Original Article

OCCURRENCE OF THE STINKBUG *Edessa meditabunda* F. (Pentatomidae) IN DIFFERENTS CULTIVARS OF LETTUCE *Lactuca sativa* L. (*Asteraceae)*

OCORRÊNCIA DO PERCEVEJO Edessa meditabunda *F. (Pentatomidae) EM DIFERENTES CULTIVARES DE ALFACE* Lactuca sativa *L. (Asteraceae)*

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ABSTRACT: There are few research involving vegetables pests, especially when we consider the culture of lettuce (*Lactuca sativa*). Thus, the aim of this study was to verify the presence of stinkbugs *Edessa meditabunda* over four cultivars of lettuce. The experiment was conducted in field conditions in the vegetable garden of farm Florentino, Novo Progresso, south Pará State (7°07'45.71"S 55°23'21.13"W), between the months october and december 2010. We used four cultivars of lettuce: *Elba* (curly group), *Teresa* (american group), *Regina* (smooth group), and *Mimosa* (clippings group). The samplings of stinkbugs were made in december, when the plants had 30 days after transplantation. In each cultivar was randomly selected one lettuce plant per line, totaling 10 plants sampled from each cultivar/day and 30 plants per cultivar during all samplings. The data were submitted to analysis of variance and the averages were compared by *Tukey* test at 5% probability. Were collected 443 adults, 127 nymphs and 50 postures of *E. meditabunda*.The results shows that the incidence of adults was higher in cultivars *Elba* (curly group) and *Teresa*(american group) (p<0,001) and the abundance of nymphs and postures of *E. meditabunda* were statistically higher in the cultivar *Elba* (curly group) than others cultivars (p<0,001), indicating the preference of stinkbugs for these cultivars. Considering the few studies conducted with *E. meditabunda*, and this being the first to obtain information about the occurrence of stinkbugs attacking different cultivars of lettuce, we suggest further studies to evaluate the physiological and morphological effects caused by these insects in lettuce.

KEYWORDS: Hemiptera. Insect pests. Vegetables.

INTRODUCTION

The lettuce (*Lactuca sativa* Linné) is an annual plant of size herbaceous, small stem and unbranched with large leaves, smooth or curly, closing or not in the form of a head. It has a pivotal root system of thin and short branches, may reach up 60 cm depth, exploring effectively 15 to 20 cm soil profile (CAMARGO, 1984; MAROUELLI et al., 1994; GOTO, 1998).

According RYDER and WITAKER (1976) this vegetable is probably originary from the southern Europe and western Asia. After be diffused for all Europe it was introduced in the Americas, being brought to Brazil by the Portuguese in 1647. Today is explored nationwide in both soiland in hydroponic systems (SOARES, 2002). It is the most important green leafy vegetable in Brazil economy, with a planted area of approximately 35.000 hectares, and it is the basic component of salads prepared both commercially and in households (MORETTI; MATTOS, 2005; YURI et al., 2002).

The predominant cultivar in Brazil is the curly type, which comprises 70% of production, followed by the american, smooth and others cultivars that correspond respectively 15%, 10% and 5% on the trade (SALA and COSTA, 2005). It is a vegetable that deserves special interest due to nutritional and pharmaceutical value, which presents high levels of vitamins and minerals and low-calorie (RICK, 1978; KATAYAMA, 1993; OHSE et al., 2001; OHSE, 2000).

In Brazil, are reported 45 species of insect pests of lettuce (IMENES et al., 2000; GALLO et al., 2002), and the main pests are the whitefly (*Bemisiatabaci* Genn.), the aphid (*Dactynotussonchi* Linn.) and the leafhopper (*Empoasca* sp.). But at restricted periods according to climate (hot and dry springs), the trips (*Thripstabaci* Lind.) become pests that worry producers (PICANÇO; MARQUINI, 1999; CORTEZ; TEIXEIRA, 2005).

