

David Speller, Applied Poultry & FW Poultry Farmer of the Year

Poultry Innovations Forge Ahead for Welfare, Food Chain and the Environment

Background

In 2004 I re-mortgaged my house and bought a 1960's poultry unit known as Lower Farm, that in its day had been at the forefront of large scale intensive production of poultry meat. The price was an attraction and due to having worked in agriculture all my life I had no doubts about what I was buying and that a lot of hard work and commitment would be required. Prior to 2004 I had been working firstly in arable farm management and then for myself as an assurance scheme assessor both in the UK and overseas. In 2003 I got married and felt I needed a business opportunity closer to home to enable me to start a family. Against advice from friends, whom had good contacts in the poultry sector, I felt that fresh British poultry had a future and I was drawn by the benefits in terms of cash flow of the modern integrated broiler business. Having had no prior experience in intensive broiler production I forged links with the local chicken factory, who had previously taken birds from Lower Farm, and relied on their fieldsman's knowledge to get me started. 6 years on I have absolutely no regrets and continue to expand the business in many poultry orientated directions. I now raise poultry on my own farm, advise others, offer demolition and contracting services, and assist the banks on reviewing and managing poultry farms.

The Early Years

After a winter of escalating fuel bills and a summer of losses due to heat stress I soon realised that the aims of a simple business model with minimal investment would not offer the best in terms of bird welfare or secure the most reliable of incomes. From this realisation I entered discussions with my customer, Moy Park to erect some new buildings on the plot of land. Instead of just replacing the existing buildings with like for like I was drawn by the opportunity for complete re-development.

I approached my customer to ensure they would purchase my birds and I also spoke with the local planning officers as the farm was situated in the Peak District National Park and local rumours about the planners were always extreme.

My customer wanted to expand their supply base and offered a financial incentive if I were to supply them with a view to a long term arrangement and the planners were in principle happy. Plans were submitted on the basis that the farm would become more aesthetically pleasing and our impact on the immediate local environment could be improved. After a presentation to the local planning committee I was granted permission for 9000 M² of bird space.



The Oxford Farming Conference 2011

The finances were more difficult to secure and it took some time to secure 100% funding for the project, finally arranged through Barclays bank.

The Development

In total the development phase took 12 months requiring the relocation of 60,000 tonnes of earth and the laying of 300 lorry loads of concrete. By the end I had over spent by 15% and was fortunate enough to be working with a bank that offered solutions to my difficulties as long as I could provide accurate and reliable financial data to their credit team at regular intervals. Most of the overspend came down to some extra excavation costs due to poor weather and also the cost of the underfloor heating. I was the first in the UK to install a complete underfloor heating system in broiler sheds and right from the start I wanted to implement modern solutions to age old issues.

The Production System

At Lower Farm I produce broilers for meat with an average live weight of 2.22Kg at kill. Birds are placed 50% hens and 50% cockerels in open sheds, without segregation, at a maximum stocking density at depletion of 36-38 kg/m². Overall growing time averages 38 days and then I have 11 days to clean and disinfect the facility and get ready for the next batch of chicks. The farm operates an all, in all out production system to give the best control of diseases through optimal bio security.

Technology Employed at Lower Farm

I use a broad range of technology at Lower Farm to ensure optimal bird welfare, which in turn offers good physical performance. Everything that I invest in is done so on the premise that broilers will perform the best when they are the most comfortable and the least stressed. I feel that with modern technology it is possible to monitor the birds in such a way as to compliment traditional stockman ship and improve bird welfare, protect the environment and secure a reliable cost effective source of animal protein for human consumption.

A summary of the technology installed at Lower farm includes:

Underfloor heating is more efficient to operate than traditional heating systems; it heats the area where the birds live rather than the roof void and leads to better bird comfort, more efficient food conversion and drier bedding for the birds to lay on.

Tunnel ventilation is in place for cooling the birds during the summer. By moving the air in the shed a constant 6 miles per hour the breeze generated offers the birds a wind chill of approximately 3-5 degrees Celsius dependant on humidity levels. Therefore when it is 30°C outside the bird effectively feels 25°C.

