

**To help make more profit than by costly spoon feeding animals unnaturally.**

GrazingInfo will be read in many countries, so the aim is to try to help all. It is obviously impossible to be specific for all, regarding brands of fertilisers, pasture varieties, minerals, etc. We aim to cover most aspects of farming, but it won't all be in GrazingInfo for a while, because it is a massive job. Each chapter will have a version number and will be updated when new information is discovered, with new dates, so readers can see the age of the information.

A main reason for GrazingInfo is that there are many old established GOOD proven farming practices that are NOT being promoted to today's farmers, many of whom are young people without practical knowledge. At the same time, some outdated and wrong information from old research is still promoted. If AgResearch and DairyNZ did their job, I would not have to write this book for no return or profit, just to help farmers do the correct, natural and most profitable things.

Examples of wrong information are AgResearch and LIC saying lime is not needed if the pH is 5.8, and that applying it on top of peat pastures is not recommended. These two statements from 1960s research were not right then, because it was raw, hungry, fibrous, un-fertile Rukuhia, Waikato, peat with no earthworms, but this is still recommended by most consultants. It was not right on the better peats being farmed correctly. Today they certainly don't apply, because there is no raw fibrous peat. See Elements > Calcium and Soils > pH. The many farmers who have used wrong information have lost collectively millions of dollars.

If no one updates research (and lack of funds is one excuse), and don't delete the old research, it continues to be used by bureaucrats who are too scared to rock the boat, and can lose promotion and even their job, for promoting anecdotal information, even if it is used successfully by the best farmers.

The best researchers know that the top farmers are up to ten years ahead of research.

Another example of antiquated practices is the continuation of soil testing, rather than pasture leaf testing. See Pastures > Sampling and Analysing. Another fault is the recommended potassium (K) level in AgResearch soil tests being so high. This is costing farmers money, not only from buying potash when not needed, but also from perennial ryegrass pulling out and blaming soil pests, and from causing animal health problems. I've seen cases of pasture K being over 4%, causing clovers to die out. Applying LimeMagPlus at three or four tonnes per hectare (1.5 or 2 tons per acre) and 50 kg/ha of coarse agricultural salt encouraged white clovers to grow again without oversowing, and the pasture to be softer, which reduced perennial ryegrass pulling and increased animal consumption and production. K levels in pastures should be no higher than 2.8%. See Elements > Potassium.

New Zealand farmers losing clovers from pastures is a serious problem, and not being able to grow clovers in pastures is an international one. Too much K and insufficient lime are two of the many reasons. If the amount spent on K was spent on agricultural lime, both pastures and animal health would improve. See Pastures > Legumes.

Olsen P soil testing for P levels is another disaster. A top farm consultant who reviewed my Soil > Peat writings on these problems in 1995 wrote to me, "Soil Olsen P has been of real concern to me because of its fluctuating figures, especially in peat." See Elements > Phosphorus. Olsen P has been condemned by many for 50 years, but is still used. The Resin test can be better, but is still no where near as useful as measuring grass leaves which show what pasture gets out of the soil and what animals are eating. See Pastures > Analysing leaves Vs Analysing soils.

Some people may question some suggestions because they can be the opposite to what the establishments (MAF, Department of Agriculture, AgResearch, DairyNZ, etc.) recommend, but much of the information in this eBook has been used successfully on our dairy and drystock farms, and by many of our 400 farmer clients in several countries.

Many have benefited from dozens of often simple practices, such as chisel ploughing, applying capital dressings of lime, using reactive phosphate (RP) where possible, using pasture tissue (leaf) tests for planning fertiliser applications, and feeding soluble mineral mixes in drinking water. These will be explained in various chapters.

Another is getting or buying *Allophana Caliginosa* (also called *Aporrectodea Caliginosa*) pasture earthworms, because they improve pastures by consuming and moving dead vegetation and animal

manure into the soil, as well as aerating and deepening the soil. Believe it or not, but earthworms become inbred, so bringing in similar ones (*Caliginosa* are best for pastures) from other areas gives them a little hybrid vigour. See Soils > Earthworms. Department of Agriculture research with earthworms in Palmerston North in the 70's achieved increases in pasture growth, and reduced facial eczema spores (See Animal Health > Facial eczema), compared with soils with no earthworms; however, this is not promoted by AgResearch or Dexcel.

### **Your help please**

Keeping GrazingInfo information up to date is a massive job. If you see any mistakes or information that is not current or not correct, or is ambiguous in GrazingInfo, please contact us via Support@GrazingInfo.com (upper or lower case).

There is so much to learn from farmers, neighbours, observations, etc., Your emailing good practices via support@grazinginfo.com would be appreciated. If recognition for your contribution is required, please let us know. Some prefer not to be identified.

### **Learning**

Problems I've seen in New Zealand and many countries are that agricultural lecturers have often been taught by agricultural lecturers, who were also taught by lecturers, and so on, so have little practical experience. They set exam papers based on what they were taught, so, for example, they don't know, so don't teach, about pasture leaf analyses. In 2007 an Australian university student who asked me to check his project report on acidosis was surprised when I added information about pasture analysis of 17 elements. He'd **never heard of it**, nor had his tutor, he subsequently told me.

A problem that some people have is believing (learning) what is completely new and the opposite to what they have been told. For instance, a farmer told a friend, who told me, that I lost my credibility when I wrote that low zinc levels can cause runny eyes and poor night vision, and that supplementing with zinc helps both. For that farmer's interest, a farmer in a low zinc area of Idaho told me how her animals broke through their electric fences and fell in drains - always at night. Her animals had runny eyes, which is a zinc (and cobalt) deficiency symptom. She was pleased with the results after fertilising with 6 kg/ha (5.4 lb/a) of zinc sulphate and supplementing her animals with 3 grams of zinc sulphate/head/day in their water.

Our son-in-law's heifers stopped breaking through polywire fences at night after he fed Solminix soluble mineral through the water. It contains zinc.

It is now recognised that people see better at night if their zinc levels are right, which only means taking two drops a day of oral zinc sulphate from chemists in any drink, but not with meals, because zinc is antagonistic to selenium and copper, so reduces their absorption.

