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Resistance of melon cultivars to *Bemisia tabaci* biotype B

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ABSTRACT

The silverleaf whitefly, *Bemisia tabaci* biotype B, is currently one of the most important pests of melon, causing direct and indirect damage to plants, and significantly reducing production in the field. Due to the need for alternative methods of chemical control in melon crops, the melon cultivars AF-646, AF-682, Don Luis, Frevo, Jangada, Nilo, Vereda, Amarelo Ouro and Hales Best were assessed at field, greenhouse, and laboratory trials for resistance to whitefly *B. tabaci* biotype B. In general, 'Hales Best' and 'Amarelo Ouro' were the most resistant, showing oviposition non-preference against whitefly. The trichome density is associated with the variation in oviposition on the cultivars and should be further investigated in future work. These results may be helpful in melon breeding programs, focusing on plant resistance to *B. tabaci* biotype B.

Keywords: *Cucumis melo*, Aleyrodidae, silverleaf whitefly, host plant resistance, antixenosis, antibiosis.

RESUMO

Resistência de cultivares de melão a *Bemisia tabaci* biótipo B

A mosca-branca, *Bemisia tabaci* biótipo B, é atualmente uma das mais importantes pragas da cultura do melão, ocasionando danos diretos e indiretos às plantas e reduzindo significativamente as produções a campo. Devido à necessidade de métodos mais sustentáveis do que o controle químico nas lavouras de melão, neste trabalho avaliou-se a resposta das cultivares de meloeiro AF-646, AF-682, Don Luis, Frevo, Jangada, Nilo, Vereda, Amarelo Ouro e Hales Best quanto à possível resistência a *B. tabaci* biótipo B, através de testes de campo, casa de vegetação e laboratório. No geral, 'Hales Best' e 'Amarelo Ouro' foram as mais resistentes, expressando não-preferência para oviposição contra a mosca-branca. A densidade de tricomas está associada à variação de oviposição sobre os materiais e deve ser melhor investigada em trabalhos futuros. Estes resultados podem auxiliar nos programas de melhoramento de melão, visando à resistência de plantas a *B. tabaci* biótipo B.

Palavras-chave: *Cucumis melo*, Aleyrodidae, mosca-branca, resistência de plantas a insetos, antixenose, antibiose.

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The melon (*Cucumis melo*) is a commercially important vegetable, adaptable to several types of soils and climate, and can be grown in several regions of the world (FAO, 2006). Brazil is one of the largest melon producers in South America, producing 340,464 t in 15,756 cropped hectares (Agrianual, 2011).

The silverleaf whitefly, *B. tabaci* biotype B, has been indicated as one of the most serious pests of world agriculture, causing losses of millions of dollars per year (Perring *et al*., 1993; Polston & Anderson, 1999). This insect has recently become the most important pest for melon cropping in several Brazilian states (Azevedo & Bleicher, 2003). Its attack causes direct damage by continuous sucking of plant xylem (Bleicher *et al*., 2000) and also indirect damage, such as silverleaf (Lourenção *et al*., 2011), sooty mold development and virus transmission (Nagata *et al*., 2005), that reduce productivity. The increase in the total number of whitefly nymphs in melon fields is directly related to the fall in weight and number of boxes harvested, in addition to reduced product end quality due to the presence of sooty mold and decreases in fruit size and total soluble solids content (Riley & Palumbo, 1995).

The strategy most used to control *B. tabaci* biotype B is still the use of chemical insecticides (Mansaray & Sundufu, 2009) but this practice is considered high risk for beneficial arthropods and the environment, encouraging the search for more sustainable management methods (Desneux *et al*., 2007). Allied to this, biological and behavioral characteristics of the insect, such as fast development, high fertility and wide dispersion capacity, increase the probability of selecting individuals resistant to the most used insecticides that decreases their efficiency in the short term (Prabhaker *et al*., 1989; Dittrich & Ernest, 1990; Dardon, 1993; Byrne *et al*., 2003).

