INNOVATION for AGRICULTURE

Alternatives to antibiotics in livestock production

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Factors contributing to animals' resilience and tolerance to diseases.

The ability of an animal to be resilient to diseases is dependent upon several factors which include; immune status, husbandry practises, vaccination, genetics among others. The majority of these areas can be employed in preventing disease occurrence in food producing animals. Examples of alternatives to antibiotics:

- Vaccines
- Probiotics
- Genetic selection

Vaccination

The prevention of infectious diseases has proved to be one of the most cost-effective methods of disease control. Vaccines stimulate a protective immune response. A few reported flock trials of Footrot vaccines and Bovine Viral Diarrhoea (BVD) in the UK. The key findings were:

- A 62% protective effect was reported against footrot and 32% against contagious ovine digital dermatitis infection in 748 fattening lambs (figure 1 and 2).
- The trial also recommended vaccinating all sheep to limit future environmental contamination and challenge.

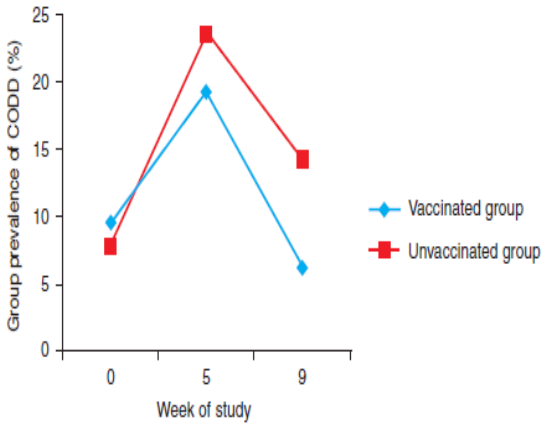


FIG 1: Group prevalence of CODD by week of study and treatment group

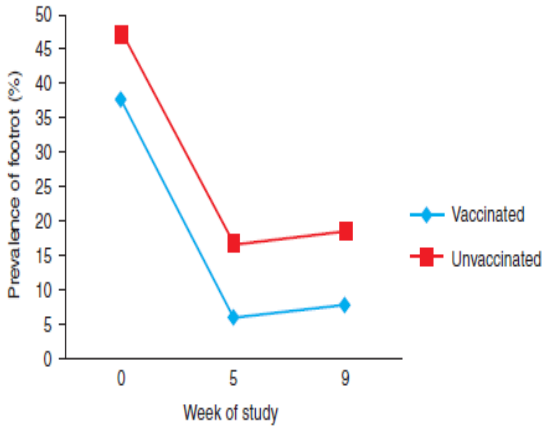


FIG 2: Group prevalence of footrot by week of study and treatment group

Source = Duncan *et al*., 2012

Vaccinating against BVD:

Studies have reported several benefits for vaccinating against BVD, for example, a decrease in abortions of nearly 45% and a nearly 85% decrease in foetal infection rate in cattle vaccinated for BVDV compared with unvaccinated cohorts have been reported.

Genetic selection for example selecting for genes resistant to *Footrot in sheep*

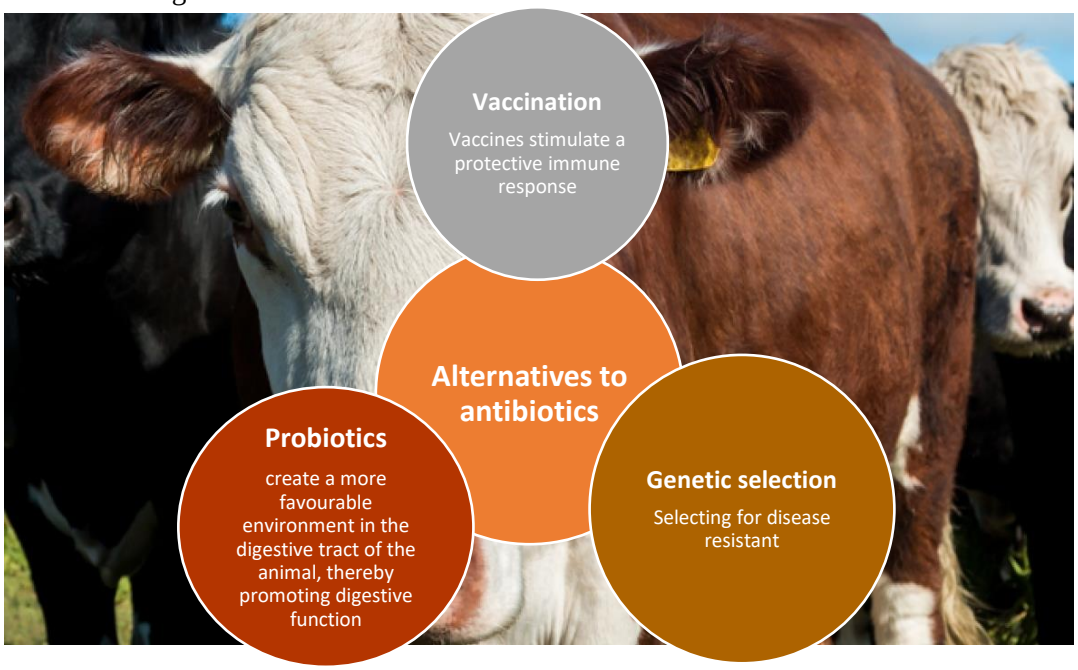
Estimates from many countries indicate that resistance to footrot in ewes is heritable at 10 - 20%. It has been recommended to selecting replacements from ewes that have not had footrot to minimise on infection. Studies have shown greater reduction in cases of footrot when using breeding methods to help control to control the problem. These measures included frequent ewe scoring for footrot heritability.

Probiotics

- Are micro-organisms that must be fed in a live, viable state in order to maintain effectiveness. Create a more favourable environment in the digestive tract of the animal, thereby promoting digestive function.

One example includes bavamine defend which showed the following benefits:

- Stabilizes the GI tract
- Maximises energy capture
- Reduction in *E.coli* .
- Reduction in *Salmonella.*
- Increased growth rates in beef cattle.



References

Duncan *et al*. (2012) = Impact of footrot vaccination and antibiotic therapy on footrot and contagious ovine digital dermatitis.

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