

In search of a Yankee Doodle Dandy! My Llama Fact Finding Mission to the US, May, 2017

Part One – What I observed, learned and thought

In April/May 2017 I was fortunate to have the opportunity to go to California and Oregon on a self-funded llama fact finding mission.

My specific objective was to find a way to beg, steal or borrow some of their superior genes and bring them back to the UK. Not the blue type they are historically famous for making and cowboys wearing but their llama genes now also arguably amongst the best in the world.

There are reasons for their pre eminence. As most of us know, Americans are generally very good at marketing and they have deployed these skills to create a significant demand for llamas of all types through well structured education programmes (eg. 4H) and shows organised by specialist breeder associations like the American Mini-Llama Association, the Argentine Aficionados and Classic Llama society; special interest groups for activities like driving, therapy and trekking; and cooperatives to market and sell fleece. The breeder associations also set standards, encouraged breeding like to like with proper selection practices and maintained the International Llama Registry (ILR).

Before too long, dedicated enthusiasts could only compete successfully with their peers through widening and enhancing the gene pool and so the demand for the importation of llamas grew. They went searching far afield for the qualities they aspired to and found in several of the South American countries like Bolivia, Chile and Peru where as a result of selective breeding over many generations, farmers had perfected different types of llamas. As the importing of live animals grew to significant numbers, some of these South American countries started to close their doors to the export of live animals, primarily to preserve their national herds. This gave additional impetus to pioneering Embryo Transfer (ET) in llamas, a technique widely used in many other species, including alpacas. Although the Rowett Institute in Scotland had been the first to master the technique, American Paul Taylor and his wife Sally were practical leaders in this field and were responsible for producing hundreds of ETs in North America. Their interesting story can be read at:

<http://www.taylorllamas.com/ReproStory.htmlresponsible>

This interest and move towards selective breeding is relatively only recent, however. Writing in 2005, Daniel Powell expressed concerns about what he described a ‘chaotic breeding free for all’ and ‘the desperate need for a sophisticated and ethical approach to llama breeding’ in the US. As a stockman with a passion for breed development and breed presentation he was disheartened by ‘the rampant out-crossing and mix & match approach’ that the typical llama breeder had hitherto employed.

‘It was as if llama breeders existed in a vacuum, isolated from all other livestock industries as well as from the breadth of that knowledge those industries had to share’

I believe the same could be said for the UK today. Indeed, I would suggest that the problem is even more acute since a small trickle of llamas had been brought north overland from South America since the 1930s. Perhaps most famously, the herd acquired by newspaper magnate William Randolph Hearst and brought to his castle in San Simone, Southern California.

In the early days of llama breeding in the UK, the only llamas in the UK in private hands were those discarded from zoos as surplus to requirements, for whatever reason. Early breeders struggled to access other llamas and I am reliably informed, often resorted to cross breeding with guanacos and between close relatives (father and daughter, etc.). To my knowledge, it is only Paul Rose in the early part of this century and Annie Austen (*Watertown Llamas*) in recent years who made any concerted effort to introduce new bloodlines through resorting to the importation of llamas from largely continental Europe. If you observe some, even a significant proportion of llamas in the UK, they bear little resemblance to their South American ancestors which had different limb ratios (longer necks. etc.), stronger bone structures, etc. The same is not true of alpacas. They are both imported into and exported out of the UK.

From the photographs which follow, you can see the quality and specialist features of the different breeds I was privileged to meet on my trip.

Rebano Escondidos are perhaps the rarest and most specialised breed. These were discovered in a very remote region of the Andes by Paul Taylor and can be read about in the previously mentioned article.

Figure 1- Rebano Escondidos at McKenzie Llama Ranch



Argentine Llamas, my favourite, have bred for their voluminous, quality fleece, good bone structure and temperament.

Figure 2- Silver Knolle's Argentine Stud Tommy



Figure 3- Rain Dance Llamas Argentine Stud – Blazing Saddle



It wasn't a case of just being 'bigger and better', as with some other US traditions. There were generally smaller Suris and Silkies with fantastic fleeces, Crosses bred to drive, for therapy and other activities

Figure 4 - Wild Oaks Suri Female



Crosses bred for trekking with strong legs, suitable gait and movement patterns.

Figure 5 - High Tower, Great Northern Llama Company Ranch Stud (Trekking) Male



I believe it is a matter of some significance and urgency that the British Llama Society should try to do something positive about enhancing our gene stock in the UK. In Part Two I write about the issues involved in the processes of importing live animals and embryos but for now it should be realised that it is impossible to do on a small scale (because you need a breeding pool) and too big a financial risk for one individual to undertake. This would be in parallel to supporting some of the educational and promotional activities that have proved such a success in the US. For example, structured and validated training programmes in llama husbandry for children, ideally, pursued in partnership with the educational establishment. This can help educate children about llamas, promote interest in and ownership of them. More competitions in llama agility, driving, fleece and handling.

Part Two- Improving the British Llama Herd – some of the options and issues discussed

Given the nature of the global society and market in which we now reside, it is not surprising that enthusiastic llama breeders like myself are now beginning to look further afield to acquire the bloodlines that will enable them to achieve their breeding objectives. So how can we do it?

Anyone who keeps llamas knows they are sensitive souls and transportation, especially over long distances and through trade barriers, is far from easy or ideal and as such carries a risk.

