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The MARE Centre

Internship Report 2011

I first received the e-mail, announcing the launch of a new competition run in partnership with the BEF and MAREC, with excitement and trepidation. The e-mail described an opportunity that I had only ever dreamed of experiencing and that I was determined would not pass me by. The e-mail described the things that I would have the opportunity to experience:

- Actively participate in research related to reproduction, nutrition, genetics, behaviour or the management of horses
- Work with over 50 horses
- Learn about reproductive management and foaling
- Show young stock at regional sport horse shows (in-hand)
- Travel to regional breeding farms and events
- Network with leading owners, riders and trainers

The MARE Centre

Little did I realise, when I first submitted my report to the BEF, that I would find myself flying over 3000 miles from my home country to enter a completely new World.

Reproduction research

One study that I was involved in was looking at insulin levels in mares and the effect of obesity upon reproduction. For this study we had to take various measurements, including neck circumference, using a tape measure, rump thickness, using ultrasound, weight, using electronic scales, and body condition scores. This study helped me to understand more about the function of insulin, its effect on obesity, how to body condition score a horse correctly and how weight, or lack of, can affect the health and lifestyle of equines.

The main study that I was involved with was focused upon inflammatory markers during luteal and follicular phases of the equine oestrus cycle, as yet unpublished. For this study, I was placed in the role of team leader, so it was my responsibility to ensure that all the paperwork was kept up to date and in place and that all of the scientific procedure was carried out correctly. Ovulation was detected using ultrasound which resulted in blood samples of progesterone and cytokines being collected every 2 and 3 days respectively, over one complete reproductive cycle. It was my responsibility to complete the blood sampling and to ensure that site checks were carried out. This study helped me to understand the amount of time and preparation that is needed to perform a study, the responsibility involved of updating records and ensuring procedures are carried out correctly and the importance of communication within a research team.

Nutrition research

Another research task that I was involved in was hay sampling. This involved boring, or drilling, into bales of hay to collect a core sample that could be analysed for nutritional content. We sampled 10% of the total amount of grass hay, which equalled, approximately, 20 bales and 10% of the alfalfa hay which equalled, approximately, 3 bales. The samples collected were placed into specially provided containers which were then sent off to be analysed. The results that came back focused upon moisture content, dry matter, crude protein, adjusted crude protein, acid detergent fibre, neutral detergent fibre, starch, water soluble carbohydrates, simple sugars, crude fat, ash and mineral content, helping me to understand more about the contents within different types of hay, the amounts of those contents that make a good or bad bale of hay, the amounts of those contents that horses need to maintain a healthy lifestyle and how the contents are affected by weather and harvesting. We also learnt how to correctly fill out a sample submittal form.

Hay sampling

Research related to the management of horses

One of the first research tasks that I was involved in was a study that was testing for parasites within equine populations. This involved collecting two un-contaminated faecal samples from each horse, processing one sample in the lab to check the parasite count and sending the other sample off to be independently tested. This revealed which horses were low, medium and high shedders within the population allowing for a correct worming programme. This procedure was carried out several times throughout my stay as it is part of an on-going study and will continue into the future. This research task helped me to understand the importance of parasite control and herd healthcare as well as helping me to understand how important following research procedure is.

The compost pile

A different study I was involved in looked at the decomposition of equine bones through composting. We spent one morning digging up and sifting through a huge composting pile in order to discover which bones had decomposed and which were left over after a decomposition period. This study and task helped me to learn about the practicalities and issues surrounding the discarding of equine carcasses, the biological hazards that can be caused by equine decomposition and the biological processes involved in decomposition.

Working with the horses

A subject we focused a lot upon during my stay was conformation; static and dynamic. We learnt how to assess conformation and score it correctly according to the standards set by ISR Oldenburg, which includes scores for head, neck, withers and saddle position, forelegs, hind-legs, temperament sex type and breed type. We also learnt how static conformation will affect dynamic conformation, how conformation can affect performance and how genetics is linked to conformation.

One of our duties during my stay was to worm both the adult and young horses. This meant that we had to decide upon the correct type of wormer, catch the horses and then calculate the correct dosage that should be given to each horse or foal. As part of the Health course given to the American students, we also had to devise a worming and vaccination schedule for all of the horses on the farm for the duration of a year. This enforced in me the importance of regular herd health checks, the importance of understanding the drugs involved in wormers in order to prevent resistance and the importance of administering the correct dosage. I also got to learn how to use an equine weight tape for the first time.

