

# THE Tow and Fert TIMES



**TOW AND FERT**  
BY METALFORM

VOLUME 3. October 2019

SEE INSIDE FOR | Paddock 39 Field Tests | Integrity Soils Angle | Taranaki Case Study | Myths: Busted

## DID SOMEONE SAY “REGULATION”? FRESHWATER, FERTILISER AND NPS-FM

**Regulation in the form of the National Policy Statement for Freshwater Management has arrived, albeit in draft form, to scupper the businesses of farmers across the country. But is it really as bad as it seems?**

Once upon a time Henry Ford, the inventor of the motor car and the brand that bears his name walked into a bar. He sat down with his mates, scratching his head and said

**“Gentlemen, it was a hard road getting here today, it took too long, the horse is tired and so am I. There must be a better way to get around.”**

*Comment attributed to Henry Ford*

A gentleman seated across from Mr Ford, whose name was John said “Yeah, we need faster horses don’t we Henry!”

It was evident that the other gentlemen at the table were not really much help either. If Henry Ford had sat back, sipped at his beer and said “You know John, you are right, let’s train them harder, make them stronger and see how fast we can make them go” we might all be still riding horses!

But he didn’t. Instead he asked a better question and set about finding a better way of travelling from place to place and subsequently invented one of the greatest machines known to man; the motor car.

The moral of this *entirely fictional* story is simple, if we keep doing what we have always done and keep pushing the same methods harder and faster they will eventually break. So, innovation and opportunity keep us and our industry moving forward as new challenges present themselves.

The environment, and more specifically the state of our fresh water in this country has come under significant scrutiny over recent years and none of these messages are new. So why the “shock and awe” at the governments announcement of the new freshwater management policy?

### Throwing Farming Under the Tractor

There have been those in the industry who have said that this is the end of pastoral farming as we know it, or at least implied that there is no way forward with such restrictions on simply doing our jobs. As farmers we have heard all this before. In the 1980’s when fertiliser subsidies were cut the message was “there is no future for farming” and “what will farmers do now”. Yet here we are.

**“We, as an industry, have seen these freshwater changes coming for a number of years. It has been clearly flagged by the current government.”**

In our first issue of the Tow and Fert times we reported on David Parker saying “Now, those people [farmers] will have to be regulated to do the right thing, because they may not be

willing to do it voluntarily. That’s the purpose of environmental regulation.” It was a simple message and one that many farmers picked up on, improving their practices and making significant changes to their farming system.

However, there are always those, and always will be, that fail to heed the call to change and persist with outdated methods. It is these farmers that ultimately this piece of policy is aimed at. Yes some of us will have to make changes to the improvements we have already made, but these will be tempered by the fact that we have already made changes to our systems so the road to meet the regulations is not so long and not so hard.

The days of flogging the horse to make him stronger and faster ie: putting more and more on the land are over (the “more-on” approach). Change is not only necessary, it is here. And what does change often lead to?

### Innovation and Efficiency.

Change is constant. It is simply a fact of life. The choice we all have is whether to effect change ourselves or to have it forced upon us by someone else. It is most often not pleasant, but only for the time it takes us to make the decision to change. Once the decision is made, we get on with it.

And this is now the case for farmers. And our choice is simple:

**1** Take the view that the world is ending, and pastoral farming is done forever, throw our hands in the air and say “I give up.”

**OR**

**2** Find a way to improve what we do, to innovate and become more efficient for example: growing the same amount of grass using less fertiliser, reducing the amount of runoff and leaching from our land, finding ways to reduce the methane expelled by cows and managing the effluent use on farm and into the land.

All of the above solutions are either available to farmers now or are being studied and tested for future commercialisation.

