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Evaluation of eggplant and gilo genotypes and interspecific hybrids as to root-knot nematode resistance

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Resumo

No Brasil, as culturas da berinjela e do jiló são importantes para a economia de pequenas propriedades localizadas principalmente nos estados do Sudeste, bem como de outras regiões, com expressivo volume de produção o ano todo nos mercados atacadistas locais. No entanto, essas espécies são muito suscetíveis aos nematoides das galhas e há poucas ou quase nenhuma fonte conhecida de resistência. Desta forma, o objetivo do presente estudo foi buscar fontes de resistência aos nematoides das galhas em genótipos de berinjela e jiló; bem como em híbridos interespecíficos para uso como porta-enxertos. Foram realizados três experimentos: no primeiro, realizado em 2013, foram avaliados 10 acessos experimentais de berinjela, um híbrido entre berinjela e jiló, e um híbrido de *Solanum stramonifolium* com berinjela para a reação ao *Meloidogyne enterolobii*. No segundo, em 2016, foram avaliados 20 acessos experimentais de jiló, para a reação ao *M. incognita, M. javanica* e *M. enterolobii*. E no terceiro, em 2017, foram avaliados um acesso e dois híbridos experimentais de berinjela, e um híbrido de *Solanum scuticum* com berinjela, para a reação ao *M. incognita,* e *M. enterolobii*. Ambos ensaios foram conduzidos em casa de vegetação, e caracteres relacionados à infeção das raízes pelos nematoides foram avaliados em delineamento inteiramente casualizado, com seis repetições, sendo a unidade experimental uma planta cultivada em um vaso contendo 1,5 L de substrato inoculado com cada espécie de nematoide. Foi verificado que: 1- todos os acessos avaliados de berinjela foram suscetíveis ao *M. incognita* e ao *M. enterolobii*, no entanto, o acesso BER 3150 apresentou menor grau de suscetibilidade ao *M. incognita*. 2- os genótipos de jiló CNPH 056, CNPH 070, CNPH 220 e CNPH 363 apresentaram melhor resposta a *M. incognita* e *M. javanica* do que o padrão de suscetibilidade, o tomateiro 'Rutgers'. 3- os acessos de jiló CNPH 070, CNPH 219 e CNPH 387, apresentaram resposta melhor ou equivalente ao tomateiro resistente 'Nemadoro' para *M. enterolobii*. 4- o híbrido interespecífico BER EG203 x *S. scuticum*, pode ser recomendado como porta-enxerto para materiais de berinjela muito suscetíveis ao *M. incognita*; bem como a solanacea silvestre *S. stramonifolium* var. inerme para o *M. enterolobii*.
Palavras-chave: *M. enterolobii; M. incognita; M. javanica; Solanum aethiopicum* gr. *Gilo; Solanum melongena* L.

Avaliação de genótipos de berinjela e jiló e híbridos interespecíficos quanto a resistência a nematoides das galhas

Abstract

In Brazil, eggplant and gilo are important for the economy of small-scale farms located mainly in the southeast states and other regions, with a significant production volume year-round in the wholesale local markets. However, these species are very susceptible to root-knot nematodes, and there are few or almost none known sources of resistance. The objective of this study was to prospect sources of resistance to root-knot nematodes in eggplant, scarlet eggplant (gilo), as well in interspecific hybrids between these species and with wild *Solanum* species, to be used as rootstocks. In the first experiment, in 2013, 10 eggplant accessions, a hybrid between eggplant and gilo, and a *Solanum stramonifolium x* eggplant hybrid, were evalu41ated for their reaction to *Meloidogyne enterolobii*. In the second, in 2016, 20 accessions of gilo

were evaluated for their reaction to *M. incognita*, *M. javanica,* and *M. enterolobii*.. And in the third experiment, in 2017, one access and two experimental eggplant hybrids, and one *Solanum scuticum* x eggplant hybrid, were evaluated for their reaction to *M. incognita*, and *M. enterolobii*. All the trials were stablished in a greenhouse, and characters related to root infection were evaluated in a completely randomized design with six replications of one plant per pot, using a 1.5 L pots filled with a mixed substrate inoculated with each nematode species. It was found that all eggplant accessions were susceptible to *M. incognita* and *M. enterolobii*, however, BER 3150 presented lower susceptibility to *M. incognita*. The gilo genotypes CNPH 056, CNPH 070, CNPH 220, and CNPH 363 shown better response to *M. incognita* and *M. javanica* than the susceptibility pattern, the tomato 'Rutgers'. Other gilo accessions CNPH 070, CNPH 219, and CNPH 387 showed better or equivalent response than the resistant tomato 'Nemadoro' for *M. enterolobii*. 4- the BER EG203 x *S. scuticum* interspecific hybrid can be recommended as a rootstock for eggplant susceptible to *M. incognita*, as well the wild *S. stramonifolium* var. inerme species for *M. enterolobii*.
Keywords: *M. enterolobii; M. incognita; M. javanica; Solanum aethiopicum* gr. *gilo.; Solanum melongena* L.

