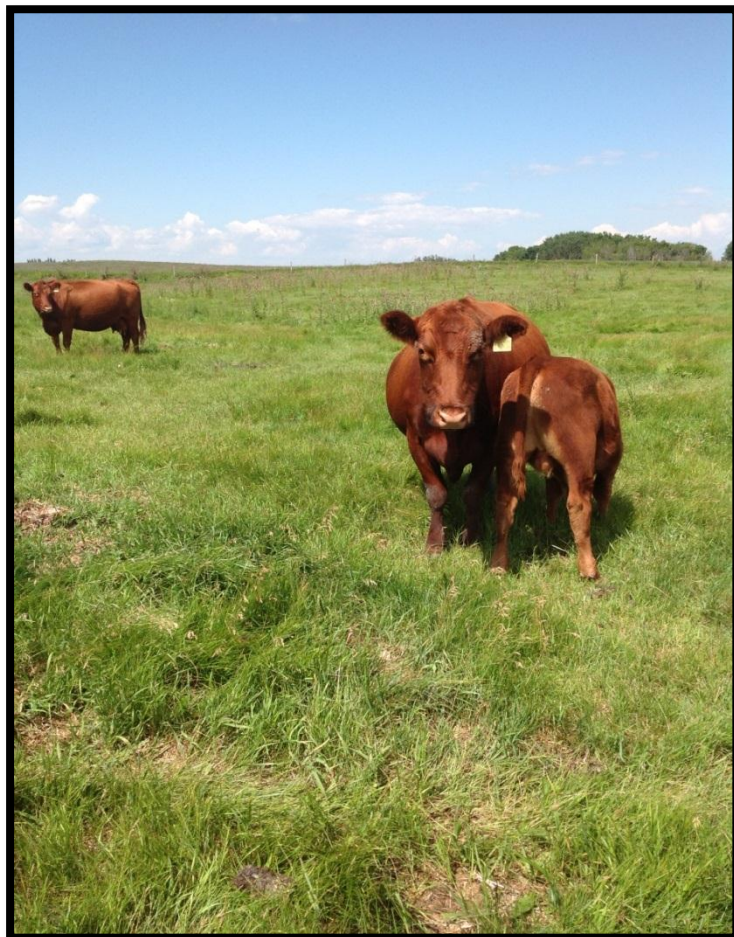


Sustainable Suckler Beef Production – The Canadian Way

Anya Westland, Myerscough College, Bilsborrow, Preston

Agricultural Educator Award 2013

Farmers Club Charitable Trust



1. Project Background

Beef production in the UK is currently facing many challenges, despite recent improvements in prices and increased global demand production systems are under increasing pressure to remain viable. One of the greatest challenges going forward for the next generation is to make red meat production more sustainable in terms of its environmental, economic and social impacts. Farmers today face increasing pressure to lower the carbon footprint per kg of meat produced whilst trying to produce a product that consumers can afford and enjoy as part of a healthy lifestyle. Beef is under increased scrutiny to meet these objectives and faces stiff competition against pig and poultry products.

Some research is now under way in the UK to quantify the environmental impacts of beef production but due to the varied nature of our breeds and systems it is difficult to quantify. Many improvements can be made using genetics but also by examining the types of systems and feeds that are utilised. The main focus however should be looking at the efficiency of beef production, EBLEX has a number of programmes underway to try and identify methods to improve the profitability and sustainability of beef production.

The Canadian beef industry however, is also facing similar challenges and is now tackling the issues head on and I felt it would be of benefit to my teaching and to my students to look at their strategies to improve the sustainability of beef production. There is a serious concern that the UK suckler beef industry is declining and any information, techniques or methods that could be adopted by UK farmers may help secure the future of the industry. The purpose of my trip to Canada was to hopefully identify any new production techniques that could be adapted to UK systems and to then inform the beef farmers of the future to help them make informed decisions on how to improve the sustainability of UK suckler beef production.

2. Purpose of trip

Following success in gaining a Farmers Club Charitable Trust I undertook a six day trip to Alberta & Saskatchewan in July 2013. The three key objectives for my trip were

1. To identify new sustainable production techniques that could be adapted to UK systems.
2. Create links with University of Saskatchewan for future potential student exchange.
3. Identify potential for Canadian student study tour by Myerscough College.

