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THE EFFECT OF CLIMATE CHANGE ON CEREAL GRAIN QUALITY

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invited lecture

One of the toughest tasks of the 21st century is to solve the difficulties caused by global climate change. Alternating dry and rainy years, long periods with extremely high temperatures, and increased mean temperatures worldwide have substantial negative effects on agricultural production. The most important cereal food in the world is cereal grain. The functional cereal grain quality defines their purpose in the food industry for particular end-use products. Aside from genetic heritage and post-harvest storing, cereal grain quality also depends on the environment conditions. Wheat, along with corn and rice, is the world's most widely used cereal. Therefore, this lecture presents research results from several different surveys about the influence of climatic changes on the wheat quality. The results showed that the season with the high average temperature could cause decreased protein content, wet gluten content, farinograph water absorption, Alveograph W, and bread volume, but an increase in amilograph peak viscosity, in the period from wheat anthesis to the full ripening grain. Also, a high temperature during June could cause the rheological properties of wheat cultivars with the HMW-GS composition 2*, 5 + 10, 7 + 9 to be at the similar level as those of cultivars with the HMW-GS composition -, 2 + 12, 7 + 9 produced in the season with lower temperature. It could be concluded that wheat quality in most surveys is mainly influenced by the production conditions.

Keywords: climate change, cereal, wheat, grain quality