Judge Creek
goes organic:

A business plan for organic sheep and beef farming

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by

Ruth Lee

Kellogg Rural Leadership Programme

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Foreword

Plans for Judge Creek

With the growing global demand for organic produce boosting organic premiums and a low-input farm management history, plus our desire to reduce our negative impact on the environment, we have decided to convert our farm, Judge Creek, to organics.

Judge Creek Farm Facts

Judge Creek is situated at Moa Flat, in West Otago. It is a 1328ha, rolling hill sheep and beef farm carrying a Romney flock of 6000 ewes and 1600 hoggets and a Hereford and Hereford Angus cross breeding herd of 200 mixed age cows, 45 rising 2 year and 60 rising 1 year heifers. There are also 31.5ha of forestry.

The average rainfall is 800mm per year (but this varies across the farm) and the altitude ranges from 210m to 507m above sea level. The farm generally has a northerly aspect but with many gullies it has a variety of orientations.

Long winters and potential summer dryness are limiting factors but with the variety of altitudes and aspects these climatic circumstances are somewhat buffered.

Judge Creek is currently under a phase of high development in terms of sub-division, fertiliser and re-grassing/over-sowing. The stocking rate has been increased in line with this development.

The farm has had a history of relatively low chemical inputs with regards to herbicides, pesticides and drenches:

- Lambs are given two or three drenches and one after their first winter but from then on they are left to fend for themselves unless detrimentally worm burdened.
- Calves receive one or two drenches before their first winter then no more treatments, except for lice control if the need arises, as adults.
- Most crops are established through conventional cultivation, without herbicides, except for a pre-emergent spray to control flat weeds.
- The farm has a small occurrence of woody weeds, nodding thistles, barberry and old mans beard and those encountered are controlled with hand cutting or grubbing and with Tordon prills.

Learning about Organics

Over the course of the year I have been interviewing farmers, both conventional and organic, and other relevant sources in a quest to learn how to successfully implement a conversion and manage the property under an organic regime.

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CHAPTER ONE

Survey of Farmers

1.1 Conventional Farmers

At the mention of organics, many of my conventional farming neighbours and general counterparts raised doubts about its viability. Typical responses were:

- You'll have lousy sheep
- You can't drench so you'll never fatten your lambs
- Your crops will never grow because they'll be so smothered by weeds and pests
- You'll have a huge decrease in pasture production because you can't use fertiliser anymore.

There was also a perception that if a farmer had converted to organics he must have gone off the rails, thrown science aside and would begin to use unproven, 'quack' remedies. From comments made by these conventional farmers, I felt that this opinion was exacerbated by the publicity surrounding a few organic farmers who had experimented with alternative remedies and had proclaimed results that didn't make obvious sense. The melt down of Probitas and the extremism of Preparation 500 (a cow's horn filled, with cow manure, buried for six months then dug up, mixed with water and the solution of it sprayed over pasture for great performance) were among those commented on.

1.2 Organic Farmers

I found a wide range of experience levels among the organic farmers I spoke to. Some had been farming organically since the pioneer days of over 20 years ago, and others were relatively new to it.

My interviews were based around three key questions:

1. What was their motivation
2. What have been their major problems
3. How have they overcome these problems

The same themes came up time and time again. They had all encountered the same major problems, they'd all tried numerous remedies to overcome them but on a whole the techniques they'd stuck with were all similar.

CHAPTER TWO

Motivation to Farm Organically

1.1 Environmental

Being aware of the possible negative impacts of agriculture on the environment, the organic farmers I spoke to were keen to avoid contributing to this. They discussed:

- Waterway pollution, caused by fertiliser run-off, which can impair fish stocks and result in toxic algal blooms.
- High country erosion of degraded soils brought about by over grazing and de-forestation. One farmer used the example of Cyclone Bola, commenting on how severe erosion had occurred after the hillsides around Gisbourne had been stripped of their supportive foliage in a misguided attempt to create grazing country.
- Pesticide and herbicide use was also questioned with regards to the uncertainty about whether it could effectively be broken down once in the soil.

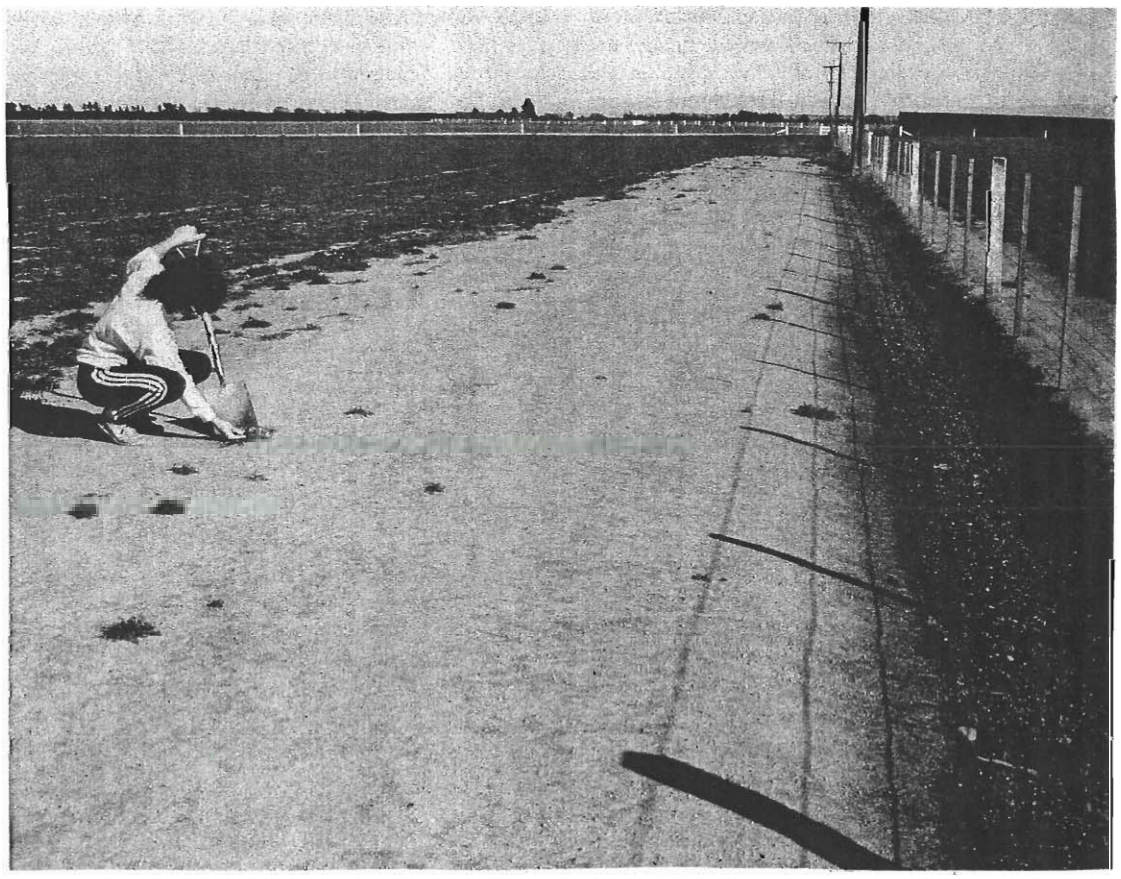

Plate 2.1: Wind blown soil contaminated with herbicide had accumulated along the fence line 8 years before the photo was taken. No plants had grown in this area since. (McClaren and Cameron, 1990)

2.2 Health

Not only were the farmers concerned about the effects of toxin exposure when handling chemicals but, like many consumers, were also worried that their chemical residue intake through food was potentially detrimental.

