



“IGNITE” Your Soils

**BMCC down from
300,000 to 50,000**

*How biological farming transformed
Steve Chilcott's herd health.*

**Practice ahead
of the science**

*A farmer and veterinarian's perspective
on how soil health has positively
impacted their herd health.*

**Sustainability
and results**

*Mark Wadley took on
biological farming 10 years
ago for the sustainability.
He stayed for the results.*



SoilIGNITE™



*Soil***IGNITE™**

The writing is on the wall

Soil is key to the livelihood and productivity of New Zealand farming.

We now know it is more than the foundation for pasture and crops. It also grounds and embraces the epicentre of a bigger subject – sustainable agriculture – improving animal and (subsequently) human health.

Biological farming may have been a slow burn initially, but there is now no denying that paddocks full of four and five-leaf clovers, night-and-day fertility results, and average somatic cell counts (SCC) consistently dropping by 250,000 starts conversations.

New Zealand's Dairy Business Centre (DBC) had been following the subject proactively, in tandem with the Dairy Business Centre Australia and its consultants.

It recently invited a group of its New Zealand clients to tour Tasmania and northern Victoria visiting operations that had been farming biologically for a decade. It afforded the Kiwis a valuable chance to see working examples on commercial dairies – something the Australians did not have the advantage of when they first embraced this paradigm shift.

US-born biodynamic specialist Hugh Lovel – one of the leaders in this subject – once commented that the full benefits of biological farming would not be realised until farmers were milking the third generation of cattle to be bred, born, and raised on biological pastures.

This tour was able to test that timeline, and they found average SCCs hitting 50,000, empty rates as low as 6.4%, and production averages as high as 637kg of milk solids per cow.

The three farmers featured in this publication all shared their personal experience switching from conventional to biological farming from a commercial, philosophical, and animal welfare perspective.



Group Photo: New Zealanders have been in Australia to tap into their trans-Tasman colleagues' experience with biological farming.



Above: Neville Prendergast, Dairy Business Centre's Managing Director in New Zealand, is ready to bring the same results Australia is achieving into New Zealand.

Below: Dan Huggins, of Maxi Cow Consulting (affiliated with Dairy Business Centre Australia), has strong thoughts on the importance of soil health for successive generations.



SOIL IGNITE AVAILABLE IN NEW ZEALAND

There is now overwhelming evidence that the adoption of soil health principles increases the soil's resilience, profitability, and secures the viability of land for future generations.

WHAT IS SOIL IGNITE, AND HOW DOES IT WORK?

- SOIL IGNITE is designed as a spray specifically to stimulate plant growth and supply key minerals for a biological process in the soil.
- SOIL IGNITE is one of the key ways to fire up soil biology and to start to wean our soils from artificial nitrogen inputs - using the soil's natural ability to maximise nutrients effectively.

WHAT YOU CAN EXPECT FROM SOIL IGNITE:

- Restore missing and essential minerals, trace elements and provides soil stimulants to produce better quality pasture, more nutritious clovers, and other crops which improve livestock health.
- Builds brix levels.
- Increases the complexity of carbohydrates and proteins.

If you have any further questions or would like to explore biological farming, please contact the DBC on:

Freecall 0800 26 93 33 or +64 3 308 0094.

If you would like to be notified of any other upcoming tours, please drop us an email on office@dairybusiness.co.nz



Pictured: Hazel Park Holsteins is today averaging 637kg milk solids with a protein percentage of 3.4% and a fat percentage of 4.0% on 350 cows.

BMCC from 300,000 to 50,000 thanks to the soil



Above: Dan Huggins of Maxi Cow Consulting (pictured right with the soil, and affiliated with Dairy Business Centre Australia) shows Australian and New Zealand farmers the base that has helped turn Australian farms around in the last decade.

A leap of faith has transformed the way Steve Chilcott farms in Tasmania's Meander Valley.

VISION OR SURVIVAL?

Steve Chilcott is one of the early adopters of biological farming. He says it was not because he was a visionary, rather it was more about survival, that he was cornered – and that he trusted his advisors.

At the time, Hazel Park Holsteins had 70 cows out of 360 (19%) that were empty, their SCC was constantly around 300,000, their fat and protein percentages were as low as 2.8% and 3.3% respectively, and they were having to apply nitrogen every six weeks to the tune of about 150kg/ha.

