

Completion Report for BSAS Scholarships

Name and affiliation: Alana Boulton
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Award Name and value of the award: Murray Black Award
£1119.63

Was any additional funding secured to support the activity?

(If yes, please state the value and source of funding): Yes
Foreign Travel Fund from the Royal Veterinary College - £120.05

Start/end date of the award: 27 July to 01 August 2014

Summary of the award (Briefly describe the objectives and how was it undertaken):

(approximately 300 words)

The Murray Black award provides financial assistance to researchers in the early stages of their careers to enable them to enhance their knowledge and skills in their area of study. In the case of my application for the award it was to support the cost of travel to attend the World Buiatrics Congress (WBC) in Cairns, Australia and to meet with a co-investigator of a collaborative project between the Royal Veterinary College and the University of Queensland. The WBC is a biannual conference that reviews all aspects of research pertaining to ruminants and is attended by a large international delegation of Buiatricians. My oral presentation was titled "The cost of nutritional management in dairy calves – Are we starving our future milkers?" This research stemmed from my PhD study which examined the cost of rearing dairy heifers from birth to first calving in Great Britain. The research included the collection of data pertaining to all the critical inputs in the rearing herd; feed, housing, grazing, reproductive management, veterinary and health care and labour. The presentation discussed the period from birth to weaning and the plane of nutrition that calves are on and whether this was enough to cover basic metabolic function and promote recommended daily liveweight gains. I developed a simple model that calculated the amount of metabolizable energy that calves were receiving from their dietary intake and the amount of growth this would generate accounting for the metabolic requirements of age, breed and environment. This was based on data I recorded on farm on the volume, frequency and duration of their feed programme and from the nutritional constituents of their diet. The collaborative research examined the risk factors involved in producing a live calf from bovine embryo transplants in beef cattle in a sub-tropical climate.

Benefits of the Award:

This is the main part of the report and the two sections below should be approximately 1000 words in total. You may focus on benefits to yourself, to the animal science community, or both – depending on the nature of the activity undertaken.

Benefit of the award to you (e.g. new knowledge or skills, new contacts and collaborations):

The benefits that I gained from the receipt of the award were the opportunity to present some of the findings from my PhD to an international audience of ruminant scientists, improvement in my oral presentation skills and exposure to research in my field which is not readily accessible. One of the important skills of research is the ability to convey your findings in a concise and logical manner to fellow academics both within your field of study but also in divergent areas of research. I have found this to be particularly challenging not coming from an academic background and up to attending the conference had only presented at college internal seminars to a small number of researchers or at farmer discussion groups. The Murray Black award enabled me to attend a large conference and to present to more than 200 researchers. The large number of presentations taking place at the conference meant that strict adherence to times were enforced. I found that this helped me to streamline my presentation to include only the most relevant information hopefully producing a more coherent and focused report. The presentation was well received with delegates speaking to me following the presentation and through email upon my return to the UK. This communication provided insight into the current situation of dairy replacements in other countries and the actions and research that other ruminant scientists were undertaking to address the issue of nutrition. I was also given the opportunity to chair one of the sessions at the conference, a role of which I had no previous experience. This is an important function to ensure the smooth running of each session and ensuring that you stay punctual to the timetable. It was also a great experience in learning how to develop lines of questioning for the speaker in case there was silence during the Q&A session following the presentation. This was particularly challenging when the session was in an area of research that you are not familiar. Another benefit of being able to attend such a large conference with so many presentations was the exposure to a great number of different ways in which delegates presented their information. It allowed me to see how well data can be presented graphically and some different and interesting ways to present written information which I will certainly adopt for future presentations.

Benefit of the award to the animal science community, academic and industrial:

The preweaning diet of dairy calves is extremely important as it provides the most cost effective opportunity to enhance growth throughout their entire rearing period. This is because feed efficiency is greatest during this time. Traditional feeding programmes on dairy farms have been 2 litres of milk twice a day all year round for many years. This plane of nutrition does not account for the increasing energy requirement that calves have when temperatures change. Examining the feeding programme of dairy calves and examining the resultant energy input and growth is important if recommended daily liveweight gains are to be achieved and to ensure calves get the best possible start in life. Negative energy balance is when you consume less energy than you use and in calves under three weeks of age

this is particularly concerning as this is a time when calves are at high risk of enteric disease. In my presentation I discussed the results of current feeding programmes on 102 dairy farms in Great Britain, focusing on the amount of available energy for metabolism and growth in dairy calves. I also examined the effect of changing temperatures on the metabolizable energy available to calves when they need to thermoregulate to maintain their core temperature. The relevance that this research has to the dairy industry is that it highlights the effect of change in temperature on the available energy for growth and the importance of increasing the plane of nutrition during colder months to compensate for energy that is partitioned into thermoregulation. The presentation also emphasizes how the current practice of 4 litres of milk per day does not provide enough energy to maintain core metabolic function and achieve recommended daily liveweight gains and that even under thermoneutral temperatures this feeding programmes does not provide enough energy for recommended daily liveweight gains in approximately 70% of the farms surveyed. The outcome of this is that calves will grow slower and not be of the ideal weight and size to breed so as to calve at the recommended age of 23 to 25 months. It also suggests that there may not be enough energy left over to mount an effective immune response should the calf be exposed to pathogens. The benefit to the farming community of this research is that it focuses attention on current feeding practices and illustrates the effect on the daily growth rates of dairy calves with increasing plane of nutrition. With an average perinatal mortality rate of 7.9% and neonatal mortality rate of 3.4% ensuring calves have enough energy to grow and thrive is important if wastage in the national herd is to be reduced.

Other supporting information:

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