

A Survey of Mycotoxin Contamination in Australian Pastures and Forages

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Mycotoxins are secondary metabolites of fungi which may be produced on pastures and when ingested by livestock cause production losses, ill thrift and reduced disease resistance (Bryden 2004). There are many thousands of secondary fungal metabolites, but globally, aflatoxin B₁ (AB), deoxynivalenol (DON), fumonisins, ochratoxin and zearalenone (ZEA) are considered the most significant. The objective of the current survey was to investigate the occurrence of mycotoxins in pasture and forages in eastern Australia. In Australia AB, DON and ZEA have been linked to disease outbreaks and were therefore considered the most important mycotoxins to study. Ochratoxicosis has not been reported in Australia (Bryden 1998) and was not included in the current study.

Representative samples (0.5-1kg) of forages and straw were collected at random from farming operations in Queensland, New South Wales, Victoria and South Australia. Sub-samples (200g) were ground using a Romer Mill and after extraction were analysed using HPLC with detection limits of: AB <1µg/kg, ZEA <32µg/kg; and DON <50µg/kg. The results of the analysis are shown in Table 1 with positive values indicating that samples contained concentrations of the mycotoxin above the detection limit.

Table 1. Mycotoxin concentrations in samples of, forages and straw

Mycotoxin	Feedstuff	No. of samples	Positive (%)	Mean (µg/kg)	Maximum (µg/kg)
Aflatoxin B ₁	Forages	42	50	163	1876
	Straw	58	22	8.7	11
Zearalenone	Forages	35	63	1058	5811
	Straw	58	53	556	3551
Deoxynivalenol	Forages	35	45	477	1758
	Straw	58	52	461	1860

All 3 mycotoxins were found in each feed group with zearalenone having the highest occurrence and concentration. This study highlights the potential risk of contamination from feedstuffs and forages other than grain used in animal production and the need to examine all sources of feed when investigating a suspect field mycotoxicosis.

Bryden, W.L. (1998).. *In* 'Toxic Plants and Other Natural Toxicants', (editors T. Garland and A.C. Barr) CAB International, p. 464.

Bryden, W. L. (2004). Proceedings of an International Symposium on Recent Advances in Animal Nutrition, Kuala Lumpur, p. 27.

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