

SUMMARY

In recent years, there has been noted a decline in the population of honey bees (*Apis mellifera*, L.), that is a threat to the stability of the functioning of ecosystems, including global food production. At the same time, a growing interest in beekeeping is observed, especially in metropolises and cities, and urban beekeeping seems to be a hope for saving bees.

The location of apiaries in the urban environment raises concerns about the quality and safety of bee products. Much less attention is paid to the bees. So far, the affection of the stressors present in cities at the sub-lethal level on the physiology of these insects has not been verified. Therefore, the aim of the study was to compare the impact of the location of the apiary (urban or rural) on the Carniolan honey bee foragers (*Apis mellifera carnica*) environmental stress responses coming from paired sister colonies at the individual level and the entire bee colony.

It was shown statistically significant differences between paired colonies from the urban and rural apiary for most of the analyzed parameters of environmental stress and in individual months of the research season. The direction and degrees of the response to environmental stress found in *A. mellifera carnica* foragers are characteristic of the tissue/organ. Genetic relationships, environmental factors affecting bees in urban and rural apiaries, or their combination, can significantly differentiate the response to environmental stress. The dominance of one of these factors is characteristic of each parameter and tissue/organ.