



Nuffield Farming Scholarships Trust

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Consumer attitudes to how milk is produced

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Disclaimer

The views expressed in this document are entirely my own and do not represent the views of the Nuffield Farming Scholarships Trust, or my sponsors, or any other sponsoring body

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Executive summary

I am a dairy farmer from the north of England. I produce milk from 250 Jersey cows and feed grass as much as possible. I am also currently a board member of DairyCo, the levy board for milk in Great Britain. Having tried unsuccessfully to add value to milk on our own farming operation by entering into the cheese and yoghurt market as well as changing our system to be organic, this study was undertaken to find out exactly what consumers think of how we farm, and to see if by doing what they want we can add value to our product.

My study began at home in the UK and Ireland. Visits to farmers, processors, retailers, animal welfare groups and consumer groups gave a perspective on how the supply industry works currently and what the expectations for dairy farming in this country were.

The UK is a country where the vast majority of milk is produced from some sort of grass based system, and in general the public are supportive of dairy farmers.

During my study term many issues from Applications for Large Scale Dairy Farms to Cloned Cows and MRSA in Milk have made the national media.

My study tour included visits to established dairy nations of the USA, Australia and New Zealand and crucially the developing nations of China and India.

In China a scandal involving melamine contamination poisoned 300,000 people, mostly under 3 years old, and killed an unknown number of children. Sales dropped 30% and confidence was lost in home produced milk products.

In New Zealand competition for water resource and development in sensitive areas has caused public opinion to turn against dairy farming in Canterbury.

In India milk demand is growing by 10% per year and production struggles to keep pace. This presents an opportunity for the UK. Milk which is clean and safe, in a country with poor refrigerated supply chains, is key and an opportunity for the UK to advise and export to.

In California promotion of milk changed from "Happy Cow Animations" to "Real Dairy Farming Family profiles" which caused the campaign to stall.

Around the world dairy farms are expanding and many developments are confined herds yet examples of advertising in all the countries I visited included cows in fields eating grass.

A customer's decision to buy milk products is underpinned by a belief that the latter are produced in a manner that comes up to their expectations.

These expectations are based on romantic ideals of dairy farming, but there is a growing realisation that modern dairy farming may be different.



The “bubble of trust” can quickly be burst by a food scare caused by product contamination, either real, or implied from something physical like the melamine scandal in China or through disease like BSE in meat.

The “bubble of trust” can be slowly eroded by poor image management and a host of issues such a poor animal welfare, environmental damage or even farmer arrogance.

The dairy Industry worldwide is making moves to counter anti-dairy campaigns from groups who are wary of modern farming methods. It is our battle to lose and the industry should continue to broaden consumer research to keep up to date with what our customers really want.

We should educate where perception is wrong and change where farm practice is wrong. Current practice in the UK best fits what the consumer expects. If we want to change then we must educate.

Research is already being conducted into measuring animal welfare outcomes, but I believe that a simple index of how to measure the comfort and happiness of cows is vital to inform the public about how well we farm our livestock. The lack of this allows perception to be the main measure.

We need to engage with environmental groups and agencies to inform and permit legislation which is likely to be brought forward for large scale dairy farms. This way the industry can be part of it rather than it being imposed upon us.

UK Dairy Farm Assurance is a world leading scheme. But, it should be re-assessed to include animal welfare outcomes and used to root out poor farming practice and tell the story of best practice in milk production in the UK.

Developments in modern animal genetics, farming systems and the opportunities for growth and export of milk products globally from the UK are growing.

But growing awareness and influence amongst consumers through new web based and social media mean that our industry could be under threat.

The UK dairy industry has some of the best milk producers in the world. In order to allow them to grow their businesses to compete in a global market the industry should carefully consider what is the best blueprint for dairy farmers in this country to move forward with consumer support and compete for the growing world demand in dairy products.

The industry needs to unite and look outwards, learn from others and be proud of British dairy.



1. Introduction

I am married to Liz and we have two daughters Harriet and Rachael. We farm a 144 ha Lowland Dairy Farm on the fringes of the Lake District in Cumbria.

I grew up on a small family owned dairy farm where my mother and father had a traditional mix of dairy, sheep and beef and we milked around 50 cows. I travelled to New Zealand through the Young Farmers movement in 1988 and this was the first “life changing” experience for me.

I was lucky in that my parents allowed me to take control of the business at an early age and soon after we got married in 1992, Liz and I moved the farming business to our current home where we have grown our business steadily over the past 15 years.

In 1996 we became involved in a joint venture with another Nuffield Scholar, Michael Cowen and his wife Joyce, milking 380 cows on a low input system. This involved changing our breeding programme, cross breeding the herd of Friesian Holsteins to Jerseys and adopting a more focused grazing system. The foot and mouth outbreak in 2001 was another life changing experience and although we did not lose our main herd to the disease Michael and Joyce decided to leave the partnership. Liz and I purchased the whole business and reduced the stocking to 250 cows.

The next 5-6 years were to see the lowest returns on dairy farms for many years. I was involved in work with the government to help farmers to produce recovery plans as they rebuilt their businesses after foot and mouth had taken their stock. Around this time we also began a small garden waste composting business which has grown to currently processing 6000 tonnes p.a.

In 2003 I was involved with 3 other farmers in creating a local dairy brand, “The Cumberland Dairy” producing local cheese and yoghurt for retail and catering businesses in the Lake District and wider North West of England. Sadly this business failed at the beginning of the recession in 2009.

Since then we have been involved in converting our farm to produce organic milk but, unfortunately, we have never had a contract to sell any organic milk.



During my study I had the good fortune to meet Mr Robert Graham of Graham's Family Dairy in Stirling who offered us a contract to produce Jersey milk for their growing "Gold" brand so we now have around 280 Jersey cows with plans to grow this back to the 380 cows we had 10 years ago.

I have been a member of the board of DairyCo for the past 4 years.



2. Background to my study

I was involved in a business producing cheese and yoghurt for the local retail and food service sector from 2003-7.

We spent around £50,000 (helped by a government grant) on market research and product development. This was to be a business which appeared to tick a lot of the boxes which as farmers we were told would add value to our businesses:

- Our products had local provenance
- They were high quality
- Our yoghurt was produced on farm
- We sold it ourselves in high quality packaging promoting our values

The business grew and in 2005 we had a turnover of £100,000 and a modest profit of about £10,000.

In the autumn of 2008 when we were gearing up for the busy Christmas market our orders almost dried up as our discerning customers turned to cheaper products in the wake of the credit crunch. We sold our last cheese in Christmas week of 2009 and wound the business up in the New Year.

In 2007 we also had to make a decision about our dairy herd: whether to expand our herd back up to 400 cows or whether to convert to organic as this sector was seeing a growth of 20%. The profitability of converting to organic milk with 250 cows at the time was similar to that of a conventional herd of 300 cows so a decision was made to “go organic”.

The failure of Dairy Farmers of Britain (who were the only organic purchaser in the region) and the lack of growth in the organic milk sector due to credit crunch left us without a contract to sell milk.

During all of this I also became a member of the board of DairyCo where as a board we made a decision to stop funding generic milk advertising and formed an agreement with DairyUK to manage the image of dairy farming up to the farm gate and leaving processors to manage the image of product.

All of the above has led me to want to investigate for myself and the wider industry:

- what our consumers want
- do they think about how milk is produced?
- and are consumers different around the world?



