SUMMER 2008/2009

Seasons

Cross Slot drill unfolded.

Kiwi drill technology puts soil first

A small New Zealand seed drill company is making inroads in soil development by offering a sustainable alternative to traditional cultivation.

The Baker No-Tillage drill company, based in Feilding, really has had a long road to hoe to reach today's increasing success as overseas markets like the Ukraine take an interest in the company's innovative technology.

At the heart of this technology is the Cross Slot® drill, patented in 1998. However, Baker No-Tillage's history lies in earlier research carried out at Massey University from the late sixties, with all of the company's founders employed there as scientists or engineers. They were committed to developing technology and techniques needed to deliver a cropping system that would reduce soil compaction and fuel use and ultimately boost yields in a sustainable way.

Baker No-Tillage general manager Bill Ritchie believes much of that early work was advanced for its time, and today this effort and commitment have come together for the Cross Slot® technology. The company's work was recently recognised in winning the 'Generating' section of the Manawatu Business Awards.

"We have had four key things happen that really put this technology in the right place at the right time. The price of fuel has soared, and the Cross Slot® drill technology offers the opportunity to reduce fuel use by 60-80%. No tillage means just that – you do not have to do multiple passes over the soil, so you cut back on fuel, labour and machinery wear. Secondly, fertiliser prices have just rocketed, even more than fuel.

You apply the fertiliser in the same pass – this is the only technology around that ensures seed and fertiliser are delivered through one opener. Then the crop benefits from the release of nutrients later, as previous crop residues break down. This is the other way around to conventional methods, where cultivation releases minerals early on but then you have to broadcast fertiliser later, using more fuel and running the risk of run-off or wind loss."

With world grain prices well over double their longer-term average, Ritchie believes this is a good time for crop farmers to make a capital investment in plant, like a Cross Slot® drill, particularly given the savings to be made on fuel and labour with its single pass technology.

"The other factor, and one most Kiwi farmers are in denial about, is the impact of carbon trading and restrictions. The amount of carbon released from tractor exhaust is miniscule in comparison with that released by traditional ploughing and cultivation methods from the soil. Minimal soil disturbance with a Cross Slot® drill cuts back CO_2 emissions many times over, something more farmers are going to be forced to consider as emissions trading affects farming."

Baker No-Tillage has been working with farmers in Eastern Europe, who are aware of the impact poor

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practices can have on crop yield and soil quality; these farmers are now looking to sustainable no-tillage methods like Cross Slot® technology to address the impact of poor past practices. In the Ukraine, in particular, much of the grain-growing soil is heavily compacted and poorly performing.

A chance meeting last year with the head of a farm company that owns 17,000 hectares has opened up a market for Baker No-Tillage in a region totalling 178 million hectares of crop land, the equivalent of the total area cropped in the United States. At the same time, the company placed its first drill into Estonia and has had reports of a 10% increase in yields in the first spring following the placement.

In the meantime New Zealand continues to provide an ideal test bed for the Cross Slot® technology, with most of the world's soil types represented here, and all year round use possible.

Bill says he appreciates the synergies between the Cross Slot® drill and the goals of Meridian Energy.

"Meridian has in fact used the Cross Slot® drill in advertising material, conscious of the shared goals of delivering sustainable methods of farming that also enhance farm profitability."

Bill Ritchie, with French engineering student Aymeric Cunrath, assemble the company's latest drill.

Lodge power lies in the wind

The attractive brick and Colorsteel construction of Taurikura Lodge is not a typical look for a power station, but this is one unlikely role for the new eco-lodge.

Located on Banks Peninsula at McQueen's Valley, Taurikura Lodge opens in November. It represents the long-held dream of its owners, Wayne and Toni Harris-Daw, to build a unique retreat in rural Canterbury.

It is a vision the couple has had for many years, saving hard, and tolerating the pressures and demands of Auckland's corporate world to build up the funds for the venture on the 50 hectares of land they bought 14 years earlier.

"I noticed that in Auckland, while there were day spas for women to visit, there was not such a variety of places for men to escape from very demanding, stressful jobs – that is part of what we want to provide here," says Wayne.