One farmer said he is horrified to look back now at how casually he used to handle the pesticide, DDT. He could feel sick for several days after using it but didn't concern himself very much because the advertising at the time proclaimed that it was safe. He is now suspicious about the effects of today's chemicals deemed safe.

Much media coverage lately of the chemical residues in food has strengthened the opinion of these farmers. Though the Food Safety Authority in New Zealand carries out residue tests on samples of food, questions are raised over:

- The smallness of test sample sizes.
- What happens if more than one chemical is consumed:
  - Two chemicals, when combined, can perform quite differently to when they're separate and yet to date, testing of residues has only been carried out on one chemical at a time. (TV3: Inside NZ)
- Whether a lot of illnesses experienced today may be secondary to our body's inability to detoxify its abnormally high chemical load. Food safety advocates point out that basically our bodies haven't changed in thousands of years and that our detoxification system was only developed to deal with the miniscule amounts of unwanted chemicals encountered in times past.

A list showing the 12 worst foods from the point of view of number of pesticides and percentage with pesticide residues was published in the *Food Safe Newsletter No 7* after tests were carried out by the Ministry of Health for the NZ Total Diet Survey in 1997/98. It was entitled "The Dirty Dozen" and comprised:

- Bread
- Wine
- Pears
- Broccoli & cauliflower
- Cabbage
- Onions
- Nectarines
- Celery
- Tomatoes
- Cucumber
- Apples
- Sultanas/raisins

The resolve of the farmers I spoke to was that in ceasing to using these potentially harmful chemicals they'd therefore eliminate the risks.

2.3 Sustainability

Many of the farmers had experienced drench resistance and were concerned that even the vets were resigned to only *slowing* rather than *eliminating* its onset. With nearly all New Zealand sheep and beef farms now experiencing resistance to at least one drench family (Wormwise data) they were keen to halt the looming crisis by finding natural and enduring ways to combat the problem.

They were also frustrated with the increased pressure to vaccinate for more and more strains of disease, citing how 3-in-1 vaccines were now widely being replaced with 5-in-1 or even 10-in-1 vaccines.

2.4 Price Premiums and Market Potential

The 'pioneer' organic farmers did not have the price incentives that those who've signed up more recently have benefited from. One early organic farmer spoke about a rude letter she'd received back from a meat works which she'd approached about marketing her meat. The letter stated that she was "stupid to hope for a premium over the price of conventional meat because the marketing of the conventional meat was proclaiming that it was totally pure anyway. How would they, the meat works, be able to make the organic meat sound any better without compromising the conventional?"

Many of the early organic farmers told me that if you were getting into organics just for the price premiums it was the wrong reason. However, as there's no doubt that in producing organic food a farmer can be looking at significant premiums, many of the newer organic farmers state this as being the major reason they've chosen to go this way. Some premiums currently on offer are:

- Beef = 20%
- Lamb = 70-80%
- Fruit and Vegetables = up to100%

With lamb prices being depressed of late there has been a huge surge of interest in organics throughout the sheep farming industry. Many farmers who have this year attended the promotional seminars put on by Organics Aoteroa New Zealand (OANZ) – a government funded organic advisory service, have gone with the sole motivation to add value to their product. Other issues of motivation, such as those stated above, have been more of an after thought.

CHAPTER THREE

Developing a Problem Management Plan

3.1 Introduction

Almost unanimously the organic farmers I spoke to cited internal parasite control as being their number one problem. This was followed by lice control, weed suppression and plant pest management. The issue of soil fertility, that the conventional farmers suggested would be a major problem, did not feature highly.

It became apparent that the most difficult problems were encountered at the higher end of the production system (i.e. animal rather than plant rather than soil). But all the farmers were emphatic that to minimise problems higher up you had to start with the basics. That by encouraging diverse and beneficial organisms at soil level (soil bacteria and fungi, worms, insects, spiders, etc) and by promoting harmony and balance within the eco-system, then the impact of disease, pests and weeds would be lowered.

In this chapter I have addressed the major problems, associated with organic farming (both perceived and real), one by one by using the format of:

1. Documenting the problem.
2. Reporting on and discussing the methods that organic farmers have used to overcome them.
3. Suggesting a management plan for Judge Creek with regards to the problem.

"Get the soil right first because everything else will be affected by it" was the main message of the organic farmers. Therefore, I have addressed the issues in the order of:

1. Soil fertility/health
2. Weeds
3. Plant pests
4. Lice
5. Internal parasites

3.2 Soil Fertility/Health

3.2.1 Problem

A common misconception of many conventional farmers is that once a farm goes organic crop and pasture production will gradually decline as the stores of fertility from years of previous applications are depleted.

3.2.2 Survey results and discussion

Organic farmers emphasize the point that *soil fertility* is only one part of the equation towards plants achieving their nutritional and biological requirements and that overall *soil health* more accurately addresses the issue.

3.2.2.1 Soil health

Soil health is a concept of particular importance in organic farming.

A healthy soil will not only have good *chemical qualities*; adequate but not excessive levels of nutrients and an absence of chemicals and toxins that may harm plants, and *physical qualities*; stable aggregates, sufficient depth and a lack of sub-surface compaction. It will also have good *biological qualities*; high populations of beneficial soil micro-organisms, an absence of plant pathogens and pests and low weed pressure.

If all these qualities are present a soil will be capable of resisting degradation and of supporting a healthy plant and animal population.

It is the scrupulous attention to the soil biology that distinguishes organic farming from conventional. Soil micro-organisms play a vital role to the proper function of soil with their ability to decompose plant material, recycle nutrients (mineralization/immobilisation), fix nitrogen, detoxify pollutants, maintain soil structure (through production of sticky polysaccharides that hold soil particles together) and biologically suppress plant pests.

In recognising these attributes, much focus is devoted to making conditions suitable for the soil micro-organisms in terms of providing plentiful food sources, a good habitat and limited exposure toxic substances.