In this context, the use of resistant genotypes to *B. tabaci* biotype B could be an efficient control alternative (Alves *et al*., 2005; Baldin *et al*., 2005; Bleicher *et al*., 2007; Silva *et al*., 2008; Baldin & Pereira, 2009; Baldin & Beneduzzi, 2010). Its advantages include efficiency, low cost and compatibility with other control tactics (Lara, 1991). Thus, the present study assessed the performance of melon cultivars under *B. tabaci* biotype B attack in the field, greenhouse and laboratory to identify possible sources of resistance against the insect.

MATERIAL AND METHODS

The study was carried out under field conditions (22°53'09"S, 48°26'42"W, 804 m altitude), in a greenhouse, and in the laboratory, from 2008 to 2009. Nine melon cultivars were assessed: AF-646, AF-682, Don Luis, Frevo, Jangada, Nilo, Vereda (from Sakata) and Amarelo

Ouro and Hales Best (from Top Seed).

***B. tabaci* biotype B rearing -** Whiteflies were reared in metallic cages (2.0 x 2.5 x 2.0 m) with sides lined with white anti-aphid screening, and the top was covered by plastic and shade cloth. Benches were placed inside to accommodate the pots containing collard green plants, that served as a food source for the insect. The pots were monitored and deteriorated plants exchanged for healthy ones weekly.

To start the rearing, adult whiteflies were acquired from a rearing center kept at the Plant Pathology Center at the Campinas Agronomic Institute [Centro de Fitossanidade do Instituto Agronômico de Campinas (IAC)], that had been recently characterized molecularly as belonging to *B. tabaci* biotype B (Fontes *et al*., 2010).

Field trial - The nine melon cultivars were sown in four rows spaced 1.0 m with 0.70 between-plant spacing. The plots consisted of four planting rows, measuring 4 x 4 (16 m²) following a randomized block design with four replications. The assessments were made on the plants of the two central lines of the crop.

The attractiveness and oviposition on the genotypes were assessed four times, first at 30 days after plant emergence (DAE) when the plants presented 6-8 completely developed leaves, and later at 45, 60 and 75 DAE. The attractiveness was assessed by counting the number of adult whiteflies on the abaxial surface of three leaves (upper, mid and lower strata) of a plant of each cultivar, using a portable mirror positioned on the abaxial surface of the melon leaves so that the insects could be counted without contact with the plants (Baldin & Pereira, 2009). After counting the adults on the three leaves, the leaves were removed from the plants and taken to the laboratory to count the eggs and nymphs present in 2 cm², under a stereomicroscope. All the assessments were carried out in the morning (before 9 AM) when the insects presented less migratory activity.

Trials in the greenhouse - The same genotypes assessed in the field were also used in the trials in the greenhouse. In a free-choice test, nine 1-L pots (one for each cultivar) containing 20-day-old plants (with two completely developed leaves) were distributed randomly in a circle inside a wooden cage (1.0 x 1.0 x 0.8 m), lined on the side and top with anti-aphid screening. Later, 450 whitefly couples up to 48 hours old were released on the floor and center of the cage. The attractiveness was assessed 24 and 48 hours after infestation, counting with the help of a mirror the number of insects present on the two leaves of each genotype. After five days infestation, the leaves assessed for attractiveness were removed and taken to the laboratory, to count the eggs in 2 cm^2 of the abaxial surface of each one, as described for the field trial. Each cage represented one replication, six in total, in a randomized block design.

For the no-choice test, pots containing 20-day-old plants were separated and metal arches were attached covered with organdy fabric (Baldin *et al*., 2005). Later, fifty 48h-old whitefly couples were released per pot and infestation maintained for five days. Oviposition was assessed following the same methodology described for the no choice test. However, in this case a complete randomized design was adopted, with six replications.

For the free-choice and no-choice tests, the oviposition preference index was also determined: OPI= [(T–S)/(T+S)] x 100, where T= number of eggs counted in the treatment assessed and S= number of eggs counted on the control cultivar (Jangada). The index ranged from +100 (very stimulating) to -100 (total deterrence), and the value 0 indicated neutrality (Fenemore, 1980; Schilick-Souza *et al.*, 2011). The Jangada cultivar was adapted as control because it was highly susceptible in preliminary trials. The mean standard error of the trial was used to classify the materials (Baldin *et al*., 2005).

