

A Nuffield Farming Scholarships Trust Report

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2050: The Challenges and Opportunities to the UK Broiler Industry

Patrick Hook

July 2016

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A Nuffield (UK) Farming Scholarships Trust Report



Date of report: July 2016

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

Title	2050: The challenges and opportunities to the UK broiler industry		
Scholar	Patrick Hook		
Sponsor	Central Region Farmers Trust		
Objectives of Study Tour	 The role and influence of broiler genetics in the future Understand new and innovative farming systems Recruitment and retention strategies for new entrants Current and future retailer and consumer perceptions on chicken Avian Influenza and the role of biosecurity 		
Countries Visited	New Zealand, Holland, Hungary, USA and Australia		
Messages	 Genetics will continue to have a crucial role in the success of the UK broiler industry Increased pressure to remove antibiotics from the supply chain The industry must invest in human capital for the future Avian Influenza is and will continue to be a global threat The power and influence of welfare groups must not be underestimated Innovation in farming systems will be welfare and consumer driven and the industry must continue to embrace it The chick is spending a greater percentage of its life in the hatchery and the management of this process pre and post hatch is paramount 		

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DISCLAIMER

The opinions expressed in this report are my own and not necessarily those of the Nuffield Farming Scholarships Trust, or of my sponsor The Central Regions Farmers Trust, or of any other sponsoring body.

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Chapter 1: Introduction

I live in West Oxfordshire, with my wife Grace and son Joseph and I am a third generation member of the farming family business. Oxfordshire is where my grandparents started hatching day old broiler chicks nearly 60 years ago. P.D. Hook (Group) Ltd now has rearing, breeding, hatching and growing operations across the UK, supplying major retailers and external customers. In addition we have a farming partnership incorporating a mixed arable, beef and sheep enterprise.

I grew up on the family farm and had a keen interest in poultry from a young age, working on the breeder farms and hatchery, packing eggs and grading chicks.

I completed a First Class Honours degree in Business Management at Aberystwyth University in 2008 and I have been directly involved in the family business for the last eight years and currently sit on the board of directors. My main responsibilities are organising the production and planning of broiler chick placements and visiting farms and hatcheries on a weekly basis to ensure they are conforming to required industry, retail and company standards.

Outside work I am an active member of the National Federation of Young Farmers' Clubs, holding the position of County Chairman of Oxfordshire in 2011. In my spare time I take part in game and clay shooting and I enjoy going to local and international rugby games.

I would like to thank the Central Region Farmers Trust for their generous sponsorship and support for my Nuffield Farming Scholarship.



Figure 1: The author, Patrick Hook



Chapter 2: Background to my study subject

2050 has been marked as a key year in terms of producing more from less, and an increasing global population of 9 billion people. This will have a direct impact on the UK broiler industry and there will be challenges and opportunities to meet this demand.

New farms, hatcheries and investment across the supply chain will be needed to meet this demand. However, at the same time genetic improvement will mean improved growth rate, yield, mortality and FCR¹, which will reduce the growing period: meaning chickens in the future could be grown to 2.0kg in 25 days. The challenge will be to educate consumers and opening the doors to showcase the high standards that chickens are grown to on UK Farms.

The UK industry is currently short of skilled people and there is a risk of the skills gap widening and positions becoming more difficult to fill. Investment in people will be needed and promotion from within the industry will happen, but more importantly the industry must attract new entrants. The industry does not currently tackle grass roots levels, such as schools, to educate younger people about the prospects in the industry. In addition, the role of managing farms is growing, with the job encompassing more than just 'growing chickens' and more about managing people, biosecurity, welfare, health and safety, auditing and customer standards.

New technologies are emerging that will challenge the traditional method of producing chicken, all with their benefits and challenges: it could be these systems that customers will want to adopt to gain a point of difference and potentially improve performance, quality and welfare. The UK must be proactive in its approach to ensure customers and consumers are educated about the benefits and challenges of current and future systems.

Antibiotic reduction is and will become an increasing pressure as the industry grows. Proactive initiatives at an industry level, combined with marketing and education, is the key to ensure the poultry industry stays and is at the front foot of Antibiotic Reduction strategies.

The greatest challenge posing a global threat to the poultry industry is Avian Influenza (AI). This is the single biggest risk that could wipe out an entire industry. With industries growing in all countries and future projections of more growth, the risk of exposure to AI across the globe further increases. Biosecurity is and will be paramount to reduce the threat of AI and there must be mechanisms within the UK to ensure that consideration is given to the location of new builds in terms of their proximity to water courses and other poultry sites.

¹ Food Conversion Rate

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Chapter 3: My study tour

New Zealand – March and April 2015

New Zealand champions some of the best technical performance in the world and I wanted to understand what farming systems were being used to achieve this. Furthermore, the huge growth in the dairy sector has put pressures on recruiting people in other agricultural industries and I wanted to understand what strategies the industry was undertaking to recruit and retain people. In addition, New Zealand is free from many diseases and has a strict biosecurity policy and it was of importance to understand how the industry structured itself to get this clean status.

Hungary – July 2015

Hungary is seeing chicken production increase across the country and major UK retailers are sourcing from this country. There are many misconceptions about poor standards in Europe and there is a real threat to the UK industry in terms of producing chicken to the consistently high standards at lower costs. I wanted to see the investment in the supply chain and how companies were adapting and adhering to retail standards.

Holland – June and October 2015

Holland has always been a driver in innovation in the global poultry industry and has limited space in a country with a growing industry. New technologies have consequently emerged, with disruptive innovation that will challenge the traditional concept of producing and growing chicken. Furthermore, welfare groups have had a profound effect in changing the chicken on the shelf and it is important to understand the importance of the structural changes the industry has faced as a result of these pressures.

USA – September 2015

The USA saw a major outbreak of Avian Influenza between 2014 and 2015 and it severely impacted the industry, with 50 million birds being slaughtered. I wanted to understand how the USA had reacted to the outbreak and what new strategies were being adopted to tackle and prevent future outbreaks. There are huge pressures on antibiotic reduction in the supply chain and I wanted to see how companies had adapted and what schemes have been adopted as a result. The USA has a global reputation of successful university poultry courses. I visited several universities to see how they were recruiting and structuring courses to benefit students and the industry.

Australia – February to March 2016

Australia has extremely strict biosecurity controls, preventing movement of higher generation parent stock in and out of the country. I wanted to understand how this helped and potentially impacted companies and the supply chain. Furthermore, through the influence of the RSPCA, there have been major changes to the standards of growing broilers in Australia, and I wanted to see how companies had adapted and invested to meet these changes.