Day	Visit	Contact
1	Battleford Experimental Feed mill, Battleford, SK	John Smille University of Saskatchewan john.smillie@usask.ca
2	Western Beef Development Centre, Lanagan, SK Tour of University of Saskatchewan teaching and research facilities for dairy, pig, poultry, sheep and beef as well as arable with a view to student study tour and potential research links.	Dr Bart Lardner Blardner.wbdc@pami.ca John Smille University of Saskatchewan john.smillie@usask.ca
3	Interview with John Wright in Saskatoon Tour of University of Saskatchewan Veterinary School and Goodale farm with Steve Hendrick	John Wright Bio-agri Mix Wright@bioagrimix.com Steve Hendrick Assistant Professor Western College Veterinary Medicine Steve.hendrick@usask.ca
4	Interview with Professor John McKinnon of University of Saskatchewan and the Saskatchewan Beef Industry Chair Interview with Dr Tom Scott Associate Professor & Research Chair in Feed Processing	John McKinnon University of Saskatchewan John.McKinnon@usask.ca Dr Tom Scott University of Saskatchewan Tom.scott@usask.ca
5	Interview with Greg Penner , University of Saskatchewan	
6	Farm visit - Brian Corey, Corey farms and Northland Livestock Haulage south Saskatoon Farm Visit – Clarke Ward, Ward’s Red Angus, south Saskatoon	

3. The Canadian Beef Industry

Beef in Canada is produced only from beef herds not from the dairy herd. In 2012 sale of cattle and calves worth \$6.6 (£4) billion contributing 12.2% of total farm income from 12.275 million head of cattle and calves on 83,525 ranches (Agriculture and Agrifood Canada, 2013). Alberta is the heartland of the Canadian beef industry with over 41% of beef production located here. Canada exported 271,040 tonnes of beef in 2012 with USA being the major export market accounting for approximately 75% of exports. The export market has been in decline however by 21% to USA and 25% Mexico since 2011-12. Canadian beef farmers send over 0.5 million head of cattle to be finished in US feedlots or to be processed every year (Agriculture and Agrifood Canada, 2013).



4. Saskatchewan beef industry background & sustainability challenges

To get a good insight of the beef industry in Saskatchewan I interviewed John Wright from Bio-agri Mix (Wright@bioagrimix.com) who works in both Alberta and Saskatchewan for a large company supplying additives and growth promoters e.g. monensin sodium to feedlots and feed companies.

4.1 Saskatchewan beef industry



Saskatchewan now only has 1.2 million beef cows a drop of 20% in the last the four years and a feedlot capacity to fatten cattle has declined from 220,000 head in 2009 to 140,000 head a drop of 36%. The suckler beef farmers - known as “backgrounders” – rely on this feedlot capacity to take their yearling and weaned calves for fattening. The decline in beef farming is mainly due to bankruptcy post the Canadian BSE crisis, but also due to recent rises in grain prices, haulage costs of cattle to feedlots and to the packers (abattoirs) have also contributed to this decline. There are no

large packers in Saskatchewan any more, only small ones, so finished cattle have to be hauled to neighbouring state of Alberta or over the border into USA. In addition to this there is not enough feedlot capacity in Saskatchewan for the cow-calf operations so store calves or backgrounders are also sold to USA or Alberta.

Feedlots in USA are more profitable as they have less haulage to the packers but like Canadian farmers many are ploughing up beef grasslands to plant cereals for ethanol production or growing soya and oilseed rape. There is no real demand for natural or organic beef in Canada so they will continue to use hormones and monensin sodium growth promoters to help keep production costs low.

John Wright believes that the cow numbers may never recover due to the increase in grain prices and the growing popularity of broiler production systems due to their better feed conversion ratios on grain. The pedigree and backgrounder cow-calf operators however, are focusing on ways to reduce their costs by moving to more extensive production systems, extended grazing systems and alternative feeding systems. There is also a move to calving on grass later in the year for those staying in beef production.

Professor John McKinnon of University of Saskatchewan and the Saskatchewan Beef Industry Chair also gave me an outline of the current cow-calf production systems in the state and the current focus of research into sustainable beef production systems.