Trichome analysis - To correlate oviposition with melon plant morphological factors, the number of trichomes present in 16 mm² of the abaxial surface of the leaves of each material was counted using a stereomicroscope, with 32 x magnification (Valle & Lourenção, 2002). The first two true leaves of each cultivar were analyzed, dividing them in two 16 mm² plots per leaf. Four replications were made in a completely randomized design.

Laboratory trial - The *B. tabaci* biotype B egg-adult cycle on the different melon cultivars was assessed in the laboratory (25$\pm$2 ºC; 70$\pm$10%RH; 12:12 L:D) to verify whether there was non-preference for food and/or antibiosis. The materials were sown in 2 L pots containing adequate substrate and remained infestation-free until 20 DAE. Then two leaves/plant (first true leaves) were separated attaching organdy cloth cages and 25 couples of the insect were released inside each one. The insects were removed after 24 hours, maintaining 30 eggs (circled with glitter glue) on the abaxial surface of each leaf. In the assessments, two pots per cultivar were used and each leaf was considered a replication (four per genotype), containing 30 plots (eggs) each, in a completely randomized design. Assessments were made daily, observing the incubation period, the nymph instar duration and the egg to adult development period. When the emergence period of the adults was close, the leaves were again covered with organdy fabric cages, so that the insects could not leave the leaves.

All the data obtained during the trials were submitted to the Kolmogorov & Barttlet test for normality and homogeneity of variance, respectively, and the necessary transformations were made to meet the requirements of the analysis of variance (Winer *et al*., 1991). The means were compared by the Tukey test at the level of 5% probability, using the Sisvar statistical program.

RESULTS AND DISCUSSION

Field trial - In the field, the 'AF-646', 'Vereda', 'Don Luis', and 'Hales Best' were the least attractive to *B. tabaci* biotype B adults, unlike 'Jangada' that was preferred by most of the adults (Figure 1). The low attractiveness of these four cultivars suggested there was non-preference against whitefly. However, as the *B. tabaci* biotype B field infestations were not high (maximum 2.1 individuals/plant), the material may perform differently under high

Table 1. Mean (±SE) of attractivity, eggs per cm^2 and oviposition preference index of *B. tabaci* biotype B in free-choice test conducted in greenhouse (médias (±EP) de atratividade, ovos por cm² e índice de preferência para oviposição (IPO) de *B. tabaci* biótipo B em teste com chance de escolha realizado em casa-de-vegetação). Botucatu, UNESP, 2008/2009.

Cultivar	Number of adults[1]		Oviposition		
	24 h	48 h	number of eggs[1]	OPI (±SE)[2]	CI[2]
Hales Best	5.94 ± 1.93 b	5.25 ± 1.54 b	10.94 ± 0.95 ab	-33.06 ± 7.95	D
Nilo	13.06 ± 4.89 ab	12.06 ± 4.70 ab	12.50 ± 1.27 ab	-27.00 ± 7.95	D
Amarelo Ouro	14.38 ± 4.79 ab	12.44 ± 4.54 ab	4.50 ± 0.48 b	-65.71 ± 7.95	D
Don Luis	16.13 ± 4.79 ab	15.56 ± 3.82 ab	11.06 ± 0.79 ab	-32.58 ± 7.95	D
AF-646	18.94 ± 5.64 ab	20.44 ± 5.49 ab	17.44 ± 2.20 a	-10.99 ± 7.95	D
Vereda	24.75 ± 10.37 ab	23.94 ± 9.81 ab	18.06 ± 1.75 a	-9.26 ± 7.95	N
Frevo	27.81 ± 9.15 ab	29.88 ± 10.34 a	13.94 ± 0.87 ab	-21.88 ± 7.95	D
AF-682	28.63 ± 8.35 a	35.69 ± 13.34 a	18.56 ± 2.10 a	-7.91 ± 7.95	N
Jangada	30.81 ± 12.35 a	30.13 ± 11.38 a	21.75 ± 2.27 a	0.00 ± 7.95	S
F	2.51*	3.27**	2.98**	---	---
CV (%)	39.52	40.16	34.21	---	---

[1]Means followed by the same letter in the column don't differ significantly, according to Tukey's test (p<0,05); original data for analysis were transformed into $(x+0,5)^{1/2}$ (médias seguidas de mesma letra, dentro das colunas, não diferem entre si pelo teste de Tukey (p<0,05); dados originais para análise foram transformados em $(x+0,5)^{1/2}$); [2]OPI= (T–P)/(T+P)x100. Classification: S= standard; N= neutral; D= deterrent (classificação: S= controle; N= neutro; D= deterrente).

