



Nuffield Farming Scholarships Trust

Meat goats : sustainable livestock farming

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Introduction



In my previous career I was a journalist on consumer magazines and local newspapers. I decided to re-focus my journalism on agriculture – I grew up on an arable farm in Somerset – so headed to Cirencester to do a one-year course. There I realised I wanted to *do* farming, rather than *write* about it.

My first farming job was managing a goat dairy, pig and beef herd in the South West. From there I moved to Cumbria to set up my own dairy goat business in shared premises on an estate on the edge of Morecambe Bay. An on-site processor bought the milk and made unpasteurised cheese. My male kids were reared on their dams and slaughtered at five weeks old as ‘Capretto’, or milk-fed kid. Initially I supplied London restaurants (charging high prices but rarely getting paid on time). Gradually my customer base expanded and changed, relying more on local markets, butchers and boxing carcasses to sell to private clients. For a small business like mine, 100 plus kids a year brought in a significant extra margin.

When the colleagues with whom I shared premises needed to expand, my tenancy ended abruptly, and I was unable to relocate my 150-head herd. So I sold up and turned my attention to establishing a goat meat business.

Then along came Nuffield...

With perfect timing, I was awarded this Nuffield Scholarship. I wanted to find out who kept meat goats, where, and how they ran their businesses; to learn more about markets, butchering and consumer attitudes to goat meat; to analyse successes and failures and hunt out every industry secret. I also wanted an opportunity to meet inspiring agriculturalists and to get some communication and co-operation established within the UK goat industry.

My study has had a secondary focus on the dairy goat industry in particular. I have long felt a solution needs to be found for the vast numbers of male dairy kids euthanased at birth. The dairy goat industry is fortunate: it has a very good image with the public. This is rare in agriculture and needs preserving. It would be a great shame for the dairy goat industry to develop a reputation for ‘factory farming’ and wasting a meat source. As part of my study, therefore, I have researched ways of rearing and marketing billy kids and striven to get as many dairy farmers as possible engaged in this issue.

During my Nuffield Scholarship I bought a smallholding and established a small business keeping meat and cashmere goats in the Lake District National Park. With economic and environmental pressure mounting on my generation of farmers, my aim is to find a low-input enterprise which is sustainable on many levels.

Why goat meat production?

- Goats are excellent for pasture management. When grazed with other livestock, studies show improvement in pasture quality for all species (*Meat and Wool New Zealand Goat Monitoring Project, 2008*).
- Farms in New Zealand running meat goats spent \$5/ha (£2.50/ha) less on weed and pest control than similar survey farms without goats.
- Studies show meat goats are cheaper to feed than traditional livestock, costing around £10/head/year of pasture where their diet is about 70% weeds (*Meat and Wool New Zealand 2008*).
- As meat goats are cheaper to feed it’s possible to produce their meat at a competitive price to lamb and beef.
- Goats turn weeds into meat. In the semi-arid areas of north-east Brazil they are estimated to be 20% more efficient in terms of meat conversion (water and protein requirement) than cattle (*Jose de Oliveira Costa, 4th Sincorte, 2009*).
- Goat meat is extremely healthy. It’s low in fat and cholesterol and high in protein:

<i>Cooked meat (100g = 0.22 lbs)</i>	<i>Energy (cal)</i>	<i>Protein (g)</i>	<i>Fat (g)</i>	<i>Iron (mg)</i>	<i>Sodium (mg)</i>	<i>Cholesterol (mg)</i>
<i>Goat</i>	143	27.1	3.03	3.73	86	75
<i>Veal</i>	196	31.9	6.58	1.16	89	118
<i>Lamb</i>	206	28.22	9.52	2.05	76	92
<i>Pork</i>	212	29.27	9.66	1.1	59	86
<i>Beef</i>	222	29.58	10.66	2.99	67	86

Source: USDA National Nutrient Database.

A snapshot of the industry

Goat keeping has changed in this country in the last 40 years. The trend has seen the size of milking herds increase from a handful kept as pets – or to provide milk for those with allergies to cow's milk – to the large zero-grazed herds we see today, many milking more than 1,500 to achieve economies of scale. It is estimated that there are around 90,000 goats in the UK at the current time. (*Clayton, 2010*).

Milkers account for roughly half of this UK stock, most being kept commercially for cheese production in an industry that is seeing sustained growth and a steady milk price.

It is estimated that there are 10,000 fibre goats in the UK kept as Angora and Cashmere breeds. These are usually small herds kept on rough grazing to produce high-quality fibre for niche processors of clothing.

And then there are the meat goats, around 10,000 of them in the UK, and usually Boer breed or Boer cross. These are managed in a range of ways from intensive indoor rearing to extensive grazing, much as you would run a ewe flock. (*Clayton, 2010*).

Meat Hygiene Service records report 9,547 goats went through UK red meat slaughterhouses in the 2009 financial year (*Andrew Bullock, MHS, 2010*).

What's it worth?

Nick Clayton, Honorary Secretary of the Goat Veterinary Society, recently made an educated guess at the value of the UK herd:

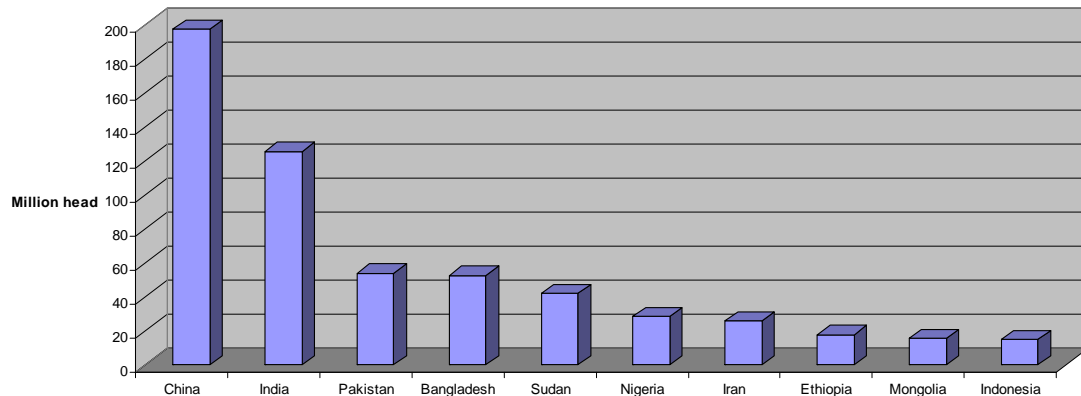
“...very loosely, the milking herd is worth £9.5 million, and the young stock involved might total £2.5 million, so the dairy sector is worth about £12 million.”

“The meat sector value is currently about £2 million for adults, and £1 million for young stock, and the fibre section would have adults valued at around £3.5 million, and youngstock at perhaps £500,000.”

Making the most of marginal land

Goats suit marginal areas. They evolved in mostly dry conditions and are browsers rather than grazers. They like rough, woody grazing rather than lush grass. Hence you tend to find the rest of the world's 800 million or so goats in arid conditions feeding on scrubland or rough pasture (*Meat and Wool New Zealand, 2008*).

10 Largest Goat Populations 2007



Source: *FAO, Meat and Wool New Zealand Economic Service*

World goat numbers

Goat numbers worldwide are increasing. Over the last 20 years they have more than doubled. The overall increase is due to massive expansion of Chinese and Indian goat herds. Goat numbers in China alone increased 128.2 million to 199 million head from 1977 to 2007.

The biggest producers of goat meat, however, are not necessarily the biggest consumers. In many parts of the world eating goat is connected to religious belief for Muslims, and generally part of ethnic traditions for Indians, Africans and Caribbeans. According to 2007 statistics Australia was the largest exporter of goat meat with 41% (21,199 tonnes) of total world exports. Ethiopia was the second largest goat meat exporter with 12,659 tonnes that year. France is in the top seven world exporters of goat meat but this is mostly as intra-EU trade (*FAO, Meat and Wool New Zealand Economic Service*). Given the religious connection, a significant proportion of export needs to be live trade, especially from Australia and China.



Postcard from Mongolia, thanks to Ian Tremain NSch.

A multi-purpose animal

Goats are farmed all around the world for a variety of reasons, and across a variety of climates. Intensive, high-yielding dairy goats are mostly a feature of Europe and North America. In Afghanistan cashmere goats are kept on rangelands for meat and fibre. In Mongolia you find fibre and meat goats carrying thick coats to get them through some of the coldest temperatures on the planet.

In Africa, subsistence farmers keep dual-purpose goats on smallholdings for milk and meat, or large scale breeders of meat animals supply the huge ethnic markets of Natal. Here the Savannah goats cope with the heat well protected by their black skin. Rangeland goats are found in Australia, exported for meat in significant volumes, while in New Zealand feral goats are run alongside sheep and beef herds to manage weeds and scrub in pasture.

You can milk goats, eat goats and make shoes, clothes and bags from their hide and fibre. You can use them as foster mothers in other livestock systems or you can put them in a trap and let them transport you. You can hire herds of goats in America to clear a construction site in record time. Ramblers' groups in the US have even trained 'pack goats' to carry their lunches in saddle bags as they go on a day's hike.

