

II. CONTRIBUTIONS

ITEMS FROM BRAZIL

BRAZILIAN AGRICULTURAL RESEARCH CORPORATION — EMBRAPA
Rodovia BR 285, km 294, Caixa Postal 451, Passo Fundo, RS, Brazil.

Wheat in Brazil – 2015 crop year.

Eduardo Caierão, Ricardo Lima de Castro, Márcio Sôe Silva, and Pedro Luiz Scheeren.

In 2015, the Brazilian wheat production was a little higher than 5×10^6 tons (Conab 2016), which is enough to supply 50% of the domestic demand (Table 1). The southern region, comprised of the states of Rio Grande do Sul, Santa Catarina, and Paraná, account for 89.2% of the national production. Nonetheless, due to the characteristics of the cultivation system, average grain yield in this region is not the highest in the country.

Weather conditions in the south of Brazil were not favorable to wheat in 2015. High temperature associated to high humidity during grain filling increased the incidence of Fusarium head blight.

Table 1. Cultivated area, total production and grain yield of wheat in Brazil in 2015 (* estimated value in March, 2016. Source: CONAB. 2016. Companhia Nacional de Abastecimento. Central de Informações Agropecuárias/Grãos/Trigo. Available at: <http://www.conab.gov.br/conabweb/index.php?PAG=131>).

Region	Area (ha x 1,000)	Production (t x 1,000)*	Grain yield (kg/ha)*
North	—	—	—
Northeast	—	—	—
West-central	26.2	88.1	3,363.0
Southeast	156.4	507.8	3,247.0
South	2,266.2	4,939.0	2,179.0
Brazil [total]	2,488.8	5,534.9	2,260.0

Reference.

CONAB, 2016. Companhia Nacional de Abastecimento. Central de Informações Agropecuárias/Grãos/Trigo. Disponível em: <http://www.conab.gov.br/conabweb/index.php?PAG=131>

Performance of wheat cultivars in the state of Rio Grande do Sul, Brazil, in 2014.

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The Brazilian Commission of Wheat and Triticale Research annually conducts the State Test of Wheat Cultivars in the state of Rio Grande do Sul (STWC-RS) with the aim to support the indications of cultivars. This work has the objective of evaluating wheat cultivar grain yield performance of the STWC-RS in 2014. The yield grain performance of 33 wheat cultivars (Ametista, BRS 327, BRS 331, BRS Guamirim, BRS Marcante, BRS Parrudo, CD 1440, CD 1550, LG Oro, LG Prisma, Estrela Atria, FPS Nitron, Fundacep Bravo, Fundacep Horizonte, IAC 370 Armageddon, IAC 381 Kuara, IAC 385 Mojave, Jadeite 11, MarAm, Mirante, ORS Vintecino, Quartzo, TBIO Celebra, TBIO Iguaçu, TBIO Itaipu, TBIO Mestre, TBIO Pioneiro, TBIO Sintonia, TBIO Sinuelo, TEC 10, TEC Frontale, TEC Vigore, and Topazio) was studied in 19 environments (Casca, Caxias do Sul, Coxilha, Cruz Alta – season 1, Cruz Alta – season 2, Cruz Alta – season 3, Júlio de Castilhos, Não-Me-Toque, Passo Fundo – season 1, Passo Fundo – season 2, 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 2014. The experiments were in a randomized block design with three or four replications. Each plot consisted of Ave rows of 5 m in length with a 0.2 m spacing between rows and a plant density was ~ 330 plants/m². Grain yield data (kg/ha) were subjected to an individual analysis of variance (for each environment) and a grouped analysis of variance (for

all environments). The grouped analysis of variance employed the mixed model (a fixed cultivar effect and randomized environment effect). Grain yield performance of the wheat cultivars was evaluated by analysis of 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 2014 was 3,136 kg/ha. The experiment in São Borja had the highest average for wheat grain yield, 4,925 kg/ha. The maximum wheat grain yield was 5,780 kg/ha, in Coxilha (TBIO Sinuelo cultivar). The Ametista, TEC Vigore, LG Oro, TBIO Celebra, and Topazio cultivars had adaptability and stability in favorable environments (environments with average of wheat grain yield higher than the general average). The cultivars Ametista, Topazio, TBIO Sinuelo, LG Prisma, and LG Oro had adaptability and stability in unfavorable environments (environments with average of wheat grain yield lower than the general average). In general, averaged for all environments, cultivars Ametista (3,671 kg/ha), Topazio (3,522 kg/ha), TBIO Sinuelo (3,557 kg/ha), LG Oro (3,545 kg/ha), and LG Prisma (3,517 kg/ha) were the closest to the ideal cultivar.

Reference.

Carneiro PCS. 1998. New methodologies for analyzing the stability and adaptability of behavior. Ph.D. Thesis in Genetics and Breeding, Federal University of Viçosa. 168 pp.

Wheat crop in the state of Rio Grande do Sul, Brazil, in 2014.

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

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 2014. That year, Rio Grande do Sul harvested 1,180,817 ha of wheat (41.7% of the total area harvested in Brazil), producing 1,670,623 tons of wheat (26.7% of the Brazilian production), with an average of grain yield of 1,415 kg/ha (794 kg/ha above the Brazilian average of 2,209 kg/ha). Among the geographical mesoregions of Rio Grande do Sul (Fig. 1), the RS Northwest mesoregion harvested the largest wheat area, 937,231 ha (79.4% of the cropped area in the state) and had the largest production, 1,141,342 tons of grain (68.3% of state production) (Table 2). However, the average grain yield obtained in this mesoregion was the lowest of the state, 1,218 kg/ha (197 kg/ha below the state average) (Table 2). The RS Northeast mesoregion harvested 53,127 ha of wheat (4.5% of the cropped area in the state), produced 161,595 tons of wheat grain (9.7% of the state production), and had the highest grain yield average in the state, 3,042 kg/ha (1,627 kg/ha above the state average) (Table 2). The 2014 wheat crop in Rio Grande do Sul had unfavorable weather conditions, with average temperature above normal and an excess of rain in the spring. In Passo Fundo, in the Northwest mesoregion, for example, the total rainfall was 586.1 mm in the months of September, October and November. Consequently, the average wheat grain yield, in 2014, was very low in Rio Grande do Sul, especially in the Northwest mesoregion. Comparing the wheat crop data with the results



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

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 2014 (Source: IBGE. 2016).

Mesoregion	Area harvested		Production		Grain yield (kg/ha)
	ha	%	tons	%	
RS Northwest	937,231	79.4	1,141,342	68.3	1,218
RS Northeast	53,127	4.5	161,595	9.7	3,042
RS Western Center	97,782	8.3	160,689	9.6	1,643
RS Eastern Center	20,289	1.7	33,038	2.0	1,628
Porto Alegre Metropolitan	3,068	0.3	6,026	0.4	1,964
RS Southwest	55,050	4.6	136,990	8.2	2,488
RS Southeast	14,270	1.2	30,943	1.8	2,168
Rio Grande do Sul state	1,180,817	100.0	1,670,623	100.0	1,415