

PASTORAL GOAT INDUSTRY SECRETS REVEALED

INTRODUCTION TO PASTORAL GOAT FARMING

Like any magic, the benefits of farming pastoral meat goats can be unbelievable and can appear to be an illusion, but as with any magical illusion, there is a rational, practical and experienced background. It is exposed below.

This is **Compulsory** Reading

If you do not read this Introduction, the remainder will not make sense.

The whole pastoral goat farming industry offers huge opportunities and advantages for New Zealand. And it is so simple it seems unbelievable, and is not sexy or high-tech to meet current enthusiasms. It just needs a different mind-set from farmers and managers farming, servicing, processing and marketing sheep and cattle. So it is not generally accepted because such people think that they have to apply the same sheep and cattle innovations and developments to make it happen. It is also being positively resisted either through lack of knowledge, incomprehension, irrationality, folly or deliberate objection. The word SIMPLE recurs frequently in the following text, and is emphasised because people have generally tried to make pastoral goats complicated

Some negative attitudes to goats flow from the biblical separation of sheep (good) and goats (bad) in our Christian history and upbringing. People either like goats or hate them. Any negative attitude was compounded by the downsides of the 1987 share market crash and parallel false investment structures that involved goats. That period also carried associated misunderstanding of how to farm goats and to develop a new industry. Subsequent activities have been adversely influenced by lifestyle farmers who dominate goat publicity with non-commercial behaviours. This does not destroy the potential.

NZ pastoral farmers have generations of experience to back centuries of domestication and breeding of their sheep and cattle. In the last 150 years they have evolved pastoral management systems to profitably farm those sheep and cattle to suit their own farm situations. However goats are not sheep and cattle, have centuries of a wild origin, and most farmers have little experience evolving management systems to suit our pastoral environment. Those that do, have developed systems to suit their farm and their goat farming objectives. Those may not suit other farmers.

Some confusion also arises from the fact that pastoral goats have multi benefits and products. For a start they are often called meat goats by default because they are not fibre or dairy goats. But they can have significant sustainable, cost cutting value to enhance clover content in mixed pastures, sustainably control pasture weeds and scrub weeds, as well as to produce meat as an end-product of these uses. And also as a specific product. Goat meat does not necessarily meet the targeted premium and added value niche markets recommended for sheep meat and beef because it is the preferred staple product of many lower income people who never less want to keep feeding their families on a healthy product that they know. That meat can also be in different forms for different markets. The end use for goats on the farm will determine the way that they are farmed and therefore the impression that they create.

There is possibly a parallel with the deer industry that took a new pastoral animal, learned how to farm it profitably and developed product markets over time. Bull beef is another example. However pastoral goats are quite different and need another different approach.

One difference to deer (and sheep and cattle) is that farming pastoral goats need not be diversification, it need not be competition with other stock and can in fact be complementary with additional stock. **Farmed at low goat stocking rates, goats can add net 10% + to the bottom line of almost any pastoral farm.**

There is now sufficient research backed experience to farm goats simply and successfully at low stocking rates. Techniques for achieving the other various objectives and products are also known.

BENEFITS

(Goat milk and fibre production benefits and profitability, whilst significant, are not considered as part of this paper.)

MEAT

Although Angora goats can end their days being slaughtered for meat, most markets discount it and Angora skins, apart from being difficult to remove at processing with consequent damage, have lower grade value.

Similarly, slaughtered cull dairy does have a meat value although not suitable for sheep chain processing because of body length and are therefore handled in deer plants. Their aged, large carcasses have specific lower value markets. There is potentially a significant meat market opportunity with very young dairy goat kids as many does produce multiple kids, and all males and most females are surplus. However total rearing costs have so far precluded establishing this product commercially in NZ.

Goat meat production is simple because markets' specifications are so accommodating of a wide range of animals, with various markets requiring different ages, weights and condition. Consequently any slaughter goat has a value and does not need to be necessarily specifically farmed to certain specification standards before slaughter (unlike sheepmeat, beef and venison).

FOB prices per kg in the last thirty plus years for ungraded frozen goat meat largely in carcass form have exceeded beef and been comparable to lamb prices.