I have analysed my findings under the following chapter headings:

Chapter 4: People and succession planning Chapter 6: Biosecurity and disease Chapter 8: Broiler genetics Chapter 5: Farming systems and innovation Chapter 7: Retailers and consumers



Chapter 4: People and succession planning

4.1 Universities

4.1.1: Mississippi State University

The USA has a global reputation for Poultry Science courses across 6 universities; with courses for both undergraduates and postgraduates. Demand for courses is on the increase, where students see Poultry Science and related courses as an avenue for a career in the poultry industry. During a visit to Mississippi State University, Morgan Farnell, a senior poultry lecturer, showed the investment that had been undertaken in the Poultry Science Department. The Department had excellent facilities, with labs that were testing feed, e coli, salmonella, campylobacter, incubation, and fertility and the labs were used for research for students and the poultry industry. There were approximately 100 students taking poultry science across 3 years and covered modules including genetics, feed, nutrition, broiler production and hatcheries.

The University has an excellent Extension Service and was started on the back of the Cooperative Extension Service that was established in 1914. This was a nationwide education system that operated through land-grant universities in partnership with government and the goal was and still is to '*deliver* education that changes lives'. Mississippi State works with 4-H youth development programmes, including leadership training, and engages with local young people involved in rural and agricultural industries. Furthermore, the Poultry Science department's extension specialists provide research and support for the poultry industry throughout the state.



Figure 2: Mississippi State University invested in a commercial broiler farm

The University runs a hatchery and a commercial broiler farm for Peco Foods (*Figure 2 and Figure 3*) and this was used for students' practical understanding of hatcheries and broiler production, as well as operating trials and research for companies. Furthermore, they had a processing facility that was *2050: The challenges and opportunities to the UK broiler industry ... by Patrick Hook* A Nuffield Farming Scholarships report ... generously sponsored by Central Region Farmers Trust



used to conduct research and analysis on aspects such as carcass yield and meat quality and was used as a training facility for students to understand the practicalities of poultry processing. The University had an excellent employment rate of 100%, with the current undergraduates all securing jobs before graduating.



Figure 3: Mississippi State University – small scale commercial hatchery

4.1.2: University of Arkansas

The University of Arkansas has one of the leading poultry science courses in the USA. They have a presence at the Atlanta Poultry Show College Student Career Program and invite potential interns and graduates to the show and interview them for potential jobs. In recent years the university has seen grants diminish, which has affected student recruitment and in addition overseas students are now being trained in their own countries. The University has a strong link and relationship with high schools and has developed a great interaction with potential students. They have helped introduce agricultural programs in high schools and this has helped in recruiting summer interns who may decide to study at the University. The University extension service also provides research and recent studies have included ascites susceptibility, wooden breast, deep muscle myopathy, white striping, campylobacter, food safety and water quality.

4.1.3: Massey University

Massey University is one of New Zealand's main agricultural universities. Poultry nutritionists Dr Ravi Ravindram and Dr Reza Abdollahi along with Patrick Morel, a pig nutritionist (*Figure 4*), were the key members of the team that ran the animal science courses. The University has 150 agricultural students and is dominated by the dairy and sheep industries, which is one of the country's strongest economic



sectors. The Institute of Veterinary, Animal and Biomedical Sciences covers poultry as an animal science component within the agricultural degree. Historically poultry used to be its own subject and course; however, demand for the course declined and the only students interested in poultry science were PhD students and a high percentage would be overseas students on scholarships, of which most would return home upon completion of the course. Due to the lack of demand from New Zealand students to study poultry science, the team were concerned about a skills shortage within the industry and, in particular, of nutritionists. Despite the growth of the New Zealand poultry industry, there has been no real investment or interest to work with the University. The University wants to reconnect with integrators and help with industry research and help support and develop young people into the industry.



Figure 4: Meeting with the Animal Science team at Massey University

4.2: Company Initiatives

4.2.1: New Zealand

A company in New Zealand was running a cadetship program; this was developed after the company identified a skills gap with many experienced farm managers approaching retirement and no one to replace them. This was an internal initiative to identify individuals and put them through a 2-year program that covered all parts of the supply chain, allowing them to gain a better understanding of how the business worked and the opportunities that were available to them. However, the company was concerned that there were still not enough young people entering the industry. Furthermore, due to the strength of the dairy industry and the financial incentives being offered, the company was finding it difficult to attract new entrants.



4.2.2: USA

Cobb Vantress (*Figure 5*) uses a talent assessment grid and matrix to identify talent at different levels within the business, and looks at two key aspects of potential and performance. It provided a tool to manage people in different ways and develop them accordingly.

In terms of succession they have adopted Rotational Succession, whereby people approaching retirement age are shadowed by a replacement candidate, and a job-share then develops and therefore enables a transition of new blood to enter the team.



Figure 5: Cobb Vantress Corporate Office, Siloam Springs, Arkansas

Cobb's aim was finding and developing people that were the right cultural fit. In the USA the retirement age is now 67 and many people work beyond this. In addition, the number of universities teaching poultry science has declined over the years; however, Cobb was fortunate as Arkansas has one of the best universities in the USA. The company works very closely with the university and invites poultry students to their corporate office for a meeting every year to help engage and educate the students about the industry. The company also offers summer internships to college students, which has played a key role in recruiting people into the company. The company's ultimate goal was to promote the industry and work with key partners and share a message of the benefits of a career within the poultry industry.

4.3: Industry Initiatives

The British Poultry Council (*BPC*) has an industry scholarship at Harper Adams University. This was set up in 2011 and the companies, represented by the BPC, offer the same scholarship to help cover tuition fees for the student's second and third years. After selection, students undertake a 12-month



placement and, upon successful completion of the year, students will come back to the company to pursue a career in the industry. This industry scholarship has been successful in recruiting people at graduate level into the industry. However, selection of the candidates is important to the success, to ensure students are not taking a placement for the benefit of the scholarship. Recruitment is working well, but retaining the students in jobs post placement is the key. Furthermore, the scheme will not necessarily succeed in filling the volume of people needed at all levels in the industry.

Summary of Chapter: People and succession planning

In summary it can be said that the USA Universities' Extension Services and poultry science courses offered across several universities is helping recruit, develop and retain young people in the industry. Furthermore, the universities engage with industry and provide support and research that in turn provides real benefits to businesses. In addition, this engagement allows students to secure jobs on completion of their degree and, due to the demand for people in a growing market, the opportunities for a career are very good.

On the back of the success of the BPC Scholarship, other agricultural-based colleges should be looked at to recruit a larger volume of people to the industry. The UK industry is in need of skilled people including farm workers, assistant managers, farm managers, hatchery managers and more; however, there is not the volume of people in the system to promote from within. The industry is not perceived to be attractive to younger people; with most agricultural students choosing to opt for arable and large stock based sectors. The industry needs to work with schools and colleges to educate younger people about the prospects of a successful career within the poultry industry.



Chapter 5: Farming systems and innovation

5.1: Hatch Care

The Hatch Care system is developed by a Dutch company called Hatch Tech. In essence the theory is introducing feed and water into the hatchery (Figure 6), a completely new concept and one which is becoming an interesting point in terms of welfare and technical benefits to performance.