Nails will improve, that means that bones will too. Once nails (and skin) are OK, decrease it to a drop every day or second day. Too much zinc lowers copper levels, which is not good, and in some people speeds going grey.

A useful characteristic that some people have is being able to differentiate fact from fiction, but remember the saying that, "Facts can be stranger than fiction."

It is not always a lack of education that causes people to dismiss what they do not think is right, it can be a closed mind, which is like a closed parachute - useless.

If you do dismiss something that could have helped you, then you are the loser, and many lose by not curing sick soils, pastures and animals, which can sometimes be possible with simple low cost solutions.

At the same time, one must be sure of what is best. Frequently a research recommendation is reversed some time after new research shows different results - OR after farmers refuse to use the first research recommendation because it is not practical and/or is time wasting. An example is the New Zealand research in the 60's that showed that identical twins produced more milk if stimulated for 35 seconds before applying the clusters. The few farmers who did it soon got tired of it and realised that they would, over time, breed cows that would **have to be stimulated** for 35 seconds twice a day, as opposed to breeding up a herd that didn't need it.

1990 NZ trials showed that the NZ national herd lets its milk down without hand stimulation, just by entering the dairy with milking machines going, and they milk out more quickly than Northern

Hemisphere cows (there are plenty of them here), where, for some, pre-milking preparation is quite a ritual of massaging and washing, wiping dry and sometimes applying a lubricant. Under confinement it is sometimes necessary to wash udders to clean them, but, if, it is necessary, do it quickly. In NZ on fresh clean pastures after every milking, and clean lanes, washing is seldom necessary. The milk let-down hormone lasts only a certain time from the start, so, if preparation takes too long, and the milk is not removed quickly, some cows produce less milk and put fat on their backs. New Zealand cows are much thinner than in most countries - sometimes too thin from under-feeding and mineral deficiency from New Zealand's poor soils and high rainfall. NZ farmers say that cows that get fat are looking after themselves rather than producing milk; however, if cows are thin (condition New Zealand score 3.5 out of 10) at calving from under-feeding, some will cleverly lay on fat again in preparation for the next deficiency.

### Fertilising Products

As a farm consultant since winning the 'Most improved dairy farmer' in the Waikato in 1959, and doing a little consulting in 1960, I learned that farmers want specific advice and suggestions, based on what has worked, and also they want the name of the best products. Where necessary this will be done, but allowance must be made for the fact that better products will continue to become available, and that some will not be available in some countries.

Where a product is the best, or the only one with specific characteristics, I may mention it by name, but please don't ask me for the names of others, because I won't give them to people I don't know. Before buying any new one, ask the supplier for names of several farmers in your area who have used it for three or more years. Contact the users and make sure that they are not getting paid to recommend the product. If they are, still listen and then ask them for users' names.

I phoned three users given to me by a manufacturer of a liquid potion called 'a fertiliser' by the vendor. I asked each where I could buy the product and all three offered to sell me some. They were all agents. It was fish oil and seaweed, well watered down. The company went broke as did one of their farmer agents who kept using it without solid fertiliser. He had to sell his farm, which ended up looking like this on the right feeding only a few sheep. The green paddock in the next photo was a neighbouring client using reactive phosphate and trace



elements based on pasture analyses that I did. Both photos were taken at the same time. The green one was not irrigated. The CalciumMagPlus and reactive phosphate with trace elements used encourage deep rooting, and the farm growing ample pasture reduced over-grazing. See Fertilisers.

Always check with as many users as practical - a few users if the cost is not high, but more users if it is high.

Another example is an elderly Waikato dairy farmer who had to sell his farm after changing from a herringbone farm dairy (milking parlour) to an internal rotary that takes months for cows to learn to enter and leave the bails. He couldn't cope and changed back to a herringbone, then had to sell his farm to pay the costs. There are a few farmers who are happy with their internal rotary, but after spending half a million dollars on one they don't like to admit their mistake. Happy users usually have docile Jerseys that learn faster and are less stressed than other breeds.



In life, the higher the cost of an item or system, the longer it takes for the farmer to admit they were wrong.

On the other hand, external rotaries are excellent and are increasing in numbers rapidly in NZ and other countries, often saving the building of another house for extra staff, and an extra annual salary because one person can milk 700 cows on their own and two people can run a 700 dairy cow farm.

### **New information**

If you have never heard of something before and choose not to believe it, that's your prerogative, but to help you benefit from the many points that will be made, please read all the wrong things I have been told -

- In 1957, that a spinner drain digger I invented and designed would not work - by an engineer and two other companies, so I bought a welder and made one, and dozens to supply the demand. Thousands have since been made around the world. See Soils > Draining.

- In 1958, by Ruakura staff that nitrogen is not used on New Zealand pastures. My applying it to new pastures paid for the cost in extra production in two months. I always applied sulphate of ammonia (ammonium sulphate) to new pastures about five weeks after sowing, and again until clovers were making N. I never used urea except on comparative trials to convince farmers, consultants and scientists when sulphate of ammonia always won. See Elements > Nitrogen.

- That lime applied to the surface of peat soils was not recommended, however, my and hundreds of farmers doing so has been highly profitable.

- In 1959, that a straight rail in a herringbone dairy would not work. Mine worked. See Dairying, and Massey University asked for the design and they built one, so did Waikato Polytech.

- That a chisel plough is not better than a mouldboard plough. See Cultivation.

- In 1980 that on-off grazing is not necessary - AgResearch. See Grazing.

- In 1980, that low calcium is not a fertility problem. See Elements > Calcium.

- In 1991, that lime in the new volcanic soils in Waikato, Bay of Plenty and pumice areas is not necessary if the pH is above 5.7. See Elements > Calcium, and read pH.

- In 2003, that in New Zealand soils (Lincoln University Farm Technical Manual) reactive phosphate powder fertilisers will not work in soils with a pH of 6.1 or higher. The figure has crept up from 5.7. Reactive phosphate with 10 or 12 kg per hectare elemental sulphur works at 6.4 in live healthy earthworm active soils. See Elements > Phosphorus.

