FUMONISIN PRODUCTION BY *FUSARIUM MONILIFORME* AND RELATED SPECIES

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The fungal genus *Fusarium* is one of the most economically important genera of plant pathogens and includes many species which are toxigenic. Members of the *Fusarium* section Liseola, expecially *F. moniliforme*, are commonly associated with the basic human dietary staples corn and sorghum throughout the world. The demonstration that *F. moniliforme* produces fumonisins, a group of mycotoxins that have subsequently been shown to cause equine leukoencephalomalacia (ELEM), porcine pulmonary oedema, initiate hepatocellular carcinoma in rats and to be correlated with a high incidence of human oesphageal cancer has emphasized the need to establish the extent of human and animal exposure to these toxins (Nelson et al. 1993; Riley et al. 1993). Australian maize and sorghum crops may be infected by *F. moniliforme* (Burgess 1985) and cases of ELEM have been recorded in Australia (Christley et al. 1993).

In this study 50 isolates of *F. moniliforme* and related species were obtained from soil, corn, sorghum, sugar cane and wheat and cultured on Weetbix® media for 21 days at 26°C. A chloroform/methanol extract of each culture was tested for toxicity in a chick bioassay (Wing et al. 1993). Fumonisin production was determined by ELISA (Agri-Screen®; Neogen) with a sensitivity of 5mg/g. Isolates of *F. moniliforme, F. napiforme, F. nygami, F. proliferatum* and a previously undescribed population ("Newnes") produced fumonisins. Some isolates of these species and isolates of *F. anthophilum, F. babinda, F. beomiforme and F. subglutinans,* although not producing fumonisins, were toxic in the chick bioassay. As fumonisins are water-soluble metabolites, toxicity in the chick bioassay would result from the production of other toxic secondary metabolites by the isolates. *F. moniliforme*, for example produces a range of compounds including beauvericin, fusarins, fusaric acid, fusariocins, moniliformin and zearalenone. In summary, the production of fumonisins by some species suggest a potential for fumonisin contamination in Australian maize and sorghum crops.

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