3. Study tour overview

3a. A quick trip around the UK

I felt I needed to get a perspective on how consumers felt about the way we produce milk in the UK. I spent the first 6 months of my study year travelling the UK to meet farmers, processors, retailers, pressure groups and a lot of people and consumers.

DairyCo

DairyCo is the levy board for milk in the UK. I have a vested interest here as I am a farmer board member of this organisation. The board made a decision 4 years ago to cease funding generic advertising (The White Stuff etc) as it was clear that, although it made everyone feel good, it was not giving farmers a return on investment.

The money was diverted to creating a new department. A clear line was drawn with the processors that the farmers' levy would fund management of their image and defend any issues arising that could damage this image. The processors would take care of everything past the farm gate.

For the first time in the UK, consumer research has been undertaken to see what people really think of dairy farmers and some of the things they do, and someone is taking charge of creating fact based statements to help the wider dairy industry to support our image.

DairyCo Findings:

- People still like dairy farmers – recent survey 60%
- When asked the specific question, consumers find it difficult to imagine what size of herd is too big
- Consumers in UK think cows eat grass

Farmers and NFU

There has been a lot of debate amongst farmers about systems this year. I visited a number of different systems from organic, to extreme grazing, to totally confined herds, right across the country.

Retailers

I met with Steve McLean, Agricultural Manager at Marks and Spencer, Emma Jones, Commercial Manager at Tesco, and was lucky enough to be hosted for the whole day by Robbie James, Buying Manager for Dairy at Waitrose, where I got to see how the whole



supermarket operation works. Most of the major retailers have dedicated supply chains to source their milk, which have production clauses that “gold plate” farm assurance, but none of them seemed to do much consumer research into what their customers felt about how milk is actually produced. Waitrose admitted that policy was set from head office. Waitrose have a specific clause in their contract that cows must be fed grass if possible. Tesco’s dedicated suppliers’ price is based mainly on cost plus. At the time of visiting the retailers, Super Dairies in the UK were very much in the news but only a handful of customer enquiries about this issue were received by Waitrose and M&S and Tesco had an open mind.

Processors and DairyUK

I visited Dairy Crest in Surrey, Yeo Valley and John Alvis in Somerset well as speaking to other processors by phone. Dairy Crest produce products for the major retailers (running dedicated supply chains for Waitrose and others) as well as for their own market-leading brands like Cathedral City Cheese. Dairy Crest conducts consumer research which shows that their customers have concerns that are not necessarily transferred into buying decisions. Yeo Valley have invested into their branding during the past year with the successful “rapping farmers” campaign and produce milk to organic standards using traditional breeding (Friesian). John Alvis produces cheese for many customers as well as running a farm shop.

Welfare organisations

I had meetings with Phil Brooke of Compassion in World Farming (CIWF) and Suzi Morris of World Society for the Protection of Animals (WSPA) at their respective headquarters in Godalming and London. Both these organisations have run campaigns against “factory farming” this year. I also met with John Avizienius of the RSPCA.

www.notinmycuppa.com is the most prolific of these. The campaigns are well run and media savvy. Farmers are quite rightly suspicious of these organisations, but they have influence and punch above their weight. My view is we need to engage with them and educate them about modern dairy.

The egg industry

Eggs are traditionally categorised with milk and dairy in retail outlets. I visited the egg production operation of Christine Jackson NSch in Northumberland. It is interesting to note that during a time of debate about dairy farms becoming more intensive, egg production in the UK has seen great restructure. Retail production has moved from predominantly intensive to free range in response to consumer pressure following a food scare involving Salmonella infections in the late 1980s. All eggs are now marked for sale with a number which indicates the system of production.



Farm Assurance

Assured Dairy Farms is the means by which farmers are audited by their milk buyers. Although the farmer does not contribute directly, the cost of auditing is picked up within the supply chain. The scheme is constantly updated and at the moment is working with Bristol University to add some degree of Welfare outcomes to the audit, based on work completed through the European Food Standards Agency's Welfare Quality Initiative.

3b. Pennsylvania (visited as part of the Contemporary Scholars Conference)

Industry Snapshot

- Pennsylvania is the 4th largest producer of milk in the US.
- There are over 6000 dairy farms producing 5 billion litres of milk.
- This is the equivalent of the production of Ireland
- Dairy is the No 1 agricultural industry in Pennsylvania

We visited two dairy farms including Mason Dixon Farm which is owned by the Waybright family. This farm milks around 2500 cows and has 4000 head of stock. The cows are housed all year round in cubicles with no loafing areas and are milked robotically. They produce 27 million litres per year. An anaerobic digester treats the waste and produces electricity for the farm and wider community. Milk is exported to Florida 1100 miles away and there is no connection with that end of the supply chain. The Waybright family is regarded highly in the local community and it is clear that they work hard to promote a sense of local pride in their operation to increase awareness in how they farm and help in the community (such as snow clearance in the winter).

By complete contrast we also visited the 36 cow dairy farm of Sam and Susie Riehl who are Amish. The Amish are averse to technology as they believe it weakens the structure of the family. Many farm tasks are by horse or by hand, therefore the farm could be seen as "old fashioned" or "traditional". The cows are kept in tie stalls and milked by hand. There was little to prove that this way of farming has any animal welfare benefits. The local government officials we were with noted that Amish farms tend to have an "easier ride" with regulations such as milk quality even though their lack of technology leads to higher bacteria and cell counts in milk.



Due to cold winters and hotter summers cows can often be kept in barns all year round. This feeds into what American consumers feel is traditional, so barn housed cows are not as alien to them as they seem to be in the UK.

Amongst the many “conferences” we attended as part of the CSC was a presentation on the pollution in Chesapeake Bay. Farmers are being encouraged (financially and by knowledge transfer) to reduce diffuse pollution through changes in farming practice, feed composition and the use of anaerobic digesters.

Issues relating to my study:

- Animals on total confinement housing in “Super Dairy”
- Environmental damage causing public concern

3c. China

Industry Snapshot

- China is fourth largest milk producer in the world
- 32.5 billion litres produced annually
- Government plan is to double production by 2013
- Milk consumption per head still lowest in the world
- If only 10 percent of the Chinese consume what the average American consumes, China will need an additional three million cows to meet demand.
- Consumption increased from 8 litres per head in 2000 to 28 litres in 2005.
- Melamine scandal in 2006 reduced demand but sales have grown by 10% annually since 2008

China - as is often reported - is the main driver of growth within the dairy industry. I visited China as part of a group of UK Scholars.

Much of the milk produced in China is still produced on peasant farms where 3-4 cows are kept and taken to a local “collection” centre to be milked.

However, China is increasing the number of cows by 1 million a year to meet current growth in demand. The increased demand for milk and dairy products has been triggered in part by a 1998 government directive for children to drink one glass of milk a day.



China has created 5 dairy regions where it feels milk can be produced. We visited Yili in the Inner Mongolia specialisation zone; the company is developing a massive dairy production “centre” which includes processing facilities for ice cream, liquid milk and powder as well as a small town for staff.

Milk is delivered from smaller farms, but Yili is investing in large, company owned farms to secure a dedicated, but crucially controlled supply of milk.

Yili Dairy is keen to control its milk supply because it was implicated, along with most dairy companies in China, in a contamination scandal where melamine was alleged to have been added by farmers to wholesale milk in the form of protein boosting additives. This contamination led to the poisoning of 300,000 people mostly under 3 years old, and the deaths of up to 6 of those children. The milk company Sanlu (43% owned by Fonterra from NZ) was blamed for most of the scandal and two suppliers to this company were executed as punishment. The company has since gone bankrupt.