Techniques employed to achieve overall soil health include:

1. Use of fertiliser
2. Use of lime
3. Addition of organic matter
4. Careful crop rotations and use of pasture phases
5. Addition of deep rooting and diverse plant species
6. Minimum tillage cultivation techniques
7. Grazing control
8. Prohibition of toxic chemical usage

3.2.2.1.1 Fertiliser

Organic farmers are only prohibited from using artificially manufactured, highly soluble types such as super phosphate and urea, that can be harsh on soil microbial life and which can readily be leached into waterways, causing pollution. They are still however free to use naturally occurring, slow release fertilisers such as reactive phosphate rock (RPR), elemental sulphur and, very importantly, lime. It just means that early planning becomes more important, especially if a short term crop is to be planted. If a deficiency is identified, trace element fertilisers such as copper sulphate, zinc sulphate and boronate may also be used. Crop residues, animal wastes, and natural products such as seaweed are also popular organic fertilisers.

The effectiveness of slow release fertilisers, such as RPR, has been called into question in the past but trials have shown that the release of nutrients from these fertilisers improves with decreased particle size. Crushing machine technology has advanced in recent years and now the biggest problem lies in how to apply the powder-like substances. The compaction of this powder into prill form may be the answer: Sulphur prills are already on the market and showing good results.

3.2.2.1.2 Lime

It's the use of lime, with its 39% content of available calcium and its ability to alter soil pH, that most organic farmers start with. Well known American soil scientist and biological farming advocate, Arden Anderson, extols the virtues of lime and claims that the only reason fertiliser companies don't push its use more is because there's not a good margin in it.

McClaren and Cameron (1990) discuss "the profound effect of pH," not only on the availability of nutrients (see Figure 3.1) but also on the soil microbiology, in particular nitrifying bacteria, which perform more efficiently at higher pH levels.

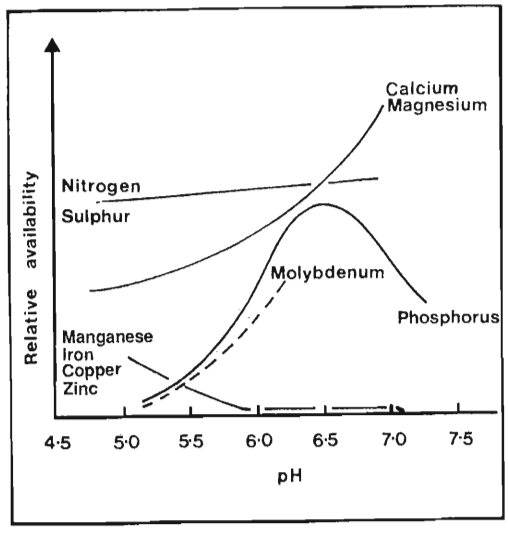

Figure 3.1: Relationship between soil pH and the relative availability of individual nutrients. *Note: The figure should not be used to compare amounts of *different* nutrients; use only to compare relative amounts of *individual* nutrients (McClaren and Cameron, 1990)

Farmers who have long applied nitrogen fertiliser to their pastures can experience drops in production when they initially convert to organics because their clover's nitrogen fixing ability is minimal. The reason for this is that the process of forming clover root nodules (*the sites where nitrogen fixation takes place), though encouraged by the presence of calcium, is restricted by nitrate and ammonia. Once a farmer ceases to apply nitrogen it can take some time for clover root nodules to establish and gain efficiency and in the mean time the pasture is lacking in a major nutrient.

As organic farmers are unable to use the standard nitrogenous fertilisers, their dedication to enhancing the activity of soil nitrifying bacteria, to reap atmospheric nitrogen, becomes all the more important and the use of lime, to increase soil pH and hence improve the bacterial environment, is a major tool.

With higher soil pH levels also favouring species such as earthworms, the decomposition of organic matter, re-cycling of nutrients and internal tillage of the soil increases. This in turn improves aspects of the soil such as structure and water holding capacity and contributes to the overall health of the soil.

3.2.2.1.3 Organic matter additions

Organic matter can be added to the soil by various means including the growth of roots, surface returns of dying plant litter, faecal deposits from grazing animals and the mechanical working in of crop material.

Green manuring is an extremely old agricultural practice and refers to the growing of a green crop, usually a legume with its high carbon:nitrogen (C:N) ratio, which is not harvested but worked directly back into the soil in an attempt to improve soil fertility (McClaren and Cameron, 1990). The addition of this plant material creates a good food source for soil micro-organisms and results in a large microbial flush:

- Nitrogen from the organic matter is released to the soil, through mineralization, and can be used by subsequent non-leguminous crops.
- Soil stability improves.
- Water holding capacity improves.

Plate 3.1: Mulching a green manure crop of oats prior to ploughing under (White et al., since 2004)

3.2.2.1.4 Crop rotations and Use of pasture phases

Though not such an issue on predominantly livestock properties, in cropping farm situations crop yields can be significantly influenced by the order of crop, particularly in relation to nitrogen, and it is wise to plant non-leguminous crops after either a restorative pasture phase or after a leguminous crop when nitrogen levels will be elevated.

Including restorative pasture phases is very important to allow soil structure to redevelop, through microbial activity and root development, and organic matter content to build. At a recent seminar in Gore, well respected American organic farmer and consultant, Gary Zimmer, spoke about large areas of prairie in America being cropped so relentlessly in the past that the soil biology was severely impaired. Crop production fell away to such low levels that farmers walked off the land. He said that soil nutrients were still present but the poor structure of the soil made it impossible for plants to access them.

Plate 3.2: Well structured soil under long term pasture phase. *Note the extensive root mass and friable aggregates

3.2.2.1.5 Deep rooting and Diverse plants species

Allowing plants to establish well and develop good root systems is not only a valuable organic matter addition. The area of highest concentration of microbes in the soil is in the *rhizoshere,* the area directly surrounding the roots. Therefore the deeper into the soil the roots penetrate, the deeper the microbial population ventures and more the aggregate stability the soil achieves.

Different plants have different nutrient requirements and by growing a wider range of plant species a wider range of nutrients will be reaped from the soil for subsequent use by grazing animals. For example, peas and buckwheat are efficient at sequestering phosphorus and magnesium while oats capture manganese effectively.

3.2.2.1.6 Minimum tillage

"If it's not broke don't fix it" says Gary Zimmer. Good subsurface structure is worth gold and should not be disturbed because with any cultivation, organic matter content is reduced, soil structure can be impaired and the risk of introducing plough pans, that can impede soil drainage and root depth, becomes a concern. If, at worst, only the first few centimetres of the soil profile are disturbed, the impact of these problems is reduced.

The exception is if sub-surface compaction already exists, in which case it can be beneficial to break up that compaction by deep cultivation to increase aeration and drainage.

3.2.2.1.7 Grazing control

Stock camp prevention, so nutrients and organic matter are returned to their place of harvest and not mined away, is important for soil sustainability. This can be achieved through fencing, carrying diverse animal species (for example, cattle tend to congregate in different areas to sheep) and even carrying different breeds of the one species (for example, Perendale sheep tend to graze and camp on more undulating terrain while Romney sheep prefer to camp on the flat hill tops).

In organic pasture situations, with the use of nitrogenous fertilisers being prohibited, good clover management for nitrogen fixation is essential. As white clover is lower growing than a lot of grasses it is good to keep pasture reasonably short when clover is in full production.

