

# Precision Farming

## - proof of the profits

Colin and Fran Jackson milk 700 cows at Hinikiwi, where they have farmed for 14 years now. They are also involved with 110ha of maize at Te Mawhai with Colin's father Alan. Alan has been growing maize at Te Mawhai for 31 years and is very much a pioneer in the maize industry. Both Alan and Colin are always eager to embrace new farm practices.

Alan and Colin's interest in precision farming practices has developed over the last 8 years, through involvement with John Austin Ltd's combine yield monitors. Even in the early years this involvement went further than studying yield maps for solutions and developed into on-farm research. Alan and Colin were keen to look at yield variations within fields and were some of the first to use grid soil testing. It was surprising to discover such large yield variability within their flat paddocks that we thought were relatively uniform. Using the yield maps we were able to quantify not only the yield differences but the economic impact of that variability.

There have been a few surprises found along the way and still many questions. We learnt from these first results that the yield variability in one paddock was a fertility problem. However, it turned out this problem was not a deficiency but an imbalance.

Alan and Colin have learnt to study yield maps, seeking out areas where compaction, weeds and drainage could be a concern and to use the resulting knowledge gained as a basis for the following year's crop management. This analysis often meant hours examining maps and then going out into the field to identify underlying issues contributing to lower yield areas.



Colin Jackson in his strip till field

However they have not stopped just with yield maps. Their hunger for better ways has led them to trial strip till last year and again this year. Colin is excited with the AutoTrac technology which will not only assist with strip till, but also help make controlled traffic a reality in the future.

Colin states that precision farming technology will not just have agronomic advantages, but also the advantage of traceability and more precise application of herbicides and fertilisers.

Colin and Fran are also keen to see this technology used on their dairy farm in areas such as:

- accountability of feed brought in i.e. yield monitors with quality measuring capability

- variable rate fertilising to match fertiliser application with past yield
- guidance of spreaders and sprayers to more accurately apply fertiliser and herbicides
- monitoring grass growth by the hectare from the farm office
- better documentation and traceability.

It's not just the economic benefits that precision farming tools provide that excite the Jacksons. They can also see great value in its contribution towards the sustainability of their farming operations. Colin and Fran Jackson believe precision farming technology will not only help them become more efficient as commodity prices continue to slide, but also be better stewards of their land and resources.



### Staff Profile

#### Matthew Whiting

Matthew Whiting is a member of our Precision Farming team at John Austin Ltd. Originally from Otago, Matthew moved to the Auckland region and spent time working on a dairy farm and for an arboricultural contractor prior to completing his BSc in Computer Science at University of Auckland.

John Austin Ltd has been developing the 'Tracker' software system to monitor and schedule jobs, create job bookings and build upon efficient work practises and needed a

keen and able young brain to work on this project. Matthew's enthusiasm and drive led to his role on 'Tracker' being expanded to include a Precision Agriculture focus, enabling us to further investigate GPS technology, yield sensors and onboard computer systems.

Our aim is to maximise your crops by using the the latest technology. Matthew's inclusion to the team ensures that we can bring the best and most appropriate technology to your farm.