- What is done in New Zealand doesn't apply in USA, which I was told at a controlled grazing seminar I gave at Cornell University in 1983. They later reversed their statement and said that if USA farmers applied what New Zealand ones did, they'd profit more. Thousands of USA confinement dairy farmers have gone broke or given up, while controlled grazing ones have increased in Wisconsin from 1% in 1980 when I first lectured there to 24% in 2008.

What counts is what successful farmers say works. Read Testimonials.

### **Not all will fit**

Please pardon the old cliches.

Not all that I or others say fits all occasions. This applies more to scientific research done on one soil-type, under perfect laboratory conditions, than to several practical farmer findings over a wide area, so remember that -

- Not everything will work for you, but if not tried it certainly won't.

- The more one wants or needs it to work, the more it will. The time it takes people and animals to change is in ratio to how much they need to - broke or hungry.

- Suggestions I make are already working for some.

- All things can and should be improved. The Japanese manufactures do it and have one word for it - Kaizem, which means 'continuous improvement'.

- There are none so blind as those who won't see.

- You can lead a horse to water, but you can't make it drink, just like you can show humans how, but can't make them do it.

- You can't teach an old dog (or person) new tricks. However, the dog will learn very quickly if hungry and if rewarded with food, and the old human will be more receptive to learning if poor and rewarded with profits.

- Animals, as with people, don't like change, so we have to help them through it, and not rush them

when training them to come when called to the farm dairy, to new pasture, to graze new crops for the first time, etc. The bait has to be attractive, so not a farm dairy with shocks, and not an old crop past its best. Within three days of grazing Pasja (a brassica) or Nutrifeed they'll run to it. Nutrifeed is a fast growing semi-tropical summer-annual, late-flowering high-leaf-content hybrid pennisetum (type of grass), that has been grown on thousands of farms in New Zealand's North Island and found to be an excellent milk producer. It is high in magnesium and sodium. Grass type crops are mostly low in sodium.

- Animals do things to feel good. Some people also do or buy things to feel good, but many complicate it by buying or doing things to look good, and only when essential, to make money.

Unfortunately many people, if making money, or some if only existing, shy away from improving that some see as change and say, "Why change?"

Please register exactly what you read, not what you might like to read into what is written. It is amazing how many people get a distorted message from what they read and hear. This will be read by Japanese, Germans and others, so I've tried to use correct English and call a spade a spade.

If you have not previously heard of things, I suggest you don't say, "I've never heard that before, it must be wrong." Think "I must try that on my farm and see if I can benefit from it." Dozens of farm management systems I used, wrote about in farm magazines and/or got clients using up to 20 years ago, were criticised by some NZ government agricultural departments, but are now standard farming practices and recommended by the same departments. Examples include aiming for increased profit, not just extra production, annual farm budgeting for profit, on/off grazing to save pasture damage, more clovers in pastures for faster animal growth and increased milk production.

This eBook has been written for practical farmers who are busy people, hesitant about reading even useful books during the day, but at night find it hard to stay awake and read. I've tried to make points quickly. Most figures have been rounded off where appropriate, quoting and references have been kept to a minimum. After a day's work, farmers want brief helpful facts, not screeds of decimal points and quantifying; however, unfortunately, some justifying is necessary.

To include all the sources of the information as done in scientists' books would bore readers, clutter the book and be useless, because many books, such as the brilliant Grasslands of New Zealand by Sir Bruce Levy, are out of print, so you could not source more information. Also, over the years I've subscribed to British, USA, and half a dozen New Zealand farm magazines, internet discussion groups, and have listened to farming radio and TV programmes, before I knew that I would write about it, so remembering the sources is impossible. When I do remember sources they'll be acknowledged.

### **Farmer ideas**

If there is something I've written that you question, please ask us about it, but remember that I've written it because at the time I had seen sufficient evidence to believe it, even if it hadn't been "scientifically" proved. Many good techniques that have survived originated from New Zealand farmers, such as -

- Non-stimulation of milking cows which saves time and makes money, and cows prefer.
- Non-washing clean teats - washing leaves the teat a little wet so more subject to chapping in cold weather. If the whole udder is not dried thoroughly, dirty water can run down from the udder and into the cluster.
- Tail-painting by farmer Barrie Ridler near Piopio.
- Use of zinc to control facial eczema, skin and eye problems by Gladys Reid.
- Mob-feeding calves.
- Once a day feeding calves from three weeks of age.
- Once a day milking.
- Some grazing systems, including one to three calves per paddock spread around the farm in the paddocks that are rotationally grazed, by calves without rotating them.
- Bloat control systems, other than bloat oil that Dr Doug Philips at Ruakura discovered.
- Capital applications of lime and fertilisers.
- Reactive phosphate works in healthy soils, even with a pH of 6.3.
- Farm dairy designs.

- Cows can be milked in a herringbone (swing over) despite NZ MAF condemning the first one and making it tough for subsequent early ones for a few years. They insisted on a bucket being placed behind each cow which is not a bad idea in some farm dairies where the cows are stressed from feeding manganese, insufficient selenium, shocks or rough cluster application.
- Turn-Style external rotary milking system by Merv Hicks in Taranaki.

Items I discovered or invented -

- Spinner drain/ditch digger in 1957.
- Chisel ploughing in New Zealand 1958.
- Steel plate nib-wall and straight back-rail instead of a herringbone rail in swing-over farm dairy in 1959.
- Quarter milker in 1960.
- Rotary weed wiper in 1967.
- Spring gates in 1979.
- Soluble minerals in 1985 and later an all plastic (nothing to rust) dispenser with no moving parts.
- White polywire to be more visible at night when most breakouts occur in 1985.
- Capital P fertilising to build up the P levels quickly, so that the pasture could use the P applied. Soil microbes use the first P so capital dressings of fertiliser are required to get pastures going. If you don't apply a capital dressing, it can take decades to get pastures up to a highly productive level. If you don't do this it is like buying a factory, engaging staff, but not buying enough raw materials to keep staff fully occupied to make things.

- On/off grazing to avoid pasture and soil damage (pugging) which can reduce pasture production by 30% (all the farm profit gone) even if only light pugging, in 1960.