We visited a herd of cows on a moderate sized farm of 300 cows. Many new dairies are much larger than this. Fonterra from New Zealand are investing heavily in farms and are currently building their third feedlot-style farm to bring their Chinese production up to 90 million litres per year. They plan to build 20 farms in total.

Main issues on farms in China

- **Herd Quality** - indigenous cattle and those imported from Australasia appear to have low production potential. An effort is being made to improve the quality of the cows (up until recently production per cow was as low as 3000 litres) and animal nutrition. There is a subsidy (of about \$3-5/cow) for using high quality Holstein semen.
- **Herd management** - China has a plentiful supply of cheap labour, but it was clear that quality farm managers were in short supply. Technical skills on farms are an opportunity for inward investment for the UK Industry.
- **Disease** - 2010 saw nine Chinese provinces reporting Foot and mouth disease with national movement restrictions imposed in the early part of the year. It is difficult to ascertain how many cows or how much production was lost as this is not reported.

Issues relating to my study

- Melamine contamination caused kidney problems in 300,000 consumers with 6 children actually dying.
- Rising consumer demand (10% per year)
- Reputation damage limitation
- Feedlot farming systems





Bio-security for visit to Feedlot System in Inner Mongolia, China

3d. Australia

Industry Snapshot:

- 17th biggest milk producer in the world
- 9.2 billion litres
- 40,000 people employed on farms and in processing.
- 45% of production is exported
- Dairy farm numbers dropped from 22,000 to 7,500 in the last 30 years

In Australia I visited New South Wales and Victoria.

Visits to farms and research centres showed an emphasis on grass based dairy. Water and competition for water are big issues in Australia. Water restrictions in the Murray Basin are forcing farmers away from dairy in favour of arable. Recent droughts (although it rained the whole time I was there) have reduced dairy output.

While in NSW I visited a number of farms including one of only two farms in the whole of Australia that can be classed as “Super Dairies”.

Michael Perich runs 2000 cows on a feedlot system. It is similar in many ways to feedlot systems run in the US - he based his farm on a US model. The cows are in groups of 500 with loafing areas between the freestall sheds. Most of the feed is home produced and again water is an issue. Manures are separated and composted and even dead cows are composted(!). Michael produces milk for a brand called A2 Milk, which sells on the fact



it contains healthier A2 Protein. Michael is selecting cows that produce this type of milk. A2 milk is sold in retail outlets and is the 2nd most popular milk brand in Sydney.

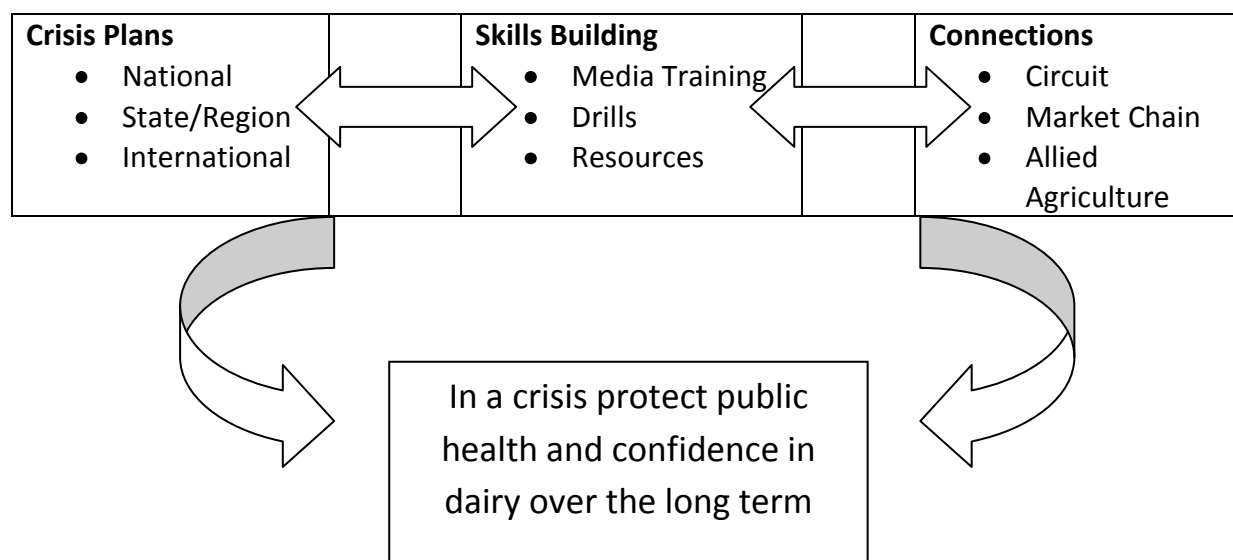
The cows and the farm management on this farm were the best I saw on my study. Before I began my study I was nervous about the growth of this type of farm. Although I still feel they bring issues of concern to the industry relating to public perception, I came away with the view that I was not worried about the welfare of the cows on this system. I am now convinced more than ever that supreme management and stockmanship are key to consumer acceptance of modern dairy farming practice.

I was lucky enough to be invited to attend an Issues and Images conference organised by George Davey (Chairman of Milk Marketing at the Food Agency of NSW).

The conference was a forum for worldwide stakeholders in dairy issues and Image management to meet, present and discuss current thinking.

Issues are similar the world over, and it was interesting to see that these issues are tackled in similar ways the world over. The main issues discussed at the conference were mainly related to the environment, animal welfare, water and more specific problems such as bobby calves and contamination.

This chart shows the interaction between organisations to build a co-ordinated response plan to an issue likely to affect the dairy industry in the US.



Courtesy of Craig Plymessenger, Dairy Management Inc.

Work around the world is similar using alliances between organisations to create early warning systems for issues and having co-ordinated response mechanisms around



factual issues statements. All organisations represented agreed that social media is playing a big part in allowing issues involving animal welfare abuse to be misrepresented or placed out of context to the detriment of the industry. Social media could play a big part in protecting or countering claims against the industry. Examples around the world from www.thisisdairyfarming.co.uk in GB to www.realcaliforniamilk.com have begun this challenge by using You Tube videos to give a factual but positive image of dairy farming.

Dairy Australia (DA) in Melbourne is the dairy services body funded by £30 million (£18 million direct levy on milk sales and £12 million in government funding). There are many streams of income for DA from various national and regional pots of money. It is all highly complicated and a lot of farmers' money must surely be lost to farmers in funds administration alone.

DA work in all areas of dairy farming but I looked at work centred around protection of the dairy farming sector which is more involved than in the UK, with projects to influence regulations around production as well as strategies to protect image plus further up the food chain.

Julie Iommi is the issues management manager for DA. Her department has gone one step further with the introduction of a social media service for Dairy Farmers only. www.udderlyfantastic.com.au

This service allows farmer to farmer chat on a site to discuss anything. The service has been very successful and has allowed DA to interact with a whole host of dairy farmers who have not been in direct contact before. The downside is that some of the chat becomes of a specific nature and some images uploaded could be seen as disturbing by a non-farmer who came upon them. e.g a discussion about the birth of a calf which including a graphic image of a breach birth or malformed calf could be taken out of context.

A site like this is useful, but must be policed accordingly.