And yes, goats do eat washing, but the least we can say is we have an adaptable creature on our hands.

Outline of my study tour

I visited the following countries:

Brazil

The semi-arid region of north-east Brazil faces a challenge: to use resources better as forage becomes limited and long-term water supplies become uncertain. Brazilian regional agricultural groups are aiming to increase sheep and meat goat numbers to ameliorate this problem. Paraiba State hosted the International Goat Association's Conference in 2009. This week-long conference and livestock show looked at how goats could represent better land use of this region. International speakers looked in depth at issues including management, breeds, conservation and marketing and processing of meat, fibre, milk and leather.

South Africa

The Northern Cape of South Africa is the ancestral home of the Boer meat goat – or Boerbok. Many farmers run large extensive pedigree breeding farms in this part of Africa, selling semen and stock overseas. I also visited farms where other meat breeds are being developed such as the Kalahari Red, Kiko and Savannah.

In addition I was interested in looking at projects for less commercialised farmers using hardier, indigenous goat breeds. The South African government supports many projects where co-operatives have been formed with small, subsistence-level farmers, producing meat and other goat products for new markets. There is an emphasis on vertical integration and empowering small producers.

Holland

The Dutch farm about 10 times as many dairy goats as we do in the UK and it is now obligatory as part of many co-operative supply agreements to rear dairy males. I visited a number of dairy farms, kid-rearing units, abattoirs, meat traders and met with a Dutch chef who has just published a book of goat-meat recipes.

Logistically, Holland is in a strong position, surrounded by markets where it is relatively cheap to transport kids, alive or dead, to European neighbours who eat more kid meat than the Dutch. But working with such an open market means already tight margins fluctuate hugely. During my visit I observed first hand how the large number of goats in Holland could be the industry's downfall: population concentration contributed to an outbreak of Q Fever which has cost the lives of thousands of milking goats in a compulsory cull.

The UK

Some of the most useful information I have found has been on my doorstep here in the UK. I have travelled extensively, meeting goat farmers, veal producers, entrepreneurs, abattoir staff and managers, butchers, chefs, restaurateurs and the meat-buying public. I have tried to get an idea of what systems work best and what constraints farmers face. I

have also attempted to piece together a general format for meat goat farming in terms of management, marketing, breeding techniques and goat-based infrastructure.

Throughout my travels I have generally been met with a volley of enthusiasm for goats, new meat products and alternative marketing ideas, and it's fair to say that goat keepers are a very positive bunch. Nonetheless, keeping meat goats is still a very small industry in the UK and there are only a handful of businesses operating successfully. If we are to start rearing large numbers of dairy males, the industry will have to go up a gear.

“Observation shows that goat keepers share many of the characteristics of their goats! The vast majority of goats are kept in ‘traditional’ systems by more ‘traditional’ people. In drier areas where goats thrive, their human masters need to be as tough and independent-minded as their goats. Many of the newer niche systems have been pioneered by intelligent, independent-minded individuals, or small groups of highly-motivated people. Some characteristics of goats and goat keepers include:-

- *Independent*
- *Inquisitive and adventurous*
- *Intelligent and easily bored*
- *Hard to confine*
- *Tough and resilient*
- *Unconventional*
- *Traditional*

Many of these characteristics will support the sustainability, continuity and resilience of goat systems. However, the isolation of some goat farmers from the modern world and lack of economic power means there is a real danger that their interests will not be heard by politicians and policymakers and that goat systems will lose out as a result.”

(Dr Christie Peacock, 2008)



Pig wallowing in extreme heat, Northern Cape, South Africa

And this is what I learnt...

In the following five chapters of this report I have summarised what I discovered on my Nuffield Scholarship. Although each chapter deals with a distinct subject, none should be seen as existing in complete isolation, as invariably issues overlap.



Cashmere female with Boer cross offspring on Lake District Fell

Chapter 1: Meat goat breeding and management

“Every man can tell how many goats or sheep he possesses, but not how many friends.” Marcus Tullius Cicero

The South African way

On a whistle-stop tour of the Northern Cape, I visited 10 farms to get an insight into goat-meat breeds and management systems. While worldwide meat goat management has much in common with sheep management systems, I wanted to pick up tips on how the best meat enterprises were run. I wasn't disappointed, seeing about 20,000 goats in this hot, red and fascinating country. For the very long journeys by car between farms I was accompanied by my brother, James Little, who was also expedition photographer.



My trusty Nuffield assistant, James Little

The mighty Boerbok

Lucas Berger, son Abraham and daughter Hermione keep 300 Boer goat does for selling in the lucrative breeding stock market. They rely on a strong internal market, but where possible export genetics to Canada and New Zealand.

Breeding stock are ranged over the 12,000 ha ranch, along with 120 beef cattle and 4,000 sheep. Many are corralled near the farmhouse for finishing pre sales, kidding and mating, and they have been using embryo and semen transfer to improve their Boer herd and export genetics since 1996.

They recognise the meat quality of the Boer and its ability to thrive on poor grazing. They also believe Boer genes have a calming effect on crossbred offspring, making for a super meaty carcass that's easy to catch!

They don't deal with the meat market as they feel they won't secure a decent margin. They are struggling with constraints on exporting genetics. Exporting is very expensive and Mr Berger believes disease-based restrictions are unfounded.

Their business thrives on a strong internal network of breed sales, where the best bucks fetch big bucks. Males like the one in the picture below can fetch up to 36,000 Rand – about £3,000.



Champion Boer male at Lucas Berger's farm, Northern Cape.

Rudi Slabbert also keeps a herd of Boers, next to his grape vines on the banks of the Orange River. This is a new enterprise for him, while the main family business is 1,000 ha of table grapes. Learning from their experience with the vines, Rudi is aiming for quality not quantity and is in the process of turning a massive 10,000 ha ranch into fenced paddocks where he hopes to ranch a 5,000 head herd.

He splits the market for his Boers roughly 50:50 with half going for breeding and half for meat. While kidding and growing the goats are out on the Veld. Meat animals are corralled near the farm for finishing on concentrates and home-grown Lucerne hay.



Boer bucklings ready for sale at Rudi Slabbert's farm near the Orange River.

His meat animals are transported live to the markets in Natal where several farmers told me the best prices were to be had. Here there is a strong Indian contingent that buys Rudi's goats. They go to Natal at 30-35kg liveweight, and can fetch 18-22 Rand/kilo liveweight. A rough calculation brings that to about £56 per head.

In management terms Rudi said they experienced problems with worms and bugs like ticks and lice, despite the goats living so extensively for most of the year. But he is keen to learn and develop the business and keeps management data on every animal so he can benchmark his enterprise and improve on it year on year. He is trying out organic worm control methods to beat the parasite burden.

Kalahari Reds

Some breeders argue that the Boer goat can require more protein and 'input' than some of the indigenous breeds to reach a good carcass weight. In response to this, Albi Horn has developed and registered a new breed called the Kalahari Red on his holding near the town of Kuruman.

He keeps 400 breeding females, extensively managed over 3,800 ha, on the edge of the town so as to be near major road routes to save on transport costs. He believes the Kalahari Reds, being smaller than Boers, allow him to fit more goats – and therefore produce more meat – per hectare.

He is still building up his herd of purebred Kalaharis, many of which he will sell internally or export for breeding. He also uses Boer does for embryo transfer to speed up the process of building the Kalahari Red herd. A proportion of the herd will go to Natal for the meat market.



Kalahari Red does.

Albi Horn is a true marketeer! A genetic throwback produced a few black goats in his herd, which he has turned to his advantage. The Chinese market customers prefer their goat meat with the skin on, and prefer that skin to be black. Now he is breeding these black goats specifically for this market.



Indigenous goat buck, used to develop hardiness and high-quality skins.

He is creative in terms of management and ambition, and has plans to circumnavigate restrictions to exporting genetics by establishing breeding hubs all over the world, meaning costs can be shared and Kalahari Red genetics can bring benefits to more meat farmers worldwide.

He is also keen on developing the hardiness of meat breeds, as he thinks this is key to a simple management system and effective use of the land in his country. With indigenous breeding also comes colour, and Mr Horn is keen to develop the market for skins. With this in mind he is working with some of the indigenous African goat breeds to get those strengths in his herd.

The Savannah goat



A reluctant show man – a Savannah buck in Brazil.

This was the breed that really interested me as I had already seen it on show in Brazil. Mervyn Swart keeps a herd of 800 Savannah goats on his 17,000ha ranch near De Aar, in the South of the Northern Cape.

We visited his farm in February. Since the previous June they had had just 17mm of rain, followed by 36mm the week we were there. Nevertheless this extensively grazed herd appeared to me to be fattening on thin air!

The Savannahs have a larger frame than the other meat breeds, and have black skin under their white hair, giving them more protection from the sun. They also have more cashmere in their coats than the other meat breeds, meaning they can cope better with the cold nights on the Veldt.