However, it can be beneficial for grazing to be limited at times as well. If plants are left to grow to maturity they can develop stronger and deeper penetrating root systems which improve the soil organic matter content and contribute to improving soil structure.

3.2.2.1.8 Prohibition of toxic chemical use

Many agrichemicals used are detrimental to microbial life and are not specific to a target problem. For example, when spraying aphids with Diazanon there's nothing to stop beneficial insects such as ladybirds from also dying.

At Kowhai Farm, Heinz Wattie's Organic Farm at Lincoln University, large population increases in beneficial insects and spiders were recorded after agri-chemical use ceased. These biological control agents now assist with pest control.

3.2.3 Judge Creek management plan: Soil health

3.2.3.1 Gully areas

A major limiting factor on Judge Creek is the soil acidity and low fertility of the gully areas. Livestock are reluctant to graze the unpalatable grasses and control of pasture quality is difficult, often resulting in animals losing condition when forced to chew into those areas. Subdivision has helped gain control of pasture quality but fertility remains a problem: The average soil pH is 5.5, the Olsen P about 11 and sulphur 2-4.

Vast gains in gully pasture performance can be made by applying lime and fertiliser.

With the rapidly rising costs of transport and fertiliser we've decided to apply all our development lime and fertiliser in one go this year. Per hectare it comprises:

	2500kg	Lime
	300kg	Reactive phosphate rock (RPR)
	30kg	Elemental sulphur
	0.5kg	Selenium (1year organic chip)
(plus)	2kg	White Clover (Huia)

Plate 3.3: Application of lime and fertiliser to gullies on Judge Creek

The financial advantages of applying all the development mix now include:

- The interest paid on our bank loan, even with compound interest accounted for, is less than the percentage rise in costs from last year to now. With costs predicted to accelerate even further we are keen to cap the cost of our development regime.
- We have negotiated large discounts which smaller piece by piece work wouldn't achieve.
- We will realise the benefits of the lime and fertiliser sooner in improved production.

Gary Zimmer talks about needing calcium if you're farming for clover and nitrogen if you're farming for grass. With the lime we're applying, and the top up of clover seed, we're optimistic that nitrogen fixation will take off and that overall pasture quality and growth rates will improve.

Soil structure and stability of the gully areas is maintained by the many tree and shrub species, (matagouri, kowhai, flax, cabbage trees) which grow there. We're keen to protect the foliage by not pushing stock into it too heavily.

Plate 3.4: Stabilising foliage on fragile hillsides

3.2.3.2 Crop paddocks

Pasture growth stops for 3-4 months over the winter, therefore healthy and plentiful brassica crops are essential for creating a bank of high quality feed to cover the period. In the past we've tended to address fertility deficits at the time of sowing the crop. However, with being restricted to use slow release fertilisers, planning ahead becomes more important.

We plan to address soil fertility for crop paddocks at least three years in advance with:

- applications of lime and fertiliser
- feeding winter silage and hay on them so they'll receive nutrients through dung and urine deposits

Prior to the paddock being cultivated we intend to graze off any rough grass then let young leafy growth come away which can then be worked in as a green manure crop.

3.2.3.3 Arable pastures

Most arable paddocks have received substantial amounts of lime and fertiliser and performance is generally good. Advances could be made however with several methods:

- Further subdividing for better grazing control
- Continuing the inclusion of deeper rooting species in the pasture mixes
- Planting shelter trees to prevent drying winds from sapping moisture from the soil in the warm season
- Periodically growing pasture to maturity before grazing to allow better root development to occur
- Reducing pugging by limiting winter grazing through making use of the extra crop grown and the improved gully pasture performance

3.3 Weeds

3.3.1 Problem

Conventional farmers, who are accustomed to the ease of controlling weeds with chemical herbicides, struggle with the concept that other methods could be effective or, at the very least, financial viable.

3.3.2 Survey results and discussion

The organic farmers I interviewed accepted the fact that for weed control they needed to implement more than one method, especially where crop and pasture weeds were concerned. Mostly they stated that the cost of weed control was no greater under organics, it just required more fore-thought and planning.

3.3.2.1 Crop weeds

For crop weeds their methods of control included:

- Ensuring soil fertility and general health was appropriate for the crop choice
- Having a good duration of pasture phase to lower weed seed burden
- Avoiding letting weed plants go to seed in previous crops
- Grazing of livestock. *Though not suitable for all crops it can be useful at reducing the dominance of flat weeds in such crops as cereals.
- Tackling some weeds (for example, Californian thistle) while still in the pasture phase by topping and heavy stocking
- Selecting optimal planting dates with respect to crop choice and weather
- Rolling after ploughing to encourage annual weed seed germination.
- Forming a false seedbed – preparing the seedbed, allowing weeds to strike then controlling them with shallow cultivation
- Hand, mechanical (tine, scuffle, etc) and thermal (flame and steam) weeding.
- Growing green manure crops between main crops for ground cover
- Using mulches to provide ground cover and lower weed seed germination
- Using under-sowed species to improve ground cover

When growing crops without the use of herbicides, the option of direct drilling without cultivation is minimised because competitive existing plants will smother the crop seedlings. Therefore cultivation is necessary which, if not done correctly, can be damaging to soil structure.

Key methods of preserving good soil structure and lowering fuel consumption with cultivation include:

1. The inclusion of green manure crops
2. Winter fallowing to let the wet/dry and freeze/thaw cycles assist with the breakdown of clods and organic matter.
3. No plough tillage: If ploughing can be avoided in favour of discs, harrows or rotary hoe-type equipment this can cut the danger of pans developing.
4. Avoiding deep tillage

3.3.2.2 Pasture weeds

To correct a wide range of pasture weed problems an organic farmer again needs to look at the soil health.

Arden Anderson claims that nutrient deficiencies can be identified by examining which species are growing. If a pasture has a lot of grass weeds (dogstail, brown top, sweet vernal, etc) then probably the soil calcium levels will be low: With low calcium the clovers won't be performing well and the nitrogen, that higher fertility grasses (ryegrass, timothy, etc) demand, which could be supplied by clover nitrogen fixation, won't be available. If broadleaf weeds are abounding chances are there'll be a problem with the phosphorus:potassium ratio or the soil biology will be poor and the otherwise competitive, desired pasture plants can't access their nutritional requirements.

Other, more direct weed control methods include:

- Topping and heavy grazing of Californian thistles
- Utilising different animal species: For example, sheep will control the ragwort that cattle refuse to eat
- Spraying unpalatable weeds with salt water or sugary solutions to increase palatability and hence grazing of them: For example, unpalatable barley grass (an annual) can be eradicated through grazing if it doesn't get a chance to seed.

