Cows kept in giant barns, fed rations and milked by robots... Farmageddon? Or a way to keep Australia’s dairy industry sustainable? Gina McColl reports.
Mega dairies are coming.
Gina McColl reports on whether it’s a threat to local farmers and animal welfare.
Would you put it on your Weet-Bix? Milk produced by huge herds housed permanently in barns longer than the MCG. Milk extracted by robots up to five times a day (and night) from cows fed an individually tailored diet – and drug regime when they get sick – for optimum production. Henry Ford is taking over Old McDonald's farm.

Industrialised dairy – long established in the United States, Middle East and China – has arrived in Australia, driven by global competition, thirsty export markets, and a spate of corporate and Chinese interest. Most experts say the changes are gaining momentum. Some see intensification as inevitable.

But there are headwinds. Animal welfare activists are signalling their opposition to the emerging practices as unnatural and leading to increased rates of mastitis and lameness. And a groundswell of opposition is building to long-standing dairy practices such as the wholesale slaughter of bobby calves (unwanted males) and horn debudding, through to the degradation of land and pollution of waterways.

But will consumers buy mega-dairy milk? Just as many are turning off battery-cage eggs and sow-stall pork, intensive dairy farming seems to be flowing against the tide of popular sentiment. With an eye on its brand vulnerabilities, global manufacturers Nestle and Saputo recently signalled a tougher stance on the welfare of dairy cows in their supply chains.

The picture becomes even more opaque as some industry experts say “cash-cow” trends, properly managed, can improve animal welfare and make medium-scale, local farming more sustainable. Others question the ability of investors to extract the returns they will require from their investments in large-scale, highly technological enterprises, given their high costs and the volatility of milk prices. What's truth and what's cow manure? Pull up a stool.

Get big or get out” has been a refrain of the dairy industry since its deregulation 30 years ago, when farmers had to consolidate and gain economies of scale to survive. In 1983, there were 20,060 dairy farms (according to Dairy Australia) with an average herd size of 90; last year, there were 6314 with an average herd of 268 cows. In Victoria – where most dairy farms are – total cow numbers remained the same between 1980 and 2010, but milk production doubled, according to the Department of Economic Development, Jobs, Transport and Resources. Better management of pasture, grazing and fertilisers, nutritionally balanced supplements, lab tests and other fine tuning all helped.

But, despite the innovation, most local farms still have much in common with those of centuries ago: cows are still herded before dawn and dusk to a dairy “parlour”. Instead of milkmaids on three-legged stools, milking is mechanical, but the cows are attached and detached by hand, usually those of the husband and wife who own the farm. Only about 3 per cent of Australian farms are corporate, according to Dairy Australia, with most family-operated small or medium-sized businesses. E.I.E.I.O.

During the same period, many dairy farms overseas have been getting much bigger and more intensive. In the Persian Gulf, Almarai in Saudi Arabia has a facility housing a herd of 67,000. In the United States, Fair Oaks Farm in Indiana has 37,000 cows milked 800 at a time, 23 hours a day.

In mega-dairies such as these, cows are generally housed permanently indoors, fed a blend of grains, vitamins, proteins and other additives known as “total mixed rations” (TMR) and milked by robotic machines. Housing cows and milking them voluntarily conserves their energy for milk production – none is “wasted” on staying cool or warm, grazing or walking to the dairy.

As a result of this and an optimised TMR diet, some cows are milked five times a day and annual output can top 12,000 litres (compared to an Australian grazed dairy cow average of 6000).

At Fair Oaks’ so-called “closed loop” mega-dairy, even the cows’ waste is used: their effluent is captured and used as the basis for fertiliser to grow feed for the herd, generate biogas to run the farm’s tractors and, memorably, as the medium for growing an algae that is fed back to the cows as a form of protein. In recent years, housed systems for huge herds have spread to Europe and Britain. In Denmark, the percentage of grazed dairy cows shrank from 85 per cent to 5 per cent between 2001 and 2010.

Large herds and housed systems remained a rarity in Australia, but in the past 18 months there has been a flurry of investment in the $13 billion dairy sector from wealthy entrepreneurs and corporate investors, including mining magnate Gina Rinehart and retailer Gerry Harvey. Chinese investors in particular have been buying up farms and planning new vertically integrated export businesses on the back of booming consumer demand in China for dairy products – especially infant formula after the 2008 melamine-tainted milk scandal, and fresh milk, which can command up to $7 a litre.

Trade and Investment Minister Andrew Robb calls such foreign investment a national priority. “If our dairy is to reach its potential, it must remain a leader in production, new products, logistics and marketing,” he told a forum in September 2014, at which he hailed mega-dairies such as Fair Oaks. “New investment and the innovation, capacity and new perspectives that comes with it,
is critical.”