Figure 6: Introduction of feed in the Hatch Care Basket in the Hatcher (Source: Hatch Tech)

During a normal hatching process, 18-day-old embryos are taken from incubators, which run at approximately 37.4 degrees, and are transferred into a hatcher at 36.6 degrees, where the chicks hatch out over 36 hours. The eggs get transferred from setter trays into hatcher baskets where they are loose. During three days the embryos begin to hatch out and the aim is to have a tight hatch window to ensure best uniformity at day old. Furthermore, the yolk sac is a powerful source of energy and nutrients for the chicks. This is absorbed after the chick hatches and the chick can survive off this reserve for at least 48 hours post hatch.

With Hatch Care, the eggs are transferred from the setter tray to a 2-tier hatcher basket; the eggs are placed into fixed positions on a honeycomb tray layout (*Figure 7 overleaf*). With the eggs being fixed into a position, this reduces the potential for cracks and thus has the benefit of a better potential hatch.

In addition, during the transfer process, the eggs are scanned using a Viscon Live Embryo Detection System. The eggs are selected

based on a heartbeat and thus all eggs in the hatcher have the potential to hatch. Coupled with this they are also selecting out infertile, early dead embryos, late dead embryos and contaminated eggs. The selection of live embryos and removal of contaminated eggs also ensures the chicks are hatched in a cleaner environment. In traditional systems, contaminated eggs can explode causing bacteria to infiltrate eggs and potentially affect chick viability. This can ultimately lead to increased mortality on farm and higher usage of antibiotics. The Hatch Care system has the benefit of clean viable embryos coming in, and clean viable chicks hatched, thus reducing the need for antibiotics on farm.

In addition, the provision of water and feed in a hatcher (*Figure 8, overleaf*) also encourages optimal chick development. The early feeding concept allows the nutrient-rich yolk sac to be absorbed more effectively, which is extremely important for immune system development. In addition, it has shown

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that the bursa weight as a percentage of body weight increases, thus providing support for the primary immune system. Using Hatch Care chicks helped reduce the use of antibiotics on farm and also reduced 7-day mortality. Early feed and water in the hatcher is proven to show that the chicks do not lose bodyweight and trials have shown 12% more bodyweight at pull time. This has provided farms with improved 7-day weights (*Figure 9 overleaf*).



Figure 7: Eggs in fixed positions in Hatch Care tray after transfer (Source: Hatch Tech)

Dehydration is always a risk during the incubation process and this can reduce the average chick weight if not controlled. The Hatch Care system overcomes this through the introduction of fresh water in the hatcher and also the consistent temperature and airflow achieved with the laminar airflow system developed by Hatch Tech.



Figure 8: Provision of fresh water in Hatch Care system (Source: Hatch Tech)

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Figure 9: Technical benefits of Hatch Care; with significant improvements in Antibiotic Reduction (Source Hatch Care)

Within the Hatch Care hatcher baskets the chicks have 40% more space compared to other systems, as the chicks do not sit amongst egg debris. To accompany this, hatchers have strip LED lights (*Figure 10*), providing the chicks with subtle light from the moment of hatch, reducing the stress on the chicks when taken through the hatchery process.



Figure 10: LED lights inside Hatch Care (Source: Hatch Tech)



In a traditional hatchery, automation is needed for the process, which requires large capital investment, labour and space. In a Hatch Care hatchery, the process requires 3-4 people compared to nearly 15 people needed in a traditional hatchery. The hatchery environment is very quiet and calm due to reduced automation and the chicks are calm and satisfied due to the early feed and water they have already received. Instead of chick counters an infrared machine scans the trays to count the number of unhatched eggs left on the tray. One person then tops up what is needed and then the basket is ready for the farm. The chicks are delivered to farm in the baskets they hatch into; meaning they have access to feed right up until they reach the farm.

Through genetic improvement the broiler chicken is growing approximate half a day faster each year. In 1960 a 2kg chicken took 60 days to grow and now this can be achieved in 30 days. The time the chick spends in the hatcher has increased relatively from 25% to 40% and as a result the hatching process is critical and the rate at which the broilers are growing means that the time spent in the hatcher alone will only become a bigger percentage of the life of the broiler.

5.2: Vencomatic X-treck

5.2.1: The system

Vencomatic have developed an early feed and water concept called X-treck, where the chicks are hatched on farm and have access to feed and water (*Figure 11*). In this system 18-day-old embryos are transferred using the Viscon heartbeat system and loaded into a lorry and taken to farm. They are put on the X-treck system and the shed is heated to 36.6 degrees Celsius. There is a belt underneath the frame, where the chicks will hatch onto; the chicks rest, dry and then move off the belt to the feed and water.



Figure 11: X Trek system (Source: Vencomatic 2015)



5.2.2: The benefits of Vencomatic X Trek system

Results have shown better early immunity, improved maturation of the intestinal tract and better uptake of the yolk sac. Vencomatic has also carried out research on the impact on the microvilli 48 hours post hatch with early feeding. With early feeding they have shown better early development of the microvilli, which helps early absorption of feed, thus potentially improving FCR.

The research also focused on the impact of formalin use and the impact of the cilia in the lungs. Formalin is traditionally used in hatchers to disinfect and kill potentially harmful pathogens. The research showed that the formalin caused a negative impact on the cilia in the lungs and further tests showed the increased incidence of Infectious Bronchitis challenges on farm and impacts of broiler health and development.

Technically X trek has seen a reduction in cumulative mortality by 0.50%, improved weight by up to 80g, improved FCR by 0.05, and a gain in EPEF of 18 points (*source: Vencomatic Group 2014*).

Operationally the system takes out the need for hatchers in a hatchery and the only need is for incubators and transfer processing equipment. This reduces the capital investment needed for a new settery (a building designed specifically just for incubating eggs) and reduces the running costs due to reduced labour and equipment. Furthermore, farmers visited in Holland had not treated any sheds with antibiotics using X-treck, due to the potential health benefits previously mentioned of early feed and water. In addition, using the heart beat scanner at transfer, there are no contaminated eggs on trays, reducing the bacterial load in the shed at hatch.

In countries like Holland, this system could have credible benefits as, in a country where space is limited and planning is difficult, it takes three days off the hatchery cycle.



Figure 12: Chicks hatching onto belt in X-Trek system (Source: Vencomatic 2015)



5.2.3: The challenges of Vencomatic X-treck system

Transport time is key to ensuring the lorries can maintain a temperature of 36 to 37 degrees, thus ensuring the embryos do not die in transport. The management of trays taken back to the hatchery is important to ensure pathogens, including salmonella, are not brought back to the hatchery. Due to embryos hatching and egg waste in the shed, the litter becomes category 2 waste and as a result there is a cost of £100 per tonne to dispose of it. This compares to farms normally selling the litter for approximately £10 per tonne. As a result, this adds considerable cost to production, in a market where retailers are challenging suppliers to take cost out. Although the system takes 3 days off the hatchery process, 3 days are consequently added on to the farming cycle.

