

# VistaMilk

## MAKING AN IMPACT

*Han Shao, Tarun Narayan & Alan O’Riordan, Tyndall National Institute*

Soil, one of the most complex and diverse ecosystems, provides a large range of services to humans and animals. With the rapid increase in human population globally, soils are facing significant unsustainable degradation. The overuse of chemical fertilizers in agriculture has a negative environmental impact.

Farmers are key to managing the transition to more sustainable systems of food production. Currently, soil monitoring and analysis can only be performed using laboratory-based assays which are costly and time consuming. Therefore, new digital technologies are therefore required, to provide informed decision-making capacity to farmers at all stages of production, to enhance food security, reduce losses, increase sustainable production, increase economic return while also protecting biodiversity.

In this work, we have successfully developed a chip-based (1x2cm) novel smart multi-sensor platform for soil nutrients monitoring (nitrate). The soil sensor has been buried in soil to continuously monitor soil nutrients over 4 months. This work has won the Enterprise Ireland Innovation Arena 2022 – Research Emerging from a 3rd Level Award, and clearly demonstrated that the application of silicon chip digital technologies to soil analysis has tremendous potential by enabling rapid analysis to provide high-end analytical data.



## Meet the Researcher

**Name:** Phil Owens



**Host:** ICBF

**Education:** Bachelor of Arts (Hons - Accounting) & HDip in Science (Computing)

**Hobbies:** Gaming (console & mobile), music (starting to re-learn guitar), cinema, reading, walking.

**Role in VistaMilk:** As a technologist, I’ve been involved with many projects within VistaMilk; most recently the Research Data Portal. The Portal provides users (researchers, etc.) with a means to upload & catalogue their data, but recently we’ve been using the Portal to automatically upload generated data (such as bulk tank data from one of the main processors) which in turn can be added to a given project, subject to data sharing considerations of course. To help some of our researchers, we’re currently working on a project to provide them with anonymised spectral data which will hopefully be invaluable to them going forward. We’re in the midst of setting up a working group for the Portal so if you’re interested in joining, please let me know.

## Funding Opportunities

The 2023-2024 Work Programmes for Horizon Europe were launched within the last month. Call closing dates will commence early March onwards. Should you have queries or require support with any of the funding calls please contact the VistaMilk external funding manager TJ McAuliffe. [tj.mcauliffe@teagasc.ie](mailto:tj.mcauliffe@teagasc.ie)

## Education and Public Engagement

The BT Young Scientists was held in Dublin from the 12-14<sup>th</sup> January. As always this was an impressive display of innovative research by Irish secondary school students. It is safe to say that the future of Irish science is in safe hands! There are lots of exciting events happening in the coming months, so keep an eye on our social media and if you would like to take part in any events contact: [elena.hayes@teagasc.ie](mailto:elena.hayes@teagasc.ie)



## Publications

### [Profitable Fee Controller for Payment Channel Networks](#)

*Anupa de Silva, Subhasis Thakur & John Breslin*

### [Simultaneous detection of copper and mercury in water samples using in-situ pH control with electrochemical stripping techniques](#)

*Bernardo Patella, Tarun Narayan, Benjamin O'Sullivan, Robert Daly, Claudio Zanc, Pierre Lovera, Rosalind Inguant & Alan O'Riordan*

### [Spectroscopic technologies and data fusion: Applications for the dairy industry](#)

*Elena Hayes, Derek Greene, Colm O'Donnell, Norah O'Shea & Mark Fenelon*

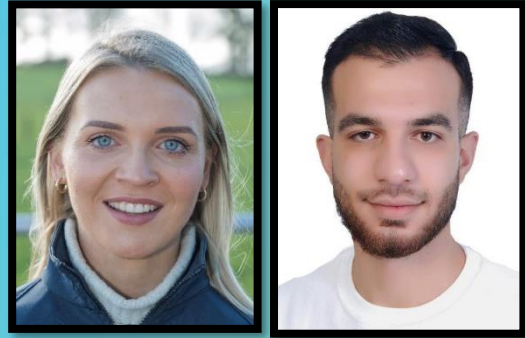
### [Classification of cow diet based on milk Mid Infrared Spectra: A data analysis competition at the "International Workshop on Spectroscopy and Chemometrics 2022"](#)

*Maria Frizzarin, Giulio Visentin, Alessandro Ferragina, Elena Hayes, Antonio Bevilacqua, Bhaskar Dhariyal, Katarina Domijan, Hussain Khan, Georgiana Ifrim, Thach Le Nguyen, Joe Meagher*

### [Amplification-free, highly sensitive electrochemical DNA-based sensor for simultaneous detection of stx1 and stx2 genes of Shiga toxin-producing E. coli \(STEC\)](#)

*Luiza A. Wasiewska, Fernando Garrido Diaz, Sofia Rodrigues Teixeira, Catherine M. Burgess, Geraldine Duffy, Alan O'Riordan*

## New staff



*Aine Murray, Postdoc in TP2- Pasture Management (Teagasc)*

*Quasi Alabedallat, Postdoc in TP8- Digestive Characteristics (Teagasc)*

## Dates for the diary

Our first masterclass of the year, Artificial Intelligence in Agriculture will be held online on the 8<sup>th</sup> February. We have an exciting line up speakers for it and the full agenda can be found on [our website](#) or Eventbrite. On the 28<sup>th</sup> of February VistaMilk, in conjunction with PWC & AgriTech Ireland, will host a workshop on the tax credit available to companies carrying out qualifying Research and Development activities in Ireland. The event will begin at 10am in the Midlands Hotel, Portlaoise and is free for VistaMilk & AgriTech Ireland partners.

## Other News

Philip Nolan, director of SFI visited Teagasc Moorepark on the 12<sup>th</sup> January to discuss a wide range of topics with Teagasc and VistaMilk staff. He also got a tour of some of the wide range of world class facilities that are available to both Teagasc and VistaMilk researchers where he enjoyed a tour of the facilities and labs.

