Cattle research projects under the spotlight

THE AHDB’s Dairy Research & Development has many projects ongoing and Dr Jenny Gibbons has discussed some of the developments and the information that is anticipated.

A £282,000 project to develop a prototype system for the exchange of cattle information across the supply chain has been given the green light by Agri-tech Catalyst (run jointly with the UK’s innovation agency, Innovate UK, and Research Councils).

The successful bid for the 12-month feasibility project is being co-ordinated and project-managed by the beef and dairy divisions at AHDB. This system could work effectively as a search engine to facilitate data exchange between government, industry and private databases, so that key information can be brought together and presented through a single portal, for example, at auction markets.

The livestock industry data exchange hub could also, for the first time, provide the cattle industry with a facility to underpin risk-based trading for economically important diseases such as BVD, Johne’s disease and bovine TB. While the initial focus is on animal disease, it is envisaged that the framework developed can be expanded to other areas of data collection, which will greatly benefit the industry.

Collaborators

The AHDB is working with over 20 industry collaborators including industry databases, farm management software suppliers, auction markets and abattoir system providers.

The steering group includes the National Farmers Union (NFU), AHDB (Dairy, Beef and Lamb), Livestock Auctioneers’ Association (LAA), British Meat Processors’ Association (BMPA), British Cattle Veterinary Association (BCVA) and Cattle Health and Welfare Group (CHAWG).

Research suggests housed cows will lie down for up to 12 to 14 hours a day if they have access to a comfortable bed, and long lying times are associated with reduced stress, improved foot health and increased milk yields. Despite its apparent importance most research into dairy cow lying behaviour has been conducted in North America and, as a result, relatively little is known about lying behaviour on British dairy farms. In 2013 DairyCo funded a study led by the Royal Veterinary College and Evidence Based Veterinary Consultancy Ltd, the first of its kind, which recorded the daily lying times of 741 cows across 23 GB dairy herds using electronic data loggers.

Some top line results from this study indicate that daily lying times were very variable, from three to 17 hours per day. Lying times varied between cows from the same herds – sometimes by up to 12 hours per day. A more detailed analysis of the risk factors associated with lying comfort is under way and due to report in 2016.

Sorting out SARA

Sub-acute ruminal acidosis (SARA) is known to arise from disturbance of ruminal ecology and leads to damage and dysfunction of the ruminal wall tissue, which is only seen post-mortem.

SARA goes mainly unrecorded and is an under-researched disorder with symptoms of poor performance rather than obvious illness. There is a lack of robust evidence on the causes of SARA, what the risk factors are, why some animals are more susceptible to the condition and how it can be treated and addressed through management practices.

These knowledge gaps need to be filled so that the costs to the industry from SARA can be reduced or removed. AHDB Dairy, partnered with a consortium involving University of Aberdeen, University of Glasgow, University of Strathclyde, Harboro, Chr Hansen, AB Vista and QMMS, is investigating the underlying causes and mechanisms of the development of SARA and collating ways in which SARA can be treated and prevented in susceptible cattle.

The availability of new and improved slurry separators, producing fibre material with dry matter levels of 34-38%, has led to many farmers using it for cattle bedding. The perceived advantages of using recycled manure solids (RMS) (“green bedding”) include improved cow comfort, lying times, cow cleanliness and reduced costs.

Under EU animal by-products regulation, manure is classified as a Category 2 waste product and the regulation sets out permissible disposal routes for this material. If animal bedding is not one, unless its “safe use” to both humans and animals can be demonstrated.

In September 2013, AHDB Dairy commissioned a scoping study, which highlighted a massive lack of research, with the majority of existing knowledge being acquired through practical experience and case study rather than rigorous scientific investigation.

The study drew together available evidence from around the world to help assess the potential risks and benefits of using RMS under British conditions. Benefits to cow comfort and the potential cost-savings are apparent, but there are a lot of unanswered questions and much to learn on how to mitigate the potential health risks including mastitis, salmonella and Johne’s disease.

After consideration of the initial report, the policy position of government regulators in England and Scotland is to adopt a precautionary approach, which will allow the use of RMS as bedding but only under a set of prescribed and controlled conditions.

Wales and Northern Ireland are currently of the view that this practice poses an unacceptable risk and therefore the use of RMS as bedding is not currently permitted. The policy position will apply for at least two years from 1st July 2014, while further research is under way. The current requirements of use can be viewed at www.dairy.ahdb.org.uk/rmsbedding and include an annual veterinary review within the Red Tractor dairy standards.

In October 2014, AHDB Dairy secured funding via the Welsh government and awarded a research contract to a consortium, led by QMMS Ltd, to conduct further research to start filling the evidence gaps. This comparative study, involving 160 herds using sand, sawdust and RMS, will provide a greater technical understanding to help inform the legal position with regard to the safe use of RMS as bedding and in particular to investigate management and husbandry options to safely mitigate any potential risks to animal and human health. Results from this project will be communicated to all stakeholders in the autumn of 2015.

Fertility

In October this year a PhD studentship at the University of Nottingham, funded by AHDB Dairy, will commence a project to combine knowledge on dairy cow fertility. A quantitative model is to be developed for use in optimising farm decision-making. Sophisticated evidence synthesis modelling will be used to simultaneously evaluate thousands of herd scenarios to identify the optimal decision for any given situation.

Collaborating with industry, AHDB Dairy is continuing to develop UK genetic and genomic evaluations, made available to breeding companies and farmers to allow them to identify the best bulls for their farming systems. These genetic indexes are combined in the Profitable Lifetime Index (PLI) and Spring Calving Index (SCI).

An AHDB Dairy-funded project using the Animal and Plant Health Agency (APHA) data on bovine TB (STB), combined with national pedigree data sources has developed a system for routine national genetic evaluations of dairy bulls for bTB resistance. In the next 12 months a TB-index will be launched which it is hoped will contribute to a reduction in bTB incidence, when used alongside existing measures.

A project on the development of genetic evaluations for carcass traits used abattoir data to calculate heritability estimates for net carcass weight, conformation and fat class. The results of this project demonstrate the existence of genetic variation in these traits.

Improving carcass quality traits through genetic selection is entirely possible and will be rolled out into genetic evaluations in the coming 12 months. Encouraging the recording of sire identity by farmers in the BCMS (British Cattle Movement Service) would further improve the usefulness of future data. This project is jointly funded with AHDB Beef and Lamb and HCC (Meat Promotion Wales).

A PhD student at SRUC is investigating if, across breeds, genomic evaluations are feasible, to complement the Holstein genomic evaluations and enhance existing traditional across-breed evaluations implemented in the UK already. This project is using high-density genotypes and will also explore the use of full genome sequencing data.

In addition to these projects, AHDB Dairy is planning to look at hoof health, utilising foot trimmer recorded data alongside other sources of national data on lameness, mobility and foot and leg conformation.

AHDB Dairy is funded from the milk levy. There is considerable discussion over how this money should be allocated, with pressure to switch funding from research to milk promotion. Veterinary surgeons are invited to contact the organisation with their views.