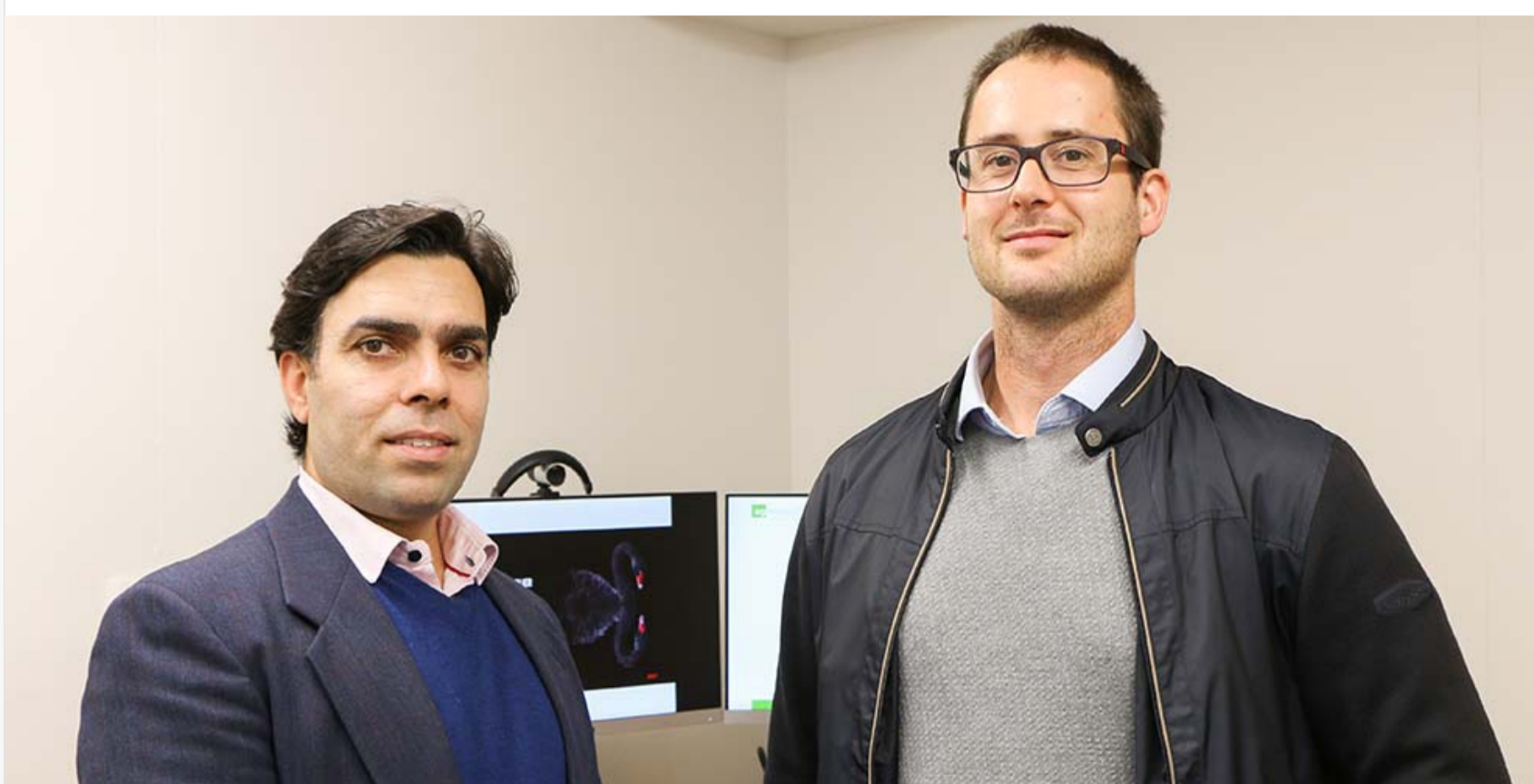


Farmers Weekly / News / Agribusiness

AGRIBUSINESS - 13 July 2020

Reading the digital tea leaves

by Richard Rennie



The AI work by Mark Wever, right, and Munir Shah might help make New Zealand better able to predict and manage future diseases and incursions.

Psa, Mycoplasma bovis, covid-19 and the global financial crisis are all tumultuous events that threw industries and countries into chaos.

But two AgResearch scientists are working on an artificial intelligence system that might be the fortune teller helping protect New Zealand from such disruptive events in future. They spoke to **Richard Rennie**.

AgResearch data scientist Munir Shah and supply chain researcher Mark Wever are intent on identifying the warning signals of threats to agriculture and trade as early as possible.

