The Oxford Farming Conference
4-6 January 2011

Inform · Challenge · Inspire

A Young Farmer's Perspective

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Introduction

The prize for winning the 2010 National Farm Business Development Competition was a scholarship to the 2011 Oxford Farming Conference. The aim of the conference was to inform, challenge and inspire delegates for the future of global agriculture and its impact on UK farmers.

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Summary of Events

Tuesday 4 January 2011

After an early rise we travelled down to Oxford from Cumbria. The scholarship included accommodation at St. Edmunds Halls of Residence, which during term time is used as living quarters for Oxford University Undergraduates.

St. Edmunds Hall, Oxford University

The historical surroundings were an inspiring introduction to Oxford and the sense of awe and grandeur continued throughout the conference.

After registration we attended the invitation only *Speakers, Scholars and Sponsors Reception*, which was kindly sponsored by Mcdonalds who provided free champagne and canopies.

This gave us the opportunity to meet our fellow scholars and those who would be addressing us over the next three days.

Michael Nelson – NFYFC, Katherine Meacham and Rosie Naylor – Royal Agricultural College

We then moved to the East School for further champagne, in the company of all delegates where we were addressed by Christine Tacon CBE, Chairman of the Oxford Farming Conference. She welcomed us, thanked everyone for coming and hoped that we would find the conference a valuable experience.

The next item on the agenda was the Pre Conference Dinner, and it was at this point that the magnitude of our prize became apparent. We filed into the giant banqueting hall alongside the other 580 delegates to take our place at a magnificently prepared table to enjoy a five-course feast. The first course was smoked salmon, which lead perfectly into the centre-piece of the meal – a 10 oz fillet steak. This was followed by a raspberry trifle, a board of luxurious cheeses and fine quality port.

Fellow scholars, Colin Beacom and Isabel Hart – Harper Adams University College, at the Pre Conference Dinner

John Humphrys, presenter of Radio 4's Today Programme, was the after dinner speaker and provided our entertainment for the evening. He regaled us with tales of his dealings with politicians, the monarchy and his failed farming enterprise. Throughout his address his empathy for farmers within the current economic climate was evident.

We finally retired to the bar to further acquaint ourselves with the conference delegates….and retired to bed at 2:30am.

Steven Powely – NFYFC, Rosie Naylor and Katherine Meacham – Royal Agricultural College

Wednesday 5 January 2011

After we had recharged our batteries, we awoke at 7:00am in preparation for Morning Prayer at the *University College Chapel*.

Morning Prayer, University College Chapel

This was lead by Reverend Dr Gordon Gatward, who included within our prayers the need for God's help in meeting the challenge of feeding the growing global population, and asking that we, as farmers, are good custodians of the land he has provided.

We then returned to St. Edmunds Hall for a multi-course breakfast before proceedings began at 8:45am.

Breakfast, St. Edmunds Hall, Oxford University

Oxford Farming Conference
4th – 6th January 2011

The morning session was opened by Rt Hon Caroline Spelman MP, the Secretary of State for DEFRA, followed by George Lyon, Scottish MEP and Brendan Smith TD, the Irish Agricultural Minister.

These political figures spoke on the evolution of the Common Agricultural Policy (CAP) and how UK farmers can meet the challenges that the future holds. This was followed by an opportunity for delegates to question the politicians.

During the preceding coffee break, Steven was approached by Radio 4's *Farming Today* programme and was asked his opinion on the morning's discussions.

The session before lunch was led by Prof Aubrey Manning OBE, who addressed the conference with his theories on the forecasted global population of 9bn in 2030. He questioned whether this would be realistic, manageable and sustainable.

After lunch we were addressed by Jeffrey Currie, Marcelo Secco and Jim McCarthy who gave us their perspective on agriculture, dealing with global commodity markets, global food markets and farming with and without subsidies.

The evening session was a debate dealing with the reoccurring theme of unrestrained population growth and food security. It was held at the Oxford Union debating chamber, which has for many years been a forum for high class debating. Many of the country's most prestigious speakers gained their eloquence in the debating chamber, which has hosted guests such as Ronald Regan and Winston Churchill.

