

Creation and characterization of the soft wheat line with centric translocation T2R.2D

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Alien chromatin introgression into the genome of common wheat *Triticum aestivum* L. is the most efficient way to enrich the gene pool of this crop. To enhance the breeding value of wheat, rye *Secale cereale* L. is used as a source of traits. Today, 1RS.1BL translocation is widely used throughout the world, transmitted to the genome of commercial wheat varieties. However, other chromosomes of the rye genome also carry valuable traits such as resistance to biotic and abiotic factors. This work is devoted to the creation and analysis of new forms of soft wheat with the rye chromosome 2R introgression. Backcrossing of the wheat-rye substituted line 2R(2D) with the varieties of soft wheat Saratovskaya 29 (S29) and Novosibirskaya 67 (N67) was carried out. The 2R(2D) line is characterized by high yield, as well as the quality of grain and bread. The plant karyotypes were analyzed with C-banding, GISH and FISH methods. Wheat-rye centric translocations of T2R.2D and 2R chromosomes with long arm terminal deletions were found in the progeny of backcrosses with N67 and S29 respectively. Changes in the chromosome structure influenced the morphological characteristics of plants. Plants with T2R.2D translocations were analyzed according to eight quantitative characteristics: plant height, spike length, number spikelets per spike, number grains per spike, number grains per plant, weight of grains per spike and plant, weight of 1000 grains. A positive effect on the decrease in height in plants with translocation T2R.2D was revealed. The lines with T2R.2D centric translocation were lower (from 83.32 ± 1.79 to 116.22 ± 4.71 cm) than the parental S29 (126.3 ± 2.33 cm) and N67 (121.37 ± 1.16 cm) varieties. Since the creation of varieties with a short stem is preferable in breeding for resistance to lodging, these lines may have practical value in breeding programs. Almost all lines with translocations were lower or corresponded to the level of varieties S29 and N67 for the rest of the indicators of yield structure.

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