“It was fine for a few years, but conception and cow health were getting worse every year,” Steve said.

“We had lame cows, sick cows, and cows going down for no reason. Towards the end [of conventional practice], we had seven deaths in the year, and the vets couldn’t tell us why those cows died. We had become okay with having 30 or 40 empty cows a year because we didn’t know any different. That last year we used conventional fertiliser, we had 75 empty cows out of 350 [21%]. And, we could not – for the sake of our lives – get the SCC under 300,000. Everyone was in the same boat that was on this nitrogen train: we all had high SCCs.”

GET UP AND CHANGE IT

Steve said he had no choice but to roll over, or to come out punching. He chose the latter.

He gave Dan Huggins, of Maxi Cow Consulting (which is affiliated with Dairy Business Centre Australia) the green light to turn the operation over to biological farming. The decision has been a game-changer in all the best ways.

Now, other farmers who are also considering changing their own operations, visit Steve’s farm to see how it’s working for him. The advantage for those farmers, is that there is now a clear working example on Steve’s dairy.

Hazel Park Holsteins is today averaging 637kg milk solids with a protein percentage of 3.4% and a fat percentage of 4.0%. On top of that, his empty rate last year (after eight weeks of joining) was just 23 cows from 360 (6.4%). It was so positive; they were able to sell 70 cows in-calf to other dairies for \$3000 each.

TOP-100 DAIRY AUSTRALIA SUPPLIER FOR BMCC

Hazel Park Holsteins’ SCC is consistently at 50,000, and the operation has been listed in Dairy Australia’s Top-100 suppliers (gold winners) in Australia based on bulk milk cell count (BMCC) for the past three successive years. This season they peaked at 43 litres a cow, feeding at 8.5kg grain per cow.

“We’re seeing awesome results.” Steve said. “We just don’t get sick cows anymore. Lame cows are almost a thing of the past. We might get eight lame cows for the whole year, and it used to be more like 30 to 50.

“Improved cow health is one big thing we’ve really noticed. When you’ve got healthy cows, you’ve got happy cows, and you’re almost there.”

SOIL TAKES A BOW FOR DRIVING COW HEALTH

He said the cow health comes from the healthy soil, which has been transformed.

“I thought I’d grow a lot less grass without putting on fertiliser every six weeks. We did not grow less grass. We’re probably growing the same grass, and in the first year of farming biologically, we spent only half of what we had been spending on conventional fertiliser.

“Our farm changed within two years. We went from a ryegrass with minimal clover that didn’t look right, to being amazed by the amount of clover that came back – with a lot of four and five-leaf clovers. In fact, the clover came back so strongly we were then really worried about bloat.

“But, we just don’t see bloat with biological farming. And, our farm is 75-80% clover. It’s amazing. The first two years, Dad was really worried about it, and we were very cautious and checked them all the time, but it just never happened. Now we never think of it.”

Dan Huggins said the science makes sense.

“Bloat is really just a symptom of excess nitrate. Changing the on-farm fertiliser – or more accurately what happens – is that the soil fertility programme grows clovers and pasture swards with higher nutrition density, so that bloat is no longer a threat.

“The general positive health responses that Steve has witnessed are signs that his herd are no longer stressed from eating conventionally grown, high nitrogen-based fodders.”

THE KEY

Steve said it has been easy to follow Dan, who sources his corrective soil treatments through Animal Mineral Solutions, based in Shepparton, in northern Victoria. Urea is still in the mix, but at 9kg/ha, it is a bit-player in a much bigger picture.

“I think it was costing us money to do what we were doing before,” Steve said. “I wouldn’t change now for the world.

“Every year I’m looking to drive that soil better and better. We’re growing more grass than we’ve ever grown. We’re still improving, too, year-on-year, and it continues to amaze me.

“The colour of our soil is even changing, and it smells lovely. It used to be really light in colour with a tighter structure. It is now darker and crumbly. It probably sounds strange to say it, but the ground just looks alive.

“All our river ground was all free draining before we got on the urea train, and by the time we made the call to change it, it was like it just couldn’t breathe anymore. Now, it’s back to being crumbly and lovely soil.”

