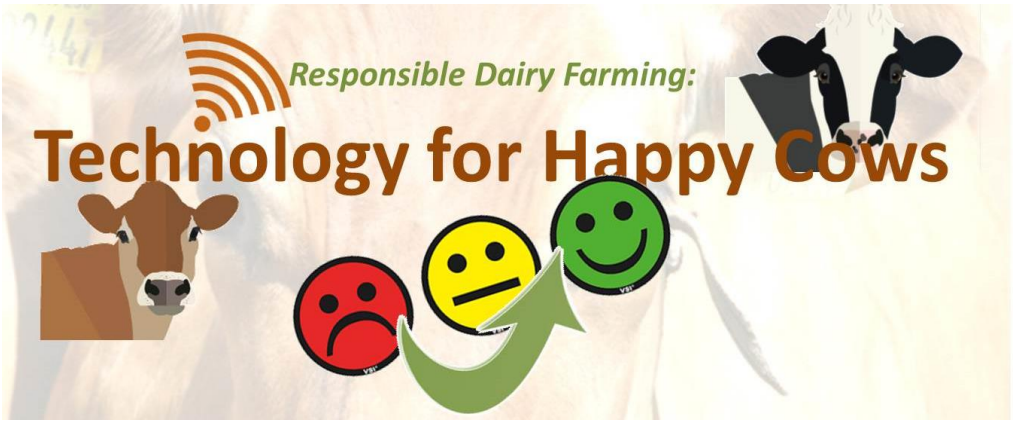
COST Action FA1308

DairyCare

Technology for Happy Cows

As the DairyCare Action comes to an end, we wish to inform the public about our achievements and the need for further support to continue the networking



Happy Cows Wear Smart Technology!

DairyCare is an EU funded network of researchers dedicated to developing technology-based solutions for improving the health and welfare of dairy animals; not just cows, but also goats, sheep, buffaloes….(did you try camel's milk yet?!) Better animal wellbeing means sustainability and job-satisfaction for farmers, a lower environmental footprint for our planet and a better quality product for consumers. Technology solutions are complex, so DairyCare has brought together animal scientists, computer technologists, electronics engineers, veterinarians and others to jointly tackle the problem. We have made lots of progress, but there is still more to be done. With your help and support, we can continue our work to develop Technology for Happy Cows.

How do we find the happy cow? Actually, this is not easy, because just like us, there is not just one type of happy cow, but lots, each with their own preferences. So we turned the question around, and asked "can we find the unhappy cow?" If technology could do that, then the unhappy cow could be prioritized for extra "TLC" (tender, loving care) from the farmer and his veterinarian.

We have realized that unhappy cows have certain characteristics that can be identified:

- ***Unhappy cows behave differently.*** Sensors that monitor activity (similar to the step counters that many of us wear) can detect changes in behaviour.
- ***Unhappy cows eat and drink less.*** Sensors can detect movements in the jaw and neck that reflect eating and rumination. Every time that the cow drinks, the temperature in its rumen dips, which can be measured by sensors.
- ***Unhappy cows look different.*** Smart video technologies and 3D cameras can differentiate between cows that are fit and well and those that might have a problem.
- ***Unhappy cows sound different.*** Audio analysis can identify animals that are coughing or otherwise not as healthy as they should be.

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- ***Unhappy cows function differently.*** Biosensors can monitor physiological parameters such as blood chemistry without disturbing the cow.
- ***Unhappy cows feel different.*** Technology can monitor social interactions between cows, which can tell us a lot about how they are feeling.

Do cows actually wear sensors? Yes, just like you might wear a smart watch, sensors of different sorts are made to be worn around the cow's neck or leg, the base of the tail, the ear and even swallowed (they are small) to work within the rumen. Up until now farmers have mainly used sensors to help manage the cow's reproductive cycle, but in the future they will also be used in the ways we describe here. Other technologies will be found around the farm and drones will follow the cows as they graze. All of the data generated could be combined with analysis of the cow's milk to obtain a full picture of her health status.

Why technology? Skilled dairymen who have grown up with animals can spot the cow with a problem long before you or I could. However, in just the same way that our hospitals have got bigger and made more and more use of technology, dairy farms are also getting bigger (like it or not, in China a dairy farm is being built for 100,000 cows!), so anything we can do to focus special attention onto the cows that most need it has to be good:

- ***Just like yours and mine, the farmer's time is valuable.*** Technology will help farmers to focus their husbandry expertise and care on those animals that most need it
- ***The vet cannot ask the cow what is wrong.*** Technology will help the veterinarian to understand and treat the problem in an ethical way using the minimum of drugs properly targeted to that individual animal's needs
- ***Farming is a business that is essential to all of us.*** We all expect to have high quality food produced responsibly. Technology will not only help the individual cow, but also the management of the whole herd, meaning fewer unhappy cows in the future

Better, more responsible care and husbandry, assisted by the best technologies, means happier cows, and happier cows bring many benefits:

- ***Sustainability for the Farmer.*** When a cow is sick the farmer will treat her. That costs money, and her milk cannot be used until she recovers. Happy cows, happier farmers!
- ***Lower environmental footprint.*** Cows are very adaptable and can eat plant foods such as grass that we can't digest, but unfortunately this produces the greenhouse gas methane. Happier cows are more efficient, meaning less methane per litre of milk
- ***A better product for you!*** The quality of the milk is a huge priority for farmers and consumers, and the best milk comes from the healthiest cows. Consumers also have the satisfaction of knowing that the milk they are drinking is coming from contented cows

Its good news all round. We call this Responsible Dairy Farming,
and we hope that you will support our network and help us to achieve it!

DairyCare

For more information on all DairyCare initiatives go online at
www.dairycareaction.org or email dairycare@sund.ku.dk

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