Mr Swart hails the breed as incredibly low maintenance, and doesn't feed concentrates to finish them. In his experience they get fewer problems with lice and insect infestations than the Boers and crucially they are making over 50 Rand per head more at meat sales than Boer goats.

An added 'unique selling point' with the Savannah is that Muslim and Indian buyers at meat markets favour the black skin, and will pay more for it.



Mervyn Swart's Savannah herd of does and youngstock.

Many hands make light work

On every farm we visited in South Africa, large and small, commercial and non-commercial, animals were in fantastic condition. They were well fed, maintained and exuded glossy health in the baking sunshine. But every farm had a large number of staff constantly tending to the animals' every need. The cheap labour available in South Africa doubtless makes it easier to turn out first-class stock.

Back in UK : The Cockerham Herd of Boer goats, Lancashire

Back in the UK, Sharon and Chris Peacock started up the herd in 2000 and have quickly up the numbers to about 100 breeding females, based on Boer genetics.

The goats are grazed outside most of the year on about 25 acre with field shelters. They are housed for kidding and in exceptionally bad weather, but generally the emphasis is on a simple management system. Hay and concentrate feed is given to late store kids to finish them before slaughter.

They are keen to stress that they are rearing 'meat goats' – not specifically Boers, and have used Angora and Cashmere crosses to get the carcass quality they want.

“Whilst any breed or crossbred female goat can be used for meat production, it is generally accepted that a 100% Boer male should be used to ensure a good carcass is achieved.

Boer crossbreds vary in their characteristics, and there are certain breeds which cross with better results than others. The Boer should improve the carcass quality of almost all

the other breeds giving increased coverage of the back and legs, an increase in meat on the carcass and also an increase in fat coverage.

Goat meat is a low-fat product, but some fat must be present to add flavour and prevent the meat from drying out or becoming tough.” (Sharon Peacock, 2008)

The couple have a young family, and Chris works full time off the farm, so it has to be simple to run – they want the animals to fit their management system – rather than adjusting their system to fit the goats. They market their meat mostly via a website taking online orders and payment up front. They have also developed a range of ‘study days’ for visitors to come to their farm and learn about foot trimming, kidding and other husbandry skills to run their own meat herds.

Keeping their goats on that acreage, they have long since lost every weed in every field, but are restricted to herd expansion by limited grazing. They are also required to worm and fluke drench stock frequently since, especially with goats, parasite infestations are quick to take over in this sort of management system.

How the enterprise runs

Whichever breed of meat goat you are using, Sharon Peacock has written a concise summary of management, some of which I have noted below:

- Kidding is normally once a year during spring, much like lambing. Out-of-season breeding programs are possible but expensive. In warmer climates breeders are getting three breeding cycles over two years.
- Kidding percentages with meat breeds tend to average between 200% and 170%.
- Birth weights range from 3.2 to 5kg with a growth rate of between 0.13 and 0.23kg/day.
- Slaughter weights in most management systems are around 32-36kg, which can be reached from three and a half to eight months old. Meat can be considered prime until 18 months of age.
- A kill-out percentage of 40-50% is normal.
- Capretto, a product similar to veal, is taken from kids weighing 14-18kg. These should traditionally be milk fed, but most will have been grazed.
- Fast-growing kids can be raised on grass only, and may be ready for slaughter before weaning at about 14 weeks.
- Once weaned, they tend to need concentrate feed, normally one formulated for cattle.

- Goats have an extremely high mineral requirement and should have access to some form of mineral at all times, which must contain copper.
- Replacement females for the breeding herd tend not to be served until the following year.
- Health problems seen in the grazed herd are often to do with mineral deficiencies, so mineral drenches are advised. Internal parasites are a problem and need to be monitored closely. Coccidiosis can be a problem in kids and also needs treating. Vaccination against clostridial disease is recommended and footrot and orf may be more common than in housed herds.
- Goatkeepers face a constant problem with veterinary medicines, very few of them being licensed for use on goats.

On-farm performance testing

When rearing meat goats there seems to be no ‘one size fits all’ solution. Each enterprise is influenced by local climate, availability and quality of grazing, the people that run it and their lifestyle and management approach. In addition, the versatility of the goat makes many different management techniques potentially successful.

In Brazil I met Richard Browning, an associate research professor at Tennessee State University, who is encouraging goat-meat farmers to use a simple system of on-farm performance testing so that the meat enterprise can be run as efficiently as possible, getting the most out of the best breeding females and maximising output.

In his talk to the IGS conference, he described how you can take simple records of kid birth weights, 60 and 90 day weights of those kids, number of kids born to each doe and thus evaluate the best performing bucks and does.

While this sort of management is commonplace in other livestock enterprises, it is worth bearing in mind its importance in goat meat enterprises, and the fact that in the UK anyone making the switch to electronic identification will find such information easy to gather and put into a management software system.

Working on a research herd of Boer, Kiko and Spanish goats, Richard Browning evaluated herd productivity. He found that while all breeds were on the same pasture, Boer females had a lower weaning rate, and a higher rate of barren does. The hardier Kiko and Spanish females required less management to perform better in terms of kid output.

His advice to meat goat farmers is to assess the breed that you are using for meat to be sure you are getting the best out of it economically. Herd health records should also be kept to evaluate which animals are costing the most in health terms. This information should be matched to productivity records to keep costs down and keep the herd at peak productivity.

The bottom line

“Performance records, when coupled with financial records, provide the basis of assessing the economic status of an operation and the likelihood of making a profit or incurring a loss from year to year. Performance and financial targets should provide direction to breeding programs. On-farm performance testing helps to achieve herd goals.” (Browning, R 2009).

The good life...

While keeping goats can upset your neighbours, given the evil rutting stench of a billy goat – the one pictured in Holland, below, did smell as bad as he looks – goats are often successfully managed in non-commercial enterprises. The rise of smallholding in the UK is leading to more people recognising goats’ value as a meat and milk animal with less impact on the ground than a house cow.

In other parts of the world goats are kept in small numbers by subsistence farmers, who can raise or drop numbers depending on available forage, rainfall, or financial pressures. It is in this situation that the importance of adequate fencing comes to the fore in managing goats, whether it be a big or small herd. As the saying goes: “Good fences make good neighbours.”



Chapter 2 : Sustainability

“So Jacob followed his mother’s instructions, bringing the dressed kids, which she prepared in his father’s favourite way. Then she took Esau’s best clothes and instructed Jacob to put them on. And she made him a pair of gloves from the hairy skin of the young goats, and fastened a strip of the hide around his neck; then she gave him the meat, with its rich aroma, and some fresh-baked bread.”

The Living Bible, Genesis 27.

Farming for the future



Savannahs head back out onto the dusty Veldt, South Africa.

In some parts of the world herds of goats have eaten their way into trouble, where large numbers overgrazed infertile areas and led to desertification of fragile landscapes. But managed extensively and carefully, there seems to be a rising enthusiasm for using goats as a pasture-management tool. As pressure mounts on the farming community worldwide to focus on sustainability, goats surely have a role to play in our search for low-input livestock systems with minimal environmental impact.

UK farmers obliged to act

“Regardless of the definition, any kind of sustainable agriculture has to integrate three main goals: some kind of environmental stewardship on and off the farm; farm profitability; and prosperous farming communities.

No farm is an island and the interconnectedness of the modern world means that farmers cannot operate in isolation and need to understand the external forces influencing their

daily lives. Many business leaders view the ability to respond to a constantly changing external environment and the ability to manage change as the keys to long-term business sustainability. This has to be the case for goat keepers too.” (Dr Christie Peacock, 2008).

Dr Christie Peacock clearly knew what was coming for farmers across Europe. In November 2009, EBLEX, DEFRA and the NFU backed a year’s research into the environmental impact of UK livestock farming. Due to be published in November 2010, the ‘Meat Roadmap’ will identify ways of reducing methane and carbon emissions from beef, sheep and dairy units, with an emphasis on farming sustainably for the long term.

The global food table

In his book, *Eating Animals* (Penguin Group, 2009) Jonathan Safran Foer presents a grim case against the US factory farming industry. While reading the book did not turn me into a vegetarian, it did get me thinking. As farmers in 2010, we have an obligation to respond to changing climate and demand for food, and endeavour to make less impact on the environment so that farmers can still grow clean, nutritious food in 50 years time. His book points to the unsustainability of intensive farming, suggesting an opportunity for goat farmers world-wide to develop their businesses based on extensive enterprises, less at odds with the natural environment:

“Next time you sit down for a meal, imagine that there are nine other people sitting with you at the table and that together you represent all the people on the planet. Organized by nations, two of your tablemates are Chinese, two Indian, and a fifth represents all the other countries in Northeast, South and Central Asia. A sixth represents the nations of Southeast Asia and Oceania. A seventh represents sub-Saharan Africa, and an eighth represents the remainder of Africa and the Middle East. A ninth represents Europe. The remaining seat, representing the countries of South, Central and North America, is for you.

If we allocate seats by native language, only Chinese speakers would get their own representative. All English and Spanish speakers together would have to share a chair.

