Pioneering work in animal identification and traceability

In 1955 Brian Murphy, a dairy farmer, and John Burford, an entrepreneur and founder of a metal engraved plates' manufacturer, came together in Palmerston North, New Zealand to invent a flexible, plastic ear tag to identify livestock more reliably and efficiently.

by MSD Animal Health.
www.msd-animal-health.com

That was the beginning of Allflex Livestock Intelligence, a business that would grow through the popularity of its innovative products into a world leader in the design, development, manufacturing and delivery of animal identification and animal monitoring solutions across all production animal species.

"Animal health intelligence is rapidly emerging as a high-growth sector within the animal health industry," Jeroen van de Ven, Chief Operating Officer, Allflex Livestock Intelligence, a business within MSD Animal Health, told International Dairy Topics.

"Our pioneering work links animal identification and traceability to animal monitoring technology and capabilities.

"This applied technology allows us to help our customers by delivering real-time, actionable data and insights to help, improve or enhance animal management and health outcomes."

Animal health challenges

The animal health business is challenged on many fronts.

- There is growing concern with ways to meet food demand for the world's nine billion people by 2050.
- There is limited ability to grow herds and increase reliance on technology to bridge the gap between supply and demand to boost productivity.
- There is an evolving public concern around food safety and traceability.
- There are issues surrounding disease control and eradication as well as preserving animal well-being and welfare.

"As a leading provider of animal identification and monitoring technology and real-time data and analytics, we identify more than 500 million animals with tags each year for our customers," Jeroen added.

"We have accumulated over 5.5 million monitored cows daily in which we are able to classify and detect various animal actions and behaviours in a minute resolution from early fertility to immediate health alerts. This high-quality and detailed sensory information feeds a state-of-the-art suite of machine learning algorithms that generate real-time, actionable data and insights for farmers, producers, veterinarians and pet owners alike. Currently, over 1.3 million cows are connected and analysed via our real-time Cloud service platform."

Technology components

The company's animal identification business markets visual ear tags (VID), which contain printed identification numbers unique to the animal or the farm.

The company also markets electronic identification (EID) tags, which hold RFID (radio-frequency identification) electronic components that have the ability to read information digitally.

The shape and size of the tags can vary based on species. Additionally, the company markets tissue sampling tags which have the ability to easily capture DNA samples while tagging the animal.

The combination of this wide span of technologies address customer needs, including traceability, government regulations, genomic testing and proof of ownership.

Within the company's animal monitoring business, advanced monitoring tags (collars and ear tags) provide heat detection, health reports and real-time alerts for individual cows as well as groups of cows.

The monitoring tags contain advanced sensors and algorithms to capture and extract important insights, such as animal activity, feeding management, disease detection, animal behaviour (eating, grazing, ruminating) and normal vs abnormal behaviour.

The company's digital technology and predictive analytics business

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Effective cow and herd management.

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then analyses the data, which is used by farmers to manage hundreds of millions of animals worldwide. By putting this data into the farmers' hands, they are well-prepared to safeguard their animals' health and well-being, while achieving optimal production outcomes for a healthy food supply.

Most importantly, the company's analytical tools and data analysis provide value across the entire ecosystem, including farmers, genetics and artificial intelligence companies, government institutions, meat and dairy distributors and retailers and animal nutrition companies.

"We analyse large amounts of accumulated data related to animal activity and health outcomes 24 hours a day from multiple farms to support this broader ecosystem. We have a well-developed infrastructure that has helped us build the scale and capabilities that we have today," added Jeroen.

"We have the potential to improve productivity, enhance traceability, assist in disease prevention and provide for animal health and well-being accountability.

"For us, it is about the ability to combine the physiological understanding of the animal with the mathematical models, machine learning and artificial intelligence to make sense of all these data points that we collect."

New product launches

Most recently, Allflex Livestock Intelligence launched the Allflex Young Stock Application for newborn calves up to six months of age.

This lightweight monitoring ear tag monitors a calf's behaviour to provide real-time actionable data and insights into health status and behavioural trends from the moment of birth.

By monitoring these health trends, livestock farmers can detect the onset of health issues often before clinical symptoms appear, including respiratory disease and gastro-intestinal issues.

The company also launched its Sensehub Beef Monitoring System, which is the first heat- and health-monitoring system that analyses the real-time behaviour of beef cattle, so that beef farmers stay in touch with their herd anytime and anywhere.

The system lets farmers know if an animal is in distress or needs attention, monitoring such areas as peak time for insemination to optimise conception rates, early

detection of health problems for quicker intervention, defining the most suitable feeding strategy, reporting difficult birth situations and post-natal health problems and monitoring sudden, planned or unforeseen changes within groups.

Research and development connection

"We combine animal science and complex mathematical models in a portfolio of digitally connected identification, traceability and monitoring products," Eli Kamhine, Chief Technology Officer, Antelliq Innovation Center, told us.

"Our multidisciplinary teams have a wide diversity of science and technology backgrounds, including hardware designers, software specialists, artificial intelligence scientists, veterinarians and animal researchers.

"Within our vast capabilities, we can classify individual animal behaviour to look for specific knowledge about the animal, such as fertility, health, nutrition, group routine and even stress events. We can even now look at relationships with groups of animals and even larger trends.

As an example, we pioneered our Sensehub Dairy Monitoring System in several regions around the world to monitor the well-being of dairy cows so that their reproductive, health and nutritional well-being are tracked." ■