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Evaluation of Grain Zinc and Iron Contents of Wheat Germplasm

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[Abstract]
Wheat is the staple food crop in the word, but wheat products have a low bioavailability of iron and zinc. So in the developing world, where wheat is a staple food, it suffers from micronutrients deficiency. This study was conducted to generate wheat varieties with enhanced grain Zn and Fe contents. Sixty wheat resource were cultivated over 2 years (2019-2021) in the field of NICS, Jeonju, Republic of Korea, to identify agronomic traits. Wheat grains were ground using grinder and analyzed whole wheat flour protein contents and Fe and Zn contents using ICP-OES. The average contents of Zn and Fe grain were 4.6 mg/100g (2.4~8.8 mg/100g) and 4.5 mg/100g (2.4~7.9 mg/100g), respectively. The contents of Fe and Zn in the wheat grain had a positive correlation with the protein content of whole wheat flour, but there was no correlation with heading date (4.22~5.27) and the thousand kernel weight (21.3~ 57.5 g). Although there was year variation, six resources with high contents of Fe (>5.2 mg/100 g) and Zn (>5.3 mg/100 g) grain in 2 years were selected. These results provide information for selecting breeding materials for biofortified wheat, and further studies on germplasms genetic variations and bioavailability are needed.

[Acknowledgement]
본 연구는 '통밀 기능성・영양성분 다량 함유 밀 육종소재 개발(과제번호:PJ0150272022)'의 지원에 의해 이루어진 결과로 이에 감사드립니다.

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