Organised by religion, three people are Christian, two are Muslim, and three practice Buddhism, traditional Chinese religions or Hinduism. Another two belong to other religious traditions or identify as nonreligious.

If seated by nourishment, one person is hungry and two are obese. More than half eat a mostly vegetarian diet, but that number is shrinking. The stricter vegetarians and vegans have one seat at the table, but barely. And more than half of the time any one of you reaches for eggs, chicken, or pork, they will have come from a factory farm. If current trends continue for another twenty years, the beef and mutton you reach for will also do so.

The United States is not even close to getting its own seat when the table is organized by population, but it would have somewhere between two and three seats when people are seated by how much food they consume.” (Safran Foer, J 2009).

Figures to bear in mind:

- Nearly one third of the land surface of the planet is dedicated to livestock. (Safran Foer, J).
- World population is 6.5 billion and growing at a rate of 76 million per annum. The population forecast is 9.1 billion by 2050. (UN, 2005).
- The developed world uses half of all the water used by livestock in the world, while Africa only uses 14% of the world's water. (Peacock, Dr C, 2008).
- An increasing proportion of world population are now urban dwellers, and want to increase the amount of meat they eat.
- Estimates predict global meat production will double by 2050. (Hughes, Professor D, 2009).

Brazil



Sheep get cleaned up for the show in Joao Pessoa, Brazil.

This was an important country to visit, since the pressures on Brazil's farmers to produce meat in a more sustainable way are there for all to see. Brazil was last into the 2008 recession, and the first country to come out of it, and presents a great case study in agricultural terms. The country is under intense worldwide pressure over deforestation, and the government clearly believes alternatives to beef production need to be secured to find a reliable future for Brazilian farmers.

In the semi-arid north-east there are already 46 million goats and sheep kept for meat in Paraiba state, but what the local farmers need are ways of developing markets, minimising inputs and getting the most out of that resource that thrives in this climate.

Speakers at the International Goat Association Conference 2008 : Brazil:

Hichem Ben Salem, INRA, Tunisia

He discussed the use of home-produced feed blocks to supplement animals that were kept on poor-quality forages. Given the price of concentrate feeds, Tunisian farmers have developed feed blocks formulated with relatively cheap local by-products such as olive husks, which they feed to goats on rangelands, preventing overgrazing at the same time as improving diet. The blocks can be stored up for times of drought, and are now used in more than 60 countries.

Dr Isaac Kosgay, Edgerton University, Kenya

While Brazil has a large goat meat herd, most of this production is exported. Dr Kosgay believes the internal market for meat needs to be developed. With disease, biosecurity, transport costs, and live-animal transport being key issues to tackle, he thinks the more sustainable future for Brazil is to get more Brazilians eating goat. With a strong internal market, the goat meat industry is less susceptible to changing global market fluctuations.

Jean Paul Dubeuf, President IGA, France

Using examples from the Mediterranean, Middle East and his native Corsica, Mr Dubeuf stressed the importance of supporting pastoral projects working with goats' milk and meat products. He advised the Brazilian government to push small producers to promote their products' sustainability. Small meat or milk processors boost the rural economy, tourism, and bring environmental benefits and increase diversity, he said.



Examples of fodder that Brazilian goats like to sink their teeth into

Goats as 'sustainable' livestock

In my introduction I highlighted the statistics showing meat goats as a low-impact, low-input enterprise, and their benefits when grazed with other livestock. There is no question that they are more sustainable than, say, intensively reared beef, most simply because of the smaller requirement for high-quality protein and water to produce a comparable amount of meat.

“Using current prices of goat products in Kenya, studies show it takes 500 litres of water to produce \$2 income from growing grain while it takes 4 litres of water to produce \$2 income from goat milk.” (Dr Christie Peacock, 2008).

While the current trend is to slam all livestock as farting, belching, ammonia-producing climate-destroyers, I would argue that goats could be deemed the lesser offenders in this crime. While they are ruminants and therefore make their methane contribution, they are largely kept extensively around the world in low-input systems, with a comparatively light environmental touch.

Goats also present a livelihood for people in marginal areas, where you can't farm anything else. This applies to the arid areas of Africa, as well as the rocky Cumbrian Fell.

Economic and social sustainability

I questioned every farmer I visited as to whether their goat enterprise was profitable. With the exception of one, who is retiring from keeping Boers, they all said it was. While few of them are about to go and buy their first yacht, most had families to support and were making a living, enjoying their work and interacting with their local communities as farmers and marketeers.

I have put together a very rough gross margin for a meat goat enterprise below, based on my own experience and discussions with people I have visited. It is important to bear in mind that these are outline figures based on a cross bred enterprise. For all of the farmers I visited, there was either at least one other income stream coming into the farm, often with other stock. Meat was also being processed and marketed to sell for considerably more than the £9/kilo I have used in the gross margin. Cashmere production also presents another output, which could potentially double the output figures.

Annual gross margin calculation meat goat herd: Based on 100 head cashmere/angora breeding females, using a Boer male:		
Output	£/year	£/doe
Meat kids: 145 to go at £9/kilo. Average kill out 15 kilos:	19,575	195.75
Replacement does:		
25 kept @ £120/kid:	3,000	30
Culls @ 10% @ £50/head:	500	5.00
Less depreciation:		
Buck only:	[300]	[3]
Output total:	23,075	230.75
Variable costs:	£/year	£/doe
Concentrates:		
120kg/yr/doe @ 18p/kg:	2,160	21.60
50kg/yr/meat kid @ 18p/kg (x 145):	1,305	13.05
Forage:	3,800	38.00
Vet and Medicines:	650	6.50
Variable sundries: minerals, straw:	800	8.00
Variable costs total:	8,715	87.15
Gross margin = output – variable costs:	£18,415/year	£184.15/doe

Assumptions made to calculate gross margin:

- *That a kidding percentage of 1.7 can be achieved.*
- *Cull value assumes a five-year herd life and current strong market price for culls.*
- *Depreciation value estimated using ABC guide.*
- *Forage costs based on own figures and ABC guide.*

Limitations of gross margin calculations

We must remember that these figures take no account of fixed costs applicable to the enterprise, or its place, and possible cost savings alongside other enterprises. The New Zealand system where goats are grazed with sheep and cattle demonstrates a simple low-input system that improves forage quality in marginal land, and yet can bring in this extra income with fewer inputs than sheep and cattle.

Chapter 3 : Ethnic markets

“Don’t approach a goat from the front, a horse from the back, or a fool from any side.”
Yiddish Proverb

Goat as a staple food

EBLEX’s Phil Hadley pointed out to me that in the UK the fastest-growing section of society, in terms of religious affiliation, was the Muslim population. This growth has huge regional variations: areas such as Leicester have big Muslim communities. Wherever these markets are, this potentially huge customer base needs to be understood when thinking about marketing goat meat.

Muslim, according to EBLEX figures, eat on average 18 kilos of sheep and goat meat per year, while the non-Muslim population tend to eat just six kilos of sheep meat per year. Muslims generally consider goat meat a staple food, and can be stable buyers year round.

This year-round enthusiasm for goat is also seen in West African communities in the UK, which are the big buyers of cull goats in markets all over the country, especially Bentham and Clitheroe.

While EBLEX has no statutory levy from the government to report buying trends and figures for goat meat, goat tends to fall under the same umbrella as sheep meat. Indeed, the 2009-10 rise in market prices for cull ewes brought a similar rise in cull goat price, from around £35 per head to £70-plus per head.

In Illinois, USA, studies have looked at niche and ethnic markets for goat meat and how the producer can get the best out of them. The table below shows just how varied the requirements are:

<i>Market</i>	<i>Preferences</i>
<i>Hispanic/Mexican</i>	Milk-fed ‘cabrito’ kids at 15-35lbs live weight.
<i>Caribbean</i>	Young, small bucks 60-80lbs live or cubed, bone-in pieces.
<i>Chinese/Korean</i>	Quality goats 60-80lbs live weight (more in colder months).
<i>Somalian</i>	35-40lbs dressed carcass weight (plus livers and kidneys).
<i>Italian</i>	Kids 20-25lbs live weight.
<i>Greek</i>	Kids 30-40lbs live weight.

continued overleaf

Each religious celebration also gives different opportunities for meat producers, as shown by the table below:

<i>Holiday</i>	<i>Religion</i>	<i>2010 date</i>	<i>Type of goat wanted</i>
<i>Eid al Adha begins (Festival of Sacrifice)</i>	Muslim	29-Nov	Yearlings with one set of adult teeth and blemish-free (no broken horns, castration).
<i>Western/Roman Easter</i>	Christian	4-Apr	Fleshy, milk fed kids with light coloured meat.
<i>Eastern/Greek Easter</i>	Orthodox	4-Apr	Similar to western Easter but preferred live weight of 35lbs.
<i>Cinco de Mayo (Mexican Independence Day)</i>	Interfaith	5-May	Milk-fed 'cabrito' kids at 20-35lbs live weight.
<i>U.S. Independence Day</i>	Interfaith	4-July	Cabrito or young kids with no more than one set of adult teeth.
<i>Jamaica's Independence Day</i>	Interfaith	6-Aug	Young, smelly bucks 60-80lbs live weight.
<i>Ramadan begins (Month of Fasting)</i>	Muslim	24-Sep	Kids with all milk teeth <12 months old; optimum live weight 60lbs, may want head on carcass.
<i>Navatra</i>	Hindu	16-18 Oct	Tender male goats, weight depends on number of people to be fed.
<i>Eid al Fitr (Ramadan ends)</i>	Muslim	24-Oct	As for Ramadan.
<i>Christmas</i>	Christian	25-Dec	Milk-fed kids, 18lbs or more.

