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to singles, weaned calf weight per cow calving was 52% greater. The objective of this study was to quantify the effect of increasing twinning rate through long-term genetic selection on the economic performance of pasture-based suckler beef systems.

**Materials and methods:** The Grange Beef Systems Model (Taylor et al., 2020), a bioeconomic model of suckler beef systems, was augmented to include a module defining the impact of twinning using data from Echternkamp et al. (2007) and Cummins et al. (1994). This module accounted for the implications of twinning on cow (e.g. calving rate, calving difficulty, fertility and feed energy demand) and calf (mortality, live weight gain and carcass characteristics) traits in suckler beef systems. The farm system modelled was a spring-calving suckler herd taking progeny through to beef as steers and heifers at 24 and 20 months of age, respectively. Farm size was 50 ha with a baseline stocking rate of 2.4 LU/ha. To reflect different proportions of the cow herd bearing twins, the analysis was conducted for three calving rates; 1.0 (base scenario), 1.5 and 2.0 calves per cow. Given the lack of consistency between published studies, two scenarios were compared with the base scenario whereby post-weaning performance of twin-born progeny were either (i) 3% less than or (ii) 9% greater than single-born progeny.

**Results:** Increasing twinning rate (i.e. the number of calves per cow) decreased the number of cows calving (range: 23% to 14%), increased carcass output (range: 16 to 27%) and increased farm net margin (range: 76% to 126%) compared to the baseline scenario.

**Conclusion:** When part of a defined breeding and management programme twinning has the potential to substantially improve net margin on suckler calf-to-beef farms.

**References**

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**73. Global Zoonotic Disease – The UK perspective**

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The World Health Organization definition of zoonosis is “A disease that is naturally transmissible from vertebrate animals to humans”. This definition encompasses over 200 diseases worldwide, with new and emerging diseases increasing this number constantly. Countries like the UK are in a privileged position of having well-functioning veterinary and public health services, which allow for potentially serious threat to be quickly identified and acted upon. Veterinary surveillance, in particular, is an essential tool designed to ensure effective and early detection of animal related problems, which could severely affect animal health and welfare, trade and public health. In the case of zoonotic diseases, active surveillance for the control of *Mycobacterium bovis* is a perfect example of the ongoing efforts to prevent the spread of this harmful bacteria to cause human tuberculosis. Through scanning surveillance, levels of endemic diseases can be monitored and identification of new, emerging and exotic conditions enables for the planning, implementation, and evaluation of risk mitigation actions. Salmonellosis due to *Salmonella dublin* is currently often diagnosed through diagnostic material submitted to official veterinary laboratories and its reportable status allow to assess the risk to human health from animal sources and to provide expert advice to private veterinary practitioners and human health professionals on the prevention measures of human infection. Because of the ongoing trend in globalization and because diseases do not recognize boundaries, an international approach to the control of zoonotic diseases is necessary. Agencies like the World Organization for Animal Health (OIE) and the Food and Agriculture Organization of the United Nations (FAO) allow for a truly coordinated approach to be implemented. Their roles in veterinary surveillance are mainly to facilitate data sharing and technology transfer between countries and to collect, analyze and disseminate (the same principle of surveillance at a national level) information on high-risk animal disease outbreaks. Finally, for all these systems to be truly effective, collaboration is the key. We all have a part to play, from animal keepers, vets, scientists, academics and industry partners and through research and dissemination of key findings we can actively contribute in ensuring public health arising from human-animal interactions.

**74. Emerging Zoonoses – Using the One Health concept as a framework for Risk Analysis and the development of blended Control Strategies**

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This presentation aims to explain and describe in detail how the One Health concept can be used to drive an assessment framework, using knowledge of the environment, people, animals and zoonotic pathogens to enable effective control and management of emerging diseases.
In the last two decades, a number of major zoonoses have emerged. They have progressed to cause epidemics, a pandemic, or have become endemic. They include West Nile Virus, SARS-CoV-2 and Highly Pathogenic Avian Influenza. It is likely that others will emerge in the future, with the WHO estimating that at least 60% of future novel diseases will be caused by zoonotic pathogens.