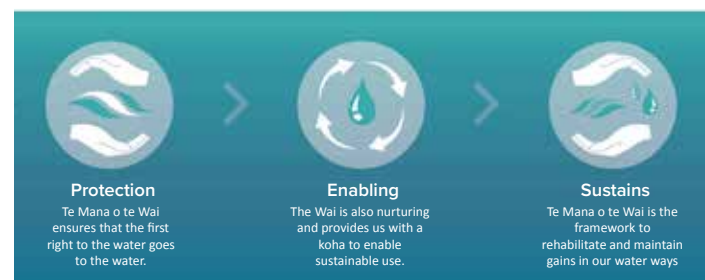
In New Zealand we have led the world in pastoral farming and the innovation associated with it has taken us to the top of the charts in dairy production. Once upon a time, (not a Henry Ford type story this time but a true story), we led the world in the use of fertiliser, specifically Nitrogen and Phosphorus to grow more grass. But that ship has now sailed, and we are faced with a problem that all New Zealanders care deeply about, freshwater quality.

As a collective industry we need to act quickly. For us, this is simply the government saying, “Go and find other ways to grow grass.” And there are other ways, to not only grow more grass but to do it efficiently, with less fertiliser, less runoff and leaching, better nutrient management, healthier cows and more profit.



Te Mana o te Wai – “The mana of the water” David Parker and Damien O’Conner announce the National Policy for Freshwater Management at Parliament on Thursday the 5th September 2019.

### Te Mana o te Wai – “The Mana of the Water” – It’s time has come.



The National Policy Statement on Freshwater Management uses the concept of Te Mana o te Wai or “the mana of the water” as a guiding principle. This simply means that the value of water and the importance of prioritising its health and wellbeing comes before providing for our human needs. The policy states Te Mana o te Wai “expresses New Zealanders’ special connection with freshwater” and that when “the concept is upheld that the future wellbeing of people and our unique ecosystems are protected.”

We have a long way to go to improve our farming practices, but it is not all doom and gloom. There are ways for us as dairy farmers to move our businesses forward and to improve our impact on our country’s freshwater resources whilst maintaining a healthy profit. It might not be easy, but the long-term results will be worth it.

Te Mana o te Wai is simply a guiding hand for us moving forward. It directs us to find ways of improving our impact on the waterways which sustain the very life we live. This is the least we can do for the generations that will farm the land into the future.

See inside for:

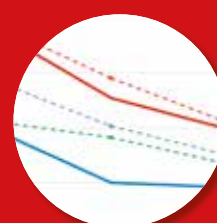
### REAL WORLD CASE STUDY & FIELD TESTS

The Tow and Fert is changing farming practices across New Zealand saving farmers money and improving environmental footprints.



#### Allan Marx’s story

“I wanted a machine that could do a lot of other things than just dissolve and apply Urea. This is a very versatile machine and it’s ticked a lot of boxes for me in terms of its versatility.”



#### Granular fert vs foliar fert: which is better?

The longevity test: Which application method gets better results over the long term?

**BOOK A FREE TOW AND FERT  
DEMONSTRATION  
CALL 0800 337 747**



# INTEGRITY SOILS ANGLE

## About Integrity Soils

Started by Nicole Masters in 2001, Integrity Soils has clients and coaches in NZ, Australia, USA and Canada. Nicole is respected worldwide as an innovative systems thinker and agroecologist. She has presented at 100's of workshops, conferences, and staff training sessions – and, has produced podcasts, interviews and a TED talk.

Over 400,000 hectares of farmland use Integrity Soils

## THE FUTURE OF FARMING: REGENERATIVE AGRICULTURE

**Beneath the grass is a complex ecosystem that farmers need to pay more attention to.**

Regenerative agriculture is taking the world by storm as producers look to optimise nutrients, reduce inputs, build healthier soils and produce clean, nutrient dense foods. The success of Regenerative Agriculture begins through building a foundation to enhance the natural cycles in the soil ecosystem, using proactive practices which address the root causes of problems, versus reacting to symptoms. Integrity Soils, a New Zealand based company is a leader in facilitating this global transformation in food production.