Table 2. Ovipostion behaviour of *B. tabaci* biotype B, and mean number (±SE) of trichome/16 mm^2 of melon cultivars in no-choice test conducted in greenhouse (oviposição de *B. tabaci* biótipo B e número médio (±EP) de tricomas/16 mm² de cultivares de meloeiro, em teste sem chance de escolha realizado em casa-de-vegetação). Botucatu, UNESP, 2008/2009.

Cultivar	Oviposition			Number of trichomes[1]
	Number of eggs[1]	OPI (±SE)[2]	CI[2]	
Amarelo Ouro	6.19 ± 0.77 d	-58.68 ± 8.39	D	99.00 ± 4.42 b
Hales Best	10.44 ± 3.65 d	-43.99 ± 8.39	D	144.25 ± 10.16 a
AF-646	11.88 ± 1.46 cd	-33.04 ± 8.39	D	99.25 ± 2.95 b
Vereda	12.00 ± 1.41 cd	-32.95 ± 8.39	D	88.00 ± 1.78 b
AF-682	13.13 ± 1.58 bcd	-28.41 ± 8.39	D	86.50 ± 3.52 b
Don Luis	20.75 ± 0.42 abc	-6.68 ± 8.39	N	82.50 ± 5.44 b
Frevo	23.44 ± 2.66 abc	-1.63 ± 8.39	N	75.50 ± 3.48 b
Jangada	24.63 ± 3.79 ab	0.00 ± 8.39	S	96.50 ± 7.97 b
Nilo	30.13 ± 3.58 a	10.75 ± 8.39	St	84.75 ± 7.11 b
F	11.25 **	---	---	11.98 **
CV (%)	14.40	---	---	12.19

[1]Means followed by the same letter in the column don't differ significantly, according to Tukey's test (p<0,05); original data for analysis were transformed into $(x+0,5)^{1/2}$ (médias seguidas de mesma letra, dentro das colunas, não diferem entre si pelo teste de Tukey (p<0,05); dados originais para análise foram transformados em $(x+0,5)^{1/2}$); [2]OPI= (T–P)/(T+P)x100. Classification: St= stimulant; S= standard; N= neutral; D= deterrent. (classificação: St= estimulante; S= controle; N= neutro; D= deterrente).

populations of the insect.

The fact that one genotype was less infected by the whitefly may have resulted from the presence of physical resistance factors, such as leaf coloring, that can directly affect preference or even repel adults of the insect (Beck & Schoonhoven, 1980; Coelho *et al*., 2009). Regardless of the cause (chemical or physical), the non-preference of *B. tabaci* biotype B for determined melon cultivar is a good management tool, because by preventing the insect from arriving on the plants, it also prevents oviposition and feeding that reduces the incidence of physiological disorders and virus transmission. These possible factors should be further investigated in future studies.

Regarding the mean of eggs laid/cm^2, 'Vereda', 'Amarelo Ouro' and 'AF-646' were the least oviposited (Figure 1), indicating there was non-preference for oviposition. Probably, in consequence of this fact, 'Vereda' and 'AF-646' also presented the lowest *B. tabaci* biotype B nymph means (Figure 1).

In other plant species, researchers have reported that there are different levels of attractiveness and preference

Table 3. Average period (±SE) of nymphal instars and total cycle (egg-adult) of *B. tabaci* biotype B obtained in nine melon cultivars in laboratory (25±2°C; 70±10% RH; 12:12 L:D (médias (±EP) de duração de ínstares ninfais e ciclo total (ovo-adulto) de *B. tabaci* biótipo B em nove cultivares de meloeiro em laboratório (T= 25±2°C; UR= 70±10%; fotofase = 12h). Botucatu, UNESP, 2008/2009.