5.3: Patio

5.3.1 The system

The Patio system, developed by Vencomatic, is a large scale on farm hatching system. Like the X-treck, the setter trays are taken from the hatchery and put into a six tier system. One site, visited in Holland, had a 150,000 bird capacity system (*Figure 13*). The fertile hatching eggs are brought in at day old and the shed is run at 36.6 degrees. Here the chicks hatch down to a belt which has straw pellets or shavings as litter. Once the hatching process is completed the trays are taken back to the hatchery. Each unit has a cage front, which can be open to check and inspect birds throughout their life. Once the birds have reached kill age, the belts convey the birds out of the shed and link onto a conveyor and carousel system, where the birds are caught and taken to the processing plant.



Figure 13: Patio system with 6 tiers, 150,000 birds (Source: Vencomatic 2015)

5.3.2: Benefits of Patio system

The rubber belt and ventilation system keeps litter friable and dry and as a result the Patio system has seen pododermatitis and hock burn levels significantly reduce. Furthermore antibiotics were not being

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routinely used on these systems, due to the mirrored benefits of early feed and water and hatching in the sheds as seen in the X-treck system.



Figure 14: Patio system: Chicks post hatch (Source: Vencomatic 2015)

Farmers have seen improvements in chick start with chicks spreading throughout the units very quickly (*Figure 14*) They have said the benefit is the early feed and water and floor temperature achieved very quickly.

The catching process was very calm, due to the conveyor system. The birds were at waste height on the conveyor making it easier for the people and better for the birds during catching. This system is not licensed to be used in the UK; however, it takes three days off the hatchery process and more birds can be housed on a smaller area of land. Furthermore, countries such as Russia and the Ukraine are investing in setteries² and linking these to designated patio units.

In addition, having more birds per square meter of land puts these birds at a cost advantage and farms visited in Holland showed they had lower costs than a traditional farm. However, due to the scale of the Patio system, thorough cleaning and disinfection would be a challenge to match that of a traditional broiler house. Although the Patio system is not allowed in the UK, the system shows a competitive import advantage in terms of cost.

See overleaf for Summary of Hatch Care, Vencomatic X-treck and Patio systems

² Setteries are buildings designed specifically just for incubating eggs. There is no transfer process or hatching and are therefore known as Setteries.

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Summary of Hatch Care, X-Trek and Patio systems

Hatch Care, X-Trek and Patio all adopt the same theory of access to early feed and water within their systems. There have been proven benefits to chicks' welfare and technical performance at day old and on farm. However adopting early feed and water systems may not be possible across the whole UK supply base. Therefore the industry must educate customers and consumers of the benefits of current hatchery practices to day old chicks' welfare and performance and that chicks can live off their yolk for two days post hatch with no issues. However the sector must recognise the importance of delivering chicks to farm as early as possible post hatch

5.4: Hungary: broiler farming system

A visit to a broiler farm in Hungary saw investment in new technology. This company was supplying major retailers throughout the UK and Europe and was audited to the same standard as the UK. As a result windows in their broiler houses were acceptable for the UK market. However, the windows had been installed at the top of the eaves, giving better light distribution in the shed, and the birds do no concentrate around areas of light as a result (*Figure 15*).



Figure 15: Windows installed at the eaves of the shed for natural light distribution of 3% of the floor space in the shed

To comply with customer welfare standards, the company also added perching logs for enrichment. They were also using straw pellet across the whole farming base, which had brought huge benefits in the reduction of hock burn and pododermatisis (*Figure 16*).

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Figure 16: Logs provided enrichment to meet customer welfare standards

The high standard of farming facilities in Hungary and the compliance to major retailer and welfare standards is a demonstration of the real competition to the UK. The average farm worker was paid $\notin 6,000$ per year compared to an average of £18,000 in the UK. This 30% cost advantage coupled with the standards being adhered to, is a serious a credible threat to the UK industry. There is a perception of poorer standards due to cost advantages in these countries. However, it is quite the opposite: the affordable labour allows farms to be staffed with more people, allowing more detailed management of bird welfare and quality, to ensure best performance and standards for customers.

5.5: Broiler breeders – egg packers

During a visit to a company in Australia, a packing machine was being used in a broiler breeder farm. These are used in the UK and are beneficial in terms of labour savings and are very efficient in packing eggs. However, packers are difficult to use on flocks after 40 weeks of age due to larger egg size and shell quality deteriorating. This can lead to higher levels of cracks which increased the level of contamination in the hatchery and on farm. Consequently egg utilisation on farm is reduced and this impacts the technical performance of the breeders.

The farm visited in Australia was using a system where eggs were taken from the sheds, via a conveyor, to a central packing area (*Figures 17 & 18*). These were retrofitted into the farm two years ago and as a result the farm saved two people and can pack the eggs 45 minutes faster, due to the conveyor system. Labour costs in Australia have increased dramatically over the last ten years, mainly due to the mining industry offering very well paid jobs to operatives.





Figure 17: Conveyor system used on farms to take eggs to central packing area



Figure 18: Jansen egg packer used on farm increased egg utilisation by 2% and saved on labour

Providing they are serviced and maintained, the management team believed there were massive cost savings and benefits in terms of egg quality, as the eggs were always packed the right way up, preventing loss of hatch through malposition or late dead. Furthermore, despite conveyors and machine packing, their egg utilisation had increased by 2%.

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Summary of labour implications from Hungary and Australia

Labour costs in the UK are now increasing. The living wage will increase the hourly cost paid to farm workers, and other industries can offer better paid jobs across five days a week. Egg packers will save labour on farms making them more cost efficient and easier to run. Furthermore, the advantage of packers is the data that can be extracted from the egg grader; including egg weight and utilisation per shed. Packing by hand has many benefits in terms of quality control; however, this can still be achieved by monitoring for more detailed quality issues such as hairline cracks which may not be picked up if packing by hand. In addition, recruiting and retaining the skilled staff needed for this job is extremely challenging and will continue to be an issue in the future.

5.6: Cameras and remote control

Farms in Holland, Hungary and the UK had started investing in the use of cameras and the remote control of systems on site. In all cases the cameras provided a useful management tool to monitor security on site; the following of procedures by staff; and bird welfare and behaviour. Furthermore, it is a demonstration to customers that there was nothing to hide and that the highest of standards were maintained at all times.



Figure 19: Cameras used to monitor bird behaviour, staff management and security

In Hungary, a company had invested in cameras that were linked to mobile software (*Figure 19*). Major retailers, including Tesco, had seen the system and asked about the possibility of having them across



the whole farming base. The owners and farm managers could view and control the cameras via their mobile phones, enabling them to monitor bird welfare and behaviour at all times. The management team stated this was very useful during periods of extreme weather, where temperatures could reach above 40 degrees. Instead of opening the doors and checking sheds, the managers could monitor if the birds were stressed and also monitor and remotely control temperature and ventilation of the sheds.

Summary of cameras and remote control

Cameras are a useful management tool for bird welfare and monitoring and managing staff on site. It is a clear demonstration to the consumer and retailer that there is nothing to hide and opens up the doors to more people. The remote access allows the continual monitoring of bird welfare and control of ventilation and temperature.

However, although a useful tool, cameras and remote access cannot replace a good stockman who can see, smell, feel and make decisions based on what he or she thinks is happening in the sheds. A combination of a good stockperson with cameras and remote access provides the best system for the birds and the people.



