agKnowledge
"The Independent Fertiliser Experts"

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PASTURE FIRST

"It is an ill wind that blows no one any good."

One of the consequences of the downturn in the dry-stock sector in the late 1980s and early 1990s was that it forced farmers to become more efficient. One of the best illustrations of this improvement is that, although sheep numbers have halved, lamb numbers have remained the same. Animal genetics came to the rescue. It is to be hoped that the recent downturn in the dairy sector will have a similar long-term effect – improved efficiency.

Historically, the source of our international competitive advantage in pastoral farming was our low-cost, clover-based pasture system coupled with a temperate climate that allowed all-year grazing. The dairy industry in particular has taken their collective 'eye' off this ball over the last few decades. It is time to reflect and reassess the situation and DairyNZ is doing just that with their "Pasture First" campaign.

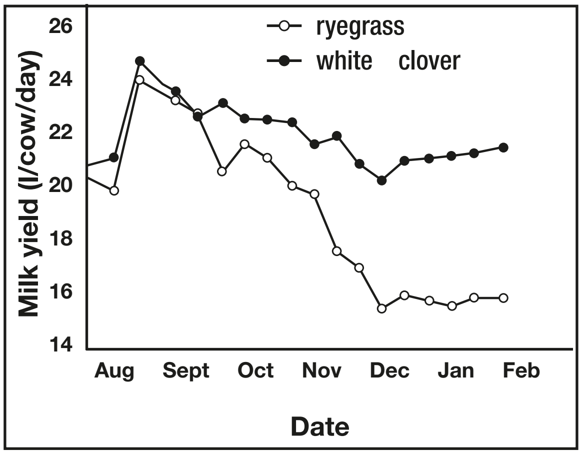
Benefits of clover

The basis for such a campaign is easily understood. The marginal cost of clover-ryegrass pasture is about 4-5 cents/kg DM. Removing the clover and growing ryegrass alone feed with bag N and the cost is 10-12 cents/kg DM. Crops cost in the region of 15-20 cents per kg DM and supplements like PKE and Maize are typically over 30 cents/kg DM.

Not surprisingly Dairy NZ data shows that the most profitable dairy farms, irrespective of which system (1-5) is being used, are those that maximize the production and utilisation of clover-based pasture. This SHOULD BE THE PRIORITY on all pastoral farms.

The reason why clover is so valuable is that it "fixes" (takes in via the root nodules) atmospheric nitrogen gas (N2) and converts it into protein N. This is "free" N relative to fertiliser N, which currently costs about $1.00/ kg N. The ideal pasture comprises about 30% clover and "fixes" about 200 kg N/ha/yr. If the average dairy farm is about 100 ha this represents an input of $20,000 of N annually.

But clover has another important attribute – it is a better source of feed for ruminants whether dairy cows or lambs (see Figure 1 below, Clark and Harris).



Recent research by DairyNZ reinforces the importance of clover in our pastoral system. Trials were conducted in the Waikato (Figure 2) and Canterbury (Figure 3) exploring the grass/clover interactions in monocultures (ryegrass alone) and in mixed pastures (clover/ryegrass), in the presence and absence of fertiliser N (Low = 100 kg N/ha and High = 325 kg N/ha). Figures 2 and 3 show the effect of these various treatments on summer production (HA = herbage accumulation) averaged over two years.

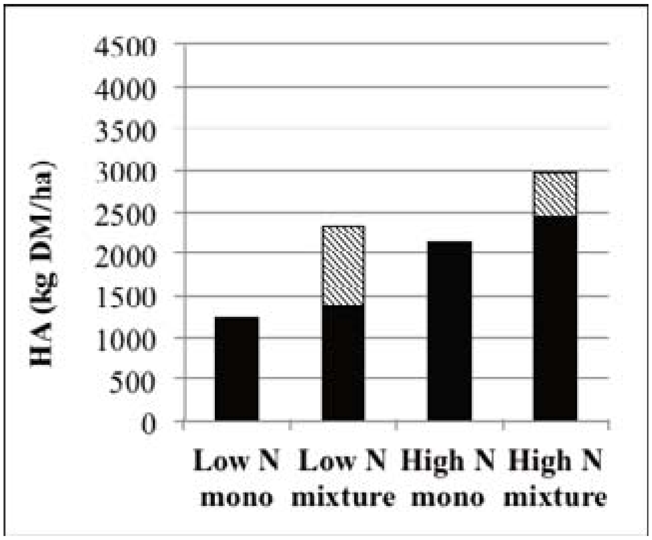


Figure 2: Herbage accumulation (HA) over the summer months in the Waikato. (Black = ryegrass; hatched = clover).