Many species of stinkbugs attacking various crop plants (PANIZZI, 2000;GALLO et al., 2002;), as observed in crops of pumpkin, cherry, cotton, rice, potatoes, eggplant, beets, boldo, chayote, citrus, peas, beans, tobacco, sunflower, joa, cassava, melon, corn, pepper, paprika, soybean, tomato, between others may cause economic damage (BASSO et al., 1974; LOPES et al., 1974; BUZZI; MIYAZAKI, 1993; LIMA; RACCA-FILHO, 1996; LOURENÇÃO et al., 1999; MOSCARDI et al., 2005; MICHELOTTO et al., 2006; GONÇALVES

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et al., 2008). However, there are no reports about the incidence of any stinkbug that attacks the *L. sativa*. Therefore, the aim of this paper was to verify the occurrence of *Edessa meditabunda*F. over four lettuce cultivars.

MATERIAL AND METHODS

The experiment was conducted in field conditions in the vegetable garden of farm Florentino, Novo Progresso, south ParáState, Brazil (7°07'45.71"S 55°23'21.13"W) between the months october and december 2010. The seedlings were produced in a temporary bed and 30 days after seeding was transplanted to permanent beds. We used four cultivars of lettuce, which are: *cv Elba* (curly group), *cv Teresa* (American group), *cv Regina* (smooth group) and *cv Mimosa* (clippings group) (Figure 1a-d). Each cultivar was planted in a bed (2.50 m x 1.25 m), in which the lettuce plants were arranged in five columns spaced 0.25 m among its and 0.25 m among lines, totaling 50 plants for each cultivar/bed (Figure 1e).