There are many and existing markets at good prices for goat meat so locating new market opportunities is not required. Current live goat farm gate prices in North America for example are more than twice those paid to NZ farmers. Even aspects like increasing carcass meat yield are not important because of market specifications, and because live weight and hot carcass weight are excellent predictors of boneless meat yield.

Goat meat prices are similarly simple to understand because weight is the main and often the only criteria, and there is often little difference between prices over a wide weight range. Certainly 9-18kgs is usually the same value per kg, as is 6-20kg with some processors.

At the same time specific markets can be targeted if profitable, and production parameters and strategies are understood and can be achieved.

The particular health benefits of low-fat goat meat, and changing buying habits of wealthier ethnic peoples offer opportunities for premium products at premium prices. There are also opportunities for added value, consumer-ready products based on goat meat for such markets.

Goat meat can also be a profitable end-product from other benefits discussed below.

CLOVER

Clover is king in NZ pastoral production. Clover is production, whereas grass is maintenance. Goats grazing mixed pasture typical of most NZ farms and especially hill country tend to avoid clover. **There is ample research evidence in NZ and overseas to show that clover component of mixed pasture increases 25 – 50%+ under goat grazing, depending on goat intensity.**

Increased clover has well proven benefits of increasing lamb growth rate. For example – increasing clover content in mixed pasture from the common 5-10% to 20-25% (with goat grazing) will double lamb growth rate. In addition goat grazing produces larger leafed white clover with sheep grazing thus improving N

fixation. Feed for weaned lambs can be preconditioned by goats with low worm burdens at about 200kgLW per hectare followed by a 10-14 day spell. Negative parasitism effects in sheep can be overcome by increasing clover content especially in hill country browntop swards because there are lower parasite larvae numbers on clover.

Lambs grazing pasture at 11MJME per kgDM can grow at 270gpd and this is supplied by young growing grass and/or white clover leaf. However in summer especially, when value drops to 9.5MJME per kgDM on older grass, lamb growth rate drops to about one quarter of that. Hence the importance of mixing clover into summer diet. Clover also holds food value longer than grass at temperatures above 20 degrees C. Clover fixes between 20 and 200kg N per hectare per annum from the atmosphere for free. The ideal mixed grazing pasture of 30%+ clover can fix 100 – 200kg N. However this relates indirectly to N deficiency so applied N fertiliser depresses clover and reduces the need for clover N. Clover fixed N costs 3 -5c per kgDM compared with fertiliser N costing 10-12c per kgDM.

Fertiliser N not only potentially increases greenhouse gases and nitrogen pollution but carries associated direct and indirect costs of machinery, irrigation, buildings and labour to use. Some at least can be replaced by clover fixed N for free.

It is not irrigation that causes nutrient contamination and loss to waterways but the grazing animal, especially cattle, and especially from cattle urine patches. Goats have less urine concentration. Goat grazing to enhance clover to therefore enable less artificial N also reduces N loss because N loss from a clover source is less likely to pollute.

Society is placing increasing controls on the use of farm chemicals including fertilisers N and P. More clover generated N must be a benefit by replacing N fertiliser and reducing negative impacts on food production. Goat grazing improves the efficiency of P use in a mixed pasture and could reduce the need for a P fertiliser also.

LITTLE CATTLE

- 1 Prolific goats are more efficient in controlling lower quality pasture than breeding cows with their high 70% maintenance feed cost to produce 0.8 saleable calves each annually.
- 2 Cattle have a disadvantage of urine and N concentration leading to increased N leaching and contamination of waterways. More widespread goat grazing that can replace cattle grazing in many respects does not have the same effect.
- 3 Cattle have 2.5x more hoof pressure than goats with consequently significantly more plant tiller reduction. For example, under higher rainfall conditions on hill country in particular, both white clover and total pasture production can be reduced by 40 – 50% in the following Spring and Summer by a single treading by rising two year old cattle.
- 4 Erosion and soil loss is a consequence of Winter treading by cattle that goats can reduce whilst doing a similar task of pasture control.

CLIMATE CHANGE

There appears to be an indirect relationship between methane production and plant tannin content so a goat diet of high tannin plants could produce less methane per kgLW than sheep or cattle. However a fibre

diet increases methane production. Never the less, methane from animals on a high quality legume diet such as goat-conditioned lamb finishing pasture produces less methane.