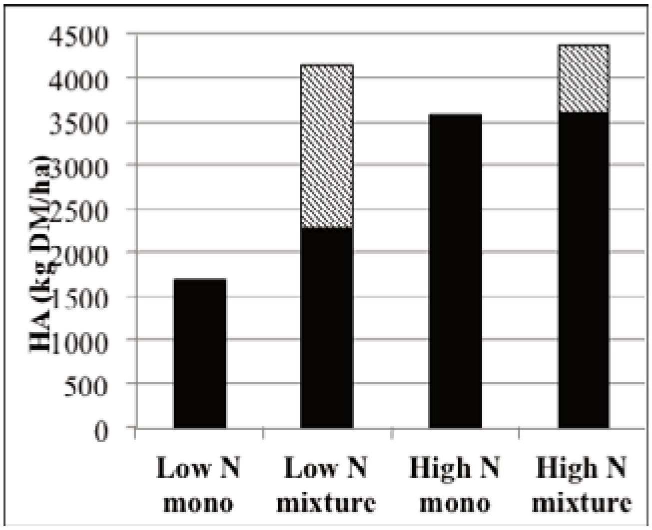


Figure 3: Herbage accumulation (HA) over the summer months in Canterbury. (Black = ryegrass; hatched = clover).

The key points from these experiments are:

1. The mixed clover-ryegrass pasture produced more DM than the ryegrass monoculture at both levels of N.
2. The mixed clover-ryegrass pasture at low fertiliser N out produced ryegrass monoculture at high fertiliser N
3. High rates of fertiliser N reduced the clover contribution to the total pasture produced.

As the authors noted; “The yield increases described above are valuable since almost all of the additional feed comes in summer when it has higher economic value and is of high digestibility, due to the clover content.

Cost of clover

But the benefits of clover come at a cost. Because clover has a very poor root structure relative to grasses, it has a higher requirement for all 16 essential nutrients (except N of course). It is for this reason that clover can be regarded as the ‘canary in the mine’ – if the soil fertility is not optimal the clover will be the first to suffer and it is a double whammy – less free N going into the system and lower feed quality.

As a reminder, the optimal nutrient levels for near maximum production of clover-based pastures are given in Table 1 (for soils) and 2 (for clover leaves).

Table 1 Optimal soil test ranges for near maximum production of clover-based pastures

Soil Test	Optimal Range for Near Maximum Production
pH	5.8-6.0 (Mineral soils); 5.5 (Peat soils)
Olsen P	35-40 (Sedimentary and Volcanic soils); 40-45 (Pumice and Peat soils)
Sulphate S	10-12 (all soils)
Organic S	10-12 (all soils)
Quick test K	7-10 (all soils)
Quick test Mg	8-10 (all soils)
Quick test Ca	> 1 (all soils)
Quick test Na	3 – 4 (all soils)

Table 2 Critical nutrient concentrations in white clover below which clover growth will be limited.

Major nutrients (%)		Minor Nutrients (ppm)	
Nitrogen (N)	< 4.0	Iron (Fe)	<45
Phosphorus (P)	< 0.3	Manganese (Mn)	<20
Potassium (K)	<2.0	Zinc (Zn)	<12
Sulphur (S)	<0.25	Copper (Cu)	<5
Magnesium (Mg)	< 0.15	Boron (B)	<13
Calcium (Ca)	< 0.25	Molybdenum (Mo)	<0.10

Clover Health Check

The optimal soil nutrient levels as set out in Tables 1 & 2 have been applied to our agKnowledge Ltd clients. Over the period 2004 to 2016 agKnowledge Ltd has visited about 400 dairy farmers across New Zealand. At the initial farm visit, 82% of the farms presented with suboptimal K levels, 64% had suboptimal S levels and P was deficient in 61% of the cases. Molybdenum (Mo) deficiency affected about 12% of clients. The situation is likely to be worse in the drystock sector.

