

IAC Herculândia – a *Coffea canephora* rootstock multiresistant to nematodes

Oliveiro GUERREIRO-FILHO¹ (oliveiro.guerreiro@sp.gov.br), Luiz Carlos FAZUOLI¹, Masako Toma BRAGHINI¹, Paulo Boller GALLO¹, Cláudio Marcelo Gonçalves OLIVEIRA², Lilian PADILHA³, Bárbara Joana dos Reis FATOBENE¹, Vinicius Teixeira ANDRADE¹, Larissa de Brito Caixeta VASCONCELOS¹, Juliana Magrinelli Osório ROSA²

¹Agronomic Institute of Campinas, Campinas, Brasil; ²Biological Institute, Campinas, Brasil; ³Embrapa Café, Campinas, Brasil

Introduction

The high occurrence of plant-parasitic nematodes in coffee, has been rapidly spreading to the various Brazilian Arabica coffee production regions (Figure 1). Plantations established with seedlings grafted onto the Apoatã IAC 2258 cultivar require about 20% replanting. A new rootstock was developed to increase the frequency of resistance alleles against the nematodes *Meloidogyne exigua*, *M. incognita*, and *M. paranaensis* in a new rootstock.



Figure 1: Arabica coffee crop infested by *M. paranaensis*

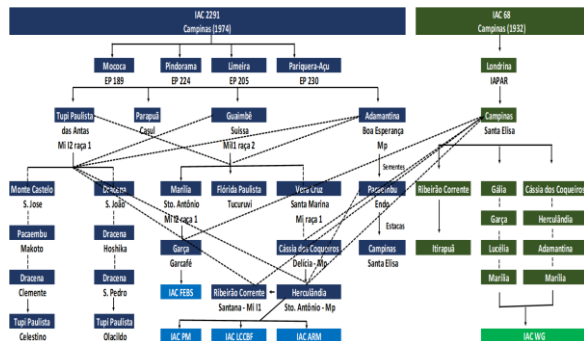


Figure 2: Selection of resistant clones: Network of field experiments

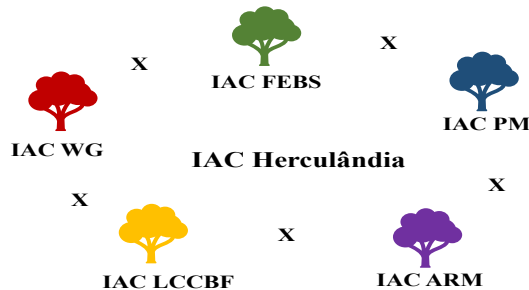


Figure 4: A rootstock multiresistant to nematodes



Figure 5: The same area infested by *M. paranaensis*

	A	B	C	D	E	F	G	H	I	J
A	X	AB	AC	AD	AE	AF	AG	AH	AI	AJ
B	BA	X	BC	BD	BE	BF	BG	BH	BI	BJ
C	CA	CB	X	CD	CE	CF	CG	CH	CI	CJ
D	DA	DB	DC	X	DE	DF	DG	DH	DI	DJ
E	EA	EB	EC	ED	X	EF	EG	EH	EI	EJ
F	FA	FB	FC	FD	FE	X	FG	FH	FI	FJ
G	GA	GB	GC	GD	GE	GF	X	GH	GI	GJ
H	HA	HB	HC	HD	HE	HF	HG	X	HI	HJ
I	IA	IB	IC	ID	IE	IF	IG	IH	X	IJ
J	JA	JB	JC	JD	JE	JF	JG	JH	JI	X

Figure 2: Compatibility in crossings. 10 clones / 100,000 flowers / 2 years



Figure 3: Greenhouse resistance assessment

Results/Discussion

IAC Herculândia is a *Coffea canephora* cultivar multiresistant to *Meloidogyne exigua*, *M. incognita*, and *M. paranaensis* to be used as a rootstock for *Coffea arabica* cultivars. It is a synthetic cultivar resulting from recombination among the clonal cultivars IAC WG, IAC FEBS, IAC PM, IAC LCCBF, and IAC ARM.

Materials/Methods

The parental clonal cultivars of the IAC Herculândia cultivar were obtained by associating individual selection methods with progeny tests and clonal selection. Evaluations were carried out in a greenhouse and, above all, in fields infested by different populations of *M. exigua*, *M. incognita*, and *M. paranaensis*, mostly located in the state of São Paulo.



Figure 6: Cultivars IAC Catuai SH3 (High) and Bourbon Amarelo (Low) grafted onto IAC Herculândia rootstock in an area infested by *M. incognita*

Conclusion/Perspectives

IAC Herculândia is recommended as a rootstock for all susceptible cultivars of Arabica coffee.

References

- Golçalves et al. (2021). Selection strategy of a *Coffea canephora* rootstock with simultaneous nematode resistance to *Meloidogyne exigua*, *M. incognita* and *M. paranaensis*. *European Journal Of Plant Pathology*, v. 160, p. 81-95.
- Guerreiro Filho et al. (2023). IAC Herculândia: a *Coffea canephora* rootstock multiresistant to *Meloidogyne* species. *Crop Breeding and Applied Biotechnology*, v. 23, p.1-6.
- Moraes, M.V., Franco, C. M. (1973). *Método expedito para enxertia em café*. Rio de Janeiro, Instituto Brasileiro de Café, 8p.