Introduction

The genus *Meloidogyne* is considered the most important among plant-parasitic nematodes worldwide, presenting a wide geographical distribution and a huge range of hosts, being responsible for economic damage in several crops (NTALLI *et al*., 2016; BERNARD *et al*., 2017). These nematodes are responsible for one of the main constraints of the eggplant (*Solanum melongena* L.) production, as well for scarlet eggplant (*Solanum aethiopicum* gr. *gilo*), with occurrences mostly attributed to *Meloidogyne incognita*, *M. javanica, M. enterolobii* and *M. hapla* (PINHEIRO *et al*., 2013, OZARSLANDAN *et al*., 2019, RAMADAN; SOLIMAN, 2020).

In Brazil, these two vegetables are important for the economy of small-scale farms located mainly in the southeast states (Rio de Janeiro, São Paulo, and Minas Gerais) and other regions, with a significant production volume year-round in the wholesale local markets (PINHEIRO *et al*., 2015). As a case in point, scarlet eggplant surpasses eggplant volumes commercialized in the Ceasa-MG Belo Horizonte market, with an annual quantity of around 12 Kt (MONTEIRO, 2009). Its popularity is confirmed by the recent interest amongst American growers that cultivate this unfamiliar species to attend the demand for ethnic vegetables by the large population of Brazilian immigrants that live in Massachusetts, New Jersey, and New York (MANGAN *et al*., 2008).

The aforementioned nematodes, additionally to the presence of galls on the roots, present other symptoms that are observed in the plants' canopy, for example, dwarfism, wilt, chlorosis, nutritional deficiencies, and reduced fruit size, consequently leading to low yields (PINHEIRO *et al*., 2013).

Studies confirm the high susceptibility of these species to root-knot nematodes, since most of the evaluated accessions are classified as susceptible, although there are differences in the degrees of their susceptibility (ULLAH *et al*., 2011; SHAKEEL *et al*., 2012; BEGUM *et al*., 2014; ABDULSALAM *et al*., 2018). For eggplant, only a few studies demonstrate the existence of resistant genotypes (BOITEUX; CHARCHAR, 1996; TANIMOLA *et al*., 2015, COLAK-ATES *et al*., 2018).

Due to the scarcity of resistant genotypes, the use of grafting has potential, since there is the possibility of using other species of the Solanaceae family as rootstocks to control soilborne diseases (GOTO *et al*., 2003; COHEN *et al*., 2017). Mendonça *et al*. (2017) state that some factors may interfere with the viability of this technique, such as obtaining seedlings with similar stem diameters, synchrony of the grafts and rootstocks development; and difficulties related to the presence of thorns in wild rootstocks species. These authors recommend the technique of interspecific crosses between these resistant Solanaceous with a inermis parental, aiming at obtaining rootstocks with fewer thorns and greater compatibility, maintaining their resistance.

The objective of this study was to prospect sources of resistance to root-knot nematodes in eggplant, scarlet eggplant (gilo), as well in interspecific hybrids between these species and with wild *Solanum* species, to be used as rootstocks.

Material and Methods

The experiments were carried out in 2013, 2016, and 2017 in Brasília-DF, Brazil – Centro Nacional de Pesquisa de Hortaliças – CNPH (S15° 56’, W48° 08’, 996 masl) in a plastic greenhouse with 6.5 m of width, 18.5 m of length, and 4.5 m of ceiling height. In 2013, 10 accessions of eggplant (*Solanum melongena* L.), a hybrid between eggplant and scarlet eggplant, and a hybrid of *Solanum stramonifolium* with the eggplant cultivar 'Ciça', obtained in 2012, were evaluated for the reaction to *M. enterolobii*. In 2017 one access (BER 3150) and two experimental eggplant hybrids (BER 171 x BER EG203 and BER 778 x BER EG203), and one hybrid of *Solanum scuticum* with eggplant BER EG203 obtained in 2016, were evaluated for the reaction to *M. incognita*, and *M. enterolobii*. And in 2016, 20 experimental accessions of scarlet eggplant were evaluated for the reaction to *M. incognita, M. javanica,* and *M. enterolobii*. All accessions belonging to Embrapa Hortaliças germplasm bank. The tomato cultivar Rutgers was used as a susceptibility standard (PINHEIRO *et al*., 2009; PINHEIRO *et al*., 2020) and as a resistance standard the tomato 'Nemadoro' (PINHEIRO *et al*., 2009; PINHEIRO *et al*., 2020) in 2013 and 2016, and one accession of *S. stramonifolium* var. inerme (PINHEIRO *et al*., 2009; PINHEIRO *et al*., 2020) in 2017.