These data shows that we have lost the plot in terms of managing the soil fertility to optimize the production of clover-based pastures. This appalling situation is not the consequence of insufficient science. It is a result of not applying current scientific knowledge, which is sitting on the 'shelf,' so to speak, waiting to be used.

Alternatively, these results suggest that there is considerable potential to increase the productivity and efficiency of the dairy sector. And the same applies to the drystock sector. My best guess is that we could easily increase productivity of our pastoral sector by 20% simply by applying current knowledge and technology in soil fertility and pasture production, thereby eliminating the existing nutrient limitations.

Exacerbating this problem is that we no longer have enough people - call them consultants - with the suitable training and experience in soil fertility and pasture nutrition to solve this problem in the short-term nor do our land-based Universities offer courses in this subject.

FINE PARTICLE APPLICATION (FPA)

You may have seen the advertisements for Fine Particle Applications (FPA) of fertilisers. "Fine Particle Application (FPA) is a high performance solid fertiliser distribution system designed to improve the efficiency of fertiliser use."

In the FPA process, which I understand is patented, water is added to normal granulated fertilisers, like urea and DAP, which are then finely ground and the resulting fluid or slurry is then sprayed onto the pasture or crop, either by aeroplane or truck. It is claimed that this results in a better distribution of the fertiliser.

More specifically it is stated on the website that "FPA is scientifically proven to a) reduce fertiliser leaching by 50% b) lower fertiliser emissions by 14% c) increase water use efficiency in plants by 38% and d) increase extra grass production by 90%.

I was informed by the proprietor of the FPA technology that the basis for these claims was a science paper written by Dawar et al (2011) entitled "Urease inhibitor reduces N losses and improves plant-bioavailability of urea applied in fine particles and granular forms."

This paper describes experiments in the field. They measured losses of N from urea applied at 100 kg N/ha either in a granular form or as FPA on pasture. Three separate experiments were reported: leaching losses were measured in small lysimeters (30 cm x 40 cm), ammonia and nitrous oxide losses where measured from small microplots (1m^2) and a further set of microplots (1m^2) were used to measure pasture production.

From my reading of the paper I concluded that FPA had no significant effect on gaseous losses (of N), decreased N leaching losses, had no effect on soil nitrate concentrations measured at the end of the trial and increased pasture production.

However, before these results can be extrapolated to the field some caveats are, in my view, essential. First, the plots were small – I always get nervous when dealing with such results because of what are called 'edge effects' But, more importantly, the application of urea was high (100 kg N/ha). In commenting on the high N application rate the authors stated; *"this application was higher than traditionally applied (30–60 kg N /ha) as a single dose, and at a time of the year most conducive to N losses, in order to best assess the potential impact of the inhibitor under field conditions."* Noting that N losses typically increase with increasing N application rate, this input (100 kg N/ha) was used to optimise the possibility of getting some effects.

If this was the only trial comparing urea as a granule versus FPA a realistic conclusion may be: interesting, proof of concept appears to be established but:

- Let's test this idea in further larger scale field trials at realistic rates of fertiliser N application before we make any claims in the market, and,
- Are there other trials, which have tested the possibility that FPA application of nutrients is better (more efficient) than normal granular application.

Fortunately there is other data (Figure 1 and 2) and these results do not support the claim that FPA increases pasture production. In fact these trials show that there is no significant difference between granular urea and FPA urea. Given the caveats, which should be applied to the Dawar et al. paper, I think it is reasonable to rely on the results of Muir et al. (2005) and Wyn (2007) when offering practical advice to farmers.

This conclusion by the way is not new, for it has been known for many years that the form of application of nutrient (solid, slurry or liquid) has no effect on plant growth (see Fertiliser Review 3).

