FIELD PERFORMANCE OF COFFEE PROGENIES (*Coffea arabica* L.) IN VARGINHA, MINAS GERAIS STATE

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ABSTRACT: This work assessed the field performance of compact growth coffee progenies developed by the MAPA/Procafé Foundation breeding program. An experiment was set up at the Procafé Foundation's Experimental Station in Varginha, Minas Gerais state, using 20 progenies, 16 of which were resistant to leaf rust. The evaluations began two and a half years after planting in four repetitions, totalizing 80 plots, each one constituted by four coffee plants. The following characteristics were analyzed: the six first annual harvests (2002 to 2007), husk/bean ratio, cup quality and screen analysis. In the 2006/2007 annual harvest, crop yield and moca percentage were assessed and screen classification was done, while in the 2007/2008 harvest, sensorial classification was carried out. The Sabiá Tardio cv 398 presented the highest yield among all the progenies. The progenies of the Catucaí group (Catucaí Amarelo 24/137 (C.O), Catucaí Vermelho 24/137, Catucaí Vermelho 20/15 cv 476 and Catucaí Vermelho 19/18 cv 221), Sarchimor group (Obatã IAC-1669-20, Tupi IAC 4093, Arara F4), and IBC-Palma-1 (3-12), Saíra cv 362, Topázio MG 1189 and Catuaí Amarelo IAC 74 presented good field performance and are recommended for the Varginha region. These progenies were also considered a good source for genetic breeding programs. The bean size and cup quality of all the progenies were rated good.

Key-words: Coffee plant, genotypes, yield, bean type.

COMPORTAMENTO AGRONÔMICO DE PROGÊNIES DE CAFEEIRO (*Coffea arabica* L.) EM VARGINHA-MG

RESUMO: *Com o objetivo de verificar o comportamento de progênies de cafeeiro de porte baixo, foi instalado e conduzido um experimento na Fazenda Experimental do Mapa/Fundação Procafé, situada em Varginha/MG. O material utilizado no experimento compreendeu 20 progênies de porte baixo, sendo 16 com resistência à ferrugem, avaliadas pelo Programa de Melhoramento Genético do Cafeeiro coordenado pela Fundação Procafé. Foram utilizadas quatro repetições, totalizando 80 parcelas, sendo ada parcela constituída por quatro plantas. As avaliações foram iniciadas aos dois anos e meio após o plantio, compreendendo as seguintes características: produção de grãos, rendimento, bebida e classificação por peneira. Para a característica produção, foram analisadas seis colheitas, safras 2001/2002 a 2006/2007. O rendimento e porcentagem de grãos moca foram avaliados na safra 2006/2007, a classificação por peneira foi feita em 2006/2007 e 2007/2008 e a classificação sensorial em 2007/2008. Pelos resultados obtidos, permitem verificar que a progênie Sabiá Tardio cv 398 foi a mais produtiva do ensaio. Os materiais do grupo do Catucaí (Catucaí Amarelo 24/137 (C.O), Catucaí Vermelho 24/137 (C.O), Catucaí Vermelho 20/15 cv 476 e Catucaí Vermelho 19/18 cv 221), do grupo Sarchimor (Obatã IAC-1669-20, Tupi IAC 4093, Arara* F_4*), as progênies IBC-Palma-1 (3-12), Saíra cv 362, Topázio MG 1189 e a cultivar Catuaí Amarelo IAC 74 apresentaram bom comportamento no município de Varginha, sendo recomendadas para plantio na região e consideradas para os trabalhos de melhoramento genético do cafeeiro. Todos os materiais avaliados possuem boa qualidade de bebida e de grãos.*

Palavras-chave: Cafeeiro, genótipos, produtividade, tipo de grãos.

1 INTRODUCTION

Coffee production is a fundamental activity in the Brazilian agribusiness, and the country has been the product's biggest producer and exporter worldwide for the last 150 years. Apart from its economic importance, coffee production has also a social function, generating a great number of direct and

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indirect jobs and fixing a large part of the population in the rural areas.

According to Mapa/Procafé, successful production begins with the choice of the adequate coffee variety, which should present desirable traits such as good yield, vigor, preferably short height and quality fruit. Resistance to pests and disease is another advantage, as it reduces crop management costs.

New coffee cultivars are developed through genetic breeding. Initially, the main objective is to enhance production. Later, tolerance to environmental stress, extreme soil and climate conditions, pests and diseases (MEDINA FILHO & BORDIGNON, 2008), among others, are also emphasized.

