



REGIONE
PUGLIA



PSR Puglia 2014-2020

Misura 16 Cooperazione – Sottomisura 16.2 “Sostegno a progetti pilota e allo sviluppo di nuovi prodotti, pratiche, processi e tecnologie”



PEANUT PUGLIA

MYCOTOXIN PRODUCING FUNGI

Toxigenic fungi are a major concern for the quality and safety of peanuts, as some of these fungi produce harmful mycotoxins for human and animal health. The primary toxigenic fungal species associated with peanuts belong to the genus *Aspergillus*, specifically *Aspergillus flavus* and *Aspergillus parasiticus*, both capable of producing aflatoxins.

Major Toxigenic Fungi on Peanuts

1. *Aspergillus flavus*: This fungus is among the most common contaminants of peanuts, especially in warm and humid climates. *A. flavus* produces aflatoxins B1 and B2, among the most hazardous mycotoxins to human health. Aflatoxin B1 is highly carcinogenic and classified as a Group 1 carcinogen by the World Health Organization (WHO) (IARC, 2012). Contamination mainly occurs during pre-harvest but can worsen during storage if optimal temperature and humidity conditions are not maintained.
2. *Aspergillus parasiticus*: Similar to *A. flavus*, *A. parasiticus* produces aflatoxins B1, B2, G1, and G2. This fungus prefers warm, humid environments and is commonly found in peanuts grown and stored under inadequate conditions. Aflatoxins G1 and G2 are also toxic and carcinogenic, contributing to the overall risk of contaminated products.
3. *Penicillium* spp.: Certain species of the genus *Penicillium*, such as *Penicillium citrinum*, can colonize peanuts, especially when stored in cool, humid environments. These fungi produce citrinin, a nephrotoxic mycotoxin, although they are less frequently associated with peanuts than *Aspergillus* species.
4. *Fusarium* spp.: Although less common on peanuts, some *Fusarium* species produce mycotoxins like fumonisins and zearalenone. Fumonisin is toxic and carcinogenic, while zearalenone acts as an endocrine disruptor. *Fusarium* contamination is more common in cereal crops but can also occur in peanuts under environmental stress.



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Factors Favoring Contamination

Peanut contamination by toxigenic fungi is influenced by environmental and management factors, including:

- **Warm and Humid Climates:** High temperatures and humidity favor fungal growth, particularly *Aspergillus* species. Peanuts grown in tropical and subtropical regions are more susceptible to contamination.
- **Inadequate Storage Conditions:** High humidity (>70%) and temperatures above 20°C during storage encourage fungal proliferation. Poor ventilation in storage facilities increases contamination risks.
- **Mechanical Damage to Pods:** Damage to pods or kernels can facilitate fungal entry and increase contamination risk during transport and handling.

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