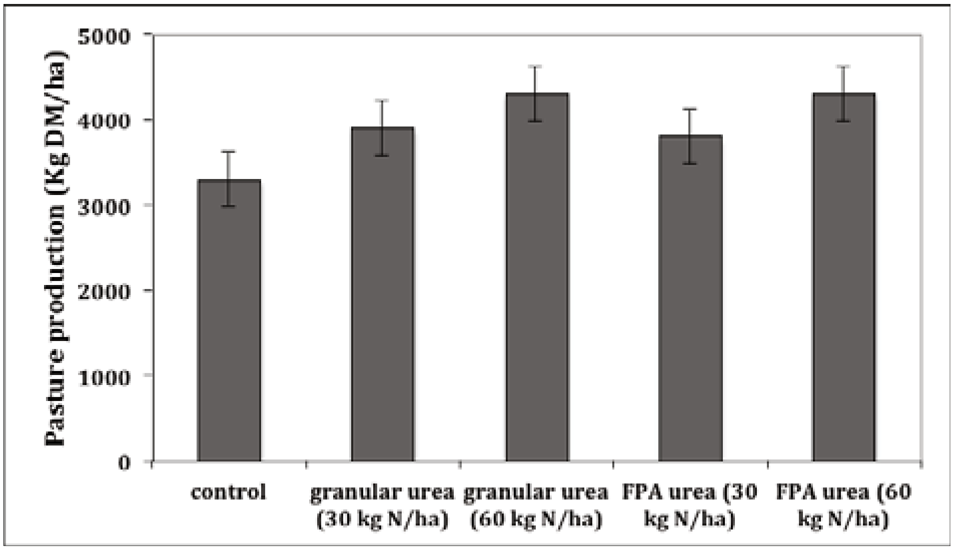


Figure 1: Effect of granular and FPA urea on pasture production applied at two rates in a field trial in the Hawkes Bay (Muir et al. 2005).

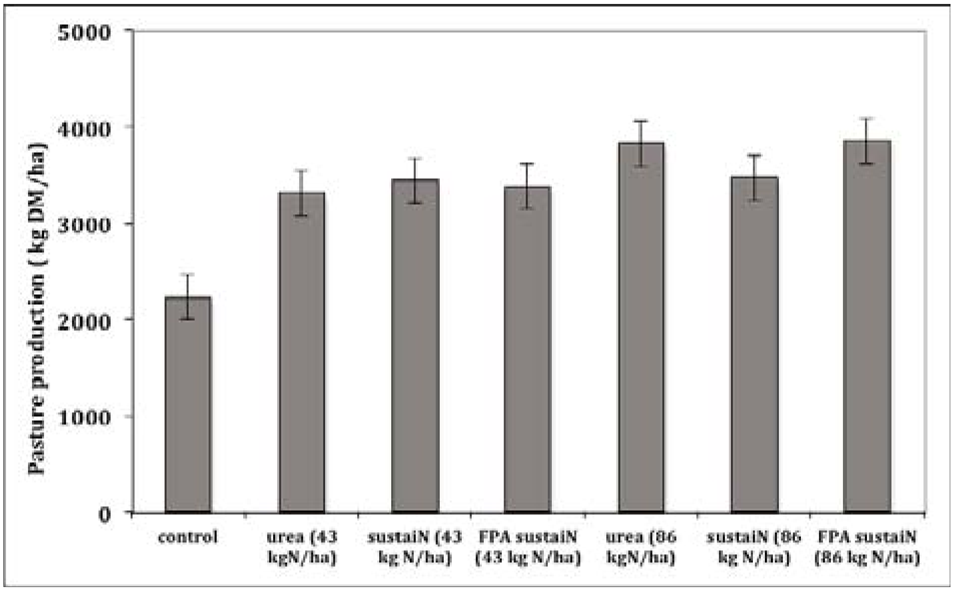


Figure 2: The effect of urea and SustaiN applied at 2 rates of application, as either granular applications or fine particle application (FPA) in Northland over a 2 month period (Sept-Oct). (Wyn 2007).

My Advice

Based on current evidence, and when applying nutrients at typical rates, FPA does not appear to be a more efficient means of applying fertiliser nutrients.

SUSTAIN and PHASED N – value for money?

I am going to repeat myself for what I think is a very good reason. Ballance AgriNutrients Ltd appears to be giving these two products a big 'push' in the market at present. For those who believe in the principle of *caveat emptor* here is a little refresher.