Spring born calves are weaned mid-Oct and the following three options are available;

1. Continental crosses go straight to the feedlot on finishing diet with animals finishing at around 12-14 months old.
2. British Continental cross (Aberdeen Angus cross) can go either to the feedlot or into the background system which means they are “stored” over winter. The “back grounding” system aims for 1kg DLWG from 250kg weaning weight through to 400Kg. This takes approximately 140 days then they are sold to the feedlot to finish at 650Kg liveweight at around 18-20 months old.
3. If calves are born on grass in May and weaned in October at 200Kg they are then stored or “backgrounder” at 0.6 - 0.7 Kg daily liveweight gain through the winter to grass in mid-May and use compensatory growth to finish them at 22-24 months. Growth hormones like Ralgro are used for 60 to 90 days to help achieve a quick finish.



John McKinnon also stated that Saskatchewan and Canadian beef industry reflects the decline in beef cow numbers as seen in North America and that this has led to fewer but more extensive and larger beef production systems. Fortunately, the Canadian consumer trusts the government and industry so there are no issues on food safety or animal welfare unlike the EU. Recently there has been an introduction of animal care guidelines but not welfare regulations however many farmers are unaware or refuse to adopt these guidelines due to costs for example providing shelter for cows from wind, clean water etc.

The main issue in recent years however has been the effect of the BSE crisis as Canada exported 50% of its beef production when BSE hit, but fortunately domestic consumption increased to rally support for beef farmer. The market has almost recovered from BSE with the only exception being exports to Asia. Professor McKinnon told me that there are only two key abattoir companies in Canada Cargill PLC & Meat Packers and the future focus of the Saskatchewan and Alberta beef industry, producing over 1 million cattle per year, is on research into developing the domestic and export potential for beef products.

4.2 Sustainability of the Canadian Beef Industry

The sustainable beef production group currently focus on number of areas including disease control and traceability of product e.g. Animal ID, quality of beef and age verification. They are also researching into costs of production in particular the cow calf operations, for example, extending grazing and calving at grass rather than in the yard but there is also some focus on calving ease and birth weights to lower labour requirements stated Professor John McKinnon. Easy calving has not really been adopted well by commercial producers but is being focused on by the pedigree breeders.

Research into lowering forage costs includes looking at daily versus alternate day feeding, costs of forage production, early maturing versus low sunshine varieties particular in Maize silage and extending grazing use swathed oats & barley or Maize fed standing in field. This however has led to issues with thin cows though due to trying to graze through snow.

Professor McKinnon informed that there is very little research on lowering greenhouse gas emissions (GHG) in agriculture as Canada did not sign the second Kyoto agreement following on from the USA's refusal. Researchers in Alberta are focusing on residual feed intake (RFI) which identifies animals within a gene pool that eat less feed for the same daily live weight gain (DLWG) but this is more about improving feed efficiency than lowering GHG.

Other areas of research and practical beef farming operations are focusing on the finishing stage at the feedlot, for example, maintaining full occupancy to reduce costs; feed cost to gain and improving feed conversion efficiency. They are also focusing more on individual animal management and on anything that improves profitability which is often adopted overnight.

For the extensive beef production systems research is focusing on grass varieties or types in particular looking at new hybrids suitable for grazing and making hay rather than just for one purpose or another e.g. Broome smooth (hay) and Metal Broome (grazing). Some work is being done on native grass seed production but crested wheat grass is the mainstay. Most grass research is on extended grazing varieties rather than those for intensive grazing or conservation.



Other key areas for improving the sustainability of beef production is focused on eating quality in particular research into selecting animals for the Leptin gene for marbling and selecting by genotype for vitamin A metabolism as it is involved in fat metabolism. Feed research is focusing on using wheat distillers and maize distillers, wheat seed, pea and oat hulls as alternative feeds to grain. They are looking at replacing

20% of barley fed in feedlots with alternative feeds and examining the effect of high oil versus high starch diets. Trial work is also underway on increasing unsaturated fat content (CLA content) in beef using Sunflower and Flaxseed.

5. Lowering costs of production

Canadian beef farmers are facing similar challenges to the UK farmers of increased cost of production in key areas such as rising feed and haulage costs. In addition to this the distance to processors or abattoirs for finished cattle and to the feedlots for store cattle also adds to the cost of transport for the beef farmer. There are no such things as local auction markets in Western Canada. Increasing costs of removing and spreading manure from the over-wintering yards has also added to production costs but the main concern is labour. In recent years the oil boom in Alberta has led to a severe shortage of labour as high wages attract many young people away from farming. This has led to government and industry funded applied research focusing on lowering costs of production and reducing labour requirements or increasing numbers of cattle being managed by one stockman.