NO GOING BACK NOW

Steve said it has been a team effort that he also would not change.

“The decision was probably pretty easy for me, because we had to do something, and I had a lot of faith in Dan and his connections. Because we trusted them, away we went.”

Dan finishes: “What’s really gratifying for me, as Steve’s consultant, is to see his own knowledge base grow in the biological space, together with the resulting enjoyment it’s now brought to his day-to-day farming practice.”



Sustainability and results

HE CAME FOR THE SUSTAINABILITY AND STAYED FOR THE RESULTS

While Mark Wadley's move away from synthetic nitrogen saved him some cash, a decade later the money has nothing to do with why he has embraced biological farming so completely.

Mark and Josephine Wadley milk 360 cows (with 1100 cattle all up) on their Meander Valley farm at Deloraine, in Tasmania. They own 486 hectares (1200 acres), which includes cropping country. The farm is a mix of free-draining red soil (ideal for cereal crops) and heavy flat land (good grazing country).

When they turned to biological farming there were few working Australian examples, so they became part of a pioneering group which formed the foundation that would give others the confidence to follow.

Mark said, "I remember when I first started considering it in 2013, I worked it out that I was going to save \$30,000 to \$40,000 on conventional fertiliser costs that year, and that was another reason to give it a go at the time.

"I thought if I don't like it, I'll go back to what I was doing. But I just never turned around."

PRACTICAL TRIGGERS DROVE CHANGE

His other reasons for switching before it was popular came down to some forward thinking around the global industry's nitrogen addiction.

"It was about sustainability for me, to be honest," he said. "I felt like it was going to eventually be policed more. It's happening in New Zealand now, but it's been happening in Europe for a long time. To me,

Above: Mark Wadley (left) hosted a tour of New Zealanders in March, who wanted to see the results of his switch to biological farming. John Guy (right), from Te Waiu Limited, near Waimate, was keen to dig deeper. The pair are pictured on recently grazed autumn dryland pasture.

it just made sense for our soil and our animal health, and I thought I may as well get ahead of the game."

Then, there were the practical triggers. His somatic cell count (SCC) at the time was sitting around 200,000 and wouldn't budge, and his empty rates had climbed to 17%.

"I pretty well just jumped in boots and all because I figured nothing ventured, nothing gained," Mark said.

"I guess, you've got to put a certain amount of trust in the process. To me, it was daunting in that there weren't many people that we could go to at that time and look at their farms and see how it had worked over a 10-year period.

"Farmers considering it now do have that advantage."

BOTH FEET IN THE WATER

At the time, he put his faith in Dan Huggins of Maxi Cow Consulting.

Dan said Mark's starting point is more common than many realise. The difference was that Mark was prepared to change things.

Dan said the journey is the culmination of 14 years of trial and tribulation, in collaboration between him, Ange Angelino of dairy nutrition consultancy AAC, and Hugo McMullan from Animal Mineral Solutions – collectively, the Dairy Business Centre Australia.

They also had access to US-born biodynamic specialist Hugh Lovel, who was semi-retired in New South Wales.

Dan said, “We were blessed to have access to Hugh throughout a lot of this development period. Sadly, he passed away in the spring of 2020, before he could see the full impact of this work.

“But one of his comments that still resonates with me was that we wouldn’t see the full benefits until our clients were milking females that were third-generation bred, born, and raised on these pastures.

“Mark is now milking those third-generation females, and we’re really starting to see a completely different milking cow. I believe their longevity will now far exceed Mark’s traditional averages.”

Mark confirmed his herd health has been supported by the maths. His average SCC recently hit 50,000, his empty rates have been down as low as 11%, and his herd is averaging 600kg of milk solids.

PASTURES RESPONDING

He said the pasture changes came fairly quickly.

“I treated my dairy platform biologically from the get-go, but the dryland and cropping areas were still treated conventionally for perhaps another three or four years.

“However, once I could see how well the biological programme was working, I knew that I needed to do it across the rest of the farm as well.

“We could see the difference in the quality of the grass pretty fast. The clovers returned, and really responded in those pastures, as opposed to the pastures that were still under conventional fertiliser. The fungi in the soil – because we were watching that too – was also starting to happen.

