



**A Nuffield Farming Scholarships Trust**

**Report**

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**The South of England Agricultural Society**



**Grain supply chains:  
an opportunity not to be missed**

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# Contents

Executive Summary .....	1
1 . Perrsonal Introduction .....	5
2. Background .....	8
3. My Travels .....	10
4. Logistics .....	12
4.1 Western Australia.....	12
4.2. Canada.....	15
4.3. Export Focus.....	17
5. Price Discovery .....	18
5.1 Australia .....	18
5.2 US .....	19
6. Relationships .....	21
6.1 Miller Coors .....	21
Burley, Idaho.....	21
Research and Development Centre.....	23
UK Relationships.....	25
7. Conclusions .....	27
Logistics .....	27
Pricing.....	27
Relationships.....	27
8. Recommendations .....	29
9. Further work after my Nuffield Study Tour.....	30
10. Acknowledgements and Thank yous.....	32
11. Appendix .....	33

## Disclaimer

The views expressed in this report are entirely my own and do not necessarily represent the views of the Nuffield Farming Scholarship Trust, or those of my sponsor, or any other sponsoring body.



## Executive Summary

### Background

I manage a family farming business in Hampshire where we specialise in arable crop production and offer contract farming services. We now operate over 1700 ha and care for land owned by seven landowners, as well as the 350 ha we managed to buy in 2006. My passion is for growing crops as well as I can. We have concentrated on growing high value, quality crops where possible. We are more committed than we have ever been to agriculture, and my main ambition is to secure that commitment with a sustainable and “bulletproof” business. One that will be able to withstand the shocks of unpredictable weather events, volatile markets, and outside shocks, such as the Global Financial Crisis, which we are certain to encounter in the future.

Our family farming business in Hampshire produces around 10,000 tonnes of combinable crops a year. I have spent much time, effort and resource over this in striving to improve the quality of our crops, lower our costs, boost our production and achieve consistently good results, both physical and financial. We have embraced science, technology, the best new thinking on cultivation and nutrition techniques. I have ensured that I was as up to date and well informed as I could be on new technical developments; we have invested in training our workforce; we have secured access to the best agronomic and economic advice. We are efficient and proficient growers, *so*

*why are we not able to produce the sort of profits that I felt this activity deserved?*

Businesses in other sectors outside agriculture would not put up with accepting this sort of return, so why should we? Nor would they accept the amount of risk we take on a daily basis. All of this had to change, and the opportunity that a Nuffield Farming Award gave me to investigate ways in which to do this was an extraordinary chance that I could not wait to grasp.

### The Study

Adding value to farm produce is a phrase that is bandied about all the time, but to do this with what is essentially a commodity needs careful examination. The area in which I feel there is still a great deal of potential from which to extract inefficiency and provide better value is through closer links with the rest of the grain supply chain. For too long farmers, especially arable producers have equated marketing with selling. I wanted to investigate examples of best practise, learn what had been the difficulties in dealing with it, and also where the future development of these relations would lie

I focussed my study travel on countries where export focus was paramount. Where growers knew that they had to grow something that could be of value to their customer, and that they could reliably continue to produce year after year for that demanding customer,





despite the natural seasonal production variations.

The three main areas my study concentrated on were:

### \*Logistics

Starting with growing for the most accessible markets and for which you can most reliably achieve customer's specification is the first step to increasing efficiency. Getting the right commodity to the right place in the right state and at the right time should be the first consideration. The beginning of the chain is the first place where cost occurs. Savings at this point are easily quantified, but may challenge existing trading cultures. My experiences in Australia drove this home. In Western Australia especially, where 95% of production must be exported through 4 deep water ports, the challenge of grading, blending and loading up to 12 million tonnes of wheat to export customers' requirements, necessitates a joined up approach to logistics. Sampling is another crucial area within the logistics category. Being clear as to how what has been delivered matches up to a required specification, can be the starting point of a clean supply chain. *If there is ever doubt at any point within the chain, the chance for things to go wrong increases dramatically.* The effect of this is cost to the chain, which inevitably leads to loss of value to participants, which in turn leads to mistrust between partners.

### \*Price Discovery

Transparency of price is crucial to speed up the logistic process. All parties within

the chain need to be able to nail down their price so that the neatest route to the next stage can be achieved. If an open and traceable pricing mechanism is not available, then this immediately acts as a bottleneck within a chain, as parties struggle to find their required price point. Delays here create disconnection within

*They will never agree fully on price, and if they do today, then they will not tomorrow*

the chain and can lead to mistrust. This is an area where most could be done to alleviate the other difficulties that occur throughout the grain chain because they usually originate from this area. In most cases participants in the chain agree on most things associated with the processes each goes through. They will never agree fully on price, and if they do today, then they will not tomorrow. The lack of transparent markets for quality bands for cereals in the UK became very clear on my travels. The Australian model of online price declaration from all interested buyers so a grower can see exactly the price offered every day on sites like Daily Grain means that a grower can decide how to price the quality he has grown exactly to a buyer's specification. The prices are published for all to see, the grain quality has been established at intake, so conflict is removed. The quality is not questioned, so the price remains rock solid. This system breeds the trust that can disappear where clarity is not necessarily a given.

### \*Relationships

This category is of course interlinked with both the above, and is the ultimate key to real benefits for all parties. The relationship can only exist if it brings mutual benefit to all participants. The challenge in this area is balancing the risks



and rewards, not necessarily evenly, but fairly amongst participants. This is the area that probably creates most tension. A formula that appropriately rewards each part of the chain for the different risks, level of investment and commitment that each takes is a difficult task, especially taking volatile market conditions into consideration. Trust, its establishment and maintenance, is where investment must be made by growers, processors, merchants and retailers. The relationship between the Miller Coors Brewing Company and its malting barley growers in Idaho, USA was a prime example of this at work. The benefits to both parties were obvious, and rewards to growers and buyers appeared commensurate. The key to this arrangement was that price as an area of conflict has been removed. The growers received exactly the same price for their barley as if they grew for anyone else, but they did get to grow the highest yielding variety of malting barley. This variety had been bred and developed by Miller Coors through a long standing research and development program and was owned exclusively by Miller Coors. The variety fulfilled the quality requirements for Miller's brewing process and Millers were also ensured the best farmers to grow it for them, as all malting barley producers wanted to grow this variety. A matrix for growers was used to measure the growers' performance, and if growers slipped into the bottom 10% for a couple of seasons in a row, they may well find their contract tonnage would decline, and even, if performance were to continue to slide, the tonnage be reallocated to a

more reliably consistent member. Everyone knew what they stood to gain in this model, and what was expected of them, and it was one of the top examples of best practice from my travels.

### Recommendations

Collaboration and transparency between willing partners is the only way to build trust. A more open dialogue between growers and processors, manufacturers and retailers is essential.

The risks and rewards that each party takes must be acknowledged by other

*The different partners must accept that they are linked all the way forward and all the way back in the chain, whatever their position.*

partners, and the different partners must accept that they are linked all the way forward and all the way back in the chain, whatever their position. An initiative like the HGCA's "Meet the Processor" is a great step in the right direction, but links only one step. I would really like to see this extended back to plant breeders and the circle completed with retailers.

We must find a way to separate the distinct activities of "marketing" and "selling", especially in the farmer's mind. I would include "pricing" within this too.

Sustainability should be built into relationships between partners in the grain chain. By this, I mean that each party must see the next stage down as their customer, and take responsibility



themselves for doing their part as well as they can. Growers should see themselves as having customers, not buyers, and act as any other business does towards them. There is a lot of work to be done here.