The Western Beef Development Centre near Lanagan, North Saskatchewan is an information and applied research facility for forage based beef production systems. Key areas of research are based on cow-calf operations (suckler cow systems) and focus on breeding, nutrition and animal health particularly concentrating on grazing ruminants and developing progeny heifers (pedigree). Six key staff, a farm manager and research staff focus on disseminating information to farmers and they have an advisory committee made up of 70% farmers who meet twice per year to agree the research goals and projects to be undertaken.



The centre is 2000 acres with 350-400 head pedigree Black Aberdeen Angus pure bred (seed stock). Funding for the centre comes from the provincial government in Saskatchewan(30%), livestock sales, research funding from both federal government (Ottawa) and the provincial development funds which are producer reviewed. Similar to funding for EBLEX in UK, cattle sales are subject to a levy of \$2 / head which goes into the provincial funding pot. A third source of funding comes from agri-business usually from animal health companies looking to trial animal vaccines etc. The Alberta Livestock Meat Agency also fund work for the meat processing industry.

Pasture management at the centre for spring grazing is planned based on soil tests for N & P but also depends trial requirements. Saskatchewan has high P & K soils and is one of world's biggest sources of Potash with a lot of very large mines throughout the province.

5.1 Effect of genetic improvement on costs of production

The current research for farmers is based on comparing high genetic merit versus low genetic merit herds of cows and looking at the effects of genetic merit on growth rates, feed intakes, body condition scores and fertility. The offspring performance is also measured from calf through to weaning (store) and then throughout the feedlot system to quantify growth performance. Each calf is individually recorded using EID and Grosafe feeders to record dry matter intake during the rearing phase after weaning.

Much of the trial work on selecting cows for low residual feed intake (RFI) in Alberta has been based on high concentrate diets however, the Western Beef Canadian Development centre, is

concentrating on looking at grass and forage based diets with up to 80-90% roughage. Using chromic markers they are analysing dung and herbage disappearance to estimate dry matter intakes at grass prior to the finishing stage in the feedlot. This work will hopefully quantify for farmers the financial benefit of genetic improvement.

5.2 Lowering feed costs

Much of the centres successful extension work on behalf of farmers has focused on extended grazing techniques for suckler cows, replacement heifers and store calves which have been widely adopted by farmers as follows:-

1. Bale grazing

Big bales are placed into ring feeders or left standing on the ground in a grid pattern and supply enough for 15-30 days feeding. The bales are then strip grazed with an electric fence usually this is done on poorer quality pasture so



that manure from cattle fertilises ground and is rotovated in by the cattle's feet. The system is started off by giving access to 10 days worth of bales to avoid wastage or hunger in order to get the balance right for group. Then the forage allowance is increased to 15 days' worth and eventually increased to 30 days.

Portable electric fences powered by a solar panel battery are used in the system throughout the winter. In order for this system to work the stocking density is important. The bales are either whole crop barley or haylage. This technique has reduced labour as they often leave the bales in the field in situ after making them. The bale grazing system has also reduced haulage on manure from the wintering yards. Some farmers practice pseudo bale grazing in that they put bales out daily or every 2-3 days but this is not really sustainable from a labour point of view.

2. Swath grazing

Cereals such as barley, oats, triticale and millet are sown mid-May to June and swathed from late August to mid-September at soft to late dough stage which is then cut and left laid on the ground in a swath. Rather than harvesting, storing and feeding as forage the crop is then windrowed and strip grazed with an electric fence. They are grazed in windrows from October onwards with swath widths 20 to 25 feet to reduce wastage. Barley swaths have highest digestibility and protein but they can mix in forage peas, ryegrass, and rye to improve swath nutrient content or under sow grass in a winter crop for late summer or autumn grazing. Cows may require additional supplements and minerals at grass.



This system requires careful introduction of cattle to windrows as there can be issues with acidosis and laminitis due to over eating the grain head first rather than the straw. For this reason they allocate three days grazing at a time. It is not uncommon for cows to graze through two foot of soft snow. In difficult access or wetter areas for grazing are removed by baling. Both bale and swath grazing are being adopted on farm and being used extensively on cow-calf operations, for rearing heifers, store calves and over-wintering cows to reduce production costs.



Source: Alberta Agriculture Food & Rural development 2004

acre or over 80% of production costs due to reduced labour, fuel, machinery and manure handling (adapted from Swath Grazing – Economics, 2004). Research has also shown considerable environmental benefits of better manure management, reduced nutrient losses and a gain of 200kg per ha of nitrogen over 18 months, almost double what was measured in soil inorganic forms.

