

OCCURRENCE OF *ALTERNARIA* TOXINS IN MAIZE HARVESTED IN SERBIA DURING 2012-2017

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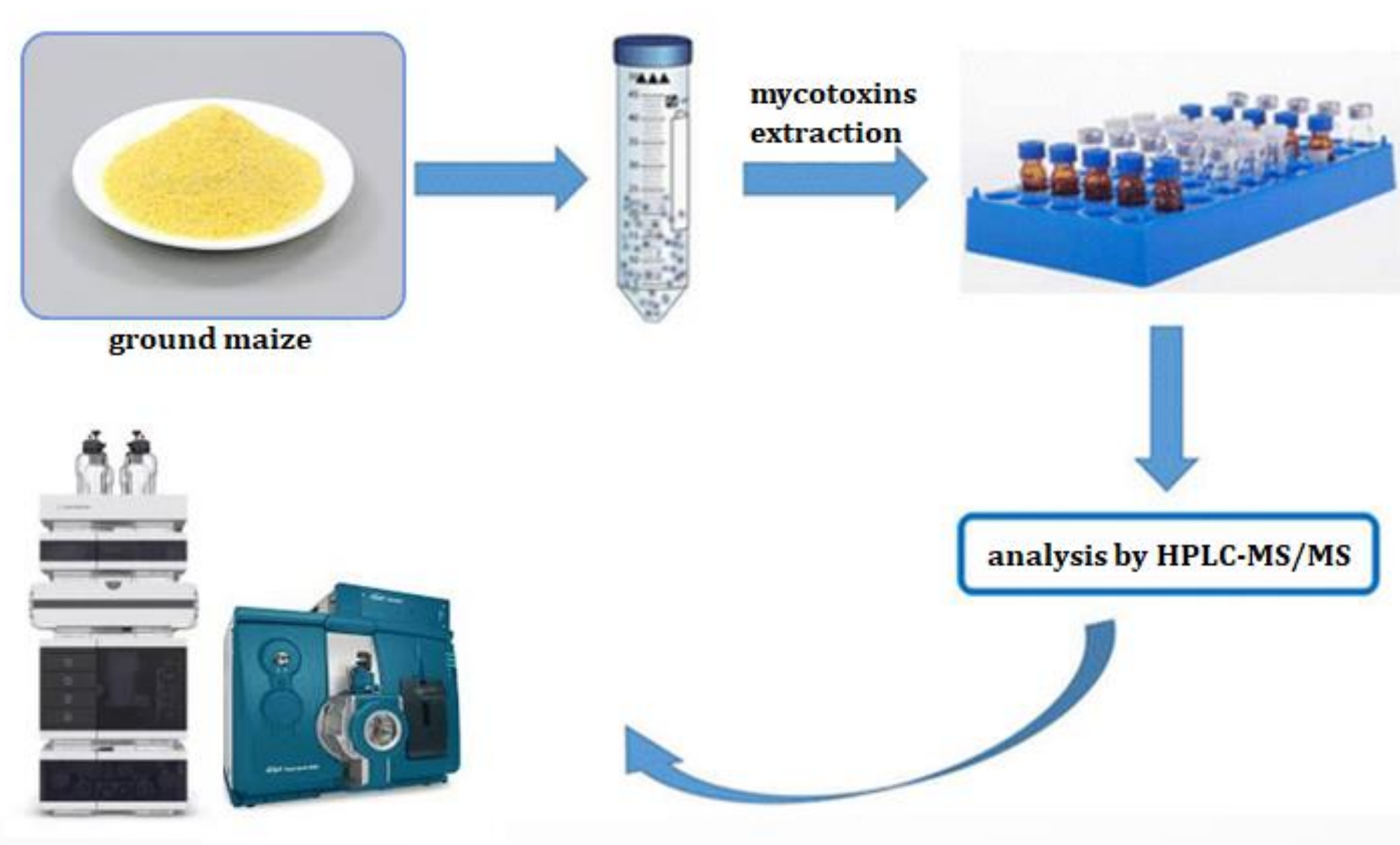
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INTRODUCTION

Due to significant amounts of nutrients, vitamins, and minerals, and several health benefits on human and animal organisms maize is one of the most widely used staple foods and animal feeds in the world. During cultivation, maize is exposed to numerous abiotic and biotic stress factors which can cause maize contamination with a large number of different fungal secondary metabolites. *Alternaria* presents one of the most common fungal genera with the ability to produce a wide spectrum of toxic secondary metabolites. Due to the frequent and high presence of *Alternaria* species and their toxins in food and feed, there is a need for their continuous monitoring, identification, and analysis.