*Growers should see themselves as having customers, not buyers, and act as any other business does towards them.*

The Nuffield experience has given me a fantastic chance to begin looking into this topic and has really opened up the true complexities. I believe that there is a great deal of value to unlock within the chain, and not just for growers. As long as the advantages that accrue can be shared fairly and with a long term view, then we can look forward to mining them out in the future.



# 1 Personal Introduction



I am a third generation farmer from Hampshire, where my family have been tenants since 1936 on 300ha of rolling Hampshire downland over chalk. A second tenancy, on a much poorer, higher farm, was also acquired in 1959 which added a further 200ha of arable land. The enterprise started to specialise quite early on in seed production of cereals and grass. Two intensive livestock enterprises sprung up around the arable business, mainly to utilise the cereal crops that were not required as seed. The pig and layer businesses thrived until the latter was closed in the mid 1980s and pig production was ceased in 1991, when the decision had to be made to either expand and make significant reinvestment, or to close. The decision was made to close the

pig unit and specialise more in arable crop production. My involvement in the business coincided with the process of this decision. I was very much in favour of trying to do one thing really well, and gaining a name and reputation for it. I have always felt that it was always better to strive to be the best in your field, and the complexity of running two very different enterprises which required very different skill sets, was not something with which I was comfortable. On my return from the Royal Agricultural College, Cirencester, my remit was to close the pig unit, computerise the office and bring the arable business up to a category leading standard.

In January 2001 I attended the Worshipful Company of Farmers Advanced Business



Management Course, and this gave me the confidence to take the business to another level. By 2004 we had moved into a machine sharing arrangement with two neighbours, and were responsible for the management of a further 465ha. In 2006 the landlords at our home farm came to us with an offer for us to buy the freehold of our tenanted land. We approached the landlords at the other farm with a proposal to buy the freehold of that farm as well. I had already suspected that the landlords on the second farm would be open to an offer and had prepared a third party as a potential buyer for the freehold, which would realise the value of the tenant right and thus go a good way towards the purchase of the home farm.

*Our business itself had changed dramatically, critically, and given new purpose and focus, by the large debt that now lay with us.*

This complex and stressful deal was concluded in March 2006. Whilst nothing had physically changed, our business itself had changed dramatically, critically, and given new purpose and focus, by the large debt that now lay with us. We had to now insulate ourselves from some of the risk that came with that.

At this point we looked to expand our arable operation and over the next few years took on more land on a contract farming basis, to the extent that we now own 300ha, rent 150ha and contract farm (with profit share arrangement) a further 1100ha and provide a stubble-to-stubble contract service on a further 180ha, for a total of 7 other landowners. I value the

relationship with these owners whom I see very much as customers. We need to know their wants and needs. We need to know their motivations and what we do right and also what we do wrong. This will be a constant theme as I describe my findings on my study tour.

I have always been very proud of the crops we grow, and had always felt somewhat frustrated that I rarely, if ever, knew what happened to our crops when they left the farm. Other than deductions where crops had not exactly met contract specifications, I would never know what had happened to our crops, or what we could do to help our buyers or improve the quality that we delivered.

I began growing “Conservation Grade” oats in 2006 on two of the contract farms on which we operate. I had always been passionate about on farm conservation and had been involved with various Countryside Stewardship Schemes for a good while. I had always believed that efficient production of high quality, high yielding, food grade crops could go hand in hand with effective and committed conservation work. I was introduced to the “Conservation Grade 2” by a local merchant who felt that it was something I ought to take a look at.

Essentially the protocol of this standard stated that, if we were to give over 10% of our farmed area to habitat creation, conservation and management, including an agreed percentage of a range of habitat types (tussocky grass areas, pollen & nectar sources, bird nesting areas) then a buyer, at this time Jordans Cereals,





would pay approximately a 15% premium over the market for oats produced under this protocol.

For further details on this protocol visit the website at [www.conservationgrade.org](http://www.conservationgrade.org)

*A surprising and interesting approach, and certainly novel in the UK arable sector.*

Jordans had committed to using only Conservation Grade accredited oats in their cereal products, and I felt that this desire to have a close relationship with their supplier was a surprising and interesting approach, and certainly novel in the UK arable sector.

The group of growers that was assembled to supply these oats was “bought in” to the concept of Nature Friendly Farming and gave the buyer an Identity Preserved product with auditable credentials. The quality of the product was standard to crops produced conventionally; value was added by the audited protocol by which the crop was produced.

The way the supply chain was run here was by using regional merchants who would manage a number of growers in their area, probably with each merchant being responsible for no more than 20% of the total tonnage. Currently the initiative requires around 20,000 tonnes of oats. The emphasis here was always to ensure that the protocol was adhered to, but rather frustratingly the other benefits of being part of a dedicated group of suppliers were lost. There was no communication on quality performance, or delivery schedules, or even year on year requirements. Identity Preservation had been placed in front of the practical working of the chain.

It was this lost opportunity or, more accurately, the lack of recognition from either party that more collaboration could result in advantages for both parties, that convinced me there was a huge need to investigate areas in grain supply chains to see where improvements in efficiencies could be effected across the chain.



## 2. Background

My grandfather's original vision had been underpinned by the legislation of the Wheat Act of 1932. This Act sought to "secure to growers of home-grown millable wheat a standard price and a market therefore: to make provisions for imposing on millers and importers of flour obligations to make payments calculated by reference to a quota of such wheat and as to the disposal of the moneys there received; and to purchase unsold stocks of such wheat..."

This served his generation and indeed my own family extremely well. There was every encouragement for him to grow as much wheat as he possibly could, regardless of market price, or supply and demand dynamics. His and the countries' farmers turned their attention to the physical science and process of growing wheat. If they grew more, they would be rewarded; it was a very simple equation. As a result there were huge rises in production, driven by unprecedented research and development, in most cases government funded.

As a result of this science driven green revolution, production rose dramatically over the next decades, as a guaranteed market and price drove production all out. No farmer had had to think twice about who might buy their crop, or what they might even demand. As it stood they had to buy everything produced, and make of it what they could.

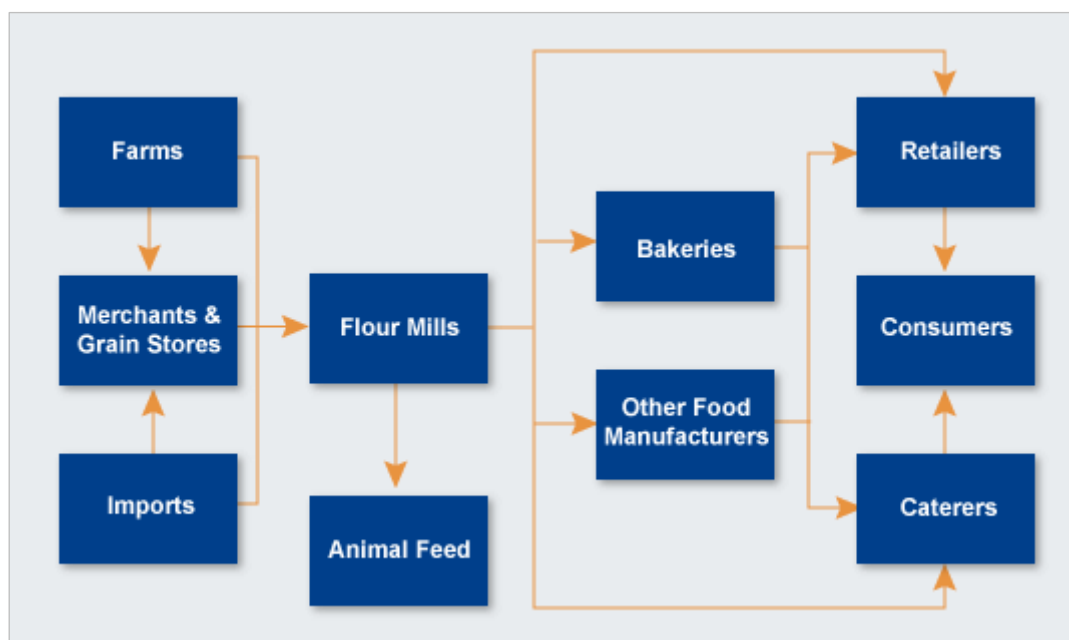
Let us now fast forward a couple more decades, to the 21<sup>st</sup> century. Pressures could hardly be more different. Dwindling resources of finite stocks, where fossil fuels and phosphate fertilisers, amongst others, rank highly on the danger list mean that we must produce more, using less, and with reduced impact upon the environment. Growers are now being asked all sorts of questions about where their crop comes from, how they have produced it, what the carbon footprint is, what effect has their method of production on wildlife, or other land users. They will be asked how much water it has used. I can only see these questions getting more complicated, not less. Here in the UK, as far as cereal production goes, we are a long way ahead of most other parts of the world. Even those countries where there is this sort of awareness coming in, our own existing Quality Assurance Schemes, which are all but compulsory now, are regarded with awe. No others have anything like them, certainly nowhere on the scale that those schemes now cover here.