Sources for tables: SheepGoatMarketing.info and Interfaith Calendar.

In the UK, as in Illinois, growing ethnic populations present opportunities. Demand for goat meat is thought to be relatively inelastic: demand will hold steady despite changes in price, because its consumption is tightly interwoven with keeping up ethnic traditions.

This bodes well for producers in terms of achieving a margin, but as you can see from the Interfaith calendar, each holiday may call for a different size or age of goat, or happen on a different date each year, requiring producers to plan their production cycle carefully.

Driving a hard bargain

While our 'inelastic' demand might give producers some element of price protection, many farmers I visited reported that ethnic customers drove the toughest bargain. Because the growth of ethnic minorities will drive up the demand for goat meat, however, farmers might be able to sell more at lower prices.

Halal slaughter

Islamic law requires that animals be Halal slaughtered (see Appendix 1). The Muslim population in England is now thought to be around 2.4million – 500,000 more than four years ago – and is the second largest religion in the country (*EBLEX 2009*). As this market increases, larger Halal units have been developed – notably Welsh Country Foods, direct suppliers to Asda; but the process is still little understood.

The Halal ('permissible') process requires the slaughterman to be: "A mature Muslim of sound mind who understands the fundamentals and conditions relating to Halal slaughter and be approved by religious authorities." (AURI 2009). The animal's throat is cut with a knife, often without pre-stunning. For small abattoirs making provisions for Halal slaughter is not usually cost effective, and this means some producers are missing out on a valuable customer base. However, some Islamic organisations have suggested they are keen to work with small abattoirs to arrange special 'Halal' days, which could open up those markets in the future.

Animal welfare

Halal slaughter can be a contentious subject among non-Muslim meat customers and producers. Many people told me they perceive it as cruel, and I found that this even tended to translate into a mistrust of eating goat in general.

During my Dutch trip I watched hundreds of kids being Halal slaughtered (before breakfast) and found no difference in my perception of the process compared to that of non-Halal pre-stunned slaughter. The Halal slaughterman in Holland told me he felt it was a better way to kill animals since they were less likely to regain consciousness on the cutting line; and EBLEX studies show that two thirds of the animals killed Halal in England are pre-stunned before their throats are cut.

Steeped in history and tradition



Sri Lankan 'Kumar'. Eating goat was part of his upbringing, and he now sells goat meat in the UK.

Talking to Dr Merida Roets in Brazil, I learned much about the place of goats in African religious folklore and tradition. Charities such as FARM-Africa have had problems in the past developing breeding programmes to aid subsistence farmers, when religious beliefs get put before the release from poverty. In one instance, pedigree milking bucks were imported into villages at great expense, only for the development staff to return later and find the prize male had been slaughtered as part of a wedding celebration.

"...the goat has been used for centuries by the tribes of South Africa to communicate with the gods and ancestral spirits. The colour, sex and age of a goat slaughtered for cultural purposes are important, but vary from tribe to tribe.

For example, the Zulus consider a black goat as possessing the most powerful magic, a reddish-brown goat is believed to prevent conflict and bloodshed, an all-white goat is used to bless a wedding ceremony, a black-and-white goat is used in thanksgiving for wishes granted, and a red-and-white goat in thanksgiving for ending conflict.

Thus cultural use and tradition have epitomised the utilisation of goats globally, especially in Africa, for centuries, but may be a reason for the non-commercialisation of its high-value commodities; distaste for the practice of sacrifice felt by other religions and its associations with Satan.” (Roets, 2009).

Chapter 4 : Products and marketing

“You Liberals think that goats are just sheep from broken homes.”
Malcolm Bradbury, novelist.



Models at the IGA conference, Jaoa Pessoa, wearing clothes made entirely from sheep and goat leather and fibre.

Is there a market for goat meat?

“Demand for goat meat is outstripping supply.” (Sharon Peacock, 2010)

Here in the UK a series of TV promotions by celebrity chefs and a push by restaurants, gastro-pubs and farmers’ markets have seen public awareness of goat meat soar in the last few years, and all the meat goat producers I met reported a healthy demand for their produce. Unlike farming beef or sheep, however, for a goat meat business to succeed the marketing and development of the product is half of the business.

What's in a name?

It sounds absurd, but many people seem to have success selling goat if they call it anything other than 'goat'. In the UK consumers still struggle with the concept of eating 'goat' or 'kid'. Perhaps they are too charming? But so are lambs. Perhaps they think it's stinky, tough meat, but we have a resurgence in eating mutton, so why not goat? Industry commentator Cedric Porter added an interesting historical angle to the argument: he suggested that in the UK we've never been as hungry as our European counterparts in modern times, and so never eat horse or whale meat when protein was scarce, and eating goat can be associated with the same sort of meats.

Whatever the reasons, producers are finding creative ways to get around this problem, such as calling goat meat 'chevon' or 'cabrito' or running tasting sessions, since once someone has tried it and enjoyed it they are more likely to make a purchase.

"We know we can sell goat meat, the market just needs educating." (Loraine Makowsky-Heaton, 2010).

Marketing considerations

Throughout my travels, various aspects to the process of selling goat meat presented themselves and I have attempted to summarise my key findings in the table below, using case studies of people I have visited and interviewed.

Pointers to marketing goat meat:

Do your homework...

As the ethnic and health-conscious consumer markets grow in size and buying power demand for goat meat should increase. The IDEA in Illinois, USA in a recent study urged farmers to arm themselves with market research, know their state regulations, and study their local populations, so they can direct their marketing efforts at the most receptive audiences.

Think local...

John Geldard runs food hub Plumgarths, a farm shop supplying local Asda store in Kendal. He says sales of local food are growing, and consumers are beginning to make buying decisions based on food being locally produced, and that despite local food being hard to fit into Asda's supply chain, the consumer has spoken, and Asda now must accommodate this demand. Goat meat producers are ideally placed to exploit this surge in demand. 'Local' also implies fewer food miles – which not only makes the product attractive to consumers but saves on transport costs for producers. Mr Geldard also highlights the importance of traceability, and says this is a big issue with customers and government which farmers must address.

Think seasonal...

Many producers suggested to me that they wanted to produce a year-round supply, so they could have better chance of getting goat meat into supermarkets. Professor David Hughes however, argues that seasonality gives producers a competitive advantage. He said: “We should celebrate seasonality. It’s hard for huge companies like Nestle to adjust fast to seasonality – so we should exploit our ability to be able to do so.”

Differentiate...

In Kent, Sivalingam Vasanthakumar (Kumar) has a small business buying billy kids, rearing them on community woodland and processing their meat into curries. At Wye Farmers Market he sells out every weekend with a stall where he sells hot ready-made goat curry, cubed meat and curry-making kits, giving consumers plenty of options. Adding value to the product is key, as is product quality: the spices in curry kits are all imported especially for him from his native Sri Lanka.

In Brazil, consultants are encouraging goat farmers to adapt to fit a new market. Dr Osler Desouzart runs OD Consulting and usually advises the poultry industry. He pointed out that you can usually find at least 450 different cuts of chicken in a supermarket – but might find just 62 different lamb or goat products.

Develop other products...

In Brazil and South Africa other products from goats are promoted to bring in alternative sources of income. Goat’s milk cosmetics, goat leather shoes and bags, cashmere and angora clothing and even rugs and skins were on show at the IGA Conference. For subsistence farmers with the ability to produce high-quality craft products, goats provide many more sources of income than just meat.

Here in the UK, Lesley Prior started farming goats with a view to running a Boer-cross meat herd, but soon realized her cashmere females were too good to just breed from for meat. Initially she gained an extra income from the cashmere, but this is now the main focus of her herd and business, Devon Fine Fibres.

Integration in the food chain...

In South Africa the Kalahari Kid Company has been established to act as a marketing co-operative for goat meat, offal, leather, milk and fibre. Both commercial farmers and small subsistence farmers are invited to join and become shareholders. The company does the marketing, securing a consistent demand for the farmers’ produce and allowing them to stick to what they know best.

In the UK, Tim and Marnie Dobson have started working with other goat farmers to source meat for their customers. Again, this gives a co-ordinated, more secure market for produce, leaving farmers to get on with farming.

Don't put all your eggs in one basket...

Working with an alternative meat can be risky: as public attitudes change, so do the financial climate and buying trends. Roger and Carole Mason run a Rose Veal enterprise on their dairy farm in Cumbria. What started as a bit of an experiment has now turned into selling four calf carcasses a week. They have done all the marketing themselves, dealing direct with butchers, restaurants and wholesalers.

