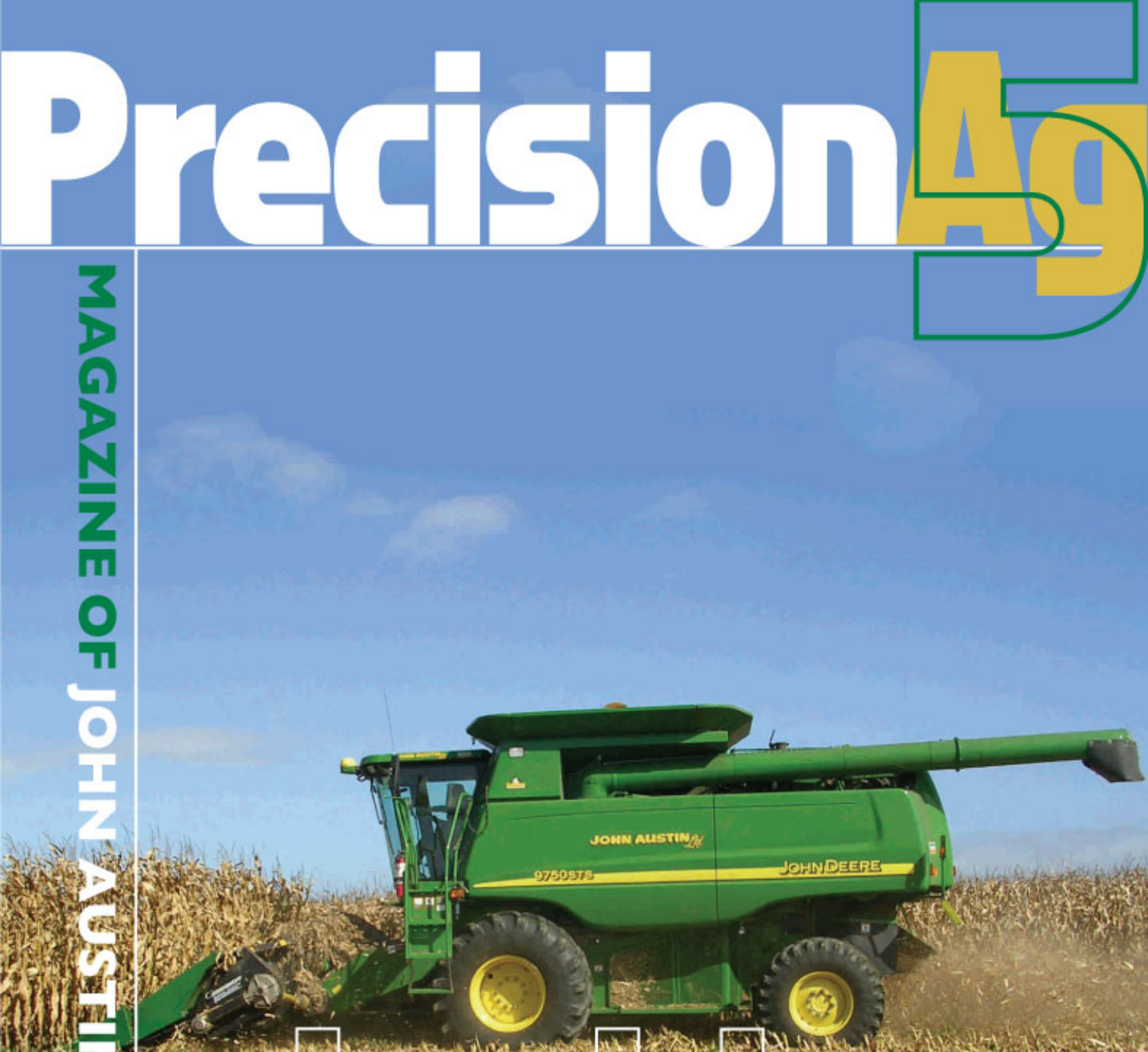
PrecisionAg

MAGAZINE OF JOHN AUSTIN LTD



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JOHN AUSTIN Ltd
AGRICULTURAL CONTRACTOR - MAIZE SPECIALIST

As the 2006 maize harvest moves from maize silage to maize grain every season certainly brings its challenges. Since family farming first began it has had to overcome many obstacles such as economic depression, droughts and floods. Farming has in the past, and I dare say in the future, its extremes, anything from prices through to the weather. One thing that remains a constant strength is our farming families. Over time generations pass down the wisdom, skill and determination that conquers those challenges. We at John Austin Ltd salute the farming family, the family of agriculture.

John.

