

WINE NEWS

Robots may take on shearing as Australia's resurgent wool industry deals with a labour shortage

7.30 By national rural and regional affairs correspondent Dominique Schwartz

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PHOTO: Shauna the 3D-printed sheep with robotic arms developed by researchers from the University of Technology Sydney. (ABC News: Dominique Schwartz)

Robots shearing sheep. The idea is enough to have 19th-century bush poet Henry Lawson turn in his grave, but Australia's resurgent \$3 billion wool industry is working to make it a reality.

Faced with a shearer shortage, it is spending \$10 million on research to streamline wool harvesting.

Projects range from better shed design to robotics, including one project that would fully automate the process of getting wool off a sheep and into a bale.

Jane Littlejohn, who oversees the research arm of the industry's research and development body Australian Wool Innovation (AWI), described automation as "forward thinking".

"It's hopefully setting us up for sustainability," Dr Littlejohn said.

"If demand's going to grow and prices encourage more ... wool sheep on farms, we're going to have to look at ways to service that need for high-quality wool harvesting."

Australia has 73 million sheep and 2,800 shearers

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Australia's sheep flock is less than half of what it was three decades ago, so you'd expect there would be fewer shearers. But perhaps not five times fewer, which is currently the case.



PHOTO: Australia's wool industry is facing a shearer shortage and is turning to technology to fill the gap. (ABC News: Simon Beardsell)

So, why the decline? It's been something of a perfect storm.

The resources boom lured local workers out of the shearing sheds and into the mines.

And many New Zealanders, who've traditionally made up to half of Australia's shearing workforce, are staying home thanks to a pay rise there.

At the same time, global demand for wool has soared along with prices, which hit record highs last year.

That's encouraging farmers to move back into wool.

Enter Shauna the 3D-printed sheep

Shauna's not the best-looking sheep, but she's certainly the best behaved a shearer could hope to handle.

Her home paddock is the robotics lab at the University of Technology in Sydney.

Shauna is modelled on a real shorn sheep and has been used by Mickey Clemon and his colleagues to test what's possible with off-the-shelf technology.



GIF: Robotic arms simulate shearing a 3D-printed sheep

"We found quite a lot is possible," Dr Clemon said of the nine-month scoping study commissioned by AWI.

The team built jointed, mechanical arms, driven by electric motors and computer programs, which can reach the back and sides of a sheep — the most valuable "fleece" wool.

"We've used some cameras to capture 3D information about a sheep in various stages of being shorn and we can use that data to reconstruct what the sheep looks like without wool and then feed that into the robot to tell it where to go," Dr Clemon said.

By adding sensors that use light, sound, heat, vibration and visual cues, a robot can be programmed to adjust its movements for each individual sheep, he said.

"This is entirely meant to help a shearer," he said, making the point it was not about replacing them.

"Our goal is to reduce the amount of manual effort it takes to shear a sheep for every shearer."

AWI's Dr Littlejohn said the robotic shearers could be using in conjunction with manual shearing methods.

"It's a cost-effective target to think of the robot shearing the easy part of the fleece and then the shearer shearing the more difficult parts of the sheep, [including the] legs and bellies and crutch," she said.

"I think it's a team effort."

But AWI is also funding a four-year project that aims to develop a series of integrated portable modules, which together, would comprise a fully automated production line for wool harvesting.

"Sheep delivery, sheep positioning, sheep repositioning, robotic arms, automated wool collection, delivery to the presser all automated," Dr Littlejohn said.

"So it's a very big ask, a very big project."

She said technology had come a long way from when AWI last looked at robotics in the 1980s and '90s.

"This is not blue sky anymore," she said.

Shearer says robots 'will not work'

Sam Weatherall has been shearing for the best part of 15 years — half his life.

He's tried other jobs, but keeps coming back to the cutter and comb.

"I grew up on a farm and Dad used to work the sheds and I tagged along and always wanted to be a shearer," he said, during smoko in a shearing shed near Dubbo, north-west of Sydney.

"It's a good job. You're not in one place, get paid for what you do and get to travel around.

"You only have to shear 100 sheep a day and there's just over \$1,500 that you earn for the week."

Fast shearers can double or even triple that number.

Mr Weatherall plans to keep shearing "as long as my body lets me" and is sceptical about any technology that may eventually replace him.

"A robot can't feel when it's on the skin, can't work around wrinkles. It won't be efficient," he said.

The shearing contractor who employs Mr Weatherall agrees.

"I'm 44, I'm never going to see that happen," said Hilton Barrett, a former champion shearer who set multiple world records.



PHOTO: Hilton Barrett said he did not believe he would see a day when technology replaced shearers. (ABC News: Simon Beardsell)

He has no interest in replacing his shearing teams with a semi-trailer loaded with robotics, despite conceding his biggest challenge these days is attracting and keeping workers — shearers, roustabouts, wool handlers and classers.

"We go through between 200 and 250 staff a year," he said.

"Some can last for a day, some last for two hours, some last for a week.

"I could put on an extra shearing team right now ... and we can't find the staff at the moment."

But Mr Barrett says robots won't fix the problem — better working conditions will.

"As a farmer and a shearing contractor I see infrastructure ... as the main thing for keeping young and old in the industry," he said.

"Eighty per cent of the sheds we work in we probably shouldn't be in. They're unsafe [in] every single way, whether the doors don't work, the catching pens have got broken boards in them or the floors themselves are worn away."

Many of the sheds don't have flushing toilets or even running water, he added.

At his farm near Dubbo, Mr Barrett is building a prototype shearing shed, which he hopes other wool producers will adopt.

AWI has contributed funding for the research. They are aware many shearing sheds are, quite literally, from the last century.

But Mr Barrett is paying for the shed's construction.

He said the shed design would reduce the twists, turns and dragging a shearer must do to get a sheep from the catching pen onto the shearing platform and then down the chute once it's been shorn.

The aim is to reduce wear and tear for shearers who have one of the highest injury rates of any occupation.

'Romanticism of the old outback' being replaced

"I think Australians are ready for innovation," said National Farmers Federation (NFF) president Fiona Simson, who is excited by the prospect of change in the wool industry.

"We have to move with the times. We have to innovate. We have to bring in improvements.

"The romanticism of the old outback that people knew and the old farms that people knew are being replaced by lots of technology.

"I'm really confident we can embrace that in wool as well ... while protecting the welfare of both animals and workers."

As for robots in the shearing shed, not all shearers are opposed to the idea.



PHOTO: Allison Preston said she was going to be "working with sheep" her entire life. (ABC News: Simon Beardsell)

"If something like that did come in, I'd be interested in getting into the company that builds or sells or maintains them ... anything to stay involved in the industry," Allison Preston said.

The 28-year-old Canadian was raised on a sheep farm in North America and took up shearing a year ago.

"I'm going to be working with sheep my entire life, one way or another," Ms Preston said.

Topics: rural, agribusiness, agricultural-machinery, sheep-production, livestock, australia

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