

Part 2 The Leap of Faith

1) Flip your priorities over in your mind – Soil on top

Oxygen in soil is the key to establishing a starting point. This is actually a physical property of the soil and comes with structural change. If you are fortunate enough to already have good soil structure and aeration, worship it. Do nothing to destroy it.

If on the other hand you are normal and you have normally degraded soils, you will need some mechanical intervention like ripping or aeration, closely followed by a biological wedge to keep it open. This would look like plant roots belonging to plants which may even be inedible to livestock. Bummer! This is normal too because 'weeds' play a vital role in land and soil restoration. They have fast growing tap roots that create capillary action and are like microscopically powerful drill-rigs.

No scab on any sore looks pretty. Weeds are Mother Nature's scab on the bare-earth sore and they perform the function of accessing minerals from the soil colloids that surround their roots. With unique plant talent and evolutionary wizardry, their decaying leaves lay nutrients on the soil surface ready for the next plant to utilise in its growth cycle.

If you are wondering what nutrients your desirable plants are lacking, try tissue testing your undesirables. Generally speaking, whatever they are high in is what you need to apply or, at the very least, understand about how they can become chemically bonded and 'tied-up' in your soils.

2) Inoculating your soil with biology

Astronauts would be alive and well when first ejected out of a space station into weightless space. But there is nothing there to support them, no oxygen, no food, no shelter. Same with microbes landing on hard soil. What the UV light doesn't kill, starvation will. So, a place

to shelter and grow is imperative to establishment of a beneficial population of soil bugs.

Balance is also the trick. There are aerobes and anaerobes, endo and exo, shredders and builders, hydrophobic and hydrating. So, a starter culture of good fungally dominant compost in cereals and grass pastures is what we need to apply. Cow manure compost is fine but it is bacterially dominant and still needs to be inoculated with a mix of beneficial fungi.

Understanding the relationship between microbes and plants is not easy and a very incomplete science since we still know very little about it. What we need to accept is that plants don't feed themselves. A plant root trying to grow in a soil sterilised of microbes will almost certainly starve unless man delivers enough nutrition from a bag to EXACTLY the right address and even then, its survival is doubtful.

3) Types of biology and quality

Knowing what to recognise in a good compost when we are looking at it can be tricky. We may have been sold a bag of converted cow pooh (highly bacterial and good for root vegetables) or broken-down wood-chips (highly fungal and good for grass and tree crops) and we're keen to try it in our garden first to see if it works. Success could look like more earthworms to dig up soon, greener leaves, more flowers, less insect attack, sweeter fruit or thicker foliage.

Here's the thing. Whenever we try new stuff like this, we apply it, watch it, longing for it to make a difference, maybe imagine something happened (when really it didn't) and hope like anything that we have something great to share with our colleagues and friends. If we do, we'll probably sing from the top of the highest mountain that we are onto the silver bullet and everyone should be doing what we're doing. And if we don't, we say nothing and try to

forget any ambitiously embarrassing conversations that we've had with someone who (rightly) doubted us.

Fact is, we either have been sold something that was overstated in its outcome or we don't know what it is that we are really trying to fix by applying it. To be sure that we are requiring some live culture biology along with some inert carbon is the first step in decision making. Do we need bacterial or fungal dominance? Normal old conventional soil tests will generally analyse mineral nutrient requirements of the soil. Soil biology tests are much more complex and need to be properly interpreted to establish whether we really do need some biological input and if so, bacterial or fungal?

Most bagged compost products are well made compost. Many bulk compost products are not finished composting yet but are sold as finished anyway. As a rule, if we buy compost in bulk and it sticks in the tip truck, it's still 'cooking' and isn't ready yet. If it has been made in giant piles, irregularly turned by a big excavator or loader, it will be too hot on the inside and too cold on the outside. The average is very average. It's basically fancy mulch and not likely to help your soil biology diversify much. It could also smell a bit (or a lot) like the parent material.

So, buy good quality compost. Apply it in the conditions most conducive to its survival, hopefully just ahead of, or in, the rain onto soils that can accept new microbial inhabitants. Work to a budget and stick with it. Good quality may mean you afford a little less per hectare but incorporate it instantly with a little more molasses for a food source to help it multiply out more quickly.

Keeping livestock alive has been your career so far, so this is just the same, only microscopic.

4) Swapping inputs for inputs

Carbon in the form of humus is like blotting paper in our soils. It holds onto nutrient and water better than clay and much better than sand. We need an ever-increasing blotting paper effect no matter where we farm. So, partially made humus in the form of compost brought in in trucks (or bags) is good but it's going to get expensive if we don't learn a way to do it ourselves, on-farm, in-soil.

A little starter culture applied through injecting or incorporating good quality, highly fungal dominant compost can go along way if we treat it well and get it translocated to a comfortable spot. Gentle incorporation through rain or light aeration with a prickle chain works well. Aerway implements are even better at the right time in soils that are not already too wet.

Whereas, in the past we would have brought raw minerals to the paddock, applied them to the soil and checked later to see if we need more, laying down humus to act as blotting paper to for the water and nutrients that we later apply is a good first step. How we lay that humus down or create it in the soils ourselves doesn't really matter but it needs to be there to hold onto the precious and sensitive inputs that we are about to add.