Profile Harlaw Farm - The Neill family

In 1943 Bill Neill and his twin brother started sharemilking on 64 ha (160 acres) at Te Kawa West. The farm was basically ring fenced and had four paddocks.

Bill Neill

Bill married Betty in 1951 and they had two sons and a daughter. They then bought the farm in 1956. Over the next 20 years the farm was developed dramatically with fertiliser, grassing, fences, races, and drainage. By the early 1970s the farm was supporting 180 milking cows.

Never one to let the grass grow under his feet, Bill led a maize growers tour to the USA in 1973. On his return he planted about 4 ha's of maize for use as a stock feed. This crop was harvested by a maize picker (one row at a time) and was cribbed for use in a mobile hammermill to be made into dairy cow feed.

In mid 1974 Bill and Betty's eldest son John returned home from his OE to take over as farm manager. In 1976 John married Jenny and by that stage the farm was milking 220 cows and the cribbed maize grain was replaced by maize silage. In 1980 John and Jenny began 50/50 sharemilking and in 1984 purchased the farm and were also busy raising their 4 sons. Maize silage continued to play an increasing role in providing high energy forage for the dairy herd. By the late 1980s, 230 cows were being milked, and most of the maize silage was being brought in.

A neighbouring property of 33ha was purchased in 1995 to make the farm 95 ha in size. Cow numbers remained around 250 but per cow production increased dramatically under the guidance of animal nutritionist Dr Sue Macky. During this time most of the farm was completely regrassed following maize silage and lucerne crops. A mixer wagon was purchased to allow greater accuracy of the feed ration.

John and Jenny's son Duncan joined the team in 2002 and his special interest in machinery and cropping added another dimension to the dairy intensification programme. Before joining the family farm, Duncan spent five years driving machinery for John Austin Ltd and two seasons in the UK operating machinery for cropping farmers. Duncan's dairy farming philosophies are very similar to those of his parents. His farming responsibilities include the sourcing and pricing of maize silage and other feeds. He is also responsible for mixing the feeds together and feeding out that ration. It's probably no surprise that Duncan does most of the tractor and machinery work on the farm. Having Duncan on the team means that when John and Jenny are having time off the farm Duncan can step into John's shoes.

John and Jenny Neill and son Duncan work together as a close team on the family farm to achieve their ambitious goals

By 2003 the lucerne stand was beginning to run out and those paddocks were returned to grass allowing more cows to be milked. At this stage Palm Kernel was becoming available at competitive rates as a high protein/energy stock feed.

In 2004 a neighbouring 46 ha property became available for lease and cow numbers again increased. Now up to 350 head and all the young stock were also grazed on. By now most of the maize silage was being brought. Up to 1500kgDM in maize silage and 500-600kg of palm kernel per cow was being fed. Production was up to 480 kg/ms per cow.

By the end of the 2004 season it was clear that, for further gains to be made in cow numbers and production, a new farm dairy needed to be built to replace the 25year old internal rotary dairy shed.

The Neill families new milking shed; a 46 bale rotary was open for business in April

A new 46 bale external rotary dairy was commissioned in April 2006 and a recently purchased herd of 110 autumn calving cows arrived to bring the herd size to 500.

Production has now risen to 530 kg/ms per cow and the Neill's have a goal of 600 kg/ms per cow in the near future. Attention to detail in animal nutrition, husbandry and pasture management has now become even more essential, as is the quality of the feed that is purchased.

Eco-N

As agriculture continues to go through many changes, different challenges arise to the forefront. We should not underestimate the issues surrounding sustainable agriculture. Eco N, I believe, is a step in the right direction to allow us to continue using the cropping input tools, such as nitrogen, to maximise production, while at the same time protecting the environment. These proactive steps are imperative for the long term sustainability of our industry.

"We used Eco-n last year, found it as good as urea, which helped us reduce our urea inputs. I have followed the research over the last couple of years, which are showing the same results every year. Eco-n is good for the farmers and our environment."