Imagine the stress they experience undergoing:

- Transportation from the farm of origin to the quarantine facility.
- A 30+ day quarantine period prior to export.
- During quarantine, testing for Tb, Blue Tongue and have blood taken to test for other nominated diseases in the protocol.
- During quarantine sometimes not having access to grass and being kept in a fairly compact area with access to hay and other hard feed only.
- Transportation to the airport.
- At the airport being loaded into wooden crates with up to 11 others.
- and moved around before being placed in a noisy cargo hold for hours on end before unloading at Luxembourg airport
- Transportation to the UK and their final destination.

The whole thing may take a couple of years (especially if coordinated with other importers) during which time you can only hope they suffer no trauma that might affect their health or psychological condition. Several partners will be needed to organise selection and purchase of stock, transportation, livery at a coordinating centre, health checks and completion of all the red tape formalities etc. Costs will be determined by the distances between their home ranches and quarantine stations, mode of transport, number transported (price for transport per crate) etc.

From a welfare point of view, embryo transfer was my preferred route.

Embryo transfer has been a successful process in many other animal species including humans for some years now. In bovine and equine species it is now common place. For exotics and non-commercial species (in which I would include llamas) there has not been the same level of investment or activity and so the art and science of ET is less perfected. However, ET is possible in llamas thanks to the pioneering work by the Rowett Institute in Scotland and Paul and Sally Taylor in the US. They have been responsible for successfully bringing hundreds of ETs to the US from South America and furnishing it with a fantastic pool of quality genes.

The process involves the extraction of embryos from a donor female and successfully transplanting them in the womb of a recipient female. Practically, an initial hurdle is securing the appropriate stock both to donate (male and female) and receive. As with all major medical intervention it is necessary for owners to declare their awareness that risk is involved. Although I am reliably informed that no harm has come to a donor females, one can understand the reluctance of an owner of an exceptionally good young female to be used in this way. The only viable way, it would appear, is to purchase suitable stock and have someone host them in the US. There are exceptionally few people in the world with experience of ET in llamas and so there is a distinct advantage of having the llamas close to them. One such person is Michelle Kutzler at Oregon State University Veterinary School to perform the extraction of the embryos and putting them into a transportable, frozen form for transportation. Whilst technically feasible, I would not want to underplay the issues and skills in preparing and monitoring the donor females and extracting their embryos.

Once the embryos have been put into storage and transported using special apparatus to the UK, there is the delicate skill of timely preparing the recipient female to accept the embryos implanted in them. This requires a suitably clean, dust free environment preferably with power laid on for a scanner and lighting where the llama can be sedated, put into position and worked on. In terms of personnel, currently, there is nobody experienced in the UK doing this operation with llamas. There are, however, veterinary clinicians with experience in alpacas, and a specialist practice with wide experience of ET in a wide range of other species including camels and exotics.

Unfortunately, but not surprisingly, there are risks every stage of the journey and imagine the disappointment if all has gone to plan, the embryos were successfully frozen, transported and then implanted into the female only for her to abort after being chased by a dog.

There is also the matter of scale to consider. Once a programme is set up, it can become a productive production line with one female supplying as many as several dozen embryos a year at marginal extra investment. Also, it would not be worthwhile producing just a small number of ETs. Since they could only be inter bred, unless put to inferior existing UK stock.

However, the desire to develop and progress is human nature and should provide the motivation for serious breeders to climb over these hurdles and not let red tape get in their way. What is obvious, of course, is that knowing the process is proven, there would be no point going to these extraordinary lengths unless a superior gene pool to what we have in the UK could be secured. From an economic point of view, there also needs to be a market willing to pay extra for these superior animals.

One would hope that a market for more ETs would evolve in Europe until such a time that there was a significant gene pool. Whether markets would open elsewhere is another consideration. There certainly appears no reason why as long as alpacas command a good price in the UK, llamas of the Argentine variety couldn't prove to be the same. From what I was told, they are capable of producing a better quality and bigger fleece than alpacas. If it proves viable in the UK, then why not in other parts of Europe?

So, is there anyone the UK interested in investing in this initiative? Fortunately, I already have someone to extract the embryos in the US and clinicians to implant the embryos in the UK. It will require significant financial investment and some risk and the return will be one of owning and having the opportunity to own and breed from these magnificent creatures, so far unavailable in the UK, sometime into the future.

From my understanding of the literature, there is both a science and art to successful ET – it requires calculated use of various chemical mixes, drugs and hormones; manipulation of some specialist apparatus and equipment; good timing and considerable dexterity. The main knowledge, issues and skills centre around selection of suitable donor and recipient llamas (in terms of age, health and characteristics likely to deliver desired traits); judging and controlling ovulation in both donating and recipient females (whether relying on normal cycling or induced via hormonal management), accurately identifying and carefully extracting (flushing) the embryos in a timely fashion (when sufficiently mature) using appropriate equipment and techniques, preparing the culture for storage and transportation of

embryos, their transportation and thawing (if they have been frozen), timely implantation and care of the host female. Finally, as with the export/import of all live animals, there is the requirement for someone to navigate the way through regulatory pathway that will permit legal importation of the embryos into the EU/UK.

If anyone wishes to participate in the initiative please get in touch at richard.cox@zen.co.uk.

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