Cultivar	Period (days)				Total cycle
	1st instar	2nd instar	3rd instar	4th instar	
Jangada	4.20 ± 0.15	3.53 ± 0.51	3.36 ± 0.50 ab	4.05 ± 0.14 a	22.14 ± 0.92
Hales Best	5.00 ± 0.02	2.60 ± 0.03	4.43 ± 0.02 a	2.80 ± 0.01 b	21.83 ± 0.02
Frevo	4.98 ± 0.78	3.65 ± 0.12	2.94 ± 0.41 b	3.03 ± 0.38 b	21.60 ± 0.17
AF-646	3.97 ± 0.22	3.40 ± 0.11	3.84 ± 0.20 ab	3.17 ± 0.03 ab	21.59 ± 0.32
Amarelo Ouro	4.61 ± 0.05	3.83 ± 0.19	3.06 ± 0.20 b	2.92 ± 0.24 b	21.42 ± 0.51
Nilo	4.80 ± 0.25	3.41 ± 0.20	2.88 ± 0.19 b	3.28 ± 0.12 ab	21.37 ± 0.35
Vereda	4.72 ± 0.20	3.33 ± 0.22	3.20 ± 0.12 ab	3.03 ± 0.15 b	21.22 ± 0.17
Don Luis	4.39 ± 0.33	3.32 ± 0.24	3.05 ± 0.12 b	3.21 ± 0.25 ab	20.98 ± 0.10
AF-682	3.93 ± 0.43	3.78 ± 0.40	2.87 ± 0.16 b	3.21 ± 0.14 ab	20.19 ± 0.39
F	1.41^{ns}	1.89^{ns}	4.22^{**}	3.42^{*}	1.81^{ns}
CV (%)	13.23	13.34	13.43	10.54	3.35

Original data; means followed by the same letter in the column don't differ significantly, according to Tukey's test (p<0,05). (dados originais; médias seguidas de mesma letra, dentro das colunas, não diferem entre si pelo teste de Tukey (p<0,05).

for oviposition by *B. tabaci* biotype B, depending on the genotypes used. In a field trial with squash cultivars, Baldin *et al*. (2009) reported that the Sandy cultivar was the least attractive to the whitefly, while Caserta Cac Melhorada was the least oviposited. In a greenhouse assay, Valle & Lourenção (2002) reported large differences regarding the attractiveness of soybean genotypes for this whitefly, and 'IAC 17' and 'IAC 19' were considered the least attractive. Boiça Júnior *et al.* (2007) assessed the attractiveness and oviposition preference on 21 cotton genotypes, and found a significant gradient among the materials, especially for 'Fabrika', described as the least attractive and oviposited in free-choice and no-choice tests. Fancelli *et al*. (2003) also observed great variability in tomato plant attractiveness and even absence of infestation in wild *Solanum* species.

Greenhouse trials - The 'Hales Best' was outstanding in the free-choice test with the least number of adults per plant in the assessments at 24 and 48 hours after infestation, showing that it was the least attractive to *B. tabaci* biotype B (Table 1). In contrast, 'Jangada' and 'AF-646', 'AF-682' (24 and 48 h) and 'Frevo' (48 h) were the most attractive to the adults. The low attractiveness observed in 'Hales Best' in the greenhouse corroborated the field results obtained with this material (Table 1) and confirmed there was non-preference for this material. 'AF-682' was considered not very attractive in the field, but the greenhouse data indicated it to be the most attractive in this type of trial. This contrast may have been related to the lower infestation of the insect observed in the field and may also be due to the influence of abiotic factors, as discussed by Lourenção *et al*. (2011).

Regarding the number of eggs laid on the leaves of the cultivars in the free-choice test (Table 1), 'Amarelo Ouro' presented the lowest mean, suggesting oviposition non-preference. Based on the oviposition preference index, the 'Amarelo Ouro', 'Hales Best', 'Don Luis', 'Nilo', 'AF-646' and 'Frevo' were deterrent compared to the susceptible control 'Jangada'. In a similar trial, with 32 different melon cultivars, 'Jangada' also stood out as among the most attractive and oviposited by *B. tabaci* biotype B, while 'Neve' was the most resistant (Coelho *et al*., 2009).