Debating Chamber, The Oxford Union

The Post Debate Supper was the highlight of the Conference, which was a banquet served in the Great Hall at Christ Church College.

Post Debate Supper, Christ Church College

The hall in which we dined was used as the Hogwarts Canteen in the Harry Potter Films. In keeping with the standards we had become accustomed to thus far, the table settings were striking and the food was delicious.

Table layout, Post Debate Supper

Over dinner we engaged in a heated debate with Drew Sloan, *Chief Agricultural Officer at the Scottish Government*, over the future of UK beef farming.

We then retired to the bar before sampling Oxford's nightlife together with some scholars from Harper Adams University College. Our night was concluded at 1:30am by sampling cuisine provided by one of the Conference's sponsors, McDonalds, at which we met Gregor Mackintosh, a Scottish Entrepreneur and one of the speakers for the following day!

Thursday 6 January 2011

After breakfast at 08:00 we were in our seats in preparation for the morning session which commenced at 08:50 and dealt with future technology in Agriculture.

Bill Clark discussed the use of science in relation to improving crop yields, and Chris Warkup described the benefits of Biosciences and how breeding technology can improve the output of livestock enterprises.

We broke for coffee at 10:30, which was then followed by the session that challenged and inspired us the most. It began with a short film, introducing the delegates to Thanet Earth – a high profile greenhouse development in Kent spanning 55 ha and costing £100m.

After the winning the Farm Business Development Competition with a proposal based mainly on poultry production, we were eager to hear the next speaker – David Speller, 2009 FW Poultry Farmer of the Year.

We were impressed how he was using the most up-to-date technology to increase the efficiencies required in order to operate a profitable unit.

Future Data Analysis used by David Speller

The early afternoon session focussed on entrepreneurial farmers and featured three case studies – Charles Baker of RC Baker (Agricultural Contractors) Ltd; John Shropshire, CEO of the Shropshire Group; and the aforementioned Gregor Mackintosh of *Mackintosh of Glendavey*.

Key Message

The key message we took away from these studies was how to recognise and utilise the opportunities that are available in agriculture.

The conference was aptly concluded by Dacian Ciolos, Member of the European Commission for Agriculture, during which he put forward his vision of the future of farming in the EU.

We have very much appreciated and enjoyed the opportunity given to us by NFYFC through our scholarship at the Oxford Farming Conference. We feel this has improved our knowledge, inspired us to indentify opportunities and prepared us for the challenge presented by a future in agriculture.

Our findings and opinions from the conference can be read in the following chapters.

Chapter 1

An Expanding Global Population

A running theme throughout the conference was the challenge of feeding an expanding world population, which according to Professor Aubrey Manning is growing by 200,000 people each day.

Prof. Manning indicated that by 2030 the global population will inevitably reach 9bn, and could potentially be as high as 10.5bn. An "utter disaster", such as a worldwide disease epidemic, is the only way this may not happen.

It is thought that the majority of the population increase will be in sub-Saharan Africa and developing economies such and China and India. However, the population of the UK is also rising by 100,000 people each year which will give us a population of 70m by 2030 – this is equivalent to seven extra Birmingham sized cities.

Brendan Smith, *Irish Agriculture Minister*, claims that 1 in 6 people go hungry every day, and Prof. Manning deems a global population of 9b is unsustainable and claims that many developing countries now regard their growth as too large.

"*I have never seen a problem that isn't easier to solve with fewer people, or harder and ultimately impossible to solve with more*"
Sir David Attenborough

The key issue of population growth is providing sufficient food. George Lyon, *Liberal Democrat MEP for Scotland*, indicated that we needed to double food production due to rising demand from developing countries. This is supported by statistics published by the World Bank:

"*The World Bank estimates that cereal production needs to increase by 50% by 2030 to meet demand"*

By increasing the production output from cultivated land, and bringing new land into production, global food production can be increased. Also through an improved marketing infrastructure we can enhance food storage practices in developing countries, resulting in less wastage from harvesting to consumption.