### Your Farm's Number One Limiting Factor

What is your number one yield limiting factor? 'Nitrogen' you're probably told. That's actually inaccurate; try this... hold your hand tightly over your nose and mouth for a minute to see what your number one limiting factor is.

### It's Air

It is just the same for your plants and soil microbes. Without adequate airflow, roots and microbes curl up and die and natural mineral and water cycles breakdown. Compacted and waterlogged soils lose valuable nutrients including N, P and C, and reduce those microbes responsible for providing minerals to your crops.

Improving yield starts with a soil that can breathe. Air, and water, moves into soil through the gaps in soil aggregates, the crumbs formed by soil microbes. Just like constructing an apartment building, microbes and earthworms make hallways, stairwells and living spaces. Poor soil structure turns these apartments into a tarmac. This loss of structure stalls the natural nitrogen cycle.

The high use of soluble nitrogen creates a vicious cycle. Microbial communities are dramatically altered, reducing organic N and C, and overstimulating bacteria. Humus is lost therefore soil carbon decreases. The loss of carbon creates the conditions for compaction, increased runoff and erosion and limited root growth.

Fungi to Bacteria (F:B) ratios are important for soil structure and pasture health. The most important of the fungi are the essential mycorrhizal fungi. Plants provide the fungi with its sole source of food (liquid carbon sugars) and the fungus provides the plant with soil-derived nutrients. Mycorrhizas will be damaged or destroyed by soil compaction and disturbance, as well as by the use of certain chemicals.

When considering natural nitrogen inputs, farmers most often think of legumes, particularly clover. However, in healthy soils among the most common organisms are the bacteria which fix nitrogen into the soil. These N fixers require air, so compacted soils will have less of these important organisms.

Soils are a living, breathing ecosystem; supporting and feeding soil microbes has huge benefits across the entire farm enterprise. Reducing nitrogen can be profitably and sensibly done through enhancing microbiology and soil health.



Above: Nicole Masters of Intergy Soils presenting to a group of farmers.

### How to Regenerate Your Farm

An Integrity Soils regeneration program is based on observation, ecological principles, regenerative management practices and science. We look to find points of leverage that will give the greatest return on investment in quality, production and performance.

These leverage points consider the 5 M's:

- 01** Management – crop and pasture diversity, grazing, production systems, inputs
- 02** Microbes – everything living in the soil, biological applications
- 03** Mindset – identifying limiting factors, asking 'why', thinking beyond what we already know
- 04** Minerals – imbalances, Ca:Mg ratio
- 05** Organic Matter – how to build it and create humus

We provide written comprehensive assessments with observations, actionable steps and reasonings. As a team we have decades of practical experience and know-how in growing a diverse range of crops and livestock.

We also provide monitoring services to ensure your soil and crop program is on track.



Get in touch with one of our coaches  
contact [info@integritysoils.co.nz](mailto:info@integritysoils.co.nz)

[www.integritysoils.co.nz](http://www.integritysoils.co.nz) | [www.youtube.com/integritysoils](https://www.youtube.com/integritysoils)

## FIELD TESTS GRANULAR FERT vs FOLIAR FERT: which is better?

As a contractor spraying capital fertiliser onto his clients farms pasture using a Tow and Fert Multi 4000, Michael Smith was often asked about the benefits of foliar applied fertiliser.

In our previous issue of the Tow and Fert Times, Volume 2, we presented the first of our granular fert vs foliar fert field tests, Paddock 13. In this test, Paddock 39, we focused on which application method, granular or foliar, got the best results over the long term.

### THE TEST:

**Paddock 39:** *The longevity test:* Which application method gets better results over the long term?

### METHOD:

- Paddocks were selected based on the average from soil tests of the property. We fenced off an 18x6 metre test area and divided this into three sections; the granular square, the control square and the Tow and Fert square.
- Each area was mown to 1500kgs of dry matter and the granular area fertilized and the Tow and Fert area fertilized.
- Once the paddock was due to be grazed we used a plate meter to measure each section (minimum 100 readings)
- Each section then had a 1 square metre area mown and the clippings collected to be weighed.
- The weight was taken and recorded.
- Each section was then left until the next grazing when the process was repeated.

