International Poultry Production

Poultryhealth BYTES

Your own reference source on poultry health

Number: 291

Mycotoxins II

Aflatoxins

Aflatoxins are the most widely spread and probably the most studied group of mycotoxins. They are considered to be a real risk in warm/hot and humid areas of the world.

Aflatoxins are produced by Aspergillus fungi, especially Aspergillus flavus and A. parasiticus, and are found in poultry feeds and, therefore, can cause problems in poultry. Aflatoxins occur in several forms, of which the most important are designated by the letters B1, B2, G1 and G2. Aflatoxin B1 is the most common and most important form and usually when we refer to aflatoxin we mean aflatoxin B1.

Effects of aflatoxins

All the clinical signs, such as poor growth, poor FCR and depressed egg production detailed in the previous Poultryhealth BYTE can be encountered when poultry consume aflatoxin contaminated feed.

Ducks are very susceptible, followed by turkeys, broilers and laying chickens.

In addition to the non-specific clinical signs previously alluded to, more specific signs include visceral haemorrhages, embryonic changes and liver pathologies typified by fatty changes, necrosis and bile duct hyperplasia. Aflatoxin also depress the activities of various important enzymes associated with various bodily functions, including those of the liver. Aflatoxin can interfere with vitamin D metabolism causing bone weakness as well as the metaboliosm of several minerals.

Aflatoxins increase the fragility of blood capillaries and reduce prothrombin levels. These changes are often manifested as elevated levels of bruising/carcase condemnations.

Some interesting research work has shown an inverse correlation between the number of aflatoxin positive feed samples and mean aflatoxin feed levels and the commercial performance of broilers.

Aflatoxins have been seen to depress egg production and hatchability in broiler breeders.

Immunosuppression

Immunosuppression caused by mycotoxins and the associated increased susceptibility to infections and vaccination and medication failures is a real issue associated with mycotoxins.

In aflatoxin associated immunosuppression there is a reduction in circulating antibodies as a consequence of serum albumin and globulin levels with an impairment of the reticuloendothelial system, reduced cell mediated immunity and abnormal development of key immunity organs such as the bursa of Fabricius and the thymus.

Evidence suggests that aflatoxicosis increases birds' susceptibility to salmonella infections.

Aflatoxin residues

The rate of residue accumulation in poultry meat is slow compared to its accumulation in cow's milk, for example.

Residue levels in eggs are dose dependent with more being deposited in the yolks than the whites.