However, Prof. Manning stated that we are currently utilising the majority of good farming land, and whilst there is still the potential to bring good quality land (*i.e. some regions of the Former Soviet Union*) other areas, such as tropical rainforests, are more difficult to produce a sustainable product from. Rainforests are cleared for two good years of cattle ranching before soil erosion makes the land unproductive.

Bringing new land into production would also destroy much of the beauty of our planet, together with its natural life support systems.

The world cannot support a population of 9bn at the affluence levels of the Western World, and per Prof. Manning, to sustain an increased population we must alter our diet and eat less meat. At present, 70% of US grain production is fed into livestock – this would be unsustainable should population levels grow to levels predicted.

The challenges of feeding a growing population are available land, resources and climate change, as noted by George Lyon. The challenge for agriculture going forward is described by Prof. Sir John Beddington as:

"*We need 50% more production ….on less land, with less water, using less energy, less fertiliser and fewer pesticides...by 2030*"
Professor Sir John Beddington

Chapter 2

Increasing Global Food Production

Dacian Ciolos, *Member of the European Commission for Agriculture*, claims that as farmers we are custodians of the environment and have a responsibility to feed the world's growing population.

Brendan Smith laid down the challenge to produce safe, high quality food at a reasonable price for the consumers. However, he felt it was necessary that prices paid to producers should also provide a reasonable return in order to encourage farmers to continue to increase production.

We were told by Bill Clark that since 1948 UK farm yields have doubled through improved farming methods, such as the use of pesticides, limes, fertilisers and the development of new crop varieties.

However, over the last 15-20 years, yields have reached a plateau and the rate of yield improvement must be increased to feed the growing population. Bill Clark explained how the UK attainable yield is 12 tonnes/ha, but the genetic potential yield of the crop varieties of wheat is 20 tonnes/ha if all variables are perfect (*e.g. if there were no losses to production due to pests, diseases and stresses*).

We can increase the attainable yield closer to potential yield through introduction of new technologies, new pesticides, host defence compound and precision farming.

Despite implementing these improved farming practices, the EU will not achieve the required increases in sufficient time – it will only maintain a slow progression. The yields in the EU will not be doubled by 2030, which is the requirement of the World Bank as noted above.

In order to achieve this, the crop genetic potential must be increased, and this can only be done using genetic modification. We need to maintain a higher potential yield through development of crops rather than developing the way we keep them.

For example, modify wheat to a C4 metabolism to boost efficiency of photosynthesis; improve crop disease resistance through immunising crops; and increasing crops nutrient and water utilisation.

Jim McCarthy is involved in farming in Argentina and the United States where there is no restrictions on growing GM crops. He claims GM crops have greatly reduced inputs and growing costs and provide a much higher and consistent yield. As a result profits are increased.
In Argentina, there has been a 41% increase in yields of soya due to implementation of GM technology. The delegates were also informed that GM is beneficial to the environment due to large reduction in synthetic inputs.

Another subject Jim McCarthy touched on was energy usage – land must return on its energy of production. He questioned whether it was viable to grow on marginal land if it uses more energy than it produces.

This was supported by George Lyon, claiming that new technology will reduce the need for oil and fertilisers and hence reduce greenhouse gas emissions; and increasing output and reducing inputs will improve the environment and profitability. Again he pointed to GM being the technology to provide sustainability of food production.

Marcello Secco, *Commercial Director of a South American meat processing company*, stated that Brazil has produced 50% of the world's beef from 2000 to 2008, and the mission statement for his business was to produce more from less land through better land management, genetics and improved livestock husbandry.

Chris Warkup mentioned that biotechnology will offer practically unimaginable potential to improve the efficiency of food production from livestock; reduce environmental impact; reduce impact of disease; improve animal welfare; enhance product quality and nutritional value; and will ultimately safeguard human health.

For example, the transgenic Canadian Enviropig, that has been engineered to express an enzyme in its saliva that enables it to extract more phosphorous from the cereals in its feed and consequently pollute less.

Another example are dairy cows that expressed a compound in their milk called Lysostaphin, produced by one of the Staphylococcus species, which effectively protected them from the mastitis infection caused by Staphylococcus Aureas.