Swath grazing cows over winter saves £79.64 per

Swath grazing barley costs	Feed Yard costs (baled silage)
Grazing costs £19.26 / acre	Yardage costs £64.19 Baling & picking £34.71
Assumed 20% losses	Assumed 20% losses
Total costs £19.26 / acre	Total costs £98.90 / acre



Trials carried out by University of Saskatchewan and the Western Beef Development Centre from 2007-2010 compared two swath grazing treatments barley versus millet compared to diet of hay and concentrate in a dry lot or yard. The trial used 120 spring born Angus calves weaned in autumn at a weaning weight of 224 Kgs with equal number of steers & heifers. They were reared on their allocated system from October to end January and then transferred to a feedlot and fed adlib for 163 to 166 days.



Calves gained significantly more per day on grazing barley swath than millet but no difference was found in daily gain between barley swath grazing and calves fed in dry lot pens (0.8Kg per day). During the feedlot phase however calves that had grazed on millet gained significantly more, in effect, they caught up, as there was no difference in carcass quality or final liveweight of any of the groups. The average cost of gain over the three year trial was 35% lower on calves grazed on barley swath versus those kept in the dry lot pen.

Other trials comparing newly weaned 150 kg calves grazing for 150 days over their first winter compared to calves taken directly to the feedlot rearing system found that although the grazing calves had slower gain in first winter they then exhibited compensatory growth and had reduced yardage costs.

3. Corn Grazing

Trials have been carried out on growing Maize but instead of harvesting feed it standing in the field to beef cows. There have been issues however with cows only eating cobs first and not the whole plant so controlling access via electric fencing is crucial to utilising the whole plant. There are also issues with the Maize crop being prone to frost damage so Monsanto are putting in millions of dollars to research early maturing and low sunshine varieties.



5.3 Nutritional strategies for sustainable beef production

Dr Greg Penner another member of the sustainable beef systems research group University of Saskatchewan met with me to discuss his fundamental research investigating the ruminant digestive tract. He described his research techniques to look at rumen function was carried out by harvesting organs and keeping them alive by use of Ussing chambers. This allows him to find out what regulates volatile fatty acid (VFA) absorption, where it exactly occurs, what affects it and ultimately how this influenced by pathogens and ph. The group also focuses on evaluating the efficacy of nutritional management strategies to enhance productivity and health in beef cattle.

This group for example believes that feed efficiency (RFI) is not purely a genotypic trait but rather a phenotypic or multi-trait. The response may be mitochondrial changes or improved protein metabolism but no one knows how it works. This means that animals selected for improved efficiency may only be efficient on one type of system e.g. grazing or forage based but not on high concentrate systems or vice-versa.

Other applied research areas of the group include looking at phase feeding for beef cows and finishing cattle like dairy cow's e.g. early lactation, late lactation and dry rations. Also researching starch versus fat in the diet to increase energy density through finishing phase, to reduce feed: gain requirements as animal liveweight increases.

5.4 Disease prevention strategies

The University of Saskatchewan also has a large veterinary school and its own farm for carrying out research into improving animal health and disease prevention to improve sustainability of beef production. Dr Steve Hendrix showed me around Goodale, 840 ha farm on the edge of Saskatoon just a few minutes away from the University. This beef farm is not based on Angus but has 200 cow - calf unit of Herefords for research and training vet students. They manage the unit on a pasture based system which also uses swath and bale grazing in winter to extend grazing. Swath or bale grazing is carried out with cows until the end of January beginning of February using barley and oats for swath and hay for bales. At the beginning of February through until March they bring the pregnant cows close back to farm and then calve in paddocks with shelter from 15th March onwards. They keep a close eye on cow-calf units to monitor calf scours as the main disease issues are coccidiosis and pneumonia.

The farm also has the Centre for Alternative Animals using native stock for example Bison, Water Buffalo, deer and Elk. They also conduct a lot of embryo transfer work, reproduction and health research and also do trials on equine herpes virus vaccine.

The main areas of Research at Goodale Farm 60% University funded and then outside funding. Much of the current research is on IBR and BVD trials on new vaccines using vibrio a gram negative bacteria strain. The main health issue in calves is coccidiosis which they use monensin sodium in feed to prevent or treat. Coccidiosis is often more prevalent in a wet spring in the yard system as they are very mucky yards and no real way to keep clean as they do not use much bedding.

