

Construct your electronic library on poultry health

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Host-Parasite-Environment relationship

Disease is the consequence of the malfunction of one or more bodily systems due to the actions of an agent (often called a parasite). The degree of malfunctioning dictates the severity of the disease. This is also influenced by the characteristics of the host and the conditions on the farm, which is often referred to as the Host-Parasite-Environment relationship.

Agents can be divided into infectious (living), for example viruses, bacteria and mycoplasma, and non-infectious (non-living) agents such as deficiencies and toxicities.

Infectious diseases

Whether disease results from an infectious agent depends on the number (dose), type and virulence of the infectious agent, its route of entry into the host's body and the defence status (defence systems and immunity). Environmental factors can impact on the manifestation of disease and these include things like overstocking, water deprivation, chilling and air quality. Whether or not we intervene, by the administration of anticoccidials for example, can also influence the outcome.

Some very virulent organisms, for example highly pathogenic H5N1 avian influenza, can overcome resistance in the healthiest of birds and cause high mortality. However, for many birds, infectious agents generate a response to the infection which usually results in survival and a return to good health. Some infections have dramatic consequences, such as a severe egg drop, whereas others can predispose the bird to other infections.

There are other infectious agents that often occur as normal inhabitants of the bird's environment but occasionally a change in environmental circumstances (stress) can result in them causing disease. Good examples here are coccidia (coccidiosis), E. coli (colisepticaemia) and Clostridium perfringens (necrotic enteritis).

Impact of modern practices

Modern poultry production has necessitated bringing birds together in large groups and this makes it easier for diseases to quickly 'multiply up' and infect many birds. This can be compounded in the case of respiratory diseases by factors which favour a build-up of the infectious agent in the air within a poultry house. A good example of this is under ventilation.

Because of these factors an important aspect of modern poultry production is biosecurity, which is basically the art of keeping infectious agents out of poultry flocks.

The advent of battery cages had a positive influence on layer health because, by their very design, the cages separate the birds from their faeces, and those of other birds, and this minimises the spread of enteric diseases.

However, in the table egg sector the practice of multi-age farms rather than single age farms has the opposite effect and has resulted in a build-up of disease on many multi-age units. In a situation such as this we then have the dilemma of finding the balance between economies of scale and the health and well being of the birds.