I was in search of a way of trying to join up the parts of the supply chain by using the "best fit" links that I found as examples of best practice around the world. I was unlikely to find, I felt, the perfect chain, but was pretty sure that I could find plenty of elements that could be slotted together to produce a best model.



To understand the basis of the study let us look at the definition of a grain supply chain. The diagram below illustrates it

well. What the essence of this study is trying to capture is:





### 3. My Travels

I set off on my main body of travels in October 2011. My first destination was Western Australia. I arrived just as the cereal harvest was about to start. In fact, the arrival of an Englishman was seen to be the main reason for rain arriving too! I was in Australia for just under three weeks and the only day it did not rain was the day before I left. The one benefit to me of this inconvenient weather for the harvest was that farmers and other parts of the grains industry were able to spare me a little more time than they might otherwise have.

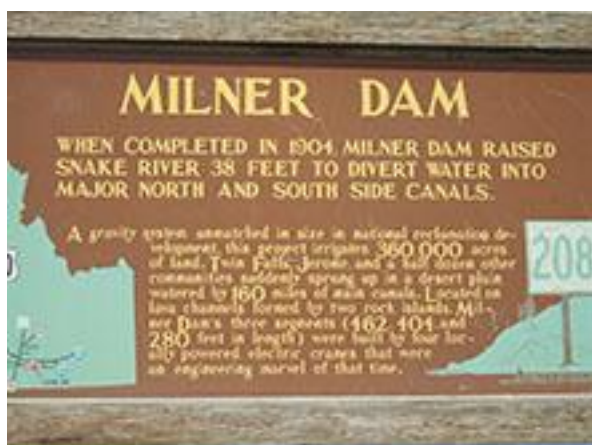
After Western Australia I flew to Adelaide and after a few briefer visits in South Australia, I then drove on to Northern Victoria, where I was able to spend nearly a week in and around the Horsham area. I then made my way down to Melbourne, before flying on to the US

I travelled via LA up to Kansas City, and then drove through the State of Kansas to Manhattan to engage with the Kansas Wheat Growers Association, and then through the State of Kansas, before visiting the Kansas City Board of Trade. I then moved north east to Nebraska & Illinois, and flew on up to Idaho on the recommendation of Jay Armstrong whom I had visited on the border of Kansas and Nebraska states. I concentrated my visit on the Magic Valley in the southern part of the state. This was a revelation as it represented the actual oasis in the desert. A 360,000 acre, centre pivot-irrigated,

agricultural powerhouse, it had been created by the construction of the Milner Dam, which had been completed in 1904. The Magic Valley is where the famous Idaho potatoes are grown, along with other high value crops like sugar beet (I visited the largest sugar beet factory in the world whilst here although, to me, it also looked like the oldest sugar beet factory in the world too!). High plain dairying was also now creeping into the area, bringing further competition for crops and agricultural prosperity. My main focus for study here though was the malting barley industry that had grown up here, mostly as a break from the higher value cropping.

After my five days in Idaho, I travelled back to Chicago and on to Winnipeg in Manitoba, Canada. Winnipeg is home to the hub of the Canadian Grains Industry and whilst it was extremely cold, snowbound and dark in December, I was able to speak and meet with many and broad ranging figures from within the industry, and make a couple of forays up country, but was unable to actually see a crop because of the snow cover. There was, however, plenty of opportunity to talk, and there was a great deal to talk about as, while I was there, I witnessed the legislation that dismantled the monopoly held by the Canadian Wheat Board to market all wheat sold out of Canada.





*The Milner Dam was completed in 1904*



*Famous Idaho potatoes*

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Since that long spell away, I have been able to meet with many merchants, grain brokers, central store operators, co-operative marketing organisations, millers, maltsters, animal feed compounders and breakfast cereal manufactures, and have found that each has their own strongly held views. I would go as far as to say that in an area where so many have a stake and very different agendas, a coherent, single solution to the problems I explored is never going to come together as a holistic, one size fits all type of way. Every relationship and its terms will have to be brokered to its own individual situation.



## 4. Logistics

### 4.1 Western Australia

#### CBH

My travels began in the state of Western Australia, arriving in October 2011. The harsh and variable weather patterns in this region mean that it can produce anywhere between 4 and 12 million tonnes of wheat. Whatever happens, and we will come to address this volatility in production a little later, around 95% of production has to be exported every year. This puts great pressure on the four deep water ports in the state, from where significant exports can be made. Movement to port, as distances are so huge in this part of the world, make up a very important cost to the grower. The focus on export, and physical path to market, were the main reasons that I had chosen to come here.

CBH Group looked after me, and after a day at their head office in Perth I was able to get a feel for the scope of the business

CBH had been the largest cooperative in Western Australia, and owned most of the infrastructure serving the main grain growing areas of the State. Their objective was to return best possible returns to their members through three principal areas of activity:

- i. To provide infrastructure to ensure their members' solutions to market.

- ii. To provide a pricing mechanism suitable to their members' requirements.
- iii. To increase the capital value of their members' shareholdings.

I met with their head of operations, Richard Simonaitis, the Head of Accumulations, who described to me the two arms of CBH; CBH Operations and CBH Grain.

CBH Operations was responsible for the logistics of 95% of all grain produced in Western Australia. Its efficient function is essential to the grain industry operation in WA. The company had recently made a significant investment in more rolling stock for the rail path to port. (Approximately 70% of grain deliveries to port were now by rail out of central accumulation points throughout the state).

Since the dismantling of the AWB (Australian Wheat Board) as a single desk for export sales, there had been considerable change in the commercial operation of this infrastructure. At the time of my visit there was considerable interest in the operation of CBH's service, known as Grain Express, from the ACCC (Australian Competition & Consumer Commission - their version of the Monopolies and Mergers Commission)



which had previously forced a grower who had designated the use of the CBH rail network, to market his grain through CBH Grain. The freeing up of the market that had come with the demise of the Single Desk meant that the ACCC felt that this situation was not in the interest of the grower, and effectively meant that the rail network had to be transparent in its haulage costs and open the network to other buyers. This had influenced the decision by CBH to buy more rolling stock, so as to ensure a revenue centre from tonnage put through the network, even if they were not necessarily able to market every tonne.

