Some of the farmers I’ve met so far have been built like gummy bears, but Pickering has the physique of a musk stick. His diet, he says, is marked by moderation. “I love my pavlova, but not every night.”

We walk up stairs onto a raised platform and watch the bins full of cane being weighed. Next the cane is

shredded, then passed through a series of rollers to extract juice. Water is added, creating a mud-coloured slurry that smells like grass clippings. Finally, the cane fibre is wrung into a dry, fluffy-looking substance that is burned to generate electricity to power the mill.

The cane juice is pumped away for processing into raw sugar. This happens in another part of the mill that smells like liquorice allsorts. At one point, Pickering gets ahead of me and I find myself alone among the labyrinth of pipes, worried that one wrong step will see me cooked by a gust of appetising steam.

Eventually we reach a part of the mill that Pickering calls “the sugar room”. Looming above is a massive rotating cylinder that dries the sugar. Motes of sweet-tasting dust hang suspended in shafts of sunlight. Sitting in a puddle of water on the floor is an iceberg of rejected sugar from the refinery. “We just re-melt it and use it again,” says Pickering. “Sugar’s great at recycling.”

AFTER THE TOUR, I sit down at a convenience store across the road and think about what I’ve seen. I’m unexpectedly impressed. Regardless of the health criticisms against refined sugar, the cane plant is remarkably versatile. Very little is wasted – the fibre is burnt for energy, the molasses is used to make rum or feedstock for animals and even the residual mud from the cane stalks is sent back to the fields to be used as fertiliser. In Brazil, sugar mills also produce large quantities of ethanol, an alternative fuel to petrol.

But this positive side is overshadowed by something more sinister: the substance’s sheer pervasiveness. For most food, a ‘paddock to plate’ tour would start in a farm and end with a specific product. You could track a cow in East Gippsland to a rump steak at a butcher in Melbourne, or a banana from Coffs Harbour to a smoothie at a juice bar in Sydney. But a ‘paddock to plate’ tour for sugar leads from a cane farm

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to...a convenience store. Or to an entire supermarket aisle, considering sugar is an additive in so many packaged goods.

This pervasiveness makes it hard to know how much sugar people are really eating. In fact, the question of Australians' sugar consumption is now so vexed it has become the subject of a national controversy.

In 2011, nutritionists Jennie Brand-Miller and Alan Barclay published 'The Australian Paradox'. The paper argued that Australians' sugar consumption had dropped 23% between 1980 and 2003, while obesity increased three fold since 1980. Perhaps sugar wasn't a culprit in weight gain after all.

Outspoken economist Rory Robertson questioned the validity of the underlying Australian Bureau of Statistics (ABS) data, which had been discontinued from 1999 due to reliability concerns. The sugar industry, keen to downplay any link between sugar and obesity, commissioned a report bolstering 'The Australian Paradox' findings. Finally, the University of Sydney launched an inquiry into the matter, which dismissed the allegations of research misconduct... but also found the paper contained basic errors and the academics should be required to write another one.

All of this means I can't give a definite figure for exactly how much sugar Australians are eating. But I can say a few things for sure. One is that sugar-sweetened drinks are the largest single source of sugars in the Australian diet, and they're also more clearly linked to obesity than sugar in solid form. Another is that even the lower estimates of sugar consumption in Australia – under 40kg per person per year, or about 22 teaspoons a day – are way over the World Health Organization's mooted guidelines of just six teaspoons a day. So while we may not know exactly how much sugar we're eating, we do know we're eating too much.

I walk around the convenience store, figuring out what I can buy and still stay within that miserly quota. A single can of soft drink, containing about 10 teaspoons of sugar, instantly puts me over. Most of the breakfast cereals have high sugar content – Kellogg's Coco

Pops is more than a third sugar – and so do the sauces and breads. Faced with an array of products that contain hidden sugar, I remember the response of cane farmer Tony Castro when I asked if he thought health criticisms would affect the industry. "No," he said, "because there's sugar in just about everything you buy. You can't get away from it."



BUT MY TOUR isn't quite finished. After the sugar is milled, its by-product, molasses, is pumped from Millaquin Mill to the distillery next door – where it's turned into Bundaberg Rum. And the next day there's to be a festival celebrating the release of a new, limited edition, Bundy.