The experiments were conducted in a completely randomized design with six replications, and the experimental unit was represented by a single plant per pot. The sowing was carried out in styrofoam trays, on July 3, 2013, October 23, 2016 and May 15, 2017; and about 30 days later, transplantations were carried out into 1.5 L plastic pots containing a mixed substrate composed of sterilized soil, sterilized sand, high-heat composted cattle manure and burnt rice straw, in the proportion of 1:1:1:1. The mixed substrate fertilization was carried out with 300 g of the formulation NPK 4-30-16 and 300 g of dolomitic limestone per 300 kg of substrate. After transplanting, seedling roots were inoculated with 4,000 eggs and eventual second-stage juveniles (J2), of the respective nematode species, in 5 ml of water distributed around the plants.

Seventy days after inoculation in 2013, and 60 days for 2014 and 2017, the following factors were determined: Egg mass index (EMI) - the root systems were washed in flowing water and then colored by immersion in a Phloxin B solution in the proportion of 0.5 grams per L of water for 15 minutes. Then, the nematode egg mass number was counted under a stereomicroscope, in the entire root system of each plant/replication (DICKSON; STRUBLE, 1965). The root EMI was obtained according to Taylor and Sasser (1978) using a scale of grades ranging from 0 to 5, where: 0 = roots without egg masses; 1 = presence of 1 to 2 egg masses; 2 = presence of 3 to 10 egg masses; 3 = presence of 11 to 30 egg masses; 4 = presence of 31 to 100 egg masses and 5 = presence of more than 100 egg masses. For the 2013 and 2017 experiments, the gall index (GI) was also evaluated, as the number of galls in the root system of each plant/replication. The GI in the roots was represented by the scale from 0 to 5, according to Taylor and Sasser (1978), replacing the quantification of egg masses by galls, to then make the attribution of grades. In addition to the reproduction factor (RF) - obtained by dividing the final and initial population densities of the nematodes (RF = Pf / Pi). The initial population (Pi) was considered to be the inoculated population, and the final population (Pf) was quantified by extracting the root systems according to the technique of Boneti and Ferraz (1981). Plants with RF = 0 were considered immune (I), those with RF <1 as resistant (R), and susceptible (S) those with RF> 1, according to Oostenbrink (1966). The number of eggs per gram of root (NERG) was also calculated.

The data were subjected to analysis of variance and means grouping by the Scott-Knott test, using the Genes statistical program (CRUZ, 2013).

Results and Discussion

There were significant differences for all characters in the different periods of evaluation according to the analysis of variance (P <0.05). The environmental variation coefficients were higher for the number of eggs per gram of root (NERG), indicating lower experimental precision for this character. However, the values above the unit for the ratio between the coefficient of genotypic and environmental variation (CVg/CV), indicate a good experimental precision or the predominance of genetic variation over the environment for the most characters, which can proportionate reliability in the estimates and conclusions based on these results (Tables 1, 2 and 3).

For 2013, it was found that, although there were significant differences among genotypes for all traits, the evaluated genotypes were considered susceptible to *M. enterolobii*; and even those with lower values of the reproduction factor (FR), did not differ statistically from the susceptible tomato 'Rutgers', including the interspecific hybrid with *S. stramonifolium*. The tomato cultivar 'Nemadoro', a pattern of resistance to root-knot nematodes in this study, behaved as resistant to this species of nematode (Table 1).

Table 1. The reaction of eggplant accessions, and interspecific hybrids to *Meloidogyne enterolobii*. Embrapa Hortaliças, 2013.