Toni is a qualified aromatherapist and her skills will play a big part in aiding clients to relax at the lodge. Meanwhile, Wayne's contacts with farm owners around the attractive region mean there is plenty of opportunity to visit a working dairy farm, or even help him with the cattle on their own property.

He admits he has always been keen to build the lodge along eco-friendly lines. When it came to providing electricity, the decision to install two wind turbines made good economic sense to him as well.

An internet search one night found the turbine he needed, the Skystream Energy turbine from the USA, capable of providing 240 volts of household power directly off the turbine.

Contact with Meridian's Right House subsidiary confirmed Meridian as an agent. Right House also ensured all the couple's eco-friendly energy requirements were met, right down to the insulation material for the lodge ceiling and walls.

Right House is the energy efficiency division of Meridian, responsible for working with clients to develop smart, low-cost solutions to lower their energy losses and demands in new buildings.

With the first turbine in place before the lodge was even completed, Wayne and Toni had the satisfaction of building up a credit as the turbine pushed power onto the national grid, despite power use by the builders on the site.

"We expect by the time we are up and running we will be 85-90% self-sufficient for power," says Wayne. The turbine project is also a first for Meridian as the company develops workable alternatives for customers seeking realistic alternative energy sources.

"The beauty of the lodge set-up is that with access to the grid it can work on a credit-debit system, being credited power when lodge demand is low and the wind is up. So the grid effectively is a storage device, doing away with the need for batteries," says James Capper of Right House.

"With the second turbine installed, total power supplied amounts to around 5kW of energy, more than enough for themselves and lodge guests," says Wayne.

By Wayne's reckoning, a five-year payback is possible on the turbines, which come with a five-year guarantee from Meridian to cover breakdown or failure.

The turbine's unusual bent blades are designed to reduce noise, much like some kinds of aeroplane propellers. The claimed 40dB operating noise is often exceeded by the very wind driving the turbine.

"Toni says it is a very feminine, smooth design; I just like the fact it's simple!" says Wayne.

As the turbines are wired directly to a control board and special meter, it is possible to tell whether the turbine is exporting power to the grid, or if extra power is being fed off the grid to supplement the turbine's generation.

Wind power growing in popularity

James Capper says demand from farmers and lifestyle block owners to have their own wind turbine for farm supply has grown rapidly over the past year.

"For most farmers, the big draw to on-farm wind generation is security of supply and a financial saving."

The surge in dairying has also meant that traditionally non-dairying areas are being explored for their conversion potential. Some of these are in relatively windy locations like parts of Southland, Manawatu and Wairarapa.

More remote areas can be susceptible to power outages, posing a real risk of loss of production and milk quality should outages occur over the milking season. Securing on-farm generation means that farmers can better manage their electricity costs into the future, providing a better basis for budgets year on year. On-farm generation can also assist with the need for increased generation capacity as the farm grows.

New Zealand wind conditions are typically intense and turbulent compared with most other countries, making choosing and installing quality equipment on farm sites vital to maintain supply stability. Meridian can assist farmers in choosing a turbine that will withstand these wind conditions.

As intense as the nor'wester is in Canterbury, at least for the Harris-Daws it carries the promise of free, sustainable energy for years to come.

Stray voltage can stalk farm dairies

A wet, early spring/summer and grass with low dry matter is a recipe for what seems like endless messy milkings, with muck sometimes seeming more prevalent than milk! Often it is simply the time of the year, but now that the season's in full swing, grass fibre levels are increasing and you may be left wondering why your herd continues to make such a mess in the farm dairy.

It could be that it is no longer their diet, but stray voltage causing them to hesitate on entering, act twitchy, continue to muck excessively and generally dislike the whole milking experience. At a time of the season when you are wanting your herd to peak, the last thing you need is for an unpleasant milking experience to disturb the lactation curve.

Meridian Senior Rural Account Manager Bill Hewitt says cows are considerably more sensitive to stray voltage than humans, with New Zealand research here linking the problem to depressed milk yields and lower quality milk. Research in the 1990s indicated a very high level of stray voltage from numerous sources around New Zealand farm dairies.

Readings on properties in the Canterbury region revealed 80% of dairies had stray voltage exceeding 1.6 volts, well beyond the tolerance range for cows. A study of 109 farms nationwide revealed only 20% of farms did not have any stray electricity problems.