- Applying all the year's fertiliser prior to the leanest period, not several times a year. I promoted this in 1960, after which a Frank Van Der Elst, Ruakura scientist, visited me and showed me figures which showed that twice a year applications grew more pasture (mostly in spring). I showed him that his own figures showed more pasture was grown in winter following autumn fertiliser application, and that winter pasture was more valuable than spring pasture, which was a cost, if it had to be conserved to feed in winter because pasture was inadequate then. P is released naturally from the soil in spring as it warms.

- On most farms, lime and RP grow more, cheaper and better pasture than N, partly because more clover is grown, perennial ryegrass pulling is eliminated and facial eczema is almost eliminated.

- I wrote in the 80's that, when budgeting to buy a farm, get a pasture analysis and if necessary allow enough for lime and fertiliser capital applications to get the farm into a productive mode immediately.

- Reactive phosphate research in New Zealand totals many volumes, most of which shows it is profitable to use, but this has not been widely publicised or promoted by AgResearch. Doing so could save farmers millions of dollars and reduce pollution by water soluble phosphates. One can only wonder why it is not promoted, and who is at fault. Is it because no one pays them to promote it. In about 1994 Whatawhata Hill Country Research Station changed to RP without publicising it. Only one year before that they rubbished me, in front of a group of US farmers I was showing their work, for recommending RP. I pointed out to all that since the 1970's almost all the winners of the NZ Fieldays Hill Country Beef Farmers of the Year based on profit, had used RP very successfully making the top profits. In New Zealand beef farmers make nowhere near the profit per hectare that dairy farmers make, so the beef farmers sniff out economical ways of doing things, and fertiliser is the highest cost of most NZ farmers.

- See the Phosphorus chapter of 25 pages and its Winchmore Irrigation Research Farm item.

- K levels in clover and ryegrass pastures should be about 2.7%, not above 3%, where Ruakura fertiliser recommendations used to keep them. 1% is enough for animals. Massey University (Gavin Wilson) recommended 2 to 2.5% which will not give high clover and pasture yields for maximum profit. As long as lime and salt are applied, the toughness caused by high K will be reduced, but no New Zealand scientist I know of has recommended them. More arguing goes on between scientists from different bodies than between farmers.

- Using Farm Profit or Economic Farm Surplus for calculating the benefits of trials.

- pH is not a good indicator of the requirement for lime. Ca levels in pasture is.
- In 1985 I suggested to Dr Brian Wickham and two staff, at an LIC meeting I asked for, that cow weight had to be used in the cow Breeding Index, otherwise New Zealand cows would get too big for their legs to carry them, as in North America. This was used to start 'Breeding Worth'.
- Perennial ryegrass pulling was worse with some cultivars. Ruakura did comparative trials and found that I was right. A seed company, which wanted me to apologise for naming their perennial ryegrass for pulling, then bred and selected for low pulling, and succeeded.

The above and many more farmer inventions confirm the saying that "Necessity is the mother of invention."

Farm machinery companies have played a major part in developing equipment. Many of them were started by farmers - Bill Gallagher Senior (machinery and high power fencing), Viv Gallagher (Vogal equipment), Ron Sharp (herringbone milking system) Merv Hicks (Turn-Style external rotary milking), Sandy Chesswas (Tumblewheel rolling electric fence support), Ecostream Effluent & Irrigation Systems and more.

Farmers who wait for science to prove everything will be left behind, and anyway much of what science proved this decade was already used by top farmers last decade, and is improved or changed in the next one. Science is not always first, right, or beneficial, but sometimes it is necessary, for example where something is questionable regarding animal health, such as large amounts of zinc for facial eczema prevention possibly affecting meat or milk (foods). Luckily it doesn't.

### **Lack of Knowledge**

Ignorance is a major problem in the world. Gaining full knowledge of your farming type or business is imperative for maximum profit and minimum risk. It is not advisable to farm until you know most about your type of farming – seek it out before you buy a farm. An understanding of how to do something correctly can make the difference between being positive about it, continuing it, making a profit and/or not doing it. Profit margins are too low to pay for one mistake, let alone all those possible. Trades people take an apprenticeship. They have to work, learn and pass exams over five years to qualify.

You might be interested in costly examples of not knowing. In 2007 a dairy farmer in Australia had 140 cows die of nitrate toxicity and 40 abort, because they were allowed to graze Cape weed, a high nitrate plant, in the morning. When I spoke with him a week after it, he didn't know that nitrate levels at 4 pm on a sunny day are half the levels at 7 am. In New Zealand hundreds of cows die from nitrate toxicity, which they do only after farmers or managers make mistakes. See Animal Health > Nitrates.

Amaranthus can do the same. One cow that liked it (Its paunch was full of it.) selected it from a crop and died, while no others showed any nitrate symptoms.

A share farmer with an agricultural science degree couldn't start his diesel tractor for hours, because he didn't know how to bleed it.

A farmer had his best dog die because he didn't place rat poison in a safe place.

Cows died after eating old grass seed in a barn, others from eating fertiliser and others from eating coal ash.

Mistakes or accidents, some might say, but unnecessary and costly.

I hope that this book helps you and others avoid mistakes and make profits.

### **MAF, AgResearch, DairyNZ, Ruakura (NZ research establishments)**

Two excellent science research ideas in New Zealand were the low impedance high power electric fence energiser developed by Ruakura scientist Dr Doug Philips in the 60s, and bloat oil that he pioneered. However, the two Ruakura developed milking machines were very costly failures, but the name sold a few. Neither survived.

NZ Grasslands has developed some excellent grasses, clovers and herbs, but some were disasters. AgResearch has researched and imported many helpful parasites to control weeds and pests. They've developed the AR (Ag Research) endophytes (A1 to AR37) which have improved perennial ryegrass survival tremendously. Generally the higher the number, the better they are.

NZ AgResearch is a world leader in high technology, but sometimes have forgotten about the

simple basics that can make a farm more profitable.

