International Pig Topics

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Mycotoxins VIII

Fumonisins – Introduction

Fusarium moniliforme and F. proliferatum occur globally in white and yellow maize and are a source of the fumonisin mycotoxins. When pigs consume fumonisins a condition known as porcine pulmonary oedema occurs. The fumonisins are produced when maize is stressed by moderate drought followed by persistent rainfall or high humidity.

The common fumonisins are FB1, FB2 and FB3 – the first two are equally toxic, but the third is virtually non-toxic to pigs.

Toxicity

Fumonisins are poorly absorbed and once absorbed are excreted relatively quickly via the bile and urine.

Clinical signs and pathology

Levels of ›120ppm in the feed are likely to induce an acute interstitial pulmonary oedema and hydrothorax with a morbidity of up to 50% and case mortality rates of 50-90%. Lethargy, depression, agitation and dermal hyperaemia are followed by mild salivation, dyspnoea, open mouthed respiration, posterior weakness and recumbence. Moist râles rapidly occur followed by cyanosis, weakness and death. The initial clinical signs appear from day 4-7 and once clinical signs appear death normally occurs in less than four hours.

Feeding lower levels (75-100ppm) continuously for three weeks causes jaundice and weight loss without the pulmonary oedema.

The fumonisins are considered to be moderately immunosuppressive in pigs. The lungs are wet and oedematous with wide seams of interlobular oedema. Pancreatic necrosis and hepatosis can be seen. Chronic exposure can be associated with hepatic hyperplastic nodules and some hypertrophy of the smaller pulmonary arteries.

Acute fumonisin mycotoxicosis is associated with abortions.

Diagnosis

Fumonisin involvement should be suspected when there are clinical signs of acute respiratory distress and mortality, coupled with lesions of oedema and hydrothorax. Typically, there is a history of the pigs eating poor quality maize.

Treatment

There is no treatment or antidote for fumonisin toxicity. If the condition is suspected change the feed source.