### RESULTS:

**Paddock 39:** By applying the Urea fertiliser mix in the Tow and Fert we achieved double the growth compared to granular (N Response 32.05 Granular, 64.09 Tow and Fert). The paddock was monitored for 104 days after the application of the fertiliser with 3 readings taken. (19th December, 29th January, 11th March). The graphs show that as the granular fertiliser application effects dropped away to being only 10% above the control area, the Tow and Fert section was still growing on average 4-5 times the amount from the granular application section.

### CONCLUSION:

Applying Urea Fertiliser through a Tow and Fert will outperform granular fertiliser by 4-5 times after 100 days. The results clearly show that foliar application with a Tow and Fert grows more grass, more efficiently.



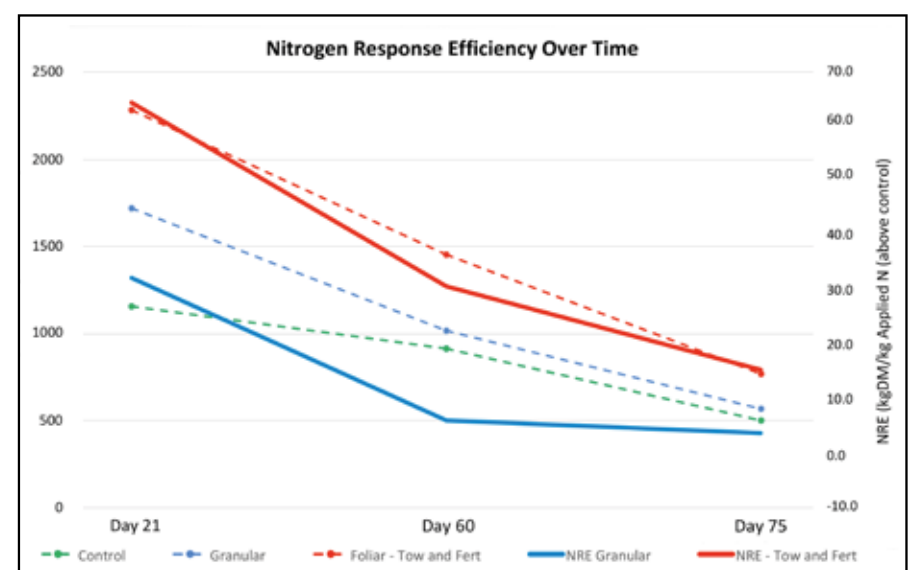
### HOKONUI DAIRIES LTD

#### Paddock 39: The Longevity Test

Paddock 39	Day 21	Day 60	Day 75
<b>Control square</b>	DM: 1156	DM: 912	DM: 501
<b>Granular square</b> 100kg/ha of granular Urea	DM: 1720 NRE = 32.2	DM: 1017 NRE = 6	DM: 566 NRE = 3.7
<b>Tow and Fert square</b> 65kg/ha of foliar Urea – Tow and Fert	DM: 2284 NRE = 64.5	DM: 1450 NRE = 30.7	DM: 769

\*Graph shows kg/DM/ha grown (above residual).

\*NRE (Nitrogen Response Efficiency) is kgDM/kg N applied.



Michael Smith is a former dairy farmer, Tow and Fert contract fertiliser applicator and now Tow and Fert manager for the North Island.

For more of Michael's tests visit [www.towandfert.co.nz](http://www.towandfert.co.nz) or call 0800 337 447.



Allan Marx Case Study:  
“I CAN DO SO MUCH MORE,  
SO MUCH MORE CHEAPLY THAN I  
COULD IN THE PAST AND THAT, FOR  
ME, HAS BEEN THE REAL BONUS.”

Tow and Fert’s versatility has led to significantly increased milk production for Allan Marx.