AIMS, MATERIALS AND METHODS

The aim of the present study was to determine the presence of different *Alternaria* toxins in maize samples collected during six years (2012-2017) from the main maize-producing regions (Bačka, Banat, and Srem) in Northern Serbia. Maize samples were collected and managed according to standard agricultural procedures and good professional practice. Sample preparations, instrumental parameters, and LC-MS/MS analysis of maize samples were performed according to the method published by Sulyok et al. (2020) without any modifications, as well as with the same chemicals, reagents, and equipment.

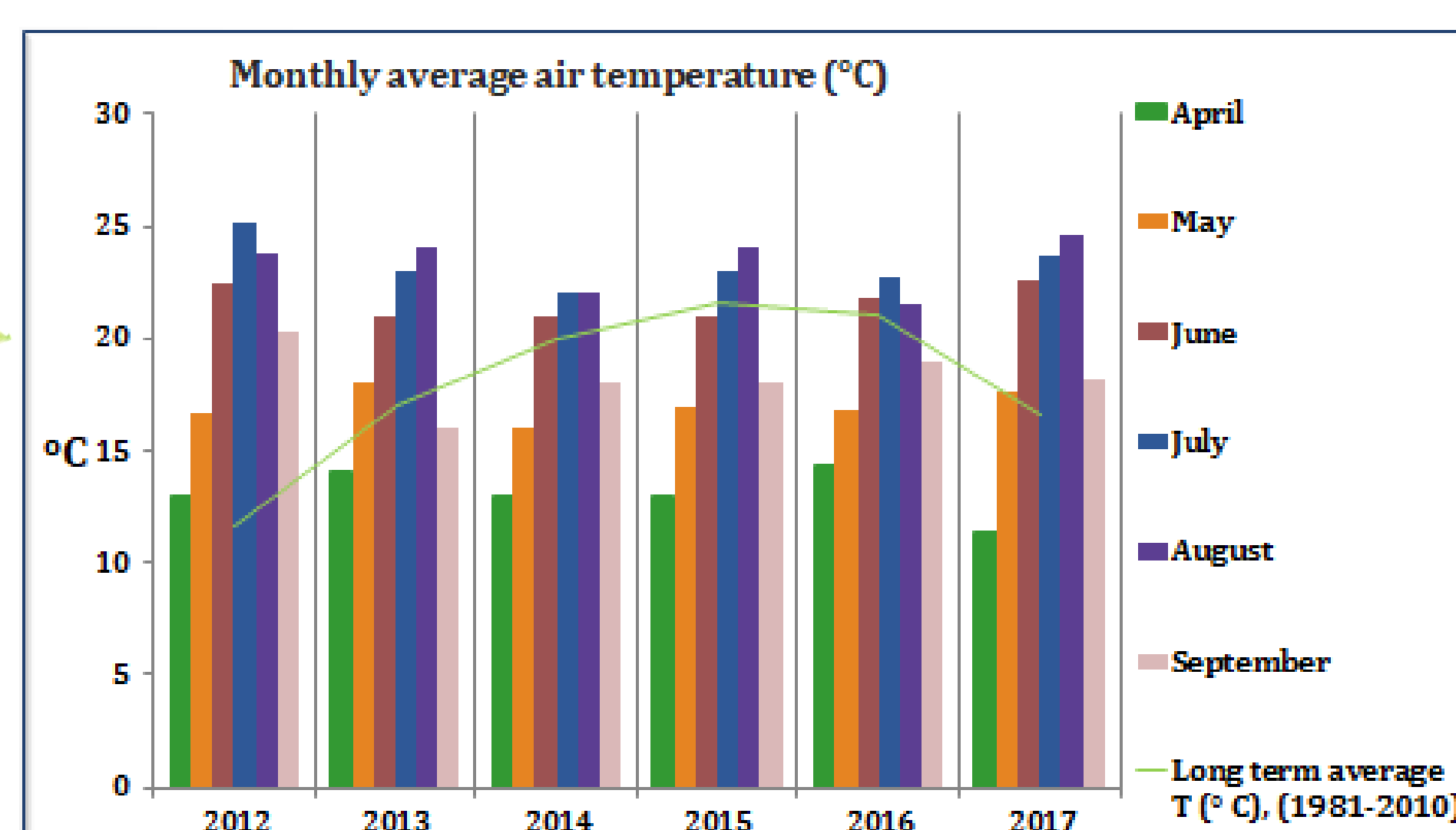
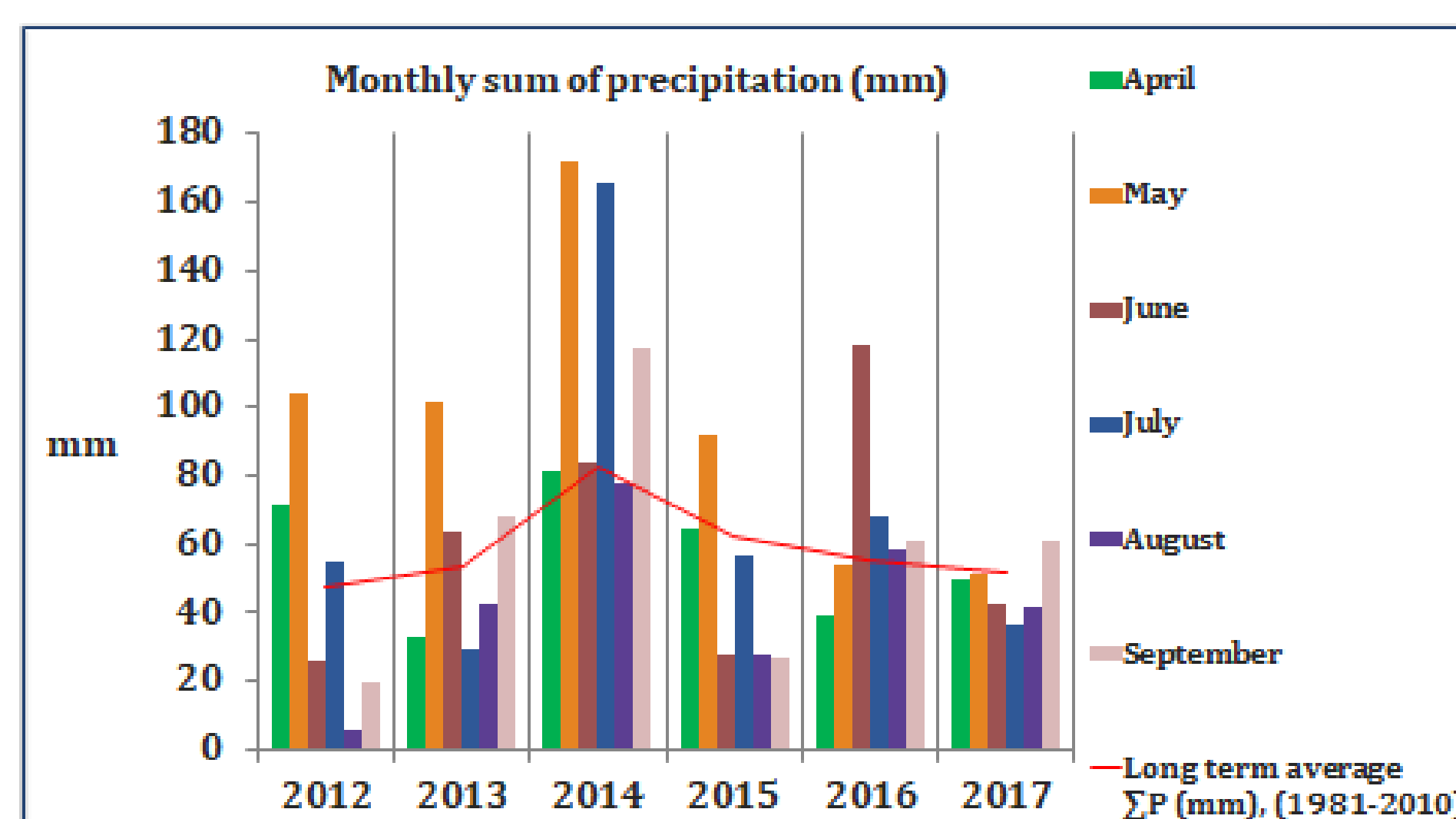
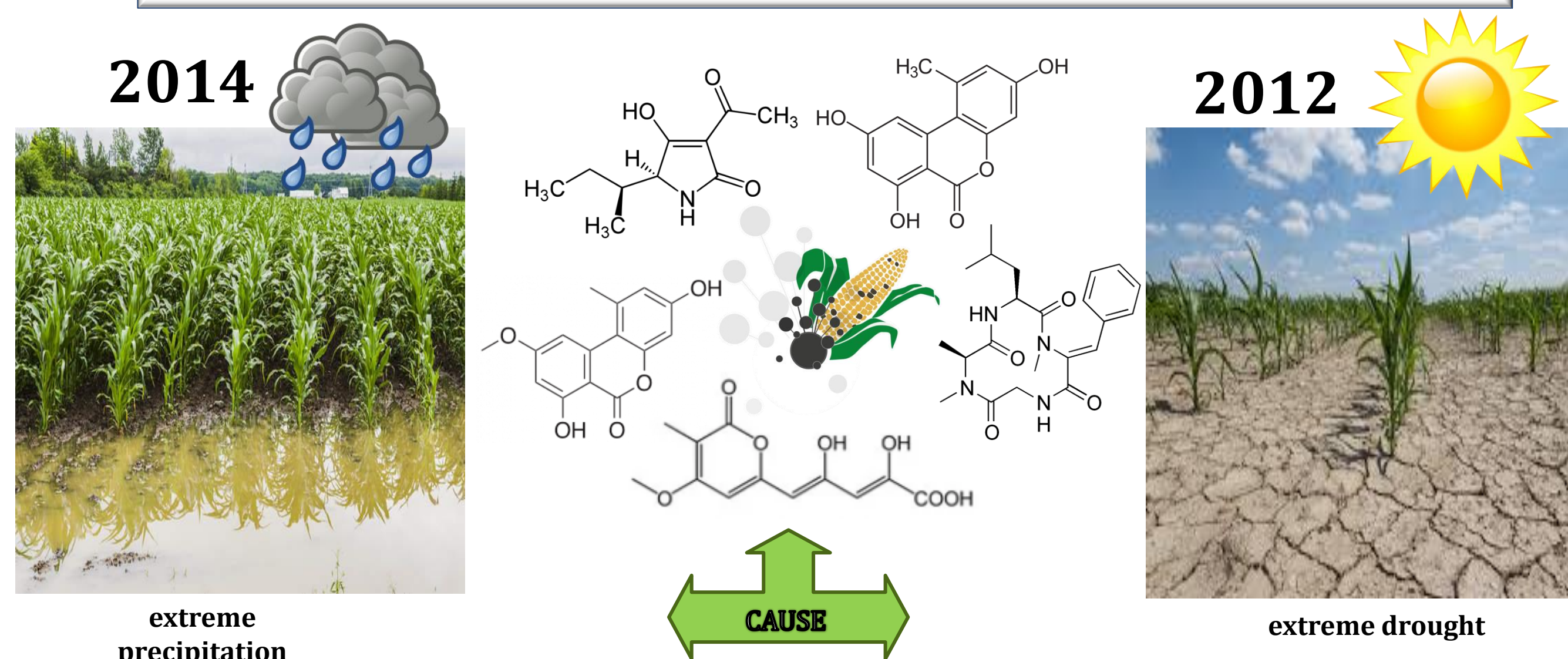
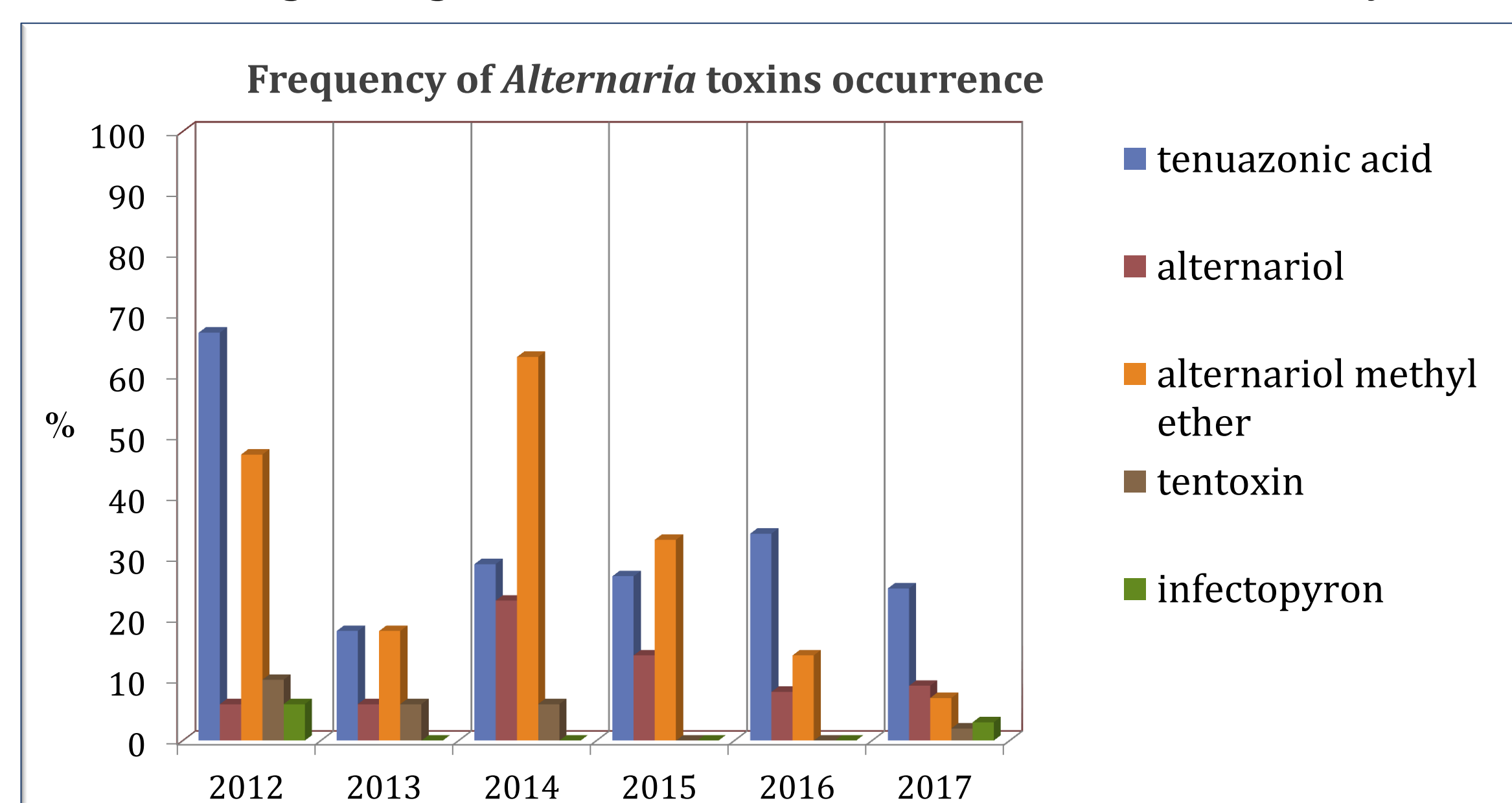


CONCLUSION

- Based on the findings obtained in this study, it could be concluded, that the weather conditions (especially air temperature and amount of precipitation) in the investigated maize growing seasons, had a huge influence on the contamination frequency and determined concentration of *Alternaria* toxins in maize.
- The contamination of maize samples with *Alternaria* toxins should be continuously monitored due to their frequent occurrence and potential negative effects on human and animal health.

RESULTS AND DISCUSSION

The most commonly detected *Alternaria* toxin in maize samples from all investigated years was tenuazonic acid with the highest frequency 67% in 2012 which was characterized as extreme drought. Likewise, the increased frequency of the alternariol monomethyl ether was recorded in samples from the 2014 maize growing season which was characterized as extremely wet.



REFERENCES:

Sulyok, M., Stadler, D., Steiner, D., Krška, R. (2020). Validation of an LC-MS/MS-based dilute-and-shoot approach for the quantification of > 500 mycotoxins and other secondary metabolites in food crops: challenges and solutions. *Analytical and Bioanalytical Chemistry*, 412(11), 2607-2620.

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