When I arrive, the place is packed. Blokes in board shorts and thongs, arms crossed over their barrel stomachs, line up to enter the bar. Inside, I meet a guy named Keith with a big bushy beard, black polo T-shirt and faded Crocs. He doesn't much like Bundy rum – reckons it tastes a bit like metho – so

he's dropped a few jellybeans into his glass to sweeten it up. His wife fishes out a jellybean and pops it in her mouth. "Helpin' your sugar levels," she says. "He has insulin injections, you know." Keith is diabetic.

On a tour of the distillery, I learn that Millaquin Mill was established in 1882, but by 1885 the wells storing molasses were overflowing, and something needed to be done. Three locals, including one of the town's founders, Frederic William Buss, resolved to tackle the problem by turning this unwanted by-product into rum. "They came up with some top-shelf thinking," says the guide, in his ocker twang.

We're led to a wooden decking overlooking a five-metre-deep well of molasses, a toffee-coloured substance with the consistency of congealed quicksand. Further along, the guide says that while the distilled alcohol is on site it's in 'bond storage', "but as soon as it leaves here we pay tax".

Health experts have recently called for sugar to be taxed in the same way



NEXT STOP: CUTTINGS ARE TOWED BY TRAIN TO THE SUGAR MILL



MILLAQUIN SUGAR MILL

as alcohol, and for the same reasons. In 2012, Lustig – aforementioned star of *Sugar: The Bitter Truth* – and his colleagues published a comment piece in the scientific journal *Nature*. It listed four criteria that justify regulating alcohol: it's pervasive, toxic, it offers potential for abuse and has a negative impact on society. The academics argued sugar met all these criteria. "It can also be argued that fructose exerts toxic effects on the liver that are similar to those of alcohol" the article went on. "This is no surprise, because alcohol is derived from the fermentation of sugar."

Following this logic, some countries and cities around the world have already introduced sugar taxes. In January 2014, Mexico, which has one of the highest rates of obesity in the world, introduced a 10% per litre tax on sugary drinks. And in November 2014, residents of Berkeley, California, voted to impose a 'soda tax' of more than 10%.

In Australia, leading health bodies Diabetes Australia, Cancer Council and the Heart Foundation have been campaigning for a tax on sugary drinks since January 2013. With mounting obesity rates, the pressure on government to investigate this option is increasing.

But the beverage industry is a formidable foe. In 2012, New York's

then mayor, Michael Bloomberg, pushed through a city-wide ban on large sugary drinks. In response, the American Beverage Association successfully petitioned to have it struck down by the courts. So far, the Australian beverage industry has responded by questioning the link between sugar and obesity, prompting comparisons to the campaign waged by tobacco companies decades ago.

I found little support for a sugar tax during my time in Bundaberg. Earlier in the week I raised the topic with the local Liberal MP, Keith Pitt. "This is a free country... I don't want to be in a government enforcing food choice," he told me. Even Brian Courtice, the former cane farmer who refuses to put sugar in his tea, doesn't support a tax on it. An ex-Labor MP, Courtice is worried that a sugar tax would disproportionately target the working class or poor.

One objection to a sugar tax raised by many critics is that the comparison between sugar and alcohol or tobacco is flawed. Lustig and colleagues concede this in their *Nature* article: "food is required, whereas tobacco and alcohol are non-essential consumables".

That's true of natural foods such as honey and fruit that also contain beneficial vitamins and nutrients.

But the argument doesn't hold up for added cane sugar, which represents empty calories and has no nutritional value. Nor does it hold up for soft drinks, which are completely non-essential and robustly linked to weight gain and therefore government health expenditure.

In the end, perhaps the government won't need to tax sugar, because consumers will abandon it for other sweeteners. Food and Agriculture Organization figures show Australians consumed about 4kg of 'other' sweeteners in 1998, increasing to about 9kg in 2011.

It's part of a trend in developed countries. A September 2013 report by Credit Suisse on sugar's global prospects predicted: "the most likely outcome over the next 5–10 years will be a significant reduction in sugar consumption and a marked increase in the role played by high-intensity natural sweeteners in food and beverages".