This was seen as a major inconvenience by CBH Operations and CBH Grain, as all

transactions had to be carried out at arm's length, but it definitely gave much more transparency to the grower, and allowed trust to be developed. All actions could be audited as separate operations and stood up to scrutiny across other buyers.

CBH looked after 200 delivery points which were connected directly to their rail network. This gave them storage capacity of over 19 million tonnes of grains, in flat stores and bulkheads (large piles, of up to 27,000 tonnes of sheeted grain, stacked outside) which were all segregated by quality. Every load delivered into these delivery points was tested on intake, and then sent to the appropriate heap.



*CBH's Quairading depot*





*CBH bulkhead*

The level of complexity in sampling and segregation that went on was much greater than I have been used to in the UK, and in my opinion was the basis for three main functions. It was possible to grade wheat in Western Australia into 55 grades. Obviously this is too many to deal with on a day to day basis, but, according to the year, bands within the 55 grades would be made to cover most accurately the quality of the crop in each year, as it varied with the weather. Every load would realise its potential by being placed in the heap of the closest quality, and then aligned with a plan of delivery to port and the required quality specification of the sold export cargo. These delivery facilities were capable of taking in up to 10,000 tonnes of crop in a day, allowing farmers

to get on with harvesting the most appropriate crop on their farms in a timely fashion. All efforts on farm and beyond were pointing in the direction of quality, retaining it, and delivering value back to the farmer.

In some areas where there was a grower, or a few growers who were perhaps that little more remote than most or who had a large area to harvest, or may have had a choice of delivery points, or also a choice of which crops to harvest, and where quality was changing on a daily basis as time or weather passed, CBH had set up mobile, manned laboratories. These could give an accurate assessment of quality which may then determine which crop or paddock the farmer cut next, or even





which receipt point would best suit that grain for its final destination at port. The expense of these mobile laboratories was easily justified by wringing out the last cent of value from each tonne, as it meant that every load was sent to its most appropriate home.

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As I hope to demonstrate, knowing what quality you have (and equally, what you do not have) as early as possible and as accurately as possible is the key to not wasting value, and not disappointing your first buyer. This in itself is a step towards vendor assurance; where what arrives at first processor point is KNOWN to be of a certain quality before it gets there, and not just hoping that when it does arrive, it might fit the bill.

CBH even went as far as to recommend a farmer version of grain analyzer, the Foss Infratech Sofia (see Appendix Figure 2). This machine was far ahead of anything I had ever seen on farm in the UK, to help with this process. Why did they do this? To make their job of realising the goal of adding value to the farmer's returns easier, by acquiring as much knowledge about every crop as early as possible in the grain chain to determine the path it would then take.

## 4.2. Canada

My arrival in Winnipeg, the heart of administration for the Canadian wheat industry, coincided with a landmark piece of legislation passing through the Canadian Parliament in early December 2011. The Canadian Wheat Board (CWB) had come into being in 1935, as the "Chosen Instrument" for a mandatory single marketing desk for all wheat. Not delivering to the CWB was punishable by fines or imprisonment, so, when the Marketing Freedom for Grain Farmers Act comes into effect on 1<sup>st</sup> August 2012 the cultural change will inevitably be difficult.

It had been enlightening for me to have seen that the Australian model had adapted to the move away from the single desk system in 2008 in an orderly and appropriate way. There had really been nothing to fear but, as we all know, change - especially for farmers where so much else is always changing (especially the weather) - can be very difficult to manage. Some Canadian farmers felt that the sharks (non CWB buyers) were circling to pick them off. I believe that these buyers' motivation to achieve efficient export gave a real opportunity to seek the best prices as long as they were not passive in their interaction. There is a balance where sitting back and letting the CWB do it all for you is not enough, and it is now up to producers to take responsibility for making their own marketing decisions.

The major difference between the CWB and the AWB was that the AWB had owned some assets (grain storage



facilities plus some other infrastructure that would have value in capturing farmer loyalty - remember the CBH Grain Express model discussed earlier). The CWB were not able to own any assets, so were suddenly left as a pretty toothless organisation with goodwill as its only real asset.

The huge distances across the country and between the grain producing areas of Canada create their own problems, so there was, and still is, a perceived geographical penalty. This of course is a fact, but one that was subsidised by the CWB model. As there were no assets over which they had control the fiercest argument to remain with CWB seemed to have disappeared. I believe producers have little to fear, as the board ought to be able to use the relationships built up with overseas customers and farmer suppliers to still be competitive in the newly free market

The Canadian International Grains Institute will have an interesting new role as the new marketing model evolves. This organisation's nearest UK equivalent would be the HGCA, but would concentrate on the British Cereal Exports role. Until this year it had been funded by a levy from the CWB sales. From now on it would have to rely on industry funding.

After an excellent meeting with Rex Newkirk, I could tell that the future of Canadian exports will rest firmly here. The research, technical and near market was exceptional. The commitment of the industry to further their work convinced me that this organisation would link parts

of the supply chain so firmly that they will succeed after the free market. They ran courses all over the world to push the qualities of Canadian wheat, and I saw test bakeries and other processing facilities where there would be processors worldwide to try their processes on Canadian crops, and find out what they could do, or how they could adapt these processes to produce what was wanted for their own country's specialities: noodles, or flours for flatbreads, or other goods.

*This was a showcase for what could be done with grains from Canada. It oozed "can do" attitude, and was a fantastic advertisement for all Canadian cereals.*

I was even lucky enough to visit CIGI's test brewery, where small batches of barley were malted and brewed on site to different characteristics. This was a showcase for what could be done with grains from Canada. It oozed "can do" attitude, and was a fantastic advertisement for all Canadian cereals.

CIGI also spent considerable resource on educating farmers as to what they could do to produce crops that measured up to their export customers' requirements. The industry commitment to continue to fund this organisation was an important indicator as to how education within the grain supply chain should never be ignored.



### 4.3. Export Focus

CBH's concentration on getting segregation right is justified with the new system now operated at the deepwater export ports that serve the WA export markets. In the last two years an auction system has evolved that has had to cope with the move away from single desk sales. Now any buyer/exporter who wishes to book quayside space for loading, has to bid at auction for two-week loading slots. This focuses buyer attentions on finding, through sampling at receival sites, the quality required by their export customers. A large market for Western Australia is the Indonesian and Far Eastern markets for noodle wheats.

This auction gives an orderly and timely structure for pricing and a Load Optimizer route to be used by the grower. If a buyer has a boat at quay, and wheat of the specification is still short, the **Daily Grain**<sup>1</sup> prices offered by that particular buyer can be seen by the grower and will reflect the demand for that wheat from that buyer with a premium over the price that other buyers may be offering. This is because the winner of the loading slot at port will suffer penalties for demurrage for overstaying the loading slot. This auction system has proven so successful over the

last two export campaign season in Western Australia that it has now been adopted in South Australia and will shortly come into use in Victoria as well.

*Most forward thinking growers in Australia have embraced the deregulation following the monopoly of the Australian Wheat Board.*

This is an excellent example of why most forward thinking growers in Australia have embraced the deregulation following the monopoly of the Australian Wheat Board. It does mean however that growers must take a much more proactive role in finding the best home and price for their grain, and in some cases growers have found this difficult. The transparency of price and signals of demand have quickened the pace of enacting marketing strategies, which I believe has made it more and more important for strategic alliances with buyers to be forged, so the grower can be confident of the physical home, while arranging price management elsewhere.

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<sup>1</sup> For explanation of Daily Grain see following page



## 5. Price Discovery

### 5.1 Australia

How was this value delivered back? CBH Grain, the trading arm of the co-operative, fulfilled this role and acted alongside the other dozen serious players in the market to add competition and transparency to the market.