In a no choice test, the 'Amarelo Ouro', 'Hales Best', 'AF-646' and 'Vereda' were the least oviposited by whitefly, unlike 'Nilo' and 'Jangada' (Table 2). Based on the index, these four cultivars and also 'AF-682' were deterrent to oviposition from whitefly when compared to the commercial control 'Jangada'. 'Don Luis' and 'Frevo' were neutral while 'Nilo' stimulated the oviposition corroborating data by Coelho *et al*. (2009), who also identified this cultivar as the most ovipositioned together with 'Jangada'. The low means of eggs laid on the leaves of the 'Amarelo Ouro' and 'Hales Best' cultivars corroborated the results of the free-choice test (Table 1) and indicated there was oviposition non-preference on these materials.

Research has demonstrated that leaf position on the plant can play an important role in the choice of oviposition location for *B. tabaci* biotype B (Chu *et al*., 1995; Liu & Stansly, 1995; Baldin & Pereira, 2009). In and experiment with *Cucurbita* spp. genotypes, Baldin & Beneduzzi (2010) assessed the interaction between the leaf position on the plant and the number of eggs deposited by the whitefly and observed that there was less oviposition when the leaves were in a higher position on the plant. The same was reported by Cardoza *et al*. (1999), who observed less oviposition on the abaxial surface of upper leaves of the Elite, ZUC76-SLR and ZUC33-SLR/PMR genotypes.

Further on whitefly oviposition, morphological aspects of the plant, such as trichome density and configuration (glandular or not), can represent important resistance sources (Toscano

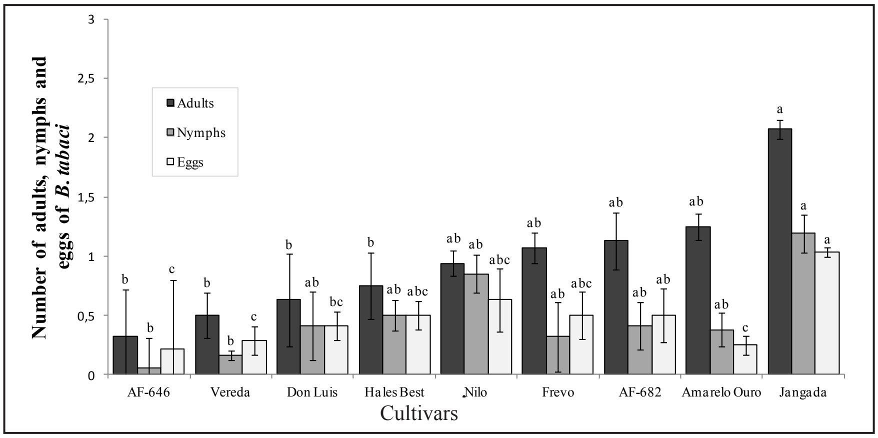

Figure 1. Mean (±SE) number of adults, eggs and nymphs of *B. tabaci* biotype B on melon plants, obtained during the development of culture in the field (número médio (±EP) de adultos, ovos e ninfas de *B. tabaci* biótipo B por planta de melão, obtidos durante ensaio de campo). Botucatu, UNESP, 2008/2009.