Recently, many rust resistant *Coffea arabica* L. cultivars have been released for commercial production. However, there is still a lack of studies on their adaptability and behavior in different production regions.

This demonstrates the need for more genetic breeding studies focused especially on pest and disease resistance, environmental stress tolerance and enhancement of productivity, in order to achieve a higher final profitability.

2 MATERIAL AND METHODS

The experiment was set up in January 2000, at the Ministry of Agriculture, Livestock and Supply – Mapa/ Procafé Foundation's experimental farm, in the municipality of Varginha, south of Minas Gerais state. The area is located at 21° 34' latitude South, 45° 24' 22" longitude. The mean altitude in the area is 950 m. The climate, according to Koppen, is humid mesothermal with dry winters; the mean temperature during the coldest month is, approximately, 16,0ºC (July), while in the warmest month the mean temperature is around 23,1ºC (February).

In the experiment, 16 progenies and four short commercial cultivars were assessed (Table 1) in four replications, totalizing 80 plots with four plants each. An area of 1152 m^2 was planted in a 3,6 x 1,0 m spacing between rows and plants.

Implantation and management were done according to coffee production technical reccommendations, while fertilization was done in compliance with the 5ª Aproximação da Comissão de Fertilidade do Solo do Estado de Minas Gerais (CFSEMG, 1999). Phytosanitary and nutritional management was applied through the leaves, preventively, in three annual applications of 3,0 kg/ha of copper oxichloride, and 0,5% boric acid, zinc sulfate and potassium chloride.

Picking was done each year between May and July and bean production was assessed annually, in kilos of freshly picked fruits per plant, in six harvest years, 2001/2002 to 2006/2007. Production was assessed by weighing the beans immediately after harvesting, after which a 2 liter sample from each plot was sun dried.

After drying, the fruits were weighed, processed and weighed again to estimate yield in processed sacks per hectare (sacks benef. ha^{-1}). Commercial coffee bean yield was estimated dividing the weight of the processed sample by the weight of the dry fruits. 200g of processed coffee from each treatment were used in the screen classification. The product was classified according to bean shape and granulometry, in other words big flat grains, retained in the 19/18 and 17 screens (BRASIL, 2003) and moca in the 13/12, 11 and 10 screens. This data was expressed in percentage.

Screen classification was done on the 2006/2007 and 2007/2008 production. In the former, commercial coffee bean yield and percentage of moca beans were estimated, while in the latter, sensorial classification of the beverage was done. To prepare the infusion, 50 g of powder were added to 500 mL of water at ± 80°C. Sensorial analysis was done five times in each replication by three tasters from the Cooperativa dos Cafeicultores de Varginha (Minasul), who elaborated only one response per replication.

To assess yield, a random block experimental design (DBC) with plots subdivided in time (STEEL & TORRIE, 1980) was used. The plots were represented by the treatments and the subplots by the groupings of two harvests (biennium), assessed together. Analysis was carried out after application of the Harttley test to confirm variation homogeneity, as reccommended by Ramalho et al. (2000).

To assess data variation, the t test at 5% significance was applied by the Sisvar program, developed by Ferreira (2000). When significant differences were found, the means were grouped by the Scott-Knott test (production and screen traits) and by the Tukey test (commercial coffee bean yield trait), at 5% probability.

3 RESULTS AND DISCUSSION

3.1 Rust incidence

The progênies IBC-Palma – 1 (3-12), IBC-Palma – 2 cv 520, Arara F_4, Acauã 1365 and Tupi IAC 4093 and the cultivars Obatã IAC 1669-20 and Iapar 59 were classified as highly resistant to rust. It is likely that the low rust incidence (%) observed in the Tupi IAC 4093 and Acauã 1365 progenies is due to the segragation of this trait, as a break in resistance has not been registered for the Sarchimor cultivars.

An intermediate group, with infection levels between 3,7% and 29,5%, was formed by the Sabiá Tardio cv 398, Catucaí Vermelho 19/8, Saíra, Catucaí 785-15, Catucaí Amarelo 20/15, Catucaí Amarelo 24/137 and Catucaí Vermelho 20/15 progenies.

The group with the highest index of infected leaves was constituted by the progenies Rubi MG 1192, ES 58, Catucaí Vermelho 24/137, Topázio MG 1189 and Catucaí Amarelo 3SM and by the cultivar Catuaí Amarelo IAC 74, all considered susceptible to rust.

2 Mean yield

Table 3 shows production results per biennium and the mean production of the three bienniums.