Chapter 6: Biosecurity and disease

Avian influenza is the single biggest risk to the global poultry industry and will be an ever increasing threat in the future. Large variations in the standards and systems of biosecurity were observed across several countries.

6.1: Demonstration of best practice biosecurity – New Zealand and Hungary

A New Zealand company operated a shower-in and -out policy across their whole broiler breeder farming base. There was a consistent approach, with a boot changing process before showering, ensuring no pathogens were walked into the changing area. After this the shower was taken before changing into a complete set of onsite clothes. The showers were of a good standard, clean and had fresh hot water. All clothing was laundered on site, again removing the potential risk of contamination or disease to the farm. Coupled with this there was a vehicle wash where the vehicles entering and leaving the site were also completely sprayed with disinfectant; this was a very effective system and applied to all vehicles on site.

A company in Hungary had just invested in a new broiler farm. The biosecurity and flow of the site had been a priority when designing the plan. Perimeter fencing was installed around the entire site, with electric gates at the entrance and a wheel wash (*Figure 20*). In addition, boot changing before shower facilities then two further boot changes after showering, allowed for some of the strictest biosecurity.



Figure 20: New broiler farm in Hungary put biosecurity at the fore front of the design



6.2: USA Avian Influenza

The USA had a recent Avian Influenza (AI) outbreak in 2015 when more than 50 million layers and turkeys were slaughtered. (Source <u>http://www.upc-online.org/health/21304flu.htm</u>). This caused massive problems for the industry in terms of their ability to export, supply customers, and risk of reinfection.

In discussion with one company, they pointed out that the geographical size of the USA would rival that of the whole of Europe; therefore outbreaks in the far North are low risk to Southern States. The company also discussed that the level of biosecurity on farms would not be as high as in other parts of the world and hence led to the outbreak spreading quickly.

Companies visited across the States have really stepped up on biosecurity since the outbreak. This is certainly apparent across businesses that have broiler breeders which, due to their cycle lengths, are at greater risk of contracting AI. A company visited was introducing a boot changing system, with outside and inside boots and investing in additional foot dips at entry points into the shed.

One company visited in Georgia had stopped the practice of spiking³ to reduce the risk of farm cross contamination. Routinely the company introduced an additional 5% younger fertile males in flocks older than 45 weeks, to help improve and maintain fertility. However, when the AI outbreak became a bigger issue in the USA, the company decided to stop routinely spiking, to reduce the risk of spreading the disease.

There is a lot of discussion in the USA about vaccinating flocks against AI. However due to the complex nature of the virus and the number of types, it is difficult to get complete coverage. Some companies visited were in favour of vaccinating, whilst others stated there was a risk of complacency developing within the industry. One company visited in Arkansas stated that the single most effective way of reducing the risk of another outbreak was improving biosecurity across the whole industry and using a mechanism through auditing to get a better consistent approach.

6.3: Location

It became apparent that location definitely plays a part in the level of risk associated with a site contracting AI. The natural migratory pattern taken by wild fowl ultimately governs where the high risk areas are; however this will always be a risk and one that has to be managed with good biosecurity.

6.3.1: New Zealand

New Zealand is declared free of AI and the country does not vaccinate broiler chicks at day old with any infectious bronchitis vaccine. The country is also free of Infectious Bursal Disease (IBD). Primarily this is due to the good biosecurity practices seen in New Zealand and the location and density of farms. When visiting a company in the North Island, two broiler breeder farms seen were 20km away from each other; neither had any previous disease challenges and there were no other poultry sites in the area (*Figure 21*). Furthermore, New Zealand does not import any poultry products and is self-sufficient

³ Spiking is the practice of introducing younger fertile cockerels onto a farm to maintain and improve hatchability

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in terms of production. The country produces 2 million birds a week while the UK, of similar size, produces 20 million birds a week. Consequently due to less density of production there is less disease pressure in New Zealand.



Figure 21: Broiler breeder farm in North Island with the next farm 20km away

New Zealand has very strict quarantine regulations that restrict the country's ability to import live poultry. This includes higher generation breeding stock and, if birds are brought in, they have to quarantine the birds for a period to ensure there is no risk to the disease status of the country. This has helped keep the country's disease status clean.

6.3.2: Holland

Holland saw an AI outbreak in 2014 and it caused massive problems across the industry and within the continent. Holland is a very densely populated country in terms of poultry and chicken produced for both domestic consumption and export. When visiting a broiler farmer he said there were 8 poultry units within 2 miles of the farm, varying between egg layers, geese, ducks and broilers. The disease pressure within this one area was high and, in the event of an outbreak, all the sites would have been put under restriction.

During the last outbreak the government prevented the movement of poultry for 36 hours. This meant birds on some farms and chicks in hatcheries having to be culled. The company visited stated this was the best approach and it successfully reduced the spread of the disease. The restriction zones applied were successful in reducing the movements of traffic and people within high risk areas.



6.4: Size of the facility

The challenge for the UK is deciding the size of a new farm or hatchery. With AI becoming an increasing global threat, the size of new builds must be factored in. There are efficiency gains in larger facilities, with economies of scale. However, in the event of an AI outbreak, the consequential losses to the business and industry are huge. For example, if one business has all of its chicks produced out of one hatchery and a breeder flock goes down with AI, the hatchery would be put under restriction and potentially all chicks and eggs culled and discarded.

Furthermore, in the event of an AI outbreak, managing a mass cull on broiler farms exceeding 500,000 birds would be a huge undertaking. It would take a considerable amount of time and whilst infected birds are alive, the risk of spreading the disease grows.

Summary of biosecurity and disease

In the UK there should be a mechanism in the planning system that factors in other poultry sites within both 3km and 10km of the proposed build. This would allow existing producers to challenge plans - if deemed high risk to their business - and reduce the risk of dense areas of poultry developing. Furthermore, guidance should be issued within the planning process concerning the formal biosecurity procedures that will be adhered to on site.

A vaccine could potentially be used to protect birds in the future; although, in its early stages, it does not offer protection for all strains. Furthermore, it creates trade barriers for countries, such as the UK, where if birds were vaccinated this could potentially affect the recognised disease status of the entire country. In addition, the application of vaccine could potentially create a level of complacency across the global industry and a resulting reduction in the level of on farm biosecurity.



Chapter 7: Retailers and consumers

7.1: Chicken of tomorrow

A visit to Holland with Hubbard Breeders saw developments in the Dutch broiler market. Through genetic improvements, the conventional broiler is now reaching target weight between 35 and 40 days, compared to slower growing breeds of 56 days, and hence the gap is widening. Furthermore, there is more pressure from animal welfare groups, social media, NGOs and consumers. As a result there is increasing demand for chicken from higher welfare systems.

The Dutch market has always traditionally been 100% for conventionally reared broilers. In 2007 the 'Beter Leven' label, meaning better life, was introduced by the Dutch Animal Welfare organisation Dierenbescherming. They adopted a star rating system to highlight the different levels of production. The 1-star Wintergarden system is an indoor system where birds have access to an outdoor veranda and are grown to 56 days and above (*Figure 22*). The 2-star is for free range and 3-star is for organic systems.



