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Performance of wheat cultivars in the state of Rio Grande do Sul, Brazil, in 2015.

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The Brazilian Commission of Wheat and Triticale Research (BCWTR) annually conducts the State Test of Wheat Cultivars in the Rio Grande do Sul state (STWC-RS). This work evaluates wheat cultivar grain yield performance of the STWC-RS in 2015. The grain yield performance of 30 wheat cultivars (Ametista, BRS 327, BRS 331, BRS Marcante, BRS Parrudo, BRS Reponte, CD 1440, CD 1805, Celebra, Esporão, Estrela Atria, Jadeíte, LG Oro, LG Prisma, MarÀm, Mirante, ORS Vintecinco, Quartzo, TBIO Alvorada, TBIO Iguacu, TBIO Itaipu, TBIO Mestre, TBIO Pioneiro, TBIO Sintonia, TBIO Sinuelo, TBIO Tibagi, TBIO Toruk, TEC 10, TEC Frontale, and Topazio) was studied in 12 environments (Coxilha, Cruz Alta, Passo Fundo, Sertão, Vacaria, Augusto Pestana, Eldorado do Sul, Ijuí, Santo Augusto, São Borja, São Luiz Gonzaga, and Três de Maio), in the state of Rio Grande do Sul in 2015. The experiments were carried out in a randomized block design with three or four repetitions. Each plot consisted of 4 rows, 5-m long 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 grouped analysis of variance (for all environments). The grouped analysis of variance employed the mixed model (fixed cultivar effect and randomized environment effect). The grain yield performance of wheat cultivars was evaluated by analyzing adaptability and stability, employing the method of distance from the ideal cultivar, weighted 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 STWC-RS in 2015 was 3,428 kg/ha. The experiment conducted in Cruz Alta had the highest average grain yield; 4,582 kg/ha. The maximum grain yield was 5,566 kg/ha in Cruz Alta. a Celebra cultivar. Cultivars TBIO Mestre, Topazio, BRS Marcante, LG Prisma, and TBIO Sinuelo had adaptability and stability in favorable environments (environments with average grain yield higher than the general average). Cultivars ORS Vintecinco, LG Prisma, TBIO Mestre, Ametista and Estrela Atria had adaptability and stability in unfavorable environments (environments with average of wheat grain yield lower than the general average). In general, averaged over all environments, cultivars TBIO Mestre (3,801 kg/ha), LG Prisma (3,766 kg/ha), Topazio (3,709 kg/ha), ORS Vintecinco (3,701 kg/ha), and BRS Marcante (3,708 kg/ha) came closest to the ideal cultivar.

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Carneiro PCS. 1998. New methodologies for analyzing the stability and adaptability of behavior. Federal University of Viçosa, 1998, PhD thesis in Genetics and Breeding. 168 p.

Wheat crop in the state of Rio Grande do Sul, Brazil, in 2015.

Ricardo Lima de Castro, Eduardo Caierão, Aldemir Pasinato, Pedro Luiz Scheeren, and Márcio Só e Silva.

The state of Rio Grande do Sul is one of the main wheat-producing states in Brazil. This study analyzed the wheat crop in Rio Grande do Sul in 2015. In 2015, Rio Grande do Sul harvested 874,362 ha of wheat (35.4% of the total area harvested in Brazil), producing 1,391,829 tons of wheat (25.3% of the Brazilian production), with an average of grain yield of 1,592 kg/ha (636 kg/ha below the Brazilian average of 2,228 kg/ha).

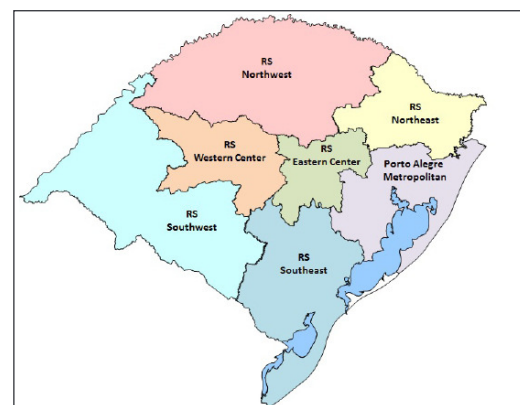


Fig. 1. Mesoregions in the state of Rio Grande do Sul, Brazil.

Among the geographical mesoregions of the Rio Grande do Sul state (Fig. 1, p. 6), the RS Northwest mesoregion harvested the largest wheat area, 691,613 ha (79.1% of the cropped area in the state), and had the largest production, 1,061,648 tons of grain (76.3% of state production) (Table 2). However, the average of grain yield obtained in this mesoregion was the third highest of the state; 1,535 kg/ha (57 kg/ha below the state average) (Table 2). The RS Northeast mesoregion harvested 41,651 ha of wheat (4.8 % of the cropped area in the state), produced 102,266 tons of wheat grain (7.3 % of state production), and had the highest average grain yield in the state; 2,455 kg/ha (863 kg/ha above the state average) (Table 2). The wheat crop in Rio Grande do Sul in 2015 had unfavorable weather conditions, with a late frost and an excess of rain in the spring. In Passo Fundo, in the RS Northwest mesoregion, for example, it rained a total of 673.1 mm in the months of September, October and November. Consequently, the average wheat grain yield in 2015 was very low in Rio Grande do Sul. Comparing the wheat crop data with the results of the STWC-RS in 2015, we observed an average grain yield of commercial crops 1,836 kg/ha, below the STWC-RS average of 3,428 kg/ha.

Table 2. Area harvested, production, and average of grain yield of wheat in each of the mesoregions (see Fig. 1) of the state of Rio Grande do Sul, Brazil, in 2015 (Source: IBGE. 2017).

Mesoregion	Area harvested		Production		Grain yield (kg/ha)
	ha	%	tons	%	
RS Northwest	691,613	79.1	1,061,648	76.3	1,535
RS Northeast	41,651	4.8	102,266	7.3	2,455
RS Western Center	60,586	6.9	83,600	6.0	1,380
RS Eastern Center	12,627	1.4	18,907	1.4	1,497
Porto Alegre Metropolitan	2,253	0.3	2,394	0.2	1,063
RS Southwest	54,312	6.2	108,808	7.8	2,003
RS Southeast	11,320	1.3	14,206	1.0	1,255
Rio Grande do Sul State	874,362	100.0	1,391,829	100.0	1,592

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IBGE. 2017. Sistema IBGE de Recuperação Automática - SIDRA. Available at <http://www2.sidra.ibge.gov.br/bda/tabela/listabl.asp?z=t&o=11&i=P&c=1612> and accessed on 25 March, 2017. Note: Aggregated database of studies and research conducted by IBGE.

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Genome-wide analysis of resistance to eyespot disease in European winter wheat.

Eyespot (also called Strawbreaker) is a common and serious fungal disease of winter wheat caused by the necrotrophic fungi *Oculimacula yallundae* and *O. acufomis* (former name *Pseudocercospora herpotrichoides*). A genome-wide association study for eyespot was performed with 732 microsatellite markers (SSR) and 7,761 mapped single-nucleotide