“The whole philosophy started to make more and more sense to me as I started seeing how it was working. Since this time, I’ve had some incredible results with my seed potato and poppy crops too.”



Above: Mark and Josephine’s poppy crop had two sprays of Soil Ignite Photo: Dan Huggins.

FOUR AND FIVE-LEAF CLOVERS EVERYWHERE

Mark applies the biological fertiliser through his centre pivot irrigator in the summer. They use a boom spray unit converted with boomless jets to apply it through the rest of the year.

While he was an early adopter, Mark was also a quick study, who put trust in the process.

“The results didn’t ‘shock’ me. It was more ‘interesting’ than anything. There is a lot of phosphorus in the soil, but it gets tied up, becomes inaccessible to the plants,

and the soil tests really showed how that worked. You need the biology in there working to unlock it.”

Mark was interested – like many of his fellow biological-farming counterparts – to see the enormous number of four and five-leaf clovers returning to their pastures.

“Dan said we’d start to see more and more of them. And, it’s now common to see them all the time. I think it has also had an impact on the pasture palatability because you can see that the cows graze the paddocks out better, and more evenly. It has been fascinating to watch all the positive changes.”

Dan explains why.

“Once you change the system to a minimal reliance on nitrogen, the biology in the soil flourishes and you grow pastures, crops – and food in general – with far higher nutrition. When you have more mineral uptake in plants, it increases the complexity of carbohydrates and amino acids, or building blocks of proteins. Building that fertility grows nutrient-dense pasture that is far higher in natural sugars, so our cows logically become more contented.

“Once that plant-sugar content moves above a certain level, the plant sap also becomes too complex for simple sucking pests, which traditionally plague pasture production. So, what traditionally sounded like a ‘too good to be true’ story has been proven to be right, and I no longer have to talk about pest and disease in my consulting discussions with Mark.”

THE SURPRISES?

Mark said, “I feel like the soil moisture retention is better, which I can’t quantify because it changes from season-to-season anyway, doesn’t it?”

“But when we’re irrigating, I don’t feel like I’m having to chase my tail so much. Again, if you’re building your humus and your soil carbon, your soil is holding on to its moisture better anyway.”

Today, Mark is probably including roughly 40-45 units of nitrogen within his annual biological framework.

“Which is well below the current caps in New Zealand. When nitrogen regulations come to us – and they will – I won’t have to worry. I feel like I’m ahead of the game in that sense.”

Mark’s SCC is averaging around 120,000, with lows down to 50,000.

“It definitely dropped when we started farming biologically, so once again, was it a surprise? Or, was it just another reassuring thing to make us feel that, ‘yes, we’re on the right track’? Because the SCC is just another indicator of cow health. Those numbers gave us confidence that we’re doing the right thing.

“I suppose what does surprise me is that people want to come to the farm to have a look, because it just feels normal to us now.”

SO MANY REASONS TO ADOPT

Mark said biological farming is no more work than conventional. He sleeps soundly at night, knowing he is setting his farm up for the generations to come, while looking after his cows’ health right now.

He said, “I don’t even factor the annual savings in anymore, because there are so many other reasons that make you feel like you’re doing the right thing with biological farming.”




Photo: Isaac Korpershoek says their soil feels lighter and is visually crumblier when they dig into it now.

Practice ahead of the science

Having a veterinarian in the family made biological farming conversations a little more interesting for Isaac and Angelique Korpershoek.

The couple milks 350 cows at Forest in Tasmania's north west, averaging 620kg milk solids per cow, with an average somatic cell count (SCC) of less than 100,000.

The Korpershoeks have always been committed to driving forward, and took ownership of their operation when they were young (see box story) – complete with the blood, sweat, and tears that comes with that decision.

Today, the parents of four children stand as a shining example on many levels – not least for their solid teamwork. The milking platform is 162 hectares (400 acres) with two run-offs that add 271ha (670 acres) to their complete 405ha (1070 acres) holding.

When they first discussed switching to biological farming a decade ago, Isaac was “curious”, while it challenged Angelique’s initial vet-driven impulse to look for the evidence-based science. Working as a Milk Quality Specialist for Saputo, Angelique is also a director of DairyTas, in addition to her commitments to the family’s dairy business.