Figure 22: Wintergarden system being used in Holland to produce Chicken of Tomorrow

The Beter Leven was the first stage in the Dutch market adopting more slowly growing broilers. In 2012 the welfare group Wakker Dier, consisting of 9 people, went on an aggressive marketing campaign and highlighted to the consumers the negatives of the Plofkip chicken, meaning the 'Exploding Chicken'. Chicken on the shelf, bill boards, TV, radio and online social media campaigns were very powerful and got other NGOs involved and put pressure on the industry and retailers (*Figure 23*).

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Figure 23: Marketing campaign highlighting the 'Plofkip' chicken (source: Sustainable Food Trust)

This drove the Dutch poultry industry and retailers to formulate a strategy and created 'the Chicken of Tomorrow'. As a result, in 2012 the word 'Plofkip' became word-of-the-year in Holland. The aim was to grow birds to a level between a standard broiler and a 1-star Better Leven. Under this programme birds are stocked between 30 -39 kg/m2 depending on the customer; have a target weight of 2.4kg reached at 49 days; and the birds have a maximum average daily gain (ADG) of 50 grams per day. As a result, Better Leven and Chicken of Tomorrow now make up 100% of the fresh chicken sold in Dutch supermarkets.

The changeover to Better Leven and Chicken of Tomorrow increased costs of production. In the initial phase this cost was shared across the supply chain and the consumers did not see the increase in cost on the shelf. The Chicken of Tomorrow was €1.00-€1.50 per kg breast meat more expensive to buy than conventional broiler meat. A meeting with one company stated the challenge will be how long consumers will keep paying the premium.

This case study is a demonstration of how quickly an industry can react as a result of pressures from Animal Welfare groups. It also shows the power of social media and its influence across the whole supply chain. There is the challenge and opportunity of developing a similar system in the UK; however similar systems already exist under brands such as RSPCA, and the cost difference between this and standard chicken means most people are not willing to pay the difference. However, the UK industry must be on the front foot to demonstrate to both customers and consumers the high welfare systems adopted across the whole spectrum of growing programmes.



7.2: RSPCA Chicken – Australia

One company explained their transition into RSPCA Chicken. Previously the Australian market had been dominated by conventional chicken and with stocking at 40 kg per square meter. The UK market has seen a transition to 38 kg stocking and, with windows for the retail market and also diversification into Freedom Food, free range and organic systems.

This Australian company stated that what happens in the UK and Europe filters through to the Australian market a few years later. As a result of increasing pressures from retailers to down-stock sheds to improve welfare perceptions of growing chicken, the company took on the RSPCA brand and reduced their stocking to 34 kg per square meter and provided enrichment to the birds in the form of straw bales. There was a considerable uplift in the production costs of approximately 10 cents per kilo, and the retailer involved helped absorb the cost. The retailer wanted to be the first to stock RSPCA on the shelf and helped share the cost to guarantee buy in and supply from the producer.



Figure 24: An example of RSPCA branding in Australia, with the logo on the tray pack

The other reason the retailer had to share the cost was due to the long term relationships with suppliers. The Australian market has extremely strict restrictions on imports of breeding stock and, as a result, switching supplier could jeopardise supply, as the producers wouldn't be able to increase volumes of breeding stock very easily. These restrictions have brought suppliers and retailers together to form real long term relationships to benefit the supply chain and customer. When I met up with both the supplier and retailer, each discussed the benefit of the relationship in terms of supply, improving quality, and value to the consumer.



7.3: Welfare - people and perception

Nancy Roulston from Wilcox Consultancy delivered a presentation in Holland on the welfare systems adopted by different countries and explained the different welfare groups' approaches to targeting the industry. One of the key statements was that people who worked within the industry had become desensitised to handling livestock. As a result, training staff on a regular basis is absolutely fundamental to reduce the risk of compromising welfare.

Nancy highlighted the power of social media and the internet in turning what is perceived as 'normal practice' in the industry into horror scenes that are edited and misinterpreted by key welfare groups such as PETA. Material videos have caused businesses to shut factories, terminate customer contracts and be liable for criminal prosecution.

One video in 2015 had been released on the internet showing hatchery practice outside the UK and had been edited to show the hatchery in a poor light. It had over 10 million views and as a result the press in the UK targeted the industry, assuming this was routine practice there. Welfare groups were also targeting companies' Corporate Social Responsibility (CSR) policies on welfare and the fact they were not aligned to company's actions.

Welfare is extremely important. The challenge is to be on the front foot, train staff and ensure we are as open as possible about the good practices undertaken - to ensure that managing the welfare of chickens is paramount in everything the supply chain does. The real success of maintaining and improving welfare is adopting a culture that views animal welfare as the key aspect of product quality.

7.4: USA – Antibiotic-free chicken

The USA has seen a dramatic increase in pressure on the supply chain to remove antibiotics. Big name brands such as Chick-fil-a, Chipotle and Walmart have all released statements on antibiotic-free meat. Historically the US market, like many other countries, used antibiotics prophylactically to increase production performance benefits. However there have been global concerns about the use of antibiotics and the link to antibiotic resistance in people. As a result, the industry has reacted and many integrators have taken antibiotics out across their production systems.

Several Integrators in the USA have reacted positively to the pressure, taking all antibiotics out of the production cycle completely. A company visited in Georgia had not used any antibiotics across one of their production programmes for 6 years and had been completely Antibiotic-free (ABF) for three years. Although initially a challenge, they had seen residual benefits in performance as their farms and the birds weren't going through as many challenges as seen before.

One company visited in Arkansas stated that 7-day mortality had increased by 0.5% when the complex went to antibiotic-free, and the end-of-flock mortality was 2% higher. The company stated that, in their research, the overuse of antibiotics was preventing inevitable mortality and also creating a build-up of bacteria in poultry houses. As a result, when using antibiotics there were more cases of bacterial



septicaemia later on in the crop and, since taking antibiotics out, they have seen a residual benefit in lower mortality and less challenges crop on crop.

A company visited in Texas highlighted that there was a real concern of not being able to manage welfare issues in the event of high mortality and, as a result, creating huge welfare issues. They have kept an Antibiotic-free stance but have maintained the ability to use antibiotics in the event of managing the welfare of the bird.

In addition, companies have used the ABF strategy to focus on hygiene and bird health across the supply chain. One company had emphasised the improvement of egg hygiene through better routine cleaning and disinfection of nesting systems, and fumigating the eggs on farm. Their simple strategy was clean eggs: produce clean chicks and thus reduce the need for antibiotics. Furthermore, they were improving their biosecurity and cleaning and hygiene programmes through the hatcheries and farms. This was the backbone when tackling their new ABF strategy.

7.4.1: Case study: Nature Raised Farms

A meeting with Joe DePippo from Tyson Foods, USA, discussed the Nature Raised Farms products. The main brand attributes included 'No Antibiotics Ever'; 100% vegetarian diet; no added hormones or steroids; and third party animal welfare certification (*Figure 25*). The farms raise birds to step 2 of the global animal partnership certification scheme. This is a non-profit charitable organisation focused on a common goal of improving welfare of animals in agriculture. The brand is aiming at higher-income and health conscious consumers.



