

Mycotoxins a menace

The presence of mycotoxins in feed can hit all animal producers hard, resulting in productivity losses and sometimes loss of the finished product.

By INES RODRIGUES*

NATURALLY occurring toxic contaminants in feedstuffs that can adversely affect dairy animal performance and health are an ever-present threat.

It is well documented that mycotoxins suppress the immune system and affect the normal functioning of major organs, including the rumen, intestinal tract, liver, kidneys, reproductive system, nervous system, etc. (Figure 1). On the dairy farm, the incidence of diseases such as displaced abomasum, ketosis, retained placenta, metritis, mastitis and fatty liver increases with mycotoxin exposure.

Mycotoxin-induced diseases seldom respond, if at all, to veterinary therapy and result in increasing losses if only veterinary solutions are pursued. Furthermore, ration adjustments and management changes (grouping, cow movement,

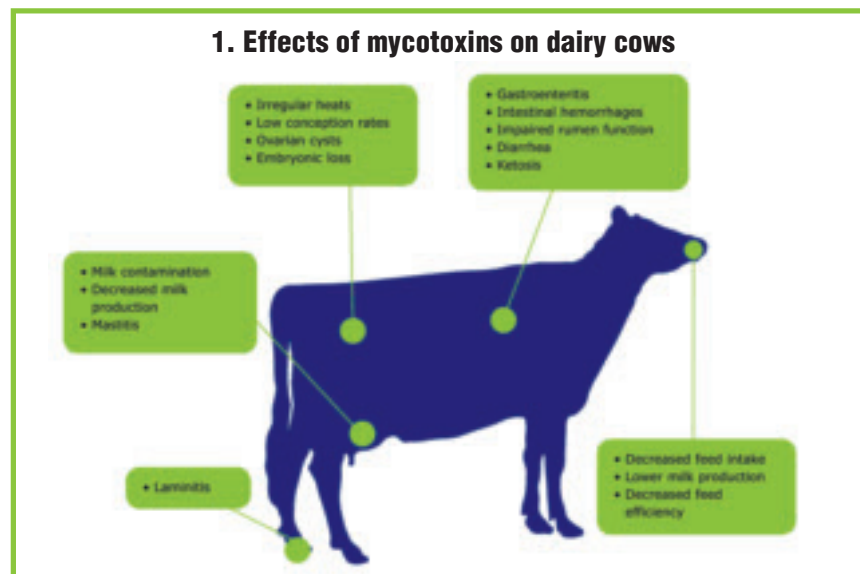
stall allotment, etc.) are of little value, although they may be a factor in predisposition to mycotoxicoses.

Initially, mycotoxins, such as aflatoxins and trichothecenes, act on the immune system (the number of macrophages, lymphocytes and erythrocytes), reducing the animal's response to challenges. At higher levels, they affect the function of the rumen (reduced concentration of microorganisms, decreased rumen motility) and other organs (gut, liver, kidney, reproductive system, neural tissue, etc.) that can manifest as ketosis, fatty liver syndrome, reduced dry matter intake, reduced milk production and making the animals less responsive to treatments (Fink-Gremmels, 2007).

Another aspect that should be taken into account is the higher incidence of lameness on dairy farms contaminated with mycotoxins.

In a study conducted by Ozsoy et al. (2005), a positive relationship was established among aflatoxin contamination of feed, lameness (subclinical laminitis) and impaired fertility (cystic ovaries).

For animals with a completely developed fore-stomach system,



the rumen fluid content is, for certain mycotoxins such as ochratoxin A, zearalenone, T-2 toxin, diacetoxyscirpenol and deoxynivalenol (DON), a detoxifying barrier, with protozoa being significantly more active than bacteria (Westlake, 1989).

For this reason, it is often thought that ruminants are protected against the harmful effects of mycotoxins due to the action of ruminal microorganisms. However, other aspects should be factored in before disregarding mycotoxins' hazardous effects in ruminants.

First of all, for some of these toxic compounds — namely aflatoxin and zearalenone — metabolic byproducts are as toxic as or more toxic than the original molecules. Second, it should always be considered that mycotoxins will adversely affect the rumen environment and activity even before having an effect on the animals themselves. Cows fed mycotoxin-contaminated diets will have decreases in ruminal motility, dry matter, acid detergent fiber and starch digestion and microbial growth.

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