Chris Warkup claims that reproductive technologies are one of the most effective ways to feed more people from the same or fewer resources. Selective breeding technologies, such as genomic selection, can increase the annual rate of progress by 60% due to reduction in generation intervals.

Furthermore, global bio-technology thus far has been proved to be unharmful to consumers and there is a pressing need to educate the EU populace of this important statistic.

In conclusion, achieving these scientific advances is possible, as much of the technology already exists. However, present levels of investment in these specific research areas in the UK are not adequate and without change in attitudes towards biotechnologies the required rate of improvement in outputs will not be met in the EU.

Greater net-benefits will be achieved, or will be achieved faster, in countries that embrace biotechnologies and utilise genetic modification.

Chapter 3

The Ramifications of Farming within the EU

Conclusions drawn from the previous chapter indicate that, according to Chris Warkup and Bill Clark, the only way to meet the challenges of a growing global population is to embrace the scientific advances available through the use of genetic modification technology.

Currently, EU regulations prohibit farmers from growing GM crops. Jim McCarthly claims this has left farming in the EU as second-rate agriculture, using antiquated technology. He believes this is due to the EU policies being hijacked by environmentalists, who are against the use of GM.

He alleges that the subsidies we receive now are used to maintain the environment but deny EU farmers the opportunity to use GM crops. GM crops have much lower production costs and hence higher levels of profitability can be achieved.

This view was also supported by George Lyon, who stated that the EU is being left behind by the rest of the world in terms of GM Technology. George Lyon's vision of the future of CAP is to have a more fairer, greener and sustainable policy, which can be achieved together with GM technology. GM crops require less pesticides and less diesel is used in crop establishment. The less insecticides used to grow Argentinean GM soya has resulted in a richer eco-system.

In the EU, productivity gains have not risen in line with other areas, for example New Zealand, as a result of the EU subsidies safety net. In the 20 years before removal of subsidies in New Zealand, there was a 1% year-on-year gain in output, but in the 20 years post subsidy removal there has been a 5.1% productivity gain each year. Merciless market pressures forced NZ farmers to either become more efficient or cease production. Those that ceased production freed up land for farmers who continued to expand their acreages, and thus created higher levels of efficiency through economies of scale.

Subsidies are holding back the development of commercial agriculture in Europe. For 80% of EU farmers, subsidies are a survival necessity and without which they would cease to make a living. The key underlying factor behind unprofitability is lack of scale – the average size of an EU farm is 30 Ha compared to 500 Ha in Argentina. Consequently, subsidies granted to EU farmers allow small farms to remain in operation thus slowing the corporatisation of agriculture.

In the words of Jim McCarthy, commercial European farmers have traded their silence for subsidy however farmers are paying a far higher price for this support than they realise.

Another implication of the distribution of subsidies to EU farmers is that in general, the industry demands a much higher price for input sales to farmers. UK farmers have developed a "have to have" syndrome. This brinksmanship has resulted in UK farms being grossly over-mechanised. In Argentina, 80% of the work is done by contractors and hence the farmers do not have to invest large capital amounts in machinery.

Caroline Spellman's view on CAP reform will reduce reliance on direct payments which will challenge farmers to increase innovation. However, she claims that environmental considerations are still of upmost importance to the government and wider public. She wants CAP reform to create the correct conditions for farmers to be profitable through better government collaboration.

Jeffrey Currie indicated that food producers operate in a global market. During the *Question Time* it became apparent that many EU farmers felt restricted by EU rules and regulations and felt that they were at a disadvantage in comparison to non-EU food producers.

This issue can only be addressed by the removal of the burden of red tape surrounding EU agriculture. George Lyon states that the World Trade organisation should be a leader in farm support changes, and therefore global agriculture would move to a level "playing field".

Brendan Smith has a similar point of view however he believes that EU support should be maintained to protect farmers from volatility in the market. He is of the opinion that CAP should support incomes and encourage innovation and sustainability, and policies should be put in place to ensure unfair practices at retail level are stopped.

The EU needs to decide whether it wants to protect the environment and maintain the traditional appearance of the countryside, or accept the challenge of feeding the growing population.