Figure 25: Example of Nature Raised Farms' tray pack chicken, appealing to higher end of the market



7.5: Alltech - seed, feed and weed

Alltech have developed different Antibiotic-free strategies and grouped them into Silver, Gold and Platinum. They have products such as Actigen which can be used in the feed to aid antibiotic free programmes.

Alltech have developed extremely sophisticated technologies to grow different types of algae to produce Docosahexaenoic Acid (DHA), which is a polyunsaturated omega-3 fatty acid found throughout the human body. It is an important part of brain and eye development and function, and a key component of the heart. It is sold as a health benefit to adults, children and expectant mothers. In the algae plant, DHA is contained in a dry form of algae after processing and, in the process, 1 gram of algae can be grown to 20 tonnes in 2 weeks. This is an incredible growth rate and very sustainable. DHA is already used in eggs and other proteins across the world and sold for consumer health benefits. The company is investing heavily in these technologies to add other sustainable feed products to further enhance production, performance and health benefits for consumers across all proteins.



Figure 26: Meeting with Dr Pearse Lyons, Founder and President of Alltech

Alltech promote the establishment of correct gut flora through Seed, Feed and Weed programmes which, over time, will enable the establishment of good gut flora on farm, despite cleaning and disinfection. The goal is not to use antibiotics that would have been used to help birds overcome bacterial issues and to establish good gut flora to enable the bird to manage these challenges. The company promotes the use of Actigen which is a yeast cell wall product. Bacterial flora is transmitted vertically from the parent to the chick; therefore the chick start in breeders is critical. The first week and particularly the first few days of the bird's life are critical in establishing the correct bacterial flora in the bird.

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Summary

The challenge and opportunity for the global poultry industry is about the responsible use of antibiotics rather than complete ABF. Prophylactic treatment of birds throughout their life is not the best policy, nor the most responsible way to treat animals. Despite the need to use them, consumers and health organisations have serious concerns about the links with antibiotics and resistance in human health.

To completely remove antibiotics from the supply chain will prove challenging in managing key welfare measures. The UK has demonstrated it has reduced its level of antibiotic usage by 44% over the last two years (*Source BPC, April 2016*). The challenge is to further improve and to communicate the positive messages to customers and consumers.

The global industry will become under increasing pressure to remove antibiotics from the supply chain. However, the industry must educate BOTH customers and consumers about the need for use of antibiotics to manage the welfare of the bird. High standards of hygiene, biosecurity and welfare are the key to good performance and also the success of the industry.

Welfare is the key area all customers and consumers look at and there is demand for high welfare from the supply chain. If this is compromised through removing antibiotics, then it is a huge backwards step for the industry.

The challenge is to significantly reduce - and responsibly use - antibiotics rather than their complete removal.

8.0: Broiler genetics

8.1: Performance

A breed company visited stated global trends show an increase in parent stock placements year on year and in some countries by more than 10%. Selection is aiming for increases in bodyweight by nearly 5% per year, a 0.5% increase in breast yield, and 2 to 3 points improvement in FCR. Selection of higher generation breeding stock includes selecting for meat yield using ultrasound, and measuring bone health and strength using lixiscope (low Intensity X-ray Imaging Scope) technology. In addition ECG and Blood O2 testing are used to test heart and lung functions and live CT scanning to monitor and measure bone structure and meat yield. Furthermore, all breeding companies will select for FCR, growth rate, meat yield, leg strength, liveability, heart and lung function, egg production and hatchability. The challenge is to get the balance to ensure consistent optimum performance is achieved on a global scale.

The breed company stated FCR improvements and carbon footprint reduction are crucial in producing a sustainable chicken for the future. With global populations increasing, feed costs will increase, putting more pressures on existing land resources.

The higher generation breeders have not been treated with antibiotics, in some cases for 10 years, so the companies know about the effects of antibiotic removal. They all believe that the global pressure will grow to completely remove antibiotics from broilers in the near future.

The conventional broiler is gaining a day's growth year on year and so growth has doubled over the last 25 years; geneticists state that growth could double again over the next 20 years. Furthermore, all breed companies look at other influences including food security, environmental, ethical, political, food safety, regulation and social to ensure performance is balanced with the needs and expectations of all key stakeholders.

8.2: Disease

When selecting for higher generation breeding stock and broilers there is the constant challenge of disease to factor in. Due to the hygiene status of higher generation breeding stock it is very difficult for companies to select for disease tolerance and it is also a challenge to replicate commercial conditions. Furthermore, all breeding companies discussed concerns over new and re-emerging diseases. Specific selection to resistance to disease could reduce the ability to tolerate other infections. They have all seen an increase in demand for parent stock and global demand predictions show further increases in numbers needed. This puts more flocks at risk to not only potential existing diseases but also new ones. The consistent consensus amongst the breed companies is to maintain and improve biosecurity to ensure the health status of the breeding stock is protected.

8.3: Welfare

Welfare traits are, and will become, even more important in the selection for broilers. Key welfare measures include leg strength, mobility, liveability, hock burn and pododermatitis. Globally,

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consumers will demand the cheapest protein possible, whilst others will pay more for *perceived welfare benefits such as slower growth rate.* Either way maintaining and improving welfare traits is paramount to the successful management of the bird and the continued success of buy in from customers and consumers.

8.4: Genetic potential: New Zealand

When visiting a company in New Zealand, the real genetic potential of the current broiler was being achieved. The company was consistently achieving 1.4 FCRs across a number of farms. Their main reason for achieving such good performance was: not vaccinating day old broilers; the country being free of diseases such as IBD and AI; no imports of chicken and good biosecurity. Furthermore, the warmer climate and the general age and standard of housing would be more modern than seen in the UK, thus aiding better performance (*Figure 27*)



Figure 27: Modern housing and good biosecurity help with maximising genetic potential

The challenge

The challenge of improving FCR and growth rate is maintaining and improving breeder and hatching performance at the same time. Breeders are becoming heavier as a result of selection pressures to benefit broiler performance. This puts pressure on the breeder's ability to maintain and increase egg numbers and fertility. The industry cannot become similar to the turkey industry and be artificially inseminating breeders due to their inability to mate effectively. This would require more labour and add costs to a supply chain where the pressure is to take cost out. The industry needs a feed efficient broiler grown in 25 days, and also one which is cost effective at day old through optimum breeder and hatchery performance.



