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The Relationship between Hardness and Vitreousity of Korean Wheat Cultivars

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[Abstract]

Milling is an important process that determines the quality of flour and is affected by milling machine type, scale, and tempering conditions. In addition, seed hardness is an important factor in determining the amount of tempering water and has been reported to affect flour yield and flour quality. There are reports that vitreousity is used as a measure to distinguish between soft and hard seeds, and the higher the vitreousity, the higher the protein contents. However, there is no established system for measuring vitreousity of seeds and studies on the vitreousity and quality characteristics of flour are insufficient. Therefore, in this study, vitreousity, hardness, and milling characteristics were evaluated for 46 major domestic varieties, and their relationship was confirmed. After cutting the seeds using a seed cutter, vitreousity was measured, and seed hardness and flour particle size was measured using SKCS and PSI, respectively. As for the seed hardness index, 'Joa' was the lowest with 11.6, 'Yeonbaek' was the highest with 78.7. As for the milling yield, 'Saeol' had the lowest at 58.1%, and 'Hojoong' had the highest at 88.6%. Seed hardness index and wheat flour production showed a high positive correlation, showing a similar to that of previous studies. Also, in flour particle size, 'Gobun' was the largest at 75.5 μm , and 'Joa' was the smallest at 43.1 μm . Flour yield and flour particle size showed a high positive correlation. As a result of vitreousity, 'Hwangeumal' (55.2%), 'Saekeumkang' (59.1%), 'Baekgang' (52.3%), 'Goso' (44.6%), and 'Joa' (19.2%) were shown. Seed hardness and vitreousity showed a high positive correlation. Also as the vitreousity increased, the flour yield also showed a tendency to increase. In addition, as the seed hardness increased, particle size of the flour yield also showed a tendency to increase. It is thought that this result can be used as a measure to determine the quality of flour with vitreousity. However, further analysis of wheat varieties and methods of analyzing vitreousity are needed.

[Acknowledgement]

본 연구는 농촌진흥청 사업 (과제번호: PJ016824012022)의 지원에 의해 이루어진 결과입니다.

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