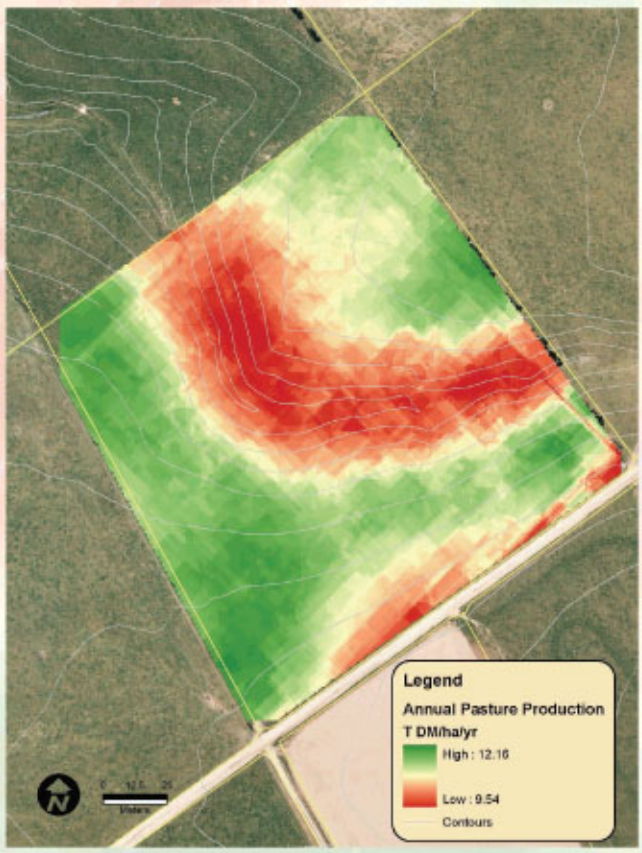
John Pouls, Ravensdown Fertiliser, 3 May 2006

Grass Production moves into Precision Agriculture

When it comes to improving on-farm productivity the old saying "if you can't measure it you can't manage it", is, we believe, especially relevant in the attempt to improve grass production. While Precision Agriculture has been used in the cropping industry since the mid 1990's, little Precision Ag technology has been developed to measure and manage grass production; until now that is. Dr Ian Yule, head of the New Zealand Centre for Precision Ag, at Massey University and C-DAX equipment in Palmerston North have developed sensors that can measure grass production in much the same way as a plate meter only at 200 times a second! The sensor is mounted on a trailed unit for towing behind a 4 wheel motor bike or similar. While this works as a stand alone pasture meter for feed budgeting, the sensor can be combined with GPS technology to produce yield maps for wider use.

For example, because of technology limitations, we currently apply our base fertiliser and urea relatively uniformly across the entire field despite the fact that grass production varies across a field. As a consequence over fertilising occurs in some parts of the field while under fertilising in other areas. Grass yield mapping will, with some further research, allow us to produce fertiliser prescription maps. These fertility maps will assist us to tailor fertiliser application according to yield produced. In some soils yield maps can also help us identify the importance of drainage and where that drainage should take place. In time Precision Ag will allow us to begin to understand grazing habits of cows according to grass production. Ian Yule's team are now working on developing technology that will map feed quality as well. As with grain production, the advantages of Precision Ag in grass production are numerous. The Precision Farming team at John Austin Ltd believe that science and technology will play a major role in the way we produce grass in the future. **Watch this space.**

Grass yield mapping is carried out by sensors mounted in a frame towed behind a light vehicle. Measurements are taken at the rate of 200 times a second.



Grass yield mapping is now a reality and is set to change the way we grow grass. This photo shows a variation in grass production across a field. Based on what we have learnt from maize mapping we would expect any grass paddock, regardless of its topography, to vary in yield.

David's column

They say that 6 months is a long time in the technology world. The frustrating thing about changing technology is that a few months after you buy that new mobile phone, or new TV or computer it becomes outdated. If you are delaying your purchase because you think that the technology advancements may slow down then I have news for you; it's not going to. So this brings me to my point, technology in agriculture is running at the same pace.

While we have been talking for some time about the role Precision Ag will play in maize production it has been slow to bear fruit. However, the turning point may be arriving soon.

John Deere's APEX software

Generating yield's maps is one very nice piece of technology. Yield maps have shown us time and time again that our yields vary throughout a field, regardless of the topography, and, that yield variation is costing us lost income through lower yields and wasted input. But yield maps are not worth the paper they are written on if we are unable to make use of theses maps. We need to do more than just look at the different colours on the map and then put the map in the filing cabinet. Given time and further research, we will be making better use of yield maps. John Deere has just released and we have just purchased a new software package called APEX. Along with generating yield maps, this software will allow us to add other layers of information in order to generate a prescription map. A prescription map is used to vary a crop input e.g. planting populations, lime and base fertiliser and nitrogen rates. Over the next few seasons we will be conducting further research into the advantages and the practical application of variable rate inputs.