Their nutritionist Dan Huggins, of Maxi Cow Consulting (affiliated with Dairy Business Centre Australia), was achieving encouraging results using biological practices on his own property, and Isaac and Angelique decided they wanted to know more.

CHALLENGING PROTEIN PERCENTAGE IN EARLY LACTATION

At the time, they were struggling to get their protein percentage above 3% during early lactation.

Isaac said, "We were just at that point where you can only adjust so much in your grain ration. Dan started changing things on his own property, and I was starting to think that we couldn't continue putting nitrogen on at 400kg/ha a year.

"Dan was referring to urea at that time as the 'white drug'. It's 100% true, because when we used it, we would see an instant response, but the grass never had any real density.

"When I put urea on, I'd mention the cows were fidgety, and Dan would say, 'you've hit the farm with urea, haven't you?'. Just because you think the farm needs it, doesn't mean it's the right thing for the cows. It made sense that we need healthy soils to have healthy cows."

FACING THE FUTURE

The Korpershoeks decided to do a comparative trial in 2013. While they said they couldn't risk compromising production by going all in, they could see the writing on the wall.

Angelique added, "Sustainability is incredibly important, and I don't think we can continue farming into the future without considering that."

Isaac finishes: "It will be forced on everyone eventually, so we decided we were better to adapt in our own process rather than have it forced upon us down the track."

Angelique had her own reasons for getting on-board.

"I guess with my experience, I feel that we shouldn't be practising medicine without evidence-based science, and we shouldn't be farming without an evidence base as well.

"But I'm also conscious that those who lead in nearly everything, do something different because they aren't happy with what's happening, or because it doesn't feel right.

"Those leaders are often a little bit ahead of the science because science takes time. There is research around soil and human health, but we just don't yet have the research connecting it to cow health..

"What we were proposing was what any good home gardener would be doing with their vegetable patch. The difference was, we were going to do it on a commercial scale."

“

***It made sense
that we need
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to have
healthy cows.***

– Isaac Korpershoek

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Below: This coastal dairy farm has a milking platform of 162 hectares (400 acres) milking 350 cows. The entire operation includes two run-offs that add 271ha (670 acres) to their complete 405ha (1070 acres) holding. The herd is pictured in the autumn, grazing summer dryland pasture.





COW AND SOIL HEALTH IMPROVED

Isaac said Dan predicted they would save money on fertiliser, but because they have bought additional land and expanded their operation, it has been hard to quantify.

What hasn't been hard to quantify are the results in their cow and soil health.

Starting with two paddocks, today the whole farm is under biological farming practice. Their annual nitrogen application within the biological regime is down to 140kg/ha (64 units of nitrogen). It also meant last year's urea price hikes passed through without putting pressure on them.

Isaac said, "We always used to struggle in the early part of lactation to get our protein over 3%. However, last year's peak milk I don't think it dropped below a 3.2%. While we might not peak as high as spring-calving herds on the same regime, we are still peaking at 34 litres with stronger components."

"Now that we know that the air we breathe in is 78% nitrogen, it makes sense that when the soil's pores are open it can absorb more nitrogen from the air."

Dan explains the science: "As dairy farmers, we are conscious of compaction from farm vehicles and hoof traffic. What many people don't understand is that with high rates of conventional fertiliser, we actually change the soil structure making it tighter and more closed.

"Tight soil cannot breathe, and it becomes anaerobic, which favours the growth of more weed species, and through the summer that means pasture needs more irrigation water to sustain the plants.

"One of the big positives of this biological programme is that the soil structure does become more open to atmosphere, and water, which allows for an increased root depth."

CLOVER IS BACK

Isaac said he doesn't miss the overwhelming smell of ammonia that used to come off the cows in the dairy after he had applied urea on-farm. It's also meant that clover is again flourishing in their pastures.

"I've got a paddock up here that the cows are going into and it's just swimming with clover. In the old days, urea used to choke the clover out and while you didn't have to worry about bloat, you also didn't have that high protein pasture.

"But bloat just doesn't seem to be an issue with biological farming, and clover is a great nitrogen fixer and very high in protein. It means we don't have to feed so much protein in our grain mix, because there is enough through the grass.