Three Ruakura scientists (two soil and one pasture) visited our first farm and then second 107 hectare (264 acre) dry stock and maize farm on Greenhill Road, Hamilton, during a dry period in February 1986. It is a few kilometres from the Ruakura Research Farm where they worked. The first thing they said was that our farm was green because we'd had rain and they hadn't. I asked if the rain fell only on our farm because the neighbours were weedy and brown. They then asked what I was doing. "Surface drainage, adequate lime at 6 to 8 tonnes per hectare on this mostly one metre peat which showed all the signs of needing lime (weeds, very few earthworms, very little clover), chisel ploughing deeply, pasture analysing to fertilise correctly and earthworms", I explained. The only thing they could question were the earthworms which I pointed out in one paddock, which were spreading across from the centre where my wife had placed them. They claimed that it was a different soil type. I took my spade from the boot (trunk) and we walked towards the green area.

Where earthworms had not been spread the pasture was brown, the soil harder to walk on, and digging showed no earthworms, while a metre away, under the green pasture there were 20 earthworms per spade spit of 20 x 20 x 20 cm (8 inches cubed) that were shiny, moist and thriving. See Soils > Earthworms.

The scientists said nothing, despite having been whispering to themselves since arriving. I expected to see a press statement the following week on how to grow pasture when others couldn't, but I shouldn't have been so hopeful.

What they also should have told farmers is that the neighbour had 20 cows with bad facial eczema just across the fence, while we had none. The neighbour was Department of Agriculture influenced, so didn't believe in liming or buying earthworms, which is crazy, because Department of Agriculture research in Palmerston North in the 70's achieved increases in pasture growth of 25% from areas with 40 earthworms per spade spit, compared with areas that had few, and found that soils with active (their word) earthworms had fewer facial eczema spores than soils with no earthworms. My lime trials in the 90's at Ngatea and Rotokauri (Waikato) reduced spores by 90%.

The three scientists (now retired) went back into their ivory tower, no doubt looking for silver bullets that would make them famous, but don't exist.

Simple basics are the things to keep working on and improving. Examples are - pasture tissue analysing, liming, chisel ploughing, minerals and trace elements for animals, and correcting their recommended levels in pasture tissue and soil analyses.

Private consultants discuss this problem of wrong optimum levels being recommended by the establishments, and good staff leave them because they get so frustrated, while farmers lose money because of wrong figures recommended by so-called scientists.

Farmers have also found that limed pastures are greener, especially in droughts, grow more clovers, have higher earthworm numbers and lower facial eczema spore counts, because the increased number of earthworms in correctly limed soils eat more of the dead vegetation on which the facial eczema spores grow. It is amazing that, despite these and other benefits, very few, if any, researchers and agricultural consultants recommend liming based on pasture analyses, or encourage breeding and/or buying pasture earthworms. See Soils > Earthworms and Animal Health > Facial eczema for their benefits.

I've been suggesting to our research people for forty years that they should measure all trials in 'profit' not just yield, and talk profit, not just production at any cost.

Some have bred and released grasses that didn't last (Matua Prairie grass, the first endophyte-free fescues and Agridark) and some have recommended excessively high stocking rates/ha that cost more than they returned in profit, because they didn't allow for the fact that in 2008 it costs NZ\$900 per year to keep and milk a cow. If the production per cow from the existing herd drops even a little because of more cows, money can be lost, and in many cases this happens.

On top of that pastures are damaged, milking takes longer, cows get thinner, conception rates drop and, worst of all, farmers become stressed, especially when they run out of pasture.

The old-timer researchers were more practical and better than today's, partly because they didn't have to secure funding that sometimes decides their research, and because some, like director Dr McMeekan, were farmers.

Some scientists were excellent and contributed a lot. Sir Bruce Levy in his book Grasslands of

New Zealand (1951) pointed out that separating pastures and animals for too long causes deterioration in both. In most of the Northern Hemisphere they are seldom together. Thank goodness there is a swing to grazing.

Pastures are best when grazed, because they benefit from the immediate return of urine and manure without much loss of nitrogen, sulphur, etc., and grazing animals get exercise, fresh air, sunshine and space; however, if grazing is not controlled, there will be less profit and pastures usually deteriorate. However, there is not one standard grazing formula. See [www.grazinginfo.com](http://www.grazinginfo.com) > Grazing for times when various types of grazing management succeed.

Then a bit later, Dr McMeekan told his scientists that their research didn't finish until farmers were using it. There is a tremendous amount unknown by people who should know, and a lot known and not used. Many don't know that low molybdenum levels (because of insufficient agricultural lime) aggravate the high nitrate problem in pastures that can kill animals, and that animals grazing high fertility grass and clover pastures suffer high nitrates in varying degrees for much of the year, especially after artificial nitrogen is applied, and in prolonged cloudy weather. Sunshine increases sugar uptake which counters nitrates.

Dexcel's information on nitrate poisoning lacks many critical points. For more complete information on nitrates see [Animal Health > Nitrates](#).

Criticism of the "establishment" is not of the scientists, but of the system run by bureaucrats and the government.

Government policy tried to change research and advisory people into marketing managers, almost overnight. They suddenly had to sell themselves to get companies to pay the to do research. The theory of the policy is fine, and can work with some sectors of AgResearch, but is absolutely impossible in the straight out research and promotion divisions.

### **Simple practises not used**

What could be simpler than applying lime?

This brown Ruakura Research farm in the summer of 1996 shows a need for lime-plus, and the cows hanging their heads low shows a lack of selenium. Our two farms, two and 15 km away, at the same time were reasonably green and growing pasture. After I recommended lime to the Ruakura manager many times over a few years, he applied it - despite his often saying that the soil pH was 5.7 so didn't need lime. In the summers since then it has not got as dry or as brown. pH should be 6 or even 6.2 at which level P is more available and earthworms thrive and make reactive phosphate more available. See [Elements > Calcium](#) for 52 benefits of lime-plus.



Some scientists should read Testimonials in [GrazingInfo](#) before saying that some of my statements are not qualified, or even say that I (and other consultants) have no research background, but how many scientists visit successful farmers or read the hundreds of successful farmer interviews in farm magazines, web pages and information from USA, UK, Holland, Australia, South Africa, and New Zealand that I get by email or read. Just reading the 100 Testimonials would make them pull in their horns. An Indian research book I read a decade ago had information that Ruakura denied because they didn't invent it but Massey University confirmed twice.

