**Podlediad 56**

00:12 - 01:48

Hello, you’re listening to episode 56 of Ear to the Ground, a podcast brought to you by Farming Connect, supporting Welsh farmers to adapt and thrive. I’m your host, Aled Jones, and today we are going to be discussing some ground-breaking research that’s being undertaken to improve the genetics and breeding of one of the leading beef breeds in the UK – the British Limousin Cattle. I’ll be joined by Alison Glasgow, Technical Manager for the British Limousin Cattle Society, to talk about the work they have been doing to improve the carcass traits within the breed by using some of the latest genetic and imaging technologies, and also how they are looking at feed efficiency to lower the carbon footprint of beef production. But first, I caught up with Dr Delana Davies of the Tierson herd of pedigree Limousin cattle from Milford Haven, who also works as a Knowledge Exchange Executive with Farming Connect. Now, our regular listeners will recall that we featured Delana on our previous episode, where she talked about how greater diversity within a farming business can drive better results. That’s episode 55, which is well worth a listen. Today, she talks about her family’s link with the Limousin breed, as exactly 50 years ago, her father brought the first two Limousin heifers into Wales, as part of the very first importation of the breed from France. Here she tells a story of how it all started.

01:49 – 04:58

It started with my father talking to Doug Lewis at the Royal Show. They were discussing what the industry, the beef industry mainly, required in the country at the time. Then, it was thought that the native breeds had become quite small in stature. Charolais had already been imported to the country, but what was required was a medium-sized beef animal that would produce a calf that was easy to calve for the dairy herd, and one that would grow well, have good vigour and produce a carcass that was heavier than what was currently being produced on the market. He registered an interest in receiving two heifers in the first importation that came in, and they came in in 1971 to Leith Docks in Edinburgh. I think there were about 40 heifers on that boat. My father travelled all the way up to Leith to pick two heifers up (I think they did a ballot system; you weren’t allowed to choose them – you were given them), and he brought them back to Wales. I spent a lot of my early years going around agricultural shows with crossbred calves from my father’s Shorthorn cows, talking about what they were and what they could do for the industry. There was also a big focus on the carcass within the Limousin breed in France. They are very much bred there for producing the highest quality of meat - they pay great attention to things like fat cover and marbling. In France, the best eating quality is suggested to come from a five-year-old cow, and the top restaurants that serve the *Blason Rouge*, restaurants in the Limousin region, will actually serve a nicely marbled fat cover steak from a five-year-old cow. He gradually imported more. In the meantime, more came into the country, and within 20 years, the Limousin bull was siring more beef calves in the UK and also in Wales than any other beef breed. What he saw at that stage and his vision was brought to fruition, because it certainly did seem to fit the bill.

04:59 – 05:23

And that explosion in popularity in 20 years is nothing short of staggering. Going back to that first importation, the two heifers that he brought down from Leith, was he concerned at the time about would they settle on the farm in terms of the climate here? Was it vastly different to where they were reared in France? Was that something that would factor in his decision at all?

05:24 – 06:38

They actually come from an upland plateau region in France. The area where they come from, the Limousin, it’s called Plateau de Millevaches, and they live at quite high altitudes. and live outside for most of the year – they are quite a hardy breed. I can remember as a school girl my father importing Simmentals, as well. If the two breeds were out in November/December, the Limousins would be out grazing in the middle of the field, whereas the Simmentals would be hiding under a hedge if it was a bit of inclement weather. The hardiness was something that what is important. Again, it was a contributed factor probably to them doing so well in Wales, because they can thrive in that kind of wet climate and also upland regions.

06:39 – 06:46

Over the years they’ve developed quite a reputation, rightly or wrongly, for being a bit flighty. Is that something that’s necessarily correct and accurate?

06:47 – 08:25

I think within every breed there are certain genetic strains, and looking back, there has been some influence that the first bulls that were received from France and went to AI maybe weren’t the best with regards to temperament. We do have fertility scores these days, and the Limousin breed has done a lot of work in removing that element from the breeding. Certainly, I would not keep them if I couldn’t handle them myself. They are a breed that is very maternal of their calf when it’s born *(and very protective).* Fortunately, touch wood, I don’t have to interfere when they are being born, because they are smaller calves, easy calving, and they get up and go, and I can just leave them alone. I do have two cows that I know for the first 24hrs, don’t look at them, but after that, they are fine *(they have settled down*). But you have to say that probably, that’s an advantageous sort of characteristic (*a positive maternal instinct)* if they were out in the field and looking after their calf.