An activity that I got to experience during my stay was farriery. During an afternoon, we were given a demonstration of how to correctly trim a horse's hoof and then we got the chance to practise ourselves. This task involved learning how to use the nippers to trim the hoof, learning how to trim the frog, learning how to the sight the hoof and learning how to correctly rasp the hoof. We were also given a demonstration of how to use a furnace to correctly heat and shape a metal shoe in order to correctly fit it onto a horse's hoof. This enforced in me the importance of hoof care and taught me how to correctly examine a horse's hoof and how to correctly manage and treat it with regards to barefoot trimming.

A large part of being on the farm was getting to work with the young horses; the two-year olds, the yearlings and the foals. Within a few weeks of the internship we had our first yearling handling lesson where we got to learn about the importance of training young horses correctly and how to put this into practise. We got taught the correct training steps and process of training, how to lead the yearlings correctly, how to assess their way of going and how to adjust their behaviour and ask them to listen to us. It was an extremely useful experience for me as I had never ever worked with any young horses before.

The lesson was very intense and in-depth and it was a little daunting but the experience was invaluable and I learnt so much from that one session.

As the sessions continued, I could easily see how, as my confidence grew, my body language changed to also become more confident which in turn meant that the young horses were more ready to listen to me and obey my instructions. I could clearly see the difference between that very first session, when I was not entirely sure what I was doing and felt apprehensive, to the last session where everything was smooth and calm because I was more confident and determined. Even now the experience has ended I still feel that change in confidence and as cheesy as it sounds I do feel I have grown so much as a person. It was also interesting to see how the yearlings grew and developed through their handling sessions.

The yearlings

Working with the foals was one of the big highlights for me and was a completely different experience to working with the yearlings. The first few weeks of my visit were spent watching and learning the process of foal handling. The first lesson to be given to the foals was to come forward but even this simple task was amazing to watch because the steps and the body language involved were so subtle and intricate. The second lesson was to ask the foals to come forward and to stop at a respectful distance from the body, again this involved such subtle and intricate body language that is was amazing watch. The third lesson was to ask the foals to come forward on an angle, the fourth lesson was to ask them to back up and the following lessons all involved reinforcing these techniques and teaching the foals to lead and listen to commands correctly.

The foals

After watching this process over a period of several weeks, I got to teach a foal one of its lessons. It was incredible to be able to handle such a sensitive, naïve creature and have it trust and respond to you and I got to realise just how subtle and delicate the body language needed to be in order for the foal to be able to understand what I was asking of it.

<u>Reproductive management and foaling</u>

The first equine reproduction task I was involved with was learning how to interpret the information given from a trans-rectal ultrasound scan about the ovulatory stages of a mare during her reproductive cycle and then being able to note this down correctly into the breeding records so that the information was readily available for interpretation as to when the mare would ovulate. This task also involved learning about the reproductive cycle of the mare, the stages that the cycle takes, what a normal cycle looks like on an ultrasound scan, the type of fluid that should be presented, the hormones involved during the cycle and how to manage a reproductive cycle using ultra-sounding, cytology, cultures and hormones, such as oxytocin and prostaglandins. This task also involved learning how to assess the health of an equine embryo and learning to look for signs of twinning. This meant I got to see the embryos inside the mares over a period of 65 days, in order to assess their development and detect their heartbeats. It was one of the most amazing things I have ever had the privilege of seeing.

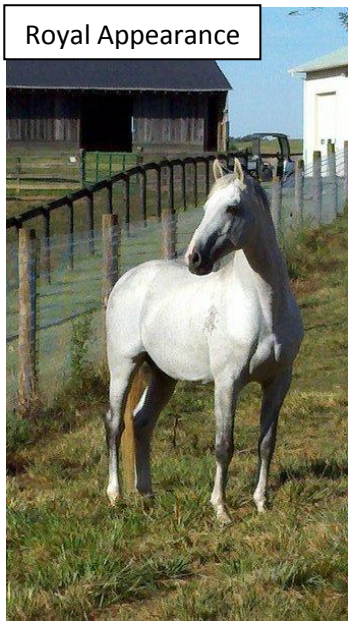
Ultrasound of arm fat and muscle

As well as learning about ultra-sounding as a reproductive management technique, we also used it as a method of measuring obesity in mares, as afore mentioned. This meant learning how to correctly place the scope upon the mare's rump in order to collect accurate measurements and learning how to take measurements using the ultrasound machine.