In Fertiliser Review 34 we reported a review of data from 105 trials comparing urea with SustaiN, which is urea stabilized with the urease inhibitor, agrotain. The average advantage of SustaiN over urea was 2.3% with a confidence interval of 1.1 and a range from -11% to +24%. The probability of getting a positive response to SustaiN over urea was about 60%. In other words the effect of SustaiN was barely observable against the background noise in the data (see Figure 2 above for example).

These results are consistent with the conclusion that the volatilization of N from urea, when applied at normal rates on temperate pastures, is small, probably in the range of 0-5% of the N applied. Ballance claims that SustaiN reduces volatilisation of N by 50% which is true based on their data, but farmers must note that 50% of 0-5% is a small number!

The current cost of SustaiN (46% N) is $515/tonne compared with urea (46% N) at $460/tonne. On a nutrient basis the N in SustaiN is costing about $1.12/kg relative to $1.0/kg N in urea. Thus the farmer is paying 12% more for N for a 2% gain in N use efficiency, noting that the probability of getting a positive response is a little better that 50:50.

Phased N is another branded product introduced recently by Ballance AgriNutrients. It is SustaiN, coated with elemental sulphur. It contains 25.3% N and 28.5 % sulphur and costs $581/tonne. Pure elemental S costs about $0.72/kg S and hence Phased N contains about $205 worth of S. Taking this into account means that the N component in Phased N costs $1.48/kg. The N in the urea costs $1.0/kg.

I am not aware of any trial work with this product but it is reasonable to assume that the agronomic effectiveness of Phased N is similar to applying the same amounts of N and S separately. Thus farmers who purchase this product are paying a premium of 48% for the privilege! Go figure!

My Advice?

Avoid branded products and stick to the generics: super, potash, urea etc. That is assuming you are cost conscious and want the best 'bang for buck' from your fertiliser dollar.

A Question. Can someone explain to me why a cooperative fertiliser company would treat their owners in this manner?

ALL PADDOCK TESTING (Another botch up?)

I am critical of this All Paddock Testing (APT) fad (see Fertiliser Review 27 and 29). It is very expensive (in time and money) and offers no advantages over the classic approach used to identify and manage the range in soil fertility that can occur across a farm.

The Correct Protocol

Just to recall. The normal procedure (protocol) to take into account the range in the soil fertility across a farm is to divide the farm into blocks – blocks being areas of similar soil group, topography, land use, fertiliser history and pasture vigor. Once this is done one paddock in each block which is representative of the block is selected for sampling – a soil test and a clover only sample. This paddock becomes the 'monitor' paddock, which is regularly tested year after year. We have farms that have between 4-8 monitor paddocks, which are sampled annually to build up a picture of the trends in soil nutrient levels over time.

Both skill and experience are required to do this job properly because it demands a knowledge of the 'art' of reading pastures in terms of their overall vigor, botanical composition and most importantly the clover content, health and color. (Remember the canary in the mine). Pastures can and do reflect important aspects of the underlying soil fertility, if you know what to look for.

APT in Practice

Not only is APT costly, but it can lead to a sense of false security as the following example shows.

The owner of a high producing Waikato dairy farm, with the help from his cooperative, tested all 64 paddocks on the farm. It took them, I was told, most of the day, and the soil testing cost alone was about $3,000.

The average results are summarized below for the effluent paddocks (15 paddocks) and the non-effluent paddocks (49 paddocks) relative the optimal ranges for a high producing dairy farm.

Block	Olsen P	K	Sulphate S	Organic S	Mg	Na	pH
Main	54	21	42	9	32	-	6.4
Effluent	74	26	30	8	41	-	6.4
Optimal	35-40	7 - 10	10 - 12	10 - 12	8 - 10	3 - 4	5.8 - 6.0

Based on this information the farmer was advised that no fertiliser was required for a good number of years, because of the high soil fertility across the farm. The farmer confidently believed that the nutrient tanks were full to over flowing.

However, after 2 years of withholding fertiliser inputs he became concerned that something was not right – the pastures were not performing as he expected. He sought my input.