08:26 – 08:51

When the two heifers landed in Pembrokeshire, how much attention did that bring? Were your neighbours interested? Did it reach the press? Was there a lot of media attention around the two at the time, or the farming press?

08:52 – 13:49

I can certainly remember an article in the Western Mail, and a picture of them. Yes, it did raise a bit of interest. I can remember spending quite a lot of time explaining to people what they were, what they were about, but very soon from people using them, and my father selling bulls to other people, they came to realise that they deliver the goods; they sold themselves very quickly. Another thing we’ve been very conscious of within the breed is the need develop figures to back that up, and we were one of the first ones to introduce Estimated Breeding Values (EBVs). I can remember starting weighing in the early 90s, and the results would all be sent away and come back as breeding reports for all the animals within the herd. At that time, we were weighing and doing backfat scanning and muscle depth scanning, and through being on the Limousin Council (which I’ve been on for 12 years now), I’ve been able to input to the development of the technical side of the breeding, which I found very satisfying because I could see what needed to be done from my own animals, and I could see the kind of information that I wanted from my breeding programme, and I tried to make that available to other farmers as well. We started on the genomic work very early, and we harvested DNA samples from carcasses in the slaughter-house. These carcasses were viewed by VIA (visual imaging analysis) machines, and they are able to define 92 different cuts of meat in the carcass, and that all gets fed in to the EBV system, and produces characteristics for that bull in terms of nine different carcass cuts, as well as the age at slaughter for that animal. By producing the ‘SNP’ key to predict that, I could take a DNA sample from one of my calves now and see immediately how he compares on the scale to that recipe for producing a certain kind of carcass. And that is very beneficial to me. Myostatin is another thing I’ve used in my breeding, because in France you have the main herd book which only allows two copies of F94L, which is a double muscling gene, but some double muscling genes are associated with different characteristics, such as more difficult calvings, maybe reduce maternal characteristics, reduce milk and things like that. To maintain a good suckler cow, it is very important for me to maintain those characteristics. I’m interested in producing animals that are two copies of F94L, which I know will give the double muscle carcass, but it has reduced instances of calving and maternal characteristics. On the Council, I did push that all bulls entered for society sales should have that myostatin information published, because I said I could not go out and buy a bull until I know exactly what that bull is. That went on then to produce more information about feed efficiency. We’ve actually done trials with 15 progenies from each bull that had been put through feeding stations, where everything they had eaten was weighed and measured, and that gets fed in to the whole genomic picture as well, and you could produce Genomic Breeding Values (GEBVs) for animals that will eat less and be more efficient when it comes to feeding them. It’s all been a fascinating journey, and it’s also taken me to lots of different places – places I would never have gone to otherwise – and met a lot of people in the process.

13:50 – 14:25

And it’s a fascinating family journey, from your father being instrumental in introducing the breed to Wales, and now you being instrumental in forging the future of the breed almost. With the emphasis on reducing the carbon footprint of beef production generally, and the need for farming businesses to be as efficient as possible, how does the breed need to evolve to be fit for the future?

14:26 – 16:46

Obviously, within the breed there are different types of animals, and there are farmers who want different things to fit different situations. But in my opinion, a beef breed will not survive unless she is a good suckler cow. Unless she can be an efficient suckler cow and milk and get back in-calf 365 days every year, then she’s not worthy of being a suckler cow. To me, I need to maintain those characteristics of my cow, and then if I can produce out of her the bulls that can feed a suckler herd into a dairy herd that can produce the carcass that today’s market requires, and we are looking at lowering carcass weights, looking at getting a certain fat cover at that weight, and the Limousin can do that because it can lay down fat; we’ve got EBVs that can tell you which animals are going to lay down fat earlier. All of that is coming out of the system now. We’ve got all those tools, and they are there for everyone to use as they see fit, but as I say, you’ve got to maintain those maternal characteristics for that suckler cow. There is an element of the Limousin does so well in commercial show rings, the show calf potential, and that people always have to have a bit of a Limousin, if not a lot, because the Limousin maintains the loin for those animals. You can get big back-ended breeds, but they are quite pinched on the loin. Someone once told me that the meat on the back-end actually goes for mince *(the loin is where the premium is).* The butchers’ wish would be that you would have a long loin because you can get more out of it, therefore you need that length and the width of the loin.

