Good cop, bad cop or fair cop?

Does technology have its place in organic farming – or is the techno-tail wagging the farm dog?

By Jan Nary

CERTAIN TECHNOLOGIES ARE proscribed by the Australian Organic Standards for a variety of reasons. At the core of organic production principles is an holistic, ecologically-balanced approach to farming and therefore the use of synthetic chemical pesticides, herbicides and fungicides are prohibited.

Others, such as genetically modified organisms, irradiation and nanotechnology are proscribed because – following the precautionary principle – there is no urgent necessity for their use and their potential for harm is still unknown.

However, organic certification doesn't require the organic baby to be thrown out with the non- organic bathwater – necessity is indeed the organic mother of invention.

The challenge and restriction of not being able to use conventional "quick fix" solutions has encouraged some organic operators into developing innovative and exciting new technologies that benefit the whole industry.

And while necessity calls for new inventors in the organic industry, organic production recognises and embraces, as a first principle, nature's capacity to provide eco-infrastructure that is free and sustainable.

The Lakelands Catcher – an olive catcher designed by Lakelands Olives.

Phil Coop, Armidale, New South Wales grazier and co-developer of the evMe electric car, has demonstrated how one informed, thoughtful management action can have a real and beneficial impact on farming operations.

When he took on organic farming 10 years ago he was faced with the challenge of watering and feeding cattle in high density, rotational grazing systems.

"For the last decade my biggest frustration has been the lack of quality hardware developed to accommodate organic farming methods such as ours", he says.

"We run high densities of cattle that are moved every day.

"This style of grazing has production and ecological benefits and is likely to be widely adopted.

"However, in these grazing systems it is essential that the field equipment must be highly durable, reliable and transportable.

"Cattle in high densities can destroy all but the best engineered equipment. It has taken a few years, but we have developed stock water troughs that satisfy our requirements and will be available for sale shortly."

Phil says that the increased momentum of organic farming will trigger a demand for more industry-specific technology development and engineering.

"While organic systems may operate on a philosophy of low physical input they have the opportunity for higher production capacities and efficiencies as well as environmental benefits that are supported by technologies and quality hardware.

"Innovations in hardware from mobile field equipment including water and feed-out systems through to mapping and management software development will be crucial", empasises Phil.

When Kammann set up Lakelands Olives near beautiful Rylstone, NSW, he decided that the traditional Mediterranean way of harvesting olives – flipping the branches with rakes to drop the olives onto nets on the ground – was not for him.

"We decided from the beginning that we didn't want fruit on the ground," says Mr Kammann.

"There is always a danger of either walking on the olives which can start an enzyme reaction or gathering up stones and sheep droppings with them and that all affects the quality of the olives."

Initially Mr Kammann and his team developed a small, portable catchment frame that could be moved around under the branches while the team stripped the fruit into them and straight into crates.

As the trees grew, a bigger collection system was needed and the team designed the Lakelands Catcher (known affectionately as the Big Condom), a cylindrical metal frame covered and floored with net that contains the olives as they fly off the branches when removed by pneumatic rakes.

The net floor of the catcher has strategically placed chutes that feed the olives – which never touch the ground – into crates under the platform.

The prototype was enclosed with plastic sheeting but presented problems on windy days so Mr Kammann made a trip to the Sydney Fish Markets for some fishing net and came up with a final design that withstands even the rigours of the strong Highland winds.

Looking at recent overseas inventions, New Holland Agriculture

has released a hydrogen-powered NH2™ tractor, winner of a gold medal at the SIMA Innovation Awards 2009. The technology involves electrolysing hydrogen from water using electricity from alternative, eco-friendly systems. It is envisaged that the process will help make farmers energy-independent and help free them from the burden of fuel costs. The innovation is hailed by those who see it as an ecologically-friendly option, particularly in view of the exhaust emission produced – water – though some have concerns about the carbon emissions that result from processing the material to make the hydrogen cells. Watch this space for the organic farm response.

Mobile stock water trough designed by Phil Coop, grazier, Armidale, NSW.

Processing and packaging

Moving on to processing of organic foods, high pressure processing (HPP) has proved a boon for two organic producers.

Donny Boy Fresh Food Company, an Australian Certified Organic juice manufacturer, will become one of the first in the world to produce commercial 'single variety' fruit juices using HPP.

Donny Boy has employed the new technology to give consumers the option of single-variety fruit juices rather than the usually available blends. HPP extracts juice by subjecting fruit to intense pressures – up to 600 MPa (~87,000 psi).

Food is not submitted to the extreme heat level of pasteurisation, which reduces antioxidants and caramelises sugars, causing flavours to be blurred.

Because HPP does not disrupt chemical bonds, the final flavour of the product is likely to taste crisper, look fresher and have a higher nutrient level.

Donny Boy also produces fruit coulis and other fruit products, and supplies the dairy industry with HPP fruit.

As well as selling tonnes of its own fresh organic chillies into supermarkets every year, Austchilli, a leading organic ingredient and fresh produce supplier, processes chillies into purees for multinational and SME manufacturers and has introduced HPP for some of its other products.

Trent De Paoli, managing director of Pressure Fresh Australia (the new company) says that HPP processing retains the original colour, taste and nutritional levels of fresh foods while destroying food bacteria.

"HPP, which is primarily the cold pasteurisation of foods, allows us to manufacture a range of products such as organic pomegranate juice and guacamoles. We have more innovative products to be released shortly," Mr De Paoli says.

"HPP has great synergy with organics as the food we produce matches the consumer expectations of organic food products."

Further down the line at the market place, organics has embraced technology with resounding success.

Googa Farms' organic avocadoes are laser-light marked as such, ensuring that consumers get what they pay for and obviating the need for plastic packaging and removable stickers.

The extra crackle in packets of Ladybird Organics is attributable to a new biodegradable corn-resin for keeping packaging responsible and salad contents crispy – increasing product life by approximately 30%.

Meanwhile, Z-Mills cool milling technique has opened the way for whole new health product lines, such as goods using South American chia grain.

Far from having an anti-technology Luddite mentality, organic production, which may well be the major food supplier of the future, not only embraces appropriate technology but will be a major instigator of truly innovative research, development and production.

The basic guideline for food futures will be to keep observing and learning, to harness cultural knowledge and ecological design with what nature already provides – a perfectly balanced eco-system that responds to respectful co-operation.