Allan Marx’s dairy farm was running a conventional style, pasture based dairy system. Nutrients were applied in solid form through the use of a bulky up to 6 times a year. Application was always weather dependant and particularly Urea, was a waste of time without any rain.

“I wanted a machine that could do a lot of other things than just dissolve and apply Urea. This is a very versatile machine and it’s ticked a lot of boxes for me in terms of its versatility.”



Above: Allan Marx applying his fertiliser brew to his pasture in Taranaki.

Since investing in the Tow and Fert in September of 2018 Allan’s farming system has changed significantly. From a largely conventional nutrition system, Allan has moved into a system that focuses on the ecosystem of the farm, considering the soil, grass and the animal. In no way organic, Allan’s system includes Molasses which he applies with every load to feed the microbes in the soil.

“The other thing I’ve started doing a lot is adding Magnesium Sulphate to the brew. This increases the Magnesium content in our grass, as this is an element that our cows are always looking for.”

Allan also includes Lime Flour. Every kilogram of Urea is balanced with one kilogram of Lime Flour which is easily added in with the Molasses.

“The other thing I have done is spread my small seeds, I’m talking about clover, chicory and plantain. They are all applied simultaneously with the fertiliser products, so I literally just chuck it in at two kilograms per hectare. The Multi 4000 will hold a six-tonne payload, so half of that is water, the other half is product. There is no extra labour, no extra machinery costs and the strike from the seed being broadcast through the Tow and Fert is absolutely unbelievable.”

And the results have been seen across the farm in a short space of time. The summer of 2018/19 was hot and dry. Farms in Taranaki suffered. Allan’s Fonterra milk production graph clearly shows the drop off in the district as the heat took hold. But at Allan’s farm, the grass held on a heck of lot better than surrounding farms meaning Allan did not have to reduce milking rotations to every 16 hours or once a day.

And, says Allan  
“When the rains did come in late March, early April, the farm responded very quickly.”

As we head into spring and summer of 2019/20 Allan is once again looking forward to seeing how the farm responds. He notes that the cover of grass on the farm is consistent and he and his team have coined the phrase “carpet grass” to describe the look of the paddocks under the Tow and Fert system.

“One of the things we’ve noticed on farm is how even the grass is growing and the grass sward is very, very thick. We have got a lot greater plant density since we’ve been using the Tow and Fert.”

With the warmer weather around the corner Allan is now looking forward to continuing his journey using the Tow and Fert.

“To be able to do small seeds, herbicides, insecticides and fertiliser all in one pass is a real bonus. There are things about this machine that no other machine on the market can equal.”

“It’s simply a magic way to utilise one machine to do a broad spectrum of jobs on the farm.”



Allan Marx, Eltham, Taranaki.

Key Stats: Stats: 330 Cross Breed LIC Cows | 120 Hectares | Tow and Fert Multi 4000

Fertiliser  
MYTHS  
BUSTED.

#01  
IT’S THE END OF  
PASTORAL FARMING

Regulation, or the potential for regulation, is now upon us but it is NOT the end of pastoral farming as some would have us all believe. In fact, it is an opportunity for all of us as farmers to do things better and to consider our long-term impact on the world around us. Yes, things will change, but we will still grow grass, and lots of it. In fact, it will probably be better grass!



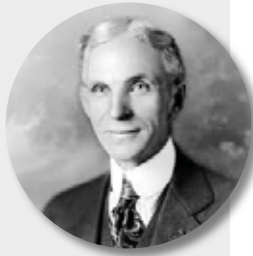
#02  
DAVID PARKER AND  
DAMIEN O’CONNER  
HAVE BEEN SENT FROM  
A STAR FAR, FAR AWAY!

We haven’t actually heard this one, but sometimes it seems an interesting point to contemplate and it might be exciting to think they were, but sadly this is not the case. They are human it seems and sitting in the seat of power.



