Crop Breeding and Applied Biotechnology 13: 95-98, 2013
Brazilian Society of Plant Breeding. Printed in Brazil

CULTIVAR RELEASE

IPR 103 – Rustic dwarf arabic coffee cultivar more adapted to hot regions and poor soils

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Received 05 September 2012

Accepted 19 November 2012

Abstract – *'IPR 103' was derived from a cross between "Catuaí" and "Icatu". 'IPR 103' is a medium size dwarf cultivar with high rusticity, partially resistant to coffee leaf rust with late ripening. This cultivar is more adapted to hot regions and poor soils. It presents partial resistance to necrosis and mummification of young fruits on field conditions.*

Key words: *Breeding,* Coffea arabica*, partial rust resistance.*

INTRODUCTION

The majority of arabic coffee areas in Brazil use cultivars of Catuaí germplasm. These cultivars present high productivity, wide adaptability and late ripening, similar to 'IPR 103', but it are susceptible to coffee leaf rust and young fruit necrosis and mummification.

'IPR 103' was derived from a cross between "Catuaí" and "Icatu" and has incorporated some traits by introgressed genes of *C. canephora* from "Icatu", such as biotic and abiotic rusticity. 'IPR 103' is a medium size dwarf cultivar with partial resistance to leaf rust (*Hemileia vastatrix* Berk. et Br.) (Sera et al. 2010), partially resistant to necrosis and mummification of young fruits on field conditions (Sera et al. 2005, Sera et al. 2007) and late ripening. This cultivar is recommended for semi dense and dense planting systems in lower and higher temperature areas with annual average between 19 and 23 ºC, in the State of Paraná.

PEDIGREE AND IMPROVEMENT METHOD

'IPR 103' was developed using the genealogical method. It was derived from a cross between plants of "Catuaí" and "Icatu", performed at Instituto Agronômico de Campinas (IAC) in 1972. In 1977, IAPAR introduced the F_3 generation (IAC H 9878 - EP 187 c.582), named PR 77054. The F_4 progeny PR 77054-40 was selected. The plant number 10 was selected and it originated the F_5 progeny PR LF 77054-40-10, later named 'IPR 103' and released in 2006.

PERFORMANCE

'IPR 103' can be cultivated in regions with annual average temperature between 19 and 21 ºC, such as Londrina (580 m altitude) and Congonhinhas (750 m altitude) municipalities and in regions with annual average temperature between 22 and 23 ºC, such as Itaguajé (350 m altitude) and Lupionópolis municipalities. The 'IPR 103' was evaluated in three locations of Paraná State with 16 annual harvests and it was more productive than 'IAPAR 59' and 'Catuaí Vermelho IAC 81' (Table 1) because of rusticity and better performance to several biotic and abiotic stresses.

Table 1. Annual average yield per hectare (bags of 60 kg ha^{-1}) of 'IPR 103', in comparison with other cultivars (Paraná State, Brazil)

Cultivar[1]	**Yield**[2]	**Relative yield** (%)
IPR 103 (late ripening)	59.36	120.28
Catuaí Vermelho IAC 81 (late ripening)	49.35	100.00
IAPAR 59 (semi early ripening)	43.14	87.42

[1] With chemical control for coffee leaf rust.
[2] Mean of three locations of Paraná State with 16 annual harvests (spacing 2.75 x 0.60 m).

'IPR 103' is a medium size dwarf cultivar, similar to "Catuaí", recommended for spacing between plants varying from 0.50 to 0.80 m, depending on the annual average temperature of local cultivation and on the technologies used, such as fertilization, irrigation and pruning. In hot regions without irrigation, the spacing ought to be narrower since

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the canopy diameter and branching are usually smaller. On farms with fertirrigation, the spacing between rows and between plants can be larger. On farms where pruning are frequently used, the spacing can be smaller. Using wider spacing between plants will increase plant yield; hence, it will be necessary more nutrition. The spacing between rows can vary from 2.50 to 3.00 m, according to the coffee crop area and the level of mechanization.

OTHER TRAITS

'IPR 103' presents late ripening, even later than "Catuaí". At lower temperatures with annual average between 19 and 21 ºC, the ripening usually occurs around August. At higher temperatures with annual average between 22 and 23 ºC, the ripening usually occurs around June.