But such innovations and investment also have plenty of critics. One controversial project in Gippsland has become a symbol of the fears and promises they attract.

During the past two years, YoYouDairy, a local subsidiary of the top 500 Chinese Ningbo Group, has been acquiring farms in Keranot, Gippsland, with a view to doubling its herd to 1000, housed eight months of the year in a 228-metre-long barn (the MCG is about 160 metres long). The company hopes the milk would be processed on site in a planned $6 million plant for exporting as fresh milk to China.

Ningbo, which has 12,000 cows in housed systems in China, reportedly plans to establish seven farms in Victoria and NSW. The project has become mired in a series of controversies, however. Ningbo Dairy’s vice-president Harry Wang boasted it could increase production from the Australian average of 6000 litres a year to the China average of 9000 litres by housing them and bringing some of his Chinese workers to Australia because of labour scarcity and high wage costs.

The community’s angst was aired on social media and in 430 objections to the Bass Coast Shire Council received opposing the proposed barn and plant. While the shire supported it, some residents were concerned about being displaced from jobs or having their wages undercut. Others worried such intensification could be achieved only at the cost of animal, environmental and food safety standards – and that, in turn, could damage the local industry.

“That is really frightening to someone like me,” says dairy farmer Marian Macdonald, who has a 260 dairy cow farm in Gippsland.

“I didn’t become a dairy farmer to be a factory owner… I don’t want some guy coming along and saying looking after the land [and cows] is just red tape,” she says. “They want to export Australia’s great reputation but at the same time import cheap labour and not have to deal with food safety, animal welfare and environmental safety protocols that have given Australia its great reputation.”

On August 19, the council denied the planning application, citing the plant’s size and impact, inadequate river and air pollution provisions and the proposed herd size as an over-intensification of the land’s capabilities.

YoYouDairy did not respond to The Sunday Age’s request for comment. It has until mid-October to appeal the decision at the Victorian Civil and Administrative Tribunal. Meanwhile, scores of plans for housed, robotic and large-scale dairy farms elsewhere in the country advance. In June, Harvey Norman co-founder Gerry Harvey was reportedly preparing to invest in a farm near Shepparton, with plans to build three huge sheds where 6000 cows fed total mixed rations will be milked.

Farmageddon?

Dairy industrialisation is inevitable says Keith Woodford, professor of farm management and agribusiness at New Zealand’s Lincoln University. “Large mega dairies are cost effective,” he says. “It’s naturally going to happen.”

Another driver is the manufacturing or industrial backgrounds of many of those making big investments, Dairy Australia analyst John Dropper says. “They think of production lines and efficiency [where] everything can be controlled and scaled very easily, whereas in a grazing environment, it’s not as reliable.”

But this doesn’t necessarily spell the end for Old McDonald – or Rosie munching grass in the fresh air.

A recent Dairy Australia report found farms with the best consistent returns employed a range of production systems but that grazing-based diets – between 40 and 80 per cent – were a consistent feature. Sustainable Farm Profitability 2015 also found evidence that farms with larger herds (600-plus) had the biggest returns but that the “risks and complexity” associated with scale meant that the advantages accrued with herds of between 250 and 400 cows, and flattened out beyond that.

This suggests that mega-dairy is unlikely to take over anytime soon and that a combination of intensive corporate dairy farming will co-exist with more traditional farm ownership and practices.

Dropper and Woodford point out that the same elements of industrialised dairy – housed and feedpad systems, and robotic milking – may be adopted as individual farm improvements that fall short of intensive factory farming.

There are about 34 dairy farms in Australia with robotic milking systems, for example, but only 12 per cent are in housed dairies; 82 per cent are on pasture-based farms and 6 per cent are hybrids, according to associate professor Kendra Kerrisk, the leader of a “Future Dairy” project at the University of Sydney’s faculty of veterinary science. She estimates 20 to 30 per cent of farms will use voluntary milking systems within a decade.

Early adopters Grant and Leesa Williams installed a four-robot milking dairy on their Gippsland property six years ago, and say it has helped them expand their herd from 300 to 550. This has meant their farm income has accommodated two sons joining the family business, as well as “lifestyle” benefits.

Not weekends away – someone still has to be around to troubleshoot...
Farmer Grant Williams on robotic milking

"There's less stress on their udders ... there's a certain quietness; more of a relaxed attitude."

Farmer Grant Williams

We can use the data to improve animal welfare – we can cure them quicker; use less antibiotics.”