Improving carbon capture and reducing CO₂ results from eating more of the DM grown in a pasture. Currently only about half the pasture grown is eaten. Of that about one quarter goes out as dung with the balance going out as CO₂ in respiration and urine and methane (5%). So there is little carbon or nitrogen remaining in livestock. **Goats can help to increase pasture utilisation and reduce CO₂ emissions.**

WEED CONTROL

- 1 NZ mixed pastures are a low value crop. As such they cannot justify expensive methods of controlling pests, diseases and weeds that attack them. Plant resistance and biological control as part of the pastoral system must be an on-going management technique.
- 2 Goats are a biological vector for controlling pasture weeds such as thistles, ragwort, buttercups, docks and rushes, and also scrub weeds such as blackberry manuka, sweet brier, gorse and broom. Additionally they can utilise gorse as a maintenance feed source as it produces twice as much edible DM as pasture.

As well as eliminating the need for oil-based chemicals, goats reduce the need for fuel to apply the chemicals, most of the labour, the associated direct health risks and less direct risks of application vehicle accidents. **Consequently they provide a low-cost sustainable weed control method.**

Goats have a deservedly bad reputation for destroying native vegetation in conservation areas and are consequently subjected to expensive control operations. An enlightened attitude from DoC would directly and indirectly facilitate the capture of these goats for slaughter and farming.

NZ will always be vulnerable to exotic animal diseases especially foot and mouth disease. Feral goats would be a disease vector difficult to control. Any reduction in feral goat numbers, particularly near farming fringes would reduce the biosecurity risk. Capture and removal for farming has a double benefit.

Goats can be farmed successfully utilising pine plantations, improving access for silviculture work, and reducing fire danger. Specific techniques have been developed for this.

Fencing of waterways to improve water quality encourages weed growth. Goats can graze fenced off areas and will avoid water. Certainly goats do not have the propensity that cattle have for fouling waterways.

PASTORAL SYSTEMS

Sustainable farming on NZ hill country needs low energy integrated pastoral systems. Pastoral goats at low stocking rates can be an integral and profitable part of that.

Goats graze hill pasture differently to sheep and cattle with greater intake and utilisation from banks and slopes that are neglected by sheep and cattle. This also reduces transfer of fertility to tracks. Goats can be farmed by adding low goat numbers to existing livestock and a recommendation is 10% of existing stock liveweight. **The primary benefit is virtually no feed cost as goats are eating largely unutilised pasture and weeds.**

They can also be farmed at heavier stocking rates partly replacing cattle and perhaps sheep. This requires a higher level of management and would be classed as diversification.

There is research evidence that supports increased pasture production from adding goats to any grazing mix to increase tiller density, reduce bare soil area and weed germination.

Most farmers with pastoral goats place most value on the indirect benefits rather than direct meat income. However it is difficult to measure indirect benefit and the worth of that will vary between farms. It is therefore not easy to present a universal recipe and result to translate or apply elsewhere.

GOAT MEAT

MARKETS

Marketing goat meat is simple because a huge world market already exists. In addition, in developing countries where goat meat is often popular, meat consumption has increased by 25% since 1995 and continues to increase. More people eat goat meat than any other meat, although total world consumption is not as large as pork, poultry, beef and sheep meat. So markets are widespread and our limited quantity (currently 1000T) and any potential increase can be targeted to any one or a few of these countries and product specifications.

A specific example is one of our traditional goat meat market areas of the Caribbean region where four main producing / consuming countries have a shortfall of 8000T. Another is USA where consumption has been increasing by about 10% per annum for some years yet domestic population of about 3 million goats that supplies about half the demand has decreased in the last two years, and will now further shrink with recent drought and wildfire influences in the main goat raising regions.

Notable goat meat consumers are in Asia where our future trade focus lies. Of a special significance are economic powerhouses of China with the largest goat population in the world (equivalent to its sheep population), and India where beef consumption competition is constrained for religious reasons.

Supply to many of these markets can be difficult because of a lack of cool chain distribution systems, and preference in some cases for live slaughter. However markets are so diverse and sizeable in relation to our potential supply this is not a problem.