I have read every ag book I can find in book shops, new and second hand, which with agricultural conference proceedings totalling 300. How many of the critics have heard hundreds of farmers talk about pasture successes and failures and heard the don'ts, such as, don't try that latest new grass because some don't last under cattle grazing, because they were developed under mowing or light sheep grazing, not under cattle with their heavy trampling and harder grazing causing perennial ryegrass pulling out, which good farming practises eliminate naturally. See [Elements > Calcium](#).

Many times I've heard it said that there is no comparative trial evidence to prove such and such is correct, when there was much more on-farms evidence than trials could do, which makes research on the item unnecessary. Some researchers like to be convinced to the nth degree before recording it, so

they keep researching - that being their occupation. If you see something having a good effect on animals, such as soluble mineral mixes like Solminix on hundreds of farms, then why wait for research to prove it. Do you need a brick to fall on your foot twice to be certain that it does hurt, so is "repeatable." You don't care what the weight of the brick was, or what speed it reached when it hit your foot, all you want is to know how long before the pain goes, and how to avoid it happening again.

I see benefits of good practices on farms, so suggest others try them. I will quote many in this eBook, without always checking them myself, or waiting for a scientist to convince us they are right. Many are mistakes (sometimes things that no one would have dreamed of doing) that have turned out well - thanks to someone being observant. An example is two or three weaned calves doing better set stocked in all paddocks in the farm (except the effluent ones) that cows rotate through, rather than in one mob and moved daily.

Another example was in 1981, when, on the Gallagher demonstration farm of 1.5 metre deep consolidated peat, the fertiliser consisting of 1,000 kg/ha (892 lb/a) of reactive phosphate, elemental sulphur and trace elements, was applied and chisel ploughed in with the 3,000 kg of agricultural lime to a depth of 37 cm (15 inches). My instructions were to chisel plough in the lime, and after that just harrow in the fertiliser. I growled at the guy who did it. Two months later he pointed out that the new pasture was doing extremely well. We dug down and found that the roots were well down and spread out. Subsequently I checked new pasture roots and found that they were often deeper than the length on top, showing that fertiliser should be well cultivated in, especially slow release ones such as reactive phosphates, and especially if the fertiliser was not washed in by rain or irrigation soon after sowing. See Forage Crops > Maize.

Some farmers will know that some things won't work on their farms for good reasons, such as, if snow covered in winter, tropical grasses won't survive, nor will some temperate ones such as perennial ryegrass, unless organic matter and fertility are adequate. Whether you try the suggestions or not is up to you. Please note that GrazingInfo has 'suggestions', not 'do this', simply because of the large number of variations on farms, soils and climates.

Farms can change from profits to losses in a few years, or can change from losses to profits, ahead of others who may go broke waiting for concrete evidence.

There is not much difference between farmers who do well and those who don't. Being on time is one factor.

### **Writings**

I've written over 300 farming articles and letters to farming publications in many countries. After writing one in the Waikato Times an AgResearch scientist Mike O'Connor wrote to me on 27th August 1999.

Dear Vaughan

Just a note to congratulate you on the article in Wednesday's Waikato Times. It was 'spot on'. Keep up that sort of information flow to the public - it is most important. Hopefully we will be able to do more research to support your contentions and provide 'on ground' data to dispute the so called experts on this matter.

Signed, Mike O'Connor, Ruakura Scientist.

What I had written was about simple basics working, despite being the opposite to what AgResearch was recommending. Nothing was done about it by him, or others in the establishment, because it was too basic and sponsorship to pay for it were not obtainable. The information was not promoted nationally so farmer profits suffered.

An Environment Waikato manager wrote that he appreciated my conservation efforts and wanted me to review the report on peat by a paid-for scientist (who had no experience with peat) for them, 'but there was no funding available' to pay me. Environment Waikato's turnover is millions and they waste thousands, so it is a lack of priorities. \$100 would have done it. What they published had serious mistakes, such as, if peat pastures fail [deteriorate] drill in more seed. There was no mention of looking for and fixing the cause of the pasture failing, which, if not fixed, will not allow the drilled seed to survive. This example is typical of many establishments. It is at ratepayer's expense and is the main reason for this eBook.

I'll believe what I see succeeding on a dozen farms before I'd believe the opposite from as many as you like researchers, even with peer reviews.

### **Education**

New Zealand has two agricultural universities (Massey and Lincoln) and Agricultural Polytechs and the Agricultural Industry Training Organisation with branches throughout the country. See [www.agricultureito.ac.nz](http://www.agricultureito.ac.nz)

Massey University has one of the most experienced and practical dairy scientist tutors in the country. He is Dr Colin Holmes, who is devoted to 100% grazing rather than any other form in New Zealand. In November 2007 he said that farmers are the real experts, and stressed that researchers should listen to and work with the good farmers, which could have prevented some research going down the wrong roads.

Lincoln Agricultural University near Christchurch in the South Island has an excellent education record. They publish Technical and Financial Manuals. They do research and run an excellent commercial dairy farm. See <http://www.sidcc.org.nz/> or fax +64-3-325 3637.

If seeking anyone or anything in New Zealand, use the telephone directory at - [www.whitepages.co.nz/](http://www.whitepages.co.nz/) or Yellow pages at [www.yellow.co.nz/index.jsp](http://www.yellow.co.nz/index.jsp)

### **Be a leader**

It is the leaders in farming systems who do well, while the over-cautious chain-draggers don't improve. Examples in New Zealand and some other countries are the first who went into fibre goats, milking goats, Kiwi fruit, deer, rearing dairy bull beef calves by the thousand, etc.

In the tower silo and heavy metal (tractors and machinery) countries the first to change to grazing and to sell their surplus silos got reasonable prices for them, while the last will have to look at them (empty) for the rest of their lives.

Since 1979 I've spoken at more than a hundred seminars, field days and conferences around the world, to tens of thousands of farmers and agricultural college students.