	Meloidogyne enterolobii			
Accessions	**EMI**	**GI**	**NERG**	**RF/Reaction**
CNPH 005	5.00 a	5.00 a	3593.33 a	8.53 c / S
CNPH 007	4.67 b	4.50 b	4430.62 a	11.43 c / S
CNPH 008	4.50 b	4.33 b	8767.38 a	15.90 b / S
CNPH 012	5.00 a	4.83 a	5538.27 a	10.38 c / S
CNPH 014	5.00 a	4.83 a	5864.43 a	13.97 b / S
CNPH 016	4.17 b	4.17 b	4641.10 a	15.92 b / S
CNPH 017	4.33 b	4.00 b	6372.75 a	11.63 c / S
CNPH 171	4.83 a	4.67 a	3642.98 a	9.10 c / S
CNPH 778	5.00 a	5.00 a	5610.72 a	22.57 a / S
CNPH 435	4.83 a	4.83 a	5779.95 a	23.40 a / S
Eggplant Ciça x *Solanum gilo*	5.00 a	4.50 b	1812.87 b	11.52 c / S
S. stramonifolium x Eggplant Ciça	5.00 a	5.00 a	1181.82 b	7.85 c / S
Rutgers	4.67 b	4.50 b	4466.88 a	8.20 c / S
Nemadoro	1.50 c	1.17 c	119.83 b	0.03 d / R
General mean	4.54	4.38	4415.92	12.17
CV	5.33	6.49	28.25	22.3
CVg/CV	2.04	1.88	1.14	1.25
P statistic	0.00	0.00	0.00	0.01

EMI and GI: egg mass and of galls indexes); NERG: number of eggs per root gram; RF: reproduction factor; Reaction: reaction of resistance: I=Immune; R=Resistant and S=Susceptible. Means followed by the same letter on the column did not differ by the Scott-Knott test ($p<0.05$). CV: coefficient of environmental variation in percentage, CVg/CV: ratio - genotypic and environmental variation. P statistic: P statistic of the variance analysis.

As for 2017, although all accessions were also classified as susceptible to *M. incognita* according to the reaction pattern, that is, the final nematode population was greater than the initial one. The resistance pattern *S. stramonifolium* var. inerme, the interspecific hybrid with *S. scuticum*, in addition to the BER 3150 access, had significantly lower RF compared to other genotypes, which did not differ from the susceptibility pattern, the tomato cultivar 'Rutgers'. While for *M. enterolobii*, all genotypes were susceptible, except the resistance pattern *S. stramonifolium* var. inerme, which had an RF lower than the unit (Table 2).

Table 2. The reaction of eggplant accessions, and an interspecific hybrid to *Meloidogyne incognita* and *M. enterolobii*. Embrapa Hortaliças, 2017.

Accessions	*Meloidogyne incognita*			
	EMI	**GI**	**NERG**	**RF/Reaction**
BER 3150	4.67 a	5.00 a	5319.17 a	11.50 b / S
BER 171 x BER EG203	4.67 a	5.00 a	4201.00 b	30.62 a / S
BER 778 x BER EG203	4.17 b	5.00 a	3546.17 b	25.87 a / S
BER EG203 x *S. scuticum*	4.17 b	3.83 b	1398.83 c	7.65 b / S
S. stramonifolium var. inerme	4.33 b	4.00 b	1339.00 c	5.03 b / S
Rutgers	5.00 a	5.00 a	6223.50 a	34.70 a / S
General mean	4.50	4.64	3671.28	19.23
CV	4.45	4.28	20.88	22.06
CVg/CV	0.65	1.30	1.43	1.67
P statistic	0.01	0.00	0.00	0.01
	Meloidogyne enterolobii			
Accessions	**EMI**	**GI**	**NERG**	**RF/Reaction**
BER 3150	4.00 b	4.17 b	6208.33 a	21.47 a / S
BER 171 x BER EG203	4.17 b	4.83 a	2581.50 a	19.00 a / S
BER 778 x BER EG203	4.00 b	3.67 c	5086.33 a	29.07 a / S
BER EG203 x *S. scuticum*	4.00 b	4.17 b	9272.67 a	26.83 a / S
S. stramonifolium var. inerme	3.40 c	3.40 c	1073.39 a	0.86 b / R
Rutgers	5.00 a	4.83 a	6529.67 a	32.68 a / S
General mean	4.09	4.18	5125.31	21.65
CV	4.00	5.54	37.31	25.32
CVg/CV	1.37	1.09	0.75	1.43
P statistic	0.00	0.01	0.55	0.00

EMI and GI: egg mass and of galls indexes; NERG: number of eggs per root gram; RF: reproduction factor; Reaction: reaction of resistance: I=Immune; R=Resistant and S=Susceptible. Means followed by the same letter on the column did not differ by the Scott-Knott test (p<0.05). CV: coefficient of environmental variation in percentage, CVg/CV: ratio - genotypic and environmental variation. P statistic: P statistic of the variance analysis.

