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The XXI International Grassland Congress / VIII International Rangeland Congress took place in Hohhot, China from June 29 through July 5, 2008.

Proceedings edited by Organizing Committee of 2008 IGC/IRC Conference

Published by Guangdong People's Publishing House

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Breeding for an alternative wheat ecoideotype to the southern brazilian region

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Key words : BRS Figueira, BRS Umbu, BRS Guatambu, BRS Tarumã

Introduction Alternatives to cropping during winter season are the main focus to improvement of conventional crop systems in South Brazilian Region including main crop areas of Rio Grande do Sul, Santa Catarina, and Paraná states. Although is known which realistic system to recover the primary physical, chemical and biological soil fertility on extensive crop areas such as south brazilian crop systems must be based on mixed system (crop-livestock systems) using perennial pastures as modern conception systems used on tropical brazilian regions including grass pasture compound by *Brachiaria* species. In the South Brazil agricultural system have a very well annual rainfall distribution with more than 1500 mm, allow two harvest/year, soybean /follow /corn /wheat is the main farming system. In Rio Grande do Sul state is growing soybean (3.5 millions ha), corn (1.4 million ha), rice (1.1 million ha), and wheat (0.8 million ha), barley (0.1 million ha), and oat (0.05 million ha). Thus researchers are looking specially new winter economic alternatives because at this moment only 20% of area used during summer season is cultivated with grain crops. On the other hand is observed an increase dairy and beef operations, specially on small holder farms (family agriculture farms) with no more than 20 ha, that is impossible to get enough revenue growing only grain crops. So year-round soil protection with permanent green or crop residues is desirable to no tillage system sustainability. Ancient results identified on region showed high yield potential in earlier seeding of small grain species, nevertheless the available cultivars have short cycle, resulting in increase frost risk at flowering.

Material and methods The selection of an alternative wheat ecoideotype for the mentioned region with long vegetative and short reproductive stages (late-early cycle) aims to protect the soil coverage longer than conventional cultivars (precocious). Crosses with traditional early spring with winter cultivars, late flowering or facultative wheat cultivars with photoperiod requirements, have been used to obtain desirable characteristics germplasm such as good agronomic type, resistance to diseases and industrial quality, adapted to early sowing under no-till system, selection activities were guided in hybrid populations and single plants or families.

Results As a result of this procedure, during 2002-2006 period, four wheat cultivars were released (BRS Figueira, BRS Umbu, BRS Guatambu, and BRS Tarumã) to be growed at Rio Grande do Sul, Santa Catarina, and southern-center Paraná states. These cultivars have yield over 2.0 t DM/ha, allowing an additional harvest of 1.5 to 4.5 t grain/ha. These cultivar cropped only for grain yielded over 6.0 t/ha reaching 8.0 t/ha with promising lines, in some years at the best environments.

Conclusions The released new ecoideotype wheat cultivars may plays an alternative for cycle, allowing seeding time diversification, higher grain yield potential and stability, increased soil coverage period to sustainability of no-tillage system. In addition, double purpose small grain species may increase biomass offer for dairy cows, steers and lambs during late fall and winter, when environment conditions result in lower growth rate, so high nutritive value of winter pasture result in better animal performance.