If the EU accepts the challenge, it must adopt global bio-technology. Improvements in output will be achieved at a faster rate in those countries that have an enabling regulatory environment for biotechnologies. Should the EU decide not to embrace GM it will be left behind as a food producer and will have to use the environment as a tool to generate profits from tourism; however, this is clearly an unsustainable use of land and resources.

Chapter 4

The Future for UK Agriculture

As a result from the Oxford Farming Conference Research, 90% of people asked thought the UK's rise in population would increase opportunities for UK agriculture.

The *Farmer Case Studies* section of the conference highlighted how UK farmers were able to utilise diversification, change management and entrepreneurship in order to make the most of these opportunities.

The case studies, that featured a range of successful UK farmers, informed the delegates of a number of strategies available that could enable UK agriculture to reach its full potential.

Chris Mack, the Executive Chairman of the Fresca Group Ltd - who recently ventured into the high profile Thanet Earth greenhouse development in Kent, described how greenhouse technology could be used to produce consistently superb quality products all year round.
The 55ha greenhouse site, which grows tomatoes, cucumbers and peppers, has increased the UK's output of these products by 15%.

80% of all tomatoes consumed in the UK are imported, but they could actually be produced in greenhouses similar to this.

Thanet Earth was created around a technical model which gives a fusion of quality products, competitive prices and sustainability. A by-product of the operation is electricity, which is generated through large gas powered engines within the greenhouse building. Some of the electricity is used to power the greenhouses however the majority is sold to the national grid. Also 50% of the water used for the production process is harvested from the glasshouse roofs.

When planning the venture cost efficient processes were at the forefront of Chris Mack's business plan, and it came to fruition that the most environmentally friendly complex would also be the most cost effective.

Another successful UK farmer that has utilised technology as a modern solution to age old issues is poultry producer David Speller. He says the simple business model with minimal investment would not offer the best in terms of bird welfare or secure the most reliable of incomes.

He uses a broad range of technology to ensure optimal bird welfare, which in turn offers good physical performance. With modern technology it is possible to monitor the birds in such as way as to compliment traditional stocksmanship and improve bird welfare.

Speller installed underfloor heating in the broiler unit in order to closely regulate temperature and improve feed conversion. The improvements in feed conversion rate enabled the £275,000 initial cost of the heating to be repaid in full within 4 years.

A centralised PC is used for monitoring the sheds and data recording – this helps to decide in which order to walk through the sheds and can identify potential problems, for example a drop in feed consumption which would indicate a broken feed auger. This electronic warning system is directly linked to his personal Blackberry whereby he is notified immediately if any of the pre-determined parameters of feed, water and temperature are exceeded.

Motion detection cameras are the latest technological development at Lower Farm, and in terms of bird welfare it is a system keeping a watchful eye on the birds 24 hours a day which is something no human stocksman could achieve.

John Shropshire's business model is to maximise growth of farming operations in the UK and Europe, hence benefiting from significant economies of scale to allow him to be the lowest cost producer. The Shropshire Group is Europe's leading privately owned producer of fresh produce. It has a turnover of £300m and employs over 4,000 staff.

He realises the brutal facts are that supermarkets are powerful. If costs go up, output prices go down in real terms. In food and farming, prices tend to fall rather than rise, so growth must come from increased sales and adding value to products. Without growth a business goes backwards – 25 years ago growth of 4% was required just to stand still therefore in 15 years' time the Shropshire Group's sales will have to be over £500m.

Shropshire's method behind managing the supermarkets' power was to supply them with a consistent product continually throughout the year. With the British climate proving a limiting factor, 4,000 ha of land was acquired in Aguilas, Spain in 2002 in order to achieve all year round supply.

In total, the Shropshire group farm 9,000 ha of salad and vegetable crops in the Czech Republic and Spain supplying half of group sales.

The final case study promoted entrepreneurship and innovation to the highest degree, and was delivered by Gregor Mackintosh, who proved that age was no restriction to business development.

After graduating in the summer of 2009 he established *Mackintosh of Glendaveny* only a few months later. As part of his dissertation published whilst studying at the Scottish Agricultural College in Aberdeen, he developed the idea of harvesting his own rapeseed crop to produce Extra Virgin Cold Pressed Oil as a UK grown alternative to extra virgin olive oil.