The first into supplying organic produce will also benefit, while the last out of growing tobacco will cry all the way to the poor house. In 1981 I warned USA farmers that they should change from confinement to grazing to reduce their costs. This Vermont farmer (on the right) said he had no money to fence and reticulate drinking water. I suggested he sell one silo because he wouldn't need three. He did this (note the base still there) and a year later held this field day on his farm. He did the talking, telling farmers of his lower costs, higher profits, healthier cows and easier life, after changing to grazing except during thick snow cover.

Silos could be sold in USA up until about 2000, but not now, so hundreds are now worthless and stand empty.

A joke I like is a silo salesman asking the farmer when he was going to pay for the silo he'd bought. "You said it would pay for itself," the farmer replied.

### **Farm costs, bureaucracy & growth**

New Zealand farmers' biggest problem, after trade sanctions, is bureaucracy, backed by politicians who are loading all sorts of costs on to our farmers, such as Resource Management Act extravagances (not their necessary rules), dog chip identification, useless research into NZ ruminant methane production that causes 0.003% of the world's methane that lightning burns up, and, some scientists are now finding, is not increasing over New Zealand, etc. The swamps drained by farmers and now mostly in grazed pasture used to emitted methane. Grazed pasture increases the soil organic matter content, which is a form of carbon storage.

There are only 60,000 farmers in New Zealand with four million people, so farmers have little

voting power, despite earning over half the country's overseas exchange.

Other countries have similar problems. Top US farmer and author Joel Salatin in Virginia, said that all he wants from Washington is to be left alone, and he is so right. Joel's farming is unique and a credit to him. He has been quoted dozens of times in *The Stockman Grass Farmer* and *Acres USA* monthlies and others. Innovation comes from people like Joel at the coal-face, not from bureaucrats making laws that a few farmers have to have, to make them comply with good practices to avoid pollution that the best farmers already do.

Joel shows how to make good profits from a small area, and that one doesn't always have to buy more land or a bigger farm, although he does lease land which he improves and farms the same way. See <http://polyfacefarms.com/>

His books are available in wholesale numbers from him, or singly from Acres USA.

<http://www.acresusa.com/magazines/magazine.htm>

### **Not much is new**

The old saying that there is not much new in farming is so true, but most things can be improved to suit your farm. Much of what I've learnt in my 77 years of life has come from others, especially from visiting farms and reading. A major problem with farmers is that most don't read much, resulting in higher costs and lower income than necessary. Most of this is because most farmers would certainly not consider having their feet up under a tree, or in a warm house in winter, reading, even if it was a farming book and the weather was miserable. The outcome is that most farmers keep inventing their own wheels and losing money by doing so. I've seen some farmers so tired and brain dead that they can't think, especially some North American dairy farmers who've milked 20,000 times without a break, so they plod along doing the same old wrong things. Seasonal milking is one way that overcomes this, but with liquid milk for home consumption it can't be done.

When tired (most farmers dose off in the lounge chair) we can't think, hence accident rates of tired people increase, and wrong decisions are made. When making decisions, remember that to do nothing about something is a decision, i.e., to do nothing. Many things fix themselves, many don't need fixing, and many are best not fixed. If it ain't broke, don't fix it.

While on this aspect of farming, don't go looking for work, rather sit down in a relaxing chair and think and make lists of the essential jobs. Don't try and do it after your evening meal, do it before the midday one. If you fall asleep, you need it and there could be no better decision. Think when you wake up about what to do to be less tired, what jobs can be eliminated, which can be shortened, how jobs can be streamlined, etc. Milking in most Northern Hemisphere dairy farms (not the large company farms) is a long drawn out time wasting process. See *Dairying > Milking*.

New Zealanders don't believe me when I say I've seen a USA (of all countries - where one expects efficiencies) dairy farmer spend three and a half hours milking 80 cows (7 hours a day). In NZ one person could milk 700 cows in that time. A slow let-down cow in a Japanese herd of 30 took 14 minutes to milk (that farmer went broke), and a Scottish sheep farmer told me that he shored 13 sheep in a day! One here can shear 500 ewes in nine hours or 800 lambs.

Most farming knowledge spreads across boundary fences from the few who read, use specialist consultants, and do their own trials.

### **Specialise**

Specialised farming, as has almost always been practised in New Zealand, has increased in other countries after subsidies were cut and costs escalated, because there is no profit in having all the equipment necessary to milk a few cows, farm some sheep, handle beef cattle, grow grain, etc. Most farms, areas and countries have things that they are best at, so they should specialise in them.

### **The information in *GrazingInfo.com* applies to most countries and grazing animals**

Much of the information will refer to dairy cows because dairy farmers in most countries have led the field of profiting from controlled grazing (CG); however the grazing principles are much the same for most grazing animals, so, if you have another species, just read your animal in place of whatever is referred to, and you won't be far wrong. Also read meat or wool for milk and vice versa, but all within reason. There is more detail on some aspects under dairying, so, even if you are not dairying, glance

through most of its sections, for example on avoiding bloat, nitrates and parasites. Most will refer to animals on temperate pastures, as in New Zealand and many other areas. The principles of grazing and making a profit are the same in most situations, so look at how to use what will apply on your farm.

The old saying, “The best fertiliser is the farmer’s footsteps”, still applies and needs to be repeated to most farmers fairly frequently, because New Zealand ones love their farm bikes or ATV’s, and American ones don’t go far without their King Cabs. “Walk!” some say, “Are you crazy?”

Even the better and more observant graziers seldom know what is going on in their soils and paddocks between ‘good’ consultant visits with a shiny (from use) spade - bad consultants are also happy to make decisions from air conditioned vehicles along the farm lane.

Farms are the best research centres, provided we observe closely and act on what we see. Some of the best pasture species were found by observant people; for example Concord was our best all round winter ryegrass in the 80’s, and was started and developed by a farmer near Orini, Waikato, and seen by a Wrightson Seeds Ltd representative, then improved and sold worldwide. Better ones have been bred since then. Farmer Ellett near Auckland did the same with perennial ryegrass.

