Project number: *6311*

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Project dates: *11/2012 to 10/2016*

Bright Farm by Precision Livestock Farming (EU-PLF)

Description of Work

The objective of the EU-PLF project is to deliver a validated Blueprint for an animal and farm centric approach to innovative livestock farming in Europe proven through extensive field studies. This Blueprint represents a manual for farmers and their surrounding industry including high tech SME's and other stakeholders. It is a reference tool offering pragmatic guidance on how Precision Livestock Farming (PLF) systems can be applied to farm level in order to create value for the farmer and other stakeholders. EU-PLF is based on the PLF concept that represents the continuously automated measurements directly on the animal or in its environment. Beyond the use of the PLF data (e.g. body movements or sounds, etc.) for monitoring and management, the data will be translated into key indicators on animal welfare, animal health, productivity and environmental impact. To analyse how PLF technologies can create value at farm level by improving animal welfare, health, environmental load and productivity, extensive field tests are done by industrial partners in collaboration with high tech SME's.

International Context

Highly experienced European teams from different disciplines with a proven track record in animal and PLF-related fields - animal scientists, veterinarians, ethologists, bio-engineers, engineers, social scientists and economists, leading industrial market players in the livestock industry and high tech SME's – have joined the consortium to deliver a useful PLF Blueprint. EU has funded in the past several projects that were related to animals and to PLF technology. To guarantee that results of these previous investments in projects from different disciplines are combined and used in the value creation by this EU-PLF proposal, several of the project partners where/ are leading teams in related projects such as Welfare Quality, Bright Animal and BioBusiness. Automated and continuous monitoring of calves through Precision Livestock Farming (PLF) technology is an approach that could potentially recognise disease states earlier. Infrared thermography has been used to detect the onset of bovine respiratory disease (BRD) in calves and image analysis to detect lame cows.

Opportunities

Strategic application

Title: Early recognition of bovine respiratory disease in calves using automated continuous monitoring of cough sounds.

The objective of this study was to develop a cough monitor for calves to provide an early warning system for BRD recognition by the farmer. This involved:

1) constructing a cough monitor algorithm based on sound data recorded during a calf rearing study over a three month period in 4 separate calf houses.;
2) comparing the algorithm performance with sensitivity and specificity metrics;
3) comparing the algorithm outcome with a gold standard for BRD using the Wisconsin clinical scoring combined with rectal temperature (RT) and respiratory score (RS).

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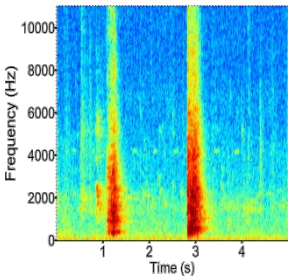
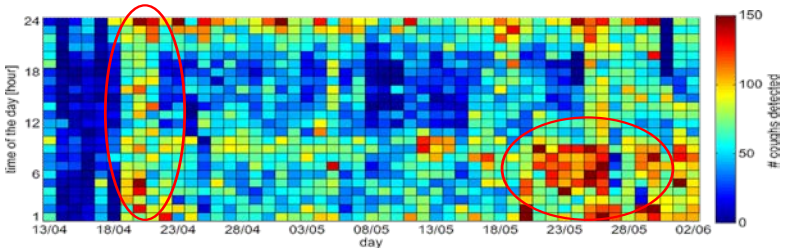
A further objective was to evaluate the algorithm outcome in terms of an early warning system and compare it with the timing of treatment of calves presenting with BRD by the veterinarian. The calf cough monitor was applied successfully.

(BSAS, Chester UK, Use of an automated calf cough sound algorithm for the early detection of bovine respiratory disease. BSAS Conference 13th to 15th April 2015, Chester, UK. Vol 6, Part 2, Pages 55-281. Abstract page: 137).



Calf cough sp

Results: Calf cough algorithm



- The number of coughs per hour and per day
- 2 periods with sudden increase in coughs

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