Above: When nutritionist Dan Huggins, of Maxi Cow Consulting (left, affiliated with Dairy Business Centre Australia) started achieving encouraging results using biological practices on his own property, Isaac (centre) and Angelique Korpershoek (right) decided they wanted to know more. The Tasmanian duo are convinced it was the right move for them.

"So, we're saving money on different grains – like lupins for example. Biological farming is a chain that keeps impacting throughout the operation in lots of ways."

While their SCC has improved, as has their fertility, Angelique said it is hard to say how much of that is due to biological practice, because they also work hard on their genetics. They genomically test every heifer with a heavy focus on fertility and BPI (Balanced Performance Index).

"I don't think there is anything in farming where the improvement is due to one thing," Angelique said.

"We're constantly looking for improvements and I guess that's the difference for farmers who are wired that way. They are constantly looking to the future – the horizon – and what they have to do to get there."

Isaac advises anyone considering biological farming to ease into it, adding that it has been the right move for them.

"Biological farming didn't put our business back one bit. If you're seeing only positive changes, why would you change back?"

IT'S COMING...

The final word goes to Angelique.

"It made sense to me to use less synthetic fertilisers, in conjunction with other changes we have made as we look forward.

"It's the next big frontier of change, and I think in the next five years we're going to see a lot of research results on this subject coming through."



“If you always do what you’ve always done, you’ll always get what you’ve always got.”

SOIL IGNITE is the key to restoring and promoting the natural soil biology so it can thrive, and cycle stored and applied nutrients in your soil.

It has been developed over a decade and includes a “mix-in-ratio” of many proprietary bio-stimulants and resources (food). It is natural and easy to apply either through a boom sprayer or a “tow-and-fert” system.

SOIL IGNITE provides the resources for the bacteria, fungi, protozoa, and nematodes, which allows them to colonise and build their populations. All four species are critical in nature’s cycle.

Once their populations build, nutrient cycling becomes more efficient and rapid – making nutrients available to the chosen pasture species. Without microbiology performing this essential task, our soils can never deliver on their potential.



The SOIL IGNITE system

Soil biology – like any form of livestock – needs care, attention, and regular feeding to achieve the best outcomes.

Step 1: A comprehensive soil test is taken to assess both the available and the total nutrients in your soils.

Step 2: We interpret the soil test and customise a recommendation for your situation to apply a “corrective” solid application of minerals and trace elements.

Step 3: We manufacture the corrective solid which will be applied through a fertiliser spreader on your farm. Like any application of nutrients, the corrective applications build fertility over time.

Step 4: Apply SOIL IGNITE to freshly grazed pasture (within 14 days of grazing) at the following rate (to maximise soil contact it is recommended to be applied prior to rainfall, in light rain or prior to irrigation):

- 25 litres/ha of SOIL IGNITE.
- 150 litres/ha of DETONATE N 20% or 10-13 units of dissolved Nitrogen Urea (initially) until the system is working.

Add water & mix to make a total solution of 150 litres/ha.

Step 5: Apply SOIL IGNITE at the prescribed rates every 90 days.

Step 6: Soil test annually to re-assess your progress and results.

Every big decision starts with that important first step. Give us a call, and let’s start the conversation...



Photo: Hazel Park Holsteins' empty rate last year (after eight weeks of joining) was just 23 cows from 360 (6.4%) – allowing them to sell 70 cows in-calf to other dairies for \$3000 each. See full article on page 4.



CONTACT US

Visit the DBC website:

<https://dairybusiness.co.nz>

Or, contact DBC direct:

Freecall 0800 26 93 33 or +64 3 308 0094.

Email: office@dairybusiness.co.nz

Did you know?

1. Recent advances in microscopy and DNA identification have revealed there are more than 80,000 bacteria species in a spoonful of healthy soil, and more than 2.5 tonnes of microscopic livestock working for the biological farmer in the top six inches of active soil.
2. Conventional farming practices regularly measure pasture as low as 1 to 2 Brix - which has a bitter taste and makes them more vulnerable to pests and disease (requiring chemical intervention with fungicides/pesticides). In the biological system, the minimum recommended Brix level is 12, because once you build above those levels the sugars and minerals in the pasture become too complex for simple digestive systems. It reduces the need for continual spraying - adding another layer of improvement to the soil's biological health.