

Impact of COVID-19

This Newsletter will be incomplete without discussion on the impact of COVID-19. Several news sources (e.g. Sky News) have highlighted the potential impact of this pandemic on agrifood supply chains across the UK and the world. For example, labour shortage can affect production and handling of the produce. The lockdown in many countries across Europe affects food transportation. Panic buying not only amplifies product demand in supermarkets, but increases food wastage and has led to imposing of restrictions on quantities sold to consumers.



How is the REAMIT project affected?

At this difficult time of global lockdown, we are all connected and working to make changes in our respective fields. This is only possible due to advancement in technology. At REAMIT, we focus on live monitoring of food quality through IoT sensors, all our project partners play a great role in running the project remotely. As we don't have to rely on human intervention to monitor food quality, we can leave the responsibility completely to IoT, AI and Data Science. (Based on a post by REAMIT in LinkedIn). In some cases, planned purchase orders have been unaffected and are expected to be delivered by the ending phases of the current lockdown. Planned recruitment is getting delayed for some partners.

How is REAMIT dealing with this situation?

To deal with the COVID-19 outbreak, REAMIT technology partners have made alternative arrangements wherever possible to continue data collection efforts. However, partners have also made plans to work on other aspects such as conceptual development and negotiating further talks to expand the current scope of technology demonstrations to a broader array of end-users during the current lockdown when opportunities for face-to-face interaction are very limited. The REAMIT team is expecting to have materialised more pilot runs by the time normal functioning of businesses resume making judicious use of "stay home" time. We need to now think how to tackle this collectively, not just in the UK but across North-West Europe.



Ulster University: Issues experienced within beef slaughterhouses

In our December 2019 newsletter, we featured **Ulster University**, in co-operation with **Dunbia** and **Cottagequin Farms**, where they conducted a technology demonstration to make predictions of meat quality before slaughter.

Ulster University have since been in talks with **WD Meats** in Northern Ireland about major problems experienced within beef slaughterhouses. **Ulster University** has been in contact with **WD Meats** to discuss two potential trials. One which will detect the presence of *Clostridium Estertheticum* in meat products, a bacteria which can commonly cause food to spoil quickly.

The other trial is to detect weight loss in meat when it is stored within dry-ageing chambers, reducing its overall value. As the REAMIT project is focused on reducing the food waste within the EU supply chain, these two trials could help by increasing the overall shelf life of beef products and cutting down on business losses.

It was discovered that a major source of food waste is a phenomenon known as “blown pack syndrome”, which is caused by several species of the *Clostridium* bacteria. This bacteria is not a food safety concern, however, it has a pungent odour, is extremely resilient and its spores transfer easily. With this in mind, **Ulster University** and **WD Meats** are going to work together to research a potential detection method to stop the spores transferring onto, and spoiling, otherwise good meat.

Use of 3D Fluorescence technology

The REAMIT project involves use of traditional sensors and also more sophisticated ones. A demonstration with one such sophisticated technology, 3D Fluorescence, is being negotiated currently. To gather more knowledge of 3D fluorescence, a web call was held with Matthias Heiden of **FreshDetect**. 3D Fluorescence is a spectroscopy technology which excites the inner molecules of certain compounds, causing light emission. This light emission can then be used to detect the number of microorganisms within a sample. **FreshDetect** was a German company who researched and developed a handheld non-invasive device which was capable of quickly and accurately measuring the total viable count of microorganisms within a sample using this 3D fluorescence technology. As the number of microorganisms may correlate with food products current level of spoilage, this **FreshDetect** device would be a useful tool for the REAMIT trials, especially considering it does so without requiring a sample to be taken.

Unfortunately, **FreshDetect** went into administration, but as a result of this conversation, the REAMIT team are now looking to obtain a **FreshDetect** sensor or alternative. This search for a device has brought the REAMIT team in contact with more German technology companies. **FreshIndex** is a company who produce temperature sensors which attach to food products and track the temperatures each product is exposed to, up until the point of sale. The idea is that this extra temperature information would be capable of producing a more accurate best-before date for consumers.

REAMIT in Brazil - 20 February 2020

Here are some highlights from the recent trip to Brazil by Professor Usha Ramanathan of Nottingham Trent University.

Dr. Usha Ramanathan who is a Professor of Sustainability and Supply Chains at Nottingham Business School, carried out an international guest lecture at UNIDAVI, a University in Rio do Sul, Brazil on 20 February 2020. She also visited a local farm of Cravil to observe its sustainable practices.

Professor Ramanathan highlighted the REAMIT project and the role of Sensors, Internet of Things and Data Analysis in Agribusiness supply chains. Professor Ramanathan was accompanied by Dr. John Buglear, also from Nottingham Trent University's Business School. Thank you to the event organiser, UNIDAVI's Research Coordinator, Prof. Dr. Lilian Adriana Borges who brought together academics, professors and the community.