Addressing the harm that these diseases can cause is best done by using the One Health Concept, where the interactions between the three elements of animal, human, and environmental health are recognized as equally important in developing control and mitigation strategies.

Each of the One Health elements needs to be examined in detail, commencing with a detailed examination of the environment, and then progressing to an understanding of how humans, animals, and the pathogen interact with it, and with each other.

To do this effectively requires each of the elements to be broken down into its constituent components - for instance population sizes, density, geographic range etc. This does not only require knowledge, but the use of structured analytical techniques, such as modified Critical Path analysis, or Analysis of Competing Hypotheses. These can be used to deliver a detailed predictive assessment, which includes the identification of infective pathways, and possible critical control points.

Once undertaken, the analysis allows the use of risk management tools such as the 4Ts (Tolerate, Treat, Terminate and Transfer) to support decision making on development of infection control strategies. This allows the development of a blended approach to harm reduction across the One Health pillars, including strategies for treatment and prevention.

Although the concept is simple, the practical implementation of both the analysis, and the identification of critical control points, can be challenging, especially with a novel pathogen, such as SARS-CoV-2.

Usually, the primary assessment only provides limited understanding, in support of an initial containment strategy; it is usually drawn from both veterinary and medical experience of similar zoonotic pathogens. As an outbreak progresses, the pathogen can mutate, or adapt, and events such as transmission from humans into susceptible animal species.

This increases complexity, and requires a constant review of the analytical outcomes, and related control measures. It will also alter technical requirements, such as monitoring, testing and genetic sequencing, to identify novel variants with risks dissimilar to the original strain.

Currently in the UK, the potential risk that emerging pathogens pose is assessed through a pan governmental body, the Human and Animal Infections and Risk Surveillance (HAIRS) group. They support the decision making of the Advisory Committee on Dangerous Pathogens (ACDP) on the appropriate containment and preventative measures for emerging zoonoses.

### 75. Lessons from cross-species transmission of influenza

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Influenza A arguably remains the ultimate emerging and re-emerging viral pathogen. Influenza A viruses frequently cross species barriers and have evolved and adapted to become established in a broad range of species. This presentation will take a retrospective look at inter-species transmission events and discuss how human activities are leading to increased likelihood of further pandemics caused by influenza and other viruses.

### 76. Effect of turmeric and Aspilia africana on the reproductive performance of rabbit does in umudike abia state nigeria

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**Application:** The use of Combination of turmeric and Aspilia africana in the diets of rabbits to ameliorate their respective adverse effects on growth and conception rate of rabbit does.

**Introduction:** Growth and conception rate are among the key physiologic and reproductive parameters in animal production. Turmeric has antioxidant and anti-inflammatory properties. Aspilia africana depressed reproduction and improve growth in rabbits (Etim and Oguike, 2014, 2015), and turmeric improve testis histology. Combined effects of turmeric and Aspilia africana on reproduction and growth are not clear. This study aims to ascertain their effects on reproduction and growth in rabbits.

**Materials and methods:** Thirty six rabbit does, aged 4 to 5 months, average weight 1.65 kg were used in a CRD with 4 treatments, T1, T2 T3 and T4, with 9 does per treatment. Does in the treatments were fed diets not-supplemented with turmeric and Aspilia africana (T1, control), 2.5 g turmeric (T2), 2.5 g Aspilia africana (T3), a blend of 2.5 g each of turmeric and Aspilia africana (T4)/kg feed. Test ingredients were dried and ground before inclusion to the diet. The diet contained 16.06% crude protein and 2579.64 MJ. Rabbits were fed for 60 days before breeding and data collected on reproductive performance. Five bucks were randomly used to breed the does. Data generated were analysed using ANOVA according to Steel and Torrie (1980).

**Results:** Results are presented in Table 1. Receptivity, though not significant showed that T3 took longer time to mate while T1 responded faster. Control has the highest significant (P < 0.05) conception rate and T3 least. The birth weight of the kits was significantly different. The litter weaning weight of was significantly (P < 0.05) higher than others. Litter size at birth and weaning, stillbirth and mortality were not significant (P > 0.05).