Issues relating to my study topic

- Competition for water
- Issues management
- Social network for farmers
- Differentiation and pricing



3e. New Zealand

Industry Snapshot

- 9th largest milk producer
- 17.3 billion litres produced
- 95% of production exported
- Dairy Exports from NZ to the UK have reduced from £140 million to £40 million since 1999.

My main reason for visiting New Zealand was to attend the International Dairy Federation World Dairy Summit (IDF-WDF) where I was lucky enough to meet the Minister of Agriculture, David Carter to discuss the dairy industry.

This annual summit brings together members of the dairy industry worldwide so was an excellent place to network. I attended a number of the “conferences” and visits.

Interestingly, at the conference I got first hand experience of anti-dairy activists who were picketing the conference. I was confronted by high security and one protester shouting directly at me that he wanted to kill me. The protesters were demonstrating about issues on calf mortality and use of palm oil and environmental destruction. Is this the future?

World Dairy Leaders Forum at the IDF Conference

Top international dairy leaders discussed current trends and issues. Here are a few choice highlights:

Jacqueline Pieters, Rabobank on Market Challenges - “High prices and volatility are here to stay!”

Alex Chu, Dah Chang Hong Holdings on New Consumer - “Create credibility by ensuring food safety”

Cees’t Hart, Freisland Campina on Health - “(there are opportunities to) roll out the goodness of dairy message and differentiate branding on health propositions”

Ken MacKenzie Amcor on Sustainability - “Distribution and packaging have small impacts (on the environment) but consumers believe they have large impacts”

Jerry Kuzak, National milk Producers Federation USA on Farming - “Better chance for farmers to provide facts and consumer education - chance to highlight best management practices”

Andrew Ferrier, CEO Fonterra on Trade - “world food production to double by 2020”



Neils Gaugaard, GEA Technology on Market Volatility - "Dairy production remains one of the fastest growing food sectors" "price volatility is more extreme at the farm and processing end of the value supply chain than at the consumer end".

Dairy Farming in New Zealand

Pasture based dairy has been synonymous with NZ and has been well documented for many years and by many Nuffield Scholars. I last visited New Zealand 24 years ago and I was surprised to see how little the industry had developed - until I moved south.

South Island Dairy Farming.

There has been incredible growth in dairy farming in South Island New Zealand (SI) in the last 10 years, mainly in Canterbury and Southland.

South Island now represents around 32% of the milk solids produced in NZ from about 34% of NZ's cows.

There are some key differences between dairy production in South and North Islands:

- Average herd size is 546 cows (366 in the North Island)
- Feeding supplements is more prevalent
- Irrigation is essential on a large percentage of farms
- Most farms are newly converted

I visited Synlait which is a 14,000 cow dairy farm on Canterbury plain which was formed as a company by a number of dairy farmers. They utilise all the new technologies in irrigation and grass growth control researched at SIDDC to produce milk for their own milk drying plant.

Dairy farmers in NZ have recently seen credit facilities tightening through their local banking system and to overcome this and still maintain growth within the business Synlait have recently sold 51% of the milk drying factory to Bright Dairy from Shanghai in China.

The plant now produces 50,000t of dried powder and will expand to produce double that procuring from 85 local farmers directly.

The plant interestingly makes a powder from colostrum collected separately from contracted farmers which is then sold as a human health product in China,.

The development of large scale dairy farms in SI has been mainly through conversion of sheep and arable farms to dairy farms. The widespread use of water has caused resentment among the wider population who see large irrigation units causing low



water flow in rivers and private boreholes, as well as “spoiling” the landscape where the growth of tourism is now the second biggest GDP earner for NZ.

The annual review conducted by the Clean Streams Accord showed an increase of 16% in the number of farms breaching their resource consents for water. In Northland one quarter of all dairy farms are non-compliant on water pollution. These kind of figures have fed anti-dairy campaigns.

The highest profile campaign against dairy farming was the “Dirty Dairying” campaign by Fish and Game New Zealand. This campaign highlighted incidence of pollution. This, coupled with competition for water resource, led to big differences of opinion at Canterbury Local Council. Eventually, the Council was suspended by National Government because farmers and other councillors could not reach agreement on water issues.

On a brighter note, in 2001 a consortium of stakeholders in Dairy Farming in SI including supply, research, knowledge transfer providers and farmers themselves formed South Island Dairy Development Centre (SIDDC) based on a working large scale dairy farm at Lincoln University in Canterbury. The IDF visited this centre as part of the WDS 2010.

The farm itself has 700 cows and produces milk on a profitable basis but conducts research projects for the consortium.

Current research is designed to inform farm management systems but is also helping to mitigate some of the misconceptions presented as fact in anti-farming campaigns. The centre is a fine example of collaborative work at its best and is supported wholeheartedly by all involved.

Current projects are

- Effects of fertiliser and other inputs on groundwater
- Effects of eco-n (a product which does not leach nitrates) on nitrate leaching and pasture production
- Pasture growth rates
- Role of nutrition on lameness
- Resource inventory and greenhouse gas footprint

Moisture measuring and effective use of irrigation to control grass growth costs about 2ppl (UK) and has seen SI dairy sustain production through drought conditions when NI Dairy has depressed production.

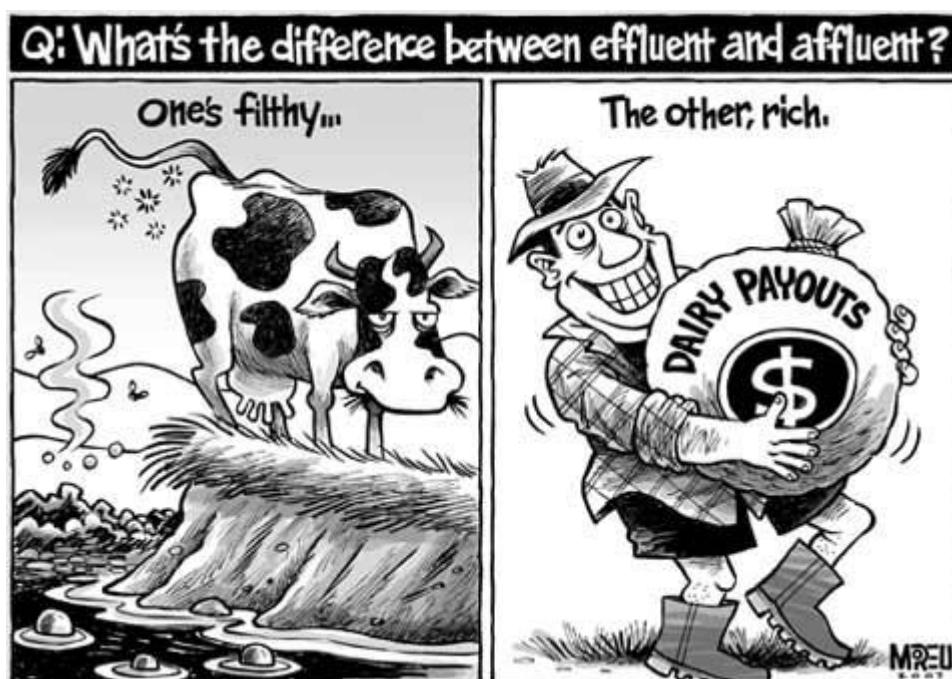
Research results are provisionally showing positive messages about nitrate pollution.

I also visited Andy Palmer and Paul and Desiree Reid who were engaged in environmental projects planting indigenous trees and rebuilding ponds.