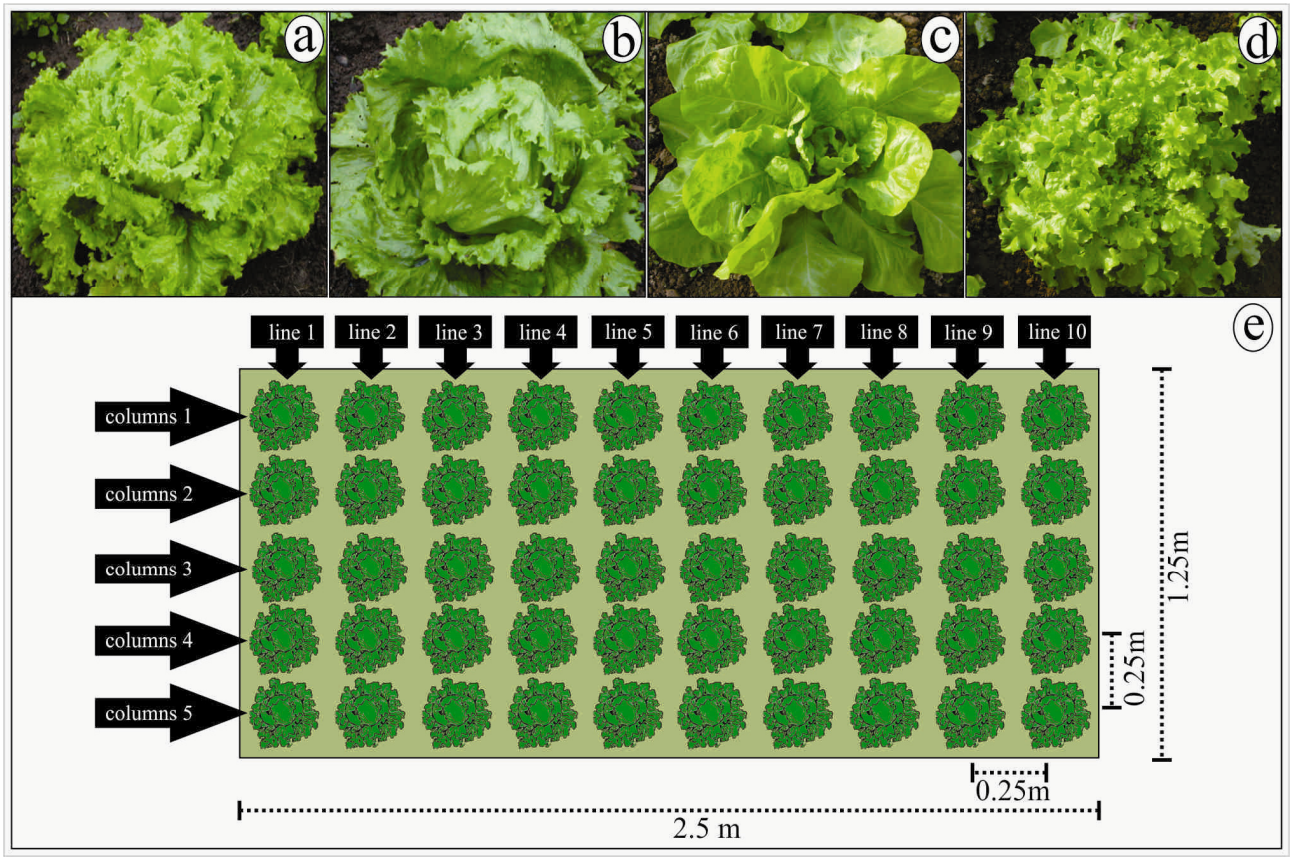

Figure 1. Cultivars of lettuce analyzed and it distribution over bed. (a) *cv Elba* – curly group; (b) *cv Teresa* – american group; (c) *cv Regina* – smooth group and; (d) *cv Mimosa* – clippings group; (e) General layout of the distribution of plants for each lettuce cultivar in beds with dimensions of 2.50 m length and 1.25 m width.

The samplings of stinkbugs *E. meditabunda* were performed on 24th, 27th and 29th december 2010, starting when the plants had 30 days after transplantation. For obtain data we used the following methodology: in each cultivar was randomly selected a lettuce plant per line, totaling 10 plants sampled from each cultivar per day. Plants already sampled in previous days were not considered in the other days. In each plant was recorded the number of adults, nymphs, and postures of *E. meditabunda*. Adults were kept in flasks until the end of each collections in all cultivars and were freed at the end of the samplings. The postures were removed and placed in Petri dishes to see if they were parasitized by microhimenopterans. The nymphs were not removed, just observed and counted the individuals on the plants.

The experimental design was completely randomized, the data were submitted to analysis of variance and the means were compared by *Tukey* test at 5% probability, using the free software SASM Agri - version 4 (CANTERI et al., 2001).

RESULTS AND DISCUSSION

In this study were collected 443 adults of *E. meditabunda*, of which 48.31% were in *cv Elba* (curly group), 37.02% in *cv Teresa* (american group), 11.96% in *cv Mimosa* (clippings group) and 2.71% in *cv Regina* (smooth group) (Table 1). Some plants had up to 24 adults of stinkbugs. Of the 127 nymphs observed, 89.76% were in *cv Elba* and 10.24% in *cv Teresa*. No nymphs were found in smooth and clippings cultivars. Fifty postures were collected, of which 56%, 28%, 10% and 6% were in *Elba, Teresa*, *Mimosa* and *Regina* cultivars respectively (Figure 2).

Figure 2. *Edessa meditabunda*over lettuce. (*a*) Adult on cv *Elba* (curly group), (*b*) nymphs on leaves of cv *Elba* (curly group), and (*c*) posture in cv *Teresa* (american group).

The results shows that the incidence of adults was higher in *Elba* (curly group) and *Teresa* (american group) cultivars (p<0,001), and the abundance of nymphs and postures of *E. meditabunda* were higher in the cultivar *Elba* (curly group) than others cultivars (p<0,001), indicating the preference of stinkbugs for these cultivars (Table 1).

Table 1. Total number and means of adults, nymphs and postures of *E. meditabunda* found in four lettuce cultivars.

Cultivar	Adults[2]	Nymphs[3]	Postures[4]
	mean ± SE[5] (total)	mean ± SE (total)	mean ± SE (total)
*Elba (*curly group)	7.13± 0.76a[1] (214)	3.80 ± 0.62a (114)	0.93 ± 0.20a (28)
Teresa (american group)	5.46 ± 1.23a (164)	0.43 ± 0.15b (13)	0.47 ± 0.11b (14)
Regina (smooth group)	0.40 ± 0.20b (53)	0.00 ± 0.00b (0)	0.10 ± 0.06b (3)
Mimosa (clippings group)	1.76 ± 0.38b (12)	0.00 ± 0.00b (0)	0.17 ± 0.07b (5)

[1]Means followed by same letter in the column do not differ by *Tukey* test at 5%; [2]F=17.78; [3]F=35.87; [4]F=10.40; [5]standard error (SE).

