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Contribution no. 23-035-B from the Kansas Agricultural Experiment Station,
Kansas State University, Manhattan.

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III. CONTRIBUTIONS**ITEMS FROM BRAZIL****BRAZILIAN AGRICULTURAL RESEARCH CORPORATION — EMBRAPA TRIGO
C.P. 3081, 99.050–970 Passo Fundo, Rio Grande do Sul, Brazil.*****Performance of wheat cultivars in Rio Grande do Sul state, Brazil, 2020.***

Ricardo Lima de Castro, Eduardo Caierão, João Leonardo Fernandes Pires, and Pedro Luiz Scheeren (Embrapa Trigo), and Marcelo de Carli Toigo and Rogério Ferreira Aires (DDPA/SEAPDR, C.P. 20, 95.200-970 Vacaria, Rio Grande do Sul, Brazil).

The Brazilian Commission of Wheat and Triticale Research (BCWTR) annually conducts the State Test of Wheat Cultivars in Rio Grande do Sul state (STWC-RS), with the aim of supporting the indications of cultivars. This work evaluates the wheat cultivar grain yield performance of the STWC-RS in 2020.

The yield grain performance of 30 wheat cultivars (BRS 327, BRS Belajoia, BRS Marcante, BRS Reponde, CD 1303, Celebra, Esporão, FPS Amplitude, FPS Certero, FPS Regente, Inova, LG Fortaleza, LG Oro, LG Supra, ORS 1401, ORS 1403, ORS Agile, ORS Citrino, ORS Madrepérola, ORS Vintecinco, TBIO Astro, TBIO Aton, TBIO Audaz, TBIO Duque, TBIO Ponteiro, TBIO Sinuelo, TBIO Sonic, TBIO Sossego, and TBIO Toruk) was studied in nine environments (Coxilha – season 1, Coxilha – season 2, Cruz Alta – season 1, Cruz Alta – season 2, Sertão, Vacaria – season 1, Vacaria – season 2, Vacaria – season 2 with no fungicide application on the aerial part of the plants, and São Borja), in the state of Rio Grande do Sul in 2020. The experiments were in a randomized block design with three or four repetitions. Each plot consisted of five 5-m rows with a 0.2 m spacing between rows. The plant density was about 330 plants/m². Grain yield data (kg/ha) were subjected to individual analysis of variance (for each environment) and to grouped analysis of variance (for all environments). The grouped analysis of variance was performed employing the mixed model (fixed cultivar effect and randomized environment effect). The grain yield performance of wheat cultivars was evaluated by analysis of adaptability and stability, employing the method of distance from the ideal cultivar, weighed by the coefficient of residual variation, proposed by Carneiro (1988).

In this analysis, the ideal cultivar was considered as the cultivar with high grain yield, high stability, low sensitivity to adverse conditions of unfavorable environments and the ability to respond positively to improvement of favorable environments. The general average of the STWC-RS in 2020 was 5,498 kg/ha. The experiment conducted in Vacaria – season 1 had the highest average wheat grain yield at 6,347 kg/ha. The maximum wheat grain yield was 7,440 kg/ha, in Vacaria – season 1 (cultivar CD 1303). Cultivars TBIO Aton, BRS Reponde, BRS Belajoia, CD1303, and TBIO Ponteiro had adaptability and stability in favorable environments (environments with average of wheat grain yield higher than the general average). BRS Reponde, LG Supra, CD 1303, TBIO Aton, and BRS Belajoia had adaptability and stability in unfavorable environments (environments with average of wheat grain yield lower than the general average). In general, the average of all environments, TBIO Aton (6,104 kg/ha), BRS Reponde (6,051 kg/ha), CD 1303 (5,899 kg/ha), BRS Belajoia (5,927 kg/ha), and TBIO Ponteiro (5,855 kg/ha) were the cultivars that came closest to the ideal cultivar.

Reference.

Carneiro PCS. 1998. New methodologies for analyzing the stability and adaptability of behavior. Thesis (Ph.D. in Genetics and Breeding), Post Graduate Program in Genetics and Breeding, Federal University of Viçosa, 1998. 168 p.