I’ll believe what I see succeeding on a few farms before I’d believe the opposite from as many as you like so-called qualified researchers. In my consulting I’m frequently told “But you’re saying the opposite to AgResearch and LIC.” How right, but I suggest what is farm proven and makes a profit, and in some cases what I’ve been doing since 1957. Some clients have said “You’re so refreshing because you recommend useful solid common sense, while the previous consultant told me was that the sky is blue, which I already knew.” Unfortunately there are many farm consultants following the establishments’ system of continuing down the wrong road. Examples are that they don’t recommend enough (or any) lime, they don’t do pasture analyses, they recommend too much potash and Superphosphate, no lean period crops, ploughing or hoeing instead of chisel ploughing, too much pasture seed per hectare, and not enough fertiliser.

On the animal breeding side, one of New Zealand’s best Friesian studs was Pukeroro just south of Hamilton. It was developed by the late Bill Chynoweth, following what his father had started, in the 1930’s. His top Friesians produced 8,600 litres, 770 kg milk solids, 430 kg of milkfat (5%) (17,000 lb of milk 1,500 lb of protein and fat) in about 300 days, all on grazed pasture, home grown maize and pasture silage and hay, without any bought in concentrates and no nitrogen, except to establish new grasses until the clovers produce it, and on the maize crops for greenfeed and silage. Even then, where possible, he used milking yard effluent spread with a mobile tank rather than nitrogen. NZ and overseas researchers have told me that his figures were impossible without feeding grain. As his consultant and showing overseas visitors I visited his farm many times a year and can assure you that no grain was ever fed, except to calves for the first two or three months. I’m not against feeding grain where it is cheap, and milk or meat prices are high, but fix the grazing first, to make the maximum profit from pasture.

### **Brief examples of successes**

Client Bryce Wilson at Te Kawa Cross Roads had Holstein/Friesian calves not thriving. When anyone was near them they bawled so loudly one could not talk. They were nervous and showed many signs of mineral deficiencies. Three weeks after giving them Solminix, in their water troughs, they became quiet, tame and started losing their long brown hair. Their eyes stopped running and noses became moist. The farmer then gave it to his cows with excellent results.

Client B who used a computer effectively and monitored trials, saw his neighbour’s much worse farm improve rapidly after becoming a client and applying what many farmers later told me are just common sense practices. B then engaged me. He wanted to be sure of my suggestions, so laid down many trials comparing mine with his previous ‘establishment’ practices. All of mine won.

Client Owen Baker near Matangi was mouldboard ploughing to establish pastures after having cropped his whole farm for a number of years. His new pastures were dreadful. I got him liming, chisel ploughing and using the best reactive phosphates and trace elements, with excellent results.

Client Gary Wilson had a high incidence of bloat and was a Ruakura Animal Research Centre bloat monitoring farm. He was using 30% potassic super (0-6-15-8). After liming, using balanced fertilising and feeding Solminix, his bloat stopped. The Ruakura scientist, instead of asking how he did it, just eliminated it from his research farms! How pathetic.

Client Bill Chynoweth's young stock had a lot of warts, but, after applying lime and improving the fertilising programme, warts were never seen again. I can imagine a veterinarian laughing and saying that it must have been a coincidence because warts are a fungal infection. Many other clients have experienced the same thing. Healthy animals are more able to ward off fungi and infections.

In the 1990s, clients Tony & Gwen Ashford on peat at Ngatea, 70 kilometres north east of Hamilton were using the Department of Agriculture advice of spraying pastures annually with a weed killer and a fungicide to control facial eczema, and using water soluble fertilisers. Animal health and vet costs from weekly calls were high. After pasture analysing, changing to the best reactive phosphate, trace elements and lime, feeding DeLaval FeedTech soluble minerals through the water, vet visits dropped to quarterly, pastures thickened and weeds stopped being a problem. Milk production increased and his cows became bigger, until the same number could not fit in the yard. They also became quieter, making milking and farming more pleasant. Many others have found the same.

All the above were already good farmers. There are dozens more examples.

In the Northern Hemisphere dairy farmers boast about liquid milk production per cow while in New Zealand farmers quote milk solids and dollars per hectare or per farm.

### **New Zealand**

Many farmers visit New Zealand and are surprised when they see good pastures on soils worse than theirs. They are right, but almost all in NZ use CG in its many forms, and most thrive without subsidies, which none get, which shows that CG works. Some claim that our climate is kinder, and in most areas it is, but even where it is not, as in South Canterbury and Otago with their frozen winters, no subsidies are paid even to dairy farmers producing milk. Parts of most countries (Australia, South Africa, South America, America, Ireland, UK, France and others) have similar or better climates, and much older and better soils.

It is amazing how people can sometimes see only what they want to. In 1981 a South African said that his visit to New Zealand to learn controlled grazing was a waste of time because, "New Zealand had such a good natural pasture and a good growing climate and such good **natural** soils."

I had to explain that the soils and pastures are man made - only bush, scrub and tussock were here 150 years ago. I then took him for a drive and showed him successful farmers and failures in the same areas, despite our favourable climate. The successful ones were using low cost electric fencing for CG, while most of the unsuccessful ones were over-capitalising on extravagant fencing, buildings and machinery. I also took him to the only really bad farm in the Waikato that I then knew of. It had the typical long brown grass seen so frequently in so many countries. Right next door was beautiful green pasture. The extreme south of South Africa has the same Mediterranean winter rainfall climate as New Zealand, but much better soils.

### **Unavailable products**

Some of the products I mention may not currently be available outside of New Zealand, however, it is frequently the use of some products that makes efficiency and extra profits possible. Almost all NZ manufacturers of agricultural items exhibit at the New Zealand Agricultural Fielddays (below) and are in the New Zealand Agricultural Fielddays web page - [www.fielddays.co.nz](http://www.fielddays.co.nz) Email addresses are usually included, so they can be contacted for names of suppliers in overseas countries.

Fielddays are always the last four days of the second full week in June (our winter) when 90% of cows are dry and when most Southern Hemisphere farmers can take time off to attend. See Fielddays

If you have queries, requests or suggestions about GrazingInfo or anything farming please contact us by emailing Vaughan Jones <[support@grazinginfo.com](mailto:support@grazinginfo.com)>