3.3.2.3 Woody weeds

If a farm has thick areas of gorse and broom mechanical mulching and grazing with goats can be options for controlling these weeds. Gaining some control and then planting out in trees and forgetting about it can be another. However, it may be more sensible to delay certification of those areas (or take out of certification) until control is gained. This does not mean the rest of the farm cannot be certified. However, organic livestock from the rest of the farm will not be permitted to graze those areas until they have full certification. In the mean time non-organic grazing stock will need to be brought in.

Once control of these woody weeds is achieved, regular checking of the area is of paramount importance so that seedlings can be pulled out or cut down before they can flourish and regenerate.

3.3.3 Judge Creek management plan: Weeds

3.3.3.1 Crop weeds

On Judge Creek the biggest problem with weeds is that of crop weeds. For winter feed we grow brassica crops for two consecutive seasons before returning the paddock to pasture. The first crop has most trouble with grass re-growth and the second crop with flat weeds. Californian thistles are sometimes a problem also.

Without the use of herbicides our plan is to start early. The sequence of events we plan to use goes as follows:

1. Getting soil fertility to suitable levels for the crop of choice while still in the pasture phase and generally getting the soil performing well through grazing management (plenty of worms, good friable structure, masses of roots, etc).
2. Elimination of thistles in the pasture phase by topping/heavy stocking
3. Working in well grown lush grass at the initial cultivation to address nitrogen requirements of the crop through mineralization of the organic matter
4. Early cultivation to allow clods to break down – reducing demand for mechanical tillage
5. Shallow working with light discs or harrows to reduce clod size and keep grass from re-growing
6. Light stocking with sheep to nibble at and control re-growing grass
7. Implementing a false seedbed to lower burden of viable flat weed seeds
8. Possibly sowing a light rate of annual grass with the crop to provide ground cover (and feed diversity) to compete with weed seed

3.3.3.2 Pasture weeds

Pasture weeds mainly include

- low fertility grasses - control with additions of lime and fertiliser, subdivision and grazing management to reduced stock transfer of nutrients and cultivating in the grasses during crop phases
- Californian thistles – control by topping and heavy stocking
- Nodding thistles – control by hand grubbing and confiscating seed heads
- Barley grass – control with topping, application of salty or sugary solutions to attract consumption by animals and cultivation

3.3.3.3 Woody Weeds

Woody weeds (gorse, broom, etc) are controlled by pulling out or cutting down. Any time that a woody weed is sighted, its whereabouts go on the farm map and once a year that area is scoured for any seedlings.

Plate 3.5: Annual control of broom on Judge Creek

3.4 Plant pests/diseases

3.4.1 Problem

Sceptics about organics point out that pests and diseases can appear quickly and spread rapidly. Not having ready access to a quick fix treatment for an outbreak could be devastating.

3.4.2 Survey results and discussion

As with weed control, the organic farmers said that the key to pest management lay in providing a balanced and diverse eco-system which improved plant health and promoted biological suppression of pests and diseases.

Methods for minimising plant pests and diseases include:

- Creating a healthy soil from which chosen plants can readily access their nutritional requirements and which supports them well; being full of diverse and beneficial fauna
- Choosing crops, varieties and strains that best suit organic production in your region and farm
- Protecting and encouraging the natural enemies of pests through provision of favourable habitats (hedges, shelterbelts, rough grass areas, nesting sites, etc)
- Building an environment based on natural balance through establishing floral and faunal diversity.

Arden Anderson states that well nourished, healthy plants do not get affected by insect pests. He says that pests prefer weak, deformed, nutritionally deficient plants with their incomplete proteins and free, fragmented nutrients which are easily digested. Also a healthy well grown plant has more reserves to counteract the negative effects of pests.

There are many permitted treatments which are available for use against pests if, after making all the conditions as ideal as possible, the crop is still attacked. They include:

- Herbal sprays e.g. garlic
- Water, salt and fresh
- Pheromones provided they're not sprayed directly onto the crop
- Disease organisms, e.g. Bacillus thuriengensis
- Natural acids, e.g. citric acid, vinegar

Restricted treatments, which require prior approval, are also available. They include:

- Pyrethrum cinerafolium, without the synergist piperonyl butoxide
- Neem
- Bicarbonate of soda
- Mineral oils

3.4.3 Judge Creek management plan: Plant pests/diseases

3.4.3.1 Porina

On Judge Creek one of the biggest pests is porina. Young grass paddocks are often attacked in the second season after sowing and we frequently need to re-sow areas the following spring (see Plate 3.6).

Plate 3.6: Porina damage in a young grass paddock.
The affected areas were re-sown.

The impacts of porina can be minimised by various techniques:

Topping or grazing of any long foliage during moth flight in November can have good effects. The moths prefer to lay eggs in calm air zones and any long foliage can provide shelter for them so by keeping pasture short this is avoided.

Once the moth flight is over the grazing management of any infested pasture is important: Plants need to build as much biomass as possible as reserves against the feeding effects of developing larvae. Therefore lower livestock pressure is beneficial.

By February the larvae will be coming up at night and actively feeding on the leaves. Heavy stocking or rolling of pastures to crush the larvae is suggested but we question the effectiveness of this. *Something which may be worth investigating is that because the larvae burrow back down into the soil profile during the day and are protected it may be more effective to either move hungry stock at night so maximum trampling occurs as they are foraging or even getting out the heavy roller at night.

The porina damage is especially bad against ryegrass and white clover so to limit complete pasture failure if infested our additions of cocksfoot and herbs to the pasture mix can help.

Once the first wave of porina has struck a paddock, that paddock is relatively safe from future attacks as the larvae leave a residue which dissuades further infestation. If a paddock needs re-sowing it is therefore pretty certain that will be the last time.

3.4.3.2 Crop pests

We have had infestations of slugs, springtails, aphids and diamond backed moth in our crops before. Almost without fail the degree of damage they cause has been related to how well the seedbed was prepared and how healthy the plants were.

3.4.3.2.1 Seedbed preparation

If the soil is worked early and the organic matter from previous pasture or crops has decomposed then slugs, without a suitable habitat and no feed source, are not a problem.

Also with good preparation (firm, fine, etc), that is conducive to fast germination and establishment, and with suitable moisture and temperature levels at sowing we're hopeful that springtail impact, on the germinated seedlings, will be lowered.

3.4.3.2.2 Plant health

We've noticed pests (aphids and diamond backed moth) in healthy crops before but in these crops the damage is minimal and the plants keeping pushing ahead. The most influential factors for the health of these crops have been soil fertility (especially nitrogen) and soil moisture. To improve the nitrogen levels we plan to build pasture performance before cropping and then dig in a crop of leafy pasture at the start of cultivation to enhance nitrogen levels.

Soil moisture is more difficult, being largely weather dependent, but our influences to it include:

- Building soil organic matter levels to increase water holding capacity
- Not cultivating deeply so that moisture held in lower soil horizons is not lost (through being loosened and exposed to drying winds)
- Cultivating, and hence killing transpiring plants, early so that stores of soil moisture are retained and built on with later rain, for crop usage
- Spreading risk by planting our crops in a variety of locations.