Similar welfare claims are made about the potential benefits of housed systems. While there are reports of cows suffering lameness and increased rates of infection because of crowded conditions and concrete floors, cows housed in barns with rubber flooring may suffer less lameness than conventional herds.

And the alternative – standing up to their udders in muddy paddocks, which can get so cold in winter that their teats literally freeze, according to dairy infrastructure consultant Justin McCallion – hardly seems kinder even if it is more “natural”.

But animal welfare organisations range from sceptical to highly critical of intensive and existing dairy practices.

The RSPCA has concerns about the treatment of bobby calves (the annual 800,000 unwanted five-day-olds transported up to 12 hours for slaughter), the prevalence of mastitis and lameness, tail docking and dehorning without anaesthetic, and the live export of heifers. The organisation says its first welfare standards were introduced for the farming of eggs, pork, chicken and turkey because of widespread industrial practices (battery cages, sow stalls). “Standards for dairy cattle may follow in the future.”

Voiceless, an animal protection group co-founded by fund manager millionaire Brian Sherman and his daughter, says “the dairy industry has done a superb job in creating and managing a fantasy” that its practices are comparatively benign and less industrial.

A Voiceless report published in January cites a British animal husbandry expert who argues: “the dairy cow is exposed to more abnormal physiological demands than any other farm animal”.

Voiceless wants greater regulation, including criminal sanctions, and a licensing scheme to promote best practice and give ethical consumers a choice.

Such campaigns may be getting traction. Milk chocolate and infant formula maker Nestle has teamed up with World Animal Protection, which ran a “Not on our cornflakes” campaign against mega-dairies in Britain last year. In April, Nestle sent auditors to 50 dairies in Tasmania and Victoria to assess welfare standards.

“If we're honest, our ability to care for the individual cow the way we did back when farms were really small has been compromised over time,” Kerrisk says.

“I don’t think [dairy farming in Australia] has gone down the path of battery farming, but the potential is there … I’m excited about the fact we can turn that around with all this technology and how it can improve our operations.”

Farming consultant Justin McCallion says, “A happy, healthy cow produces more milk, so it's in every farmer's best interest to provide cow health whether pasture-based, housed or robot-milked.”
How now robot cow?

From the Williams’ farmhouse you can see, on top of a small rise, the dairy where their cows milk themselves.

Grant Williams – a third-generation Gippsland dairy farmer, like his two brothers and sister and two of his four children – built only the second robotic dairy in the country back in 2009. Wife Leesa told him he was mad.

“Why do we want to be on the cutting edge?” she asked him. Now there are four farmers with robotic dairies within 10 kilometres of their farm in Athlone, near Warragul in Victoria’s south-east, and 28 elsewhere in Australia, with seven more under construction.

In late winter, their lush pastures are a patchwork of Tanqueray, Chartreuse and Creme de menthe, slashed here and there with dark brown mud where the cows or cars have churned it up. Grey puddles, reflecting the sky, lie in the flat and low areas where the drunk ground can’t take any more.

The robotic dairy is no gleaming sci-fi intrusion in this pastoral scene. Housed in a barn open on two sides, the robots are metal boxes with galvanised pipe pens to one side (the computers that control them are protected in a room in the back of the shed). The metal, like the concrete floors, is generously sprayed with mud and the mustardy-green of fresh cow manure. Cows mooch in through a sorting gate that detects whether each is ready for milking. Those deemed “full” wait patiently for a berth at one of the four robots.

When ready, each cow takes her place in the pen where roller brushes wash her teats of dirt splatter (mud marks from grazing in the sodden paddocks come past their knees like cow gumboots).

A laser guides a pneumatic arm to position the milking cups – the location of every cow’s four teats is pre-programmed via co-ordinates. As milking begins, computerised tests determine the fat and protein levels – farmers are paid per kilogram of protein and butter fat. If mastitis markers show up, the milk is dumped, the lines flushed, and the cow herded to a secure area for treatment. The robot will call Williams’ mobile phone to let him know he or Leesa is needed. It speaks, apparently, in a female voice.

Throughout the milking, which takes six to seven minutes, cows get a feed, the grain released 25 grams at a time until her ration (which depends on her productivity) is reached.

When she’s done, her teats are sprayed with iodine and lanolin to help protect her from bacteria and sores, the gates open and she ambles back to the paddock.
Grant Williams in his automated dairy near Warragul. Photo: Joe Armao.
South Gippsland farmer Marian Macdonald with her family. Photo: Heather Downing

Feeding time at a mega dairy farm in Dongying, Shandong Province in China. Photo: Qilai Shen