*The key item that contributed to this was the price discovery mechanism called **Daily Grain**.*

The key item that contributed to this was the price discovery mechanism called **Daily Grain**.

Daily Grain is an electronic platform, accessible through the internet. It is now developed to be used through smartphone and text messaging as well, so growers had their farm “sales desk” in their combine or tractor cab.

This advance in technology and access to information on the move has caused a revolution in opening a market to transparency.

At any time, all growers can access all prices offered for all grades of wheat, and trade accordingly. There is no equivalent in the UK. The closest we can get to this is

*There is no equivalent in the UK.*

by sitting on the phone and asking merchants to quote a price, which may or may not be out of date once the UK farmer has had a chance to ring all his potential buyers.

CBH take this Daily Grain a little further. Once the sample results of delivered grain have been logged, these results are also accessible to the grower, who can then use some clever software called **Loadnet® Optimizer** (please see Appendix Figure 3 for more details) to “optimize” the full value for the portfolio of qualities that they have delivered. A full training program is available for all growers so that they are able to use the service with as much confidence as possible.

This service has come as a logical extension of the current Customer Service Centres that run every day, and after hours during harvest, to provide practical solutions to logistical problems. The theory here is to make the path to market as painless and cost free as possible, concentrating on quality service to deliver quality product.

CBH provides the link and independent pricing platform that give the Western Australian growers every opportunity to make the most of their crop.





## 5.2 US

I was lucky enough to visit the Kansas City Board of Trade, where I was very well looked after by Deb Bollman, a Vice President of the Board. The Board of Trade represents the independent interface between growers and buyers. It represents a fair and efficient price discovery platform on neutral ground for buyers and sellers. It established price and was responsible for the equitable dissemination of information pertaining to market conditions.

Over and above this function, it would regulate a consistent source of wheat throughout the year by nothing other than the economic tool of supply and demand.

The price board would show, on a real time basis, prices for ten different grades of wheat. It is very easy for anyone to see at any time the prices on offer for various grades. This is simply not the case in the UK, where the only price everyone can see are those on LIFFE which only give a base price to feed wheat. It is not possible to read a quality premium anywhere transparent. It is true that a MATIF price can be found, and there is a relationship between French milling wheat and UK quality wheats but, with currency coming into the equation, as well as varying quality criteria, it is still by no means definitive.

An example price board is displayed on the next page:



4800 MAIN STREET, SUITE 303  
KANSAS CITY, MISSOURI 64112  
PHONE (816) 753-7500  
FAX (816) 753-3940

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CONTRACT	LAST	CHANGE	OPEN	HIGH	LOW	PREV SETTLE	VOLUME	OPEN INT	LAST TRADE TIME
<b>KCBT Wheat</b>									
KWU2	892-4s	-24-4	901-0	901-0	892-4	917-0	8951	75498	07/31/12
KWZ2	913-4s	-24-0	926-4	926-4	913-0	937-4	5375	53168	07/31/12
KWH3	917-0s	-23-4	918-0	918-0	917-0	940-4	1278	12497	07/31/12
KWK3	909-4s	-24-0		909-4	909-4	933-4	152	6330	07/31/12
KWN3	847-4s	-13-4		847-4	847-4	861-0	470	12098	07/31/12
KWU3	843-4s	-11-4		843-4	843-4	855-0	39	442	07/31/12
KWZ3	857-4s	-11-4		857-4	857-4	869-0	22	645	07/31/12
KWH4	855-4s	-11-4		855-4	855-4	867-0	0	22	07/31/12
KWK4	840-4s	-11-4		840-4	840-4	852-0	0	0	07/31/12
KWN4	769-4s	-11-4		769-4	769-4	781-0	8	112	07/31/12

KCBT Wheat - Electronic

KEU2	897-0	+4-4	894-0	898-6	894-0	892-4	266	75498	17.45
KEZ2	918-0	+4-4	914-2	919-4	914-2	913-4	245	53168	17.42
KEH3	920-4	+3-4	920-4	920-4	920-4	917-0	65	12497	17.30
KEK3	909-4s	-24-0	925-6	927-4	909-4	933-4	446	6330	07/31/12
KEN3	854-6	+7-2	851-6	854-6	851-6	847-4	23	12098	17.42
KEU3	843-4s	-11-4	850-6	862-2	843-4	855-0	22	442	07/31/12
KEZ3	857-4s	-11-4	872-2	872-2	857-4	869-0	7	645	07/31/12
KEH4	855-4s	-11-4		855-4	855-4	867-0	0	22	07/31/12
KEK4	840-4s	-11-4		840-4	840-4	852-0	0	0	07/31/12
KEN4	769-4s	-11-4		769-4	769-4	781-0	0	112	07/31/12

## Value Line Arithmetic Index

MVYD	2872.56s	-14.08	2886.56	2893.34	2872.25	2886.64	n/a	n/a	07/31/12
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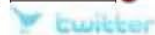
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## Market Commentary

Kansas State Department of  
Agricultural Economics  
Oklahoma State Professor  
and Extension Economist,  
Dr. Kim Anderson

Disclaimer

8/1/2012  
60¢ per bu

*Example of price board at Kansas City Board of Trade*



## 6. Relationships

### 6.1 Miller Coors

#### Burley, Idaho

To illustrate the best example of a real relationship at work, I would like to describe what I found when I visited the Magic Valley in Idaho, and specifically the area around the town of Burley. I have discussed at length throughout this paper the importance of the relationship in making true efficiencies within the supply chain.

I visited the Miller Coors Research and Development Centre and elevator and met with Kris Smelser who is the Coors Brewing Company Idaho Regional Manager.

The Burley elevator was a storage and blending facility that stored approximately 200,000 tonnes of malting barley, and handled around 400,000 tonnes per annum. This accounted for nearly 35% of the Coors Miller total barley requirement for the whole of the US. There were no maltings at Burley, but guaranteed quality was moved to their own malting and brewing facilities in Vancouver, Milwaukee & Colorado. The Coors policy was to contract around 50% of their requirement each year to give them a safe base of supply and also give them a chance to select only the best quality of remaining tonnage from the open market.

The really unique and outstanding part of my visit here was the department that sat

*The really unique and outstanding part of my visit ... was the dedicated Research and Development Centre*

next to the elevator itself. This was the dedicated Research and Development Centre for Coors barley.

The story behind this investment within the company is what differentiated Coors from the other brewing companies who also had presence in the area. There were competing facilities nearby belonging to Modelo the Mexican owned brewers (famous for their Corona brand) and also Anheuser Busch (famous for the Budweiser brand)

The Fundamental Procurement philosophies of the Miller Coors are at the heart of everything this company does, and to understand the process we first must look at these overarching principles.

