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Variability in accumulation of *Fusarium* mycotoxins in grain of winter wheat breeding lines artificially inoculated with *F.culmorum* in 2015

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Fusarium head blight (FHB) is a disease of grain caused by the complex of toxinogenic *Fusarium* fungi. The most important species are highly pathogenic: *F. graminearum* and *F. culmorum* producing deoxynivalenol and zearalenone, which can cause severe epidemics of FHB.

One of the most efficient ways leading to reduction of mycotoxin contamination of food products is breeding of cultivars with improved resistance to FHB. The aim of our study was to evaluate selected winter wheat breeding lines in terms of mycotoxin accumulation.

In the field experiments in two locations: Radzików (Central Poland) and Cerekwica (Western Poland) the heads of 70 winter-type wheat lines were artificially inoculated with *F.culmorum* at flowering stage. Grain of 35 genotypes with elevated resistance to FHB was analyzed for content of mycotoxins: deoxynivalenol (DON), zearalenone (ZEA) and ergosterol (ERG).

The mean content of ERG was relatively low (2.1 ppm), and was 4 fold higher in Western Poland (4.1 ppm) than in Central Poland (0.9 ppm).

The deoxynivalenol (DON) content in wheat grain varied from 480 to 38065 ppb (average 15621 ppb) the level of DON in Western Poland was 20 fold higher than in Central Poland (21114 ppb and 848 ppb respectively).

The content of ZEA was very low (43 ppb). The range of variation of 0 to 148 ppb. In Cerekwica, ZEA content was more than 10 times higher than in Radzików.

This year's conditions were unfavorable for the development of FHB, as indicated by the low value of analyzed compounds. Only the DON content was high in Western Poland, except that twice lower compared to 2014. Despite the unfavorable weather conditions, obtained results showed that in the winter wheat population coming from Polish breeding programs, there is variability in resistance to the accumulation of *Fusarium* mycotoxins in the grain. It has been that significant relationship between damage to the grains and the content of toxins were found. As a result, it seems possible to select resistant genotypes combining different types of resistance. Such genotypes are stable under various weather and exhibit good resistance not only to decreases in grain yield and contaminate the grain which by toxins caused by *Fusarium* blight.

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