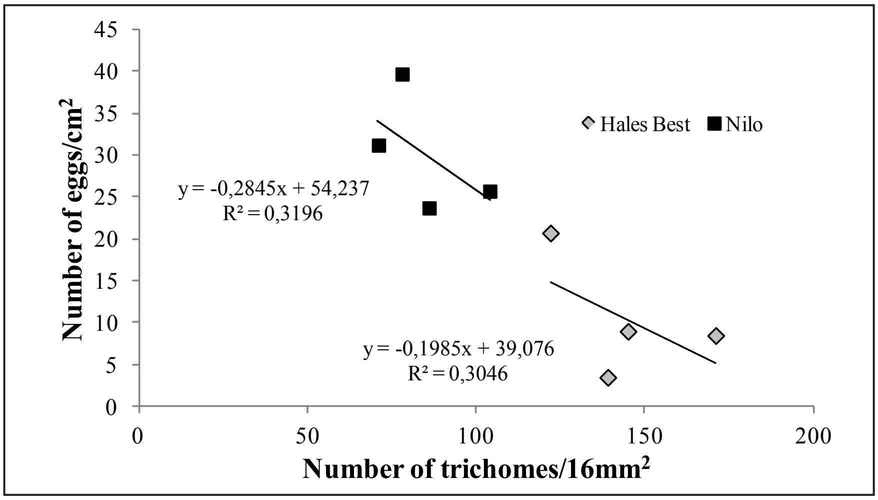

Figure 2. Correlation between mean of trichome/16 mm² and number of eggs/cm² on 'Hales Best' and 'Nilo' cultivars (correlação entre a média de tricomas/16 mm² e o número de ovos/cm² presentes nas cultivares 'Hales Best' e 'Nilo'). Botucatu, UNESP, 2008/2009.

et al., 2002a; 2002b). The trichome quantification in the present study (no choice test) showed that the 'Hales Best' cultivar had the highest trichome density compared to the other cultivars (Table 2). The correlation graph (Figure 2) between trichome density and number of eggs on 'Hales Best' and 'Nilo' suggested that as the number of trichomes increased, whitefly oviposition rate decreased. However, considering other materials such as 'Amarelo Ouro', this tendency was not confirmed, suggesting the action of other factors. Generally high *B. tabaci* biotype B oviposition rates have been associated to high trichome densities on soybean, cotton and tomato leaves (Valle & Lourenção, 2002; McAuslane 1996; Heinz & Zalom, 1995; Flint & Parks, 1990). The negative correlation observed between trichomes and oviposition for some of the cultivars assessed in the present study can be explained by the low variability in trichome density in the germplasm assessed.

The presence of glandular trichomes is considered one of the main causes of morphological resistance in plants and can affect oviposition and feeding of small sucking insects (Sippell *et al*., 1987; Heinz & Zalom, 1995; McAuslane, 1996). The importance of these structures as resistance source against whitefly has been reported by several authors (Butler Junior *et al*., 1986; Valle & Lourenção, 2002; Lima & Lara, 2004; Fancelli *et al*., 2003; Baldin *et al*., 2005). The potential effects of the trichomes on the whitefly can vary, favoring or not the insect, depending on the trichome angle on the leaf surface, length and type. These factors potentially affect oviposition, fixing and juvenile feeding (Mound, 1965; Williams *et al*., 1980; Channarayappa *et al*., 1992). The morphological and chemical characterization of the trichomes in melon cultivars should be assessed in greater depth in future studies, to help in the understanding of the interaction with *B. tabaci* biotype B.

Significant differences were not detected among the cultivars regarding the duration of the first and second nymph instars (Table 3). Regarding the third instar, 'Hales Best' significantly prolonged the period, differing from 'Frevo', 'Nilo', 'Amarelo Ouro', 'Don Luis' and 'AF-682'. In the fourth nymph instar, the Jangada cultivar differed from 'Hales Best', 'Frevo', 'Vereda' and 'Amarelo Ouro' and presented the highest mean duration compared to the other genotypes. The significant prolongation observed in 'Hales Best' and 'Jangada', in the third and fourth instars, respectively, suggested there was non-preference for feeding and/or antibiosis (Panda, 1979; Lara, 1991). However, as the cultivars did not differ for the total *B. tabaci* biotype B development period (egg-adult), it can be stated that these resistance mechanisms occurred at low levels.

Coelho *et al.* (2009) in a similar experiment with the same whitefly species, did not observe significant differences in the development periods of seven melon cultivars. These authors reported means ranging from 24.0 and 25.4 days, that is, they were almost 5 days longer than those obtained in the present study. This probably occurred because the trial was carried out in a greenhouse and not a laboratory, as in the present study. The means of adult emergence in the present study were around 80%, with no significant difference among the cultivars. Among the seven cultivars assessed by Coelho *et al.* (2009), 'Vereda' (68.25%) and 'Nilo' (69.3%) presented the lowest emergence means, indicating there was antibiosis in these materials.

Based on all the assessments carried out, 'Hales Best' and 'Amarelo Ouro' were the most resistant cultivars, expressing oviposition non-preference to whitefly. The trichome density was associated to variation in oviposition on the materials and should be better investigated in future studies. These results can be useful in melon breeding programs to obtain cultivars resistant to *B. tabaci* biotype B in the field and greenhouse.

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