16:47 – 17:01

Despite all the data that’s currently available (and clearly, there’s a lot more sophistication to breeding now than what there was 50 years ago), what’s fundamental to Welsh farmers is that the animals must look good.

17:01 – 17:46

As I said earlier, it would be no use for me if I couldn’t get up in the morning, go out and have a look at a nice animal and be proud of what’s in front of me, and that’s what brings joy to my life every day, especially when you spend a lot of it stuck behind a computer. I think Welsh stockmen, they really take that on board; they love their stock, and they can appreciate a good animal; they love to produce them, and they love to show them, and that will always be a very important element in beef cattle breeding in Wales.

17:47 – 17:58

[Music]

17:59 – 18:26

I’m Alison Glasgow, the Technical Manager for the British Limousin Cattle Society. I predominately look after the performance recording scheme that the society runs on behalf of its members, which produces the breed’s EBVs, and also look after the technical programme of work that we have ongoing with various projects, and work within the herd book.

18:37 – 19:04

Thank you every so much, Alison, for joining the podcast. We’ve heard from Dr Delana Davies some of the history behind the Limousin breed, her family’s connections with introducing Limousin cattle to Wales 50 years ago, and some of the ground-breaking work that you are now involved with now, in developing the breed and making sure it’s fit for the future. There are two projects that we would like to talk about on this podcast, first being the carcass traits project, and the second being the beef feed efficiency programme. Looking at the carcass traits project to start with, tell us a bit more about its background and the work that you’ve been doing on it.

19:05 – 20:59

The work for the project has been in place for a year or two now, but it started as a four-year programme, and during that time, we worked with other partners within the project, EPP food group and SRAC (Scottish Agricultural College), which was the academic partner involved with the project. During those four years, we collected a range of data from the abattoir and on-farm. In the abattoir, we collected data on age at slaughter, carcass weight data and VIA measures, which gave us weights back on individual carcass cuts, some of the prime cuts. On-farm, we collected genotypes from animals that were either related to the cattle that were being slaughtered, or were ultimately slaughtered themselves, and we collected all of that information. From that, we were able to produce GEBVs, eight GEBVs plus one breeding index, and these were the first GEBVs for beef cattle in the UK. They gave us the first genetic indicators on the abattoir traits, such as age at slaughter, carcass weight, and then for six individual primal cuts. They allow better selection, more accurate selection at a younger age on animals with these traits. That’s the essence of it in a nutshell.

21:00 – 21:08

Once you’ve developed the GEBVs, talk us through how a breeder would use those in their breeding decisions.

21:09 – 22:10

They are exactly the same as any other breeding value, and I think we are familiar enough now with these EBVs in the industry - they’ve been around for a long time, both in the beef and sheep sector. And GEBVs, for all they’ve been arrived at, they are developed in a slightly different way using information from the DNA, as well as the performance records. The way they are used is exactly the same: they identify animals with high genetic merit and animals with low genetic merit for the different traits, and they can be used to select breeding animals, depending on what you want that breeding animal to do, and how you want it to perform, you can hone your selection a little bit by using these specific breeding values for the traits that you might be interested in.

22:11 – 22:18

Predominately, these values are used within the pedigree breeding element of Limousin cattle?

22:19 – 23:07

Both! They are used by pedigree breeders; they are looking to produce the next generation of pedigree animals, but these pedigree animals are destined for using largely in commercial herds to produce commercial cattle that go into the food chain. The buyers of these pedigree animals, for that purpose, are looking for cattle with specific traits; they need these stock bulls or replacement females to do a specific job, depending on how they want to produce and market their end product. Commercial producers would use these breeding values in exactly the same way as pedigree producers.

23:10 – 23:17

Would you say that the use of breeding values is becoming more and more common now amongst your members?

23:18 – 23:56

I would say so, yes. It has taken a period of time, as all things do, but as these better technologies have come along, such as GEBVs, it tends to make them a bit more robust, and with that comes a bit more confidence in their use. I would say, yes, we are seeing an increase in numbers, certainly in buyers using them, the commercial buyers that are looking for bulls with these breeding values.

23:57 – 24:09

Is this project an ongoing piece of work, because presumably, the value of the values is dependent on the data you collect, and the more data you collect, the more accurate the GEBVs are?

