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THE USE OF DIGITAL IMAGE ANALYSIS TO ESTIMATE THE PHENOLIC COMPOUNDS CONTENT IN COMMON WHEAT GRAINS

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Summary

Common wheat is the cereal grown and eaten worldwide in the largest amount. Considering it being a valuable source of many nutrients and its consumption volume, wheat is an important ingredient in the human diet. It is characterized by a significant content of bioactive compounds, including polyphenols, which have antioxidant properties. The content of phenolic compounds in plant raw materials is influenced by many factors, inter alia, the raw material variety. The determination of the content of phenolic compounds involves the use of time-consuming and expensive analytical methods. Taking into consideration the influence of polyphenols on the colour of raw plant materials, the aim of the work was to use the digital image analysis method (color measurement in the RGB and HSI model) to estimate the total content of phenolic compounds and the amount of selected phenolic acids in the grain of different common wheat varieties.

The material for testing was 10 varieties of common wheat (5 spring varieties and 5 winter ones) harvested between 2014 and 2015.

The conducted tests have confirmed that there are correlations between the colour and the phenolic content in the grain of the common wheat tested. The regression equation determined for the statistically significant dependence might be used to predict the total content of these compounds on the basis of the B component value in the RGB model and the S component in the HSI model. The relationship determined between the colour and the phenolic acid content is ambiguous. Therefore, it is necessary to carry out further research in this field.