"With a lot more new farm dairies going in, the industry's expertise at wiring and isolating power spikes and stray voltage has improved significantly. However, we still find a lot of older sheds have the same problem year in and year out, and little inclination by some operators to do anything about it," says Bill.

Good design has greatly reduced the level of neutral to earth stray voltage sources. However, there has been a jump in the number of industrial-sized pumps for effluent disposal and probe-operated milk harvesting equipment, all introducing greater risk of transient voltages, particularly along the udder to vat pathway.

The detection and isolation of stray voltage from two fence energisers on a Rakaia farm dairy resulted in an increase of 12% in production.

Data from a Northland farm showed a doubling in average per cow milk solids from one season to the next after a stray voltage problem was eliminated.

"Meridian has had its own experience with stray voltage issues, and seen the benefits of sorting this out.

When Meridian eliminated stray voltage on its dairy farm in North Otago, milking times were halved thanks to calmer, easier to manage cows. Somatic cell counts dropped and the whole farm working environment was a better place to be," says Bill.

Meridian has published a comprehensive booklet outlining many aspects of stray voltage and farm dairies and Bill strongly recommends seeking the advice of an expert when dealing with any electrical issues in farm dairy operations.

Where does stray voltage come from in farm dairies?

1. Leaking electric fence energisers: Leakage is very common, often through shorts that can lead to leakage to objects in the ground. Inadequate earth systems on electric fences will further increase the flow of stray electricity.
2. AC voltages: Leakage is common from voltage drops across power lines supplying dairy sheds. Faulty insulators, trees growing into lines, and damaged wiring can also contribute.
3. Load switching spikes: Switching lights and equipment on and off can result in voltage being injected into the ground and then onto other dairy shed equipment.

FIXING STRAY ELECTRICITY IN THE FARM DAIRY – FIRST STEPS

- Check the main board earth peg – are wires clamped and not corroded?
- Turn off the electric fence energiser and tune your dairy radio to 520-522 AM and listen for any 'clicks' from neighbouring energisers.
- Turn off water heaters during milking.
- Weld yard and bail pipe work to bring to the same voltage as the main board earth peg.
- Avoid hosing down during milking, or running the effluent pump.
- Keep the drench unit running continuously, avoiding 'stop-start' surges in electricity flows.
- Observe behaviour over several days to see if any changes occur, particularly if cows cease urinating or mucking excessively, as these are signs of distress caused by stray electricity.

Set a good rate before summer arrives

Playing the spot market for irrigation electricity is a risky game, and particularly so in recent years.

Tim Jackson, Rural Key Account Manager for Meridian, is keen to see more irrigators remove this element of risk from their farming business by opting for a fixed plan scheme early on.

Over the past 20 years spot markets have been a cheaper option for heavy power users, but growing demand in parts of the South Island has changed this picture in recent years. The spot option has only been offered by Meridian to large irrigators because on smaller irrigation sites the cost of the metering outweighs the potential savings.

Greater demand from heavy irrigators has stretched some networks to capacity. This, mixed with low lake levels, has seen spot prices rise to as much as 30 times that of the equivalent fixed rate for the same hour period. As prices alter every half an hour on the spot market, irrigators can be heavily impacted by these spikes. This is especially true for those with big irrigation pumps.

Tim advises irrigators to speak to their account manager to determine the most appropriate plan for them.

He also suggests that they get back in touch with their account manager at the end of the season to see how the plan went. This is also an opportunity to advise Meridian that the irrigation season is finished so that Meridian can set estimates to 'zero' until October, when use begins again. This helps to ensure irrigators receive correct accounts.

"We want to see our customers get the absolute best value from their energy spend, and isolate whatever risks they can from a business that is already risky enough."

Mentoring to dairying's future

The hard slog to achieve farm ownership while keeping head, heart and relationships intact is not always appreciated by non-farmers. The 24-hour constant demands of a growing farm business bring social and personal pressures that can't simply be left at the door at the end of the day, and this will often isolate farming families from non- farming relatives and friends.

Katrina Knowles.