Although the F test was significant for the progênies in the bienniums, this difference was not detected by the mean comparison test. Assessment of the three biennium means revealed a difference between the progenies and led to the formation of three groups. The best yield (mean of 40,89 sacks benef. ha^{-1}) was obtained for Sabiá Tardio cv 398, considered high for the free growth and rainfed system. This cultivar is characterized by very high yield, especially in the first three harvests (CARVALHO et al., 2008), a potential confirmed by various studies. Matiello et al. (2007), studying rust resistant progenies in the south of Minas Gerais state, found that, after four harvests, Sabiá Tardio was among the most productive (49,9 sacks benef.ha^{-1}). The cultivar presented the same behavior in the Zona da Mata region of Minas Gerais state, with a mean yield in five harvests equal or higher than Catuaí Amarelo IAC 86 and Catuaí Vermelho IAC 15, (MATIELLO & ALMEIDA, 2001).

The intermediate group, constituted by 11 materials, presented mean yields between 31,87 and 36,72 sacks benef.ha^{-1}, which left the third group, consituted by the remaining 8 materials, with the lowest yield, 25,82 to 30,67 sacks.ha^{-1}.

The Catucaí group (Catucaí Amarelo 24/137 C.O., Catucaí Vermelho 24/137 C.O., Catucaí Vermelho 20/15 cv 476 and Catucaí Vermelho 19/8 cv 221) is among these intermediate progenies. In general, Catucaí progenies used in commercial crops present high yield (CARVALHO et al., 2008).

Dias et al. (2005), studying competing rust resistant cultivars in the municipality of Lavras, south of Minas Gerais state, found a higher production in the cultivars Catucaí Amarelo 2SL and Catucaí Vermelho in the first two harvests. The authors highlight the yield of Catucaí Amarelo 2SL, 69,9 sacs benef.ha-1, in the second harvest. Similar results were found by Pereira et al. (2006) in a similar experiment in the Alto Paranaíba region, Minas Gerais state. After three harvests the authors found that, in the high yield group, three cultivars belonged to the Catucaí group, among which Catucaí Amarelo 2SL was the most productive.

The progenies IBC-Palma-1 (3-12), Tupi IAC 4093, Arara F_4, Saíra cv 362, Topázio MG 1189 and the cultivars Obatã IAC-1669-20 and Catuaí Amarelo IAC 74 also presented intermediate yield.

Almeida et al. (2006) have verified the production potential of IBC-Palma-1, obtaining in their work a mean yield of 50,6 sacks.ha^{-1} in two harvests. IBC-Palma-1is a cross between Catuaí Vermelho IAC 81 and Catimor UFV 353, both of which origiated from crossing with the Caturra genotype, which explains this cultivar's high production potential (FAZUOLLI et al., 2002).

The cultivar Obatã IAC 1669-20 and the progenies Tupi IAC 4093 and Arara F_4 belong to the Sarchimor group, a germoplasm descending from the hybrid CIFC H 361/4 resulting from the cross between Villa Sarchi and Híbrido de Timor (CIFC 832/2).

Obatã IAC 1669-20 frequently has similar or even higher yields than the Catuaí group, especially in the first harvests (FAZUOLI et al., 2002). Giomo el al. (2007), studying the productive potential of arabica coffee cultivars in different spacings in the Mogiana region of São Paulo state, found that Obatã IAC 1669-20 was more productive in the first harvest than Catuaí Vermelho IAC 144. On the other hand, Paulo et al. (2005), comparing Obatã IAC 1669-20

and Catuaí Amarelo IAC 47 means in four harvests, concluded that their yields were not significantly different.

Preliminary assessments of the progenies that generated the Topázio cultivar showed the material's productive potential. Production levels up to 58% higher than that of some Catuaí cultivars has been found (MENDES et al., 2002), a result corroborated by Carvalho et al. (2006a, 2006b). Assessing progenies resulting from this crossing, the authors found that most of them were more productive than the cultivars Catuaí Vermelho IAC 99 and Catuaí Amarelo IAC 17. It is important to highlight that, in the experiment conducted by Carvalho et al. (2006a), Topázio MG 1189 was more productive than the cultivars Catuaí Vermelho IAC 99 and Catuai Amarelo IAC 17, presenting productivity levels closer to the cultivars Catuaí Vermelho IAC 15 and Catuai Vermelho IAC 144. Topázio MG 1190 was also one of the most productive cultivars in the municipality of Lavras, Minas Gerais state, in studies comparing the mean yield, in five harvests, of 42 materials, among them 15 of the Mundo Novo group and 14 of the Catuaí (SANDY et al., 2004).