A centralised PC records and graphs data from the 4 individual sheds allowing constant monitoring of any required parameter.

The central PC has a summary screen allowing immediate checking of all sheds before any shed is entered. This allows the stockman to go straight to a



The Oxford Farming Conference 2011

problem rather than waiting to find it as and when he gets there in a pre prescribed inspection routine.

Remote access to the farm computers to monitor and adjust the computers from anywhere via the internet or a smart phone helps when I am away on business.

Water and feed measuring devices are in place to closely monitor intake levels and react to unexpected changes in intake, be it feeder breakdowns or excessive water consumption. I am able to use the water consumption figures to indicate any gut health issues that may lead to an increase in water consumption and a drop in feed intake.

Automatic bird weighers allow me to monitor overall growth, daily growth rates, flock uniformity and conduct historical comparisons. Ventilation rats are also carefully linked to the exact weight of the birds with heavier birds requiring more air and vice versa

Web cams are in place in the sheds to allow remote monitoring via the web and also allows accurate assessment of bird behaviour without disturbing the birds

Gable end extraction of all vented air allows me to catch dust and treat the air leaving the shed to minimise the odour impact on the local environment.

Carbon Dioxide monitoring ensures the birds have excellent atmospheric conditions and ensures I don't over or under ventilate the sheds which would have an impact on the birds' welfare and waste energy.

Just about all things monitored and some things that aren't monitored are linked to a remote alarm system that will call either me or my staff whenever required, day or night, 365 days a year. At all times there is always someone no more than 10 minutes from the birds.

Odour abatement systems are in place, although after several years of trying and a considerable trials budget I, along with the Environment Agency, are yet to find a way of preventing chickens from emitting a smell. I am currently trialling a new approach, designed by myself and hope to be closer to a solution in 2011.

One of my most recent investments was in motion detection cameras that enable me to monitor bird activity and put a quantitative figure on activity levels and distribution of birds around the sheds. The aim is to ensure even distribution of birds around the facility to ensure each bird has equal access to food and water and also to link activity levels with good welfare. The system should enable a proactive approach to meeting the bird's needs, prove good welfare and ensure consistency of supply to my customer. I have already seen in Holland this system being able to detect a change in bird behaviour when 1 of 4 feed lines ran out of food and the birds all became active looking for food. This then triggered an alarm and allowed the farmer to rectify things immediately, in terms of bird welfare it is a system keeping a watchful eye on the birds 24/7, something no stockman could achieve.

Efficiencies

At present I am converting a predominantly wheat based diet into meat protein at a ratio of 1:1.6. This means that for every 1.6kg of feed a bird eats it



The Oxford Farming Conference 2011

retains 1kg in live weight. Efficiencies like this ensure we minimise our carbon foot print both in terms of minimising energy consumption on site by producing birds faster but also reducing the number of feed delivery lorries that are required in a year. This level of efficiency is only achievable by ensuring that the bird is completely comfortable and stress free. If the environment in the sheds is wrong the birds will burn calories to either keep warm or keep cool and any undue stress will also result in loss of efficiency.

Timing & Consistency is Everything

On average I have stated that my birds live to 36.6 days prior to slaughter. Based on net profit figures of 7% this means that there are 2.5 bird growing days per cycle for me to make my profit. If I produce 7.5 cycles per annum this means I only have 18.75 days per annum to make my profit and so whilst it is essential to look after the birds every minute of every day on grounds of bird welfare, this close monitoring is also essential to ensure I remain in business. This low level of profit means that the business is made viable by the scale of the enterprise and by the total commitment to the bird's welfare and attention to detail.

What is also essential for my business to be successful is the ability to generate a predictable supply of chicken for my customer almost irrespective of what quality of chick I am supplied and whatever the weather conditions outside. Prior to the redevelopment of Lower Farm the quality and quantity of chicken meat generated at the end of cycle fluctuated seasonally, as environmental management in the sheds was difficult. Also it has to be remembered that we are dealing with animals and as such everyone is an individual, no 2 chicks are identical and part of the challenge is to ensure each and every chick becomes a viable bird fit for human consumption ready for my customer to process. In this way the technology I have implemented is helping to secure food for the consumer today and for the future.