3.5 Lice

3.5.1 Problem

A flock of sheep which is infested with lice is an unpleasant sight. Sheep with matted or dislodged fleeces, constantly scratching in their discomfort and lining the fences with wool in the process, is enough to make many farmers abandon the idea of organics if it means no dipping.

Plate 3.7: Fence line covered in wool by scratching lousy sheep

3.5.2 Survey results and discussion

Most organic farmers had experienced lice problems in about year three of conversion. They had been controlling infestations with:

- Regular shearing (as often as every six months) which they said could remove 90% of the lice.
- One farmer said he spray-dipped them with plain water to further dislodge remaining lice.
- Having a higher cattle:sheep ratio: i.e. the sheep were more thinly spread out which lowered the rate of transmission
- Making sure other aspects influencing sheep health were top notch (e.g., feed quality, mineral status, reduced social pressure)
- Changing to a breed of sheep with better lice tolerance and/or the ability to shed its own fleece (e.g. Wiltshire).

Plate 3.8: Wiltshire sheep shedding their fleeces (MacDonald, 2007)

All the methods previously mentioned were aimed to *reduce* the impact of lice but a residual burden still existed.

In the last few years, however, a new dip has been produced called *Extinosad*. Being derived from a natural source it is allowed to be used under organics as a restricted input. Some of the farmers I spoke to had used it.

W.B. Pomroy (2007) explains that the active ingredient in *Extinosad* is known as Spinosad, which is the common name for a mixture of 2 related molecules (Spinosyn A and D). First used in 1997 for plant pests they are a new class of insecticides. Spinosad is a macrolide isolated from the fermentation of the soil actinomycete *Saccharoployspora spinosa*. Spinosyn activates the post-synaptic neuronal nicotinic acetyl-choline receptors at a novel site creating initial excitation followed by paralysis due to neuromuscular fatigue. It is active by both oral and contact routes against a range of insects but not all.

- Has high potency against lice, fly and maggots, with lice control for up to 4-5 months and fly control for 4 weeks.
- Very safe for mammals with a LD50 for rats of >3000mg/kg (live weight). By comparison some conventional dips have LD50's of 3mg/kg (LW).
  *LD50 – dose rate which is lethal to 50% of animals treated with it.
- Displays rapid photolytic and microbial degradation suggesting it would be reasonably safe around groundwater, etc.
- Binds to wool grease and is rain fast
- NO wool (or meat) withholding period
- Able to be used on all lengths of wool

3.5.3 Judge Creek management plan: Lice

One of our biggest concerns about going organic was the prospect of having lousy sheep. We had heard that regular shearing was necessary and this would have caused problems.

Currently we shear the mixed-age ewes and ewe lambs in February. The hoggets are shorn again in October and June/July before moving into the annual February shearing. The late summer shearing is ideal with the warm settled weather and long days being conducive to dry sheep and post-shearing comfort. It also gives the ewes a boost of appetite prior to tupping which has a flushing effect.

More frequent shearing would mean implementing a cold season chore. On a large scale, this would be difficult weather-wise, stressful on the sheep and demanding of feed stocks. Additionally, with less wool per harvest, the current low wool prices would hardly cover the cost of shearing.

We think that by maintaining good stock health the incidence of lice should be reduced but we also intend to make use of *Extinosad* when the need arises.

3.6 Internal parasites

3.6.1 Problem

For conventional farmers the use of drench is a fact of life. They have certain drenching operations pencilled into their diaries and will frequently drench animals as a precaution, even when they may not be unduly worm burdened. Their livestock have been bred with drench as an aid and to stop using it as a matter of course would have significant effects on their farming operation.

3.6.2 Survey results and discussion

Internal parasite control was by far the biggest problem of the farmers I interviewed. This was because if anything had gone wrong previously down the chain, the end animal would ultimately be affected and, with lowered immunity, would be more susceptible to parasite attack.

The farms which had heavily concentrated monocultures of sheep were the worst affected.

3.6.2.1 Stocking rate, Breed and Animal Ratios

Internal parasites were what drove the farmers to drastic stock management changes:

- Dropping stock numbers
- Increasing cattle:sheep ratio so the lower intensity of sheep limited spread of the parasite and the extra cattle could have a cleaning effect
- Investigating different breeds of sheep. *Many found Romney sheep to be unsuitable under organics and were switching to breeds with more resilience e.g. Perendale, Texel, Wiltshire and White Headed Marsh (generally sheep which had had less reliance on drench and which matured quickly)
- Sectioning off part of their farm to run conventionally so that they could continue to finish their poorer stock

The farmers, however, all emphasized a common theme: If you got the basics right in terms of soil health and plant management and took care to lower stress and enhance the comfort of the animals significant reductions in parasite burden could be made.

3.6.2.2 Soil and plant performance

Soil health enhancing measures they undertook are documented in previous sections:

The plant matter they aimed to grow was:

- diverse
- plentiful
- nutritionally rich
- grazed appropriately (to maximise productivity and to minimise uptake of parasite larvae)

3.6.2.3 Animal comfort

Methods they used to enhance animal comfort included:

- planting of shelter, shade and scratch pad trees
- ensuring access to quality water
- suiting lambing and calving dates to match the climate and feed levels
- not breeding their stock too young
- allowing stock freedom to behave normally

3.6.2.4 Use of drench

The perception among many conventional farmers is that you're not allowed to drench stock on an organic farm.

However, this is not quite true. If you've carried out all the techniques mentioned above appropriately you shouldn't have a problem. However, if something goes wrong or is overlooked and a heavy parasite burden arises to a point where your stock can't overcome it then you must drench.

The *Animal Welfare Act (1999)* places statutory obligations on livestock owners to prevent unnecessary pain and suffering. It is therefore a legal requirement to take adequate steps to treat disease situations. If a farmer fails to meet the requirements of this Act, or is proved in any way to have caused unnecessary pain or suffering to a stock animal, it may result in the immediate loss of certification of the whole property. (www.biogro.co.nz)

Under Bio-gro rules, following drenching you must quarantine for 48 hours, and identify any livestock which have been treated, before they can again graze your organic paddocks. There are also implications about how you can sell them:

- To be sold under the *Bio-gro* label those animals must have a 12 month stand down period.
- EU markets however, will accept the animals as 'organic' after twice the with-holding period for the drench has elapsed. Under this system they can be sold as *EU Compliant*. Currently there is no difference in price and meat sold this way will fetch the same premiums as *Bio-gro* labelled meat.
    - Though the certifying bodies promote taking measures to reduce drench reliance over time, where drenching can't be avoided, this extra market option does assist farmers hugely, particularly those new to organics who are still adjusting.

3.6.3 Judge Creek management plan: Internal parasites

We have a saying on Judge Creek, "you never see a straggler struggle." This means that animals which are left behind after a muster and have plenty of scope to forage widely, are free to choose what they eat and to act as they please and they always come out fat and healthy. Our aim under organics is to replicate that situation.

