



**A Nuffield Farming Scholarships Trust
Report**

Award sponsored by

**The British Egg Marketing Board
Research and Education Trust**



**The effects of globalisation
in the egg processing industry**

Sara Gibbins

July 2014

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A Nuffield (UK) Farming Scholarships Trust Report



Date of report: July 2014

*"Leading positive change in agriculture.
Inspiring passion and potential in people."*

Title	The effects of globalisation in the egg processing industry
Scholar	Sara Gibbins
Sponsor	British Egg Marketing Board Research and Education Trust
Objectives of Study Tour	<p>To analyse the effect of globalisation and how it's impacted the UK egg processing market.</p> <p>To find solutions in order to grow the domestic market share and to stop the decline.</p>
Countries Visited	Canada USA Spain Belgium Dubai
Findings	<p>Globalisation is always going to threaten any industry. The importance is to understand how it affects your industry and your business. Once this is understood measures and actions can be implemented in order to work alongside globalisation rather than work against it.</p> <p>Identify the trends and find solutions for your customers. Build and maintain customer and supplier relationships, value them more than your business as, without them, there is no business. Invest in science and new technology. Look outside your usual markets; there are many others markets to target. Be the best at purchasing and negotiation. Communication and Influence – the right communicator needs to communicate the right message to the relevant audience.</p>

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1.0. Foreword

Having left school at 16 all I knew was: if I wanted something I needed to go after it, and do it now. I've always had a sense of urgency, to get things done and I guess that's why higher education wasn't important to me at the time. I had a real desire to get out there and be in business, solve problems and find solutions. Although I never thought for one moment my career would pan out the way it has; from being the Chairman of Manton's egg processing business to Managing Director of Didier's Patisserie supplying the royal household; and now becoming a Nuffield Farming Scholar and Assistant to the Chairman of Noble Foods. I've never been one for a quiet life!



Me, Sara Gibbins

After working in the exciting world of Sir Richard Branson and his group of companies, I never thought I'd get excited about eggs, but here I am 12 years later and still getting excited about egg products and the food industry.

The last decade has been an interesting time in the egg processing industry; one thing is for sure, there's never a dull moment.

I've always been fascinated by solving problems and creating change and these two certainly go hand in hand for the future of the egg processing industry.

So many questions - and my Nuffield Farming experience certainly gave some of the answers but I have a feeling this will be an ongoing journey. We live in a fast, ever-changing world and we must keep evolving and moving forward.

I'd like to thank the British Egg Marketing Board Research and Education Trust for the opportunity to research this area and the Nuffield Farming Selection Board for awarding the Scholarship. I'd also like to thank my employer Noble Foods for their support whilst I travelled.

I couldn't have undertaken the whole Nuffield Farming experience without the support and encouragement of my husband Ian and my two stepchildren Sam and Cerys plus all my friends and colleagues; thank you for all your support.



2.0. Background to the egg processing industry

According to a report: 'Global Poultry Trends - More Egg Products but Fewer Processors in Europe', 2011 by Terry Evans from ThePoultrySite.com: around one quarter of all eggs produced within the EU are processed. The egg processing industry is growing internationally in both volume and product variety, although mergers and acquisitions have slowed the increase in the number of companies involved in this business. Global production is estimated to be in the region of 4.8 million tonnes as shell egg equivalent, and of this EU member states could contribute to around 1.8 million tonnes. One of the main differences between the EU egg processors and the UK egg processors is the increasing focus and growth within the EU on the catering and food service industry with added-value products such as: cooked and peeled eggs, poached eggs, French and Spanish omelettes, waffles, scrambled egg mixes, quiches, egg mayonnaise, custard mixes and sports drinks.

.. around one quarter of all eggs produced within the EU are processed. The egg processing industry is growing in both volume and product variety.

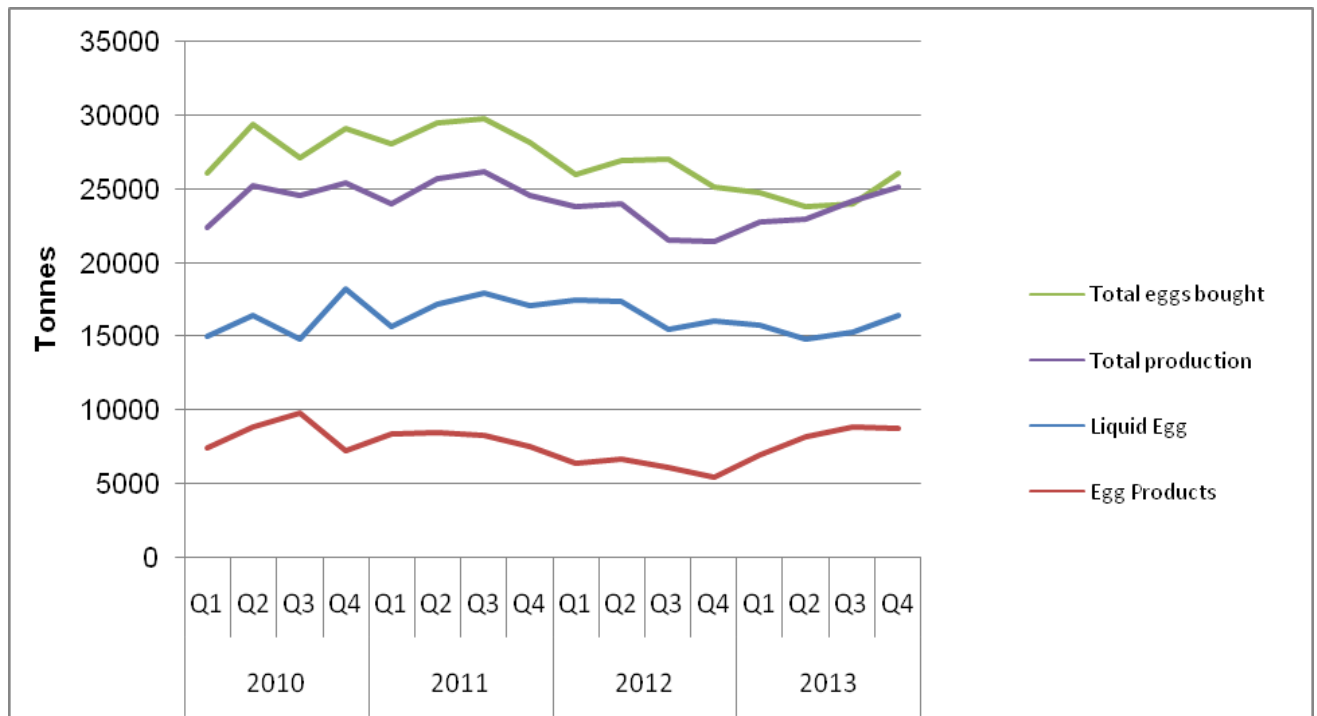
The European Union as a whole is self-sufficient in product for egg processing although imports from outside the European Union may be small due to the protection of EU tariffs.

Getting accurate information on the processing industry is somewhat subjective. Some industry figures are different due to varying methods of calculation and not all countries will report all their numbers, even though EU law requires them to.

Some industry reports may account numbers twice; for example if an egg processor imports 25 tonnes of liquid egg, this will show 1) under import figures and 2) under domestic processing egg volume, therefore causing double accounting when looking at overall country consumption.

Historically, UK egg imports only have to be declared if the annual spend is over £150,000. However from this current year that minimum declaration figure moves to £1.2 million, so when analysing future figures we need to take into account there could be a large volume of egg that's not been reported but nevertheless *has been* imported. Each source of information has its flaws. With the help of Martin Kerfoot from Noble Egg Innovations extracting, deciphering and summarising, these various reports give us the following information on the UK egg processing industry: *(Please see graph on next page)*

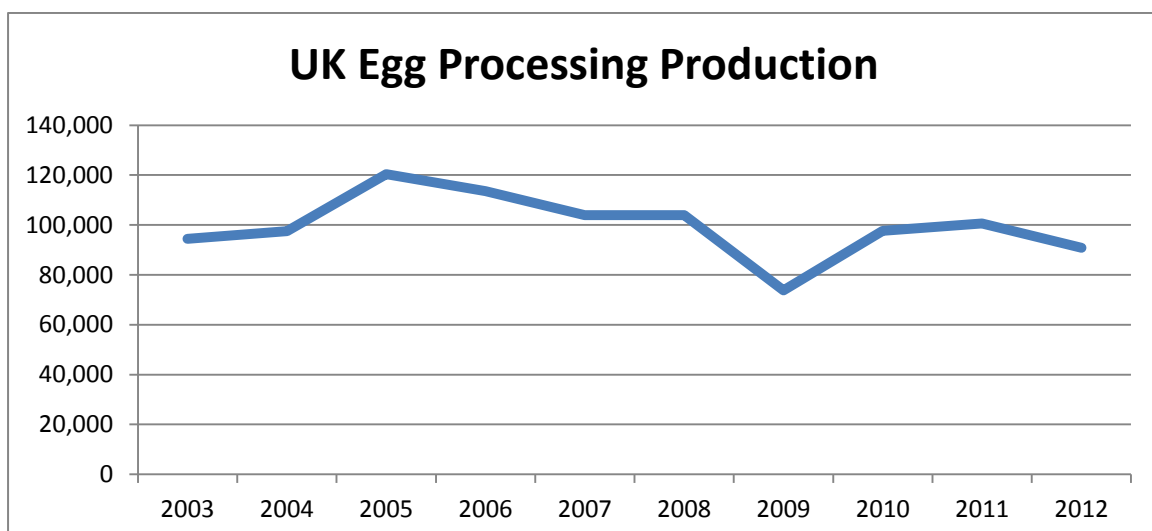
The top graph has used data from DEFRA, BEIC and the IEC. The lower graph is taken from DEFRA Stats: 'Intake and Production of Egg Products by UK Egg Processors'



DEFRA Stats: 'Intake and Production of Egg Products by UK Egg Processors'

This shows that since 2010 we have seen a decline in the overall market but then a return in 2013.

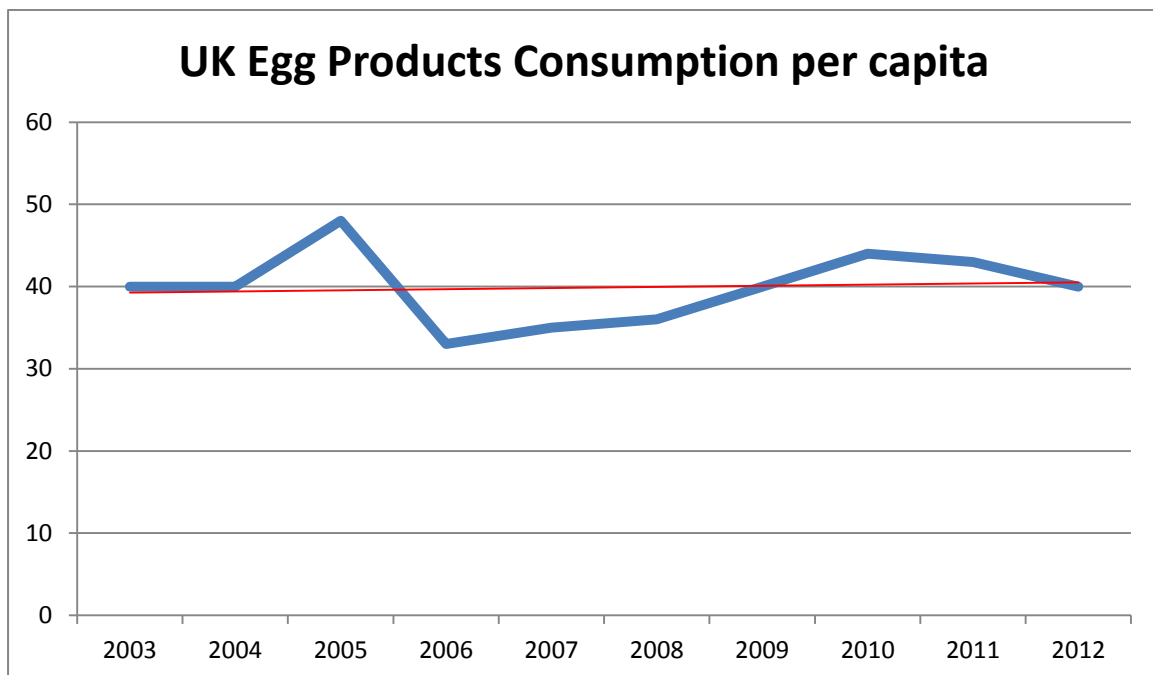
The graph below shows the UK Egg processing production is in decline. Most of this is due to imports going direct to food manufactures and food service sectors, instead of imports coming via British egg processors.



Source: IEC Websites Statistics

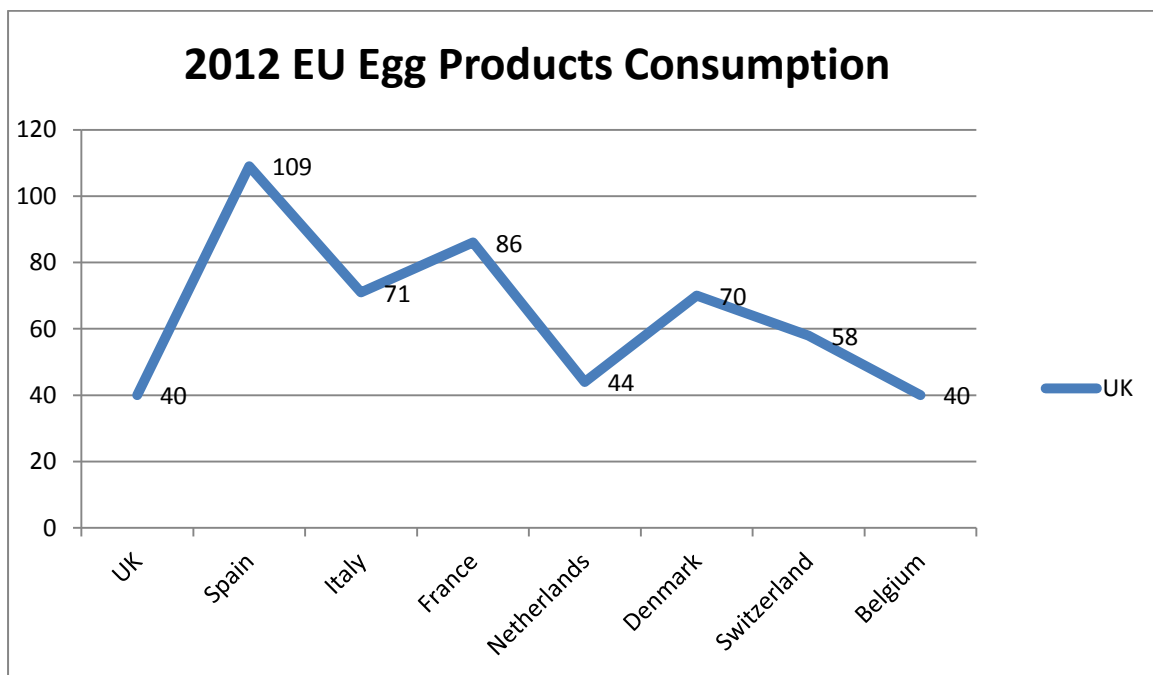


Consumption is in decline too.



Source: IEC Website Statistics

The chart below shows the EU consumption of egg products. Spain has the highest followed by France, Italy and Denmark, with the UK as the lowest in the group. Spain had the highest consumption growth in the 2012 and has tremendous growth - from 189 per capita in 2008 to 239 in 2012.



Source: IEC Website Statistics

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Seeing the above decline in home grown production for the egg processing industry, and imports getting stronger and stronger, the UK – compared to other countries - seems to be lacking focus on the potential growth of the egg processing industry.

