Title Aflatoxin and fumonisin contamination of corn (maize, *Zea mays*) hybrids in Arkansas

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Abstract

A severe infestation by aflatoxin-producing fungi diminished food quality of southern United States corn (maize) in 1998. Corn hybrids (65) naturally infected with *Fusarium* spp. and *Aspergillus* spp. were evaluated from 1998 to 2001 for resistance to mycotoxin contamination. Kernel corn samples were assayed at harvest for aflatoxins and fumonisins. In 1998, samples from all hybrids exceeded 20 ppb aflatoxin (mean levels: 21–699 ppb) and 2 ppm fumonisins (mean levels: 23–79 ppm), the maximum levels permitted by United States Food and Drug Administration guidelines. Samples from hybrids planted in the same and other locations in Arkansas in 1999 and 2001 were shown by similar methods to contain aflatoxin levels ranging from not detected to 255.3 ppb and fumonisin levels from 0.3 to 83.6 ppm. The fumonisin levels in 2001 were very high in all hybrids, ranging from 8 to 83.6 ppm while aflatoxin levels were low ranging from <5 in most hybrids to 131 ppb. The presence of aflatoxin B_1 and B_2 in samples was confirmed by thin layer chromatography and liquid chromatography/mass spectrometry and fumonisins B_1, B_2, B_3, B_4 and C_4 by liquid chromatography/mass spectrometry. During the period studied, a positive correlation was observed between aflatoxin and fumonisin levels, indicating that natural infection with *Fusarium* spp. did not appear to protect against aflatoxin production.