There are four of these:

1. SAFETY first
2. QUALITY of products is inviolable
3. Our SUPPLIERS are our partners
4. We seek to provide the best TOTAL COST VALUE to the Miller Coors Supply Chain

Their supplier management policy was also defined to me, thus:



***“We seek well maintained relationships with reliable, high quality suppliers that are key to our quality, service and overall success. Our relationships built with barley growers are a fine example, and those techniques are leveraged across other supply categories.”***

Miller Coors value their supply chain as part of their core business ethic. I was introduced to the practices laid down by William Edwards Deming of the US during the Second World War. Deming is widely credited with improving production during the 1940s, but he is perhaps best known for his work in Japan from the 1950s. He taught top management how to improve design, service, product quality, testing and sales through various methods including the application of statistical methods. His methods can be summarised by the following statement:

***“When people and organisations focus primarily on quality, quality tends to increase and costs fall over time. However, when people and organisations focus primarily on costs, costs tend to rise and quality declines over time.”***

Miller Coors take this theory and apply it to their own business:

***For Miller Coors, it starts with barley. “We have to have a high quality, safe, identity preserved, supply of barley to make high quality malt. That in turn is used to make our unique Rocky Mountain style beers.”***

To quote Bill Coors with some comments he made at a Growers Barley Field day in 2004 would summarise the company's attitude to quality and what it means within their business:

***“I really think, my dear friends, that one of the reasons that we have prevailed and so many breweries haven't, is that we focussed our full efforts and our full intentions on producing a quality product. I think some of you have heard me say this before, that barley is to beer as grapes are to wine. You cannot make a good wine out of bad grapes and you can't make a good beer out of bad barley. You can make a terrible beer out of good barley, that's easy to do. But at least start right.”***

These statements were made often and directly to the grower base. It reinforced very strongly just how important the supply of barley was to the buyer, and just how highly they valued it in terms of their entire business. Now Miller Coors had to put their commitment to the growers who would produce this critical ingredient in such a way, and with appropriate reward for their risk, to ensure that this barley would be grown.

In short, how was the WIN WIN situation that both parties benefit from going to be achieved? What was it that would make the relationship work in both directions?





## Research and Development Centre

Alongside the elevator at Burley was the Research and Development Centre for Miller Coors. They have another similar facility at Golden Colorado, another important area for malting barley, and these are unique within the brewing industry in the US. Their presence owes a great deal to the founding ethics of the company, and I will describe these in a little more detail.



*Miller Coors Research and Development Centre*

Peter Coors realised in 1936 that, post Prohibition (which ended in 1933), to ensure that he could brew a consistent product year after year, he would need first to secure barley with reliable quality traits for the results he required. This was where the Coors malt barley program began.

Coors had, in that year, been able to purchase a large quantity of malt from R. Karsten Ltd. of Prague. This malt had been of exactly the quality that suited the Coors brewing process and, contained in some of the correspondence with Karsten, was a small sample of the barley from that season's Moravian barley crop that had gone on to produce the shipment of malt.

John Ulrich, a farmer from Loveland, Colorado, was persuaded to grow this sample. Under the direction of Coors staff, this seed was multiplied for the next five years until there was sufficient quantity to be malted and then pushed through the brewing process. Results from the brew house were favourable and in 1945 the first Coors beer was brewed with local malt. The following year further farmers were recruited to grow. The Coors Barley Program was born.

This Barley Program has developed over the last 60 and more years. Breeding programs have constantly made advances in barley genetics. Specific advances over this time have included:

- Resistance to lodging
- Protein response
- Resistance to thinning of kernels (screenings)
- Resistance to disease
- Resistance to pests (e.g. Russian Wheat Aphid, a significant pest in barley in the US)
- Regional traits
- Increased malt extract yield
- Decreased malting time
- Increased yield

All of these advances have helped the farmer grow crops of increasing yield and consistent quality that fulfil, broadly, the requirements of the malting and brewing process. What comes out of this, is that all of these improvements provide mutual benefit to the grower and the buyer. The crop has become easier to grow and more likely to reach the specification required



by the buyer. It also provides an increasing yield which cuts the cost unit to the buyer, and also provides the grower with a higher return. The efficiencies and benefits are shared.

Running alongside the breeding program is an Agronomist/Farmer relationship. This acts as the Knowledge Transfer conduit. The Agronomist brings advice on growing the varieties to get the best out of them and attain the high standards required for the barley to reach purchasing quality. They are in fact the highest standards in the industry. The 5 major quality criteria that must be met are

- Plumpness
- Colour
- Protein
- Moisture
- Damaged or Diseased Kernels

The buyer has high expectations, but wishes to make sure that every grain sown has the best potential to reach those standards. The aim is to leverage the relationship to secure area for planting each season (in the areas of the US ideally suited to malt barley production, there is increasing competition for highly productive irrigated land from other high value crops) to manage costs, maximize quality, ensure traceability and introduce sustainability into the chain.

A “scorecarding” system is also run with all growers. A matrix incorporating elements of quality and delivery efficiency is built up for every grower which

incorporates a 5 year rolling index. A league table of growers soon emerges. Lessons learnt from those at the top can be passed on to those growers who find themselves consistently in the lowest centile of the table. If improvement does not then come to pass, that tonnage can, and indeed will, be offered to those who perform higher in the table. The buyer then ensures that all growers are constantly trying to improve and do the job better. The best growers self select and are rewarded as such



*Coors Sample*

The Barley Program advance now means that varieties owned by Miller Coors now consistently out-yield any rival, publicly available malting barley varieties, by approximately 15%. If you grow barley in Miller Coors areas, why would you not want to grow their varieties? The buyer wants, in fact, needs them, and growing them will provide the specialist malting barley grower with the best returns. This final piece of the jigsaw cemented the relationship of Miller Coors with “their” growers. They were all in it together with the end goal of improving the quality of the final product. For Miller Coors this was quality beer, and to achieve that, it was



imperative that each stage in the supply chain shared the same commitment and vision. A line of quality could be traced from seed to bottle. The growers I met were very proud of the fact that they grew for Miller Coors, and equally the buyer was proud of those that supplied him.

*Everybody I met was either proud of their status as a grower, or if they were not, to a man wanted to be part of it.*

This sense of common purpose was palpable and everybody I met was either proud of their status as a grower, or if they were not, to a man wanted to be part of it. I do not think this feeling of “belonging” should be ignored or discounted, hard as it may be to directly value this “soft” benefit for the grower.

A final characteristic of the relationship between purchaser and vendor that I have not yet found in the UK, is that Miller Coors directly contract with the producers. This gives no separation between the two parties, tightens trust and binds the parties closer as partners. Today the company direct contracts with around 800 growers in Idaho, Colorado, Wyoming and Montana, which equates to around 370,000 tonnes of malting barley. Further backing up the commitment Miller Coors owns 6 main elevators with a storage capacity of more than 600,000 tonnes

*I have included in the Appendix a copy of the Miller Coors 2012 grower contract.*

The only thing wrong with this supply chain was that the beer itself cannot hold a candle to our own British beer!



*Coors Pride Beer*

### UK Relationships

Molson Coors, the UK partner business of Miller Coors, operates in the UK from Burton-on-Trent. They have attempted an approach that resembles that which I found in Idaho, but with some crucial differences that, in my opinion, pay little more than lip service to the ethos of the American model I have described above. At best it tells a story, but does not share risk and reward in equal measure. The commitment on either side is not as strong. This is down to the level of trust that currently exists, and without more commitment from both sides, I cannot see this improving in a hurry.

Let us contrast and compare the Growers Club that is run for Molson Coors with the relationship that Miller Coors has in the US.

Currently the Molson Coors group is centred on the West of England area and provides around 20,000 tonnes of malting barley from 65 or so growers, and supplies



a “floor” of about 15-20% of the brewer’s requirements. The group is run and managed by Frontier, so there is already a separation of interface here. This is, however, traditional in the UK, and at present the thinking is that no processor really wishes to talk direct with the grower and vice versa. The role of the merchant is to manage this relationship. These are commercial decisions, but the introduction of a third party to the partnership, triples the number of relationships that need to be managed.

I believe that the complexity this brings has to bring many more benefits to justify the cost and separation of communication that come with it.

The other big difference between the two continents’ systems is that in the US nearly 95% of barley is delivered to a central elevator where the conditioning and storage can be controlled in one place by professional storekeepers. In the UK the opposite is the case. This brings more

risk to the relationship. Far too often in the UK there are too many occasions when what has been sampled on farm, whether by unrepresentative sampling techniques, or deterioration in a grower managed store over time does not match either party’s expectations on delivery.