DOES ALL OF this spell doom for Australian cane farmers? After my week in Bundaberg I take a train down to Brisbane and visit the head offices of Canegrowers to find out. I meet chief operating officer Ron Mullins, who tells me that domestic sales account for only 20% of the raw sugar we produce. Cane farmers in New South Wales, and to a lesser extent in southern Queensland, are exposed to declining consumption in Australia, but the vast majority of the nation's cane farmers and millers have their eyes on overseas palates.

Despite a history of protectionism, the Australian sugar industry is now largely deregulated and unsubsidised, which makes it highly exposed to fluctuations in the global sugar price. When that price collapsed in the early 2000s, for example, the industry received a federal assistance package of \$444.4 million.

Canegrowers' latest annual report mentions that during the previous financial year, farmers faced "some of the biggest issues in the history of the Australian sugarcane industry". Yet the list of issues – a rift between

growers and millers over marketing arrangements, worries about electricity price hikes and gripes over sugar being excluded from recent free trade agreements – are all to do with market competitiveness. Health concerns don't rate a mention.

The crucial factor is that Australia sells most of its sugar to Asia. Indonesia is our biggest export market, followed by South Korea and Japan. While consumption of sugar has stalled or is declining in many Western markets, Asian countries are starting from a much lower base, so there's more room for growth and less concern about health impacts. In 2011, Indonesians consumed on average 13.6kg of sugar; just over 9 teaspoons a day. Australian cane farmers are at the mercy of so many variables, from the whims of climate to the dynamics of international competition. But as long as demand continues to rise in Asia and the global sugar price hovers at a profitable level, the industry is on a firm footing.

Even if demand weakened in Asia, that still might not kill the industry. Sugar cane can be a core ingredient in ethanol, pharmaceuticals, bioplastics, animal feedstocks and alcohol. Sugar mills can generate electricity for regional hubs – Racecourse Mill in Mackay, for instance, can supply the town with 30% of its power. Re-inventing the industry would require huge investments, most likely from government coffers, but the potential is there.

On my tour around Bundaberg, I learned that the cane plant is remarkably resilient: a cutting can reshoot five times or more after harvesting. As planting contractor Jason Wheeler told me, "It's hard to get rid of sometimes." Those who rail against sugar might just discover that the Australian industry – survivor of floods and cyclones, pests and diseases, mechanisation, globalisation and a volatile commodity price – will prove just as persistent.

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SUGAR: AN UGLY HISTORY

IN 1864, A Scottish aristocrat named Captain Louis Hope crushed the first batch of commercially grown sugar cane at his property at Ormiston, east of Brisbane. Hope is now considered the father of the Australian industry, but he left the hard physical work to others. Needing extra labour to increase production, he purchased 30 South Sea Islander workers (called 'kanakas', a term now considered offensive), who lived in their own simple dwellings on the property. Between 1863 and 1904 an estimated 63,000 South Sea Islanders, mainly from the Solomon Islands and Vanuatu, were brought to Australia to work in the fields under 'indentured labour' contracts.

While some were recruited or coerced into the labour trade, others were blatantly kidnapped (a practice known as 'blackbirding').

Selwyn Joel Eggmolesse OAM is a South Sea Islander elder living in

Maryborough, about 300km north of Brisbane. His father's mother was kidnapped as a 16-year-old girl on Santo Island, Vanuatu. His mother's grandparents worked for plantation owner Robert Cran, who was taken to court for ill-treatment of his labourers. "They took away their water cart and made them drink from the hoof prints of the cattle," says Eggmolesse. The practice of denying Islanders clean water was a common one. As a result, disease was rife – the workers suffered from dysentery, malnutrition and even scurvy. One in four died.

These atrocities, and others, have now been acknowledged in Federal Parliament. While it's now well-ploughed territory, it is still important to stress that without the suffering of South Sea Islanders, there would be no cane fields in northern Queensland. As Eggmolesse puts it: "The sugar industry was built on the blood, sweat and tears of my people."



ARMANELL JANE SMITH (LEFT), SELWYN JOEL EGGMOLESSE'S COUSIN, WITH A PHOTO OF HER MOTHER, A DESCENDANT OF SOUTH SEA ISLANDERS WHO WORKED IN THE CANE FIELDS; BRIAN COURTICE (RIGHT) HOLDS A SLAVE TRADE PAPER