In 2012 the UK exported around 5,414 tonnes of egg products and imported 33,921 of egg products whilst it produced a total of 90,841 tonnes. Data Source: *IEC Website Country Information*

The UK is estimated to be around 10.5% of the total EU market for egg product. Weekly imports of egg products to the UK are around 750 tonnes a week whilst exports are estimated to be 104 tonnes a week. Domestic production is in the region of 1,900 tonnes of egg products per week; all these figures could be +/-10%.

According to British food manufacturers, egg products can be imported more cheaply into the UK than by buying from a British egg processor. When demand for free range and barn egg products in the UK started rising, the UK market soon started to see competition rising too, and more egg products being imported. With this rise in demand causing changes to the dynamics of the supply chain, many questions are being asked but being left unanswered.

The problem with imports is that the egg products are being shipped direct to the customers. So it's not that imports have vastly increased, more the fact that imports are now going direct to UK customers instead of via a British egg processor. Imports have always been necessary as the UK industry is not self- sufficient.

In terms of cost of production, out of the countries below the UK produces the third most expensive eggs. This is why the UK egg processing industry cannot compete if the purchase price of the shell egg is based on the actual cost of production. Purchasing egg on the open market is the only way to be competitive. Knowing the markets and the market drivers are crucial to be able to understand when to buy and by how far forward to secure prices; which is very difficult to do when customers demand long term price contracts and egg producers want as much for their egg as possible, on short term supply.

Cost of production for caged egg.

UK	Spain	Italy	Denmark	Netherlands	Belgium	Ireland
\$1.17	\$0.96	\$1.00	\$0.91	\$0.96	\$0.90	\$1.14

America	Canada	Japan	China	Brazil	Argentina
\$0.91	\$1.95	\$1.75	\$0.91	\$0.76	\$0.79

Source: *IEC website Country data*

There were, and still are, concerns of liquid egg being imported with lack of traceability. Is this why imports are cheaper or is technology so far more advanced in the rest of the world that production costs are much lower?



Source: *Guardian Newspapers*.

Some of the best technology in egg products is produced in Europe. Investing in the latest technology is a huge consideration. The efficiency of the breaking machines can make a significant difference in reducing waste – a figure that hits the bottom line on any Profit & Loss sheet - and of course will make those sites much more competitive than those that don't invest in technology.



3.0. The history of egg processing

As World War II came to an end and food rations reduced, the UK imported powdered egg, mainly from Canada, in order to deal with the shortages. After the war most countries strived to become self-sufficient in their food supply and the growth in food manufacturing quickly developed in the 1950s as did the demand for egg in large quantities. The UK began to import frozen liquid egg from overseas but after a few safety concerns over frozen egg coming from China, the UK egg processing industry was born.

The first egg processors - that can be traced as far back as the 1950s - are Lowrie who are based in the north east of England who started their first egg breaking plant in the 1950s, and Framptons who are based in the south.

Over the years companies have come and gone, businesses have been bought, sold and closed. Here are the current processing businesses that exist in the UK today:

Processor	Liquid	Scrambled Egg	Omelettes	Boiled	Egg Mayo
Noble Foods Ltd	Yes	Yes		Yes	Yes
Framptons Ltd	Yes	Yes	Yes		
Ready Egg Ltd	Yes			Yes	Yes
Bumble Hole Ltd	Yes			Yes	Yes
Wise Ltd	Yes	Yes			
Lowie Ltd	Yes				
Just Egg Ltd				Yes	Yes
Fridays Ltd					Yes
Ferndale			Yes		
Oaklands	Yes				
Fresh-pack					Yes

There are a number of egg traders who import egg into the UK to sell to food manufacturers and the food service sector.

3.a. Breaking history

When I joined the egg industry Clive Frampton of Frampton's Ltd was very supportive to me and I'd like to acknowledge this and pay tribute to all his achievements at Framptons. It demonstrates a business that diversifies with global trends and when markets dictate. Please see Appendix B for a detailed account. There have been so many changes in the industry over the last 20 years a full account of the British Egg Processing Industry is in Appendix B.

In summary, the egg processing industry is a tough industry to be in. It's a fast moving industry. To be able to maintain a business that survives the constant high and lows of a market place and still be able to make a profit, is a skill desired by most. It is indeed a rare skill as most egg processing businesses have suffered, as a result of either a takeover, merger or being closed down, during the past 20 years.

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4.0. My Nuffield Farming study tour: March 2013 to May 2014 and onwards

I could divide my Nuffield Farming study tour experiences into two different categories: visits to egg sales and processing operations on the one hand, and attendance at conferences on the other. My visits to sales, production and manufacturing units were all made within Canada and the States.

I propose to describe my visits to individuals, companies and institutions first; and then proceed to a description of the conferences I attended.

Canada	March 2013	The Nuffield Farming Contemporary Scholars Conference plus individual visits to : Global Egg Solutions Burnbrae Farms Guelph University
USA	May 2014	Las Vegas : Urner Barry Conference California: Hampton Court and J West Minnesota: Michael Foods Iowa: Rembrandt Foods Washington: the Humane Society
Dubai	February 2014	To Gulfood, the world's largest food and hospitality event
Spain	April 2013	International Egg Commission Spring Conference – Madrid
UK	April 2014	Nuffield Farming Arden Conference

I shall be detailing my experiences on the following pages.



5.0. Canada:

My travels began in Canada when I and the rest of the 2013 Nuffield Farming Scholars, from the various participating countries, gathered for the international Contemporary Scholars' Conference.

5.a. The Nuffield International Contemporary Scholars' Conference

The conference was a great introduction to the rest of the 2013 International Scholars who came from every background imaginable; a truly inspirational group. Being all from different backgrounds and different industries gave an enormous opportunity for sharing insights and ideas. The variety could not have been greater. From dairy farmers in New Zealand to rice growers in Australia; retailer food buyers to bankers; from hens to sheep; from pigs to beef - and not forgetting arable farmers and fruit farmers – surely all aspect of agriculture were covered.

First off it was fascinating to hear about the bio-products industry and to learn from the research teams from various groups. The conference continued with marketing and social media training along with visits to VG Meats, Cranston Farms and Hansall District Co-op where Heinz Beans were being packed ready for shipment to the UK. A visit to Niagara was followed with a wine tour and a fascinating tour of the Vineland Research and Innovation Centre. Interesting research was explained on how to get the consumer to eat more fresh vegetables and fruit. The idea currently being worked on was a cucumber being developed to grow in the shape of an apple. The cucumber is extremely healthy and growing it in a round shape makes it an easier and more attractive shape to eat. A lesson learned here was to think outside the box and constantly ask questions about how to do things differently.

After the conference in Canada I decided to stay on to visit two egg processors. Each of these companies offers a full range of egg products and one won the Global Egg Processor Award given by the International Egg Commission, so if there was anyone I should see it was these guys. I also wanted to understand how the Canadian egg industry works as it is controlled by their government. Does it work? Is it a profitable industry? How do they deal with conflict with government over prices and availability?

5.b. Global Egg Solutions, Etobiocke, Canada - Monday 18th March

So I was lucky enough to meet brothers David and Arran Kwinter at Global Egg Solutions, which is an incredible business that is very focused and of course very successful. It was interesting to see how a company could operate, grow and be profitable under a government-controlled industry that set the prices and availability of production within the egg industry. In Canada the egg industry operates under a unique system known as Supply Management. Supply Management is run by Canadian Farmers who agree to sell their products under a consistent set of rules and get paid a fair price in return. This system ensures that a) the consumer receives fresh, local high-quality eggs and that b) the farmers get a fair return on the cost to produce a dozen eggs in Canada.

It works well as the business principles remain the same; produce an excellent product as efficiently as you can with outstanding customer service and you can't go far wrong. Whilst some views of a government-controlled industry may vary, the industry seems to work. If there should be

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circumstances such as those we see today, where demand in Canada has unexpectedly outstripped supply, imports from the USA would fill the gap. Trends are analysed and production will either be increased or decreased, just as it would in any other country.

What are the benefits if the market always dictates? Why still have this government control?

The industry believes it works. Could the Canadian egg producers and egg processors earn more profit if there was no control in the market place? Why, of course, but it would lose stability and losses could increase and financial performances be more volatile. Which would you choose?

5.c. Burnbrae Farms – met with Margaret Hudson Burnbrae Farms in Mississauga, Ontario.

Burnbrae Farms is an incredible business, so proactive and so interactive with its suppliers, customers and consumers; never afraid to address issues and happy to give information to consumers, industry and pressure groups. There is a team working with the interaction on social media both with Facebook and Twitter, engaging in conversation, running competitions and gaining feedback from the consumers to learn how to develop. What I love about any business is when they are brave enough to challenge the norm and challenge convention - as far too often we get stuck in our old ways, we think we're doing things right and then one day, everything changes.

Burnbrae Farms is a prime example of how to communicate with your customers. Their activity with social media is superb; with over 63,666 likes on Facebook and 5,479 followers on Twitter there's no wonder they are one of the leaders in their industry.

Burnbrae Farms was established in 1893 by Joe Hudson who came to Canada from Stranraer, Scotland, and named the farm Burnbrae, "burn" being a Scottish name for a stream and "brae" a hillside. Since Burnbrae Farms has a creek, a waterfall and several hillsides sloping down to a valley, the name is very appropriate. The farm was a dairy farm originally and entered into the egg business through the efforts of Joe and Grant Hudson in the early 1940s. From 1943 to 1948 egg layers were a sideline - although 3,000 layers was not a bad sideline then. In 1973 Burnbrae entered the "further processing" market, breaking and pasteurising any surplus table egg and selling it to the bakery, hotel, restaurant and industrial trade.

What I love about any business is when they are brave enough to challenge the norm and challenge convention - as far too often we get stuck in our old ways, we think we're doing things right and then one day, everything changes.

By leading innovation in eggs and egg products, which represents a very important category for both retailers and food service operators, Burnbrae Farms has also supported its customers. The development of unique, differentiated egg varieties that can be retailed at higher margins than traditional Grade A Large - an expensive loss leader for most retailers - has improved gross revenue on eggs by millions of dollars every year for Canada's grocers.

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By providing innovative products like pasteurised liquid eggs in the 90s and now cooked premium omelettes in the 00s, Burnbrae has provided improved product costs, labour savings and improvements in quality standards for food service operators. Burnbrae continues to innovate in the egg category under Joe Hudson's direction, by developing new products and new ways to market eggs.

Five years in a row Burnbrae Farms has been nominated for the Canadian Grand Prix New Product Award and in the past decade Burnbrae has won 13 awards in shell egg and egg products. Burnbrae won Egg Processor of the Year in 2011, awarded by the International Egg Commission. In 2012 Joe Hudson was inducted into the Ontario Agricultural Hall of Fame.

5.d. Guelph University : Professor Evan Fraser

I was lucky enough to visit Evan Fraser, Canada Research Chair in Global Human Security in the Department of Geography at Guelph University, who specialises in food security under economic globalisation and climate change. Evan is the author of around 70 scientific papers, wrote book chapters on these subjects, and has written for many newspapers and has authored two books. Evan currently holds the Tier 1 Canada Research Chair in Global Food Security.

Evan Fraser is renowned for his video and strategy on feeding 9 billion. Whilst being a fascinating video of his views on feeding 9 billion, his strategy is clear: *"In order to feed 9 billion we must support a healthy farming industry, providing local food, in order to keep an affordable food supply in times of high food prices and conflict"*.

There are so many subjects involved with food security: it would require full time study with subjects such as local food systems, food regulations and policy, distribution and storage and finally science and technology.

Evan and his wife Elisabeth Fraser also wrote an article for the Irish Guardian Sustainable Business Food Hub which was so chock full of common sense that I'm quoting the main thrust of it here:

'10 things you need to know about the global food system'.

- 1) **There's enough food for everybody.** The most important thing to know about the global food system is also one of the least appreciated: There is enough food for everyone on the planet to live a healthy and nutritious life. The UN reports there are about 2,800 kcal (kilo calories) per person per day available. There are about 842 million people hungry on the planet whilst at the same time there are about 1.5 billion who are overweight or obese.
- 2) **Price volatility.** The price of food is wildly volatile. In 2008 the United Nations Food Price index almost doubled in less than a year before crashing in 2009. Prices shot up again in 2010 and 2011 but, despite this volatility, our supply of food stayed stable suggesting that the price of food is not determined by our ability to produce food at a global level.
- 3) **One third of the world's food is wasted before it is consumed.** In the developed world most of the food wasted is at the consumer level but in the developing world most waste happens on the farms as a consequence of inefficient storage and processing facilities.



- 4) **Food for fuel.** 40% of the corn grown in the US is being turned into first generation biofuels such as ethanol. Creating bioethanol only uses the sugar in the corn; this leaves a protein-rich by-product called dried distillers grain that can be fed to livestock.
- 5) **Land buy-up.** The landscape of who owns our food system is changing. Since 2008 more than 56m hectares of land (the size of France) have been purchased in the global south by international companies. Some would say that this represents meaningful foreign direct investment in places such as rural Africa, yet others are worried that the companies are exploiting the land and labour of Africa to make rich countries grow richer.
- 6) **Corporate control.** A very small number of corporations control the vast majority of the world's food trade: four companies produce more than 58% of the world's seeds, four global firms account for 97% of poultry genetic research and development; yet another four produce over 60% of the agrochemicals farmers use.
- 7) **Impact of agricultural policy.** Whilst we all know that people are eating more junk food, dairy and meat, we don't appreciate that one of the causes of this rise is US governmental farm policy. In the 1970s the US government started subsidising maize farmers to produce grain, resulting in overproduction. Farmers learned they could feed this over-production to cows, pigs and chickens, which then drove down the price of these products and created the conditions for intensive livestock production. It was also discovered around this time that the sugars from corn could be removed and turned into high-fructose corn syrup. This has given rise to the junk food industry.
- 8) **Environmental impact.** The way we're producing our food is impacting our environment. Agriculture is responsible for 75% of deforestation worldwide and is also the largest contributor of non-CO² greenhouse gas emissions. We're also rapidly losing marine food sources. In 2010, 53% of fisheries were fully exploited, 28% were overexploited, 3 % were depleted and 1% was recovering from depletion.
- 9) **Adapting to climate change.** Climate change may reduce crop yields by 2% per decade over the next 100 years. These reductions won't be the same everywhere. The poorest regions of the world are expected to be the worst hit. A lot depends on whether farmers are able to use the tools they need to adapt to changing weather conditions
- 10) **Increased demand.** Recent studies suggest that the farmers of this world will have to produce 50% more food by 2050 in order to meet global population growth. This will have to be done against a backdrop of rising energy prices and climate change that is set to make food harder and more expensive to produce.

Whilst these 10 steps highlight some of the issues in the global food system it is by no means exhaustive and there are many debates. The main thrust of my discussion with Evan at our meeting was that this is such a vast subject - so start where you can make a difference. If there's one thing a person can do to help support global food production most, it's: be local. Buy your produce from your local farmer, producer or supplier to allow them to continue to produce and secure a future for our supply of food.

*... start where you can
make a difference. If
there's one thing a person
can do to help support
global food production
most, it's: be local.*



For egg processing and the effects of globalisation on the industry, Step 1: Buy British where possible and support British farmers.

5.e. Guelph University : Dirk Stienke, Director of Education and Outreach

at the Biodiversity Institute of Ontario at Guelph University

I went to visit Dirk to explore the area of food fraud, which he investigates. I was particularly interested in this area due to some accusations of free-range egg being imported into the UK but sold by the exporter at a price more associated with caged egg. At the time of my visit Dirk was in the middle of a news release on mis-labelling in fish, in particular fresh tuna. Dirk was convinced that fraud in fish was rife around the world and it was only a matter of time before an exposure on fish would be in the media.