Farm Visit

I visited the farm and inspected the pastures rating them as follows:

Block	Rating	Description	Implications
Effluent	8/10	About 30-40% clover with the balance predominantly ryegrass. Even colour, height and vigour. A few weeds.	No obvious nutrient limitation
Non-effluent paddocks	4-5/10	Excreta patches obvious and showing a response to clover. About 10-15% clover. Pastures between excreta patches lacking vigour and flat weeds abundant. Some symptoms of S (yellowing) and K (brown leaf margins) deficiency on clover leaves.	Likely K and S deficiency

My visually assessments supported the farmers intuition – something was amiss.

APT v Standard Protocol

I took five soils samples from representative paddocks on the farm - one from the effluent block and four from non-effluent paddocks. The results for the four non-effluent paddocks were similar, allowing for the normal variability in such tests. There was no evidence, in other words, that the soil fertility was different on different parts of the farm. The four results could sensibly be averaged.

The soil test results for the non-effluent paddocks from the APT and from agKnowledge soil tests are compared below.

Block	Olsen P	K	Sulphate S	Organic S	Mg	Na	pH
agKnowledge (n=4)	39	7	26	8	30	11	6.4
APT (n = 49)	54	21	42	9	32	-	6.4
Optimal	35-40	*7 - 10*	*10 - 12*	*10 - 12*	*8 - 10*	*3 - 4*	*5.8 - 6.0*

The APT levels for most of the tests, and especially for P, K and sulphate S, are higher than the levels recorded by agKnowledge. This is a common problem in our experience (see also the next article). It is very easy to get inflated incorrect soil test levels if the proper soil testing protocols are not followed.

This raises the question: which set of results can or should be believed? The answer is contained in the advice my Mentor the late Mike O'Connor gave me: "Never believe a soil test results until you have inspected the pastures. In this case the results of the APT are inconsistent with the visual assessment and therefore should be set aside.

My Advice

The full set of the agKnowledge results are summarized below and clearly the soil nutrient tanks were not full as indicated by the APT results and fertiliser inputs were required.

Block	Olsen P	K	Sulphate S	Organic S	Mg	Na	pH
Main	39	7	26	8	30	11	6.4
Effluent	82	40	14	7	50	6	6.7
Optimal	35-40	*7 - 10*	*10 - 12*	*10 - 12*	*8 - 10*	*3 - 4*	*5.8 - 6.0*

The results for the Main block indicated deficient levels of S (organic S is the major pool of plant available S and there where symptoms of S deficiency in the clover leaves) and marginal soil K levels – I say marginal because although the average was within the optimal range 7-10, there were symptoms of K deficiency in the clover and the range in the soil K results was 5-9.

I recommended maintenance inputs of P (50 kg P/ha) a healthy maintenance of K (100 kg/ha) and capital input of S (50 kg S/ha).

A TRAGIC CASE OF MISDIAGNOSIS

A cropping farmer contacted agKnowledge recently. He had kept meticulous records of his farm's production. This included plant production (pasture and brassicas) and stock live-weight production (lamb growth) over the past 16 years. As shown below this data reveals an alarming downward trend.

Period	Hybrid Ryegrass (kg DM/ha)	Rape Yields (kg DM/ha)
2001 - 2005	15,280	17,900
2006 – 2010	12,620	13,750
2011 - 2015	9,410	11,815

Numerous crops had been grown on the property and a typical rotation was: small seeds, rape, oats, wheat, and then clover-based pasture. No conventional cultivation has been practiced for the past 10 years and Cross-Slot no-tillage was the preferred seeding method. Lime use was intermittent.

He sought solutions to this problem from many quarters - all to no avail. By the time he contacted agKnowledge he was of the view that the problem might be the result of zero-tillage. He reasoned that because the soil had not been turned over regularly, the subsoil was perhaps becoming compacted or acidified. I dispatched my man Mr Bob Longhurst to investigate.

Pasture analysis

A clover-only sample had been collected by a fertiliser company representative from a particularly troublesome paddock (Elsies) in November 2015. The results (below) showed that K and S were grossly deficient.