We have found, through faecal egg monitoring that big fat healthy sheep can tolerate and even overcome a worm burden. Our aim is therefore to create sheep which fit that description.

3.6.3.1 Winter Feeding

On Judge Creek our most critical feed time is the winter, with the combination of no pasture growth and the rising demands of pregnant ewes as they near lambing. (*Note: pregnant cows are not of so much concern because they are more efficient at 'carrying their hay on their backs' i.e. they maintain good health while using fat stores accumulated over the summer/autumn period). For the ewes, at this sensitive stage, if they're to avoid getting high worm burdens and subsequently contaminating future lamb pastures, we need to thoroughly meet their requirements, starting with feed.

Plans to achieve good winter feed levels are:

- Putting in plenty of winter brassica crops. If there's an excess we have the option of bringing in grazing stock. *Note: Non-organic stock may be grazed on organic farms provided they are quarantined for 48 hours and do not come into contact with any organic stock.
- Conserving excess summer pasture as hay and silage. After early March any excess feed is left standing to eliminate conserving and feeding out costs. Pasture growth can slow down as early as mid-April so this excess feed is not standing for long before it is utilised.
- Getting rid of any unnecessary stock as soon as possible: Fattening lambs should be gone by early April and after scanning in July, any dry ewes are culled.
- Making sure all the breeding stock are fat going into the winter. Most particularly, not pushing the ewes to clean up rough pastures for too long after weaning. The cattle can always finish a cleanup job over the winter.
- Improving the feed quality and volume in the gullies through continued sub-division, lime/fertiliser application and over-sowing of clover.

3.6.3.2 Mineral status of livestock

The mineral status of the ewes is checked through blood testing prior to tupping and prior to lambing. Deficiencies are corrected preferably by fertiliser applications e.g. Selenium is top dressed on each year and cobalt is periodically applied. We have low iodine levels and address this deficiency with iodine injections after shearing in February. Though it is preferred that mineral deficiencies are corrected at soil level if this is impractical other more direct treatments are allowed with prior notice.

3.6.3.3 Increasing cattle numbers

As cattle and sheep are not affected by the same parasites the cattle can 'vacuum' up sheep parasites and have a cleaning effect on the pasture (and vice versa). We plan to increase our cattle numbers from 20% of total stock units to about 35%, largely for this purpose.

The cattle themselves don't get badly affected by internal parasites, after a tradition of culling any beast that is not performing well.

3.6.3.4 Pasture management to lower parasite uptake

With our pasture management we're aiming to both maintain feed quality and lower the level of parasite uptake by animals. These two objectives however are slightly counteracting: The most nutritious grass is short and leafy but, as parasite larvae prefer to reside close to the ground, it's in the short leafy swards that parasite concentrations are highest.

The methods we plan to adopt to both maintain quality and lower parasite consumption include:

- After weaning young and sensitive stock will have first access to high quality pasture and be moved on before it is grazed too short
- Cattle and mature sheep will be used to do any clean up grazing
- Young and sensitive stock will be given first access to relatively 'clean' ex-hay/silage paddocks where large numbers of parasites have been removed
- Each year different paddocks will be used to fatten young stock so that high burdens of the parasites specific to young stock e.g. *nematodirus* don't get a chance to build.

3.6.3.5 Growing of herbs

The addition of herbaceous species, such as chicory and plantain, could have combative effects against internal parasites as studies have shown they contain natural anthelmintics.

Plate 3.9: Chicory in pasture sward

3.6.3.6 Lowering intensity of sheep on arable areas

With our expected increase in gully pasture performance there will be less pressure on the arable tops to provide feed for the sheep: A typical scenario to date has been that we'll lamb our ewes down the gullies, to take advantage of the shelter, but then drift them up to the tops so milking ability and lamb growth can proceed with vigour.

From now the sheep can spread out further and for longer and, at lower intensities, there will be less exposure to parasites.

3.6.3.7 Shelter and shade

Plans are in place to grow shelter belts to protect from both the cold south westerly winds and the drying northerlies which limit pasture growth. Shade will be a coincidental advantage with these trees but we also plan to plant free standing trees in non-cultivatable areas of the otherwise treeless paddocks.

We have been hosting Telford Students over the past year on work experience and plan to get large stretches of shelter belt fenced and planted with the help of groups of these students. This will require good organisation because there's a big range of ability between the students. We'll need everything set to go and then be on hand to supervise and assist throughout the job.

3.6.3.8 Set stocking

With our farm development increasing pasture performance and stock holding capacity, we plan to set stock the sheep for longer periods and just move around our larger cattle herd to control pasture quality. In doing so; mob stocking of sheep and frequent moving, with all the attached stresses, will be less.

3.6.3.9 Breed

For now we plan to stick with our hardy hill Romneys. We have a simple system of breeding that we're reluctant to abandon without good reason and, as our sheep have traditionally received few drench inputs, we're hopeful that they won't have any drops in production under our new regime.

However, we have been experimenting in a small way with Perendales and Texels and admit that we are impressed with the results:

- Texel Romney cross lambs hit the ground running and have fast growth rates. They also have a clear face and tail which improves their self sufficiency.
- Perendales are good movers and are excellent at foraging in the gullies. As our property is 2/3's gully this could increase farm utilisation considerably. It could also free up cattle, which are usually controlling feed in the gullies, to come up to the paddocks and assist with parasite control.

Therefore an eventual change in breed may occur.

Our traditional breeds of Hereford and Angus cattle will remain the same.

CHAPTER FOUR

Marketing

4.1 Marketing techniques of farmers interviewed

A common theme that came out in most interviews with the organic farmers was that they felt they were in touch with consumer demand. Many had had contact with the end consumer of their produce: Several had actively toured overseas to discuss the opportunities for export markets, others were selling directly to consumers at farmers markets or privately and many had branded their businesses and had websites advertising them. However, most were putting the marketing of their produce in the hands of meat companies.

4.1.1 Prime and Store markets

The farmers I interviewed were happy with the premiums they were getting through selling their organic stock straight to the works. In the past season a 17kg organic lamb was selling for $102, compared to about $57.80 for a conventional lamb of the same weight. This amounts to a 76% premium. Organic beef was selling for about 20% more than conventional beef.

An additional advantage was that a single price was set for the season so, unlike their conventional counterparts, they didn't feel pressured to push the boundaries and either get lambs away early or hold onto them at the end of the season.

In terms of store organic stock the market is currently limited, especially for lamb. Most farmers aimed to fatten all their lambs but as the organic lamb market closes towards the end of May, some were resigned to selling their tail end lambs on the conventional store market.

With the rise in popularity of organic farming most farmers were confident that an organic store stock market would develop in the near future.

4.1.2 Direct Marketing

Some farmers had experimented with direct marketing their produce and reported that considerable interest was shown from New Zealand and overseas buyers alike. One farming couple had branded their beef and were selling it in Germany. They had initiated this in 1996 when organic premiums were not very good. As their buyer only wanted certain cuts, they would sell their animals to the works and buy back the required cuts for export under their own label. The rest of the carcass would remain the property of the meat company.