In each genotype, in the bienniums assessed (Table 3), most of the cultivars presented superior results in the second biennium, indicating that the best genotypes could have been identified based on the results of the first four harvests, or two bienniums. This is corroborated by Carvalho (1989), who found a good correlation between the first four harvest means with yield after 10 harvests, concluding that four harvests are sufficient for determining the best progenies.

3.3 Mean commercial coffee bean yield and screen classification

In Table 4, IBC-Palma – 2 cv 520 presented a higher mean commercial coffee bean yield percentage, in relation to Tupi IAC 4093, while the others remained in an intermediate position.

It is common to adopt the performance of dry fruits for processed coffee in a 2:1 ratio; that is, 2 kg of dry fruits, after shelling, result in 1 kg of processed coffee.

Table 1 – Progenies and cultivars assessed in the experiment set up at the Mapa/Procafé Foundation's experimental farm (Varginha, Minas Gerais state, 2009).

Order	Progenies and Cultivars
01	IBC-Palma – 1 (3-12)
02	IBC-Palma – 2 cv 520
03	Catucaí Amarelo 24/137 (C.O.)
04	Catucaí Amarelo 3SM (3-18)
05	Catucaí Vermelho 24/137 (C.O.)
06	Catucaí Amarelo 20/15 cv 479
07	Catucaí Vermelho 20/15 cv 476
08	Catucaí Vermelho 19/8 cv 221
09	Sabiá Tardio cv 398
10	Acauã 1365
11	Tupi IAC 4093
12	Obatã IAC 1669-20
13	Rubi MG 1192
14	Topázio MG 1189
15	Catucaí 785-15 (Manhuaçu)
16	Saíra cv 362
17	ES 58 cv 274 - (MN. SH_2 x C.Verm. IAC 81)
18	Iapar 59
19	Catuaí Amarelo IAC 74
20	Arara (F_4)

Table 2 – Rust incidence, in February 2009, on the progenies and cultivars assessed in the experiment set up at the Mapa/ Procafé Foundation's experimental farm (Varginha, Minas Gerais state, 2009).

Progenie	Rust Incidence (%)
IBC-Palma – 1	0,0
IBC-Palma – 2	0,0
Obatã IAC 1669-20	0,0
Iapar 59	0,0
Arara	0,0
Acauã 1365	0,4
Tupi IAC 4093	0,4
Sabiá Tardio	3,7
Catucaí Vermelho 19/8	12,5
Saíra	14,9
Catucaí 785-15	22,0
Catucaí Amarelo 20/15	22,4
Catucaí Amarelo 24/137	24,7
Catucaí Vermelho 20/15	29,5
Rubi MG 1192	38,7
ES 58	41,7
Catuaí Amarelo IAC 74	42,5
Catucaí Vermelho 24/137	42,8
Topázio MG 1189	44,3
Catucaí Amarelo 3SM	55,9

This performance varies, usually, from 45 to 55% and may reach extremes of 40 and 60%, according to climate and cultivation conditions (MEDINA FILHO, 2003). In this work, all the materials, except the progenies Acauã 1365, Catucaí 785-15 (Manhuaçu), Saíra cv 362, Tupi IAC 4093 and the cultivar Obatã IAC 1669-20 had a mean commercial bean yield above 50%.

Likewise, Dias et al. (2005), studying different coffee progenies selected in Minas Gerais state, observed a superior performance of the cultivars Sarchimor IAC-4361, Catuaí Amarelo IAC-4394, Obatã IAC 1669-20, Catuaí Vermelho IAC 99, Rubi MG 1192 and Topázio MG 1189.

Carvalho et al. (2008), however, affirm that the cultivar Obatã has a crop yield above 50%. The crop yield of processed beans obtained from a certain volume of cherry coffee is influenced, among others, by factors such as without seed fruits, moca or malformed beans (CARVALHO & ANTUNES FILHO, 1955; GASPARI-PEZZOPANE; 2004; MENDES, 1942; MÔNACO, 1960). These traits are influenced by climate and genetic factors, which are the targets of coffee breeding programs.

Regarding the percentage of moca beans, that is oval shaped beans with a longitudinal slot, two groups were formed. In the higher percentage group (variation between 18,75% and 22%) were the progenies IBC-Palma – 1 (3-12), Acauã 1365, Catucaí Vermelho 19/8 cv 221 and the cultivar Catuai Amarelo IAC 74. The other group was formed by the remaining progenies and the percentage of moca beans varied from 10% to 15%.