White Clover-Only Nutrient Analysis								
Sample Name	N (% DM)	P (% DM)	K (% DM)	S (% DM)	Mg (% DM)	Cu (ppm)	Mo (ppm)	B (ppm)
Elsies	5.10	0.33	1.56	0.22	0.34	8	0.42	24
Low	4.0-4.4	0.30-0.34	2.0-2.4	0.25-0.27	0.15-0.17	5-7	0.10-0.14	13-14
Deficient	<4.0	<0.30	<2.0	<0.25	<0.15	<5	<0.10	<13

Soil Tests (0-75mm)

A soil sample (0-75 mm) was also collected from the same paddock in April 2016 by the fertiliser company representative and again in June by agKnowledge, at the time of the agknowledge farm visit. The results are summarized below:

	Olsen P	K	Sulphate S	Organic S	Mg	Na	pH
Fertiliser company (April 2016)	44	10	16	11	24	6	6.0
agKnowledge (June 2016)	24	4	4	7	20	5	6.0
Optimal[1]	*20 - 30*	*7 – 10*	*10 - 12*	*10 - 12*	*8 – 10*	*3 - 4*	*5.8 – 6.0*

Note: 1) The optimal ranges (0-7.5 cm) required to maximize long-term profitability of clover-based pasture.

There is a large discrepancy between the two sets of results – the levels of P, K, S and to a lesser extent Mg, are greatly elevated in the sample collected by the fertiliser company (see also the article on APT in this issue).

Importantly, the agKnowledge results indicated severe K and S deficiency and these results are consistent with the results from clover only samples. No need to guess which results are incorrect and should be set aside!

Soil tests (to depth)

The farmer was concerned that as a consequence of zero tillage over many years something nasty was happening in the subsoil. agKnowledge collected soil samples from three depths (0-7.5 cm, 7.5-15 cm, and 15-30 cm). The results are given below:

Depth(cm)	Olsen P	K	Sulphate S	Organic S	Mg	Na	pH
0 – 7.5	24	4	4	7	20	5	6.0
7.5 – 15	18	3	6	6	15	3	5.4
15 - 30	9	3	6	6	16	4	5.7
Optimal[1]	*20 - 30*	*7 – 10*	*10 - 12*	*10 - 12*	*8 – 10*	*3 - 4*	*5.8 – 6.0*

Note: 1) The optimal ranges (0-7.5 cm) required to maximize long-term profitability of clover-based pasture.

These results reinforced the fact that the soil was deficient in K and S and also indicated that there is a layer of acid soil (pH < 5.5) in the 7.5 – 15 cm depth. The associated soil aluminium (Al) concentrations were 1.0, 5.0 and 1.7 ppm respectively for the 0.7.5, 7.5-15 and 15-30 cm depths.

Reason for the Declining Production?

The combined results (soil tests and plant analyses) indicated that S and K are very deficient. This will be limiting clover growth in particular and hence the amount of 'fixed' N being returned to the soil and thus the amount of N available for the subsequent crops. This is, in all likelihood, the primary reason for the decline in production over time.

This is likely to be exacerbated by the low, but not fatal, soil pH, at the 7.5-15 cm depth and hence the elevated soil Al. This could be limiting plant root growth. It is possible that the layer of soil acidity at the 7.5-15 cm depth could be a consequence of zero tillage. In normal cultivation the soil profile would have been mixed up and hence this layer of acidity diluted or neutralised if lime was worked in. This should not be taken to mean that zero tillage should be avoided. It simply means that when using this technique adequate lime should be applied to the surface at sowing. The active ingredient in lime – the carbonate – will move down the profile over time and neutralise any developing acidity.

We can infer from the production data on this farm that these problems have been developing over a long period of time (about 15 year) and would have been apparent in the pastures for some time. Acute K and S deficiencies symptoms in clover leaves are very obvious to the trained eye.

These nutrient deficiencies cannot be attributed to zero tillage – they are simply a consequence of misdiagnosed nutrient deficiencies, and consequently bad fertiliser advice, in this case, over many years. The tragedy is that it has cost the farmer a considerable amount of money in 'lost' production, not because of ignorance, carelessness or incompetence on his part – he was well aware there was a problem – but because nobody took the time or had the experience to solve the problem earlier.

WHAT DOES "SNAKE OIL" MEAN

Editors Note: As you will be aware I write a fortnightly column for the NZ Farmer. For the second time (see Fertiliser Review 36) I have had one of my draft columns rejected by the Editor for legal reasons. Here is another one.