Regarding eggplant reaction to these nematode species, some studies have proven the existence of resistance to *M. javanica* and *M. incognita*, but there are no evaluation reports for *M. enterolobii*. Boiteux and Charchar (1996) evaluated 39 accessions of eggplant and one access of *S. turvum* for the reaction to *M. javanica* and found that in addition to the access of *S. torvum* (CNPH 610), one access of eggplant with code A-264-A presented a value of zero for the NERG, and concluded that this access presents the potential for crossbreeding aiming at resistance to this species of nematodes. Likewise, Tanimola *et al*. (2015), evaluated the reaction of 7 eggplant accessions to *M. incognita* and found that two, Ngwa large and Anara ogi, were resistant, with RF lower than the unit. As well, Colak-Ates *et al*. (2018) evaluated 77 eggplant genotypes and found the P29 and P52 acessions as potential resistant sources to *M. incognita*.

However, most studies indicate that, in general, accesses or genotypes are classified as susceptible, showing different degrees of susceptibility; corroborating with the present work results. Some examples are the works of Ullah *et al*. (2011), that evaluated the reaction of six eggplant cultivars to *M. incognita,* and Shakeel *et al*. (2012) that evaluated 10 cultivars also for *M. incognita*, all classified as susceptible. Equivalent results were obtained by Begum *et al*. (2014), which evaluated 13 eggplant cultivars to root-knot nematodes; Abdulsalam *et al*. (2018) that evaluated three eggplant cultivars reaction to *M. incognita* and Ozarslandan *et al*. (2019), that evaluated five aggplant accessions for the same nematode specie.

The accessions of scarlet eggplant (Table 3), genotypes CNPH 056, CNPH 070, CNPH 220 and CNPH 363, regarding their gall index (GI) and egg mass index (EMI) values, presented a better response to *M. incognita* and *M. javanica* than the susceptibility pattern, tomato cultivar 'Rutgers'; however, they were more susceptible compared to the resistance pattern, tomato cultivar 'Nemadoro'. A similar result was obtained for the accesses CNPH 026, CNPH 051, CNPH 219, specifically for *M. incognita*, and for the accesses CNPH 027 and CNPH 223 for *M. javanica*. Concerning *M. enterolobii*, the accessions CNPH 070, CNPH 219 and CNPH 387, presented a better or equivalent resistance reaction than the tomato cultivar 'Nemadoro', as to GI and EMI values, and considering that this was the most aggressive nematode species, with the highest overall average value for these characters.

Table 3. The reaction of gilo accessions to *Meloidogyne incognita, M. javanica,* and *M. enterolobii*. Embrapa Hortaliças, 2016.

Accessions	*M. incognita*		*M. javanica*		*M. enterolobii*	
	GI	EMI	GI	EMI	GI	EMI
CNPH 024	5.00 a	3.00 b	5.00 a	4.50 a	5.00 a	3.67 a
CNPH 026	3.50 c	3.50 b	4.67 a	4.33 a	5.00 a	4.50 a
CNPH 027	4.83 a	4.00 a	3.33 c	3.17 c	5.00 a	3.50 b
CNPH 037	4.17 b	4.00 a	5.00 a	4.17 a	4.67 a	3.00 b
CNPH 042	4.17 b	4.17 a	5.00 a	3.67 b	5.00 a	5.00 a
CNPH 051	3.67 c	2.67 b	5.00 a	4.33 a	5.00 a	4.17 a
CNPH 053	5.00 a	3.83 a	5.00 a	4.33 a	4.33 b	3.83 a
CNPH 056	3.17 c	3.00 b	2.67 d	2.67 c	5.00 a	4.00 a
CNPH 065	5.00 a	4.50 a	5.00 a	4.33 a	4.17 b	4.17 a
CNPH 070	4.50 b	3.17 b	3.33 c	2.33 c	3.50 c	3.17 b
CNPH 206	4.33 b	3.67 a	5.00 a	3.83 b	5.00 a	3.83 a
CNPH 218	5.00 a	3.50 b	5.00 a	4.17 a	5.00 a	4.00 a
CNPH 219	3.50 c	3.17 b	5.00 a	3.50 b	4.17 b	3.50 b
CNPH 220	4.50 b	3.00 b	3.33 c	3.67 b	5.00 a	3.00 b
CNPH 221	5.00 a	3.83 a	5.00 a	3.00 c	5.00 a	2.67 b
CNPH 222	5.00 a	3.50 b	5.00 a	4.33 a	5.00 a	3.67 a
CNPH 223	5.00 a	3.00 b	3.67 c	3.50 b	4.83 a	3.17 b
CNPH 363	4.67 b	3.00 b	4.00 b	3.00 c	5.00 a	3.83 a
CNPH 387	5.00 a	3.33 b	5.00 a	4.17 a	4.00 b	3.50 b
CNPH 435	5.00 a	3.50 b	5.00 a	3.83 b	4.67 a	4.00 a
Nemadoro	1.00 d	1.00 c	1.00 e	1.00 d	5.00 a	3.00 b
Rutgers	5.00 a	4.17 a	5.00 a	4.67 a	5.00 a	4.17 a
General means	4.36	3.39	4.36	3.66	4.74	3.70
CV (%)	6.05	8.53	5.54	8.14	4.82	9.13
CVg/CV	1.91	1.15	2.31	1.40	0.83	0.62
P statistic	0.00	0.00	0.00	0.00	0.00	0.01

