

Marker-assisted selection of new barley genotypes accumulating anthocyanins in grain

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Marker-assisted selection (MAS) is becoming increasingly important in breeding and genetic studies. It allows selecting valuable genotypes from hybrid populations precisely. Here, barley lines based on cvs. Tanay, Aley, Vorsinsky2, Biom, Krasnoyarsky1 accumulating anthocyanins in grain were created by MAS. The Bowman near-isogenic lines (NILs) PLP (or P18) and BA carrying dominant alleles *Ant1/Ant2* (or *Ant2* only) and *HvMyc2* controlling purple pericarp and blue aleurone, respectively, were used as donors. The selection of homozygote purple- and blue-grained plants by primers specific to *Ant1/Ant2* or *HvMyc2* was conducted in the F₂ hybrid populations obtained by crossing the parental forms. The purple- and blue-grained F₁₁ lines and BC₆F₆NILs were obtained on Aley, Tanay, Vorsinsky2, while on Biom and Krasnoyarsky1 purple-grained BC₁F₄ lines were obtained. Black-grained lines homozygous for three genes *Ant1/Ant2*, *HvMyc2* were developed by crossing purple- and blue-grained NILs. The yield-related traits and content of anthocyanins and antioxidants in grain were evaluated in the lines developed. The study was supported by Kurchatov Genomic Center of ICG SB RAS (No. 075-15-2019-1662).

The main publications of authors on the subject of the abstract:

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Take-home message:

For the first time in Russia, a set of the lines, accumulating anthocyanins in pericarp, aleurone and in both these tissues were developed based on barley cultivars of Siberian breeding.