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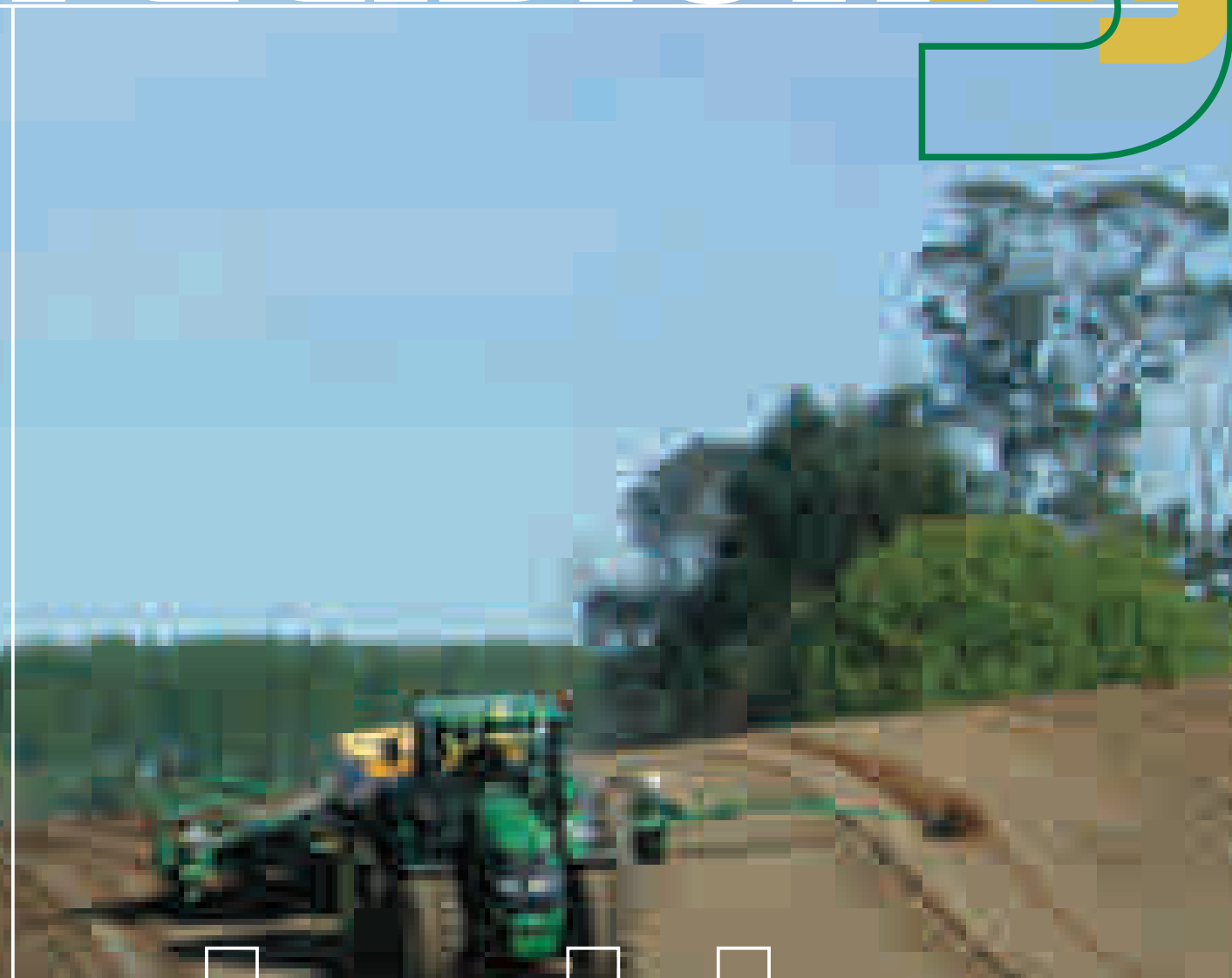
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Wishing you and your family a very Merry Christmas and a productive and prosperous 2005



# Precision Ag

MAGAZINE OF JOHN AUSTIN LTD



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Angus lost in Bruges



# Developments in Europe

**Angus and I traveled to England, Belgium, Holland and Germany.** This was our prize for winning "Contractor of the Year" and since Case New Holland is a major sponsor, we were fortunate to visit the CNH tractor factory at Basildon in north London. We were impressed with their focus on quality control and that they took pride in their achievement of ISO 9001-2000 certification, as we do here at J.A.L. We noted a few of the larger, very professional contractors had also achieved this international standard. It is a continuing commitment to improvement, and takes good people to make it happen. We also visited the CNH combine baler and forage harvester factory at Zedelgem, Belgium. Although a very different factory, they still maintain the same focus on quality but combine this with a rich European pride in their history and confidence in the future. We really enjoyed our time there, with Tim Wilks from Norwood's, New Zealand.

From there, we visited other Dutch and German contractors and were amazed at their scale and professionalism. Looking at what these guys achieve helps to keep my vision alive!



Gijs van der Woerd in Holland

We spent a few days with our friends Jann and Marianne Frieling who are very professional contractors in West and also East Germany. Jann took us to visit some other contracting colleagues of his and also a large dairy operation where three dairy farmers have joined forces and built new sheds together, combining all their resources. They milk 300 cows through a new rotary cow shed.

Our trip took us to Kemper in Studlom and the John Deere forage harvester factory in Zweibrücken. We had valuable discussions with Ag Management Solutions, John Deere's Precision Farming group. We also had good discussions with Claus and the team at Forage Harvester Works.

All in all our time spent away was interesting and valuable in the continual journey toward our goal of providing the most up to date and efficient service to you our clients. 🌱

*John*

## Australian adventures

**On a recent trip to Australia with John, I saw another side of crop establishment, cultivation methods and climate variations.**

It was a real eye opener to see how farmers adapt to a dry and sometimes very harsh environment. In areas we visited in southern Queensland and northern NSW, the crops planted in late autumn had very little or no rain for up to 6 months. In some areas it was debatable the cost of harvest would be covered by yield. There was a real emphasis on retaining soil moisture and limiting soil compaction. Most farmers were adopting a minimal cultivation and controlled traffic regime to reduce soil compaction.