I believe that this situation gives rise to areas of unknowns, or variations from what was thought to be known. The result of this is the breakdown of trust, and deterioration of the relationship again.

Both countries’ models strive for the same goals; quality, consistency and uniformity. I believe the model used by Miller Coors will deliver more often than the version in the UK. Perhaps it is skewed more as a marketing story, not as an all round quality assurance system. The fact that at present only 15-20% of requirement is produced in this way (for Millers in the UK) does not yet encourage me to believe that the objective is total quality.

The chart below attempts to illustrate the differing complexity of the relationship between Miller Coors and the farmer in the US and UK respectively.

US	UK
Farmer ↔ Miller Coors	Farmer ↔ Frontier ↔ Molson Coors
	and also : Farmer ↔ Molson Coors
Just two relationships (arrows)	A total of six relationships (arrows)



## 7. Conclusions

1. Farmers must see themselves as the first part of a chain with many stages. They cannot do without those partners if crops are to reach their destination market. Farmers now have customers; they are no longer customers themselves when it comes to receiving consideration for their goods.
2. Farmers must endeavour to make the next stages of the chain as easy as possible. Just as product flows one way in the chain, information must flow back to constantly review performance
3. The supply chain can be broken down into three main areas:

### Logistics

These are displayed best where export focus concentrates large amounts of crop to a few end points

Planning in advance for market destination is vital. Local markets ought to be satisfied first, so haulage can be minimised. This is a practical step and the first and easiest move a grower can make to improve his returns. It must be up to the farmer to find these markets and find out exactly what they want.

### Pricing

Transparent pricing for all parties will ensure less negotiation at critical bottlenecks in a chain. Once price has been removed from negotiation, then real savings can be made in the process of moving the product along the chain

Price discovery can be one of the most contentious areas of disagreement between parties. Removing barriers to price discovery can break down suspicion and engender a mutual trust which can lead to healthy relationships within the chain

### Relationships

As competition for crop area increases, open and frank relationships within a chain will safeguard supplies and help with orderly paths to market. Those who do not start to develop these relationships now, will struggle to plan and be further removed from greater provenance demands from end users

4. Risk and reward must be commensurate to each party's commitment. Transparency within the relationship is crucial in this instance, as all parties need to understand the difficulties, points of risk, and contentious areas of their transactions from the other parties' points of view.





Without an understanding then assessing risk and reward is very difficult.

5. Certainty of quality is an often neglected area which can bring huge hard advantages to any supply chain. Vendor assured grain, where all parties can be confident that what is delivered will match exactly the contract specification, is essential. The scope this brings to minimising grain movements and stock holdings with “just in time” deliveries adds huge value to a processor. A processor, or first receiver, can then rely on an ingredient delivery, rather than managing their intakes themselves and having to go through their own process to ensure that a delivered commodity is then in a fit state to become an ingredient.
6. The places where I have seen the best results are ALWAYS where collaboration has worked. This was usually across steps in the chain, but sometimes, so as to equalise power or trust within a step of the chain (farmers marketing, or even growing co-operatively), more heads were generally better than one.
7. Trust was at its greatest where price & quality were known and not opaque in any way. If you get laboratory sampling and price discovery right, then trust just begins to flow through the chain. The role of lab sampling and quality control is where I see the role of Central Storage. It gives critical mass, and quality assurance (being able to draw from a very wide pool of production to offset regional and seasonal variation).



## 8. Recommendations

1. Collaboration and transparency between willing partners is the only way to build trust. A more open dialogue between growers and processors, manufacturers and retailers is essential. The risks and rewards that each party takes must be acknowledged by other partners, and the different partners must accept that they are linked all the way forward and all the way back in the chain, whatever their position. An initiative like the HGCA's "Meet the Processor" is a great step in the right direction, but links only one step. I would really like to see this extended back to plant breeders and the circle completed with retailers.
2. We must find a way to separate the distinct activities of "marketing" and "selling", especially in the farmer's mind. I would also include "pricing" within this too.
3. Sustainability should be built into relationships between partners in the grain chain. By this, I mean that each party must see the next stage down as their customer, and take responsibility themselves for doing their part as well as they can. Growers should see themselves as having customers, not buyers, and act as any other business does towards them. There is a lot of work to be done here.
4. The perfect chain, in my view, would involve:
  - ❖ Centralised storage with a common quality goal and customer identified well in advance of a crop being planted. A vendor assured delivery system. Agreed with the customer, on a long term agreement.
  - ❖ A delivery schedule to processor. This requires a dedicated logistic plan, and fee for such to be agreed.
  - ❖ A clear pricing mechanism that achieves a "fair deal" at all times. Open book accounting between parties and a formula to calculate appropriate shares of reward.
  - ❖ Long enough term of agreement to give stability.
  - ❖ Quality targets and monitoring of performance. Why try to grow crops that you never have a real chance of achieving. Be realistic and honest about quality goals.



## 9. Further work after my Nuffield Study Tour

I have returned with a renewed sense of purpose to try to drive forward the relationships we have already forged with some of our buyers. There are some difficult cultural barriers here in the UK that do not exist in other parts of the world. The merchant system that enacts up to 90% of grain sales and purchases in the UK is not naturally designed to necessarily put all three of the areas I have identified together; however there are definite elements which can make a start to bring benefits to the partners in the chain.

We are already, through cooperation and collaboration, working closer as a group of growers with the Jordans Ryvita company, where a “scorecarding” system is to be introduced for oat production. This also involves the instigation of some proper field and milling trials which, for example, include a project to determine the extraction goate rate from different varieties. This in itself could improve mill efficiency dramatically and mean that variety selection and even breeding could be driven from this direction with some evidence to back up the work.

Simply put, a happier processor/first buyer will breed more of the trust that is necessary to turn the “soft” advantage of relationship into a “hard” advantage of measureable financial return to all parties.

We will now be receiving load by load analysis on all oat deliveries, which will spell out these numbers, and give us our

individual league placing by supplier to benchmark our performance and show us where we can look to make improvements in the future. It may also mean that we can seek advice from those who consistently perform to a higher standard than ourselves, and in the areas that matter most to our buyers.

My topic has taken me to places where the focus on crucial parts of my study were very specific, and pinpointed crucial areas for my investigation, and I am sure that this has only been the start of digging deeper into the problems that are peculiar to our own situation in the UK.

*I am confident that what I have learnt, and described in this report, will form the basis of creating a new way in which the UK farmer can extract maximum value from his crops*

I am confident that what I have learnt, and described in this report, will form the basis of creating a new way in which the UK farmer can extract maximum value from his crops, whilst creating a sustainable chain that takes it to its market as efficiently as possible.

From a personal point of view, I have also learnt a number of very important lessons. The most significant of which was that I have often become a little obsessed with controlling every process within our



farming business. I have learnt how talented and loyal my staff are. They have really stepped up to the plate whilst I have had to be away for eleven weeks this year. It has also opened my eyes to looking beyond the close up game and really getting out developing the business in many ways and directions that are not necessarily connected to my study topic. I am exceptionally grateful for this “spin-

off” of the wonderful experience I have had over the last eighteen months.

If I had one more thing to add to my travels and studies, it would be the welcoming nature of the Nuffield family around the world and with that its willingness to share knowledge and friendship, and bringing tremendous fun to my work again.

Nick Rowsell

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## 10. Acknowledgements and Thank yous

**To everyone I met on my travels and studies**, who without exception were helpful, forthcoming, and went out of their way to assist me in many ways, and were always hospitable and welcoming – a huge thank you. There are a few others that I need to thank by name who really made my travels such an extraordinary experience.

