Determination of the fumonisins content in different small grains

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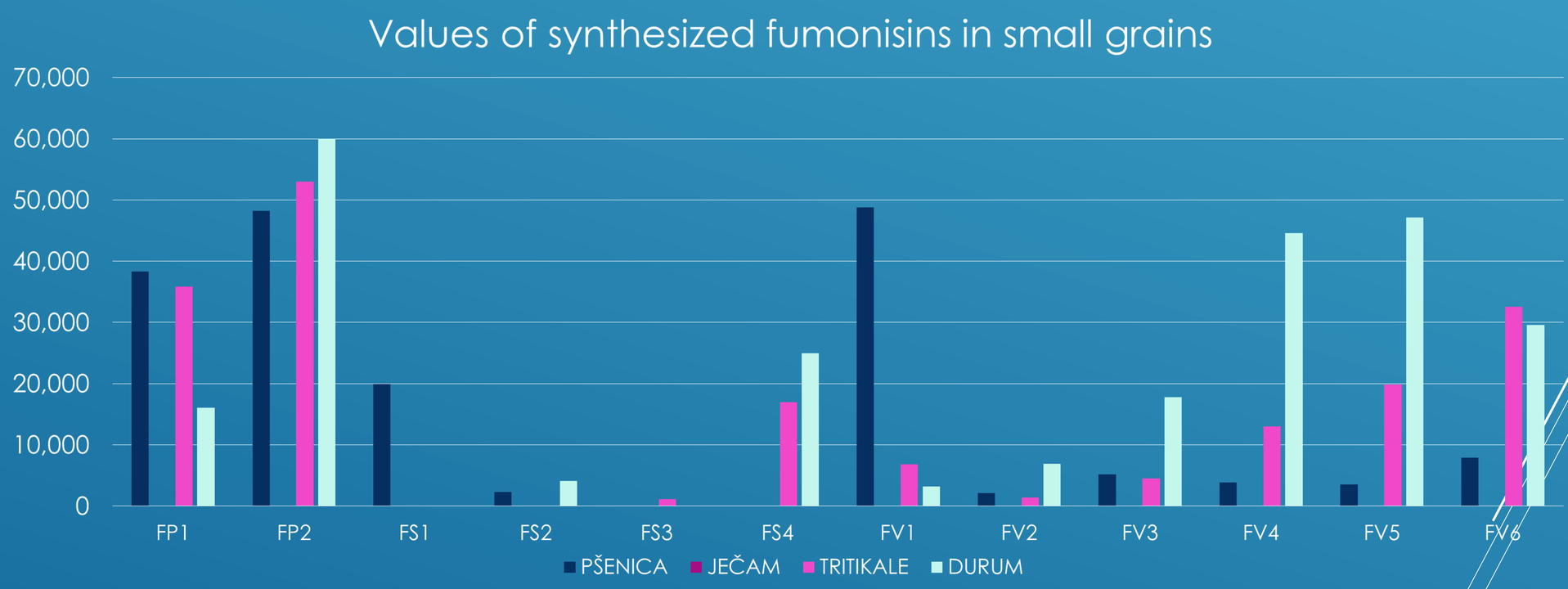
INTRODUCTION

Fungi of the *Fusarium* genus belonging to the Liseola section can synthesise fumonisins of greater or smaller concentrations. Maize is a primary host of these species. In recent years their presence has been also observed in small grains. The aim of this study was to observe the concentrations of fumonisins synthesised by small grains after artificial inoculation.

METHODOLOGY

Twelve isolates of the following species were selected from the collection of fungal cultures of the Maize Research Institute, Zemun Polje for artificial inoculation: *Fusarium verticillioides* (6), *Fusarium subglutinans* (3) and *Fusarium proliferatum* (3). The concentrations of synthesised fumonisins were analysed in four small grains: wheat (cultivar Aurelia), barely (cultivar Nektar), triticale (cultivar Zenit) and durum (cultivar Cosmostar).

The artificial inoculation was performed with the hand sprayer when more than a half of tested plants were in the full-blossom stage. Inoculation of plants was done in four replications. The amount of inoculum (spore concentration was $1x10^{-6}$ per 1 ml) was 20 ml per a group of 20 spikes. The isolate of *Fusarium graminearum* species was used for spike inoculation in the positive control, while sterile distilled water was used in the negative control. Inoculated spikes were covered with wet PVC bags that were removed after 48h. After harvest, fumonisins were analysed by the ELISA test using the kit Celer FUMO (Tecna, Italy).



RESULTS AND CONCLUSION

According to obtained results not a single isolate of the observed species synthesised fumonisins in the barley crop. In the remaining crops, isolates of *F. subglutinans* species synthesised fumonisins in low concentrations (0.793-24.949 ppm), while the corresponding values of isolates of *F. proliferatum* species were high and ranged from 35.886 to 60.000 ppm. Isolates of *F. verticillioides* species had low values in wheat (2.162-7.925 ppm), while these values in durum were high (29.610-47.174 ppm). The mean values of synthesised fumonisins in the triticale crop were low (1.357-32.587 ppm).