

Title Modelling of interacting environmental factors on growth of mycotoxigenic spoilage moulds
Author N. Magan, D. Aldred and R. Parra.
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Abstract

Mathematical modelling has proved to be a valuable tool in the food industry to predict microbial growth as a function of environmental factors such as pH, temperature and water availability. However, less attention has been paid to filamentous fungi because of their mycelial growth habit. Many studies have also only considered single factors in modelling fungal growth whether using growth/no growth thresholds, or empirical mechanistic approaches. The use of secondary polynomial model development using surface response contour plots has received particular attention for mycotoxigenic moulds. Using *Aspergillus* section *Nigri* group, *A. flavus* group and *Fusarium* species as examples we have examined the development of models which take into account interacting environmental factors of aw and temperature using polynomial functions and validated these against different models for microbial growth available in the literature (e.g. Miles, Davey and Rosso). These types of approaches could have significant impacts on the development of prevention approaches as part of a HACCP system for minimising entry of mycotoxins into the food and feed chain.