Issues Related to my study topic

- Competition for water resource
- Pollution and environmental damage
- Carbon tax, greenhouse gas emission and carbon footprinting
- Campaigns against dairy farming by activist groups
- Grazing cows
- Image management



Newspaper Cartoon in New Zealand



3f. India

Industry Snapshot

- India is the world's biggest producer of cows' milk.
- 114 billion litres annually produced
- Population is 1.2 billion and expected to grow to 1.5 billion by 2030 (adding nearly 5 times the population of the UK in 20 years)
- Demand for milk is growing at 20%
- Production targets of 10% per annum increase are set by the government
- Growth this year only 4%

I visited India as part of a group of UK Scholars. The dairy farms visited in were all in the north of India, specifically the Punjab, near the border with Pakistan and Chhattisgarh south East of Delhi.

Punjab - hosted by Kanwal Brar of Deep Roots Retreat

Our first visit was to the farm of Harinder Singh, who is also the Treasurer of The Progressive Dairy Farmers of Punjab. Harinder has taken advantage of government grants available through the NDDB. (The National Dairy Development Board has been instrumental in growing dairy production in India since 1970 through a project called "Operation Flood")

He is expanding his farm from 200 to 400 cows and is building a large US-style feedlot system to make use of the fact that at least 3 crops of maize can be grown per year in the fertile land around the Punjab. As water resources in this area dwindle, production of dairy is increasing at the cost of rice. Dairy interestingly is seen as less water intensive than rice. Farms are traditionally small due to the way India was divided after colonial rule. Land prices in this fertile area are around £60,000 per acre!!

I paid a visit to a macro-dairy brand called Tru-Milk. This was a truly vertically integrated business with 1100 cows on site and a large, modern processing plant for liquid milk to the local market. Their strapline is "Cleanest, Freshest, Safest" and they make use of the fact that they and their extra suppliers use modern dairy equipment to supply cleaner milk that has a longer shelf life. In a market used to hand milking this is a key USP as we were told many dairies can collect up to 25kg of flies from the incoming milk filters!!

The Tru-Milk brand was also pioneering a co-operative type of operation where farming women can own and manage a group of 5 cows as part of a large scale dairy. They receive the net price for their milk after feed, rent and finance costs and we were told that they would receive more than if they owned 5 cows themselves. There were some however who were sceptical.



Chhattisgarh – hosted by Ricky Tapir Treasurer/ Spokesman for the Poultry Federation

Chhattisgarh is an industrial region of India and here land prices are lower.

We visited the ABIS Group, a farming company owned by Dr Mukesh. He started his business in 1985 with 10,000 broiler chickens. He now produces around 17.5 million chickens per year and has diversified into layers, dairy cows and buffalos as well as one of the largest feed mills in India. He also owns a rendering plant.

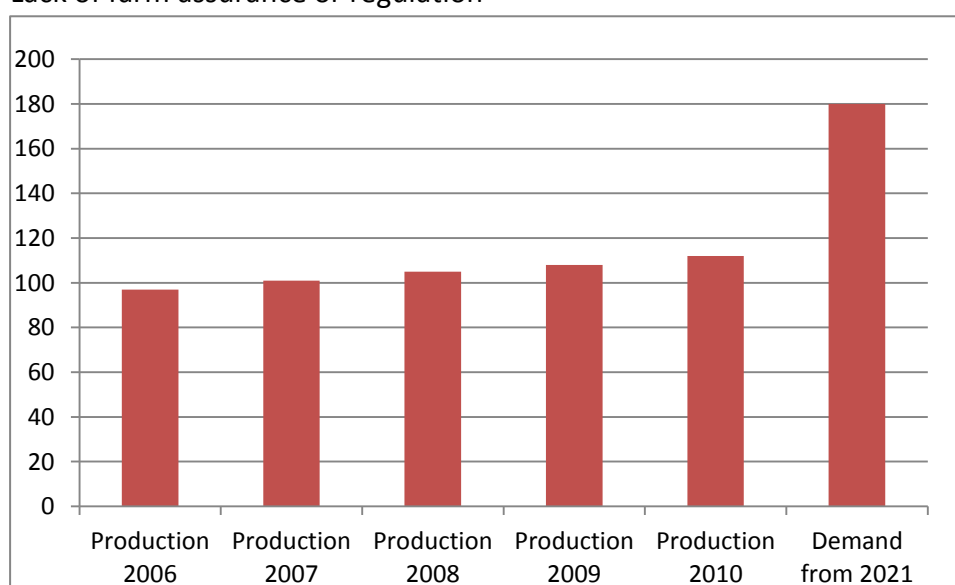
He has 4 Dairy Farms, which are mainly buffalo herds. We visited his newest and largest farm which houses 2500 dairy cows. These were bred from indigenous breeds but like elsewhere in India the move towards a high index Holstein breed from the US to increase production is being speeded up with the use of embryo transplant. The farms are run by vets and the cost structure is similar to Europe apart from the cost of labour which, at £10 per week for basic farm staff, means there are always plenty of hands to help and automation is kept to a minimum.

The cows were clean and the farm was based along the now familiar lines of a US feedlot. Muck was collected dry and pelleted to use as fertiliser for maize cropping.

Milk was processed on site into ghee (clarified butter) or liquid milk which was sold in polybags and through a franchise distribution system and delivered fresh every day due to the lack of cold-chain for distribution.

Issues relevant to my study

- Large scale dairy
- Huge rise in consumption due to richer population
- Lack of farm assurance or regulation



Graph showing current production and predicted demand in 10 years in India.



3g. California

Industry Snapshot

- 18.5 billion litres produced annually. Production has moved inland and has changed from grass-based to feedlot systems in the past 25 years
- Population is 37 million, the most populous state in the US
- Dairy farming is the leading commodity agriculture in California
- Average per cow production is 10,465 litres (UK 7,406)
- Average herd size is 1080 cows (UK 165)

I was lucky to be hosted by Tessa Curti-Hall whose father Ben is a leading dairy farmer in Tulare County. Their farm Curtimade Dairy Incorporated has around 3000 cows and produces milk for Land of Lakes dairy of which Ben is a farmer director. The farm is 448 hectares. The cows are kept in a large totally confined feedlot system, with calves reared on farm. Ben still uses BST to promote milk production. The biggest challenge is competition for land to produce home grown feeds. Curtimade Dairies, like many dairy farms, made huge losses in 2009 as milk prices plummeted and input costs rose. Ben believes that dairy farms must be self sufficient in grain to shield themselves from rising commodity prices.

Ben is also involved as a farmer director of the California Milk Advisory Board (CMAB) which is funded through a levy on milk production and produces generic advertising to promote milk products, their health benefits and, increasingly, farmers themselves and how milk is produced.

Raw milk is a growing market in California, which is one of the only States to allow its sale in the US. I visited Mark McAfee whose Organic Pastures operation is one of the most pro-active Raw milk producers in the state. His 400 cows are farmed organically and produce milk which is sold by Mark and his family through direct sales and selected outlets and farmers markets. Raw milk claims to be allergy free and does not cause lactose intolerance. Research has been done around the world but a lot of the claims come from testimonials.

My main concerns about this operation was that its claims were not always backed by research, it did not have a Johnes free status and its aggressive campaigns through social and traditional media were causing animosity amongst dairy farmers.

Issues relevant to my study

- Confined Animal Feeding Operation (CAFO) and the environmental protection restrictions on large herds
- Generic advertising and promoting farmers as opposed to milk



- Effect of very large farms on smaller farms
- Effect of very large farms on public perception of farming

3h. France and Ireland

I visited both these countries during my study year. Visiting grass based dairy systems, I used the trip to get a feel for whether consumer perceptions in other European countries were different to those in the UK.

