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TOXIC EFFECTS OF THE FUNGICIDE TEBUCONAZOLE ON THE ROOT SYSTEM OF FUSARIUM-INFECTED WHEAT PLANTS

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Abstract

The study investigates toxic effects of the fungicide tebuconazole (TEB) on *Fusarium*-infected wheat (*Triticum aestivum*) plants based on the morphological characteristics of root apices and changes in the integrated parameters of redox homeostasis, including the contents of free proline and products of peroxidation of proteins (carbonylated proteins, CP) and lipids (malondialdehyde, MDA) in roots. In two-day-old wheat sprouts infected by *Fusarium graminearum*, the levels of proline, CP, and border cells of root apices are higher than in roots of uninfected sprouts by a factor of 1.4, 8.0, and 3, respectively. The triazole fungicide tebuconazole (TEB) at the concentrations of 0.01, 0.10, and 1.00 $\mu\text{g ml}^{-1}$ of medium causes a dose-dependent decrease in the number of border cells. The study of the effects of TEB and fusarium infection on wheat plants in a 30-day experiment shows that the effect of the fungicide TEB on redox homeostasis in wheat roots varies depending on the plant growth stage and is significantly different in ecosystems with soil and plants infected by *Fusarium* phytopathogens. The study of the morphology of root apices shows that the toxic effects of TEB and fusarium infection are manifested in the destructive changes in root apices and the degradation of the root tip mantle.

Key words: Fusarium, tebuconazole, free proline, carbonylated proteins, malondialdehyde, border cells

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