

ISSN 1848-2554

10th INTERNATIONAL CONGRESS

FLOUR–BREAD '19

12th CROATIAN CONGRESS OF CEREAL TECHNOLOGISTS

BRAŠNO–KRUH '19.

OSIJEK, CROATIA

June 11-14, 2019

BOOK OF ABSTRACTS

ORGANISED BY

JOSIP JURAJ STROSSMAYER UNIVERSITY OF OSIJEK
FACULTY OF FOOD TECHNOLOGY OSIJEK - PTFOS

CROATIAN AGENCY FOR AGRICULTURE AND FOOD – HAPIH

INTERNATIONAL ASSOCIATION FOR CEREAL SCIENCE AND TECHNOLOGY - ICC

ISEKI-FOOD ASSOCIATION – IFA

GLOBAL HARMONIZATION INITIATIVE – GHI

Published by
JOSIP JURAJ STROSSMAYER UNIVERSITY OF OSIJEK
FACULTY OF FOOD TECHNOLOGY OSIJEK

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Lahorka Budić

Cover page
Grafika d.o.o., Osijek

Printed by
Grafika d.o.o., Osijek

Edition
200 copies

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**IMPACT OF HIGH TEMPERATURE ON THE ACCUMULATION OF PROLINE IN
GENETICALLY DIVERGENT CEREAL VARIETIES**

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poster presentation

Growth and development of cereals is affected by abiotic factors, particularly by high temperature. An important factor in plant adaptation to abiotic stress can be the proline accumulation. Proline is an amino acid involved in a series of metabolic processes and is important as a protein stabilizer, osmolite and antioxidant. Under normal physiological conditions, the proline makes up less than 5% of the free amino acids in the plant, while due to stress this amount can increase to over 80%. Field experiment was conducted with the aim to determine the effect of high temperature on the proline content in different cereal varieties during two vegetative seasons. For the investigation, plant material of 8 genetically divergent winter wheat varieties, 1 variety of triticale and 1 oat variety were used. Samples were collected in days with moderate midday air temperatures of 24-26 °C in the milk stage and after a few days in the same phenological stage, in conditions of high midday air temperatures of 34-36 °C.

The results from both seasons showed that under moderate air temperatures the mean proline content was 0.719 $\mu\text{mol g}^{-1}$ of fresh plant, while under heat stress conditions the mean proline content increased to 2.339 $\mu\text{mol g}^{-1}$ of fresh plant. Compared with other cereal varieties, wheat varieties Zvezdana, Pobeda, Simonida and Avenu were characterized by higher contents of proline in conditions of heat stress in both vegetative seasons. The obtained results showed that the content of proline in cereals can be thermally induced.

Keywords: proline, cereals, heat stress