Breeding trials using oestrus synchronisation are being carried out to look at economics and improvement in calving patterns as most of western Canada do not synchronisation and AI but use a stock bull instead. They have also trialed the benefits of sing synchronisation programmes followed by a stock bull. Using a prid they remove it followed by an injection of GnRH and then an injection of Prostaglandin versus prid and an injection of Prostaglandin only then put bull in to compare conception rates and time to conceive. Last year they had very good results on prid only versus prid plus prostaglandin which helped help maintain or develop a tighter calving pattern.

6. Canadian Beef production in practice

I visited two commercial beef farmers in south Saskatchewan near Saskatoon. One pedigree Aberdeen Angus producer and one farmer producing store or weanling calves for feedlots in USA and Alberta.

6.1 Ward's Red Angus

Clarke & Denise Ward of Ward's Red Angus established the herd in 1975 by himself and his father who was a Horticulture Professor with University of Saskatchewan (www.wardsredangus.com). They used to breed Charolais and Simmentals but now concentrate on a pedigree herd of Red and Black Angus.

They have two calving periods January until first week in March and second period from August 25th until mid-October. He sells his young bulls privately and mostly at sales. The farm uses natural service and a synchronised AI programme as well as sharing bulls to progress genetics all the time. He uses shared bulls in the autumn calving herd with other farmers in partnership and they get to use his bulls in the spring for their cows. The partnership shares about 4-5 bulls.

They keep yearling autumn born bulls together in a 60 acre paddock with electric fences and handle them a lot at an early age so it is safe to walk in the field and call them. Any temperament issues in a bull then, they are culled, as his buyers are family famers with kids who help on farm so he does not wants any behavioural issues with his bulls that he sells.



They aim for calf birth weight of around 45 Kg or less and handle them early. They will be ready in March for the first sale at 750 - 800Kg at average of Canadian \$4500. They breed for bulls with low birth weight for easy calving but

high growth rate with minimal concentrate input. Clarke does not believe in over feeding his bulls for the sales and gives every bull a guaranteed to work immediately if there are any issues he will take the bull back. The only time he might feed up is for a show competition. Anything cows which require assisted calving the offspring bulls are castrated and heifers culled. They will also cull anything with a poor temperament.

The Wards herds are mostly kept on 160 or 80 acre paddocks in groups of 12 or less, fed once per day on 3Kg of pellets. The grazing system on this farm is not suited to rotational as there is a lot of native grass (rough pasture). They do not swath graze because land is not good enough or too wet but he does bale feed in situ with hay.

The Wards are selling autumn born animals at 18 months old and spring born 12-14 months old. They sell mostly at auction via specialist sales but some are sold direct as he has a website. Clarke delivers all his bulls personally direct to the buyer so he can check out homes if he is not happy he will not sell. Most of his business is repeat business.

Before selling each bull with a fertility guarantee Clarke will do a semen motility test and sperm count with his vet. He also guarantees a minimum testicle size of 32cm diameter at 12 months old.

6.2 Ward's Breeding programme

Using natural service and AI Clarke selects 30 of his best heifers and 30 of his best cows. He uses three different bulls on heifers, one black and two red bulls. On his cows he uses four or five different bulls two of which are home bred red bulls. He is looking for at least two to three bulls of good type for his tall rangy cow type and then uses a bull to put condition on. The Ward herd achieves 75-80% conception rate using one oestrus synchronisation injection and then a prid. Another hormone injection is given when the prid comes out to help adhesion to uterine wall.

He likes to keep all his replacement heifers but sells any surplus. He will only keep one bull per 30 cows normally as he likes to know who one bull per group is father is and makes record keeping much easier and prevents inbreeding. He does not do any DNA tests on young bulls for AI purposes, so he tends to put yearling bulls where they can watch an experienced bull mate first so he tries to train it bit like an AI bull. He then lets the yearling bull mate one cow for real if he is happy a yearling bull will be given 15-20 cows maximum in his first year.



Marketing of Pedigree stock

Holds a BBQ once a year invites all customers as thank you no selling just social. He has about 30 cows and calves nearby so can look tells them to wait until spring catalogue and if still like can us at sales. This year not doing that going on road trip to see them and take beers and food or take them out to lunch so he can see their stock and get to spend more one on one time.