Ireland - Main visit to Moorepark research centre

The North and South Irish are export based farming dairy economies and the main exports are cheese and milk powder. Dairy farming is predominantly small family farming on grass based systems. There is less reason to be concerned about consumer perception as consumers are further away. However, the Northern Irish Dairy council have one of the world's leading experts in Mike Johnson whom I met in Australia and have consulted a great deal.

France- Main visit to Travarez Research Centre plus farm of Erwan & Laurence Le Roux

France also has a base of small farms. It has a "foodie" reputation too, which was demonstrated during our stay. My main discovery on the short stay here was that organic milk is still a growing market, quite the contrary to the UK.

Issues relevant to my study

- The use of pasture farming in milk production
- The image of smaller farms on public perception





Chinese slurry collection



Dairy in "Lord of the Rings" Country, NZ



Composting on large dairy farm in Australia



Meeting an Indian dairy farmer



Mega Dairy (3,000 cows)



4. Main consumer issues around the world

As the world's population becomes more urbanised and food is increasingly delivered to consumers in more processed forms, consumers internationally have become more detached from how dairy farms produce milk. This process is just beginning in the developing economies of China and India.

As well as the many farm and farm related organisations I have visited worldwide, consumer studies by DairyCo, Dairy Crest, DairyNZ, Dairy Australia, World Society for the Protection of Animals and my own small "vox pop" interviews in airports and public places around the world have fed into my findings.

The main overriding finding is that most of the buying public make a very quick decision when buying milk. The decision is primarily about fat content and food safety but is underpinned by a "bubble of trust" that the milk is produced in a way that fits the consumer's perception of the way they think the product is produced.

Price is certainly quoted as a reason for choice of milk type, especially when discussing a reason why consumers don't buy organic milk, but it is difficult to get people to remember the price of a litre of milk in the shops. Milk is cheaper than bottled water.

Why don't consumers value milk as a quality product?

In the 21st century the "bubble of trust" around customers perception of the product appears to be anchored somewhere in the past where cows were milked by the local farmer in small herds and grazed in fields of grass (with possibly daisies and buttercups) on sunny days. Dairy Crest told me that their survey revealed that consumers imagined the milk in supermarkets was local and from fields near the shop. This romantic image is used around the world to advertise milk and milk products.

The Consumers' "bubble of trust" can be burst very quickly by a food scare.

Food is a highly sensitive product. Food safety should be of paramount importance to dairy farmers – they are food producers. Farm assurance inspections and the regulations imposed by the Food Standards Agency (FSA) in the UK are designed to give consumers a degree of trust that their food is safe to eat, and products labelled with the "Red Tractor" will indicate that the food was produced to these standards. Red Tractor is second only to Fairtrade as a quality mark that consumers trust in the UK. But, do they know what this means other than that it is British?

In the UK the *salmonella* egg scare was caused by a flippant remark by Junior Health Minister Edwina Currie that "Most of the egg production in this country, sadly, is now affected with *salmonella*". This claim was made without the backup of any evidence and egg



sales collapsed; the industry's image was irreparably damaged. BSE is a similar example relating to the beef industry.

The Consumers' "bubble of trust" can be let down slowly by a large number of other issues. These issues are wide ranging, and do not feed immediately into the consumers' purchasing decision, but can affect their feelings about how milk is produced over a longer period of time.

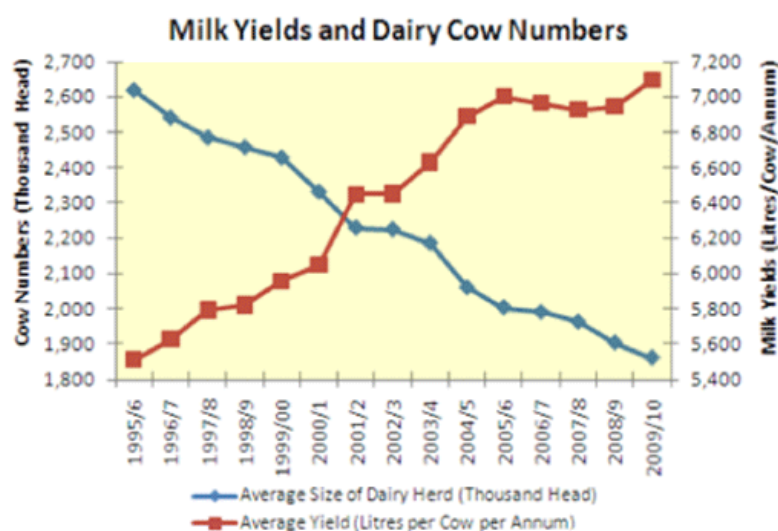
Most of the issues that can affect consumers' trust longer term are covered by UK Farm Assurance. Other countries, especially dairy export countries like New Zealand, Australia and Ireland, do not have such well developed systems as in Great Britain. The National Milk Producers Association in the USA has developed the National Dairy Farm Program which is similar in intent but is aimed and written to inform farmers of their responsibilities and demonstrate best practice on farm. It is however written in a way that enables the wider public to learn how farms work.

I will now summarise some of the main issues I came across during my study.

4a. Herd confinement and "factory farming"

This was a very big issue in the UK during my study due to the application from Nocton Dairies in Lincolnshire to build the largest dairy farm in Europe. The system of farming which was to be used at Nocton is prevalent around the world and is the main way dairy production is increasing in the developing nations of China and India.

Dairy herd sizes in the established dairy nations have grown steadily in the past 50 years as farms became more specialised in milk production. Yields per cow are increasing all the time throughout the developing world while cow numbers are declining. See graph below.



The growth of dairy farming in the developing world is currently based on large scale feedlot systems developed in the USA. Many of the operations I visited were based on a similar template.

In the UK the move to large feedlot systems is only just beginning. Consumer research shows that consumers are not aware of herd sizes, but there is a strong movement of animal welfare groups who are against the growth of “super” or “mega” dairies and believe it to be cruel. Their campaigns are only just beginning to take hold. The animal welfare activists are collating evidence and recruiting famous people (and even farmers) to support their campaign. The World Society for Protection of Animals (WSPA) is basing its campaign directly against “large scale farming” and in support of smaller pasture based farmers.

Farmers I met in the UK were generally supportive of each other. In the US smaller farmers in California were feeling squeezed financially and cited large farms as a threat.

Will the campaign against large farms cause a split in the farming community in the UK?

The best cow management I saw was on Michael Perich’s farm in Sydney, Australia, where the cows were kept in groups of 500 and were allowed free access to exercise areas between the sheds during lactation and were kept on pasture during their dry period. The cows had a specific calving area which was staffed 24 hours a day. Lameness and mastitis were controlled and the milk produced was sold as A2 healthy milk in supermarkets which was a growing brand with a health related story to tell.

It is interesting to note the growth of a milk brand based on health claims. The system of production (apart from cow selection) has had no bearing on this growth.

Consumer surveys by DairyCo tend to suggest that the public are more concerned about the general animal welfare than herd size. When asked, consumers in the UK tend not to have a concept of herd size. However, because herds over 1000 cows tend to be in confined systems it is difficult to separate these issues.