One of the regular tasks that we did on the farm was to carry out semen collection on the stallions. This involved preparing the AV (artificial vagina), preparing the stallion, by washing him and exciting him using a mares frozen urine sample, controlling a mare, if we needed a tease mare, collecting the actual semen from the stallion using the AV and preparing a mare if we did live cover, which I did get to see during my stay.

Innkeeper

Royal Appearance



As part of the process of stallion collection I also got to learn and practice how to evaluate fresh semen and the processes of cooling and freezing equine semen, which was very interesting and fun to do. When evaluating fresh semen, we got to learn about their structure and what abnormalities can occur within that, we had a lecture on the stallion, that taught us the anatomy of the reproductive tract, the requirements of an AV and the aims of using fresh, cooled or frozen semen and we also got to learn how to freeze semen using a cushion. The processes of freezing and cooling semen also allowed us to learn how to use a centrifuge and haemocytometer, how to correctly handle liquid nitrogen, how to correctly store and record frozen semen, how to use a nomograph and the basis behind equine reproductive formulary i.e. the type of drugs that can be used, the routes that they take and the dosages that are required.

When I first arrived on the farm, there were two mares that had yet to drop their foals, and so during my stay I got to witness and become involved in the process of two foal births. The first thing was to learn how to identify impending signs of foaling and how to record any changes. As the physical signs became more prominent, I then got taught how to correctly collect a milk sample in order to perform a milk calcium test. When the milk calcium results came back high enough, it was then time to go on foal watch.

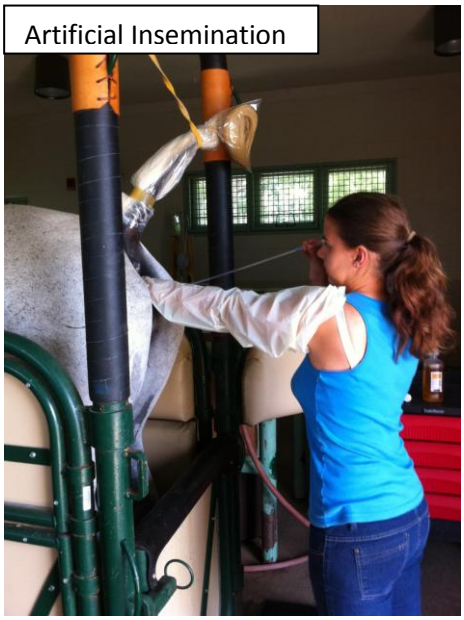
The night that both of the foals were being born it was our responsibility to notice any signs of impending foaling in order to notify staff. It was then all hands on deck. It was the responsibility of us interns, as a group, to record all of the foals' behaviour to check it occurred in the correct time frame such as when the foal first suckled, when it first stood etc. It was our responsibility to collect the colostrum and to then measure its value and see if it was suitable for storage and to prepare it correctly for storage. It was our responsibility to tie up the placenta as it was dropping and then once it had dropped, to take it into the clinic to check that it was all present. It was our responsibility to perform IgG tests regularly and it was our responsibility to monitor the health and behaviour of the foals regularly. As part of the foal handling process you have to 'imprint' on them within 24 hours and I felt extremely privileged that, for one of the foals, I got to be the first one to hold and touch it properly during its first day in the World. It was an incredible feeling.

Belle's colt

Consuela's filly

As part of the breeding management of the farm I got to witness and participate in AI (Artificial Insemination). This involved preparing the mare for the procedure, preparing the frozen semen doses for the pipettes and then administering the correct dose of semen. As interns, we could not actually perform AI but we got the chance to practice administering a semen dose. We filled insemination pipettes with a sodium chloride solution and then were instructed on how to correctly place the pipette. It was a very weird task and felt strange but I also really enjoyed it.

