

Effects of cytoplasm and chromosomes of wild barley *H. marinum* ssp. *gussoneanum* on characteristics of wheat-alien introgression lines

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H. marinum ssp. *gussoneanum* Hudson is a source of new genes for wheat. Euplasmic wheat-barley substitution lines 7H^m(7D), 4H (4B) and alloplasmic substitution lines 7H^m(7D), 7H^m(7B) with cytoplasm of wild barley, as well as reciprocal hybrids 7H (7B) × variety Omskaya 37 (with translocation 1RS.1BL) and their progenies were studied. A combination of genomic situ probing and marker genotyping have identified barley chromosomes in the genome of studied lines. It was found that the cytoplasm of *H. marinum* in the presence of chromosome 7H^m, regardless of the type of barley-wheat chromosome substitution, negatively affects the manifestation of morphobiological traits and yield. Among the progenies of hybrids 7H^m (7B) × Omskaya 37 alloplasmic lines carrying 1RS.1BL with heterosis for some traits were identified. These lines are used in crosses with promising wheat genotypes to create a new breeding material. The values of morphobiological traits and yield in wheat-barley lines 7H^m (7D) and 4H (4B) are either at the control level or exceed it.

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

Trubacheeva N.V., Badaeva E.D., Osadchaya T.S., Pershina L.A. Use of *H. vulgare* EST markers, GISH and C-banding to study bread wheat-*H. marinum* subsp. *gussoneanum* (2n=28) introgression lines. *Cereal Res Comm.* 2019. 47(4):593-603.

Trubacheeva N.V., Divashuk M.G., Chernook A.G., Belan I.A., Rosseeva L.P., Pershina L.A. The effect of chromosome arm 1BS on the fertility of alloplasmic recombinant lines in bread wheat with the *Hordeum vulgare* cytoplasm. *Plants (Basel)*. 2021; 10(6):1120

Take-home message:

H. marinum cytoplasm in the presence of chromosome 7H^m negatively affects the morphobiological traits and yield.

Alloplasmic lines with translocation 1RS.1BL are used in crosses with promising wheat genotypes to create new breeding material.