



## International Conference

*Protection of soil functions – challenges for the future*

15<sup>th</sup>-18<sup>th</sup> October 2013

Puławy, Poland

**CONFERENCE MATERIALS**



**Institute of Soil Science and Plant Cultivation**  
Department of Soil Science, Erosion and Land Protection  
State Research Institute  
8 Czarzoryskich St., 24-100 Puławy  
[www.iung.pulawy.pl](http://www.iung.pulawy.pl)

## OCCURRENCE OF HEAT-RESISTANT FUNGI IN AGRICULTURAL SOILS UNDER STRAWBERRIES CULTIVATION

Nina Bilińska, Magdalena Frąc, Agata Gryta, Jacek Panek

*Instytut Agrofizyki Polskiej Akademii Nauk, ul. Doświadczalna 4, 20-290 Lublin 27, tel.: 81 744 50 61  
e-mail: [n.bilinska@ipan.lublin.pl](mailto:n.bilinska@ipan.lublin.pl), [m.frac@ipan.lublin.pl](mailto:m.frac@ipan.lublin.pl)*

Heat-resistant fungi are often factors causing spoilage of heat-processed products, especially fruit. Contamination of agricultural raw materials is often as a result of their contact with the soil. Materials contaminated by spores of heat-resistant fungi can be a risk to consumers' health by toxic metabolites (mycotoxins) produced by these microorganisms. Due to the resistance of the fungus to high temperatures they are able to survive the industry pasteurization process. A necessary condition for reducing the negative effects of this problem is to understand the occurrence of heat-resistant fungal forms in agricultural soils, especially under fruit cultivation.

The aim of the research was to evaluate the occurrence of heat-resistant fungi in soils from strawberries plantations.

For enumeration of heat-resistant fungi the samples of soils were submitted to heat shock for 5 minutes at 80°C. After the heat shock, the total number of heat-resistant fungi using microbiological plate method culture was evaluated. Cultures was carried out for 5 days at 30°C, on Potato Dextrose Agar (PDA) with antibiotics streptomycine and chlorotetracycline. For comparison the total number of fungi without heat shock was evaluated.

During the analyzes, it was found that after the heat shock the number of fungi was decreased to varying degrees. In most of the soil samples, despite the implementation of heat shock was observed the presence of filamentous fungi and yeast. The results indicated that in tested samples of soils the number of mold was higher than the number of yeast.

Studies have shown that the soil may be a factor causing contamination of agricultural raw materials by heat-resistant fungi and in consequently causing a threat to the health of consumers.

The project was financed by National Science Centre (Poland) awarded by decision number DEC-2012/07/D/NZ9/03357