In the US herd sizes are much larger in general and have become synonymous with the acronym CAFO (Confined Animal Feeding Operation). In California where herd sizes now average over 1000 cows there is some animosity from smaller farmers who feel they have been squeezed out of business. There is also a growing awareness amongst consumers of how milk is produced. Much of the education of consumers has been by animal welfare groups through social media. This has tended to be unbalanced and sometimes sensationalised; however and unfortunately it is based on elements of truth from poorly managed farms or from particular management practices which don’t fit the consumers’ romantic vision of dairy farming.

When visiting Curtimade Dairy in California, there was awareness that their chosen method of calf rearing, which had individual crates where the calves had little room, could be



compared to veal crates. Although the calves were only kept in these crates for 8 weeks before moving into social groups and were well cared for during this time, the perception and image issues raised by this were obvious.

In New Zealand (as in the UK) there has also been an application to build a large scale feedlot dairy. This application was in McKenzie country where “Lord of the Rings” movies were filmed. The scale of this development was new to New Zealand and although there are already small operations where cows are kept indoors all year with robotic milking systems, in general the New Zealand dairy industry is based on and has a worldwide image for pasture based dairy farming, and this is used to their advantage in product promotion.

The main regulatory or planning concerns around the large scale operations in both New Zealand and the UK were around environmental protection. Both applications were refused on these grounds.

In the US the CAFO regulations include environmental protection for water and air as part of the permitting. Tessa Curti-Hall completes all the administration for her father’s farm. The cost for this protection work is high. The permits themselves cost a total of £5320, but the cost of professional engineers and agronomists to sign off on reports and the laboratory costs for all of the sampling requirements can cost up to £20,000 per year.

Pigs and poultry already have environmental permitting in England and Wales. I fully expect it will be extended to dairy as a result of current developments.

The farms I visited in the USA have seen large swings in profitability. It is difficult to get financial data but most large scale farms suffered huge losses in 2008-9. Ben Curti had changed his whole system to become less reliant on purchased inputs.

High input large scale dairies of this type are reliant on good building design and resource availability but, above all, on good stock management to deliver the high production necessary to be profitable. I saw some very well run large confined herds, but I also saw some pretty badly run farms where animal welfare was poorer as a consequence of lack of awareness surrounding animal behaviour and which also lacked profit to invest in quality infrastructure which is key to good cow management. If large scale farms are to be accepted by the consumer then very high levels of cow management and staff training are needed.

The spotlight is on large farms. Animal welfare is a main concern of consumers. It is difficult to explain how happy a cow is, but it is imperative that “confined herds” can deliver proof through animal welfare outcome measurements that their cows are happy.

Lameness, mastitis levels and cow lifespan must be quantifiable and below average to prove to consumers that these systems care for their animals.



Large confined herds have developed a bad image based around “factory farming” and “battery cows”. The development of this type of farm in the UK is hindered by this image. This type of farm can only be successful if the farms are designed and managed to the best standards. Otherwise, these farms will leave themselves open to criticism and this will lead to mistrust for the whole industry.

4b. Animal welfare including calves

Part of the consumers’ trust and support for dairy farmers is born from the fact that they expect and presume that we care for our animals, and on the whole this is true.

The UK has some of the best welfare standards in the world. But, it is difficult for us to prove this as there is no measure for animal welfare outcomes. Inputs such as cubicle size, cow space in a shed etc. are easy to measure, but outcomes have not been measured.

There are issues around the world that will always be targets for animal welfare activists:

- Lameness
- Mastitis
- Loafing space in sheds
- Access to pasture
- Calf management and bobby calf disposal
- Shelter from extreme weather/heat

These apply to all systems, some more than others, and these problems are seen in every country.

If we are to promote or educate the consumer about modern dairy farming we need to be able to explain how we deal with these issues.

In the US calves are still reared in crates, but they are healthy. What’s the problem? It is difficult to explain but easy to see the downside for publicity purposes.

In Australia we heard a lameness figure of 6% for the national herd quoted by Dairy Australia, but also noted that the on-farm measure for this is if a cow can walk onto a truck to the abattoir. Is this honest?

In NZ we hear that tail docking is now less prevalent. However I saw the practice is still common - even on research farms!

Here in the UK it is frequently claimed that lameness and mastitis levels are too high. I am sure there could be some truth around this, and I believe levels are improving, but there



doesn't seem to be much factual evidence of high or low levels. How can we turn this into a good news story without the facts?

If we are to promote modern dairy to the public we need measures of animal welfare so that we can present ourselves factually in a good light or, if not, show that we are improving on an annual basis.

During my study I met farming professionals who have been trained in "Cow Signals" (Karen Lancaster, DairyCo, and Owen Atkinson of Lambert, Leonard and May Vets). This is a system of farm management developed by Jan Hulsen of Vetvice in the Netherlands which uses a method of "reading" cows to understand if they are happy in their surroundings. The European Food Standards Agency has been working to find a system to define animal welfare outcomes and a way to measure this through the Welfare Quality Initiative. This type of work is essential to inform both farmers of their responsibilities to animal welfare as well as the public to let them know systems are in place to maintain their trust in farmers.

Consumers expect farmers to care for the animals in their trust. It is not in a farmer's interest to have bad animal welfare as this impacts on profit as well as image. The "Red Tractor" mark for Assured Dairy Farms is the second most recognised quality mark after Fairtrade in the food industry in the UK. At present this is the best channel to promote high animal welfare and dairy farming standards of UK farms to the consumer.

4c. The Environment

The UK dairy industry is well ahead of the game internationally when it comes to the environment. The developed nations I visited had developed some sort of Countryside Stewardship Scheme, but the European nations have the most well developed and funded scheme. In the UK nearly 70% of dairy farmers are delivering Environmental Stewardship and this feeds into targets set in the Dairy Roadmap, a unique initiative across the dairy industry to reduce the carbon footprint of dairy production and processing in the UK.

This is extremely important to consumers, as demonstrated by a focus group for Dairy Crest. It is also a good example of the industry working towards a self regulated control of carbon policy.

Contrast this with New Zealand where a carbon tax has been arbitrarily imposed on the whole industry across the milk price regardless of individual business performance.

In Pennsylvania we saw how the Chesapeake Bay initiative is addressing agricultural pollution, and in California, to maintain permits for dairy farming, emissions are regulated at huge cost to the individual farm business.



Following the failed Nocton Dairies application for an 8000 cow dairy farm, there is likely to be pressure for large dairy farms to be regulated under Environmental Permitting.

4d. Pasture and Provenance

Of all the issues I have looked at this is the most contentious for me as a dairy farmer. My farm business is run via grazing cows at pasture for as long as possible and housing them in winter for as little as possible. Having spoken to many welfare organisations and members of the public this is what they feel is a sustainable way to produce milk and is in line with consumer expectations. It is certainly in line with the expectations of high end retailer Waitrose. But, is this the best model to deliver a sustainable dairy industry in the UK?

I have seen all types of dairy farming systems around the world and as a farmer I am convinced more than ever that profitable and sustainable farms are more about the management and people running the business than they are about system. So, training or uplifting the skills of the least profitable farms is likely to improve both the efficiency of the farm and the animal welfare of the animals.

The visual evidence is clear to me that on a well run large scale confined dairy farm, like Michael Perich's in Australia, the cows appear to be as contented and happy as any I have seen. Pasture based farmers in New Zealand have lost the confidence of their local population and still stand accused of animal welfare abuses and environmental damage. In the UK the RSPCA representative, John Avisienius, told me that he has as many concerns about extreme grazing systems where shelter is not provided in the winter or wet periods as he has about totally confined herds.