Auto steer has become very popular on many farms as a means of reducing overlap. This decreases their labour, fuel, and ultimately overall running costs. John Austin Ltd believes this technology can be used in our operation to provide improved efficiency to our clients. This spring, auto steer has been used on our 8220 tractor for disc ripping, power harrowing and strip tilling. The result has been increased productivity and job quality.

As a company, John Austin Ltd will continue to look at new technology and endeavour to improve efficiencies and services to you, our customers. 🌱

-Graham

Jogi Blinks first contractor in Germany to be ISO credited



We visited a number of contractors in Holland and Germany. We were keen to learn how they manage their businesses and find new technology to bring home. One of the Dutch contractors Jackie and I visited many years ago took us to his daughter and son-in-law's farm.



Ben and the bulb harvester

Ben, the son-in-law worked for us 9 years ago. What a small world we live in! When we were there, he and his brother were harvesting tulip bulbs. It was great to see Ben and his wife and their two young children.

# Tractor guidance for every farm

**Next time you go for a drive in the country, try some road scouting. No, not for weeds (you're supposed to get out and walk your fields for that). We're talking about antennae scouting, specifically for those GPS antennae that seem to be sprouting up out of tractor cabs like mushrooms after a warm spring rain. Those antennae arrays are a sign of change and confirmation that farmers are adopting precision agriculture.**

Flash back 10 years ago. Experts predicted that site-specific farming technologies would change agriculture. Farmers responded with a half-interested yawn. The equipment was expensive, and no one knew for sure if the investment would ever pay for itself. But now, as one enabling technology leads to another, the pieces are all snapping together like the picture in a giant jigsaw puzzle. Turns out the experts were right, just a bit ahead of the curve.

While more than a dozen companies compete to be a significant part of this now booming industry, university researchers such as North Dakota State's Vern Hofman are stepping back to take a look at where the technology stands today. Starting with yield monitors in combines, Hofman has been monitoring precision agriculture technologies for six years.

### TECHNOLOGY CONVERGENCE

"Variable-rate application has become feasible due to several new technologies, including fast computers and powerful graphical and information management software," Hofman says. "These technologies are now small enough to be easily carried in a tractor cab."

The ability to precisely manage field operations can reduce inputs by eliminating overlap on each pass. Tie map-based variable-rate software into the system, and you only apply the fertilizer you need, exactly where the crop needs it. Reduced chemical and fertilizer inputs not only save money, but also reduce runoff into groundwater and waterways.

### ENVIRONMENTAL BENEFITS

Precision farming allows conservation tillage practices to be adopted more easily and successfully. A farmer can strip-till or ridge-till more easily with a guidance system, then place fertilizer within a narrow band in the crop root zone. Conservation tillage saves fuel and builds soil health for future crops by increasing organic matter left in the field, which reduces crop water requirements and reduces soil erosion losses.

by Wayne Wenzel (reprinted from Farm Industry News)

### MAKING IT PAY

The benefits of almost any guidance system become readily apparent after a few rounds of a field. And although you don't necessarily need to have a huge farm to realize those benefits, the primary benefits of guidance systems are in maximizing a large farm's inherent economies of scale. With guidance, you can drive faster, pull wider implements and waste less fertilizer and fewer chemicals on overlaps. Tied in with mapping software, a GPS guidance system allows you to keep better records of fields for comparing yield, weed pressure and inputs in specific sections of each field over a period of years.

### MONITORING PROFIT

Another level of precision farming payback can come from adding variable-rate technology to the tractor guidance system. The University of Kentucky has done considerable research in this area. According to ag engineer Tim Stombaugh, the general consensus on the profitability of variable-rate application is that it won't necessarily reduce input costs, but by putting the correct amount of product precisely where it is needed, it should improve crop yields. Determining profit gained through variable-rate application can be a significant data management challenge, with a need to meticulously rule out other variables in a field that can influence yield. Research to date strongly points to benefits from variable-rate phosphorus and lime. Improved income from variable-rate nitrogen or seed may be more difficult to quantify, however.

### THE NEXT LEAP

Stombaugh says future technologies may add more certainty. "New tools are being developed each year," he says. "In the future, new sampling techniques will give better information about variation in field fertility. Sensing technology, such as electrical conductivity and near-infrared imagery, could revolutionize field management strategies. Farmers who have several years of historical data will be able to better use these new tools when they become available. That is why it is important to begin data collection now." 🌱

## Greater profits from parallel tracking

**P**arallel tracking is not new for us, but I feel it is one of the most profitable ways precision farming will pay. Parallel tracking not only enables a more accurate application of chemicals and fertilizer, but also the promise of greater machine productivity, job quality and documentation. The added benefit of less operator fatigue through improvements in 'operator easy systems' will greatly improve adoption and pay back.

We have been working closely with precision farming companies to deliver this technology to farmers in a user friendly form.

Yes watch this space it really is here! 🌱