#03  
HENRY FORD ACTUALLY SAID,  
“PEOPLE WOULD  
HAVE ASKED FOR  
FASTER HORSES.”

In reference to our lead article in this issue we can confirm, that whilst attributed to Henry Ford, he never actually uttered those words. It is simply used to illustrate the importance of innovation and creative thought in business in order to solve problems. Regulations anyone!



#04  
YOU CAN ONLY USE NITROGEN  
IN A TOW AND FERT

Now this one we have heard before and we are pleased to say that this is entirely false. The Tow and Fert Range is designed to handle all manner of products and is an incredibly versatile machine, just ask Allan Marx.



A REGENERATION REVOLUTION

From pasture diversity to soil ecosystems and biostimulants, farm regeneration is at the forefront of industry minds.

As dairy farming faces its future, there has been increasing focus within our industry on the alternative methods of farming dairy cows that we can turn to to solve the issues that seem to find their way to our door.

Farm Regeneration: Regenerative Agriculture

What on earth is regenerative agriculture? At its core, regenerative agriculture is simply about regenerating a healthy and well balanced soil, plant and animal ecosystem.

We know that dairy farming practices have gone too far in the direction of “to grow more grass, put more fertiliser on”. This mantra has largely been led by industry players with a direct financial interest in selling more fertiliser: and truth be told, it has worked up until now. However, as soils have had to absorb more and more fertiliser and effluent from the animals grazing the pasture, these soils and plants have become increasingly unable to use the nutrients applied.

As we have begun to learn more about the ecosystem of soil itself, biostimulants, or nutrition products added to the farming system with the aim of stimulating the micro-organisms in soil or “soil life”, have risen in prominence. Essentially, these biostimulants feed these micro-organisms which in-turn feeds the ecosystem between the soil and plants. This helps to unlock the soil nutrients making nutrients plant-available in order to stimulate growth. Being plant-available means these nutrients are then made more available through the plant to the animals that graze the pastures.

Pasture diversity

High performing rye grass-clover pastures as found on the typical New Zealand Dairy Farm, do not match the ideal diet of a dairy cow. They typically contain too much protein and too little energy. Diverse pastures allow farmers to provide dairy cows with a more balanced diet of energy, protein, vitamins and minerals resulting in an animal that can produce closer to their genetic potential because their diet gives them more of what they need to produce more milk. Diverse pastures enable more capturing and storing of nutrients in the soil. Deeper plant roots across the species in

diverse pastures capture more of the nutrients that find their way back into the soil by way of urine and fertiliser, helping to reduce nitrous oxide emissions and the subsequent impacts on freshwater systems.

So not only do diverse pastures enable the up-take of more nutrients in the soil, they also provide the dairy cows with a more balanced diet that results in more milk production.

A Revolution in Farming

In many ways the rise of regenerative agriculture makes a lot of sense. In essence it simply means working with the ecosystems that already exist and finding ways to both stimulate and sustain them.

Our whole world is one giant ecosystem of inter-related organisms, be they microscopic or the size of a dairy cow. We all rely on a balance of many different things working together to generate the conditions for the life we lead. It makes sense, therefore, that the rise of regenerative agriculture, with it’s focus on sustainable ecosystem maintenance, would seem to be the logical way forward for our industry.



# ANATOMY OF A TOW AND FERT:

It's been ten years since the launch of the first Tow and Fert.

Tow and Fert is a New Zealand innovation story being one of a kind in the world. We sat down with Campbell Easton of Metalform to discuss the past, present and future of the Tow and Fert.

Tow and Fert started its life in 2009 as a simple idea in the small central North Island town of Dannevirke. Dannevirke is your typical New Zealand country town, no traffic down the main street, a town hall, a pub and a restaurant or two, and now, even a McDonalds (more typical now than then perhaps!). Of course, there are Vikings, but that is a story for another day.