The highest incidence of adults, nymphs and postures of *E. meditabunda* on the *Elba* and *Teresa* cultivars may be related to the nutritional composition of these cultivars, therefore, another studies should be performed in order to check the possible nutritional differences between various types of lettuce. Gonçalves et al. (2008) recorded that the damage caused by this species may limit the production of several crops, depending on the number of insects that are feeding on plant-host and phenological structure of plant used by them. However, there are no studies in the literature relating to damage that these stinkbugs may cause the lettuce.

Cortez and Teixeira (2005) reported that the attack of pests on vegetables is one of the main problems faced by farmers, because many species of pests find in these environments optimum conditions for development and reproduction. Gallo et al. (2002) already emphasized that the pests can cause direct or indirect injure in plants, since they may alter the physiological processes causing prejudice on production, and for lettuce, the main attributes of quality are well formed plants and good

appearance leaves due to absence of physical damage and insects attack (IMENES et al., 2000).

According to information reported by producers, the occurrence of the *E. meditabunda* in lettuce makes the bolting happen earlier. The bolting consists in elongation of the stem, reducing the number of leaves and stimulating the latex production, which become the taste of the leaf bitter (COCK et al., 2002). This reflects in a crop of small plants, with less weight and minor number of leaves, bad appearance, not expressing its maximum genetic potential (SANTANA et al., 2005). Therefore, researches based in observations of producers (empirical) should be performed to confirm the interference of *E. meditabunda* on the lettuce phenology.

However, the cultivars were not evaluated in order to verify the influence of stinkbugs over early bolting. The current data this stinkbug species presented in this study are preliminary, and thus require specific researches to further understanding about the ecology of the species involved, because as reported by Lopes et al. (1974), the knowledge related to the host plants of a particular group of insects is important for studies about bio-ecology, population dynamics and predicting the emergence of new pests, and mainly in general agriculture (PANIZZI, 1997).

Considering the few researches conducted with *E. meditabunda*, and this being the first to obtain information about the occurrence of stinkbugs attacking different cultivars of lettuce, we suggest further studies to evaluate the physiological and morphological effects caused by these insects in lettuce to be able to know the economic impact of this pest and to establish the levels of damage.

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RESUMO: Pesquisas envolvendo pragas de hortaliças são escassas, principalmente quando consideramos a cultura da alface. Assim, este estudo teve como objetivo avaliar a presença de percevejos *Edessa meditabunda*F.em quatro cultivares de alface. O experimento foi conduzido em condições de campo, na horta da Fazenda Florentino, município de Novo Progresso, sul do Estado do Pará, Brasil (7°07'45.71"S 55°23'21.13"W), entre os meses de outubro e dezembro de 2010. Foramutilizadas quatro cultivares de alface, sendo elas: *Elba* (do grupo crespa), *Teresa* (do grupo americana), *Regina* (do grupo lisa) e *Mimosa* (do grupo repicada). As coletas de percevejos foram realizadas em dezembro, quando as plantas já apresentavam 30 dias de transplante. Em cada cultivar foi sorteado uma planta de alface por linha, totalizando 10 plantas amostradas em cada cultivar/dia e 30 plantas por cultivar durante todas as coletas. Os dados foram submetidos à análise de variância e as médias comparadas pelo teste de *Tukey* a 5% de probabilidade. Foram coletados 443 adultos, 127 ninfas e 50 posturas de *E. meditabunda*. Os resultados mostram que a incidência de adultos foi maior nas cultivares *Elba* (crespa) e *Teresa* (americana) (p<0,001) e que a abundância de ninfas e posturas de *E. meditabunda* foram maiores na cultivar *Elba* (crespa) quando comparados com as outras cultivares (p<0,001), indicando a preferência dos percevejos por estas cultivares. Considerando a escassez de trabalhos sobre *E. meditabunda*em alface, e sendo este o primeiro a obter informações sobre a ocorrência deste percevejo em diferentes cultivares, fica como sugestão para posteriores estudos, analisar os efeitos fisiológicos e morfológicos que *E. meditabunda* causa sobre as diferentes cultivares de alface.

PALAVRAS-CHAVE: Hemiptera. Insetos praga. Hortaliças.

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