24:10 – 25:07

Yes. The initial work established the parameters that were needed to be able to do the calculations that produce the breeding values, but the data collection and the analysis doesn’t stop. Since their first introduction, we continued to use the abattoir data, and animals continued to be genotyped. All this time this library of information keeps building, which makes the predictions that comes from it ever more robust. The bigger that library of data, and the more different types of animals that are in it, the more robust the results that come out of it. As time has gone, it’s been building massively, and we have a lot of data in it now.

25:08 – 25:20

The financial impact of using the animals that possess the best traits is quite substantial when you run some figures through the data.

25:21 – 26:58

In the development stages, the SRAC was the academic partner involved this project, and they used the data to look at the different levels of performance within the same weight bands and the same carcass grades. And the work they did established that the carcass value, the retail value of carcasses could vary by as much as £100-£150/head for animals that weighed the same and graded the same. That was a bit of work that was done across just short of 20,000 steers. What that tells us is, payment grades can be quite blunt at times, because they are not necessarily filtering out the very best and the very worst within the same grade band, therefore there is value that’s being lost. And the flipside to that is, there is value that can be captured if we can identify the breeding merit of these animals, and that’s what this work is all about. Yes, a lot of interesting data did come from it.

26:59 – 27:06

What makes a good carcass? What were the specific traits you were trying to measure, and obviously improve on?

27:08 – 28:00

The key drivers, the traits for which we can produce values for are age at slaughter and carcass weights, and in my view, those two traits in isolation are very important to just about all types of producers, or they should be. Beyond that, with the individual carcass cuts, we get data back on striploin, fillet, topside, rump – the prime cuts that are higher value cuts within the carcass. It does allow selection on those, but my view on it would be that age at slaughter and carcass weights are king!

28:01 – 28:23

And that leads us quite nicely to some of the work that you are doing around feed efficiency. There is huge pressure on the beef industry as a whole to try and reduce greenhouse gas emissions and reduce carbon footprint, and I’m sure age at slaughter has an impact on the carbon footprint of that beef production system, but tell us a bit more about the feed efficiency programme that you have been working with.

28:24 – 30:25

The programme is called the Beef Feed Efficiency Programme. It’s an initiative that’s being funded by AHDB and Defra. SRUC was the delivery partner involved. It’s ran across two phases. Phase 1 started in 2015 and ran into 2019, and in that time, we established three farms with feed intake units within them; these were installed as protocols for collecting the feed intake data that we established as part of this work as well, and put just over 2,000. I say ‘we’: the hard work was done by others within AHDB and SRUC, but just over 2,000 animals went through the feed intake units, and the full data and the genotypes were recorded. This allowed the establishment of EBVs for these traits, and work is ongoing now to use the genotypes to produce GEBVs for these traits, which will help role it out to a wider part of the pedigree population. It is a difficult trait to measure, obviously, because animals have to go through units. Having GEBVs helps us establish EBVs for animals that perhaps haven’t been through the units, but can be predicted through their genotype and how they compare to animals that have been assessed.

30:26 – 30:38

How much work was involved in trying to capture that data? You relied on support from farmers across the UK, measuring animals, weighing animals and collecting quite a lot of data, really.

30:39 – 31:28

There were three units on the go at any one time. We sourced commercial cattle through various routes to put through those, and we tried to get as bigger representative spread of types. They were all Limousin-bred cattle, but they came from different sources, because the wider the information in your library, the more representative information you have in your library, the better the estimates that comes out on the other end. They came from a wide source, but the three units that were on the go were on the go continuously throughout that four-year period.

31:29 – 31:31

And one of those farms was in Flintshire in Wales.

31:32 – 32:23

That’s right – Meilir Jones. Those three units on that farm are still up and running. We are into the second phase of the project now, which Defra and AHDB are still the partners of. They funded further work on further 750 animals through the units, and from those animals they will also be collecting meat samples. The aim of this is establishing whether selecting for increased feed efficiency has any impact on meat quality. Those meat quality samples will all be fully analysed to see what the correlations are between the meat quality traits and the traits associated with feed efficiency.

32:24 – 32:50

And that’s really fascinating! Clearly, you want to improve the efficiency of your herd and your beef production system, but you don’t want to do that if it harms the eating quality at the end, and I’m sure it doesn’t. But I wonder with the retailers – have they shown any interest in some of this work, because I’m sure they are looking at the carbon footprinting of their supply chain, and I’m sure some of these projects will be of interest to them?