Therefore, we don't so much swap inputs for inputs, rather we establish a new priority of needs and follow that protocol, as much for our budget as our soils benefit.

5) Calcium and other essentials.

The great biological farmer and educator Gary Zimmer stated in his book "The Biological Farmer", calcium is the trucker of all minerals and, in my experience on grey sandy soils over clay, he is certainly correct.

Often, we apply lime (CaCO_3) to soils on an agronomist's recommendation to change the pH of our acidic soils. This is a good

idea but not so often well executed. We need to add a live carbon source to all CaCO_3 when applying it to soils because we need to convert the lime to plant available calcium and only biology will do this for us.

Also, we often apply way too much in one go, assuming the 'More-on' principle that if a little is good then more must be better. But the best analogy I can give you to that is it's a bit like saying, "There's all of the steak that you're going to eat for the next 4 months – but I want you to eat it tonight!" It chokes up the system.

Generally speaking, split your total recommended lime application into at least 2 and add a carbon source at the rate of 20% carbon: 80% lime.

It's not quite as soft on soils but I have used liquid Calcium Nitrate with molasses (CaNO_3 happens to be the best cold weather emulsifier of molasses I know) with good results. If you are lucky enough to be starting with well-balanced calcium: magnesium: potassium ratios, you have the jump on balancing macros and may just need to have a look at your micro nutrients to see if you need something additional.

Remember, what you are fundamentally trying to provide is a soil environment that has adequate AVAILABLE nutrient to feed the microbes to feed the plant. The plant roots do not occupy much of the soil at all by comparison to that which bacteria and fungi can. The plant root sources very little nutrient by itself without the help of soil biology.

I like the old saying that goes, "Attention to detail is wonderful but meticulous execution of the task gets the best results."

6) Stick to a budget

If your current conventional fertiliser budget is breaking you and you aren't getting the results that you once were, first reduce your fertiliser budget. Rule #1 is to stay in the game and not go broke. Whether you go down a Regen path or not, you have to stay viable.

Conventional NPK fertilisers are a contributor to the Profit & Loss of the business. A soil that is required to grow a pasture or a crop needs a certain adequate level of available nutrient over and above its base-line level to give up to the biomass that will be removed from the paddock. This is nutrient that is taken out of the paddock cycle. It's not very much, I can tell you. Nutrient that stays in the paddock cycle is not so much for the Profit & Loss of the business but for the Balance Sheet of the business. It is a small but not insignificant part of the asset.

Soils marketed for sale with a high Phosphorous history sometimes sell for more than those that aren't but really, it's just all marketing hype. On the other hand, soils that have great friability, structure, moisture holding capacity and biology are true balance sheet assets. Plants can grow well in highly biologically functional soils with surprisingly un-luxurious levels of synthetic N, P & K.

A truly chemically, physically and biologically trained eye will see through the hype.

7) Remember the multiplier effect

Arden Anderson would always say to us, "No number is right until all numbers are right", meaning that just fixing one limiting nutrient in isolation will not solve a problem. This is because elements work in concert with each other in the soils where biology is functioning well. Some of us may never have witnessed such a soil so this is a foreign concept. Where biology is NOT functioning well, or at all, we are trying to force feed our plants, one nutrient at a time. Simply adding

one element to solve a problem generally puts another out of balance, like exercising just one muscle in your body.

There is a multiplier effect that starts with carbon, then calcium, then magnesium, potassium and sodium. There is a whole periodic table to roll through but this is where we start. Because tiny little live animals are now driving our fertility in a biological system, they need a balanced diet of all the macros and micros alike to get the energy to deliver the good stuff to our plants.

Fundamentally croppers, even if you think you're growing plants, you're still raising livestock!

8) **A mentor to guide you**

The golden rule when we were kids was 'Always tell someone where you're going and don't talk to strangers.' We were pushing our independence and pushing our boundaries. Similarly, when we embark on a biological system of farming, we need not go it alone. We have wise people in Regen Agriculture who have gone before us, made mistakes and lost money all by themselves. Maybe they know why, maybe they don't. If they know why and even better how to correct it, ask them to help you with your transition. Most are only too pleased to help because they remember what it felt like when they started out.

If we tell someone that we trust where we are going, we can get some directions. If we seek mentorship by building relationships with farmers who we revere, there is much to be learned by both parties. Seldom have I encountered a refusal if the request is honest and for all the right reasons. A mentor who has made mistakes shouldn't stop us from making our own but they should steer us down a learning pathway and encourage us to explore and research our options. They know that none of this is really new and that it's their job to set us up to accumulate, activate and pass it on.

Nic Kentish is a recovering Conventional Rescue Remedy farmer. He and his family have acknowledged that their Mechanical Mind approach to farming was not working economically, ecologically or healthily. Their journey to develop an ecosystem on their farm grounded in biological diversity has uncovered and shone the light on many unchallenged remedies. He is a trainer, coach and senior consultant with RCS and lives in the Adelaide Hills