EMI and GI: egg mass and of galls indexes; NERG: number of eggs per root gram; RF: reproduction factor; Reaction:: I=Immune; R=Resistant and S=Susceptible. Means followed by the same letter on the column did not differ by the Scott-Knott test ($p<0.05$). CV: coefficient of environmental variation in percentage, CVg/CV: rate among the genotypic and environmental variation. P statistic: P statistic of the variance analysis.

For scarlet eggplant, studies on nematode resistance are scarce, but it is known that this species is very susceptible to root-knot nematodes (PINHEIRO *et al*., 2013). Looking for sources of resistance to *M. javanica* and *M. incognita*, Tzortzakakis *et al*. (2006), evaluated 7 accessions of scarlett eggplant and verified the presence of galls and egg masses in all the genotypes. The same was found by Ozarslandan *et al*. (2019), that evaluated five accessions that were susceptible to *M. incognita*.

Since resistant eggplant and scarlet eggplant genotypes to root-knot nematodes are difficult to obtain by conventional breeding, and crossing these with wild Solanaceae species with a higher degree of resistance to nematodes, such as *S. stramonifolium* (PINHEIRO *et al*., 2014b; PEREIRA *et al*., 2018) and *S. scuticum* (PINHEIRO *et al*., 2014a), is feasible, a possible strategy that could be employed would be developing hybrid rootstocks, which are compatible to vegetable Solanaceae, species, maintaining the parent's resistance, and having complementary traits such a lower amount of thorns (MENDONÇA *et al*., 2017).

In the present study, regarding the interspecific hybrids resistance to nematodes, this strategy has shown promise in the case of the BER EG203 x *S. scuticum* since their hybrid presented an RF for *M. incognita* similar to the *S. stramonifolium* var. inerme (Table 2). On the other hand, it was not effective for *M. enterolobii* (Tables 1 and 2), probably because this species of nematodes are more aggressive to Solanaceae than the others evaluated (KIEWNICK *et al*., 2009; MELO *et al*., 2011).

Gisbert *et al*. (2012) evaluated the response of the hybrid rootstocks between eggplant x scarlet eggplant and eggplant x *S. incanum*, compared to the respective parents, in a field naturally infested with *M. incognita*, and found the eggplant parents were more resistant, and that both progenies showed intermediate resistance reaction, therefore, although there was compatibility of grafting, this strategy was not efficient for the nematode control.

Conclusions

All the eggplant accessions evaluated in this study were susceptible to *M. incognita* and *M. enterolobii*, however, the accession BER 3150 presents a lower degree of susceptibility to *M. incognita*.

Scarlett eggplant genotypes CNPH 056, CNPH 070, CNPH 220, and CNPH 363 has a better response to *M. incognita* and *M. javanica* than the susceptibility pattern, tomato cultivar 'Rutgers', but more susceptible than the pattern of resistance, tomato cultivar 'Nemadoro'.

The scarlet eggplant genotypes CNPH 070, CNPH 219 and CNPH 387, are better or equivalente in resistance to *M. enterolobii* compared to the tomato cultivar 'Nemadoro'.

The interspecific hybrid BER EG203 x *S. scuticum* can be recommended as a rootstock for eggplant cultivars susceptible to *M. incognita*; as well the wild Solanaceae *S. stramonifolium* var. inerme can also be indicated as a rootstock, mainly for areas where *M. enterolobii* occurs.

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