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TOTAL AFLATOXIN CONTAMINATION IN COMMON WHEAT IN ROMANIA IN THE YEARS 2015 AND 2016 WITH EXTREME WEATHER EVENTS

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Abstract

Contamination of cereals with fungi *Aspergillus* spp. and mycotoxins aflatoxins causes losses in the agro-food chain and cancers in animals and humans. This article assesses the occurrence of total aflatoxin contamination in common wheat in Romania during the 2015 - 2016 period under the influence of environmental factors and extreme weather events.

Wheat samples (N = 272) taken from localities characterized by deoxynivalenol contamination in 2012 - 2014, were analyzed for aflatoxins using the enzyme-linked immunosorbent assay (ELISA) method and gained resuts were statistically evaluated by SPSS.

Total aflatoxin contamination in common wheat was very low (max. 1.10 µg/kg) in June - August of the 2015 extremely dry year, but high values were recorded in Covasna, Harghita, and Vâlcea counties (4.00 µg/kg; 5.42 µg/kg; 4.58 µg/kg; acidic soils) in May - June 2016, an extremely rainy year. Extremely hot and dry weather conditions in July - August 2015 reduced the effects of environmental factors to non-significant correlations with total aflatoxins. The effects of the extreme drought were also manifested in 2016, but the temperature and precipitation in July - August were significantly correlated with aflatoxin contamination. The results show the occurrence of total aflatoxin contamination in common wheat grown in regions characterized by *Fusarium* spp. and deoxynivalenol contamination in the year following a dry year.

The increased frequency and intensity of extreme weather events in the last two decades and the predicted climate changes require the analysis of aflatoxins in wheat and other cereals grown in agricultural regions with low aridity.

***Key words**: Common wheat, Aspergillus spp., Total aflatoxins, Extreme weather, Atmospheric blocking, Soil, Climate change.*