A maximum percentage of moca beans is not a criteria for assessing quality. Guimarães et al. (2002) cite that, in seeds, standardization criteria stipulate a maximum tolerance of 12% of moca seeds. Therefore, the results found in this work indicate losses in most of

the materials studied, except for the Catucaí progenies: Catucaí Amarelo 24/137 (C.O), Catucaí Amarelo 3SM (3-18) and Catucaí Vermelho 20/15 cv 476. This could be caused by the water deficit in Varginha between June and November 2006 and April and December 2007, which may have compromised fruit filling.

Regarding the percentage of big flat beans, two groups were formed by application of the Scott-Knott test. The progenies IBC-Palma-1 (3-12), IBC-Palma-2 cv 520, Catucaí Amarelo 24/137 (C.O) and 3SM (3-18), Catucaí Vermelho 785-15 (Manhuaçu), Saíra cv 362, Arara F_4, Tupi IAC 4093 and the cultivar Obatã IAC 1669-20 presented the highest bean retention percentage in a 17 screen (between 32,00 and 40,25 %).

Carvalho et al. (2008) and Maluf et al. (2000) found similar results, emphasizing the production of high screen beans by the Tupi and Obatã cultivars, while Dias et al. (2005) highlighted the same behavior in the Sarchimor IAC-4361, Obatã IAC 1669-20 and Tupi IAC 1669-33 cultivars. Mendonça (2004) also did screen classification of many of the cultivars assessed in this work; in 2002, the author observed that Catucaí Vermelho was among the cultivars with the highest bean retention percentages in a 17 screen (27,86%).

The author also found, on the other hand, very different bean retention percentages in a 17 screen in relation to this work, between 17 and 40% for IBC-Palma-1, Catucaí Amarelo, Catuaí Amarelo, Acauã, Rubi MG 1192, Sabiá Tardio and Topázio. This difference may be attributed to the year the fruits were picked.

Table 3 – Mean yield of processed coffee progenies (sacks benef. ha^{-1}) per biennium at the Mapa/ Procafé Foundation's experimental farm (Varginha, Minas Gerais state, 2009).

Progenie				Mean	
	Biennium 1	Biennium 2	Biennium 3		
Sabiá Tardio cv 398	40,7 aA	45,4 aA	36,3 aA	40,8	a
Tupi IAC 4093	26,4 aB	41,3 aA	42,2 aA	36,7	b
Arara F_4	28,2 aB	47,7 aA	30,6 aB	35,5	b
Topázio MG 1189	28,1 aB	41,9 aA	35,9 aA	35,3	b
Catucaí Vermelho 20/15 cv 476	24,0 aB	40,5 aA	40,3 aA	34,9	b
Obatã IAC 1669-20	27,3 aB	51,9 aA	23,4 aA	34,2	b
Catucaí Vermelho 24/137 (CO)	26,8 aB	43,0 aA	31,2 aB	33,7	b
Catuaí Amarelo IAC 74	26,7 aB	50,6 aA	23,1 aB	33,6	b
Saíra cv 362	23,7 aB	52,3 aA	24,8 aB	33,6	b
IBC-Palma-1 (3-12)	26,7 aB	38,5 aA	34,1 aA	33,1	b
Catucaí Vermelho 19/8 cv 221	26,1 aB	42,1 aA	28,2 aB	32,1	b
Catucaí Amarelo 24/137 (CO)	27,4 aB	37,7 aA	30,3 aB	31,8	b
Acauã 1365	21,0 aB	42,6 aA	28,3 aB	30,6	c
IBC-Palma-2 cv 520	20,2 aB	39,0 aA	32,1 aA	30,4	c
Catucaí Amarelo 20/15 cv 479	25,8 aB	36,26aA	26,7 aB	29,6	c
Catucaí 785-15 (Manhuaçu)	18,1 aB	42,8 aA	25,1 aB	28,7	c
Rubi MG 1192	25,8 aA	32,1 aA	26,9 aA	28,3	c
ES 58 cv 274	21,8 aB	37,6 aA	24,9 aB	28,1	c
Catucaí Amarelo 3SM (3-18)	17,8 aB	41,5 aA	23,2 aB	27,5	c
Iapar 59	23,0 aB	34,9 aA	19,5 aB	25,8	c
Mean	25,3 C	42,0 A	29,4 B	32,2	

Means followed by the same lower case letter in the column and upper case letter in the line did not differ in the Scott-Knott test (P<0,05).