Red snapper and tuna are the most frequently mislabelled species at 87% for red snapper and 59% for tuna

Dirk's investigations show that, in 2001, 84% of white tuna was actually another fish species called escolar, which can cause digestive issues for some people. Red snapper and tuna are the most frequently mislabelled species at 87% for red snapper and 59% for tuna. Only 7 of the 120 red snapper samples tested correctly.

Since Horse-Gate the presence of food fraud in the industry has become more apparent across the world and in many different sectors. Companies must demonstrate their due diligence in ensuring the origin of their food. Isotopes are the main way of identifying where the egg has originated. Isotopes in drinking water are different from country to country and even region to region. The test can even identify the presence of processed foreign egg in manufactured food products that can contain egg. If a quiche contains egg which it had been agreed should be supplied from a British farm, but has come instead from an imported egg from Europe, a test can prove it. Likewise a test can be carried out to prove if an egg product is free range or caged.

Isotopes are the main way of identifying where the egg has originated. The test can even identify the presence of processed foreign egg in manufactured food products that can contain egg.

The only way to ensure your free range is indeed free range is either a) buy British with the assurance of the lion code and b) if supply does indeed come in from Europe, ensure that the supply chain is as short as possible in order to audit the origin of the egg.

Just how important is food fraud to the consumer? Horse-Gate hit the media eye and hit home to the consumer because an animal was involved, an animal that in the UK is mainly a pet rather than a food source.



Is anyone really interested so long as food prices remain low? Would a burger sell well at £1 for 4 burgers if it were labelled a Mixed Burger? Does animal welfare play its part still in the production of food or is it now back to price?

As an industry the answer must be, and has to be, yes. Animal welfare should be the norm in food production and there must be a constant striving for continuous improvement and this should never end. Not only does it protect the animals, which is the priority, but also it protects the farmer from media exposure and it will allow the industry to concentrate on aspects of their business that will help to keep that business as efficient as possible in order to sustain itself in the competitive environment.

Everyone in the food chain has this responsibility. In egg processing we have a responsibility to ensure that free range from the UK or from Europe is indeed free range and, with recent stamping regulations, audits and ethical purchasing, this should be straightforward. There will

*Animal welfare should
be the norm in food
production*

always be some sort of food fraud as the food industry is so valuable. If a price for a product is far cheaper than the going market rate, there is always a reason why.

I left Canada still a little puzzled by their Supply Management system but completely sold on their attitude to customers and consumers.



6.0. USA

Due to their vast markets for egg products, the USA was the country I was most interested in visiting. I visited Las Vegas, California, Minnesota, Iowa and Washington DC.

6.a. Urner Barry Conference

My American tour started off at Las Vegas and was timed to coincide with the Urner Barry Conference in May 2014.

Urner Barry is a business publisher specialising in the timely, accurate and unbiased reporting of market news and quotations to clients in the poultry, egg, meat, seafood and related segments of the food industry. It's a great source of information to help compare European, American and other global trade. The information is sourced from the egg industry itself and Urner Barry is one of only two organisations that publishes egg trade information. The Urner Barry Conference is held annually and delivers good speakers, connects suppliers and customers, and is a platform for general trade information for the USA.

For the past 13 years the USA has seen their monthly exports of shell egg and egg products rise in value and they continued to rise throughout the latter half of 2013. More than 1,600 truckloads of shell egg and egg products moved outside the USA borders in the last quarter of 2013, which is a 58% increase from the previous year and an 89% increase from the previous five-year average. (Source: *Urner Barry Reporter Volume 9* by Brian Moscogiuri.) Nearly two-thirds of this record shipment travelled to three countries: Mexico, Canada and Japan.

Since August 2012 and the spread of avian flu there have been opportunities to export to Mexico and this increased demand continues throughout 2013. No doubt this will reduce over time as supply catches up. Canada is seeing a constant growth in the demand for table eggs with a 3.4% increase year on year. Again production is being increased to meet the increases in demand. During the last quarter Japan had a strong interest in egg products for the month of November, taking more than three times that of 2013 and three and a half times the five year average. This demand from Japan was mainly for yolk products which was a perfect fit considering the large increase in the demand for egg white elsewhere, leaving the yolk in surplus. This would be the perfect balance for US trade.

One of the most insightful presentations was that from Joe Pawlak, of Technomic: 'Consumer Trends in Food Service'. The report is an analysis of consumer drivers and industry reactions and it categorised the population to analyse the behaviour of *consumers* - *Who is driving and forming new trends?* - which I'll report on in further detail later on in this report. (See Chapter 11.c. on page 29)



6.b. California

The main purpose of my visit here was to visit **Hampton Creek Foods** and learn about their innovation in the food processing Industry. I shall be describing my visit to them under the Technology and Innovation chapter of this report. (See Chapter 12.a. page 36)

But I also met with **Jill Benson from JS West**, a family business based in California. The meeting with Jill was to gain a further understanding about Proposition 2¹ and the progress made so far in California. Jill's farm was the first farm in California to build the new colony-enriched cages that comply with Proposition 2's new regulations. At the moment California is going through the very same changes that Europe experienced in 2012 with its ban on traditional cages. There are many other farmers in other states who import into California but will no longer be able to do so if they don't comply with Proposition 2.

The debate throughout the USA is not just about laying hens. There is an overwhelming fear that Proposition 2 will progress into other animal sectors, in particular into the pork industry. If this occurs even higher investment will be needed to change that industry's production system.

The frustrating part for the food industry is that, whilst this applies to shell egg being bought and sold in the shell, this does not apply to egg products used in food products. Albeit due to pressure from the consumer who wants their food to be from ethical sources, major brands are starting to insist that their egg supplies comply with the new regulations.

There is an overwhelming fear that Proposition 2 will progress into other animal sectors, in particular into the pork industry.

My message from this is that there is confusion and frustration in all areas, the main lesson being that the consumer will always demand the food they require. If that means they want better animal welfare, why indeed would anyone be against it? Yes, it must be managed and supported by not just the egg industry but the financial sector as well in order to support farmers making these changes.

This also tells me that your relationships must be strong with your customers and your suppliers in order to get their commitment and help to sustain your future. It does seem, though, that you need to have more than just farming skills these days in order to deal with the ever-changing demands, and political communication skills will help. Business does not stand still and over the years changes seem to occur more often and indeed much faster.

6.c. Iowa – Rembrandt Foods

Rembrandt Foods was established in 2000 – a very young company compared to the egg processors I've known in Europe, so it was a real pleasure to hear of the success of the business over the last 14 years. Rembrandt is the largest fully integrated egg processing business in America and

¹ Proposition 2, introduced in 2008 in California but taking effect in 2015, prohibits with certain exceptions the confinement on a farm of pregnant pigs, calves raised for veal, and egg-laying hens in any manner that does not allow them to turn around freely, lie down, stand up, and fully extend their. The law would principally apply to the state's 18 million egg-laying hens. Currently 5 to 8 percent of the eggs produced in the state come from cage-free chickens

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sustainability, innovation and partnerships are at the forefront of their business. Rembrandt has a clear goal, a vision *‘to be the global leader in added-value egg based products through the relentless pursuit of sustainable production and innovative solutions.’*

The success behind the business in establishing long term growth and success lies through people and partnerships, and this was certainly demonstrated here at Rembrandt. When asked what the most successful aspect of the business is, Rembrandt’s emphatic answer was: people.

People make the business happen and will make it either a success or a failure. Hire the best and you’ll get success.

People make the business happen and will make it either a success or a failure. Hire the best and you’ll get success.

Being in Iowa, the hub of agriculture, one realises how much scope is afforded by the amount of available land, something we lack in the UK. We also face many other restrictions such as planning permissions and EU Directives.

There is such a sense of freedom in America.

6.d. Minnesota – Michael Foods

Michael Foods is a leading supplier of egg products, potato products and refrigerated products with net sales exceeding \$1.5 billion dollars, and is the world’s largest egg processing company. Michael Foods are leaders because they have introduced innovation, value-added food technology and customer solutions to the food industry. 74% of the turnover is in egg products and being sold around the globe.

Again the interaction with their customers and consumers is excellent, far better than I’ve seen in the UK. They work closely with their customers on innovation and development and analysing market trends to understand the consumers. In April, 2014, Michael Foods was acquired by Post Holdings, who also own Post Foods USA & Canada, Attune Foods, Premier Nutrition, Dymatize Nutrition, Dakota Growers and Golden Boy.

Michael Foods are leaders because they have introduced innovation, value-added food technology and customer solutions to the food industry

(See a quote from their website under Chapter 11.f. page 34)

6.e. Washington DC – Humane Society.

One of the consistent messages I was getting on my Nuffield Farming journey concerned people and effective communication. Who better to get another point of view on how to communicate effectively than the CEO of the Humane Society?

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I managed to get 30 minutes to interview Wayne Purcelle in Washington. We talked for around an hour; but not on animal welfare but on the success of effective communication. Again the message was the same: people.

I shall be detailing his messages in Chapter 14, page 42, which is headed Communication.

6.f. Chicago

I flew out of Chicago to return home but didn't make the planned American Egg Board visit due to changes in my schedule. But I had in fact managed to meet the Chairman, Joanne Ivy, and John Howarth, VP of food service and egg product marketing, earlier at the Urner Barry Conference and will go through my findings later on in my report. (See Chapter 11.b. page 28)



7.0. Dubai

I flew to Dubai to attend the Gulfood Exhibition at the Dubai World Trade Centre.

Gulfood is the worlds' largest food and hospitality event. The show covers beverage and beverage equipment; food and drink; food service and hospitality; restaurants and cafes. There were over 4,200 exhibitors and 77,609 buyers.

I decided to go to this, the world's largest food trade show, in order to search for product ideas and to learn about exports and imports of egg products around the world. A large amount of egg products are imported by the Middle East from Europe, USA and India. This market has opportunities but only for long shelf life products.

Gulfood, staged in Dubai, is the worlds' largest food and hospitality event. The show covers beverage and beverage equipment; food and drink; food service and hospitality; restaurants and cafes.

I was amazed to see so many egg companies showing at the Gulfood show and fascinated to hear of the opportunities that the UK could also have to export egg products to the Middle East. Most imports of egg products are from Europe or the USA and there is a definite lean towards supply from Europe due to control over food safety and animal welfare. This is a clear sign of an export opportunity for the UK. The UK has many advantages when selling British egg products and should definitely look at the opportunities to export.

I interviewed **Sascha Triemer, head chef at the Atlantis resort**, on how they manage the supply chain. The seasons never stop in Dubai but the tourist/clientele coming to Dubai range from British, Russian, German, the Gulf Region, Chinese, Indian etc. and all have different eating habits and the supply of products must be adjusted. This can have an effect on the supply chain as it adapts to these changes.

The relationship that the Atlantis has with their suppliers is incredible. Working on an exclusive basis with their suppliers in order to receive the quality and service that the Atlantis demands to meet the expectations of their customers has been the basis of the success of these relationships. Some of the products are even branded exclusively to the Atlantis. Their beef is from Australia from the Gold Coast and is fed on an exclusive diet; the whole carcass is used from the prime cuts to all secondary cuts, which are used in the Buffet Restaurants, TBJ (own Burger brand) and the Pool Restaurants.

When it came to egg products, due to health and safety reasons (especially with the hot temperatures In Dubai) Atlantis use shell egg from approved local suppliers and also liquid eggs depending on the functionality required from the egg.



8.0. UK: Frank Arden Conference

How can farming learn from science to improve the nutritional value of our food?

Back in the UK I attended a Conference staged by NFST itself where the two main speakers were the two Nuffield Farming Arden Scholars who had recently completed their study tours: David Northcroft and Caroline Drummond.

This was a superb conference that sadly only lasted from 10am to 13:00. This was a conference worthy of 3 days never mind 3 hours. The two Nuffield Farming Scholars speaking were Caroline Drummond and David Northcroft who gave excellent presentations on the subject. The conference was hosted by Tom Heap, BBC presenter for Country File, followed by an introduction on the subject title by Professor Susan Jebb, Professor of Diet and Population Health, Oxford University.

The conference ended with the two speakers, Caroline and David, being joined by Professor Tim Benton; UK Champion for Global Foods Security and Professor of Population Ecology, Professor Tim Brocklehurst; Head of IFR Food and Health Network, with Matthew Naylor columnist and observer. It should have been 30 minutes of a Q&A session, which again could have lasted all day.

My learnings from this conference, were

- Evaluation
- Innovation
- Communication

Learn about market trends:

what do we need to do to feed an ever-growing population
with healthy nutritional food?
what do consumers need and want?

Then innovate.

You can find the Scholars' papers on the Nuffield Farming International website: www.nuffieldinternational.org/reports and each is a truly fascinating read and an insight into the future of the food industry.



9.0. Spain - Madrid : International Egg Commission Spring Conference

The IEC conferences take place twice a year; one short spring conference and an annual conference which is around a week long, covering all aspects of global egg supply from the breeding of chicks to the European market for egg products. There are always a host of speakers giving information and advice to the egg sector. So attending this was a “must” for my study tour.

The most important learning from this conference was innovation, innovation, and innovation – albeit, as I’ve discovered on my Nuffield Farming journey so far, people are reluctant to contribute to events of this nature for fear of business secrets and ideas being stolen.

The focus of this conference was on innovation and technology with presentations of three papers for the egg processing industry.

- 1) The Future of Protein Modification and the use of Enzymes by Fabien De Meester
- 2) The Role of Enzymes in food processing by Arhen Sein, Senior Scientist Food Application, DSM Food Specialists.
- 3) The use of Nisin as a preservative in pasteurised liquid egg products by Joss Delves-Broughton, Principle Application Specialist, DuPont Health and Nutrition.

These reports are referred to later on in this report. (See Chapters 12.b.–12.d. pages 37-38)

The most important learning from this conference was innovation, innovation, and innovation – albeit, as I’ve discovered on my Nuffield Farming journey so far, people are reluctant to contribute to these sort of events for fear of business secrets and ideas being stolen.



10.0. The dynamics of global egg trade

First let's understand what globalisation is.

There are many different definitions about what globalisation means. The one that best describes it for me is from the Levin Institute – The State University of New York:

'Globalisation is a process of interaction and integration among the people, companies and governments of different nations, a process driven by international trade and investment and aided by information technology. This process has effects on the environment, on culture, on political systems, on economic development and prosperity, and on human physical well-being in societies around the world'.

Globalisation is not new; as soon as man travelled and discovered the world the beginning of trade started to happen from country to country. By connecting and trading with different countries the impact, either positive or negative, would create other changes and new trends would start to occur over time. It's imperative for the future of any industry to understand how globalisation is affecting the future of their industry, and identify those trends to decide how their business needs to change in order to align to those trends for a profitable future.

According to the Levin Institute, policy and technological development over the past few decades have spurred increase in cross-border trade and investment. Since 1950 the volume of world trade has increased by 20 times, and from just 1997 to 1999, flows of foreign investment have nearly doubled from \$468 billion to \$827 billion. Author Thomas Friedman has said that today globalisation is *"farther, faster, cheaper and deeper"*.

My concern for the UK egg industry is that globalisation means that more and more imports could be heading into the UK market. Why? Because the price of these imports is lower than that of domestic egg production.

My concern for the UK egg industry is that globalisation means that more and more imports could be heading into the UK market. Why? Because the price of these imports is lower than that of domestic egg production. Innovation is worlds ahead in overseas countries and technology is far more advanced.