**The Nuffield Farming Scholarship Trust** for providing me with the opportunity to study this topic, and also for the invaluable induction process of the Contemporary Scholars Conference in New Zealand. I hope what I have learnt will be of some value not only to me, but may in the future serve to improve the way in which grain supply chains may be understood in the UK.

**My personal sponsors, The South of England Agricultural Society.** The vision of their Education Committee to invest in a Nuffield Scholar is genuinely appreciated. I hope that they will continue this farsighted policy. I am truly grateful for the opportunity that their contribution has given me.

To the CBH Group, Perth, Western Australia; especially Jessica Weeks & Corey Lee

David Jochinke NSch & Simone Tait, Murra Wurra, Horsham, Victoria

Kansas City Board of Trade

Jay Armstrong, Kansas

Aaron Harries, Kansa Wheat, Manhattan, Kansas State

Mark Darrington, Burley, Idaho

Kris Smelser, Coors, Burley Idaho

Mike Grenier, Canadian Wheat Board, Winnipeg

Dennis Stephens, Canada Grains Council, Winnipeg

Rex Newkirk, Canadian International Grains Institute, Winnipeg

I cannot let this pass without thanking my wife and family for putting up with my being consumed by the Nuffield Experience for nearly 18 months. Their support and forbearance has been amazing.

I would also like to take this opportunity to thank the farm staff who have stepped right up to the mark and beyond in my absence. Their support has been invaluable.





## 11. Appendix

1. Loadnet® Optimization Brochure

[www.cbh.com.au/media/219021/go%20brochure%20screen.pdf](http://www.cbh.com.au/media/219021/go%20brochure%20screen.pdf)

2. Foss Sofia Grain Analyzer

[www.foss.dk/-/media/Files/Documents/IndustrySolution/BrochuresandDatasheet/Infratecsofia/Infratec%20Sofia%20Solution%20Brochure.ashx](http://www.foss.dk/-/media/Files/Documents/IndustrySolution/BrochuresandDatasheet/Infratecsofia/Infratec%20Sofia%20Solution%20Brochure.ashx)

3. Millers Coor contract : **See next page**

### Further Information can be found in these websites:

CBH Group	<a href="http://www.cbh.com.au">www.cbh.com.au</a>
Canadian International Grains Institute	<a href="http://www.cigi.ca">www.cigi.ca</a>
Canadian Grains Council	<a href="http://www.canadagrainscouncil.ca">www.canadagrainscouncil.ca</a>
Miller Coors	<a href="http://www.millercoors.com/Home.aspx">www.millercoors.com/Home.aspx</a>
Kansas City Board of Trade	<a href="http://www.kcbt.com">www.kcbt.com</a>
South of England Agricultural Society	<a href="http://www.seas.org.uk">www.seas.org.uk</a>



## Millers Coor Contract

### Exhibit A to Barley Agreement



**MillerCoors™**

#### 2012 MillerCoors Malting Barley Standards & Purchasing Policy

MERCHANT NUMBER	PURCHASE VENDOR	REMIT VENDOR	MVC	ELEVATOR	FIELDMAN	BARLEY MATERIAL NUMBER
FARM NAME			MillerCoors Office Use ONLY - Price After Adjustment			VARIETY
CONTACT PERSON			BASE ALLOTMENT (POUNDS)			FARM STORED (POUNDS)
ADDRESS			PO NUMBER			EST ACRES/EST SEED
			LIENHOLDER (S)			

1. MillerCoors LLC, a Delaware limited liability company with a principal place of business in Golden, Colorado, herein called "MillerCoors", agrees to purchase, and the undersigned barley merchant herein called "Merchant" agrees to sell \_\_\_\_\_ lbs. of \_\_\_\_\_ malting barley, herein called "barley," to be delivered at harvest or at MillerCoors' election at a later date as determined by MillerCoors in which case the barley shall be properly stored in storage bins approved by MillerCoors. Title to the barley shall pass to MillerCoors upon delivery and acceptance at MillerCoors' designated facility. Barley purchased hereunder shall be grown from seed purchased by the Merchant from MillerCoors, or MillerCoors' designated reseller.

2. Barley shall meet the following standards and tolerances at time of delivery to MillerCoors as sampled and tested by MillerCoors.

A.

Moisture	≤ 13%
Plumpness (6/64"x3/4" screen)	≥ 70%
Protein (dry matter basis)	≥ 7.5% & ≤ 14.0%
Germination at 72 hours	≥ 97%
Skinned & Broken Kernels	≤ 3.0% by weight
Foreign Kernels	≤ 0.5% by weight
Immature Kernels	≤ 2.0% by weight

Damaged & Diseased Kernels	≤ 5.0% by weight
Ergot Pieces	≤ 0.1% by weight
Wild Oats (uncleaned sample)	≤ 2.5% by weight
Detectable Sprout Damage	0.0%
Detectable Frost Damage	≤ 1.0%
Detectable Deoxynivalenol (DON)	≤ 0.5 ppm
Treated Seeds	0.0%

- B. Barley with 1% or less frost damage, exhibiting microflora (mold), or below 40 Agtron/Perten color may be required to be farm stored in MillerCoors approved storage for additional testing. Barley with heavy mold will be rejected.
  - C. Barley must be free of, at a minimum, weed seed, weed residue, un-threshed barley heads, barley awns, straw, undesirable or musty odors and/or live stored grain insects.
  - D. Blending of rejected barley is not permitted.
  - E. Cleaning and/or sizing of farm stored barley is permitted with prior approval and utilizing equipment authorized by MillerCoors Agronomist, Regional Manager, or Elevator Supervisor. Merchant will strictly adhere to the MillerCoors Malting Barley Approved Pesticide List. All pesticides applied to any barley purchased hereunder must be accurately reported to MillerCoors prior to purchase. Merchant further agrees that any known off label or off target applications of pesticides made to any barley produced for delivery under this Agreement will be reported prior to any delivery of said barley.
3. The following payment provisions shall apply to the 'Base Allotment' if the barley meets all of the standards set forth in sub-paragraphs A-E of paragraph 2 at the time of delivery to MillerCoors:
    - A. The barley contract price shall be set at a floor of \$/cwt.
    - B. The barley contract price will be adjusted upwards if the average of the daily closing prices for CBOT Chicago Wheat December 2012 futures (W), as published by www.cmegroup.com, from October 10<sup>th</sup> 2011 through March 9<sup>th</sup> 2012 is above a strike level (k) of \$/bu. If the average daily close price is higher than the defined strike, 50% of the difference will be added to the barley floor price using the following conversion formula below:  

$$50\% (x) \text{ the greater of } (W \text{ minus } k), \text{ or } \$0.00 \text{ } \$/\text{bu Wheat } (x) 0.80 \text{ bu Wheat/bu Barley } (x) 100/48 \text{ bu/cwt}$$

There is no limit to the upside potential of the adjustment. If the daily closing prices for CBOT Chicago Wheat December 2012 futures average below the strike, the barley contract will not be adjusted below the floor.
    - C. All prices FOB MillerCoors elevator, City, State
  4. MillerCoors, at its option, may elect to purchase additional barley over and above the contracted allotment. If MillerCoors exercises this option, price will be established at receiving time provided such barley meets all other conditions set forth by MillerCoors at time of purchase.
  5. This document may be executed in counterparts, each of which will be deemed an original, but all of which will constitute one and the same agreement. Each party agrees that a signature delivered by facsimile or pdf is intended to be their signature and will be valid, binding and enforceable against such person.

MillerCoors LLC	DATE
By	
MERCHANT	DATE
Agreed	