Taranaki farmer Katrina Knowles appreciates these demands better than many, having spent over 30 years with her husband, Kevin, turning their 165-acre property into 165 hectares. The purchase of a second property has meant that she and Kevin now have the pleasure of seeing their sons take over the business after choosing to return to farming from other careers.

As an Agriculture ITO pastoral business co-ordinator and board member on the Dairy Womens Network, Katrina spends much of her time in contact with the young, ambitious couples and individuals who form the heart of the country's dairy industry.

"I feel it is important to put something back into an industry that has given us so much, and it is rewarding to see just how many young, enthusiastic couples there are out there, committed to the industry."

She appreciates a good relationship forms the backbone for future success in the industry, such is the intertwining of work and home life.

Working with Kevin in the early days as they strove for farm ownership had the couple planning more around survival than growth. In a story typical of farming in the mid to late eighties, they battled crippling interest rates and low returns.

Katrina worked off the farm between milkings to ensure they had enough cash to cover household bills and pay the bank. She was experienced in cash flow and debt management, thanks to her experience as a rural bank lender before farming.

She acknowledges, however, that there is a sharper awareness when you are managing your own debt.

The couple developed a flexible relationship where they shared their respective skills. Kevin taught her the nuts and bolts of running the farm, including grass management, while she helped him get to grips with cash flow, book work and debt management. As the environment for growth improved, with lower interest rates and stable returns, the farm business moved into an expansion phase. However, even as the opportunities presented themselves, decisions were only made on the grounds that both partners agreed on the best way forward.

Research work conducted by the Dairy Womens Network reveals their relationship was one slightly ahead of the times. Nowadays around two-thirds of women are actively involved at a high level in strategy and planning within a farm business, and play a key role in decision making on how the farm business will evolve into the future.

Katrina has been able to combine her experience of the nuts and bolts of farm management and good people skills to compile a spectrum of courses for Agriculture ITO. These have covered milk quality and effluent management units and rural staff management courses.

Her mentoring work extends beyond sharemilking couples in the Taranaki region, to include the new Dairy Womens Network representative replacing her in Taranaki.

"Like many people keen to take up a leadership position, she does not need a lot of assistance, just some encouragement."

Katrina acknowledges the organisational bodies behind the dairy industry can be political machines not suited to all those who see themselves as potential leaders. The pressure on young sharemilkers to perform in their farm positions may mean that starting at a smaller, local level in a group or body can be the best place to get a taste of what is needed to succeed as a leader at the national level.

She is heartened by the increasing involvement of women in the day-to-day management of farms, and the increased participation in management courses.

"The proportion of women involved in courses has definitely increased, right up to the diploma level. A recent graduation of diploma students here in Taranaki had three males and six females complete it." She also cites the continuing strength of the Dairy Womens Network as evidence of a hunger among farming women to acquire as much information as possible about their industry.

"The Dairy Womens Network, DairyNZ and Agriculture ITO are all sources of well-sourced information and experience that this industry is particularly good at sharing."

While some years have passed since she brought up her own young sons whilst farming, Katrina is adamant the business provides an ideal environment to combine family and career. The flexibility for women to be involved at any level, from calf rearing to strategic planning, is one few other businesses can offer from home.

"I take a lot of encouragement from what I see in the couples I meet, and the sheer energy they bring to their businesses – taking that energy into a leadership role is a great challenge, and extremely rewarding."

Meridian is a sponsoring partner with the Dairy Womens Network.

For more information be sure to check out the website: **www.womenindairying.org.nz**

We'd like to hear from you

We'd like to hear what you think about Seasons, and what you'd like to see in future issues.

Please let us know by writing to us at:

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Entries open for the 2009 New Zealand Dairy Industry Awards

Meridian is proud to be a national sponsor of the New Zealand Dairy Industry Awards – a programme of awards which encourages excellence and progression through the dairy industry. Every year people enter the competition for the first time and discover the numerous benefits of being part of a New Zealand-wide, industry-wide competition.

Equally, entrants return to further their skills and develop the networks that are beneficial to their careers and farming businesses. If you are a dairy trainee, a farm manager or a sharemilker, we encourage you to be a part of these prestigious awards.

Find out more at **www.dairyindustryawards.co.nz**

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