

THE COMMON BEAN (*Phaseolus vulgaris* L.) DEMONSTRATION UNITY SYSTEM - SUDF - APPLICABILITY POTENTIAL FOR FAMILY FARMING

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INTRODUCTION

Rio Grande do Sul (RS) State, in southern Brazil, is characterized by the important role that family farming occupy in agriculture, being directly responsible for about 70% of common bean production. In the early 90s, the Embrapa Temperate Climate found that many farmers were not taking advantage of the productive potential presented by the new released bean cultivars, about 40% higher in productivity to those under cropping and resistant to major diseases. From this recognition, the Embrapa Temperate Climate common bean breeding team, with the contribution of Emater / RS, the official extension institution, put in place the Common Bean Demonstration Units System - SUDF - having as assumptions, giving producers the knowledge on new cultivars released by research institutions, the possibility of comparison with farmer's cultivars, the possibility of selection of those best suited to farmer's environmental conditions and the subsequent use of their seeds. Simultaneously, the SUDF made possible to avoid the expression of genotype x environment interaction for the testing at farm's level. This paper describes the behavior of SUDF's common bean cultivars in Soledade region, one of the regions with the highest bean production in Rio Grande do Sul, compared to the cultivar used by farmers.

MATERIAL AND METHODS

Demonstration Unities (UD) were composed of seventeen cultivars already recommended by research Institutions located in southern Brazil, as well as by the cultivar in use by the farmer, as check. The plots consisted of four 4m rows, with 0.50m between rows, with a density of 12 seeds per meter. In the region of Soledade, headquarters of one of the twelve Emater / RS administrative regions, composed of 39 municipal offices, were installed 25 UD's in the period 1996/97 - 2014/15, being each UD considered as one block. UD's, for the most part, were installed in properties of farmers selected by Emater / RS employees. At harvest, the two central row plants were threshed, weigh and the seeds sent to Embrapa accompanied by the field notebook, specifying region and county, sowing date, farmer's name, Emater / RS technician's name, harvest date, maintenance and cover fertilization, lime soil improvement, phytosanitary treatment, cultivar's grain yield, assessment of the occurrence of diseases, general grade and Emater / RS and producer's individual technical assessment on the performance of each cultivar, and the diffusion of technology conducted through meeting, field day, visit, meet and / or tour. Statistical analysis involved the analysis of variance for the variable grain yield and the Dunnett's test mean comparison having the farmer's cultivar as term of comparison.

RESULTS AND DISCUSSION: As shown in Table 1 among the seventeen SUDF cultivars tested, only FT Nobre (with productivity 20.2% higher) and Iapar 31 (with productivity 19.8% higher) differ from the cultivar in use by the farmer. These data reveal a wide adaptation of these cultivars to the environments encountered in the target region, since they result from observation in many years,

at varying climatic conditions and farming management conditions conducted by the different farmers. These aspects do not guarantee that these cultivars are to be adopted by farmers because they take into account other aspects, such as cooking characteristics, regional preference for color, and relevant cultural aspects of each family. However, results achieved by Chollet (2005), reveal that 90% of the SUDF farmers have adopted at least one of SUDF cultivars, suggesting that both FT Nobre and Iapar 31 can be adopted by them. At the same time, characteristics other than productivity, presented by SUDF cultivars, such as seed coat color, can induce the farmer to adopt them. The results obtained suggest that SUDF constitutes an effective tool in disseminating knowledge about new bean cultivars, as well as source of information to the common bean breeder, and especially to the extension agent, on the adaptation of cultivars released from research.

Table 1. Mean yield (kg.ha⁻¹) of SUDF cultivars in comparison to farmer's cultivar. Soledade region, RS, Brazil.

Cultivar	Grain yield (kg.ha ⁻¹)
FT Nobre	2352,20*
Iapar 31	2345,01*
Macotaço	2258,21
Carioca	2250,22
Guapo Brillhante	2208,77
Minuano	2196,39
BRS Expedito	2152,42
Soberano	2134,65
Macanudo	2067,89
Guateian 6662	2044,67
Iapar 44	2005,91
Iraí	1992,82
Farmer's cultivar (check)	1957,43
FT 120	1900,90
Valente	1892,23
Pérola	1840,56
Rio Tibagi	1817,23
Diamante Negro	1790,20

*: Cultivar differs from the check by Dunnett's test at $\alpha = 0.10$ level

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