Chapter 9: Conclusions

- 1. Genetics will continue to help improve performance and welfare traits to ensure the industry can continue to produce an efficient, healthy protein whilst maintaining and improving welfare traits
- 2. There is a shortage of skilled people across the global poultry industry and very few strategies to recruit and retain people
- 3. Customers and key stakeholders will continue to maintain pressure to reduce and remove antibiotics from the supply chain, and the UK industry must view this as an opportunity
- 4. The percentage of time a chick spends in a hatchery as part of its life cycle is growing and early access to feed and water may become more critical for future potential improvements in performance, welfare and reduction in antibiotics
- 5. All is and will continue to be a huge threat to the poultry industry and strategies must be consistent and robust in tackling and preventing future outbreaks
- 6. The power and influence of welfare groups cannot be ignored and the poultry sector must ensure they work in partnership with these people to mitigate the risk of aggressive campaigns against the industry and open the doors and showcase the good work and high standards that farmers adhere to in the UK.

Chapter 10: Recommendations

- 1. The UK Poultry industry should collaborate with the wider agricultural industry to recruit and retain people. Furthermore, collaboration at universities and colleges to get poultry back on agricultural course agendas is paramount, to educate existing entrants about the industry and its prospects.
- 2. Mechanisms should be built into the planning process to ensure new poultry sites are erected in areas of minimal risk: for example, sites should not be built near water courses, and guidance given to new entrants about biosecurity standards. This will help mitigate the risk of future outbreaks, reduce the risk to existing facilities, and ensure responsible growth of the industry.
- 3. Adopting early feed and water systems may not be possible across the whole supply base, but the industry must recognise the importance of delivering chicks to farm as early as possible post hatch.
- 4. The UK industry must not be complacent, thinking that a cheap and healthy protein will keep the industry going. It must work with customers and consumers to educate them about the excellent standards that British chickens are grown to. It should utilise existing events such as Open Farm Sunday and champion individual farmers to use social media to promote the good news story of the poultry industry. The industry should utilise existing brands, such as Red Tractor, to have more marketing campaigns and celebrity endorsement to really put British chicken back on the map
- 5. The UK industry operates in some of the most volatile retail markets in the world and it is imperative that retailers, customers and consumers all play their part in investing in the supply chain. There is one pie to be shared across the supply chain and in order for there to be a supply of clean, safe, high quality, British chicken in the market then everyone must have an equal piece



Chapter 11: After my study tour

The Nuffield Farming Scholarship has given me confidence and recognition outside the family business. Since completing my study tour I have presented to the South West Chicken Association, NFU Regional groups, Agricultural Colleges and, more recently, I have been asked to present at the 50th Anniversary of the Egg and Poultry Industry Conference. Through these presentations my aim is to help educate people about what I have seen and what that means to the UK industry.

I am now part of the British Poultry Council Breeders and Hatcheries committee. I have taken part in discussions about new legislation and potential challenges and opportunities to the industry and they have been relevant to what I have seen on my study tours.

Within the family business I have been involved in implementing an apprenticeship scheme. The aim is to target school leavers and people under 24 and placing them on a programme of training to 'earn and learn'. This will be paramount in getting the volume of people needed across the farming base now and for the future. I am also involved in the Harper Adams University's BPC scholarship scheme, and work with our own HR department to feed back changes to help improve the success of the programme.

I have sat in on many internal meetings with key customers, retailers and our own internal team, discussing concepts such as the Chicken of Tomorrow and potential new concepts that we may have to adopt if customers demand it. Discussion has also been held on how systems such as Hatch Care, and X trek could potentially be introduced into the UK market, and the potential benefits and impacts to the business and industry.

I want to continue to share what I have learnt during my study tours with farming groups, Young Farmers' Clubs and the wider industry to ensure people can see and understand what could be facing their industries in the future and how to plan for it.



Chapter 11: Executive Summary

The UK poultry industry is one of the oldest in the world and continues to grow at an annual rate of 2-3%. 2050 is the year being marked for a global population of 9 billion people and the UK will have to adapt and grow to meet this challenge. There is a current shortage of skilled people in the industry and there are very few initiatives to recruit and retain new entrants. Avian Influenza is the single biggest risk to the global industry and recent outbreaks have proved challenging to those affected. There are many misconceptions of the broiler industry, and welfare groups are on aggressive campaigns trying to put the industry's reputation at risk. There is an element of complacency in the UK, where at the moment, thanks to genetics, there is an affordable, versatile and healthy protein source. However, the industry must be proactive in its approach in communicating to consumers the benefits of eating chicken and the high standards adhered to in the UK.

The main aim of the report is to understand how companies, industries and countries were planning for future challenges and opportunities facing them. Integrators, governing bodies, retailers and farmers were visited across New Zealand, Holland, Hungary, USA and Australia. All countries visited had correlations to the UK market, and there were four consistent areas that featured in all discussions and meetings that aimed to shape future strategies to tackle and adapt to challenges and opportunities being faced.

All countries were seeing the benefit of genetic improvements and adopting new and innovative farming systems to help improve performance, quality and welfare. Apart from universities in the USA, there were very few successful schemes in recruiting and retaining new entrants. Welfare groups were a huge influence across all countries in shaping the structure of the industry in some way. Avian influenza was a global problem; it had directly or indirectly affected all countries visited and new strategies were being adopted to prevent future outbreaks.

The UK poultry industry should collaborate with the wider agricultural industry to recruit and retain people. With the future projected growth in the industry, people will be the scarcest asset and investment in them is paramount to the success of the industry. Mechanisms should be built into the planning process to ensure new poultry sites are erected in areas of minimal risk, and guidance given to new entrants about biosecurity standards. The percentage of time a chick spends in a hatchery as part of its life cycle is growing, and early access to feed and water may become more critical for future potential improvements in performance, welfare and antibiotics reduction. The UK industry must not be complacent and should work with customers and consumers to educate them about the excellent standards to which British chickens are grown. Furthermore, the power of welfare groups must not be underestimated and the UK Industry must ensure proactive awareness of these people to prevent damaging backlash to the reputation of the industry. The UK industry has been successful over many generations due to its customer-focused structure and adaptable nature. If the industry continues to major on these two strengths, it will continue to succeed for many generations to come.

Patrick Hook



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Mr Michael Czarick, III	Yash Gandhi
Mr Tony Newsome	
Mr Daniel Dorsey – Breeders Fieldale	New Zealand
Dr Billy M Hargis	Dr Kerry Mulgueen
Dr Michael T. Kidd	Professor Ravi V Ravindran
Mr Jerry Lane	Dr M. Reza Abdollahi
Mr Jeramie Martin	Mr Bob Watson
Mr John Renault	Mr Muhannad Juma
Mr James McGinnis	Ms Debbie Fisher
Dr David Wicker	Mr Brian Jones
Mr Robert Benton	Mr Marc Scott
	M Robert Lloyd
	Mr Jim Kingsley-Jones
	Mr Nicholas Narbey
	continued overleaf



UK

Mr Brian Barnett Mr James Hook Mr Alan Beckett Mr Patrick Nicolls Dr Leon Furlong Mr Tom Procter Mr Jim Hunnable Mr Alan Thompson Mr Adrian Rushby Mr Roy Mutimer Mr John Cooper Mr Philip Wilkinson OBE Hungary

Mr Robert Roszkopf Mr Peter Bárány

Holland

My Michiel Van Veldhuisen Mr Paul van Boekholt Mr Maikel Veron Mrs Lotte van de Ven