Their son Neil works in London, and has used his media skills to develop all the branding, leaflets and website for Heaves Farm Veal.

They had space to set up this new business without investing in new buildings, and run it alongside a successful dairy business. Key for Roger is also the fact that they can take more or fewer calves in for rearing depending on how the market develops.

Coordination...

A clear message my travels have given me is the importance of talking to other producers and sharing ideas and information. This is especially important in a small, alternative industry that is finding its way in the market place. Members of the Goat Veterinary Society have suggested designing a logo to unite producers of British goat meat and co-ordinate our efforts to promote it. It would also give consumers assurance of the quality of the product.

Chapter 5 : Rearing male dairy kids for meat

“Happiness isn’t happiness unless there’s a violin-playing goat”. Julia Roberts.

The great bull calf scandal...

The size of dairy goat herds in the UK is expanding, much as with other agricultural enterprises as they strive to achieve economies of scale. There are large, more intensive zero-grazed herds (over 1,000 head) and small, extensive, lower-input herds (under 100 head). Whatever size the herd, there will be surplus male kids each year. In an article in the *Farmer’s Guardian* in 2009, opinion writer Robert Forster summed up the mirror image of the picture in the cow dairy industry. He wrote:

“At least 110,000 Holstein bull calves were shot immediately after birth on UK dairy farms during 2008 and even more are expected to be killed this year too. When this death toll becomes public – and that means tabloid headlines – it will tarnish every dairy farmer in the country’s reputation and could trigger a hostile consumer reaction which may damage milk sales.”

In my travels I encountered many different approaches to dealing with these kids, the most relevant of which I will summarise.

Holland

The Netherlands has a strong dairy goat industry numbering a staggering 300,000 head. It has access to European markets on its doorstep, and it is relatively easy to transport milk to these markets. The Dutch have always reared more male dairy kids than we do in the UK, and a new co-operative membership requirement to prove that male kids are being reared and not put down at birth, meant Holland was a great place to visit to see the enterprises in place for rearing males.



Amalthea Cheese plant storage, Holland.

My itinerary in Holland was kindly arranged by Jos van Wegen, then milk supply manager for the Amalthea co-operative. Amalthea is one of Holland's largest co-ops, yet is having to keep adjusting its business to adapt to market changes. Recently French customers have started buying more milk from the Spanish, who have started producing goat milk more cheaply. In turn Amalthea has developed a cheese-making plant, in the hope that processing more of its milk will leave it in a stronger position to deal with fluctuating markets.

Holland is also well placed for marketing male kids. There are big markets in Spain, Italy and the rest of Europe keen to buy goats for meat alive or dead, and are not particular about whether it is a meat or dairy animal, as long as it's goat.

Dutch rearing systems

My first visit in Holland was to a slaughter house at 6am to watch 150 male kids go through a Halal abattoir. Here kids reared at rearing farms are killed at around two months old, killing out at just 4-6 kilos as 'capretto' or milk-fed kid. From there they are transported chilled to Spain and Italy.

Henk Evers runs a meat trading business and deals in many thousands of goat kids each year. He told me that in the past up to 80% of the trade in kids was live trade. Since BTV and other disease threats that percentage has dropped to 60%.

Because of huge demand fluctuations in the European marketplace, Henk is trying to find closer markets to bring his transport costs down. He is passionate about meat quality and believes freezing goat kid meat (which would reduce his transport bills) is not an option as it colours the meat.



My Dutch hosts: Left Henk Evers, centre Mr and Mrs van Dam, right Jos van Wegen.

Next stop was the rearing unit where the van Dam family rear around 3,000 males a year in a climate-controlled hut on an all-in, all-out basis. They have been rearing males on their farm for 12 years and have seen the market for kid meat rise and fall. Kids arrive at one week old.

Hygiene is crucial, but when questioned Mrs van Dam highlighted other potential pitfalls with the system:

- Some farms supply healthier kids than others.
- Sufficient colostrum on birth farms makes kids stronger when they arrive. Rarely does she feel they get enough colostrum at birth.
- Teaching them all to drink makes the first week very labour intensive.
- Kids are given antibiotics on arrival to target joint-ill and scours.
- If the market price is not there, then the system is flexible enough for them not to raise any.



*Above: Billy dairy kids at the van Dam rearing unit.
Below: Automatic milk feeding machines at the van Dam rearing unit.*



Dutch bottom line

Henk Evers calculated a gross margin for billy goat kids shown below. The Euro exchange rate at the time of calculation was 1 Euro = 80 UK pence:

Costprice calculation Capretto (to 10kg live weight)/kid:		
Price paid to goat farmer:	2 euros	£1.70
Transport cost (collection):	1 euro	£0.85
Fattening costs at rearing unit (housing, straw, labour, energy etc):	4.5 euro	£3.80
Feed cost: 7kg milk powder at 1.75 euro/kg:	12.25 euro	£10.40
Total:	19.75 euro/kid	£16.80/kid
Sales options:		
Option 1: Live export to Spain/France/Italy.		
Option 2: Slaughter in Holland and export carcass.		
Option 1: Live export:		
Export cost (transport, labelling, border controls etc):	2 euros	£1.70
Transport costs to Spain:	2.5 euros	£2.10
Total:	4.50 euros/kid	£3.80/kid
Therefore total costs to delivery in Spain = 19.75 euros + 4.5 euros (and sterling equivalent):	24.25 euros	£20.60
Market price per billy in Spain:	30.00 euros	£25.50
Margin:	5.75 euros/kid	£4.90/kid
Option 2: Slaughter in Holland and export:		
Transport cost to slaughter:	1 euro	£0.85
Slaughter cost:	7.50 euros	£6.40
Transport of carcass to Spain:	2 euros	£1.70
Total:	10.50 euro	£8.90
Therefore total costs to delivery in Spain = 19.75 euro + 10.50 (and sterling equivalent):	30.25 euros	£25.80
Market price per billy in Spain:	24.00 euros	£20.40
Margin:	negative	5.75 euros/kid £4.90/kid

Market fluctuations and constraints.

Talking to Dutch dairy goat farmers, it is clear that markets fluctuate greatly. Sometimes they are paid a small amount for the kids, and sometimes they pay someone like Henk Evers to take them so that they can honour their co-operative commitments. By varying this arrangement Henk continues to be able to run the operation, but it is far from ideal being in such a changing market, for all the people in the supply chain.

Main costs

Milk replacer is a key cost in kid rearing. On a visit to milk-powder manufacturer Nutrifeed's headquarters I met marketing manager Simon de Jong. With an average dairy kid requiring at least 7.5 kilos of milk powder, Holland's kid rearers are key customers of Nutrifeed. Mr de Jong predicts those costs are going to carry on growing. Drying milk and whey to make powder is a very expensive process and while Nutrifeed is looking at using greener energy sources, its biggest pressure is still energy costs. For the goat rearing industry Nutrifeed supplies two full-time members of extension staff advising farmers on how to get the best from its products.

Other options

Some goat dairy farms rear their own males on site in Holland, keeping them alongside replacement female kids. Where they already rear females, rearing males as well is convenient. Danni Van de Wetering runs just such an operation on his 500-head dairy unit. He used to be an agricultural engineer, so has used these skills to develop a sideline supplying milk machines for hire to other farmers rearing kids. He rears his own males on site in sealed, temperature-controlled units. He sells his billies to a local meat buyer for about 20 Euros/head (£17/head). He says the enterprise *does* have a positive margin, but adds to his income significantly with his milk machine operation, so doesn't mind if the billy kids don't turn a huge profit.

Changing markets and 'milking through'

Also worth bearing in mind is the fact that as markets change, the number of billy kids available for rearing changes too. In Holland the recent outbreak of Q Fever and the significant cull of a proportion of the national herd will reduce the number of kids available and could impact positively on the market price for meat. In Holland and in the UK goat dairy farmers are on a steep learning curve, trying different ways of managing does to get the best quality and quantity of milk. Some are 'milking through' a proportion of their herds, allowing them two seasons of milk production with no kidding in between.

It is recognised that kidding each year puts pressure on the doe, and is the time when farmers lose the most does. It also presents extra costs, with youngstock to rear or dispose of. Once farmers have enough replacements, some are trying out a system of kidding them once as goatlings (heifers) and not kidding them again unless they are significant milkers from which they want replacements.

Getting the chefs on board

In response to the drop in live exports, Dutch chef Door Sjef Brok has published a book of recipes to get the Dutch eating goat meat, saving the expense of export. The book, *'The Rise of the goat'*, highlights the greener option for Dutch consumers of eating healthy meat and reducing heavy freight traffic across Europe.

Partnerships formed

In the UK I met many goat dairy farmers and quizzed them on their attitudes towards and plans for surplus dairy males. Significant numbers on large units are culled at birth. However, I came across a range of rearing solutions, many of which could be easily replicated.

Tim and Will Frost team up with Longdown Activity Farm

Tim and Will Frost run a 1,500 head unit milking three times a day in Dorset. They are purposefully gearing their management system to reduce the number of kids. They have struck up a partnership with Bryan and Dawn Pass, who run an open-activity farm in the New Forest, and send them around a third of their male kids each year. They have another buyer on board for this season who they hope will take a further 200.