The UK egg market size as of latest figures for 2013 had UK production at 9,684 million eggs with imports at 1,839 million eggs and exports at 292 million eggs. Total UK egg consumptions were 11,532 million eggs, an increase on 2% on 2012. Source www.egginfo.co.uk

Retail market value for 2013 is estimated at £986m. The breakdown by market sector is: Retail at 51%, Food Manufacturing at 21% Food Service 25% and Home Produced eggs at 3%. Data Source www.egginfo.co.uk

The egg processing industry in the UK is approximately 22% of the UK total shell egg production. The consumption of egg products in the UK is far lower than in many other EU member states.

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Egg products can be imported more cheaply into the UK, according to British food manufacturers, than the home produced article can be bought. With the rising demand for free range and barn egg processing products, the UK market soon started to see competition rising and more free range and barn egg products coming in from Europe. With this rising demand for increases in shell egg production, the shift in dynamics in the supply chain leads to questions.

Due to the lack of traceability on liquid there were, and still are, concerns about liquid egg products being imported. Is this why imports were much cheaper? Was technology far more advanced for the cost of production to be lower?

Consumers in the past few years want to know more and more about where their food comes from, what's in it and is it safe to eat?

Consumers need to know how it's made and also that the food they consume is delivering more for them in their diet, otherwise known as functional food.

But eggs are a commodity product and traded around the world, so whilst it can seem attractive to invest and join the industry, competition is high and margins are driven low, as businesses compete with other countries from around the world. The cost of production in the EU has increased due to welfare regulations, food safety and environment protection therefore making Europe an attractive location to export to from outside the EU.

The top five egg product manufacturers in Europe are:

- **Eurovo** who are the largest egg processor with plants in Italy, France, Poland and Spain
- **Igreca** who are the largest spray-dried egg suppliers in France
- **Sanovo** Group who have factories in Denmark, Germany, Spain and the Czech Republic
- **Weko** Group have plants in the Netherlands, Austria, Spain and Portugal. For more information on egg processors see Appendix A

The UK does not deliberately produce shell eggs for egg breaking for the food industry. The shell egg sold to the egg breakers is made up from seconds from retail production and surplus shell egg available due to low retail sales. This of course brings a considerable amount of vulnerability to the egg breaking market. The most important part of any egg business is the raw material price; everything else is pretty standard and, with the right people, everything else can take care of itself. However the raw material is another story. It can destroy a company in a matter of weeks if the market has unexpectedly turned drastically and an egg breaker is linked into a contract on prices with their customers. Recently the EU egg industry has been affected by the 2012 Directive 1999/74/EC for the minimum standard for the welfare of laying hens. However let's go back and look at production costs and their effects on the EU industry around 2010.

'The Competitiveness of the EU egg industry' is a report produced by Professor Peter van Horne from LEI Wageningen UR, which develops economic expertise for government bodies and industry in the field of food, agriculture and the natural environment. This LEI research report VR2012-002 was carried out by commission of EUWEP (European Union of wholesale eggs, egg products, poultry and game.)



This research was key after the introduction of new European Directive 1999/74/EC that set out the minimum standard for the housing of laying hens in enriched cages. There were and still are concerns over the competitiveness of the EU market after the introduction of this directive. The introduction of the new cages cost the European egg industry millions of pounds and therefore questions must be asked as to how the EU will remain competitive when incurring such high costs of production.

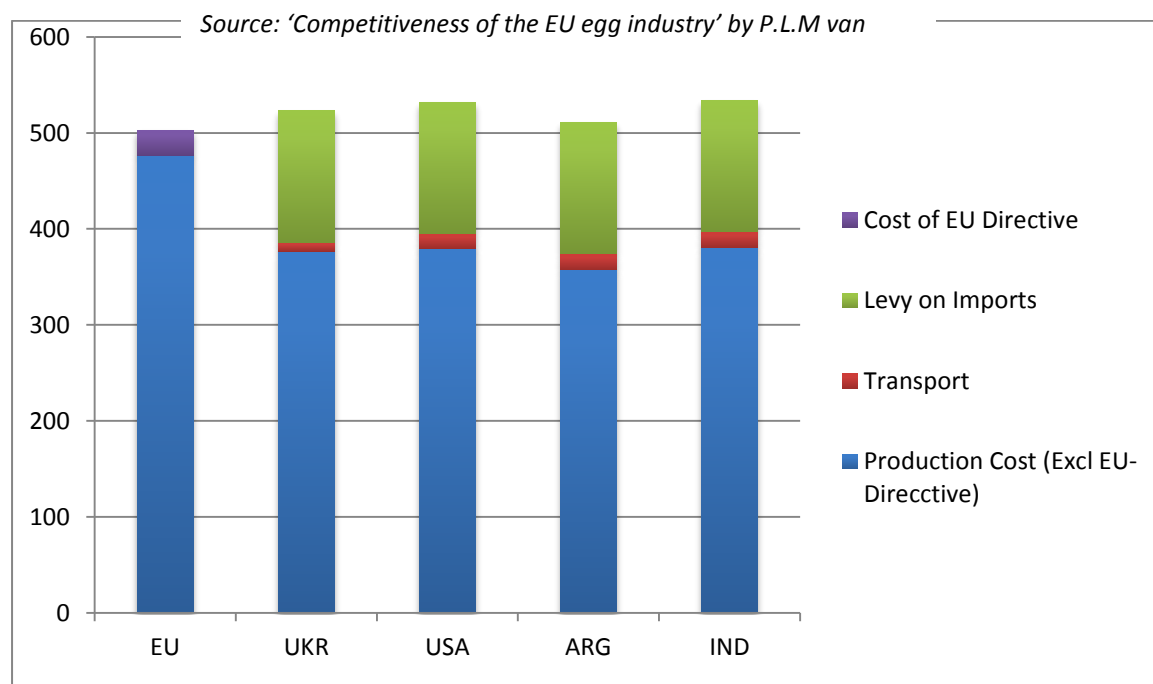
The report (by Professor van Horne) also takes into account that the EU has other costs that other countries outside the EU do not incur: such as the additional costs for the environmental protection and food safety, along with the EU being involved in multi-lateral (World Trade Organisations) negotiations, and bilateral (e.g. Mercosur, India, Ukraine) negotiations which were to further liberalise trade by either further reducing import tariffs or by removing them altogether. The result of these three factors along with the introduction of the directive for minimum standard for the housing of laying hens, gave great concerns for the competitiveness of the EU egg industry. The cost of egg production in Europe for certain would be higher than other countries, not taking into account any benefits from currency exchange rates.

The results below show that the offer price in 2012 of whole egg powder from third country imports is close to the average EU Price. However, despite the current import tariffs on whole egg powder, some of the third world countries can be very competitive.

If there was a worst-case scenario of an agreement of a 50% lower import tariff on all third countries, that would result in a much lower offer price of whole egg powder compared to the EU egg industry.

The charts below offer some understanding of the differential in costs prior to 2012 Directive 1999/74/EC for the welfare of laying hens.

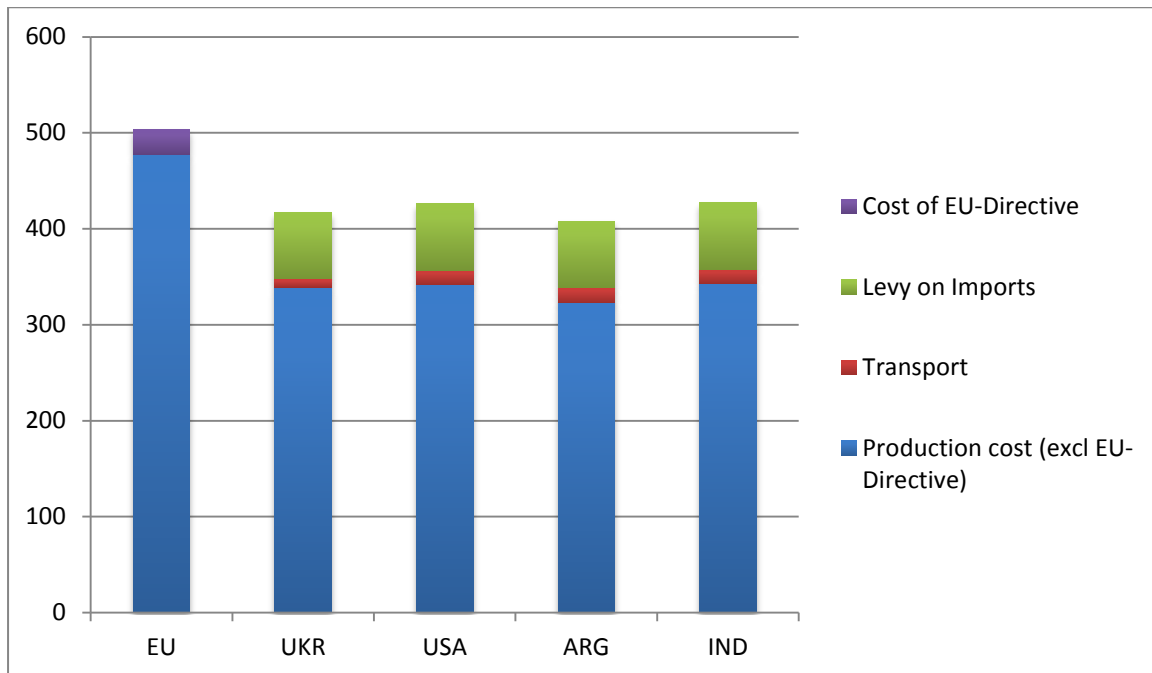
Offer price of whole egg powder in Germany and non-EU countries in cents per kilogram (*below*).





Offer price of whole egg powder in Germany from EU average and non-EU countries in cents per kilogram based on a scenario of 50% lower import tariff and 10% lower exchange rate. (see below)

Source: 'Competitiveness of the EU egg industry' by P.L.M van Horne



The average EU production costs were 0.88 eurocents per kg.

The Ukraine costs were 79% of that figure

USA 75%

Argentina 72%

India was 81%

Whole egg powder prices were even more competitive in non-EU countries.

Ukraine prices were 79% of the UK level

USA 80%

Argentina 75%

India 80%

This was due to the cost of transportation of powder being low and the offer price from EU countries is relatively low. In other non-EU countries such as Argentina, Ukraine and India, there is no legislation on animal health and the space allowance for the hen is much smaller.

Feed makes up on average 60% of the production costs

The other factors to consider in the difference of production costs must be the feed.

Feed makes up on average 60% of the production costs therefore this can vary from not just in Europe but around the world too.

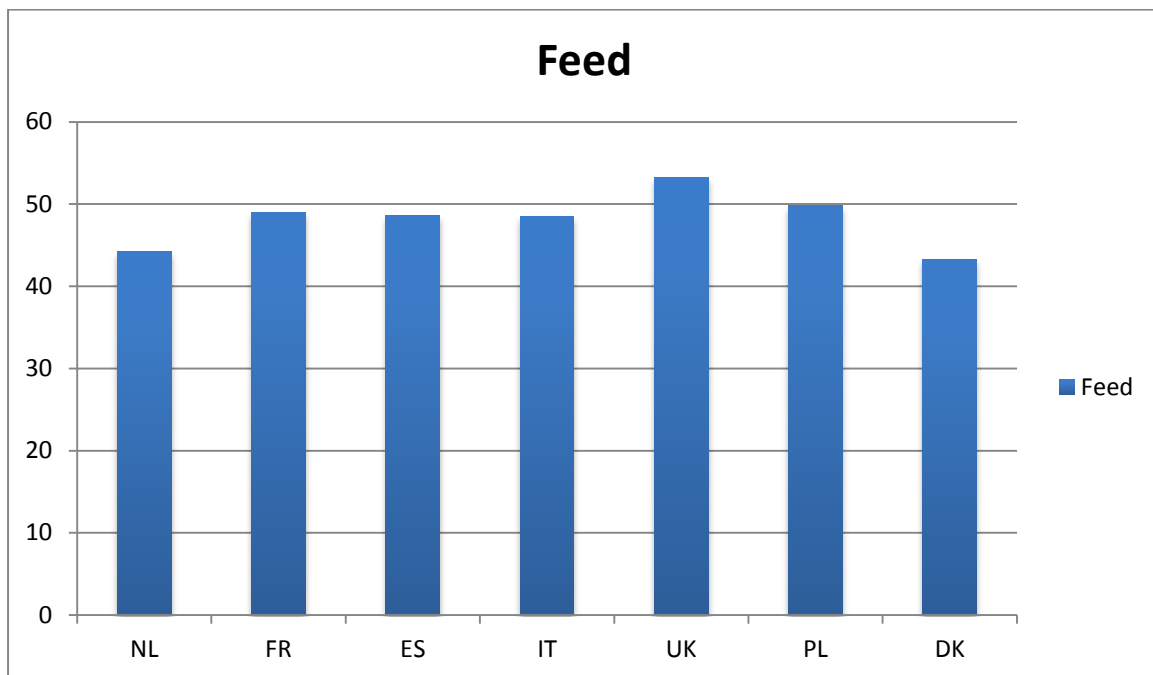
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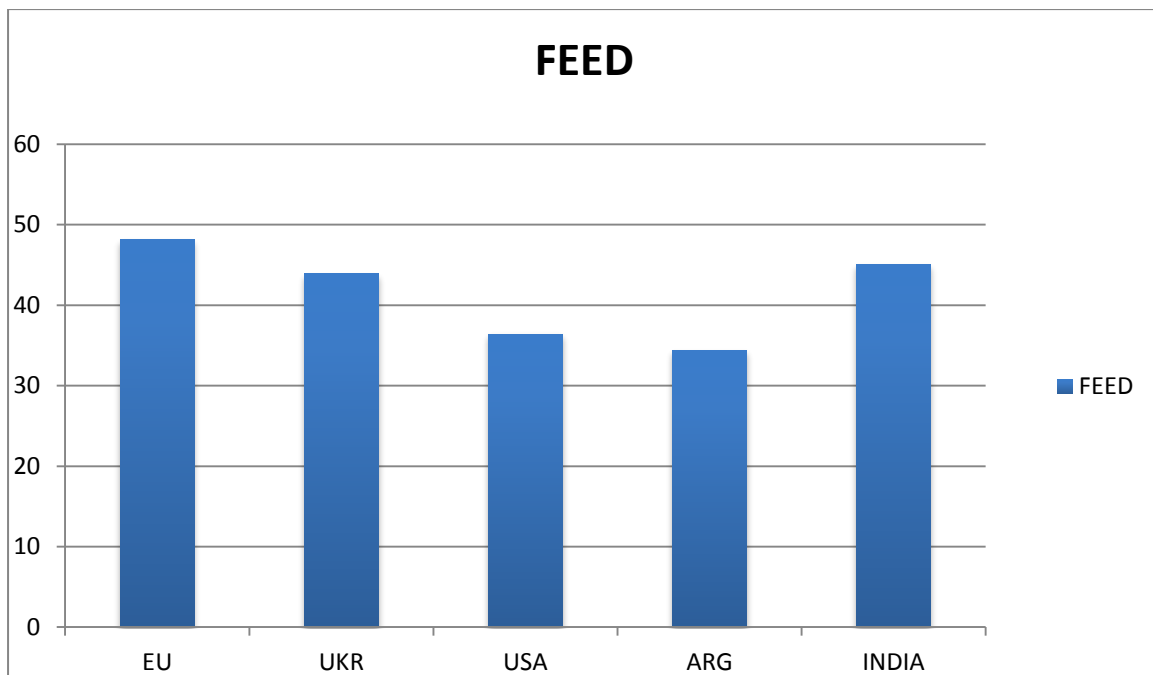
**Cost of primary production in conventional cages in some EU countries
(cents per kilogram of eggs in 2010)**

Source: 'Competitiveness of the EU egg industry' by P.L.M van Horne



Comparing Feed costs in Non-EU Countries (2010)

Source: 'Competitiveness of the EU egg industry' by P.L.M van Horne





Argentina is a real threat for whole powder because of the lower cost of feed for shell egg production. The tariff on imports hardly provides protection from Argentinian whole egg powder entering the EU market.