Update on Vertical Strip Tillage (VST)

In my last report I discussed the potential advantages of VST. We used the VST cultivation programme on over 250ha's this last planting season. Potentially, VST offers us the ability to retain or improve soil structure, improve drainage and at the same time increase the soils water holding capacity, reduce base fertiliser rates through banding and, most importantly, increase grower profitability. Our early observations suggest that VST does have a place in our maize cropping programme. Through the use of FRST funding, during the spring and summer John Austin Ltd employed a university student (Rachael Cowie) to study the difference between VST and conventional cultivation in crop establishment and growth. Rachael's report showed that, other than a slight delay in maize establishment and growth in the VST, there was no detrimental effect on maize from VST. The VST maize had 50% less base fertiliser that the conventional cultivation had with no visual side affects. As expected, the VST also had less soil compaction than did the conventional cultivation. Because this is the first year of the trial we would also anticipate that, over time, the soil health in the VST cropping area will improve dramatically. As always if you would like to discuss any topic covered here in my column or in the **Precision Ag** magazine please feel free to contact me.

Forage Yield Mapping Technology is now a Reality

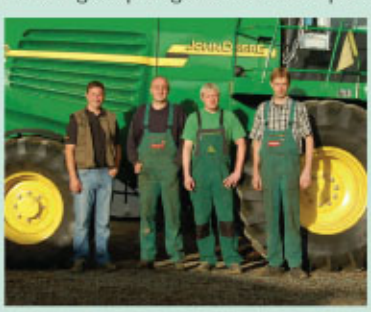
For several years now John Austin Ltd has been assisting John Deere to develop the John Deere forage yield mapping technology. It has not been an easy task to develop the tools needed to produce forage yield maps. Along with wet yield, the dry matter of the forage also needs to be measured in order to calculate dry matter yield. An NIR is used to measure whole plant dry matter and has been mounted on the spout of the forage harvester. This successful ability to be able to measure wet yield and dry matter percentage now means we can produce a forage yield map. Further to this, the yield mapping capability on the forage harvester is interfaced with Pioneer's ULV inoculant applicator, which means that the silage inoculant is applied more accurately.

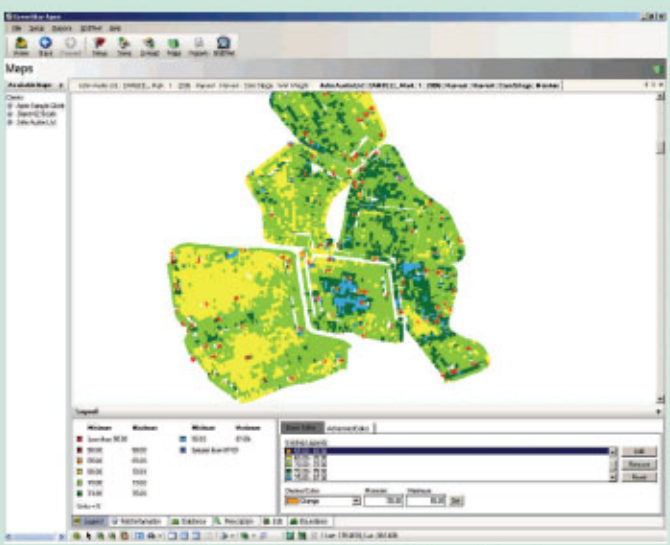
This photo shows an NIR mounted on the spout of the forage harvester. The NIR is responsible for measuring the forage dry matter percentage.

There are several reasons why we are excited about this technology. Yield mapping gives the forage producer the following benefits:

- Identifies areas of the field that are more or less productive which can then be treated differently
- Can be used as a guide to delivering the end users required dry matter tonnage
- Accurate inoculant application
- In the near future prescription maps will be generated from yield and other maps to allow for variable rate input application

John Deere is now working on the next phase of this technology. The NIR equipment currently used to measure dry matter percent has the capability to measure certain feed values such as protein and starch. Once this is achieved it will then be possible to determine the actual amount of certain nutrients within the forage bunker. The NIR can also be linked to the chop length. As the dry matter percentage changes throughout the field the chop length automatically changes. Matching chop length to the whole plant dry matter is critical for efficient and effective stack compaction. Having the chop length change automatically as the dry matter changes should mean that stack density increases when compared to the current process of manually setting the chop length. Better stack compaction results in better silage quality.





This is what a maize forage yield map looks like. The darker colours represent more yield and the lighter colours lower yields. In this 70 ha field the difference between the highest and lowest yield is more than 15tonnes of wet yield/ha or 5tDM/ha. Under our current method of growing maize the same inputs were applied on both the high and low yielding areas.

Over the next month or so the John Austin Ltd Precision Farming team will be busy producing forage yield maps for our maize growers.

Welcome to the age of Precision Agriculture.

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348 Te Mawhai Road
R.D.5
Te Awamutu
New Zealand

Phone 07 872 0000
Fax 07 872 0001
Email john.austin@johnaustinltd.co.nz
www.johnaustinltd.co.nz