Artificial Insemination




The Upperville Show

In-hand showing

The first in-hand show that I got to witness was the Upperville Horse Show, Virginia, where a series of in-hand dressage classes took place in the morning. We watched the classes and discussed and analysed in detail the method of in-hand showing, using the triangle, how to make the horse look good, how to handle the horse correctly etc., the process of in-hand showing, from standing, to the walk, to the trot, and the appearance of in-hand showing, such as which braids to use, what to wear etc. However, during the afternoon we got to visit the petting zoo and watch the Grand Prix Show jumping final and a carriage driving competition.

Our first in-hand lesson started with a braiding session. None of us had ever braided for an in-hand dressage or hunter show before and so we dedicated several hours to learning how to do this correctly. The dressage and hunter braids turned out to be completely different from each other, and although I already knew how to do the dressage braids it was interesting learning how to correctly braid for a hunter show and it was definitely well-needed practice.


A braiding lesson

The first in-hand show that we exhibited at was Dressage at Lexington, Lexington, Virginia. This was a 2-day show where we exhibited in 4 in-hand classes with a mare and foal. It was an extremely valuable experience as I got to learn how an in-hand show was run and organised, how the judges scored a show and how valuable preparation is. It was also a good experience as we got to speak to many different people and learn more about their experiences of in-hand showing and we got to pick-up many hints and tips. As part of this experience we also got to help manage a Sport Horse Auction after the first day of competition. Our tasks included helping to set up the auction, organising the sellers and riders so that they ran in the correct order and at the correct time and controlling the music and videos for each horse. I had never been behind the scenes at a horse auction before so it was extremely valuable and interesting to be able to learn all about the procedures and tasks involved in organising and arranging this type of event.

The second show that we exhibited at was the Morven Park Horse Show, Leesburg, Virginia. This event consisted of two 1-day shows and again we exhibited in 4 in-hand classes with a mare and foal. On the first day that we participated, I got to help the judges as a steward, organising exhibitors entering and exiting the show ring. On the second day of the show, I acted as an assistant, handling the mare, in two of the classes and it was a daunting but very exciting experience. I got to learn the importance of co-ordination between handlers, ways in which the mare can be used to assist the foal when it's being shown and I got to practice the techniques that I had been shown in a new environment.


Morven Park

The third show that we exhibited at was the Warrenton Horse Show, Warrenton, Virginia. This was a 1-day show where I exhibited in a non-thoroughbred broodmare class with a new mare that had arrived at the centre. It was amazing to be able to exhibit and I thought it was a wonderful experience and I was extremely grateful for the opportunity.

The Warrenton Show

Travelling to regional breeding farms and events

One of the breeding farms that we got to visit was the Lazy Lane Farm, Upperville, Virginia, which bred Thoroughbred racehorses and Angus beef cattle. The first thing we learnt there was how to assess the conformation of Thoroughbred racehorses and why that type of conformation was beneficial to that breed. We then got to learn about the training procedures involved with young racehorses, the preparation that is undertaken to train them ready for an auction and the breeding policies of Thoroughbred racehorses. We also got given a selection of sale catalogues and got taught how to analyse them for the information that buyers would be concerning themselves with.

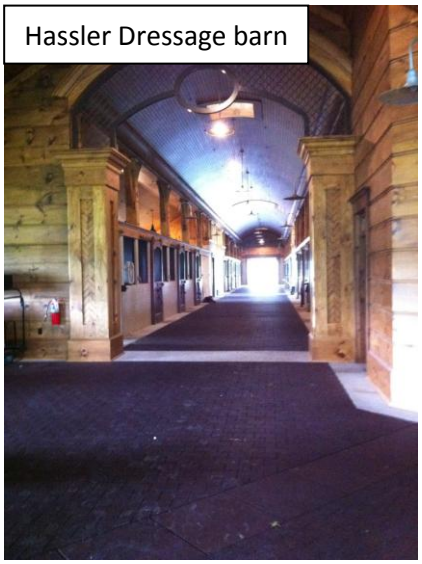
Lazy Lane Farm

Concerning the Angus beef cattle, we got taught about their conformation and what to look for and why that conformation was beneficial to that breed. We then got taught about the breeding techniques that are involved with beef cattle and how they are prepared for both breed shows and auction. We also got an insight into how the meat industry worked, which was bizarre for me being a vegetarian, but which was interesting to learn about. We also got shown a very rare occurrence that had taken place, in the form of a set of three Angus cattle female triplets which were extremely cute.