'IPR 103' can be used in association with other dwarf coffee cultivars with different ripening times (e.g. 'IAPAR 59' = semi early, 'IPR 98' = medium, 'IPR 99' = semi late) in order to reduce the labor, infrastructure and equipment requirements. By using 'IPR 103' with other maturation cultivars group for harvest in different times, the rain risk at harvest is reduced and it is easier and cheaper to produce more quality coffee in the rainy and cool coffee regions of Paraná State.

'IPR 103' shows rusticity and better adaptation to high temperatures and poor soils, comparing to other compact cultivars such as "Catuaí" and 'IAPAR 59'. 'IPR 103' was selected in coffee regions with poor and sandy soils, low altitudes and higher temperatures, with annual average between 21 and 23 ºC, in the State of Paraná. In this State, this cultivar is highly recommended for cultivation in the west and northwestern regions (Arenito Caiuá), and in lower altitudes of argillaceous soils regions. 'IPR 103'could be planted in lower temperature areas with annual average between 19 and 20 ºC in Paraná, but it must be planted in areas with reduced frost risk since this cultivar presents late ripening.

Currently, 'IPR 103' is partially resistant (moderately susceptible) to rust physiological races present in Paraná State (Sera et al. 2010) and it may require chemical control, but with a lower number of fungicide applications in comparison with susceptible and highly susceptible cultivars.

'IPR 103' presents a good level of partial resistance (moderate resistance) to the symptoms of necrosis and mummification of fruits (Sera et al. 2005, Sera et al. 2007). These symptoms are being associated with the attack of *Colletotrichum* spp. or *Colletotrichum gloeosporioides* Penz (Juliatti and Silva 2001, Paradela-Filho et al. 2001).

The cup quality is similar or superior to "Catuaí". These traits and others are described in Table 2.

Table 2. Morphological, physiological and agronomic traits of 'IPR 103' with the respective descriptions.

Traits	Descriptions
Size (tree height)	Medium (~ "Catuaí")
Canopy radius	Medium (~ "Catuaí")
Canopy architecture	Cylindrical (~ "Catuaí")
Internode lenght	Medium (~ "Catuaí")
Secondary plagiotropic branching	High (~ "Catuaí")
Young leaf colour	Bronze
Leaf size	Medium (~ "Mundo Novo")
Undulation of the leaf margin	Medium wavy (~ "Mundo Novo")
Colour of ripe fruits	Red
Fruit shape	Oblong (~ "Mundo Novo")
Fruit size	Between small (~'Bourbon Amarelo') and medium (~"Mundo Novo")
Grain lenght	Between short (~ "Catuaí") and medium (~ "Mundo Novo")
Grain width	Between medium (~ "Mundo Novo") and large (~ "Catuaí")
Ripening cycle	Late (later than "Catuaí")
Resistance to rust	Partial resistance
Resistance to nematodes	Still not identified
Reaction to Brown Eye Spot (*Cercospora coffeicola*)	Susceptible
Cup quality	Similar or superior to "Catuaí"

SEED MAINTENANCE AND DISTRIBUTION

'IPR 103' is registered by the National Cultivar Registry (Registro Nacional de Cultivares - RNC) of the Ministry of Agriculture, Livestock and Supply (Ministério da Agricultura, Pecuária e Abastecimento – MAPA) under the number 09945, in Brazil. IAPAR is in charge of genetic and basic seeds, and private seed producers who are registered in MAPA are responsible for certified seeds.

IPR 103 – Cultivar de café arábica rústica mais adaptada para regiões quentes e solos pobres

Resumo – *A 'IPR 103' foi derivada do cruzamento entre "Catuaí" e "Icatu". 'IPR 103' é uma cultivar de porte compacto médio com alta rusticidade, parcialmente resistente à ferrugem e com maturação dos frutos tardia. Essa cultivar é mais adaptada para regiões quentes e de solos pobres. Em condições de campo, apresenta resistência parcial à necrose e mumificação de frutos jovens.*

Palavras-chave: Coffea arabica*, melhoramento genético, resistência parcial à ferrugem.*

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