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Introduction

Fungi on crops produce mycotoxins in the field, during handling, and in storage. Exposure of animals and humans are usually through consumption of contaminated feedstuffs or foods (IARC, 2002). Molds can grow and mycotoxins can be produced either pre-harvest or post-harvest, during storage, transport, processing, or feeding. Worldwide, approximately 25% of crops are affected by mycotoxins annually (Marin et al., 2013). Because of this is possible to concluded that mycotoxins occur frequently in a variety of feedstuffs that are given to animals causing several effects: subclinical losses in performance, increases the incidence of disease and reduced reproductive performance (Binder, 2007).

Aim of Study

A study was developed intending to know environmental fungal contamination in a Portuguese feed production unit. Corn, wheat and soybeans were the most common cereals used in the feed production.

Materials and Methods

Air samples of 250L were collected through an impaction method with a flow rate of 140 L/min onto malt extract agar (MEA) supplemented with chloramphenicol (0.05%), using the Millipore air Tester (Millipore), during a work day. Surface samples, taken at the same time, were collected by the swabbing method. All the collected samples were incubated at 27°C for 5 to 7 days. After laboratory processing and incubation of the collected samples, quantitative (colony-forming units - CFU/m³ and CFU/m²) results were obtained.



Fig. 1 - Equipment used for air samples collection

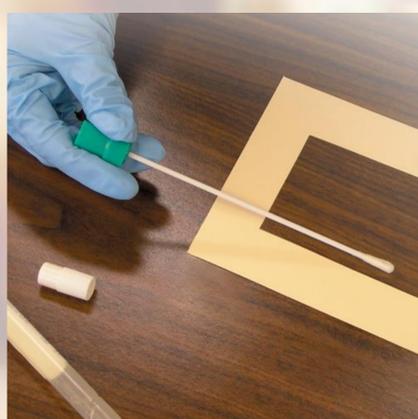


Fig. 2 - Materials used for surfaces samples collection

Results and Discussion

Species from *Aspergillus fumigatus* complex were the most found (46.6%) in air but other species such as *Aspergillus ochraceus* complex and *Fusarium graminearum*, both with toxigenic potential, were also found. *Penicillium* genus was the most prevalent in surfaces (32.0%) but *A. flavus* complex, *A. ochraceus* complex and *Fusarium verticilloides*, all with the ability to produce mycotoxins, were also identified.

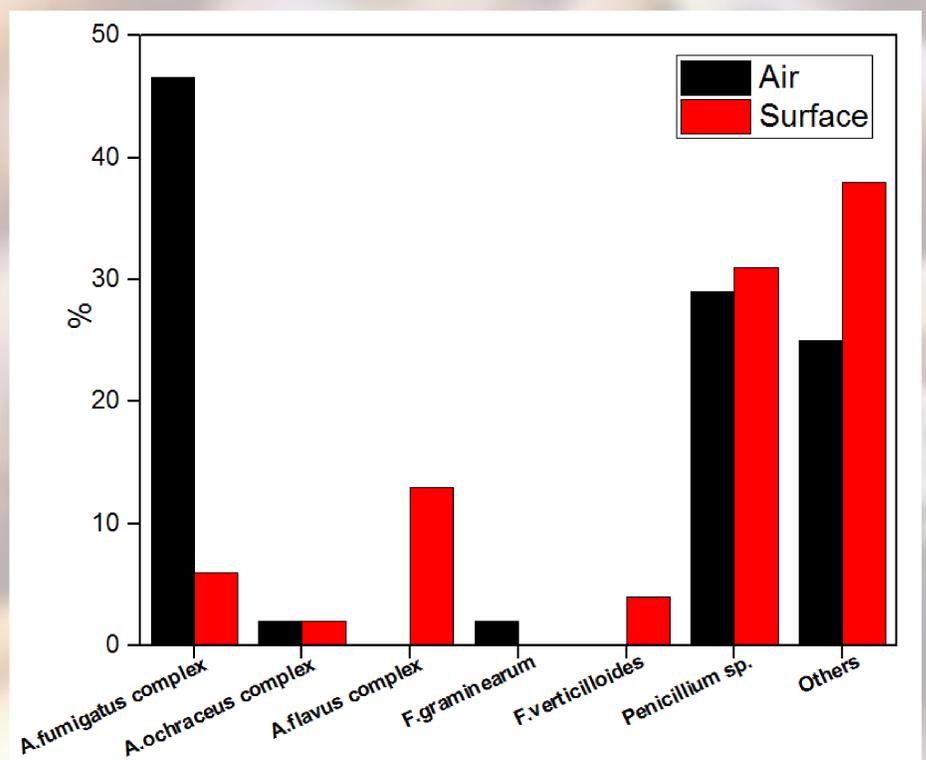


Fig.3 Total of fungi with the ability to produce mycotoxins in air and surfaces samples

The results showed the presence of fungal species that are known as producers of several mycotoxins, such as aflatoxins, ochratoxins and fumonins.

Conclusion

The feed contamination can result from the cereal used as raw material but also can be occurring in the unit during the production, storage and later, during transport. More information is needed related with: why and when mycotoxins are produced, how to prevent their occurrence and how to deal with their presence in the complete cycle of feed production.

References

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Marin S, Ramos AJ, Cano-Sancho G et al. (2013) Mycotoxins: occurrence, toxicology, and exposure assessment. FoodChem Toxicol; 60: 218–37.