Let's take a look at the EU competitiveness up to and after 2012. We must also remember that the higher EU production costs are not just about the welfare for laying hens for the space allowed in the enriched cages, but it's also about other EU legislation that all European countries must comply with - that third country imports do not.

- 1) Environmental Protection for the Directive 91/676/EC that protects land and water from high concentrates of nitrate by specifying a maximum amount of nitrogen per hectare that can be applied.
- 2) Directive 2001/81/EC that gives national emission ceilings to ammonia emissions for every member state.
- 3) The IPPC Directive (2008/1/EC) to protect the air quality, agricultural activities with high pollution levels.
- 4) Zoonoses Directive 2003/99/EC and Regulation 2160/2003 to regulate sampling, monitoring and control measures.
- 5) Animal Welfare Directive 99/74/EC laying down the minimum standards for the protection of laying hens.

In general it can be stated that in non-EU countries the level of legislation on environmental protection, food safety and animal welfare is either non-existent or at a very low level. Today some non-EU countries do strive to make changes on food safety and animal welfare but, overall, most are behind the EU.

Research undertaken in the Netherlands (*Peter van Horne, 2008*) shows that production costs directly related to EU legislation in 2010 represented 8.8% of production costs compared to 15.1% in 2012.

Egg powder will always be the main competitor of egg or egg products into the EU due to the fact that powder is more suited to travelling long distances than shell egg or any other egg products, and there is no decrease in product quality after months of storage. Dried egg powder also has a very low cost of transport as the product is dried.



11.0. World Changing Dynamics.

The dynamics of the entire egg industry are changing – and changing fast. This is illustrated by the information given in this chapter.

11.a. World trade negotiations

Address to EUWEP

I attended a meeting in Brussels in April 2013 where Mark Williams NSch, the secretary-general of EUWEP (European Union of Wholesale Eggs and Poultry), addressed that body. He gave a presentation regarding the 'Competitiveness of the European Egg Industry' following the publication of the report by P.L.M van Horne 'VR2012-002'. I have already referred in detail to that report in the previous chapter.

The research for the report had been carried out under the commission of EUWEP. Essentially this is what Mark said:

The European Union is involved in multilateral (WTO) negotiations and bilateral negotiations, designed to further liberalise trade by either further reducing import tariffs or removing them altogether. This results in concerns on the competitiveness of the European Union egg industry, especially as, at the same time, new legislation came into force that prohibited hens being kept in conventional cages and egg producers had to change to either enriched cages or alternative housing systems. The result was increased costs of producing eggs. Lowering the import tariffs seen against the increasing cost of producing eggs in the European Union would indeed threaten the competitiveness of EU egg products. The current price of whole egg powder in 2012 from some of the third world countries is close to the average EU price. Despite the current import tariffs on whole egg powder, third world countries (i.e non-EU) can be competitive on the European Union market. If there was a 50% lower import tariff, all third world countries in the study would have a lower offer price on whole egg powder compared to the EU egg industry.

This report also highlighted the production costs of shell egg in the Ukraine, USA, Argentina and India .

Creating awareness across political sectors in Brussels of these ongoing negotiations is imperative due to the consequences if indeed tariffs are lowered. If the European Union is implementing changes for animal welfare and food safety, we must ensure that our markets are protected not just for the egg sector but for all industries involved.

11.b. American Egg Board Presentation at the Urner Barry Conference May 2014

Trends in egg consumption

All businesses in any industry must be aware of changing dynamics, in order to re-direct their business where necessary. America's breakfast consumption has grown and continues to grow rapidly, **according to the American Egg Board presentation**, presented by John Howeth, VP of Food

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Service and Egg Product Marketing and Kevin Burkum, Senior VP of Consumer Marketing: “How AEB is driving egg demand’.

In America the Quick Service Retail market in breakfast is worth over \$30billion US dollars. One out of 10 homes eats breakfast away from home. Since 2007 the growth for the breakfast market has risen by 45% in the USA. 70% of Quick Service Restaurants offer sandwiches, which are perfect for egg products. 82% of Quick Service Restaurants now offer breakfast.

In the USA one out of 10 homes eats breakfast away from home. Since 2007 the growth for the breakfast market has risen by 45%.

McDonald’s breakfasts now accounts for 25% of their total volume and they recently launched the ‘Egg White Delight’, which has been an amazing success.

Dunkin Donuts now have a breakfast menu with an egg white flatbread. (see picture on page 34). Egg white is being sold everywhere in the USA.

What is the trend globally for egg white and how is this affecting the global markets? Demand for egg white in Europe is the highest it’s ever been. Albumen prices are rising and at times are valued at the same price as whole egg and prices are now firm and availability is limited.

Yolk prices are lower than in previous years and demand is decreasing

Yolk prices are lower than in previous years and demand is decreasing. The industry needs to identify what will happen if this continues and, if the outcome is negative, identify what can be done? Usually trends that happen in the USA eventually come to Europe. In anticipation of this, the industry needs to start to ask

different questions now. As opposed to just selling egg white products to UK consumers, the food industry must think differently. What is the reason for the demand? The reason is because it contains no fat from the yolk and is therefore healthier. But the nutritional benefits are in the yolk. Think differently. Why not extract the fat from whole egg? No separation issues, no production yields issues and no devaluing of the product. Perfect.

Keeping an eye on all sectors of the food industry is crucial as egg can play a part in so many different areas of the food industry.

11.c. A presentation from the Urner Barry conference

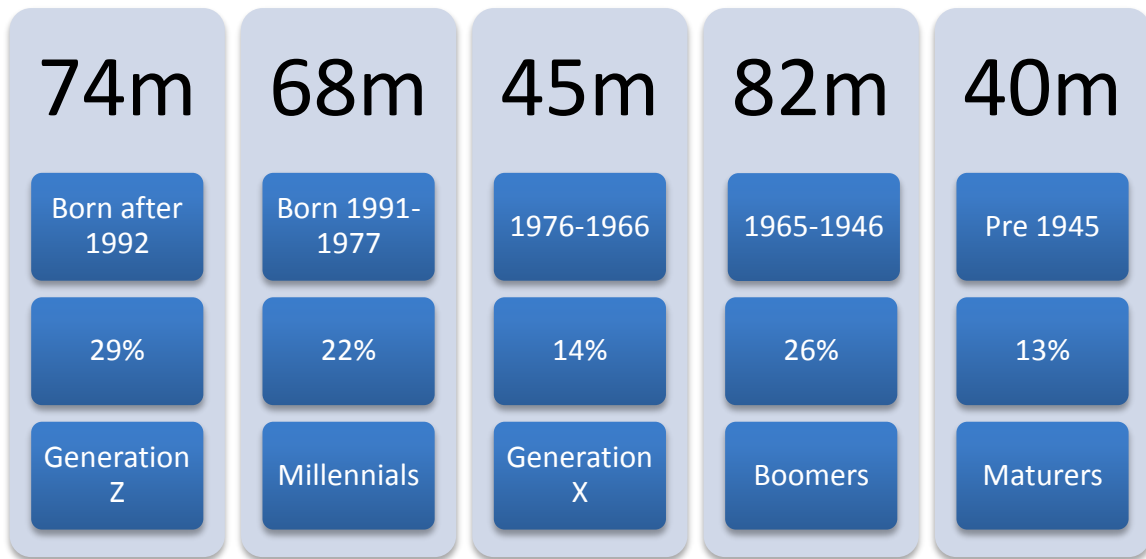
“Consumer trends in Food Service”

One of the most insightful presentations was that from Joe Pawlak, of Technomic: ‘Consumer Trends in Food Service’. The report is an analysis of consumer drivers and industry reactions and it categorised the population to analyse the behaviour of consumers - who is driving and forming new trends? Joe Pawlak said:

Out of the USA population the age range is split as follows:-

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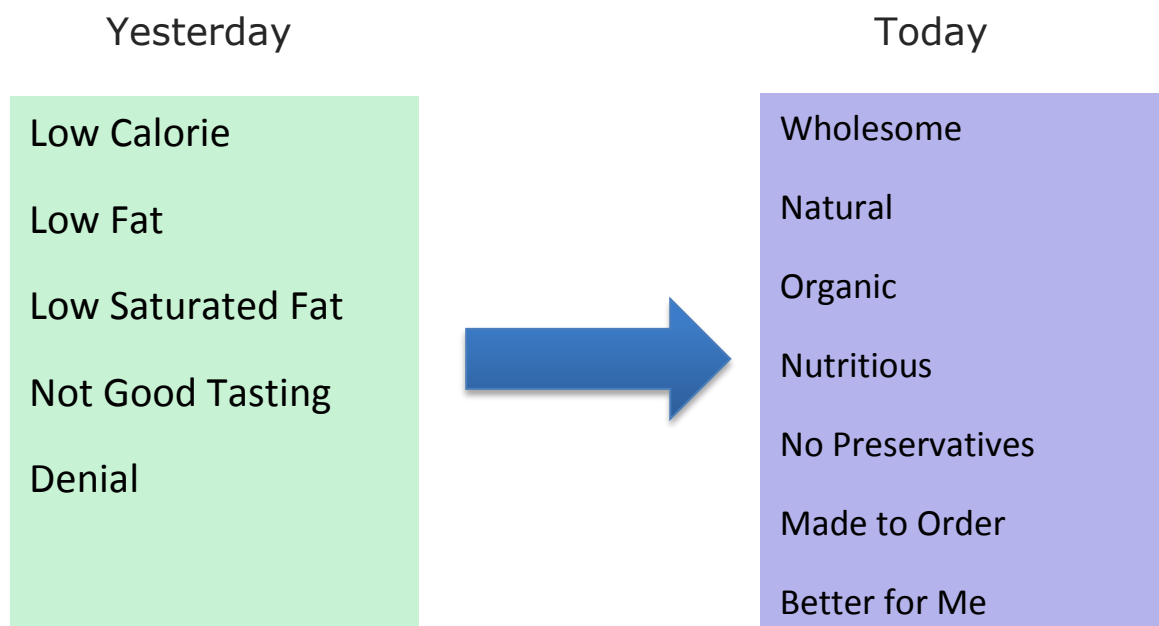


- 33% of Millennials eat out more than once a month and is the highest of the population groups. Millennials drive many of today's trends and are the ones to watch.

Source: 'Consumer Trends in the Food Service Industry' Technomic 6th May 2014

- "Healthy" has become a lifestyle with fruit and veggie smoothies, wheatgrass detox, antioxidant power boost.

The Definition of Healthy Eating has changed





“What you can’t have”

“It’s all about fresh”

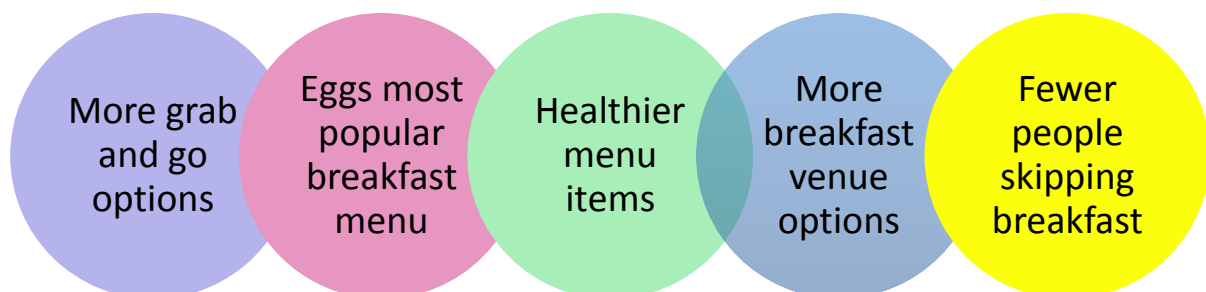
“Fresh” is the new “Healthy”

Source: ‘Consumer Trends in the Food Service Industry’ Technomic 6th May 2014

- Millennials are more likely to embrace new health definitions and are willing to pay more
- 51% would pay more for ‘Fresh’ food
- 45% would pay more for ‘Organic’ food
- 43% would pay more for ‘Natural’ food

Source: ‘Consumer Trends in the Food Service Industry’ Technomic 6th May 2014

Consumers are much more food savvy than ever before. They demand for the new and exciting, adventurous, authenticity critical and a dining experience. “Less time” has contributed to Foodservice Breakfast Growth.



Source: ‘Consumer Trends in the Food Service Industry’ Technomic 6th May 2014

11.d. Pay attention and get involved with industry conferences and meetings!

The future success of the egg processing industry

The future success of the egg processing industry is tied up with innovation and developments in the food industry as a whole.

At a recent lecture at the Royal Institute in Mayfair London the future of food was discussed.

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“The effects of globalisation in the egg processing industry” .. by Sara Gibbins

A Nuffield Farming Scholarships Report .. generously sponsored by The British Egg Marketing Board Research & Education Trust



According to Stylus the future of food is : “**Innovation, Research and Advisory**”. Stylus is an advisory firm that scours the global market to pinpoint the most influential emerging trends for companies such as Saatchi & Saatchi, Bacardi and Hotel Chocolat.

Edible QR codes. Harney Sushi, a restaurant in San Diego, has attempted to tackle the problem that 52% of Californian seafood is supposedly being mislabelled, by devising edible rice paper QR codes. Using smartphones, diners can call up detailed information about the provenance and global stocks of the fish they've ordered.

Smart knives Another Electrolux Design Lab contender is a knife that can check levels of harmful bacteria, pesticides and nutrients such as sugar, vitamins, protein and fat in the food it cuts. It also emits negative ions to help keep the food fresh.

Kale lollies Nothing, it seems, can stop the march of the kale evangelists. Next summer, forget Magnums – it's all about the [kale ice-lolly](#).

Egg-white crisps [IPS](#) (Intelligent Protein Snacks) contain protein, half the fat of regular crisps and fewer carbs, too. No mention of salt levels, though.

Another demonstration of how egg can be used in other products is shown in the advert below:

Los Angeles Times

FOOD

Gluten-Free Chips Made From Egg White and Corn



Fruits and vegetables don't contain gluten. Neither does fish. For people who can't eat gluten, or who choose not to, the problems often arise over processed foods – a booming [gluten-free market](#) these days.

One new L.A.-based product that crossed our desk this week intrigued us: egg white chips. They're called [ips](#) (as in intelligent protein snacks, or the last three letters of chips), and they come in salt and pepper, barbecue, cheddar and cinnamon flavors. The ingredient list is blessedly short, also including flour from corn, rice and tapioca. A one-ounce bag has 130 calories, with 35 of them from fat.

The taste is in the family of other popped-style chips. I can tell you that four bags didn't last long in my house (which includes a teenager). Sean Olson, the founder, says he was inspired by his own kids, who always liked the crispy white edges of the eggs he cooked for them.

... which the packages below illustrate:



But not all new product ideas are confined to the USA. See below the details of a very successful British product launch.

11.e. Two Chicks

Don't discount old product launches that have previously failed. Neither the market nor the consumer may have been ready for it.

However, **Two Chicks** is a pretty new launch and they certainly don't come into the above category. It has been a very interesting company to watch and grow as they head for a £2 million turnover this year. The idea of starting a company to sell liquid egg white in retail in the UK came to Anna (the founder). whilst living in Los Angeles. She was struck by the popularity of egg white in America and was aware that the UK didn't have such a product. On her return to the UK Anna spoke with her friend Alla who really liked the idea and saw that there was a gap in the market.

