

Title Control of *Fusarium* moulds and fumonisin B₁ in seeds by gamma-irradiation
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Abstract

The distribution of naturally occurring *Fusarium* moulds producing fumonisin B₁ in seeds was determined. *Fusarium* infection of seed samples ranged from 10% to 60%, *Fusarium moniliforme* was the predominant species. *Fusarium* counts in wheat seeds were 8.1×10^4 CFU/g, 6.3×10^6 CFU/g in maize and 4.8×10^3 CFU/g in barley. Wheat, maize and barley seeds naturally contaminated with varying levels of fumonisin B₁ 1.4–5.8, 8.0–13.8 and 0.1–0.5 µg/g, respectively. *F. moniliforme* and *Fusarium proliferatum* were major *Fusarium* contaminants producing fumonisin B₁. The effect of gamma irradiation on *Fusarium* moulds and levels of fumonisin B₁ was also determined. The viable counts of *Fusarium* in seeds decreased by increasing the radiation dose levels and the growth of *Fusarium* spp. was inhibited at 4.0 kGy for barley and 6.0 kGy for wheat and maize. Application of radiation dose at 5 kGy inactivated fumonisin B₁ by 96.6%, 87.1% and 100% for wheat, maize and barley, respectively, and a dose of 7 kGy was sufficient for complete destruction of fumonisin B₁ in wheat and maize.