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Page 1 of 3

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## Mechanisation offers more than labour savings says Scholar

*Labour savings are not the only reason to pursue mechanisation says Nuffield Scholar Tim Harslett, who has spent almost four months travelling internationally to identify the latest in vegetable harvesting and weed control technology.*

By Catherine Norwood

Walking along the many rows of mini cos lettuce growing on his family's vegetable farm in Amiens, Queensland, Nuffield Scholar Tim Harslett can see the benefits of machines that can weed not just between rows, but between plants.

As a horticulturalist keen to find alternatives to chemical weed control, the chance to see the latest infrared and GPS-driven weed machinery in action was a highlight of Mr Harslett's 16-week Nuffield scholarship, exploring some of the world's most advanced agricultural technology and research.

He says while not all of his travelling experiences relate directly to his own farm business, the scholarship has "opened his mind" and exposed him to new ways of thinking and new possibilities for agriculture.

Mr Harslett's scholarship was funded through the National Vegetable Levy, sponsored by Horticulture Australia Limited (HAL) in partnership with AUSVEG, to research mechanisation in the vegetable industry. HAL is the national research, development and marketing organisation for the Australian horticultural industry and AUSVEG is the national body representing the interests of Australian vegetable and potato growers.

Mr Harslett says he found world-best-practice in the horticultural industry in Europe. Among the many farm businesses he visited was one in Denmark that mechanically harvests mini cos lettuce, like those he produces at Amiens, 20 kilometres west of Stanthorpe, just north of the Queensland-NSW border. He also grows Chinese cabbage and celery for the domestic market as part of his family's vegetable business.

The mini cos lettuce are sold as baby cos or cos hearts on contract to Perfection Fresh, and the Chinese cabbage and celery are sold through the central market system in Brisbane, Sydney, Melbourne and Adelaide, with an average harvest of 50 tonnes of produce a day.

Mr Harslett says with two million lettuces are harvested during a 25-week period he is keen to introduce mechanical harvesting, and will build most of the harvester himself, based on the Danish model he saw, with a few key parts imported from Europe.

"Cutting labour costs is often given as the main reason for mechanisation," he says.

"However, I think the real financial benefits will come from changes to our agronomic practices to achieve a more consistent crop. Machines can't handle variation in produce the way that people can.

So to use mechanical harvesters we must have a much more consistent crop, and that's a higher quality, higher value product," he says.

There are also other, less tangible benefits. Mechanisation can eliminate some of the more undesirable and repetitive labour tasks and can help remaining staff work at a more constant speed. With fewer staff there are also fewer management issues.

In Denmark Mr Harslett also saw the latest mechanised weeding technology, which he says is being developed as much to reduce chemical use as to reduce labour costs.

In Europe as a whole, there are increasing restrictions on chemical use as a result of social and environmental concerns.

"Weeding machines are the big development – previously it was inter-row weeding. Now it is weeding between plants, which is possible because of the accuracy of GPS equipment these days. They have also developed infrared and digital detectors that can differentiate between leafy crops, like lettuce, and weeds. The technology can potentially work for any type of crop, but it is yet to come to market."

Mr Harslett says restrictions on chemical use in vegetable production, and in agriculture generally, will be a major challenge for the Australian industry, and farmers should already be looking proactively for alternatives such as mechanical weeders.

"There are many ways we can reduce our reliance on chemicals, improve their effectiveness, or eliminate them entirely," he says. "We need to evaluate these methods on-farm, and we need to do this regardless of the social and environmental pressures on chemical use."

Mr Harslett also spent part of his time in the US, visiting California, which he says has often been promoted as the pinnacle of best practice in the horticultural industry. However, he found that compared to Europe there were relatively low levels of innovation, with easy access to land, water and low-cost labour, particularly from Mexico.

"Everything is more expensive in Europe and Scandinavia than in the US, including labour, and they use few chemicals, so they have to be more innovative, particularly with pest and weed management."

Mr Harslett says in Europe he found some amazing research being done – including genetic modification (GM) – even though implementation seems uncertain.

"Europe is quite anti-GM, but they are still doing the research and it really opens your mind to what might be possible," Mr Harslett says.

For example, phosphorus is one of the greatest potential land and water pollutants in Europe, coming mostly from the piggery industry. Pigs are inefficient absorbers of phosphorus from the grain feeds they eat, which leads to high phosphorus levels in their manure, and potential for environmental contamination. However, while visiting researchers at Denmark's University of Aarhus, Mr Harslett found they have discovered a way to modify barley that makes it easier for the pigs to absorb the phosphorus from the plants, reducing phosphorus levels in manure and increasing their feed conversion potential.

Mr Harslett says his Nuffield Scholarship also allowed him to attend a number of international conferences, including one on precision agriculture in Colorado, in the US, a soil health conference in Sweden and an agricultural engineers conference in the UK.

"It is 16 weeks out of your life, which is not much when you really think about it, and it's certainly given me the confidence to go ahead with my plans for the business."

## **Applications for 2010 scholarships open**

Applications for the 2010 Nuffield Scholarships are now open, with 20 scholarships valued at \$27,000 each, sponsored by a range of leading agribusiness and primary producer organisations.

Scholars take part in a compulsory six-week Global Focus Program that includes Canada, the US and UK and may also include the Philippines, Brazil, China, France and Ireland. This is followed by a further 10 weeks of international travel as part of each scholar's individual study tour.

Scholars are selected for their farming and leadership capabilities, and potential to make a valuable contribution to Australian agriculture.

Applications close on 30 June 2009. Application forms are available from Nuffield Australia on 03 5480 0755, via email, [enquiries@nuffield.com.au](mailto:enquiries@nuffield.com.au), or from the website [www.nuffield.com.au](http://www.nuffield.com.au). Successful scholars will be announced in October 2009.

Mr Harslett's report *Some future trends for the production of vegetables in Australia* can be downloaded from <http://www.nuffieldinternational.org/reports/report.php>.

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A high-resolution photograph of Mr Harslett can be downloaded from [www.coretext.com.au/communications\\_images.php](http://www.coretext.com.au/communications_images.php)

Please contact Catherine Norwood at Coretext Communications (03) 9670 1168, [cnorwood@coretext.com.au](mailto:cnorwood@coretext.com.au) if you have any problems accessing images.