They came across numerous magazine articles that recommended eating 'skinny' egg white omelettes to stay in shape and which included quotes from celebrities and sports stars advocating eating egg white on a regular basis. In addition, they knew of plenty of people (themselves included) who were separating eggs and would benefit from being able to buy liquid egg white.

They were therefore convinced there would be a market for it in the UK. They set up Anna Alla Ltd to sell Two Chicks free range liquid egg white products. Two Chicks has also just launched an egg white omelette mix flavoured with sun-dried tomato and three-cheese flavour. The products are available in major retailers and other stores across the UK. Two Chicks has also had feedback by many celebrity chefs such as Lloyd Grossman, Nigella Lawson and the rugby player James Haskell.



Two Chicks on sale in major retailers in the UK



11.f. New products in the USA

The USA is the natural home of new product development. The pictures below illustrate some of the latest of these.



Egg wraps



Egg white delight



Egg white flat bread



Special K egg breakfasts

The Nutri Centre Blog dated 27th January, 2014 : “Food and Supplement Trends for 2014”, listed the most prominent food trends with eggs being one of them:

‘Number 5:- People will go back to more traditional foods’.

There are some foods which we have been told (in the past) were unhealthy for us, which we are now realising are an important part of a healthy diet. Some examples are: Eggs.

Thinking has moved on about eggs and we now do not recommend cutting these out. Dr David Perlmutter in his book ‘Grain Bait’ explains: ‘*When researches compare serum cholesterol levels to egg intake, they note over and over again that the levels of cholesterol in those who consume few or no eggs are virtually identical to those in people who consume bountiful numbers of eggs*’.

Trends are continuing to rise in the health sector of the food industry in many areas, including gluten free products. According to the Food Standards Agency, the British gluten-free market is worth £238 million annually and grew by more than 15% last year. Across Europe and the world, the health food market and gluten free products are in demand:

“The effects of globalisation in the egg processing industry” .. by Sara Gibbins

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“Gluten free growth continues to rise. In the USA, 1 in 3 adults are trying to avoid/cut back on gluten. In 2013, more than 7,000 new products labelled gluten-free were introduced to the consumer packaged goods landscape. The global gluten-free products market is projected to exceed \$6.2 billion by 2018. Sixty five per cent of consumers who eat gluten free foods do so because they believe them to be healthier for them. Source. Michael Foods www.michaelfoods.com. The NPD Group, CREST 2013; Datassential Menu Trends 2012; New Items based on Datassential Menu Trends; Dohler, March 2014; Gourmet Retailer, October 2013; RNR Market Research, March 2014 Papetti’s Egg Products made with Bread or Tortillas are not Gluten-Free; Chain Website”. (www.michaelfoods.com)

As previously reported the breakfast trends in the USA are growing at a very fast rate. Taco Bells now serve breakfast and out of 13 items on the breakfast menu, 11 contain egg.

Mintel’s Senior Trends Consultant Richard Cope outlines the four trends set to impact the consumer market in the UK; examining the areas of commercial opportunity for brands – and what consumers will be buying into in 2014.

Number 4 is healthy foods:

“In the coming year we will see consumers moving away from caffeine and further towards functional green vegetable drinks. In late 2014 new EU food and drink labelling legislation (the Food Information Regulation) will extend beyond the current situation, where drinks containing more than 150mg of caffeine per litre (mg/l) are deemed to have ‘high caffeine content’, to ‘require additional caffeine labelling for high-caffeine drinks and foods where caffeine is added for a physiological effect’. This is going to place pressure on the energy drinks brands and in the run-up to this legislation we’re going to see a new wave of competition from natural and vegetable drinks launches.”

According to Mintel’s research, UK consumers would appear very open to the prospect of new ‘healthy’ launches within the energy drinks sector. Indeed, some 38% of UK consumers agree that ‘fruit and vegetable juice blends are healthier for you than pure fruit juice’.

How can egg play its part? Can we add egg as a protein for these new drinks?

“In the coming year we will see consumers moving away from caffeine and further towards functional green vegetable drinks



12.0. Technology and innovation

This chapter is a summary of papers presented on this subject at the International Egg Conference in Madrid, May, 2013, and the Urner Barry Conference in Las Vegas May 2014, plus a description of a visit I made on site to Hampton Creek Foods

12.a. Hampton Creek Foods

Consumers in the past few years want to know more and more about where their food comes from. *What's in it and is it safe to eat?*

Hampton Creek Foods, situated in San Francisco, seems to be doing just that. With the support of investors such as Bill Gates and Li Ka-shing (the wealthiest man in Asia), it's clear that this company has a bright future. Founded by Joshua Tetrick, Hampton Creek started a movement with one question; *"What would the world look like if healthier food were affordable?"* Hampton Creek currently has two products that indeed do taste amazing. Just Mayo and Just Cookies have been made using plants that their teams of scientists screen every week from all around the world. I was invited to do a taste test of their products and being an expert on mayo myself, I was convinced I would tell the difference compared with good quality mayo, as I always do. Not on this occasion. Just Mayo comes in 4 different flavours and was thick, creamy and tasted delicious. Their cookies were incredible too, again without any additives, artificial preservatives and tasted great.

Hampton Creek has screened over 3,255 plants and found one that can allow them to take conventional food products and make them healthier and less expensive. Whilst I was at the visit, the BBC had attended and also did a blind taste test on Yorkshire Pudding Mix, and the conclusion was the same: tasty and delicious. Would consumers prefer to buy this over using just the basic egg? Consumers with allergies to egg products would. With other technology and research taking place with the functionality of egg, the same could be achieved, as long as the desire of egg processors will continue with new product development research. If they don't Hampton Creek could quite easily gain consumer confidence and market share. Hampton Creek secured a financial injection of \$23 million dollars in February led by Hong Kong's Horizons Ventures - a confidence boost to any business.



Hampton Creek 'Just Mayo' containing no egg.



12.b. The future of protein modification and the use of enzymes

Presentation by Fabien De Meester at the IEC Conference, Madrid, May 2013

Protein modification and enzymes enhance the functionality of egg products and their performance in food manufacturing recipes. They also allow the egg to become more stable and predictable in their functionality giving confidence of the performance of the egg in any given recipe.

By using enzymes and protein modification the performance can have added benefits such as cleaning up labels and reducing other ingredients in a recipe making the egg product more commercial in a very competitive environment.

12.c. The role of enzymes in food processing

Presentation by Arhen Sein at the IEC Conference, Madrid, May 2013

The title of the presentation was 'Enzymes to enhance profitability of the egg business,' and Arhen Sein is the Senior Scientist (Food Application), DSM Food Specialities

Enzymes are biocatalysts. Using enzymes, conversions occur that otherwise would not take place. Enzymes exist in nature and as humans ourselves we would not exist without them. The good news on enzymes is that they are classified as a processing aid; therefore a clean label. Enzymes break proteins into small pieces, break down lipids and fatty compounds and cut carbohydrates into smaller sugars. Traditional enzymes in foods would be milk into cheese, must into wine, barley into beer and flour into bread. Enzymes create value, cost effective and create sustainability.

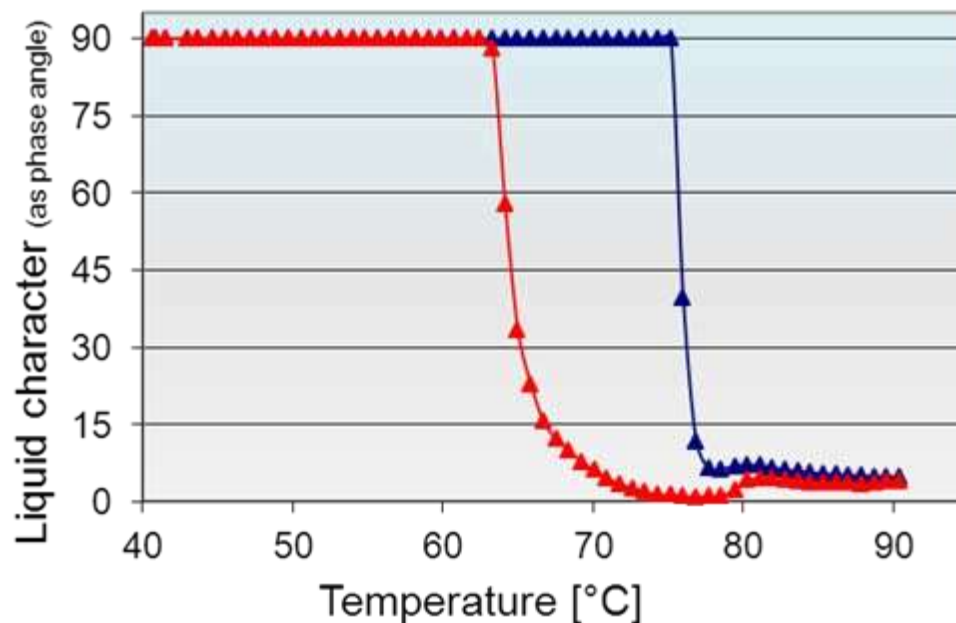
An example of this for egg processing products is added-value yolk for emulsified sauces, mayonnaises, salad dressings etc.; the result being increased firmness of the end product, better heat stability of emulsified sauce and a creamier mouth feel.



*Source: 'The Role of Enzymes in food processing'
by Arhen Sein. Senior Scientist DSM Food Specialities.*



Egg white with enzymes - by being able to increase gelation temperature, this opens the route to liquid pasteurisation.



Source: 'The Role of Enzymes in food processing'
by Arhen Sein. Senior Scientist DSM Food Specialities.

Enzymes and protein modification enhances the profitability of any egg business through:

1. Modification that adds value to the egg processors and the customers
2. Sustainable by reduction in energy, reduction in chemicals and longer shelf life by better processing,
3. More cost efficient processing company.

12.d. The use of Nisin as a preservative in pasteurised liquid egg products

Presentation by Joss Delves-Broughton, Principle Application Specialist, DuPont Health and Nutrition. At the IEC Conference, Madrid, May 2013

Nisin is an antimicrobial protein produced by certain strains of *Lactococcus Lactis* Subsp. It has been used as a food preservative for many years, first being discovered back in the 1920s.

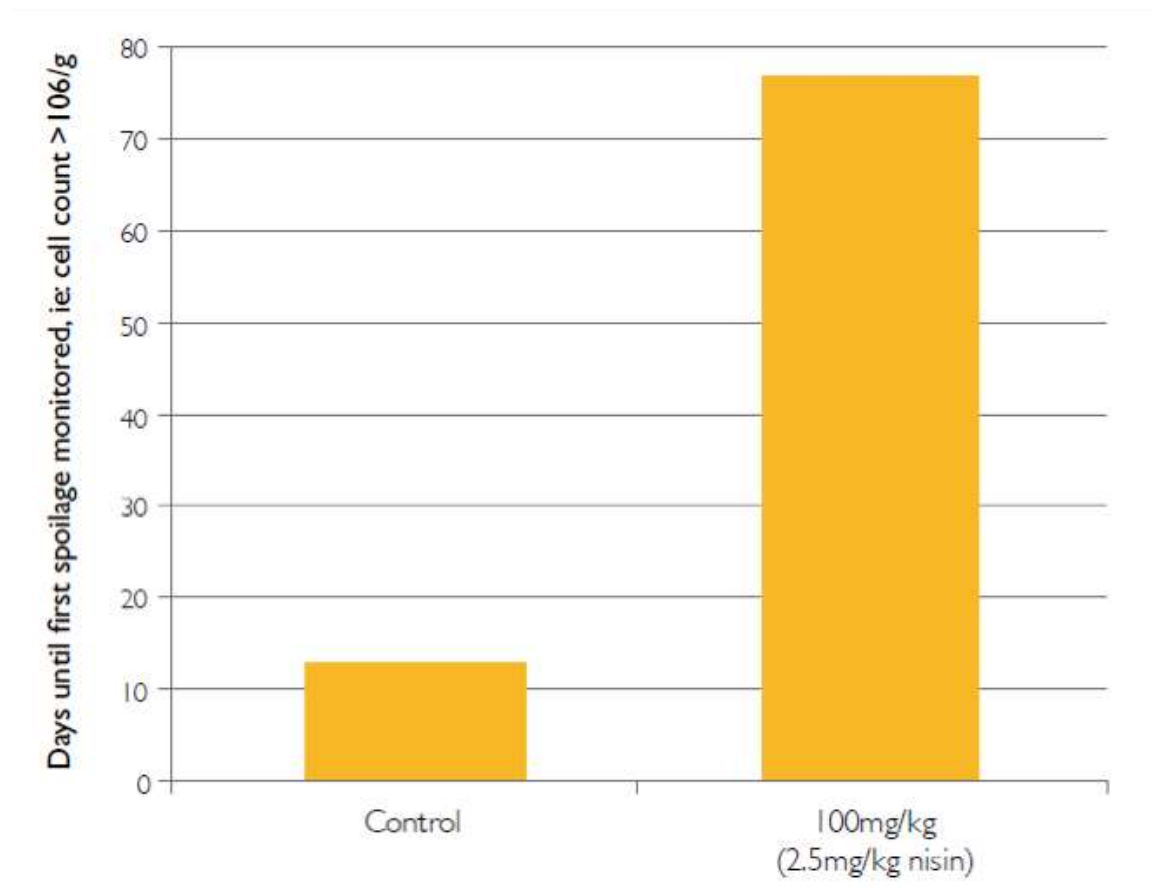
Nisin is a natural antimicrobial agent with activity against a wide variety of undesirable food borne bacteria.

Nisin is a food additive intended to preserve and prevent spoilage and it has the ability to preserve food because of its antimicrobial properties.



Nisin extends the shelf life of the product and prevents the growth of food poisoning spore-forming species, like *bacillus cereus*, which may survive from pasteurisation treatment.

®
Demonstration of Nisaplin efficacy in Liquid Whole Egg



Source: Danisco

With the rising demand of efficiencies adding shelf life to liquid egg, it is a perfect solution for the customer and the egg processors. Further studies are showing that Nisin works better in egg white than in egg yolk, making the product more stable throughout production.

In all these three areas the importance of working with customers to also understand their requirements on the functionality of the egg is highlighted, in order to do further research together to find a solution. This is a demonstration of innovation, communication and how relationships with customers help to move new product innovation from an idea to launch.

In summary, all three of these presentations at the International Egg Commission conference were a demonstration of the new product development and research going into the food industry, and all three papers were about making liquid egg products more functional, more viable and fixing a problem in the egg processing industry.



13.0. Future food manufacturing and retail products

The Food and Drink Federation (FDF) commissioned a report - 'Value of Food and Drink Manufacturing to the UK' - from the Institute of Manufacturing (IfM): what the economic and social impacts on the industry were, and to understand what could be done to improve their impacts on the industry.

During the recent recession food manufacturing was 'the' sector that reduced its output the least and has returned to pre-recession output levels the fastest. How? Through innovation.

There are over 1,500 new products introduced each quarter. This is a mix of product and process innovation and is the core strength of the sector. In particular the UK has become a leading source of new foods with health propositions. In 2007, 36% of new health product launches in the European Union originated in the UK. There is a growing deficit for food and drinks in the UK rising from £2.6 billion in 1995 to £9.9 billion in 2007. This impacts on the UK's ability to increase its food independence and is an ongoing concern in terms of the environmental impact of transporting food great distances.

Professor David Hughes gave a presentation at the **International Egg Commission conference in Vienna**: 'Can egg products exploit the declining red meat consumption in developed countries?' Indeed, yes, the egg industry can and should consider the export opportunities to other countries, such as China, as their demand gets stronger.

Technical experts talk about innovations required to drive the egg products industry forward and how we must improve the marketing of egg in the UK and use social media as a free tool to educate the consumption of egg products; using Instagram/Pinterest/Facebook/Twitter to communicate the message.