32:51 – 33:27

They are. Associated with this project is a consortium of stakeholders, and within there are a number of processors and retailers; they are all perhaps not directly involved with the day-to-day running of the project, but they are all parties to the progress and the information that’s coming from it. There is good interest, and naturally, it fits with a lot of the ambitions that they have within their own medium and long-term strategies.

33:28 – 33:42

And what are your plans around sharing the information that you are gathering through all this research, through all the trials and through all the data capture? Clearly, you are disseminating amongst your members, but are you pushing the messages wider than that?

33:43 – 34:50

The stage that we are at at the moment is trial EBVs have been established, and I mentioned earlier that the GEBVs are being developed. The point where information is available, information that producers can use, then the roll-out within the wider industry begins, and that would very much be the plan. Until there is something tangible in front of people with real-life live information, it’s very difficult. Our members are aware of the project. We focused it in various publications and press releases and so on, but human nature as such, until something there is something very tangible in front of you, then perhaps it’s very difficult to do something about it. But we are not very far away from that point, and we are working with AHDB and SRUC to put these plans in place.

34:51 – 35:01

Clearly, as the British Limousin Cattle Society, you are right at the forefront of this work, but are there any other breed societies doing similar trials and developing their own genomic work?

35:02 – 35:48

I’m not aware that there is genomic work going on, but there are other breeds involved with different approaches to feed intake, recording feed intake. The Aberdeen Angus Society was partly involved in this project that we’ve been talking about, and they had some data collected through that route. There are other breeds that have started data collection, and some have been doing it for a little while. Other breeds are engaging in it, but as I say, I’m not aware that any have any GEBVs yet for any of these traits.

35:49 – 36:04

And over the years, Alison, you have been heavily involved in a number of farmer meetings, with a good chunk of those over in Wales; you’ve supported Farming Connect over the years with various open days and so on, but tell us about your experiences there.

36:05 – 37:22

Shortly after the sort of early stages of the carcass traits coming into play, we worked with a couple of the focus farms where we genotyped animals, and the breeding values were reported for the different animals, and we held meetings and so on where as a group we were able to look at what that meant and how you would use that information. At the same time, we also talked about the use of myostatin information, which with the Limousin breed we’ve been testing and publishing that information for a few years now. Again, with the pedigree breeders, it’s become part of the breeding furniture as it were, and increasingly, that’s spilling over into use by commercial producers. We had myostatin information as well as our GEBVs from the cattle within those herds, and we looked at different ways of using that and how you would use it, and just exactly what value it was to the herds.

37:23 – 37:42

In your role as a Technical Manager for the society, what’s going to be your focus now over the next 12 months? I’m sure, as you’ve mentioned, there is more work to be done on the two projects we’ve specifically spoken about today, but I’m sure that’s only a part of your remit. What are your primary objectives for this year?

37:43 – 38:45

The feed efficiency work is our priority, there’s no two ways about that, and accelerating the end-point of that is very much in our sights. But beyond that, we have a technical committee within the society, who at the moment is looking at sharper ways and smarter ways of using the data that we collect on-farm, and how that’s collected and how it’s validated to produce more robust breeding values, and breeding values that all produces, be that pedigree or commercial, just to have a bit more confidence it; it’s all about using newer technologies to collect better data, and to collect it in a more easy fashion, so that what you produce at the end is better than what we have produced before. Those are the two key areas that we will be doing in the next 12 months.

38:46 – 39:08

Alison Glasgow, thank you every so much for joining the Ear to the Ground podcast, and for sharing some of the fascinating research you’ve been doing around carcass traits and feed efficiency, and of course, all the important work of capturing and making the best use of data. On behalf of the team at Farming Connect, once again, all the very best with your future research. Thank you.

39:09 – 39:10

Thank you very much.

39:11 – 40:07

Thanks as well to Delana Davies of the Tierson herd of pedigree Limousins cattle, who also works as a Knowledge Exchange Executive for Farming Connect. Therefore, thank you once again to both Delana and Alison for their contributions on this podcast.

If you would like more information about the support available through Farming Connect, then please contact your local development officer or the Service Centre on 08456 000813. And there we are, we have reached the end of yet another episode. We’ll be back in two weeks’ time, with plenty more to talk about, but in the meantime, don’t forget to hit ‘subscribe’ on whichever platform you use to keep notified of all new episodes of Ear to the Ground. On behalf of the team in Farming Connect and myself, Aled Jones, thank you for listening, and goodbye for now.