

Mycotoxins could be reducing the profitability of your breeders

Mycotoxins are known to contaminate feedstuffs worldwide and can cause a variety of symptoms in poultry. Responses to mycotoxin consumption can include changes in performance and efficiency, alterations of the intestinal structure and its functions, damage to internal organs, disruption of endocrine system signalling and modification of the immune system.

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Even lower levels of mycotoxins can impact poultry, resulting in decreased performance, increased disease occurrence and/or an increase in intestinal pathogens.

When mycotoxins are consumed, the gastrointestinal tract is one of the first organs impacted. Here, mycotoxins can be absorbed and transferred to the rest of the body, or they can directly affect the epithelial cells that result in inflammation, necrosis and even changes to gut-level immune responses. As a result of these changes to intestinal structure and function, mycotoxins can also increase the occurrence and severity of intestinal pathogens.

Research shows that when broiler breeders consume Fusarium mycotoxins, their intestinal immune response is suppressed. If mycotoxin consumption occurs during

coccidial challenges with pathogens such as *Eimeria maxima*, immune system suppression could lead to an even greater increase of this pathogenic activity.

Furthermore, consumption of Fusarium mycotoxins at levels too minimal to impact performance still increased the intestinal damage in breeders, leading to poor recovery from enteric coccidial infection.

However, when breeders consumed Mycosorb (from Alltech) during the mycotoxin challenge, the birds displayed immunity and health levels similar to those of the control birds not experiencing a mycotoxin challenge.

Mycotoxin challenges to intestinal, immune and organ systems that become chronic can result in decreased overall breeder performance and productivity. Besides these impacts on the intestinal and immune systems, the reproductive performance of breeders can be altered by mycotoxin consumption.

Research from University of Guelph, in Ontario, Canada, showed that breeders consuming Fusarium mycotoxins, such as deoxynivalenol (DON), had significantly reduced eggshell thickness – but that this reduced thickness was prevented by supplementing the diet with Mycosorb, a polymeric glucomannan mycotoxin adsorbent. Breeders consuming mycotoxins also experienced a 22% rate of early embryonic mortality ($P<0.05$), significantly more than the 5% rate of early embryonic mortality in the control eggs. This effect, however, was mitigated in birds consuming

Mycosorb, which reduced the early embryonic mortality rate to 2%. The negative changes in shell thickness and embryonic mortality in breeders who consumed mycotoxins decreased their overall hatchability rate by 10%. Again, however, this improved when Mycosorb was included, leading to a 30% increase in hatchability rates.

Management of mycotoxin risk important to reduce negative effects on breeders

Given that mycotoxins can affect the performance and health of the poultry breeder, it is clear that they can also affect farm profitability. The cost of mycotoxins can add up over time, such as when they change intestinal structure or immunity, and these costs may be more noticeable if performance is reduced, impacting overall financial productivity.

A broad range of preventative measures may be required to minimise the risk of mycotoxins. Management methods can be implemented at the field, feed or farm level to reduce the overall risk. Techniques such as properly drying grains, providing adequate storage, feed mill management and including a broad-spectrum mycotoxin binder can be valuable methods for reducing the overall risk to the bird. ■

References are available
from the author on request

Fig. 1. Early embryonic mortality of eggs from hens consuming diets with Fusarium mycotoxins with or without 0.2% Mycosorb from Alltech Inc (Results adapted from Yegani et al.).

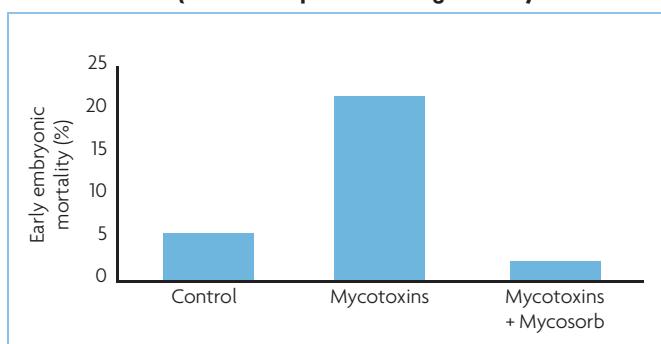


Fig. 2. Hatchability rates of eggs from hens consuming diets with Fusarium mycotoxins with or without 0.2% Mycosorb from Alltech Inc (Results adapted from Yegani et al., 2006).