There are various names used to describe products that contain nothing more than hype and hope - products so jammed packed with promises that there is little room for any useful active ingredient. "Muck and mystery products" springs immediately to my mind. Or how about something a little more obscure, "rocking horse poo." Once you stop grinning the metaphor settles powerfully in the mind.

I recently came across (thanks Uncle Google) the background to the expression "snake oil." I did not realize its full meaning – its rich pedigree, its fascinating origins, its distinguished etymology.

It dates back to the building of the transcontinental railway across America in the mid 19th Century. About 180,000 Chinese peasants were contracted on low wages, one assumes to do the hard yards. As they say in the Unions – it is a poor job that will not carry a supervisor!

They brought with them a medicative oil derived from the Chinese water snake. It was, we are told, rich in omega-3 acids and worked wonders on aching joints – something to look forward to after a days hard yakker. It worked just as well on the aching joints of Americans who were soon extolling its virtues.

Enter the ex-cowboy entrepreneur Clark Stanley who was to become known, as we are about to learn, the 'Rattlesnake King.' America did not have any Chinese water snakes but who cares – why not use the American rattlesnake? Stanley needed to convince gullible buyers that the American snake was as good as the real thing and so he concocted a story that during his cowboy years he learned from the Hopi Indians about the healing power of rattlesnake oil.

He was in business and he soon had another brilliant idea – to hell with the active ingredient - rattlesnake oil. A shipment of Stanley's Snake oil was seized by the authorities in 1917. They found it contained mineral oil, a fatty oil believed to be beef fat, red pepper and turpentine. His magic potion contained none of the magic ingredient! He was fined for violating the Food and Drug Act 1906 for "misbranding" his product by "falsely and fraudulently representing it as a remedy for all pain."

It is as a result of Mr Stanley's antics that the phrase "snake oil" has come into our lexicon to mean a fake product or quack remedy, initially pertaining to patent medicines but now applied more widely to any product that does not work as claimed.

You will be pleased to know that we have our own indigenous snake oils and I am sure that Mr Stanley would be delighted to know that his methods have been copied in modern times.

Take a product used for eons by our seaside forebears to makes plants grow – seaweed. Gather it up and make compost and then apply it to the soil in copious quantities and voila!

But this is laborious; collecting tonnes of seaweed, turning it over and over to aerate it into good compost and then spreading and digging it into the soil. Where is my Chinese snake oil when I need it?

Lets apply a little bit of Stanley's thinking. Lets make a liquid extract of the seaweed and claim that it contains all the active ingredients in the seaweed and is so potent that you only need a few litres rs per hectare. What a relief. No more of those backbreaking activities. Squirt on a few litres of concentrated snake oil and that is all that is required. This you can see is almost as audacious as Stanley's trick of leaving the snake oil out of the snake oil!

Claims – no problem; first off, it is organic despite the fact that caustic soda is used to extract the 'goodness' from the seaweed. It contains nutrients therefore it can do all the things that fertiliser can do. It contains organic matter that will enhance soil biology and it contains health giving growth hormones to protect plants from insect damage and frost. A panacea.

Mr Stanley when challenged at least had the decency not to defend the claims made about his snake oil. It is a pity that the proprietors of a well-known snake oil 'Maxicrop' did not follow his example. Remember when they were challenged they sued MAF for defaming their product. The High Court in this case ruled that the product did not work (based on the empirical field trial evidence) and cannot work (based on it's contents and recommended rate of application). They were hoist by their own petard, a bit like poor old Oscar Wilde in his defamation action again the Queensberry.

The other perhaps lessor known New Zealand snake oil was in fact a silicate mineral sold under the brand name Probitas. The authority, in this case the Commerce Commission, successfully prosecuted this company for misleading advertising. Once again failing to heed Mr Stanley's fine example they attempted to defend themselves arguing that the active ingredient in the product was silica, which captured energy from the sun, and that somehow this unlocked soil nutrients, restored the soil nutrient balance and improved soil structure. Unfortunately for them they picked the wrong active ingredient. The magic ingredient in their snake oil, silica, is completely inert - as I explained to the Court this must be so otherwise we would have no beaches.

It is a sad measure of our society that both these snake oils are on the market according to their respective websites. George Orwell said it all: "The further a society drifts from the truth the more it will hate those that speak it."