Also took a group of 30 heifers from his customers out of his bulls and selected them to sell after his bulls. He vet checked them and vaccinated them and put them into groups of 3. They made on average extra \$60 per head or 10cents per lb he took no commission. This also created more interest from buyers in his customer's farms.

Does most of his selling by networking on phone or attending commercial sales to watch his customers sell and buy them lunch.

Guarantees his bulls 90% of time will give a direct replacement but if farmer at fault will back away this is why he likes to deliver bulls himself to see farm set up and management.

6.3 Feeding System

Youngstock are fed complete pelleted feed designed specifically for his herd so there are no issues with fertility or feet as he has never had to trim feet. Sometimes he has had issues with sand cracks on hooves because of very dry land in places. Mr Ward likes to keep his stock on a constant plain of nutrition. They are creep feed until end of July to August then moved on to a grower ration plus hay if required maximum 7.5 Kg per day just nearer the sales, but he does not want fat heavy bulls that will "melt" and not work when the customer gets them home. Show animals may get maximum of 10 Kg per day but he will cut back after show. He never aims to get a grand champion he purely enters just to advertise his stock.



Cows are weaned between the 15-20th of September and get put on stock piled native grass paddocks. These are just paddocks with grazing allowed to grow high they seem to find it more palatable then. The grass holds it quality in autumn and in fact it seems to be better digested by the cows once it has had a frost on it. They may consider corn-grazing as it works better in snow. They then bale grazing plus 2.5 Kg of pelleted feed until post-Christmas and post-calving up to pasture in May.

Like all other farmers in the region no fertilisers are applied to pastures purely FYM from yards or earth paddocks from around farm are spread. The grassland on this farm and typical of the region is a mix of native grasses and Broome grass. Smooth Broome grass is used for hay production. He travel around the farm in his pick-up truck and no longer uses a horse as it takes too long, in winter however he uses a skidoo or quad to travel over snow and frost.

6.4 Corey Farms

Brian Corey of Corey farms and Northland Livestock Haulage located south of Saskatoon near South Saskatchewan river, has 550 crossbred cows; Black Aberdeen Angus cross Charolais cross Simmental and Charolais cross Red Angus and other Simmental crosses. He uses colour of mother to choose the colour of bull to mate. For example, a white bull is used on red cows he keeps both red and white bulls.



Mr Corey calves at the end of March beginning of April on grass this is a recent change as he used to calve February to March like many traditional farmers, however, like many cow- calf operators he has moved to later calving to reduce feed costs. He also has his own cattle trucking business but he basically runs the farm by himself and two dogs. He has two sons who sometimes help and who also own some cows in the herd.

6.5 Breeding Programme

At Corey farms bulls go in from mid to end of July until weaning at the end of September. He selects and buys easy calving bulls. He looks for length in a bull but in particular smooth shoulders to prevent any calving difficulties, as he does not want to assist calving as he is on his own with occasional help from his family. He uses Black Aberdeen Angus on his heifers as they are smaller and easier calving. He puts six bulls per 120 cows and mostly has two and four year old bulls but he also uses yearling bulls alongside the two year olds. He needs to have a high bull to cow ratio due to the size of his paddocks which are all quarter sections or 160 acres. His farm totals two sections or 1280 acres and is part-owned and part-rented from the Government.

6.6 Store calf Production (Back grounding)

Brian aims for a big framed calf in the autumn for selling as store so uses pellets in creep feeders which are a 14% Protein and barley based. He feeds up to 3.5 kg per day over winter. Any light weight yearling heifers and steers at 275 Kg or less by August or September are kept until Christmas on this system. He sells all his calves on- line and last year averaged \$830 per head, selling 260 head each of heifers and steers. His average cost of production for feeding, the cow maintenance cost and machinery was \$540 per calf. He lost 14 calves out of 550 cows due to weather equivalent to 2.5% mortality and only has on average 20-30 barren cows per year which are mostly due to age.

