Abstract

Each year (2001–2005), 300 samples of wheat from fields of known agronomy were analysed for ten trichothecenes by gas chromatography-mass spectrometry (GC/MS) including deoxynivalenol (DON), nivalenol, 3-acetyl-DON, 15-acetyl-DON, fusarenone X, T2 toxin, HT2 toxin, diacetoxyscirpenol, neosolaniol and T-2 triol and zearalenone by high-performance liquid chromatography (HPLC). Of the eleven mycotoxins analysed from 1624 harvest samples of wheat, only eight were detected, and of these only five–deoxynivalenol, 15-acetyl-DON, nivalenol, HT-2 and zearalenone–were detected above 100 µg kg\(^{-1}\). DON was the most frequently detected Fusarium mycotoxin, present above the limit of quantification (10 µg kg\(^{-1}\)) in 86% of samples, and was usually present at the highest concentration. The percentage of samples that would have exceeded the recently introduced legal limits varied between 0.4% and 11.3% over the five-year period. There was a good correlation between DON and zearalenone concentrations, although the relative concentration of DON and zearalenone fluctuated between years. Year and region had a significant effect on all mycotoxins analysed. There was no significant difference in the DON concentration of organic and conventional samples. There was also no significant difference in the concentration of zearalenone between organic and conventional samples, however organic samples did have a significantly lower concentration of HT2 and T2. Overall, the risk of UK wheat exceeding the newly introduced legal limits for Fusarium mycotoxins in cereals intended for human consumption is low, but the percentage of samples above these limits will fluctuate between years.