Tim told me they would like to rear their males on site but haven't got the space. This was a common response from big dairy units. With milk volume being the crucial bottom line, there seems little incentive to rear males on site in space you could fill with more milkers.

Before going to Bryan Pass's, kids are all de-horned, vaccinated, tagged and castrated. Tim then sells them on for £15/head at a fortnight old.



Some of the kids for visitors to feed at Longdown Activity Farm

Bryan and Dawn's Longdown Activity Farm, on the edge of the New Forest, receives around 100,000 visitors a year. They host many school groups and place an emphasis on education at the farm. Brian keeps 100 goats on milk for visiting children to bottle feed.

Kids are kept on milk until they reach 15kg. They are then pan fed by children and reared on until they are about a year old, when they are then either sold as pets or pony companions or for meat. The goat kid enterprise was previously a loss leader, crucial for attracting visitors. However, a new farm shop on site has invigorated the meat trade. Bryan described his confidence that he can turn a stronger margin from the dairy males:

“We are really pleased with the sales of goat meat, averaging five whole goats a week to local pubs and through our farm shop. We arranged a goat evening with a well-known local chef serving up a varied menu, which went down well and has created a lot of interest. The important learning curve for us is the goats must be at least 40kg live weight to warrant the cost.”

Cross breeding with meat breeds

In Staffordshire I went to visit Nick and Caroline Brandon. They are milking around 2,400 dairy goats and supply milk on contract to Delamere Dairy. Nick keeps three Boer males which he uses on poorer milkers and goatlings to breed a meat-cross kid which is much easier to market. At 38kg liveweight he is getting £40-50. Tim Dobson of Chesnut Meats buys these meat cross kids, providing Nick with a consistent and professional market.

Many of the large dairy goat farmers I met seemed to have accepted the cull of unwanted males, but Nick felt strongly that he had to find a solution. He also set himself apart from the others by grazing his milkers outside from April to October. Youngstock on the farm spend much of the year outside, and this new system brings a massive saving in concentrate costs.

‘Capretto’, or milk-fed kid

When I ran my own small dairy herd I reared males on their mothers and slaughtered them at around five weeks old as ‘Capretto’, or milk-fed kid. Initially my customers were upmarket London restaurants, but I soon expanded the customer base to local butchers, pubs, restaurants and could box them up to post to private clients. For a small business like mine this brought in an extra margin. It also suited my business, since my milk buyer wanted spring milk to increase steadily, so losing milk to kids was not an issue. The kids were not castrated, and grew fast, running with mother. Other than the milk they were drinking, there were no other extra costs of vaccinations, wormers, de-horning or castrating. In contrast to the Dutch Capretto system, mine were a bit bigger, killing out at 9-12 kilos, or upwards of 15kg liveweight.

Looking back in my records, my costings were as follows:

Cost price calculation Capretto (upwards of 15kg liveweight)/kid:	
Costs:	
Milk (Average age 4.6 weeks, 1 litre/day @ 0.50ppl):	£16.10
Concentrates (2-4 kilos/kid):	£1.20
Sundry costs (straw, labour – minimal since running with mothers):	£1.40
Total:	£18.70/kid
Sales	
Option 1: Boxed and sold to private customers:	
Costs:	
Slaughter and cutting cost:	£15.00
Transport cost (DHL-type special delivery):	£10.20
Box and lining to transport it:	£4.30
Total:	£29.50/kid
Total costs for boxed to private customers £18.70 + £29.50:	£48.20
Sale price £9/kilo average weight 10 kilo:	£90.00
Margin:	£41.80/kid
Option 2: Via meat dealer to London restaurants:	

Slaughter cost:	£9.00
Total:	£9.00
Therefore total costs for London restaurant customers £18.70 + £9.00	27.70
Sale price paid by meat dealer £7.50/kilo average weight 10 kilo:	£75.00
Margin:	£47.30/kid

Margins of error...

While the figures make Capretto seem like the proverbial ‘no brainer’, there were other factors at play that influenced the enterprise:

- The system required a great deal of marketing and organisation on my behalf at an already busy time of year. I was overstretched, and other dairy farmers see themselves as milk producers and don’t want to spend time chasing kid meat customers.
- As is often the case in agricultural gross margins, I didn’t cost my time accurately. On a bigger enterprise a dedicated member of staff to deal with kid rearing would be the best solution, but presents a huge extra cost.
- The market I was supplying was undoubtedly ‘niche’, and I was able to charge accordingly. It is unlikely that you could shift larger numbers for those sorts of prices, especially given the seasonality of the system.
- In very busy times, I took a few groups of kids to my local auction, to free up barn space in a hurry and test the water price-wise. Prices fluctuated hugely for dairy kids at that size, from £40/head to £18.



Kentish goat...

Running on similar lines to my own dairy business, Debbie Vernon and David Shannon run a small dairy goat herd near Wychling, Kent. They currently milk around 70 goats and process the milk for doorstep deliveries of unpasteurised milk, and make hard and soft cheese which they sell at the local farmers’ market. This is a high health-status herd, with top-quality stock and an emphasis on quality, not quantity. I visited Debbie and David in part to see their approach to surplus males.

Billy kids are reared on milk replacer and sold on when weaned. Many have been sold to Sivalingam Vasanthakumar (Kumar) in east Kent. He would take them on to 30kg, then slaughter and process the carcass to sell in various forms at nearby Wye Farmers' Market.

The margins are small for Debbie and David (around £10/kid given an estimated rearing cost of £35/kid) – but both feel it's better than knocking the kids on the head. This year Kumar is unable to buy their kids, so Debbie is approaching local restaurants to try to sell them there. She has reported good feedback.

Tim and Marnie Dobson, Chesnut Meats, Cheshire

At their farm in Cheshire, Tim and Marnie are building something of a goat meat empire. I discussed with them their opinion on the market for Capretto, and dairy kid meat in general. They told me they thought meat-cross kids were the best solution for the dairy industry, bringing a bigger carcass, which helps to balance travel and rearing costs. Marnie feels there is potential to persuade dairy farmers to rear Capretto, as it is sold on after only two months or so. She suggested a specific seasonal auction mart could be used to connect these kids with Greek, Turkish and restaurants and customers. She emphasized the fact that she saw Capretto as a premium product, and if dairy farmers could be shown that they could attract a premium price, then the enterprise could work.

The universal foster mother

While my Capretto enterprise had faults, it was arguably a higher welfare option for the kids. I felt it was better to have a short, happy life with Mum than none at all.

A key feature of goats is their mothering ability, as well as their ability to nurse other animals' young. Fostering on with goats is rarely a painful process requiring a head yoke, and is not even species specific. For over a century, sheep farmers in Cumbria have kept a few milking goats on which to foster orphan lambs, and I have heard cases of foals and calves being reared on goats.

In Greek mythology, the baby Zeus was hidden in a cave on Mount Aigaion (known as Goat Mountain) in Crete, and nursed by the goat Amalthea. The name Amalthea translates as 'the universal foster mother'. The picture below, *'The Nurture of Jupiter'* by Nicolas Poussin, depicts this episode.



Goat nursery

With this in mind I developed an idea for establishing a 'Nursery', rearing billy kids on perhaps the lesser milkers from a herd, or culls. Every young animal does better drinking real milk from a proper mother, so I set about sounding out the industry about it.

I visited a multi-suckler cow herd, just a few miles from where I live. Here around 20 cows are used to feed four calves per cow, twice a day. Calves are kept in traditional Cumbrian shippons, meaning each cow knows where to go at feeding time.

Sam Holliday, wife Barbara and her brother John Young made the move to the multi-suckler herd from milking their own cows a few years ago and now wish they'd done it sooner. They buy in dairy and beef cross calves at an average price of £25/head. They sell them three months later for an average price of £500/head.



Cows heading for their calves at feeding time at Buck Crag.

The calves look sleek and well, and buyers are now seeking out the Holliday's stock because they know they are strong and healthy. The cows have responded well to the change of system too and cases of mastitis are virtually zero. They are able to buy replacement cows without worrying too much about the cell count of the cow, and thus save money. Sam said: "This is so much better than a suckler system where cows are milked off too hard by the calf. This way the cows keep condition."

Much like the billy kid rearing units I saw in Holland, they have some of the same problems here, with calves receiving insufficient colostrum at their birth holding, which can turn into pneumonia at the Holliday's farm. They also get high incidence of ring worm and lice in the calves which they put down to the old-fashioned Shippons, but they can easily tackle the problem with medication, and don't want to lose the natural nursery that the Shippons have turned out to be.

Not all milking cows would be suitable for this system, and it takes time to teach them to feed different calves; but a few days of husbandry pays off and they will soon let new calves drink.



