

Title Use of electronic nose technology for the early detection of spoilage moulds in cereal products.
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Citation Advances in stored product protection. Proceedings of the 8th International Working Conference on Stored Product Protection, York, UK, 22-26 July 2002 (2003); 139-143

Abstract

There is a requirement for rapid early detection of mould activity in grain throughout the food chain as part of a quality assurance programme and to enable critical control points to be effectively monitored. The rapid development of electronic-nose (e.nose) technology has resulted in examination of the potential of using this qualitative approach to enable decisions to be made about the status of grain and bakery products. Since moulds produce characteristic odours when growing on different substrates, the opportunity exists to use these volatile production patterns to improve decision-support systems for making decisions about grain quality. We have examined the use of e.nose systems for the discrimination between different grain spoilage fungi in vitro and in situ in grain. A real-time grain-monitoring system was developed which is able to evaluate a sample in less than 10 mins and give information on whether the grain is "good", "bad" or "intermediate". Subsequent studies in bakery products have shown that it is possible to detect and differentiate spoilage mould growth on bread within 24-40 h of inoculation, before visible growth. Alternative methods such as enzyme detection and colony-forming units could detect changes only much later. The use of e.nose systems as part of a HACCP scheme is discussed.