Environmental Challenges

Lower Farm is regulated by the Environment Agency and has to operate within tight environmental permitted conditions. When I built the new facility I was always mindful of this and as such environmental risks were engineered away. This includes all internal drains being linked to catchment tanks to control dirty water and the potential of any stored products to leak, such as oils and cleaning chemicals. All dirty water generated during the washing of the facility is caught in catchment tanks, dust vented out of the sheds is caught in dust canopies and then washed into catchment tanks, and all yard water can also be diverted to catchment tanks.

Waste is minimised and recycled where possible including the recycling of all plastics and the office waste is shredded and used for environment enrichment for the birds. All dead stock are routinely removed from site by a renderer for recycling.

At the end of a production cycle we sell our manure to local farmers to use as a valued fertiliser. Putting a charge on the product prevents it being wasted and ensures the environment is considered during its storage and application.

The Oxford Farming Conference 2011

I have planted 3,500 trees around the 5 hectare site to lessen the visual impact and where possible offer some wildlife habitats.

An ongoing issue is that of odour. I have 1 or 2 neighbours who seem to have taken a dim view to my modernisation of Lower Farm and they are intent on trying to get my environmental permit removed on the grounds of odour nuisance. It has to be said that this alone has been one of the biggest stresses I have had to overcome in the whole project. When the poultry sector was first issued with the IPPC permitting rules it appeared the rules had been written very logically indicating that I am required to do all I can to reduce the odour and ensure I use all industry standard controls. This was not an issue to me as things like under floor heating, computer controlled ventilation, dust catchment is way above industry standard. In practice the regulator, the Environment Agency, has continually sided with the complainants and on more than one occasion wrote to me threatening to revoke my permit. Without this permit I could not produce the number of birds I need to be a viable enterprise. I have operated way above industry norm and have trialled just about everything I can think of at a current cost of £40,000, to no avail. Regrettably the issue continues to cause me huge amounts of stress and along with my industry peers I continue to campaign for a degree of common sense to be included in the control of odour from intensive livestock farms.

What Next?

I have 3 main areas that I hope to address in the next 3-5 years.

Renewable Energy/ Energy recycling; now that I have hot water running under my floors heating the sheds it seems sensible to heat this water in a more efficient way than gas boilers. At present a lot of the renewable technology is expensive and some is only viable with government incentives. What is of real interest is the potential to capture the heat generated by the bird during its growing period which we vent out of the shed and re use this as the heat source for following young chicks. On average a bird generates 3 times more heat during its life than it requires keeping it warm at a young age.

Rain water harvesting has to be considered on a site with such a large roof area and a being situated in a high rainfall area. To date two reasons have prevented this being in place already, cash flow and site topography. With Lower Farm being dug into a hillside flat land is a premium and so some excavations will be needed for the rain water storage area. I would hope to come up with a tank system that can be running within 3 years.

Windows in the sides of the sheds is becoming a requirement of our customer and so I will look to have the equivalent of 3% of my floor area as windows in the coming months. The difficulties this pose include the effects on the insulation properties of the building and also light management. During the catching process at the end of a production cycle it is essential that we can black out the sheds to minimise stress to the birds and also moving vehicles around the site will startle the birds as they drive past a window. I am sure we can overcome these issues but what appears a simple request actually has huge implications on bird welfare and management both for the good and otherwise on the farm.



The Oxford Farming Conference 2011

Conclusion

In conclusion I would hope that I have shown how at Lower Farm I am using numerous innovations to ensure primarily that the birds' welfare is optimal given the tight financial constraints we operate under. It is 100% in my interest to ensure my birds are comfortable and live a stress free life. I would love to have only 25% of the bird numbers and keep them for 6 months each but this in reality would mean a rise in the cost of chicken by some 15 fold as I could only produce 1/15th of the birds from the same facility/fixed costs. In addition it is likely that should we lose our UK based intensive livestock sector food processors and retailers would look to import more meat from other countries. I will continue to use innovations and technologies to further improve welfare and business margins and feel sure we are far from having done all we can to optimise the welfare of the birds, protect the environment and secure a viable food chain that can meet the demands of a growing population.

David Speller