The couple said that the advantages included:

- a good price for their meat
- satisfaction at seeing their label selling
- constant direct feed back from the consumer

but they also incurred a lot of disadvantages:

- the high costs of labelling, packaging, carting and handled. *They were fortunate to be able to use the export licence of their meat company who they "had a good relationship with" or this would have been another cost
- They needed to have year round supply which was difficult
- They had problems with sending big chunks of meat that required further cutting once overseas; e.g., who got the blame if something went wrong?
- They always had to be available in case the buyer wanted to question or change something

The couple said that it had been a good experience but now that organic premiums had risen to the heights they have it wasn't worth carrying on with their method: They planned to finish using up their labels then just sell through the meat companies.

Some organic farmers were having good success selling through farmers markets or by private order within New Zealand.

4.1.3 Group Marketing

Some farmers had combined forces and were selling to the meat companies as a bulk group for better negotiating power. Another group had combined forces to do their own marketing overseas but had been unsuccessful because they were all were all too busy farming to devote enough time to making it work. They said if they had another attempt they'd employ an independent marketer.

4.1 Judge Creek: Marketing

4.1.1 Selling avenues

We intend to take advantage of the good premiums on offer through the meat works.

4.1.1.1 Lamb

Presently all non-replacement lambs are sold as stores, under forward contract, at weaning in mid-January. Once certified we plan to sell more lambs as prime to capture the price premiums. The top cut will be sold off the ewe and the middle cut will be fattened on the farm, possibly with the help of a summer brassica crop.

The improved pasture performance, through development we've been undertaking, combined with the fact that we don't plan to increase our ewe numbers in-line with the improvements, will mean that there's more scope to retain non-replacement lambs into the late summer, autumn period. However, the bottom cut of lambs, which will be the most difficult to fatten before the end of May deadline of the organic lamb trade, will be sold on the store market to ease the pressure on feed. The size of this bottom cut will depend on seasonal feed levels. We're optimistic that in future there'll be a bigger organic store market we can sell into. For the mean time they may have to be sold conventionally.

4.1.1.2 Calves

Calves are currently sold at weaning at the local calf sale in March. We have no plans to start fattening our young cattle so will be aiming to find a buyer privately for our organic calves. There is already good market for calves on organic sheep farms where farmers are wishing to increase their cattle numbers but don't want to run breeding cows.

4.1.2 Future market options

4.1.2.1 Branding business

In view of the rising global awareness of food miles and carbon foot-prints, which is beginning to increase consumer preference for locally produced food in overseas markets, we'd like to brand our business and advertise what we're personally doing in terms of reducing energy consumption and negating the effects of our production e.g., tree plantings and protecting/enhancing aquatic areas.

One farmer told me that he is frequently contacted by buyers from overseas, particularly Germany, who are interested in what they have seen on his website. He has been unable to supply meat to them because he has a limited volume and would have trouble with year round supply. However, his name is known and the positive feedback he receives indicates that buyers are interested in procuring meat from farms and farmers who they have personal contact with.

4.1.2.1 Co-ordinating with other farmers

Buyer interest in produce from a known source is apparent, but supply of sufficient quantities and duration of supply is a stumbling point for producers. One option which may have huge potential would be to create a group of farmers from a within region and market the combined produce along the lines of that used in the wine industry; using provenance as a marketing tool (Champaign, Wines from the Barossa Valley, Marlborough Wines, etc)

4.1.2.1.1 Closed group with standardised practises

Farmers who were in the group would all be using the same guidelines for production; for example, they might all follow Bio-gro rules. Each farm would be recorded and information about it would be available for buyers to access.

4.1.2.1.2 Even balance of breeders and finishers

To ensure that the value of provenance is protected a guarantee would need to be made that all meat sold had been both bred and finished by farmers in the group. Therefore, so that farmers could either off-load excess store stock or take on finishing stock from within the group, an appropriate balance of breeders and finishers would need to be included.

4.1.2.1.3 Employment of independent marketing

As farmers are generally pre-occupied with work on their properties and in many cases have little experience with marketing, it would probably be worth employing an independent marketing team who can devote all their time to the job. This would also put the farmers in the group on an even keel.

CHAPTER FIVE

Financial outlook under organics

5.1 Surveyed farmers

There was a spectrum of financial results between the farmers I interviewed.

5.1.1 Income

The degree of difference in income farmers had experienced depended largely on the intensity of their property:

- The intensive farms experienced more animal health problems and had to drop stock numbers more than extensive farms so gains made in premiums were lost in fewer livestock sold

5.1.2 Expenditure

Generally farmers had found that their costs stayed the same: For example, while they paid less for animal health products, they spent more on cultivation. It was more a change of expenditure ratios.

5.2 Judge Creek Financial Outlook

As Judge Creek is an extensively run property, which has traditionally had few inputs, we are not expecting any drops in productivity under organics. With room for development we are expecting healthy gains in profit to be made over and above the current levels. Based on a stable state scenario using last season's figures:

5.2.1 Income

5.2.1.1 Lambs

6000 ewes @ 120% lambing = 7200 lambs – 1600 replacements = 5400 sale lambs

The lambs average 30kg at weaning

Conventional price	$47 - (30kg @ $1.57/kg) x 5400	= $253,800
Organic price (average for the same lambs)	$81 - (30kg = 13.5kg(CW) - 13.5kg(CW) @ $6/kg = $81) x 5400	= $437,400
	Increase of:	= $183,600

Factors influencing the scale of this increase are:

1. Whether the price premiums will remain high. Organic farmers say the reason for this year's good price was because PPCS had started buying organic lambs which increased demand. Prior to that Alliance had been the sole buyer and they'd gradually been lowering the price
2. Whether we fattened the middle cut of lambs further and add value to them
3. Whether we can sell our tail end lambs organically or not.

5.2.1.2 Calves

245 in-calf cows @ 90% calving = 220 calves – 60 replacements = 140 sale calves

Conventional price	$430 x 140	= $60,200
Organic price	$516 – (20% premium attached) x 140	= $72,240
	Increase of:	= $12,040

5.2.1.3 Older livestock

The is no premium for older stock (sheep or cattle)

5.2.2 Expenditure

Most costs are fixed and won't change (shearing, wages, rates, machinery costs).

Other cost changes cancel each other out:

- Animal health costs (drenching, annual dipping, etc) will drop but feed costs will rise (mostly cropping as more winter feed and possibly some lamb finishing summer brassica crops are planted).

Conclusion

From the results of this year's research I have found that there's a lot of confusion and lack of knowledge about organic farming, and its viability, among those not ready involved in it.

The range of problems that can be encountered is wide however there is always something that can be done to overcome or mitigate them. The most important rule of thumb is to start with the basics: Working from the soil up to foster diversity and balance within the ecosystem.

With global demand for organic food continuing to rise, it is a logical move to make steps towards producing it.

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