Cow with her four foster calves at Buck Crag

There is no reason why a similar system could not be used with dairy goats, putting surplus billy kids on them. On consultation with others in the industry, several thoughts presented themselves:

- First-class husbandry is crucial, especially at the adoption stage, but a good milking goat could potentially rear at least 11 kids/year, working with a dairy herd kidding nearly year round. Depending on killing weight of kids, she could rear more if they were going to slaughter at five weeks old.
- This system could be run on site at a large dairy unit or by someone with sufficient shed space and a willingness to invest in an alternative enterprise.
- Sufficient colostrum for the kid at birth is the number-one priority.
- The enterprise would be dependent on market prices for cull goats. Currently prices for culls are high, in line with cull ewe prices, but direct collection or an arrangement with a goat dairy farmer could secure a better deal.
- A clear market for the finished kids needs to be secured before costing the enterprise.
- It would be more expensive than rearing kids on cheap milk replacers, but could be labelled 'higher welfare'. Could you in turn charge a higher price for the meat?

Conclusions

I have learned that a Nuffield scholarship is not a chapter that can simply be tied off and finished with. I am learning more about my industry – and others that relate to it – every day, but there are some areas where conclusions can be drawn. These are as follows:

1. Meat breeds and management

No single system seems to fit all, and the best businesses have adapted their management, breeding and marketing plans to suit their circumstances. In many cases this is using Boer-cross, or other breeds of goat, and not relying solely on Boer genetics.

2. Sustainability

With pressure mounting on the livestock sector worldwide to face up to its environmental obligations, extensively farmed meat goats have a crucial role to play in that adjustment. Goat meat will probably never rival lamb or beef in popularity, but we should be open to the idea of using them as a management tool, bringing in a sustainable extra income.

3. Ethnic markets

In the UK the ethnic population is growing fast. Muslims, Asians generally and Caribbeans eat goat. For them it is often part of a religious celebration or cultural event – resulting in more price stability.

4. Marketing

There *is* a market. Many farmers report an inability to meet demand for goat meat. This is often local and regional demand, which offers the possibility of a direct link between farmer and customer and looks set to increase with the growing enthusiasm for local, seasonal, ethically produced meat.

Sometimes the whole idea of eating goat can be a barrier for consumers. Producers worldwide are tackling this perception through marketing and being creative about their product.

Many of the case studies I looked at have had success marketing more than just goat meat. The ‘Fifth Quarter’ has been well exploited in other countries with offal, leather, cosmetics and fibres being processed. Differentiating products by increasing choice of cuts has proved a useful marketing innovation, as has processing meat into burgers or curry-making kits.

5. Dairy males

The dairy billy kid question is a tough nut to crack: Dairy farmers in the UK are busy increasing goat numbers and lack space and time to devote to an unknown margin. As with black and white bull calves, the dairy billy kid needs to be marketed differently to a meat goat. Meat goat breeders are not keen on rearing dairy males as they don’t usually fit their management system, so a specific enterprise needs developing.

Recommendations

Once my report is complete I have a long list of things I hope to get involved with to maintain the momentum of the positive attitude towards goat meat farming I encountered during my study.

1. Shared experience

I think the industry needs a logo to promote the healthy and tasty attributes of goat meat. The industry needs to work together: when working with 'alternative' livestock, knowledge is often limited and there is much to be gained from sharing experiences and ideas with others. Through communication and co-operation we can innovate, develop a professional marketing approach and try to apply lessons learnt from other niche industries about reaching the public with a good sustainability story.

With regard to rearing dairy males, we have a long way to go. I am planning a trial nursery rearing system, making the most of the fostering ability of does, to cost rearing males in this 'nursery'. Once I have a proven method from rearing to market, I will be better placed to sell the idea to large dairy enterprises.

2. Industry changes

We also need to encourage the principle of putting Boer males on goatlings in dairy herds to produce meatier kids which are easier to market. Changes in the dairy industry, with increasing numbers of milkers being 'milked through' and keeping does for fewer lactations, will all have the effect of reducing the number of surplus male kids.

3. Share our good news

As part of our sustainability story, I also believe we should be looking to increase the hardiness of meat goats and trying to find a breed or cross-bred animal that is most effective for each individual management system. This may mean less focus on the Boer goat and more research into feral and fibre breeds and their respective carcass quality.

There is no doubt that goats have a significant role to play in high-quality meat production with minimal inputs on marginal land. In this sense it is unquestionably a food for the future. But while established and thriving markets already exist, the largest challenge for the industry is to promote goat meat to a broader public that is, by and large, in the dark about this wonderful food. With strong demand the industry can also work towards a profitable purpose for male dairy kids, stopping the waste of an animal which has so much to teach us about the effective use of resources.

Postscript



Myself and some fellow 2009 Scholars at the 2009 Nuffield Winter Conference.

My aim when applying for a Nuffield Scholarship was to gain a clear idea of the role meat-goat farming might play in the future of agriculture, and which management and marketing systems looked best placed to shape the success stories of tomorrow. I have achieved what I set out to do, and now find this study influencing every aspect of my business and how I run it.

The study has made me much more environmentally focussed than I had been previously. My new business is managed extensively, with the goats grazed on LFA land covered with gorse and rocks, and inputs kept to a minimum. Feed is home grown, usually locally, and where possible is sourced from by-products such as wheat distillers' grains.

I no longer worm my goats routinely, but rotate pasture, use Faecal Egg Counts, and am working on trailing non-chemical wormers which I saw working well in other herds. I don't use herbicides because the goats eat nettles, thistles, brambles, docks and gorse.

Customers for this year's kid meat have been relatively easy to find. A local butcher is already stocking it, running popular tasting sessions and providing recipes.

I have an extra potential avenue of income with the coats from my cashmere goats, many of which have very high-quality fibre. I am surrounded by enthusiastic local fibre processors who want to develop new tiers to their businesses as I do to mine.

I'm anticipating that with herd expansion plans in place, by 2012 I will be able to give up my relief milking jobs, and that the business will stand completely on its own feet economically as well as environmentally.

Being given the opportunity to explore an engrossing subject in profound depth has been a wonderful experience for me personally. Travel – whether around the corner or around the world – always enriches the soul; but it has been especially rewarding that my geographical exploration has gone hand in hand with the acquisition of knowledge, that I can pass on to others to benefit the great and vital profession of farming.

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Andrew Bullock, Meat Hygiene Service.

Brian and Dawn Pass, Longdown Activity Farm, Ashurst, New Forest.

Nick Brandon, Upper Enson Farm, Stafford.

Tim and Will Frost, Childhay Manor Farm, Dorset.

Lesley Prior, Westcott Farm, Devon.

Jos Van Wegen, Milk Supply Manager, Amalthea, Holland.

Henk Evers, Paridaans – Liebrechts, Holland.

Family Van Dam, Horssen, s'Hertogenbosch, Holland.

Paul and Carla Van de Laar, 'Orchid', Zeeland, Holland.

Danni Van de Wetering, Western s'Hertogenbosch, Holland.

Gertyan and Marcel Peters, Milke Connect, Holland.

Simon de Jong, Nutrifeed, Holland.

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Lucas Berger, Griquatown, Northern Cape, South Africa.

Rudi Slabbert, Production Manager Karsten Farms, Roepersfontein, Kanoneiland, Northern Cape, South Africa.

Albi Horn, Kuruman, Northern Cape, South Africa.

Mervyn Swart, Houtkraal, De Aar, Northern Cape, South Africa.

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Dr Hitchem Ben Salem, INRA, Tunisia.

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Tim and Marnie Dobson, Chesnut Meats, Cheshire.
Gary Yeomans, Abergavenny, Monmouthshire.
Stephen and Joanne Airey, HC Airey and Sons, Ayside, Cumbria.
Ivan and Sally Baker, Macriloda Boer Goats, North Somerset.
Nick Clayton, Goat Veterinary Society.
Peter Bidwell, British Boer Goat Society.
Philip Omerod, Pasture House Farm, Nr Skipton, Yorkshire.
John and Rachel Geldard, Low Fowlshaw Farm, Cumbria.
Sharon and Chris Peacock, Cockerham Herd of Boers, Cockerham, Lancashire.
Roger and Carole Mason, Heaves Farm, Cumbria.
Neil Rowe, Buildings Farm House, Abingdon, Oxfordshire.
Dr Christie Peacock, FARM-Africa, London.
James Little, Summerway Farm, East Devon.
Professor David Hughes, Emeritus Professor of Food Marketing, Imperial College, London.

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Appendix

Appendix 1

Halal Slaughter Requirements (El-Mouelhy 1999):

- The factory must be under close and constant supervision of a Halal certifier
- The premises machinery and equipment must be cleansed according to Islamic law before any production takes place
- The slaughterman must be a mature Muslim of sound mind who understands the fundamentals and conditions relating to Halal slaughter and be approved by religious authorities
- The slaughter must be done manually using a stainless steel knife
- Facilities must be available for ensuring the knife after each kill (*protecting the knife from interference from other parties*).
- The respiratory tract, oesophagus and jugular vein must be severed
- The animal must be completely dead before removing the hide

N.B Since pork is not considered Halal, facilities that process pork would be excluded or could require special arrangements before slaughtering or processing goat intended for Muslim consumption.

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