He has actively marketed his niche product effectively, resulting in his oil being stocked by major supermarkets and a range of delicatessens, butchers and farm shops. His products have been used and promoted by top chefs as well as supplying Buckingham Palace.

Mackintosh has highlighted that there is always gaps in the market and potential opportunities available to UK farm businesses. Should the UK want to become self-sufficient, farmers must innovate in order to pursue these profitable opportunities.

Despite the opportunities referred to above, there are still significant restraints to UK agriculture producing maximum potential yields in terms of output and profitability. These were identified by the Oxford Farming Conference Research, the most restrictive of which being the greater burden of legislation in the UK.

Although we operate in an EU wide regulatory framework, many people feel that other EU countries are more lenient when enforcing these rules, allowing non-UK farmers an increased level of freedom.

A major issue that the conference struggled to find resolutions to is that of insufficient collaboration with the supply chain and supermarket power. John Shropshire's response to immense supermarket power was to be the lowest cost producer, which forced other smaller enterprises out of business, and in some cases were subsequently bought by the Shropshire Group in order to expand their empire.

This, of course, is not an adequate solution to the number of small and medium sized farms wishing to stay in agriculture but who sell their products for less than the cost of production. Perhaps this is an area on which the Oxford Farming Conference could focus on in future years.

Another area that has been referred to by numerous speakers as a way to encourage the growth of UK agriculture is investment in agriscience and the implementation of new technology on farms. Research found that 90% of people believed that investment in agriscience was insufficient.

Substantial capital investment in innovative technology was a key underlying factor behind the success and profitability of the enterprises created by both Mack and Speller. However, small and medium sized UK farmers may struggle to secure funding required to raise this level of capital and this should be considered in the future CAP reform debate.

The final barrier to the growth of UK agriculture is its perceived unattractiveness to new entrants, due to insufficient support and lack of knowledge transfer and skills training.

Chapter 5

Challenges to Young Farmers and New Entrants to Agriculture

We were given the opportunity to attend the Oxford Farming Conference as a result of winning a competition for which we had to propose a tender and business plan for a farm, from the perspective of a new entrant to agriculture. Throughout the conference we have absorbed the facts and theories presented to us from this perspective.

The fact that global population is rising would seem to present new young farmers with the opportunity to meet this increase in the demand for food globally and in the UK. However, we were told that there are 1bn people going hungry every day in the world and yet most sectors of British Agriculture claim to be in a position where current levels of profitability cannot support further capital investment.

The increase to unsustainable levels, which will create Sir John Beddington's *Perfect Storm* scenario referred to by Caroline Spellman, is forecast to happen in 2030. Will a predicted situation 20 years in the future attract and sustain new young farmers to an industry which has traditionally had lower levels of pay than other areas of the economy?

The countries that are making the most progress in terms of agricultural output and efficiencies are those that are utilising biotechnology. It is these countries, with lower cost structures, that are in a better position to make the most of the increase in global food demand.

Given the increased level of legislation surrounding farming in the EU, many speakers at the conference felt this put UK farmers at a competitive disadvantage. Failure to embrace the benefits and synergies provided by adopting genetic modification now will result in future generations being left far behind by the progressive Americas.

Examples of successful and profitable UK agricultural enterprises that were presented to us at the conference appeared to be those with large economies of scale and significant capital investment at the outset. This is obviously a significant barrier for entry into UK agriculture, especially for young farmers who do not have a family farm to inherit and will therefore have to tender for the rental of a small to medium sized farm.

The case study which provided the most inspiration from a new entrant's perspective was that of Gregor Mackintosh. He showed us that intelligent, innovative ideas can create a profitable agribusiness.

This presents a challenge to all young farmers whereby profitable, unique opportunities must be identified and developed in order to create a sustainable business in difficult market conditions. Through implementing initiatives similar to those displayed by Mackintosh, young farmers can grow profitable enterprises with strong infrastructures which will be in a position to sustainably expand in line with the growth in global food demand.