Bitesize Biosecurity: Helping Farmers and Vets with Livestock Health

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Background

Livestock diseases such as Johne's, PRRS, and roundworm pose major economic and welfare challenges, yet uptake of biosecurity practices remains inconsistent. To address this, we are developing a suite of practical resources to help farmers, vets, advisors, and students prevent and manage disease transmission. These include AI-powered tools, discussion support calculators, an educational sampling game, and accessible animations and videos. By making biosecurity advice engaging, easy to understand, and simple to embed in daily practice, our Bitesize Biosecurity platforms aim to reduce the spread of costly diseases, strengthen livestock health, and build more resilient farming systems.

Making Farm Biosecurity Advice Accessible Using AI

Biosecurity is vital for reducing livestock disease, yet uptake on farms remains low due to complex and fragmented guidance. Bitesize Biosecurity is an AI-driven framework that curates expert advice into concise, farmer-friendly summaries. Delivered via a web application, it provides clear, actionable guidance on key UK livestock challenges—Johne's disease, sheep scab, and liver fluke—while maintaining scientific accuracy. By centralising information and tailoring outputs to farmer needs, the tool bridges the gap between research and practice, improving animal health, welfare, and farm productivity. Its scalable design allows expansion across diseases, species, and regions, transforming how biosecurity knowledge is communicated.

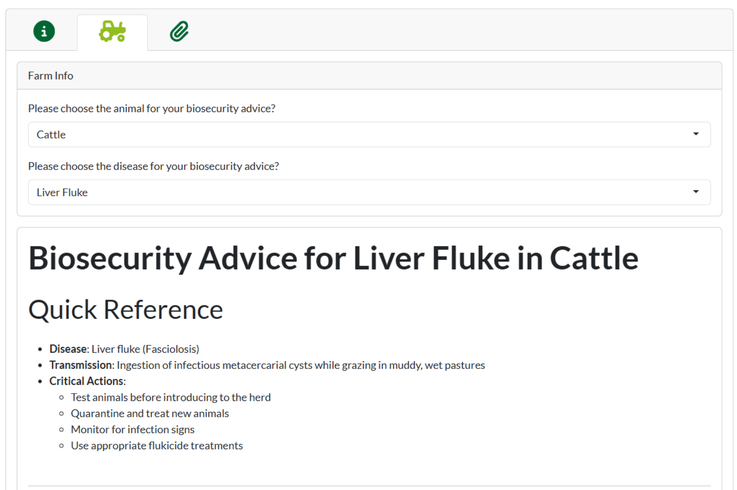

Figure 1:
An example of the type of information shown on the AI summarisation app. We very clearly define the structure expected for the output, to ensure a consistent display between species and conditions. The example here shows the Quick Reference produced for liver fluke in Cattle.

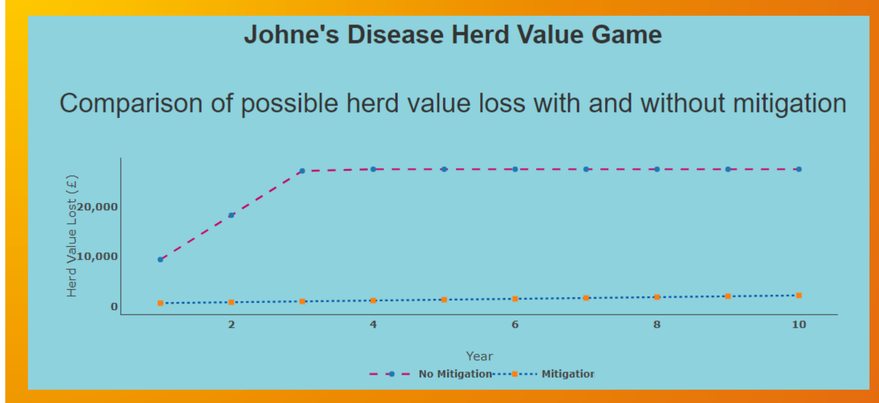

Figure 2:
An example time series graph for projected losses that farmers may incur if they do not include mitigation strategies into their farming practices.

Johne's Disease – Herd Value Game

This interactive tool estimates the potential impact of Johne's disease on a farm and the what could be achieved through prevention and control. By entering information such as herd size, animal value, and purchasing practices, users receive a 10-year forecast showing how the disease could impact their business. The tool also models the benefits of specific risk-reducing actions, helping farmers, vets, and advisors weigh up options and plan practical interventions. Much like a pensions calculator, it provides evidence-based estimates to support informed decision-making and collaborative herd health planning.

Sampling on the Hoof

Sampling on the Hoof is an educational web-based game designed to simulate the economic and clinical decisions farmers face when managing livestock health. Players must choose testing strategies and treatment options while balancing imperfect diagnostics, costs, and disease risks. The game captures anonymous decision data, allowing researchers to explore how factors such as age, education, and written 'nudges' influence evidence-based decision-making. By combining interactive learning with research insight, the tool provides a novel way to evaluate and improve decision-making in agricultural contexts, supporting farmer and veterinary education, and future policy development.

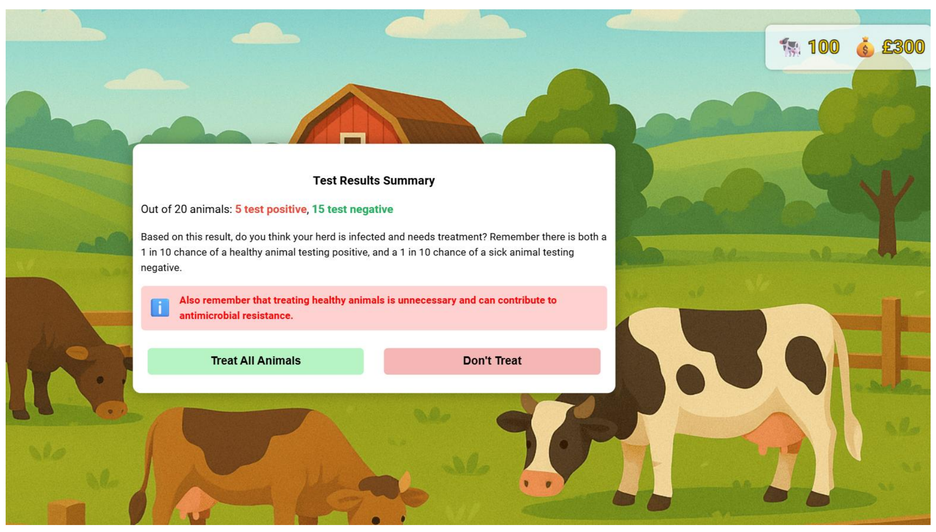

Figure 3:
One of the steps of Sampling on the Hoof randomly might include a prompt reminding the player that antimicrobial resistance may be a factor that they should consider when deciding whether to treat or not.

AI Summarisation Tool

Sampling on the Hoof

Johne's Disease Game

And much more...

Alongside these pieces of work, our team is creating animations and educational videos to support knowledge exchange in the pig industry and the wider agricultural sector. These resources simplify complex information into engaging, accessible formats and are being enhanced with translated speech tracks in other languages, helping ensure that vital messages reach diverse farming communities.

Outcomes

We have presented the Sampling on the Hoof game at agricultural shows and industry events. We will also be engaging with vets through a workshop at the upcoming BCVA Congress and this project has several pending publications.

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