'OURO VERMELHO': NEW RED BEAN CULTIVAR FOR MINAS GERAIS, BRAZIL

José Eustáquio S. Carneiro[1], Lêlisângela Carvalho da Silva[2], Trazilbo José de Paula Júnior[3], Geraldo Antônio A. Araújo[4], Pedro Crescêncio S. Carneiro[5], Marcos Paiva Del Giúdice[6], José Ângelo N. Menezes Júnior[7], Magno Antonio Patto Ramalho[8], Maria José Del Peloso[9], Ângela de Fátima B. Abreu[10], Maurílio A. Moreira[11] and Everaldo G. de Barros[12]

[1, 2,4,6] Departamento de Fitotecnia, Universidade Federal de Viçosa (UFV), 36570-000, Viçosa, MG, Brasil; [3] Empresa de Pesquisa Agropecuária de Minas Gerais (EPAMIG), Vila Gianetti, 47 36570, Viçosa, MG, Brasil; [5] Departamento de Biologia Geral (UFV); [7,8] Departamento de Biologia, Universidade Federal de Lavras (UFLA), Lavras, MG, Brasil; [9,10] Embrapa Arroz e Feijão, Caixa Postal 179, 75375-000 Santo Antonio de Goiás, GO, Brasil; [11,12] Instituto de Biotecnologia Aplicada à Agropecuária (BIOAGRO), UFV

The common bean is cultivated throughout Brazil with the state of Minas Gerais ranking nationally as the second largest bean producer. The most important grains in the country belong to the Carioca and Black groups, which have been given special attention by bean breeding programs. However, there is a regional prevalence for particular common bean types, such as red bean, which is widely cultivated in the Zona da Mata of Minas Gerais state. This bean type occupies around 50% of the bean cultivated area in this region, and tends to expand to other regions in the state and even in the country (Soares et al., 2002). The cultivar Vermelhinho belongs to this class and is traditionally grown by small farmers. It is widely accepted, and for this reason its market price is higher than those obtained for other bean types. However, it is highly susceptible to the major bean pathogens. Thus, there is an enormous demand for improved red bean cultivars. Aiming to meet this demand, the bean breeding program of the Universidade Federal de Viçosa started to work with this type of bean, developing lines that can be potentially recommended. During 2002-2004, some of these lines participated in the national assays, and one of them, identified as line VR 6, was recommended under the name of Ouro Vermelho.

This cultivar is derived from the cross between AN9022180 and Vermelhinho with backcross for Vermelhinho. For conducting the population, the bulk method was used among families derived from F_3 plants, with generation advance being carried out until the $F_{3:7}$ generation and massal selection for the traits grain color and aspect. One of the families selected, identified in the national assays as line VR 6, gave origin to the cultivar Ouro Vermelho. From 2002 to 2004, the line VR 6 was jointly assessed with two checks (Vermelhinho and Vermelho 2157) and other 13 lines in 19 environments, comprising the municipalities of Viçosa, Coimbra, Ponte Nova, Leopoldina and Florestal, in the rain, dry and winter seasons. Considering the 19 environments assessed, the cultivar Ouro Vermelho showed an yield increase of 31% compared to the check Vermelhinho, whereas in the harvest evaluation, Ouro Vermelho out yielded the cultivar Vermelhinho by 106% in the rain season and by 18 and 35% in the dry and winter seasons, respectively (Table 1). The better performance of cultivar Ouro Vermelho in relation to cultivar Vermelhinho was much more expressive in the rain season, indicating that this cultivar, even under unfavorable conditions, showed higher production potential. As for grain quality (Table 2), Ouro Vermelho presents bright red grains and excellent cooking quality. Thus, the cultivar Ouro Vermelho is a new option for the bean producing areas in Minas Gerais state.

Indeterminate growth habit, type II plant, semi upright stand, and average flowering of 38 days and cycle (from emergence to harvest maturity) varying from 80 to 90 days, depending on the

planting season are traits presented by cultivar Ouro Vermelho, whose architecture is similar to that of Vermelhinho, but with smaller size and more upright stand. It also presents white-colored-flowers and red dish pink pods at physiological maturity and purplish-brown at harvest maturity, with elliptical and semi–full seeds.

Table 1 – Grain productivity averages (kg/ha) of red bean cultivars Vermelho 2157, Vermelhinho and Ouro Vermelho, evaluated in Minas Gerais, 2002-2004

Environments		Grain yield (kg/ha)			Relative production(%)[1]
Harvests	Number of assays	Vermelho 2157	Vermelhinho	Ouro Vermelho	
Rainy season (R)	4	1,590	817	1,687	106
Dry season (D)	10	2,157	2,190	2,581	18
Winter(W)	5	3,472	2,720	3,680	35
R + D+ W	19	2,383	2,040	2,682	31

[1] Grain yield increase percentage of cultivar Ouro Vermelho, compared to check Vermelhinho.

Table 2– Technological and nutritional quality of cultivar Ouro Vermelho grains, compared to cultivars Vermelho 2157 and Vermelhinho

Cultivar	Cooking time (min)	Soluble solids (%)	Whole grains (%)	Seed coats (%)	Protein (%)	100 Seed weight
Ouro Vermelho	30	12.6	98	9.6	25.7	27.6
Vermelho 2157	48	12.3	81	9.7	23.1	27.0
Vermelhinho	50	13.1	94	8.6	23.1	26.0

References:

SOARES, P. C.; CHAGAS, J. M.; SALGADO, L. T.; CARDOSO, A. A. **Efeito de quatro níveis de tecnologia sobre o rendimento e "stand" final em variedades de feijão melhorada (Ouro negro) e comum (Vermelhinho).** In: In: CONGRESSO NACIONAL DE PESQUISA DE FEIJÃO, 7, 2002. Viçosa. **Resumos...** Viçosa: UFV, p. 623-625, 2002.