Fonseca (1999) used 7 screen classification traits among the 19 used to separate 77 *Coffea canephora* Pierre clones through multivaried techniques. The author reccommends screen classification because it is related to quality standards, and may be a reference for selecting new variety genotypes. Therefore, as suggested in this work, progenies with a better screen classification should be considered for coffee genetic breeding programs.

The samples did not differ in the sensorial analysis and were all classified as hard beverage, indicative of high quality. Mendonça (2004), in an experiment also set up in Varginha in 2002, classified all the IBC-Palma-1, Catucaí Amarelo, Catuaí Amarelo, Acauã, Rubi MG 1192, Sabiá Tardio, Topázio and Catucaí Vermelho samples as soft and strictly soft. This difference may be due to the method of preparing and drying the samples, as the author pulped and dried the coffee on a concrete ground while in this work the samples were dried in 15 x 15 cm wood boxes with 20 holes perforated at the bottom without depulping, which may have facilitated fermentation and compromised beverage quality. Climate variations in the sampling periods are another important aspect.

Table 4 – Mean commercial coffee bean yield and percentage of moca and big flat beans in coffee progenies, at the Mapa/ Procafé Foundation's experimental farm in Varginha, Minas Gerais state. (Varginha, MG, 2009).

Progenie	Commercial coffee bean yield (%)	Big flat beans (%)	Moca (%)
Tupi IAC 4093	43,7 b	40,2 a	15,0 a
Catucaí 785-15 (Manhuaçu)	49,3 ab	40,0 a	12,7 a
Obatã IAC 1669-20	47,4 ab	39,5 a	13,7 a
Arara F_4	51,5 ab	39,0 a	13,7 a
IBC-Palma – 2 cv 520	55,6 a	38,5 a	15,5 a
Catucaí Amarelo 3SM (3-18)	51,0 ab	38,2 a	11,7 a
IBC-Palma – 1 (3-12)	50,7 ab	36,2 a	18,7 b
Saíra cv 362	47,5 ab	34,5 a	14,6 a
Catucaí Amarelo 24/137 (CO)	53,6 ab	32,0 a	10,0 a
Catucaí Vermelho 20/15 cv 476	51,8 ab	27,5 b	11,5 a
Catucaí Amarelo 20/15 cv 479	51,8 ab	24,2 b	13,2 a
ES 58 cv 274	51,2 ab	24,2 b	14,0 a
Catucaí Vermelho 24/137 (CO)	54,0 ab	23,7 b	13,7 a
Sabiá Tardio cv 398	53,0 ab	22,5 b	15,0 a
Iapar 59	50,7 ab	21,5 b	14,7 a
Catucaí Vermelho 19/8 cv 221	53,4 ab	20,7 b	22,0 b
Acauã 1365	49,4 ab	18, 5 b	19,5 b
Topázio MG 1189	51,3 ab	17,7 b	12,7 a
Rubi MG 1192	51,7 ab	17,0 b	12,5 a
Catuaí Amarelo IAC 74	54,7 ab	17,0 b	20,2 b
Mean	51,0	28,6	14,7

Means followed by the same lower case letter in the column did not differ in the Tukey test (P<0,05) for the trait commercial bean yield, and in the Scott-Knott test (P<0,05) for the big flat bean trait.

4 CONCLUSIONS

The most productive progenie in this experiment was Sabiá Tardio cv 398, with a mean yield in the first three bienniums of 40,89 sacks benef. ha^{-1}.

The Catucaí (Catucaí Amarelo 24/137 (C.O), Catucaí Vermelho 24/137 (C.O), Catucaí Vermelho 20/15 cv 476 and Catucaí Vermelho 19/18 cv 221, Sarchimor (Tupi IAC 4093, Arara F_4) and IBC-Palma-1 (3-12), Saíra cv 362, Topázio MG 1189 progenies, and the cultivars Catuaí Amarelo IAC 74 and Obatã IAC 1669-20, are productive in the municipality of Varginha and are also reccommended for genetic breeding studies.

The progenies IBC-Palma-1 (3-12), IBC-Palma-2 cv 520, Catucaí Amarelo 24/137 (C.O), Catucaí Amarelo 3SM (3-18), Catucaí Vermelho 785-15 (Manhuaçu), Saíra cv 362, Arara F_4, and Tupi IAC 4093, and the cultivar Obatã IAC 1669-20, presented the highest percentage of 17 screen beans, between 32,0 and 40,25%.

All the progenies and cultivars assessed presented a quality beverage.

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