A particular advantage of many of these markets is that unlike some other meat products goat meat lacks the politicisation that surrounds them, and tariff and non-tariff protection does not exist on goat meat in many markets to inhibit access.

Although goat meat can be traded as a mutton substitute, product demand and specifications are such to clearly distinguish it from our traditional lamb products in weight, conformation, fatness and form. Lamb marketing mind-set is not appropriate to goat meat.

Specific markets can differentiate between carcass size ranging from 4-30kgs, from chewy to tender, kids to entire males, skin-on and skin-off, very lean to some fat finish, as whole carcasses or various cuts, frozen or chilled. So goat meat does not have the constraint of carcass conformational finish standards of sheep meat or most beef and is generally paid for on a weight basis alone.

These simple market specifications and huge weight range opportunities provide flexibility to accommodate different processing dynamics as well as different farm production circumstances and situations.

A specific characteristic of the goat meat market is increased demand at festivals and celebrations by various religions several times a year requiring specific products that can increase retail prices by up to double.

By products in some markets beyond the more usual heart, kidney and liver have extra value as they also include head, horns, mesentery fat, eyes, and especially skins that can add significant value to revenue from a carcass.

Despite lack of marketing by exporters who have historically traded bulk meat and skins, goat meat has had FOB returns comparable to lamb over a range of recent years.

Some markets pay astonishingly high prices for preferred goat meat. For example live goats sold at auction for slaughter in USA early 2013 for USD\$8 per kg carcass weight. Consumers in one specific

Caribbean country pay EU13.5 per kg. This can be compared to NZ processor schedule values of up to NZD3.50 per kg.

In the longer term, and perhaps as a potential niche market for NZ to develop, is the low-fat/high-health aspect of goat meat compared with other meat for non-traditional western markets that emphasise these aspects.

GOAT MEAT PROCESSING

Goat meat processing is simple, easy to implement but also capable of quick improvement. Goats have a simple specific advantage for processors as they can be handled on sheep or deer chains with little adaption apart from some reduced speed. Consequently processors have used goats as another slaughter animal to keep plant and staff utilised when not handling other stock, and to spread overheads particularly in slack periods.

However there has been little attempt to develop best practise or to research ways to overcome processing problems such as are causing reduced speeds.

Research in more sophisticated markets such as USA has shown no consumer differentiation on blind testing between fresh local meat and frozen imported meat. However in USA and especially in other markets, consumers are used to fresh meat from goats killed in the morning to be consumed that day; frozen meat is price discounted at retail. This is another area for research to improve frozen and chilled product saleability.

Goat meat is mostly bought, prepared and eaten as whole carcasses (kids), primal cuts, or cubed for curried type dishes. Consequently processing and packaging is simplified. More importantly whole carcasses go to one buyer thus facilitating and simplifying supply, packaging, despatch and distribution, and especially payment timing.

Traditional markets for which there is unsatisfied demand require traditional products. Development of added value is not required in the short to medium term at least.

Goat meat is consumed in all markets currently supplied with other meats from NZ. Consequently low volume goat meat deliveries related to NZ slaughter livestock supply can be piggy backed on other deliveries. Goat meat can be the end point of a specific farm meat production system, and also a by-product of the other plant control roles of goats on pastoral farms. Whilst meat specifications are wide and accommodating, processors can have difficulty in meeting specific market specifications as animals put up for slaughter can vary in age, size, sex and condition. However there are sufficient avenues and opportunities in supply management to overcome such problems.

FARMING PASTORAL GOATS

Farming pastoral goats is simple if they are treated differently to sheep and cattle, which they are. This needs a different and new mind-set for their feeding and handling management.

A common mistake is to treat goats like sheep because they are a similar size, often white, have two teats and make a somewhat similar noise. In fact they are more similar to cattle in diet and eating behaviour, colours, coat, longevity and intelligence.

Another mistake is to economically evaluate the goats with sheep and cattle using the stock unit system that assumes a common cost per unit of feed. However goat diet can include varying amounts of feed not eaten by other stock so cost per kgLW of goat could be as low as 0-25% of a stock unit value.