They are analysing the world's data flows using an early warning system powered by artificial intelligence in collaboration with Niall O'Leary, a researcher from Cork Institute of Technology in Ireland.

"If you can identify threats earlier and assess their impact both quicker and much more comprehensively you have more time to react.

"For covid-19, that would have meant, for example, that users of our system would have been able to anticipate shortages of items like face masks and disruptions in supply chains earlier. We could have taken timelier mitigative actions," Wever said.

The work comes as the primary sector checks its footing post-covid, following on from an assortment of threats it has been forced to deal with over the past decade including Psa and Mycoplasma bovis.

The proposed early warning system could help regulators and the industry by continuously and more comprehensively scanning for risk.

They are essentially looking to read the globe's digital tea leaves, sifting through gigabytes of data surging through global information outlets, identifying links and relationships often too subtle to be detected through simple human observation.

Wever has a background in finance, an industry that has spent years trying to home in on market behaviour and build predictive capacity.

"But this is something of a first for the agri-sector.

"It involves breaking things down into micro, meso and macro areas and using AI to identify non-obvious patterns and relationships in data sets using machine-learning algorithms."

At a macro level that might be scanning how regulatory institutions are doing their job, even what legislation and rules are coming into play in a certain sector.

Meantime, at a meso level it could be identifying clusters of behaviour in the supply chain, such as particularly large volumes of purchases of certain products like personal protective equipment in one part of the world.

The AI technology includes tools like natural language-processing algorithms capable of scanning written media like newspapers and social media posts combined with video and image processing and speech to text algorithms to efficiently dissect vast and varied data sets.

"So, you may have a system that is agri- focused but it needs to be able to look wider at financial, economic factors like all imports and exports," Wever said.

In the case of M bovis AI scanning might have detected unusual patterns of live animal transfers or imports of farm machinery as potential risk factors early on.

Similarly, Psa infestation might have been flagged sooner by the unusually higher levels of pollen and budwood importations that ultimately were linked to the disease's outbreak.

The work will help speed up the process by which new risk forecasting models can be developed, tested and adjusted, making them less reactive.

In the context of a disease outbreak that could help authorities quickly test the accuracy of existing epidemiological models in real time against latest disease spread data.

"We can identify warning signals much earlier and provide more-up-to-date measures of the system's fragility against these risks."

The work has been done through AgResearch in recognition NZ's largely biologically driven export sector needs greater resilience in the face of ever-widening biosecurity and economic threats globally.

"In general people tend to deal with systemic risk in a reactive manner when that risk has already transpired," Shah said.

It is also human nature for people to forget relatively quickly after an event what needed to be learnt from it and applied to avoid having to react to the next one rather than be equipped to deal with it.

The men predict the assorted crises already experienced are likely to become more frequent as countries become ever more connected and dependent on each other for trade.

Supply chain disruptions are more likely to have cross-border impacts that ripple all the way back to this part of the world.

"We can see such a system being a collaborative effort across industry with all parties contributing and benefitting from it."

They are already in the early stages of having discussions with interested parties about how to take the work live. They believe it will put NZ at the global cutting edge of predictive AI capacity.

But both men are emphatic their system is not a big-brother means of controlling individual behaviour. Rather, it is a system for preventing industry-level threats by collecting and analysing anonymised data through AI.

"Farmers, in particular, already have to submit a lot of data. We just want to use that data more efficiently to develop a more sophisticated early warning system for the benefit of them and NZ."

Tags: [Agribusiness](#)

Independent journalism is essential

Thank you for reading our stories and watching our videos. We'd love you to become a Farmers Weekly Patron. You'll be adding to the things we create and we support, like independent and courageous content, weekly On Farm Story videos, the Rural Support Trust, trainee reporters, and so many other industry-good initiatives. **Click through now. Thank you.**

[Become a supporter](#)

 Powered by
PressPatron

LATEST IN AGRIBUSINESS

Reading the digital tea leaves

13 July 2020

Hamilton agritech firm sells to UK company

11 July 2020

Agri-tech boosting global grunt

11 July 2020

Agriculture keeps on keeping on

11 July 2020

Events celebrate rural communities

11 July 2020

PGW expects \$23m profit

11 July 2020

[MORE IN AGRIBUSINESS](#)

TAKE CHARGE OF PARASITE MANAGEMENT



Read More:

ACROSS THE RAILS: In-lamb ewe fair season a non-event

7 July 2020

Farmer charity has strong start

8 July 2020

Firms reject subsidy criticism

7 July 2020