"Don't ignore waste, it can threaten your industry" was a conversation I had with **Les Priest** who has worked in the egg and protein industry for many years. Whey protein many years ago was a waste product of cheese manufacturers but whey solids contain 12% very high quality protein and today whey is valued around £1,000 per ton, 5 times its value 25 years ago. In Les Priest's view egg replacers shouldn't be viewed as a threat, but more as an instance of how both industries can work together creating egg enhancers.

Whey protein many years ago was a waste product of cheese manufacturers ... today whey is valued around £1,000 per ton, 5 times its value 25 years ago.

General Mills's Peeyush Maheshwari who works in General Mills's Egg Products Innovation Division gave a great presentation to the IEC Conference held in Madrid. General Mills is one of the largest food companies in the world with net sales of \$16.7million in 2012.

Between January 2010 and December 2011 General Mills recorded more than 800 egg related product launches. Asia accounted for the highest percentage growth but over 50% of the new products were launched in Europe. It is incredible that one company launched 400 new egg related products during this time.

"The effects of globalisation in the egg processing industry" .. by Sara Gibbins
A Nuffield Farming Scholarships Report .. generously sponsored by The British Egg Marketing Board Research & Education Trust



Egg is regarded as a hero ingredient by General Mills. “Egg is very powerful; there are a lot more positives than negatives”, explaining that it is perceived to be the gold standard of protein and other protein sources are measured against it. Egg communicates a clear simple image to consumers; people know what an egg is, it is easy to pitch to consumers.

Peeyush Maheshwari advised that the biggest challenge product developers face today is balancing the needs and wants of consumers with those of business. Consumers want affordable homemade quality food products that taste great and are nutritious.

According to Peeyush, consumers are requiring more from their foods, with different requirements such as diabetic foods, vegetarian and gluten free, all of which are very positive for the egg industry. The recent trend for gluten free diets offers a great opportunity to the egg industry, as consumers look for an alternative to wheat and see eggs as a substitute. Peeyush also pointed out that nutritional benefits are becoming more important to consumers; eggs have great nutritional messages such as a good source of vitamins, high in protein, helping with satiety, memory function, muscle growth, eye health and brain function.

... the egg industry should consider a universal symbol that communicates clearly and simply that a product they are buying contains this hero ingredient, the gold standard of protein.

One point of interest that Peeyush did make: due to the amount of egg replacers on the market the egg industry should consider a universal symbol that communicates clearly and simply that a product they are buying contains this hero ingredient, the gold standard of protein.

From this one conference, with even just this one presentation from Peeyush Maheshwari, much inspiration is given to the future of the UK egg processing industry and indeed just what can be achieved.



14.0. Communication

As communication is part of our business from internal messages to messages with industry, customers and consumers, it is of the utmost importance. I wanted to learn more about it and in fact it could be a Nuffield Farming study all on its own. The Humane Society is an excellent communicator, albeit some may disagree with their point of view, so I was intrigued to find out how they communicate to change people's minds over animal welfare.

I managed to get 30 minutes in Washington to interview CEO Wayne Purcelle of The Humane Society. Being a huge dog lover I was in awe of their dogs but somehow I didn't think my own two golden retrievers would have behaved very well! We talked for around an hour; but not all on

animal welfare but rather on the success of effective communication. Again the message was the same: people. People are the best communicators but most important is getting the right communicator to tell the message. *"You can have a great message but the wrong person to communicate it. You must consider all the many different ways to communicate. In today's world it's far easier to communicate than it was 10 years ago when it had to be through traditional means of newspapers and television. With the internet and social media it's far easier to communicate to a wide audience and all for free".*

there are always three sides to a story: yours, theirs and the truth

People are the best communicators but most important is getting the right communicator to tell the message

Wayne was thrilled about the European 2012 ban on conventional cages and believes that the consumer is more and more interested in the welfare of animals in the food industry. Communication creates awareness. This awareness creates change, a change that benefits all. I believe, in any situation whether professional or personal, there are always three sides to a story: yours, theirs and the truth, as most things are down to personal interpretation.

When asked about the best way to communicate to consumers, there is no "one way." There are hundreds of different ways to communicate and it depends on the issue, the audience and the message as to which strategy to follow. It's great to use television but the budget will need to be huge for this to be a success. Low cost marketing is easy with social media and the internet and there are so many tools now compared with 10 years ago that there is no reason why communication should be difficult. But the right person needs to say the right message through the right tool in order to be successful.

It's easier for the Humane Society as these subjects are emotional and it's far easier to change someone's mind on an emotional subject than on a non-emotional subject such as food; so in that respect it's key that what you communicate and how you communicate is very powerful. Invest in the right people with the right skill to do it.



The key is to understand the customer and the consumer and what influences them to make a buying decision about certain products. Different products will have different buying decisions so it's key to understand them.

I spoke to Mark Buckingham, Corporate Affairs Lead for Monsanto, to get his view on the best way to communicate.

- Make sure you have the right person to communicate.
- Many people think they can communicate when indeed they can't.
- It's important to understand how to communicate, what you want to communicate, does it work and does it target their audience you want to target?
- Communicating to industry is far different than communicating to a consumer.
- Communication to government is different to NGOs and pressure groups.
- Get an incredible spokesperson for each part of your strategy.
- It's also key to understand the rapidity of communication, today it's instant and if something goes wrong you need to be able to respond in an appropriate manner.
- Communication is everything. It's your reputation, it's your business, and it's who you are.

In a future where food needs to deliver more, we must be able to communicate about it: more nutrition, more functional foods and foods that have a desire to be eaten, more tasty food. Believe it or not, not many people will change their habits to eat healthier food. It's just not too appealing to 'eat healthy'. So how can we produce foods that are appealing that will deliver a healthier and a more nutritional product?: Health by Stealth.

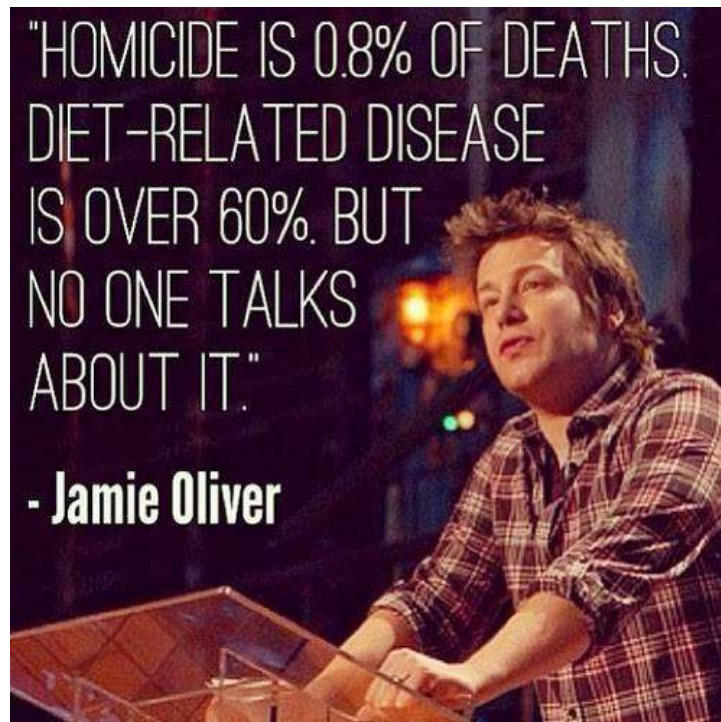
So, for the growing population as we head towards 2050 it's not just about more food, it's more and more about nutrition. Even more frightening, by 2050 it's predicted that we will need 35% more food to feed the growing population because we are also putting far too much on our plate. This means we will need 60% more food not 35%. Said differently, 9 billion people will eat for 12 billion people.

The additional consequence of this is illness. Diabetes is growing extremely fast; in China it's more frightening as 50% of the adult Chinese are pre diabetic. The whole world needs to look at what it's eating and how they are becoming sick.

UK consumers are starting to follow USA trends. Consumers are becoming more health conscious. They want to know more about their food. People are starting to talk about diet-related disease.

Eggs and egg products are a healthy food. Eggs can create egg products that can produce many different food products, delivering all the nutrition the body needs. We can produce healthy nutritious foods, with an egg.

We also need to recognise that customers and consumers are different. Customers buy the product and consumers eat it. Marketing a product is critical but it's also crucial to understand how to communicate your products to the right person. To get your products right, it has to look right and taste right that will result in the dream outcome, repeat purchases and loyal customers and consumers.



Soon the purchase of foods will change dramatically; soon the retailer will know everything about you: your medical history, your eating habits and those all-too-often indulgent items. The retailer will then market and promote to you the exact products you need, rather than just want. If you have heart disease, you'll be able to filter out foods that are beneficial for heart disease or foods that are suitable for a diabetic. Food companies will be able to target food personally for you.

Amazon in the USA has launched Amazon Fresh, an incredible website that promotes their online food store as 'fresh' with no mention of food. The food is so fresh some of the fresh produce is shown without its packaging. In fact there is now a supermarket that sells its food with no packaging whatsoever.

"The fabulous blueberry has never been marketed by the industry as a super food and you'll never see these words on the packaging, but through clever marketing and media attention on the blueberry, the assumption is that it is. This market in the UK has gone from £0.5m to £170 million from 2003 to 2013. Consumption has gone from 6% to 34%. This berry has been around for many years but the way the media talk about it, grew its popularity". Source: The Frank Arden Conference, David Northcroft.

All the above are examples of different ways to communicate, market, influence and ultimately sell food products whether directly or indirectly.

Communication is key to innovation and technology, and this is key to the success and growth of any business.



15.0. Conclusions

1. The egg industry and the egg processing industry have a very, very bright future. It is clear that the egg industry has many different sectors to which to offer products. Health foods are on the rise, food service products are growing and the convenience markets are also in demand for more innovation and new product development.
2. Technology is under-used in the UK whilst many countries around the globe benefit from the results on offer.
3. From healthy foods, medical products, nutritional products to even being part of packaging and electronic devices; there is so much potential to grow the industry and the consumption of egg and egg products.
4. Communication is a skill that must be mastered. Communication is a subject on its own. It covers every aspect
5. Think differently - throughout this study trip I have been advised that you have to give the consumer what they want. I tend to also think like Sony and Virgin; give the consumer something that they don't even know they needed or wanted - but you have to put the resource behind it to market it and sell it.
6. Consider niche markets, guide the consumer to eat more healthily, to make better choices and to change their behaviour.
7. How can you create change in an industry when you're trying to change the buying habits of a population? The only way is through collaboration, through communication and through innovation.
8. This is the future. It's our industry. It's your business, shape it or someone else will.
9. Who has the power? Who shapes the market? Is it the consumer? The retailer? The food manufacturer? The pressure groups and even the media? It's all of us.
10. UK retailers report that working together provides growth, success and support for each business through each level of the supply chain, but businesses in the supply chain must have a desire to do this and sadly many don't.



16.0. Recommendations

1. To successfully market new products and new ideas you must also understand the directions in which societies are moving. Recognising consumer attitudes will help to implement marketing campaigns and your messages to the consumer. A product doesn't sell itself; people need to know it exists. The British egg processors must market and sell their products; be the best communicator about your business.
2. Consider the use of enzymes; the product is more functional, more stable and gives great flexibility in food manufacturer's recipes.
3. Sir Terry Leahy spoke at the IEC conference in London and he gave an excellent guide on the culture of good business growth. The most reliable guide is your customer; listen to them and they'll tell you what's good and what's not and if you keep listening they'll give you a strategy for growth. For the egg processing industry you must not only listen to your customer but to the consumer too. According to Sir Terry Leahy the key drivers for growth are Trust, Information, Health and Beauty, Convenience, Simplicity, Loyalty and Going Green.
4. The only thing we can guarantee in business and, in fact, in life is that change is certain. You can either create change, be changed or be left behind.
5. **To the egg processors** – build stronger relationships throughout the supply chain towards a long future together. Learn about your customers and the consumer trends. Develop new products in line with the changing trends and help and support your customers when they launch their new products.
6. **To the egg producer** – align yourselves with egg processors and build strong relationships, trade differently, think differently.
7. **To the industry** – be proud and communicate to your customers and your consumers. There is so much that the egg has to offer. Think differently; instead of thinking how we can sell more egg white and what will we do with yolk, why not ask how can we extract the fat out of whole egg instead of selling albumen? Why not market the fact that it's the yolk that has all the nutrition, so there is no need to remove the yolk from a health point of view.

A quote from BNL Ltd : 'Egg is life! It is the only product you can buy, already wrapped in its shell, that contains all the ingredients to create life.'



17.0. After my study tour

It is clear that a Nuffield Farming Scholarship is just the beginning. My study has opened up many areas of further research needed in order to keep the industry moving forward and I've only just scratched the surface.

I have enjoyed doing the research and will continue to do more.

More research needs to be done, but research is no good without actions to implement. Here is an ideal target list.

- 1) Research new food products for the breakfast market that contain egg.
- 2) Identify new trends that align with egg for the future?
- 3) Transforming egg into new innovative ingredients for clinical research, electronic devices, packaging technologies and many more.
- 4) Extraction and refining egg proteins and lipids for use in other pharmaceutical and Biotech applications.
- 5) Extract oil that heals skin five times faster than standard lotions when faced with treating burns. This is being researched at a hospital in London.
- 6) Mental health – research is developing a drug for people with anxiety and depression, that contains extracts of egg, and which has proven to give the same results as conventional medicine but with no side effects. Over 350 million people across the globe suffer from depression. Huge opportunities.

Sara Gibbins



18.0. Executive Summary

The food industry changes very quickly. The egg industry changes even faster and over the past 20 years there have been many dynamic changes, not only with customers' needs, but market dynamics, technological advances and EU Directives which have all dramatically affected the UK egg processing industry. The number of egg processors in the UK has shrunk as the markets become more competitive. European competitors are getting stronger, global trends are changing and if this continues the UK egg processing sector will be in further decline. This was the drive to undertake a Nuffield Farming Scholarship; to research these areas further and find some solutions.

The purpose of my study is to find out what we should be doing next, not to just sustain and protect our industry but to grow the egg processing industry. If the egg processing industry in the UK grows, this can only help support and grow the shell egg industry so both will benefit.

There are success stories around the world in egg processing, with huge markets. So my study took me to those markets and businesses to learn the skills. We can build on this knowledge and by bringing it to action it will mean security and growth for many sectors of our industry for the egg producer, egg packer, egg processor, food manufacturer, retailer and of course for the consumer.

America and Canada have the best success stories in marketing, new innovation, adding value and growing their egg products market. The rest of my tour was to visit countries that were hosting various conferences - in order to hear speakers from around the world discuss the various solutions to the issues faced by our industry. There are so many ideas for solutions to help grow the egg processing industry. The world changes at a fast rate and, as changes occur around the world, it can impact upon our own industries here in the UK, as demonstrated from my tour. It's so important to keep on top of changing trends and developments in global markets and not just our own domestic markets, in order to stay ahead and be pro-active to protect our industry, our business and indeed ourselves.

Thinking differently is the solution. Innovate, add value and - most importantly - communicate. Focus on the customer and their needs; and the needs of the consumer are key. Find solutions to their problems and that will find solutions to your own. Take time to step back and look at how other industries away from the food industry can benefit from egg products. There are other industries that can benefit from eggs and their functionality; think differently.





19.0. Appendix A

European Egg Processors

Austria – Amering, Falzberger, Pro-Ovo (owned by Weko) and Hessel Eier make products for local markets. Ovoport is the most important producer of powdered egg products. Imports from outside the EU mainly from India and South America.