Consumer Research shows that in our home market consumers think that cows eat grass in fields and this is engrained in their "bubble of trust" about how milk is produced.

- WSPA are campaigning for pasture based systems.
- Currently, the vast majority of milk is produced in the UK from some degree of pasture based farming.

Is there potential to differentiate the market and collect from these farms separately and create a "free range" or "grass fed" brand or label to mirror the free range egg market? I was told by retailers and processors in the UK that there is no desire for this to happen within the supply chain and any moves to push towards this are likely to cause friction amongst farmers and confusion amongst consumers.

Dairy Crest pointed out the failure of "local choice" milk is a case in point. The consumer seemed happy to pay 2ppl extra for their milk and support local farmers, but this highlighted the fact that other milk in the supermarket was not necessarily produced locally. This did



not meet the expectation in their “bubble of trust” and was likely to cause loss of demand for the mainstream milk market leading to the supermarkets to lose interest rather than risk a drop in demand.

Consumers believe their milk is produced in nearby pastures. Are consumers ready to accept that it may not be?

4e. Personal Health Issues

Until recently milk was always seen as a healthy product and was used to promote the health of school age children during their physical development. This fundamentally has not changed and dairy organisations like the Dairy Council in Great Britain have strong evidence to corroborate this. In fact, in the developing nations like China children are encouraged to drink milk and I saw dried colostrum tablets which were aimed at school age children.

This has changed a little in the west as fat content has become an issue for consumers and processed dairy products like cheese and butter are now included on “bad food” lists in the UK and USA due to fat content despite their calcium content.

Soft drinks are still a growth market for children in the west.

Fat percentage is now one of the main reasons why consumers will choose a certain type of milk. However, dairy is still something that is found in nearly all domestic fridges across the UK (and most western countries).

The perception of milk as unhealthy is likely to have a long term effect on demand.

The dairy industry must continue to promote the health benefits of milk to school age children and particularly girls through social media and new media.



5. Recommendations

- **Dairy farm assurance should be strengthened and promoted more to maintain the public trust in dairy**
 - Auditing should be fair and applied evenly to all farms.
 - It should include achievable easily measured animal welfare outcomes to maintain and improve the image of dairy farming .
 - The farm assurance manual should be re-written in practical plain English to promote dairy farming and the benefits to consumers (and farmers) of the assurance scheme.
 - Failing the farm audit should be penalised financially by paying to be re-audited.
 - Repeated failure should result in dairy farming licence removal.
 - A traffic light system of auditing should be considered to highlight poor farms
- **Dairy farmers and their representative organisations should begin a dialogue with government agencies about environmental permitting.**
 - It is highly likely in my view, given that this is already in place in other developed nations, that dairy farming will be taken into the scope of Environmental Permitting in regions of the UK.
 - Dairy farmers should be pro-active in engaging with government agencies to avoid imposition of bad legislation.
- **There is a lack of good research into what consumers really care about.**
 - DairyCo should continue and possibly strengthen its research into what consumers really care about with regard to farming practice.
 - Results of this research should be acted on carefully.
 - Misrepresentations highlighted in research should be addressed carefully through education and image management.
 - The market may need to differentiate milk by production system (as in the egg market) to deliver choice for the consumer.
 - **Alternatively, farmers may need to be ready to change their farming practice to meet the expectations of the consumer in order to protect their market.**



6. Conclusions

When I chose my topic for study I had no idea what a complex issue it would turn out to be. To distil this subject into a usable set of recommendations or to create a template to beat the market brings to mind phrases like “herding cats” and “nailing down jelly”

Consumer attitudes change from person to person and definitely from country to country.

My report hopefully contains some degree of knowledge to at least help our industry to grow the debate.

Demand for dairy seems set to grow outside our little island. These markets are surprisingly sophisticated and will demand quality and provenance.

The UK has some of the best dairy farmers in the world, and on the whole we produce milk in the way that consumers imagine it is produced.

Our industry needs to innovate and expand but should always have a global perspective and put the consumer at the heart of any decision making process.



7. The Nuffield experience - and what has changed in my life

The Nuffield Experience has been tiring, girth increasing and above all else life changing.

The years prior to applying for a Nuffield Award for me personally were challenging with low farm incomes and a failed attempt at food processing. The lessons learned from these experiences were huge but came at a cost to my personal confidence and business bank balances.

Nuffield has given me back my confidence and has helped me realise that as a farmer I am on the right track and that I was right that the public do like the way that I farm.

Before I began my study I had a limited knowledge of how a large scale confined dairy herd was run. My basic instinct was to be against the development of US style systems in the UK which I felt were wrong for the cows and the UK. I also believed that there was a way I could add value to my own milk production by selling a "Free Range" product or informing someone else to facilitate this.

Having visited many different farms across the world I have come to understand that in different climates and different cultures dairy farming systems can be very different.

I have found that it is not the system that is wrong for the cows, but sometimes the way that system is managed by the farmer on farm and the image that he portrays to the public.

I make no apology for repeating that the best managed cows I saw on my trip were on a confined herd in Australia, but I must also point out that the farming operation on this farm was part of a much larger property development business. I had no way of telling how profitable the farm was but the investments that had been made on the farm were definitely in the best interest of the cows. I saw good and bad systems on large and small herds both grazing grass and not grazing grass.

It is not the system but how the system is managed that matters.

Back at home, we now have a Jersey herd which is a change of breed, and this has increased our income; this would not have happened had I not been a Nuffield Scholar

I have faced up to my fear of public speaking and I hope that any presentations I make and the report you have just read will add to the current debate on how dairy farming develops in the UK.



8. Post Script

There are many people and farmers whom I would like to thank personally. There are too many to mention all of them here and some I may not even know the names of. If they have read this and recognise me then thank you.

I would like to single out the following people for outstanding contribution to my study.

In the UK

Robbie James at Waitrose

Steve McLean at M&S

Emma Jones at Tesco

Tim Bennet, Amanda Ball and Karen Wannacott at DairyCo

Jim Begg and Simon Bates at DairyUK

Judith Bryans at the Dairy Council

Phil Brooke at CIWF

Suzi Morris and Neil Darwent at WSPA

Arthur Reeves and Lyndsay Chapman (amongst others) at Dairy Crest

Graham Keating and Karl Tucker at Yeo Valley

John Alvis at Alvis Bros

Mike Madders and Derek Kennedy at Assured Dairy Farms

John Aviziensis, the RSPCA

My uncle Fred Tyler and Ian Watson for their encouragement

In China

James Su Hao

Margaret Philipson, UKTI

Peter Bloxham and Snow for saving us

Angus Christian

Sarita Li

Michael Hope in Hong Kong (for recovery process)

UK Scholars for your good company

In Australia

Julie Iommi at Dairy Australia

Michael Perich and Graeme Nichol, Farmers

George Davey and Tim Burfitt



In New Zealand

The IDF Summit Organising Team

Sarah Fraser at Dairy NZ

Paul and Desiree Reid

Les and Marina Keeper

In India

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Ricky Tapir and Kanwal Brar for organising Dairy Visits

In France

Michael Blanche for organising

John Bailey

Erwan La Roux

Malcolm Fewster and Rhys Williams for good company

In California

Tessa Curti-Hall and Ben Curti

Mark McAfee

My family for waiting in 102 degree heat (by the pool)

Special mention

Mike Johnston Dairy Council NI – I will get to visit you sometime, honest.

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