An angus cow

A different place that we got to visit was Hassler Dressage, Chesapeake City, Maryland. As their name suggests they have a strong passion for dressage but also for sporthorse breeding. Our visit consisted of watching a demonstration of dressage training with a talk about the purpose and history of the facility and we got to tour the facility. As part of our tour we got to visit some of the top dressage breeding stallions including Davidoff Hit, Wamberto and Pik L. We also had an in-depth talk about their water treadmill and solarium, including their uses and their practicalities.

Hassler Dressage barn

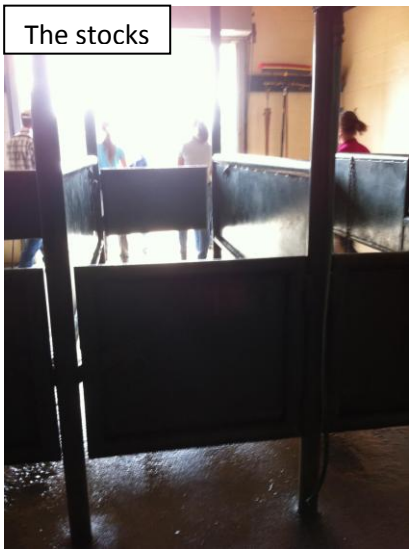


On the same day that we visited Hassler Dressage we also got to visit Select Breeders Services (SBS), Chesapeake City, Maryland. SBS is the World's largest provider of frozen semen services with 28 equine reproduction laboratories worldwide. This equine reproduction facility had research and clinical laboratories, breeding shed, mare exam room, administrative offices and frozen semen storage and distribution centre. We got to learn about the purpose of SBS, how they run, how they assess and freeze semen, how they transport it, how they record it and we got an extensive tour of the entire site, which was definitely worth a visit.

The phantom

We also visited Equine Reproduction Concepts, Amissville, Virginia. This was an equine reproduction facility that used modern technologies to aid the increasing needs of equine breeders. Our tour included the laboratories, the semen collection shed, a room equipped for embryo transfer, palpation, insemination and standing reproductive surgeries. We got taught about reproductive evaluations, cooled semen programmes, semen freezing and storage, phantom training and contagious equine metritis (CEM) testing.

The stocks



An alternative trip that we got to go on allowed us to visit the Equine Medical Centre, Leesburg, Virginia. At the Centre we were given a demonstration of their equine treadmill and what it was used for and we then had a session where we were shown endoscopy videos of equine airway disorders accompanied by an in-depth explanation of each individual problem. After this, we were then given an in-depth lecture on lower airway respiratory diseases and disorders, including causes, preventions and treatments.

The treadmill

As part of the American students' Equine Exercise Physiology class we got to visit a local equine and canine swim centre that was used for both training and rehabilitation purposes. This provided me with an insight into the purposes of swimming, what to look for when horses swim, which horses need to avoid swimming, how to train horses for entering the pool, what to look for in the design of an equine pool and the practicalities of running and organising an equine swim centre from a business point of view.

The Swimming Centre

Farm management

During the last month of my stay, we were given a lesson in pasture sampling. We took a walk out into one of the fields and were shown the different grasses, plants and weeds that grew there and were taught the preference that equines have over which to eat, the nutritional value of the grasses, how to seed, sow and generally manage an area of land, the importance of rotational grazing, the value and benefits of different species grazing land and how to measure and analyse the nutritional value of the soil.

As part of the management of the farm, they cut and bale hay every year. As interns we got to learn and practice this process. We were taught about hay and grass management, how to distinguish a good bale from a bad one and how to correctly cut and bale hay. This meant I had a chance to drive the big blue tractor and make my own bales of hay, which was really, really good fun as well as being extremely educational and useful.

The big blue tractor

Part of the business of the farm included selling the young horses and so I got the chance to experience the procedure of pre-purchase examinations from a seller's point of view. This meant preparing the horses for the buyers, preparing the facility for buyers and leading the horse through walk and trot for both the vet and the buyer to assess. It was a very interesting and valuable experience seeing this from a different point of view.

