A New Farm-Side Diagnostic Platform to Detect Poultry Diseases

The poultry industry in the Philippines accounts for 17% of the agricultural output, equating to 60 billion Pesos per annum. However, the inability to rapidly and accurately detect bacterial and viral infections within flocks affects the growth of the industry. Currently, diagnostic methodology often relies on clinical observations. This is time consuming and can affect the ability to implement control measures to limit disease spread to adjacent farms and into the human food chain.

To address this, the multidisciplinary team behind this project has developed a simple farm-side molecular diagnostic platform and complementary surveillance software to use at the site of infection and test for viral and bacterial pathogens.

The team quickly produced a portable, battery powered, stand-alone diagnostic platform. Meeting World Health Organisation guidelines for resource-poor settings, the device can be operated anywhere in the farm, eliminating the need for laboratory infrastructure, trained personnel, and additional equipment. Costing 95% less than comparable devices, it is validated against gold standard devices and performs equivalently.

The team has also developed and demonstrated tests for the detection of Salmonella, E. coli, and Newcastle disease virus which can achieve detection within 30 minutes. Commercially available tests developed by a third party for the detection of Porcine epidemic diarrhoea have also been demonstrated. The successful implementation of these technologies will restrict the spread of poultry infectious diseases, antimicrobial resistance (AMR) and zoonotic pathogens through early detection and containment.

“A low-cost, simple system like the device demonstrated will be of great use to farm veterinarians and farm managers in monitoring and controlling poultry diseases with ease.” Dr Antonio Augustus Laranas - The Chicken Doctors, Philippines

Functional prototype device being used in early field trials in the Philippines © Professor Wamadeva Balachandran

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