Belgium – The production of eggs and egg products has fallen significantly. Belovo decided to halted egg breaking in Belgium and transferred production outside the EU to China, India and South America and concentrates its activities on the production of fine chemicals extracted from egg whites and yolk. Anseeuw, Hulstaert, LEC and Lodewijckx.

Bulgaria – Has no commercial egg processing facilities.

Czech Republic – Framagro has two plants; one in Jicin and one in Prerov which is a joint venture with the French Group, Glon.

Denmark – Major player being the Sanovo Group which has it's own trading company that exports to Japan and the Far East. Sanovo has plants in Denmark, Germany, Spain, Czech Republic and the Far East. Danegg Ltd has its main interest in shell egg but is also a main shareholder of Swedens Kronägg. The production of Honum Ltd has been transferred to Hedegaard.

Finland has two main egg processors; Scanegg Suomi OY and Farmimuna OY a vertically integrated family run business.

France - egg products output has shown continuous growth and accounts for 25% of the EU market. There are more than 60 plants listed as egg processors but around 30 are active. Igreca is the biggest and most important processor of powder products in France. The Glon Group own Trois Vallées, Lacam, Ovoland and Ponte-Inovo. Liot plant is owned by Italian's Eurovo who already own Ovonor and Caradec Group. ABCD, PEP has increased its capacity recently and Geslin continued with its modernisation and expansion programme to become the second largest producer in France. Ferme du Prè has expanded capacity and is specialised in ESL products, boiled and poached eggs. Samo has increased production and is now owned by Carrier. Other independent egg processors have also increased their capacity; Agrodoubs, Atlantic Ovo, Blanchard, Epi Bretagne, Lorandel, Soc.Normande 'Ovoproduits, Ovoservice and Socovo. Valoroef is a specialist in spray-drying technical egg products.

Germany – The leading egg processor here is Ovobest followed by Eipro and Juchem. Sanovo remains active in the production facility in Zeven but has sold its interest in Rex Emsland to Ovobest. Over manufacturers is Bonner egg products Cewo, Ei-Quick Eisa, Ehlego and Rädler.

Greece – Sovimo-Hellas, which is owned by, egg producers and trades, which have added, cooked and peeled eggs and omelettes to its production.

Hungary – Egg production has fallen by more than 50% since 2000 and only medium-sized egg processors such as Capriovus, Babolna and Pasteur are operational to serve local markets. Gyermelyi, an important noodle factory has its own modern egg processing plant.



Ireland – Ready Egg produces ESL liquid egg products and cooked and peeled eggs and dominates supply in Ireland. There are smaller operators in Ireland such as Glenshane and Andrews.

Italy – Italian egg products represent around 40% of the total consumption of eggs. Italy is a large consumer of egg yolk, much of which is imported, while it exports egg white in liquid and powdered form. Eurovo is the largest egg processor. New farms with in-line breaking have been added and the production of egg powders increased. Monaldi has acquired Uovador and together with its production facilities in Albania and Romania, it has become the second biggest in Italy. AIA has further modernised its production, while Parmovo has added drying facilities. GF Ovodry is specialised in spray-drying without having breaking facilities. Other operators include Cascina, Italia, Ferraris and Novelli.

Latvia – Balticovo, a key processor with 1.5 million layers for liquid and powder facilities.

Lithuania – Vievio EMT is the number one products manufacturer.

Netherlands – A major producer and trader of egg products with 20 registered plants. Weko Group has become one of the most important egg processors in Europe. Along with several acquisitions in the Netherlands, Weko also owns a processing facility in Austria (Pro-Ovo), a factory in Poland (Weko-Polska) and Nive plant with its trading companies in Germany and Spain. Adriaan Goede BV has increased capacity for powder products and has also acquired Bouwhuis. Frisian Egg Products has completed a new plant and established a joint venture for egg products manufacturing in Egypt. Lemmers and Jacobs have merged and entered into a co-operation with EPO. Wulro are still a strong processors and there are several other smaller processors supply local markets.

Norway – 17% of its egg output is for egg processing. The biggest manufacturer is Prior which having modernised its plant has changed its name to Nortura. There is also a smaller player called Ek Gårdspakkeri AS.

Poland – Ovopol is the most important manufacturer. Ovoir has added an egg products line to its egg farms. Other EU processor that have invested in plants in Poland include Wako (Netherlands) and Eurovo (Italy)

Portugal – Derivados de Ovos is the only egg products manufacturer and has managed considerable growth mainly through exports to Spain. 50% of its output is exported.

Romania – Egg processing is only in a small scale with only two companies processing egg products. Avicola Buftea and Agricola International Baca. Monaldi (Italy) owns the largest egg farm and has recently added a processing facility.

Spain – The industry has grown rapidly. Pascal, the leader has added a line for Spanish Omelettes(Torilla). Induovo closed down. Dervo Hibramer a leading egg producer has built an egg processing facility. Other processors include, ACE, Procasa, Nutme, Ovossec and Copain have increased their capacity.

Sweden – Has two processors; Källberg (owned by Denmark's Danegg) which specialises in dried items and Svenska Lantägg is oriented towards liquid.



Switzerland – Is an important buyer of eggs and egg products from the EU. 39% of all total egg consumption is for egg products of which 95% is imported. There are several smaller processors and the biggest is Luchinger and Schmidt. Second is Eier Hungerbühler.

See Appendix B – History of British Egg Processors – on following page.



20.0. Appendix B – History of British Egg Processors

Including a list of current egg processing companies

When I joined the egg industry Clive Frampton of Frampton's Ltd was very supportive to me and I'd like to acknowledge this and pay tribute to all his achievements at Framptons. It demonstrates a business that diversifies with global trends and when markets dictate. This excerpt is taken from the book 'From bacon to eggs' by Leonard Ware. This story about Framptons also gives a detailed account of the historic events which formed the egg processing industry today.

"Framptons, a long-established egg and products business was set up by Henry James Frampton and George Cranfield Frampton in 1898, initially trading eggs from local farmers to markets and local shops. George Frampton had 5 children and qualified as a chartered accountant. He moved to Africa where he had several financial roles and ran a number of businesses. Upon his return to the UK in 1953 with his two sons Paul and Clive, he joined the egg business and soon developed an interest in egg processing.

"In 1956 the government formed the British Egg Marketing Board in order to help stabilise the market due to a huge collapse in sales. The board purchased all egg produced and graded them to a national standard and sold them to shops and other users. This meant the egg producer got paid according to the quality of their eggs, less a levy for administration and advertising. The board then sent any surplus to approved processors who converted these eggs into egg products. This helped to control the market and stabilised the market until 1971 when the board was closed.

"As the UK food manufacturing industry grew, so did the demand for eggs in recipes. This growth in the use of egg as an ingredient highlighted the potential for food poisoning. I

"In 1963 new laws were introduced requiring all egg products to be pasteurised to protect the consumer from food poisoning. The introduction of the Liquid Egg (Pasteurising) Regulations 1963 was to ensure that food products used egg with very low bacterial counts and no pathogens. Norman Frampton could see the demand for egg products rising and, after securing an empty old Co-op bacon factory and a contract with the British Egg Marketing Board to provide a service in the south west of England, Framptons (Shepton) Ltd. was established. The BEMB was closed down in 1971 but Framptons continued to supply egg products, buying shell egg that was not required in retail or wholesale markets.

"In the 1970s two major events happened, 1) the closure of the British Egg Marketing Board due to pressure from egg producers that the industry should be allowed to market itself and 2) the entry of the UK into the European Economic Community. The demise of the BEMB meant that Framptons could no longer rely on revenue from the Board and so started to buy egg from other producers in the industry, breaking and processing those eggs and selling them to high street bakers and food manufacturers. As the UK worked towards entry into the EEC Norman Frampton saw an opportunity to move eggs between France and the UK. Along with a new ferry route between Roscoff and Plymouth, Framptons France SA was formed with an office in Roscoff. Eggs became in short supply in the UK and in the early



1970s so many eggs were imported from France that (UK producer) protestors gathered at Plymouth and even the trucks required police escorts.

“To encourage producers to send Framptons larger eggs for breaking, Framptons introduced a system whereby they bought by the weight rather than by the dozen and it wasn’t before long that other egg processors followed. During the 1970s and 1980s any egg from the farmer that was soiled, cracked or misshapen shells were sold to the egg processing industry; these eggs account for around 10% for all eggs laid by the bird and otherwise known as ‘seconds’. In the 1980s Framptons egg processing moved into egg powders with the installation of two second-hand driers, one for whole egg and yolk and the other for egg white. Egg powder has always been popular in the food industry due to its long shelf life, in excess of a year, compared to liquid whole egg of less than a week. Today though, due to the advances in technology, the shelf life of liquid egg products can be extended naturally to 28 days and further if additives are used, such as salt and sugar. From 1981 to 2004 Framptons were the only UK producer of egg powders but this ended due to cheaper imports from South America and India, which made it uneconomic to continue.

“In 1986 Clive Frampton was awarded a Nuffield Farming Scholarship to study egg products in the USA. One clear message that Clive brought home was that the food service industry, due to its growth, was moving from shell egg to liquid egg. Upon his return to the UK Clive purchased a carton filler and launched a new product in a 2-litre carton, called Easy Eggs. Another idea Clive brought home was to have the egg broken at the laying site and Framptons soon formed a relationship with the Griffiths family in Shropshire on this basis. In 2007 Framptons stopped breaking eggs and all their supply was broken out on farm and delivered by tanker to Framptons where the egg was pasteurised, filled into its relevant packaging and delivered to the consumer. Sadly the industry lost Clive Frampton when he passed away in 2012 from a sudden illness. Framptons continues today under Ian Harvey, cousin of Clive Frampton.”

SZ Wick & Co - Founded in 1950, bought by Croda in 1970’s. Croda decided to exit and closed the factories in 1990s and assets bought by HD Hardies.

Freshgold - Founded c.1974 in Heywood and was eventually sold to Daylay in 1989 and closed in 1993.

Freshfayre Products (previously known as Freshgold Foods South Wales) was set up in the late 1970’s. After various owners was eventually bought by Jerry Tuffs and subsequently closed.

N Reich Ltd - Founded in the 1960s bought by Hillsdown Holdings early 1980’s and moved to a purpose-built plant in Bilsthorpe. In c.1990 the name was changed to Daylay Foods Limited. Hillsdown also acquired Freshgold Foods Heywood (1988) and Springfield Egg Products (1990). Daylay was sold by Hillsdown in 1998 to Hicks, Muse, Tate and Furst, then bought by Deans Foods in 2000 and merged with Dell Foods and HD Hardie to form a new Egg Products Division of Deans.



In 2007, a merger of **Deans and Stonegate** was halted by the Competition Commission at that point Deans re-named themselves **Noble Foods** whilst Stonegate retained the same name. In January 2014 Noble Foods acquired Manton.

John Rannoch - Operated from Haughley Park in Suffolk. Also processed chicken, mainly for M&S. Withdrew from egg processing in late 1980s.

HD Hardie - Emerged from Hardie, Summers and Foucard and was involved in distribution of bakers sundries as well as egg products. The Edinburgh factory business was bought by Deans in 1998 and closed in early 2010.

South Western Egg Products - Based in Taunton. Originally a co-operative, was bought by Thames Valley in early 1990s. Thames Valley and Stonegate Ltd merged.

Fridays - originally liquid but later exited to concentrate on boiled only

Griffiths/Oakland – on-farm breaking supplying pasteurised egg to other egg processors to be filled and packed for the market.

Lowrie – a long established family business focusing on local trade in north-east since the 1950's.

D Wise – another family business that diversified from breeding into egg products.

Bumble Hole – diversified from shell egg production to products. Further expansion with a new facility being built.

Goldrei Foucard / Northern Foods – traded later as Dale Farm prior to sale to Stonegate. Stonegate closed the breaking facility in Rotherham in 2004 and outsourced all their breaking requirement.

Stonegate Ltd sold the liquid processing business to Manton in 2009.

Wickenhall Foods / Boyds Creameries/ Foodvia – Small Manchester processing businesses

Manton – developed from an egg processor who traded egg to other processors to going direct to market in 1980, bought by Noble Foods in 2014.

Dell Foods – Set up by Sanovo and Thames Valley in late 1980s. Bought by Deans in 1988.

Based in Northern Ireland, Quality Egg Products was purchased by Charles Crawford and in 2007 Ready Egg Products was established forming a joint venture between Erne Eggs, Irish Egg Products and Greenfield Foods. Charles has invested in capacity by opening a new production facility in England.

2014

Noble Egg Innovations - Re-launched under new ownership in 2007, Noble Foods is the leading egg and egg products marketing company in the UK. Noble Foods are the progressive face of the UK Egg Industry committed to high quality production, packing and supply of shell egg and egg products. It is renowned for exemplary standards of quality, service, innovation and is totally committed to meeting the needs of all customers. Noble has recently acquired Manton



Bumble Hole Foods - Bumble Hole Foods Ltd a family lead company. With are a team of professionals dedicated to the manufacture of high quality egg products. As a large local employer we continually focus on the welfare and development of our employees and community **responsibility. Bumble Hole Foods has recently increased their capacity.**

Ready Egg Products - After large and continuing investment in plant and machinery, Ready Egg Products has the most up to date and efficient egg processing unit in the British Isles, based in Ireland. This includes the opening in June 2010 of our Hard Boiled Egg plant, the most modern in **Europe and more recently increased capacity with a second plant in England**

Framptons - Based in Somerset and with a history of over 100 years in the Egg industry, Framptons are one of the largest, family run suppliers of Innovative Egg Products in the United Kingdom.

Wise - D. Wise Ltd is a family run business with a long history in the poultry industry, to date spanning over 3 generations. Based in Cheshire, we supply and manufacture a range of pasteurised egg products (including free range and organic) from our BRC (Grade A) approved factory.

Lowrie Foods Ltd produces high quality pasteurised liquid egg products, to serve customers throughout the North of England. We pride ourselves on consistently excellent products, and hold BRC grade A accreditation. We provide an utterly reliable delivery service and are trusted by big companies and small through the North for all of their egg needs.

Fridays - Fridays Ltd is a leading food producer in the South East of England. The business is focused on producing fresh eggs, boiled eggs, egg mayonnaise and other sandwich fillings for retailers, foodservice companies and manufacturers. With over 50 years in the egg industry Fridays is well placed to supply high quality product with a focus on technical assurance.

Just Egg - Established in 2003, Just Egg (Chilled Foods) Ltd is a premier manufacturer of Hard Boiled Eggs and Egg Mayonnaise. An investment of nearly £750,000 enabled Just Egg to build one of the most modern boiling and manufacturing facility in the UK. The factory has been built to the highest standards and meeting all the technical requirements of the retail and food service sectors. Just Egg commenced trading in June 2003 and shortly after attained EFSIS higher level accreditation. Just Egg was the first company to install state-of-the-art boiling and peeling equipment of a new design from Europe and first to pack eggs in pouches within cardboard trays.

Oaklands Foods Ltd - Family farming based business which now ranks amongst Europe's elite. It remains just as passionate about producing healthy birds, nutritious quality eggs and egg products, as the day it started in 1967 with first generation farmers Aled and Olwen Griffiths. Now managed by sons Gareth and Elwyn who continue to reach new levels of excellence for products, welfare and food safety.

Fresh-Pak – A major Chilled Foods company that is the UKs largest dedicated manufacturer of fresh sandwich fillers. We operate from a state-of-the-art, well invested factory in Barnsley, South Yorkshire. We employ over 450 well trained people and pride ourselves on having absolute focus on producing the highest quality products, designed and developed by a highly skilled team of chefs and technologists. Fresh-Pak's success is built on a 20 year history of specialist food manufacturing experience. Our core skills include the production of hard boiled eggs at 30,000 eggs per hour and production of some 80 tonnes of mayonnaise per week.



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