

Introgressions into 2A chromosome of bread wheat from relative species as a source of genetic diversity of protein and gluten content in grain

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The gene pool of wild relatives is a source of genes for improving grain quality. Fragments of 2A chromosome of the relative species *Triticum timopheevii* and *T. militinae* that carry a new genetic factor responsible for the protein content in the grain were transferred into the genome of Saratovskaya 29 (S29). The line S29 (821 2A) with introgression from *T. timopheevii* showed an increase in gluten content in the grain by 3-4% and in protein content by 1-2% when studied in different climatic zones (Shchukina et al. 2022). The yield of the line remained at the level of the parent variety S29. The line S29 (8/1 2A) with the introgression from *T. militinae* (Jakobson et al. 2006) showed an increase in protein by 5% and gluten content by 10% in the grain of different backcrosses grown in greenhouse conditions. Comparison of the introgression regions of the both lines was carried out using molecular markers. It is possible that the identified genetic factor in chromosome 2A belongs to the Gps-2 homoeoallelic series, which controls the high protein content in grain of wheat. Financial support: Russian Science Foundation (№ 23-26-10046) and Novosibirsk Region (№ p-59).

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

Shchukina L.V. et al. Increased grain protein and gluten contents of bread wheat caused by introgression of a *T. timopheevii* segment into chromosome 2A // *Euphytica* (2022) 218:170. doi: 10.1007/s10681-022-03121-w

Jakobson I. et al. Adult plant and seedling resistance to powdery mildew in a *Triticum aestivum* × *Triticum militinae* hybrid line // *Theor Appl Genet* (2006) 112:760–769. doi: 10.1007/s00122-005-0181-2

Take-home message:

Introgressions in 2A chromosome from *T. timopheevii* and *T. militinae* increase protein and gluten content in bread wheat grain.