6.7 Custom Back grounding / Store calf production on Contract

Mr Corey also buys in store calves in the spring to custom rear on grass, he may give some creep feed if the weather is bad. In total he is feeding 570 steers and 530 heifers bought in at \$1.70 per lb or \$3.74 per Kg liveweight. He then forward sold them at \$1.41/lb or \$3.10 per Kg, steers must reach an average weight of 850lbs or 380Kg to be delivered 1st Oct to the feedlot. Heifers are on the same contract but at \$1.34/lb or \$2.95 per Kg and 365 Kg. He will get penalty of \$0.04 per lb for every 10lb over weight and bonus \$0.04 for every 10 lbs under. This scheme has paid on average 700\$ for heifers and steers at \$800 but he should make \$1200 for steers and \$1070 for

heifers. He sells to a co-operative group of farmers in the south and they group them together and send them for finishing in USA. There are only two abattoirs in Western Canada JBS and Cargill, none in Saskatchewan he therefore has to haul to Alberta or USA. This why there very few feedlot finishers left in Saskatchewan and he has had to look for new buyers for his calves which is why on=line selling is easier for him. It costs him \$600 a load to haul and they agree



percentage shrinkage in cattle weight due to the distance travelled he therefore weighs them on his own certified box weighbridge. This can weigh 8-11 cattle at a time.

6.7 Cow Management

Brain keeps his cows out on pasture until the end of February, beginning March. The herd is split into two herds dependent on colour, blacks and reds. He puts scratching posts (brushes) out in the paddocks for the cows but the bulls use them more. He feeds mineralised salt licks at grass and garlic.

Mineral deficiencies are common for Cobalt, Selenium, Copper and Iodine. They vaccinate for Blackleg, BVD and inject with Vitamin A, D, and E each spring. They seem to think that vitamin A in particular puts cow condition back on in the spring after a hard winter.

He uses swath grazing until Christmas and splits up fields into permanent swath grazing paddocks using permanent wire fence rather than have to move electric fences as he is on his own most of the time. The paddock usually lasts 500 cows one month; he then uses bale feeding (hay) for the rest of the winter or sometimes processes it in tub grinder to feed in a dry lot. He never buys in grain to feed as he finds it is cheaper to buy pellets in rather than cereals and less risky in terms of quality feed. Lots of problems occurred on farms last year for example, with Ergot in wheat and barley, cows and calves feet / hooves fell off, it starts with the back feet and they need to try and catch quickly with long acting antibiotic.

7. Adaptability to UK

Extending grazing using forage crops is not a new concept and we are well experienced in growing whole crop cereals in the UK, however, these techniques have been focused on reducing concentrate inputs rather than looking at all the benefits such as reducing housing costs, labour and manure costs. Perhaps a re-evaluation of extended grazing techniques to look at all the benefits would encourage more farmers to consider this practice even if only for a few hours per day as the potential savings are massive.

Swath grazing, corn grazing and bale grazing in such an extensive way are more of novel concepts however it would not be suited to high rainfall areas. There is potential on bale grazing and possible swath grazing by under sowing with grass mixtures and baling part of field to give lie back area. Clearly Canadian beef farmers are extending grazing over winter in order to, reduce the cost of gain for weaned calves during winter growth period, improve feed efficiency during the finishing phase, whilst also reducing labour, feed inputs and manure handling. So perhaps the biggest take home message was focusing a lot more on reducing cost to gain for

weaned calves and cost of cow maintenance as is being done by the Canadian farmer who know these costs by heart and are continually analyzing and evaluating them.

7. Value of Trip

My initial purpose of the trip was to :-

1. To identify new sustainable production techniques that could be adapted to UK systems.
2. Create links with University of Saskatchewan for future potential student exchange.
3. Identify potential for Canadian student study tour by Myerscough College.

I achieved all three of these objectives and more. It was fascinating to look at such large farms run by so few people and the focus on making their systems profitable and fit in with their natural environment. I feel there are some real benefits to their "mind set" for UK farmers. Whilst out in Canada I set up a facebook page and uploaded my photographs and comments daily about my trip. This was available to current and past students. I have also presented the information in this report to my students through several lectures looking at sustainable livestock farming and to the Myerscough Research conference in November 2013. I have also presented a talk to students from a number of colleges and farmers on my trip to Canada to highlight the benefits of travelling and seeing ideas from other countries. All of this of course was done with acknowledgement to the Farmers Club. Finally I will be placing a copy of this report in our college library.

Through all my interviews and tours I was warmly received and have still kept in contact with the University of Saskatchewan as we have discussed potential for student exchange and a study tour by students. We are currently planning and seeking funding which we have been successful in gaining some sponsorship to lead a student tour in May 2015.

I would sincerely like to thank the trustees of the Farmers Club Charitable Trust for awarding me the Agricultural Educator Award, 2013 my students, college and I have benefitted enormously from this experience and will hopefully continue to do so.