In this article we wanted to give you more of an insight into Metalform, the creator, designer, developer and manufacturer of the Tow and Fert and the process they went through. We sat down with Campbell Easton, Director of Metalform and asked a few questions:

*Campbell, what prompted the idea of a foliar fert sprayer that could also suspend fine particles etc?*

**CE:** We had been approached by various farmers who had read about the benefits of the foliar application of fertiliser, at the time there was no machinery available and many farmers had built their own rigs (rather unsuccessfully) or tried their traditional sprayer without any success.



Above: The very first Tow and Fert prototype from 2009, we've come a long way.

*Can you tell us a little about the design process, how long it took before building the first prototype, successes, failures etc?*

**CE:** There were a couple of key things we needed to test initially. Firstly was the initial mixing and secondly the best method to keep the product from settling in the boom and blocking the spray nozzles.

We actually tried a heap of different methods for mixing, a lot of the early prototypes were failures. We learnt quickly from these failures and eventually prototyped the idea that we later patented and still use today.

It was actually the same story for the method to prevent product settling, the early prototypes were pretty rough, but they proved what worked and what didn't. Eventually we patented our recirculating boom because it was simple and so effective.



Above: Today, the Tow and Fert is still manufactured entirely at Metalform headquarters in Dannevirke, New Zealand.

*How did you go about developing the production process and assessing the viability of building a machine like this in New Zealand, let alone here in Dannevirke?*

**CE:** The viability of this product was hard to estimate, we were not simply building a new product in an existing category – we were creating a whole new category! We did our normal market research, but it's hard to get potential customers to comment on a concept that is vastly different from the machinery that was available in 2009. In the end, we were so impressed by the scientific research around foliar applied fertiliser that we thought we would just go for it.

*That sounds risky! What were some of the biggest design hurdles you had to overcome to ensure the Tow and Fert did what you needed it to do?*

- CE:** The biggest hurdles were;
1. Mixing to a ratio of one part water to three parts fertiliser, once we cracked this in a cost effective way we patented our design.
  2. Stopping the fert particles settling out in all the pipework and booms, likewise when we cracked this one, we also patented our design.

*When you first launched the Tow and Fert what was the reaction from industry like?*

**CE:** A mixed response initially, some customers had been trying to do their own thing as I mentioned and could immediately see the value of our system, these were early adopters. Other farmers, when introduced to the foliar fert concept, were baffled as to why anyone would want to do that. Their comments were along the lines of "fancy looking machine, but why would I need one?"

*So now, ten years on, what is Metalform doing to improve the product and its already high build quality and performance?*

**CE:** We (Metalform) are strong believers in continuous improvement, as we get more and more machines in the field, our customers find the weak points and we systematically fix these. We also get a lot of good suggestions on additional capabilities from our customers and where possible we build these suggestions into future design releases.

*We've seen a lot about farmers needing to innovate and improve efficiency lately, what does the future hold for Tow and Fert?*

**CE:** We are really excited about this product range, we have noticed a big change in the industry over the last ten years. With farming compliance changes, the possibility of regulation and increased awareness on environmental sustainability, freshwater pollution and the cost savings farmers can make, we think foliar fertiliser application and the Tow and Fert will go from strength to strength.



## On-Farm Field Days TOW AND FERT

We are running a series of on farm field days throughout November and December and into the new year.



A recent Tow and Fert field day in Australia.

**Attendance is FREE**  
Food and drink will be provided.

If you are keen to find out more about a Tow and Fert register your interest on

**0800 337 747** or  
**dairy@towandfarm.co.nz**

## The Tow and Fert range LIQUID FOLIAR SPRAY MACHINES

THERE IS ONE FOR YOUR FARM



Multi 1000



Multi 1200



Multi 2800



Multi 4000

### THE BENEFITS OF OWNING A TOW AND FERT:

- Save on fertiliser costs ☒
- Reduce nutrient loading ☒
- Improved grass quality ☒
- Improved soil health ☒
- Better animal health ☒
- Better milk productivity ☒

For more information or  
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DEMONSTRATION**

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