The Sire Project

During my stay at the MARE Centre, I had to complete a four stage project entitled the 'Sire Project' where we were assigned 10 different mares and given four different tasks to complete. The first task of this project was, for each of our mares, to find a 5 generation pedigree, assess their performance, conformation, gait, temperament, pedigree, previous production record and reproductive history. We then had to describe what we felt the mare had the ability to produce e.g. dressage, jumper, hunter and/or eventing? Upper or lower level? Amateur and/or professional horse? Breed show or riding type? The last part of this task then required us to list absolute minimum qualities that would be needed in a stallion for our mares.

The second task of the project assigned us 10 sires that we had to match up with our assigned mares and we then had to justify our matches keeping in mind the breeding goal, conformation, gaits and jumping ability, temperament/character of the horses, their reproductive ability and the potential for marketability for the foal.

The third task of this project gave us an assigned budget that we could spend on stud fees and/or semen. We had to assume that 2 cycles would be needed to get mares pregnant with frozen semen and we had to, again, make and justify the best matches possible for our mares.

For the final task of the project we had to pick the best possible matches for our mares assuming that money was no object and that all mares became pregnant upon the first service. We had to research various stallions and include the price of their stud fee or semen dose and our sources for this information.

This project was extremely interesting and enlightening and helped show me how much work is involved with planning breeding, the considerations that need to be made, the importance of budgeting a breeding season and planning for cycles, the resources that are available for finding potential sires and how important it is to understand the current breeding market, to be able to estimate the future breeding market, to be able to assess the needs and wants of the potential buyers and future buyers and the marketability of the foal that is produced.

Journal Club

Once a week we would gather together as a group, staff members and interns, to discuss a recent journal article that had been published, in a group we called 'Journal Club'. This involved reading an article and critiquing it from a scientific, moral and ethical standpoint and then discussing any issues we thought there were in the scientific methodology, the data collection or in the way that results were presented. The subject matter of 'Journal Club' consisted of reproduction, nutrition, genetics, management and/or behaviour of horses.

This weekly meeting helped me to understand more about the importance of planning before conducting a scientific experiment, the considerations that are involved, the importance of conveying information in an understandable and structured manner and the importance of a clear hypothesis with precise aims, goals and objectives. From a personal standpoint, 'Journal Club' also gave me confidence to voice my opinion about scientific content and the format of articles and to ask questions about the scientific topics that were discussed.

Lectures

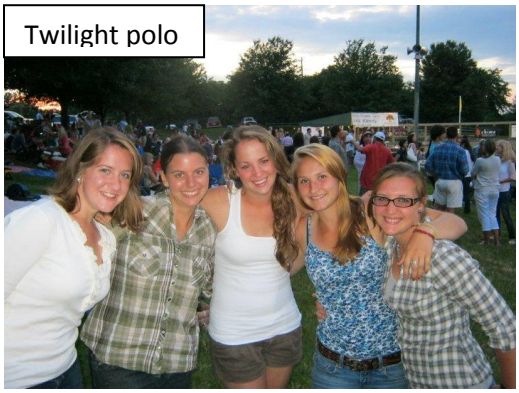
As part of the internship there were scheduled lectures covering the topics of reproduction, nutrition, genetics, management and the behaviour of horses. These were given by the experienced staff at the MARE Centre, who all had a theoretical knowledge behind their specialist subject areas as well as practical experience in applying their knowledge to real world situations. The lectures were extremely useful and practical in their approach as well being taught in a very relaxed and friendly environment. Lecture titles included: Pregnancy diagnosis and twinning, the mare, the stallion, genetics for the breeder, health status and physical exams, genetic improvement in conformation and gait, emerging issues in parasite management and physiology of exercise.

The social side

As well as all the hard work and learning that took place, there were also some informal and fun times which included various trips into the local town of Middleburg, watching Twilight Polo and a spectacular trip to Washington DC on Independence Day. It was an amazing time.

Washington D.C.

Twilight polo



The fair

Conclusion

This was an opportunity I had only ever dreamed of experiencing and I cannot begin to describe how much I learned and experienced, how much fun and enjoyment I had and how much I feel I have grown in knowledge, experience and confidence. I will never forget the amazing times that I had and the fantastic people that gave me so much joy. That was my dream summer in America.

The MARE Centre