Final grant report form: Student Grants

Project title:	The relationship between grimace expressions of dairy cattle and post-mortem dental health; and the implications for welfare and production in dairy cattle.
Researcher:	Jillian Gordon, University of Edinburgh
Supervisor:	Guraa Bergkvist and Fritha Langford
Year awarded:	2019

Provide a lay summary outlining the project, focusing on the project's achievements and potential impact to animal welfare.

This study developed the preliminary understanding of dairy cattle dental health and examined possible areas in which improvements into the monitoring and management of the UK dairy herds' dental health could be of value. It showed that, in a pilot population of cull cattle, the prevalence of dental health concerns was significant (100% affected). This highlights that more research into this area to further understand the impacts and prevalence of these conditions is needed, as dental health has been shown to have the potential to affect a variety of health, welfare and production parameters in the dairy industry.

In this investigation dental health abnormalities were found in every individual of the cull dairy cow sample group. No significant correlation was found between cattle with poor dental health and cattle that presented with higher scores in the live grimace scale assessment. This result may have been influenced by the small sample group size or comorbidities.

It was anticipated that this study could determine if the cull cattle with poor dental health also had a reduced production value in the months leading to slaughter. However, due to the significant number of variables in the health and production data and comorbidities such as lameness and mastitis, combined with the evidence that 100% sample group was suffering from dental health abnormalities, it was not possible to prove this hypothesis. It would be beneficial to have a control group of non-cull cattle to allow for an industry relevant comparison. This study has resulted in the production of an accurate Triadan-dental chart for cattle dentition. This chart could be used in veterinary teaching and has the potential to be used in bovine practice by veterinarians.

This investigation was a successful pilot study into the novel area of dairy cattle dental health. It demonstrates there is a potential link between dental health and other notable issues affecting the health, welfare, and production level of dairy cattle, as well as the environmental impact and economic success of the herd. Therefore, the investigator recommends that more detailed research be undertaken in this area to accurately determine the impact of dental conditions and to identify possible mitigations or interventions.

Provide a short description of your personal experience in undertaking this project

This project has been a fantastic experience and allowed me to develop my research skills, and the confidence to continue to develop these skills in future studies.
As this project was a pilot study in an area that is currently needing development, this project taught me the importance of comparative biology and the significance of novel research and how it has the potential to affect the relevant industry.

Use the space below for any other relevant information you wish to report on.

We are looking to submit this project for publication as it is felt that these results are significant to the industry (especially the development of the Triadan dental chart for cattle). It is felt that this study will encourage others to further develop this research, and knowledge in the area of cattle dental health.