The key to introducing pastoral goats to an existing pastoral farm is to run them at a low stocking rate in addition to other livestock and not as a competitive category or enterprise. Adding up to 10% of existing

animal LW as meat goat LW will capitalise on existing unused feed sources for extra income at low cost. Low goat stocking rate also enhances kidding rate, growth rate, survival and reduced stress for better animal health.

Goats have a wider dietary range than sheep and cattle and eat at different heights. The key is to graze pasture no lower than 10cm and to provide variety. Goats are opportunistic eaters for the best that is available on their terms that are different to sheep and cattle. It is commonly stated that they need roughage and will not eat clover. Neither is true as they will adapt to the best (in their terms) of what is on offer. However their preferred wide diet will include lower food value roughage and minimum clover that is in the lower pasture profile.

Goats are intelligent, quick to train, learn good and bad habits, quick to move on familiar territory of land and yards. So they need less labour to manage. Additionally they do not require the same level of husbandry as sheep and cattle with no shearing, fly-strike, bearings, cast ewes, birthing difficulties, TB testing, NAIT tagging.

This intelligence is specifically advantageous in quickly training goats to electric fencing. Even poor quality standard fences that may not hold sheep can be proofed with an electrified outrigger to control trained goats. Even feral goats can be quickly trained to respect electric fences and are soon domesticated. Foot problems that plagued goat farming in the 80s have largely been overcome, and eliminated with breeding, management and better breed selection. Internal parasitism is also better understood and not a problem at low stocking rates and/or planned management.

Goat handling facilities can be readily adapted from existing sheep and cattle facilities to provide for their unique patterns of behaviour.

A significant advantage with farmed pastoral goats is their flexibility. As slaughter specifications are so wide and not requiring a specific weight or degree of finish, animals can be slaughtered as dictated by feed and management conditions. They provide an ideal flying herd for short notice disposal to cope with climatic fluctuations.

Pastoral goats can also be farmed to partly replace other livestock, and or to capitalise on a specific feed source like gorse, but this requires specific and more skilled management.

NZ has a huge advantage over other goat farming countries with no predators, so avoiding extra costs for prevention like guard animals, predator control, and inevitable losses from predation.

PASTORAL GOAT FARMING RESOURCES

NZ has a huge genetic resource in the feral population estimated at 300,000 that integrates escaped and liberated dairy, fibre and meat breeds from UK, Europe, South Africa, Asia and Australia. In the opinion of leading animal geneticists this offers significant scope for cross breeding and selection. Although modified by hunting, capture and climatic effects, this resource has also demonstrated survival ability to suit low input farming.

Some attempts have been made with some success to develop this feral base. The Kiko breed now well established in USA as a major meat goat breed originated from such a programme in NZ. More recently this has been further developed as the Kikonui Project. The Boer meat breed has received popular recognition but has reinforced its reputation for suiting only dry conditions such as Central Otago, and needing maximum feeding to express its meat production potential.

All breeds have the advantage of a naturally high reproductive rate facilitating improvement programmes, annual income from slaughter stock, and rapid build-up of numbers for other on-farm benefits. When commercial goat farming started in the 1980s there was little goat knowledge available to suit our pastoral farming situation. Then when limited but specific goat farming became not uncommon (1 in 6 farmers had some goats) farmers developed husbandry and management practises to suit their own

conditions. Research workers confirmed and amplified that knowledge which still exists. Consequently there is no immediate need for foundation research to support industry growth. There is sufficient knowledge and experience to move past the inhibiting hobby farm approach of earlier years with small herds and non-commercial management.

There is adequate advisory material available to be quickly developed to meet educational and training needs.

Although bank and stock firm financiers were badly burnt in the collapsed artificial goat boom 80s and 90s there should be no financial limitations on investment in meat goat livestock where values are correlated with meat schedule prices. Seed-stock prices have a similar relationship to commercial stock as they do with sheep and cattle.

Goat industry politics are fragmented by different milk, fibre and meat sector agendas, and by the different roles and therefore farming objectives of meat producing goats on farms. Representation activity is dominated by breed society interests with little input from commercial pastoral goat producers. Consequently public and agricultural industry perception is often misaligned with commercial pastoral reality.