First Record of Empoasca kraemeri (Hemiptera: Cicadellidae) Attacking Sweet Potato in Brazil

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First record of *Empoasca kraemeri* (Hemiptera: Cicadellidae) attacking sweet potato in Brazil

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The sweet potato (*Ipomoea batatas* (L.) Lam., Convolvulaceae) is cultivated throughout the national territory of Brazil, presenting great phenotypic and genotypic diversity (Santos et al. 2018). The plant has a wide spectrum of potential uses, making it a species of economic interest, mainly for developing countries with food shortages. Therefore, sweet potato is grown in more than 100 countries, making it 1 of the world's 7 most important sources of food (FAO 2016). Cultivation can be designated for animal and human consumption, cosmetic, fabric, paper, preparation of adhesives, and alcohol fuel industries, as well as raw materials for food (Cardoso et al. 2005; Castro et al. 2018; dos Santos et al. 2018).

Among the most damaging sweet potato pests in Brazil are *Bedellia somnulentella* Zeller (Lepidoptera: Bedelliidae), *Diabrotica speciosa* Germar (Coleoptera: Chrysomelidae), *Euscepes postfasciatus* Fairmaire (Coleoptera: Curculionidae), *Megastes pusialis* Snellen (Lepidoptera: Crambidae), and the mites *Tetranychus ludeni* Zacher and *Tetranychus urticae* Koch (Acari: Tetranychidae) (Soares et al. 2012; dos Santos et al. 2018), all with the capacity to cause production losses.

The objective of this study was to report, for the first time, the attack and impact of the *Empoasca kraemeri* Ross & Moore (Hemiptera: Cicadellidae) on sweet potato germplasm in Brazil.

Adult and immature *E. kraemeri* (Fig. 1A–D) were observed in the Vegetable Crops sector at the Universidade Federal dos Vales do Jequitinhonha e Mucuri (UFVJM) in Diamantina, Minas Gerais State, Brazil (18.166600°S, 43.500000°W; 1,387 masl). The insects were detected between Sep and Dec 2017 in a bank of sweet potato germplasm, grown in soil beds within a greenhouse. The mean air temperature and relative air humidity of these months were 20.6 °C and 66.7% (INMET 2018), respectively. Physical injuries were caused by *E. kraemeri* penetrating the stylet into the phloem of the plant, creating chlorotic spots on the leaves and necrosis (Fig. 1C, D).

Adults of *E. kraemeri* were collected and killed in 70% alcohol, and taken to the Agricultural Entomology Laboratory of the University to confirm the identification. The identified samples were deposited in the entomological collection of the Museum of Entomology of the University.

Empoasca kraemeri is widely distributed in tropical and subtropical regions of the world (Singh & Allen 1979). This pest occurs in the abaxial and adaxial leaf surfaces. In the third instar, the nymph can easily be seen and identified by its rapid lateral movement. Adults of *E. kraemeri* are green, and measure about 4 mm in length. The mean longevity of these adults is 60 d (Gallo et al. 2002). The egg incubation period is about 10 d, and the immature period lasts between 8 and 10 d (Gallo et al. 2002). Higher infestations may lead to changes in plant growth, which demonstrate downward facing leaf edges with reduced size (Boiça Júnior et al. 2000).

The species was observed attacking other crops with economic importance, ultimately causing damage, such as *Jatropha curcas* L. (Euphorbiaceae) (Laviola et al. 2010), *Manihot esculenta* Crantz (Euphorbiaceae) (Pamplona et al. 2009), *Phaseolus vulgaris* L. (Fabaceae), and *Ricinus communis* L. (Euphorbiaceae) (Santos et al. 2009), all records for Brazil. There is also a report of *E. kraemeri* attacking sweet potatoes in Peru (Langlitz 1964).

The geographic record of the presence of phytophagous species and the identification of their hosts are important for the design of local strategies for integrated pest management (IPM) (Pires et al. 2011). This is the first report of *E. kraemeri* damaging *I. batatas*, in the municipality of Diamantina (average temperature of 19 °C), and shows that this pest now warrants integration into Brazilian sweet potato pest monitoring programs.

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Summary

Empoasca kraemeri Ross & Moore (Hemiptera: Cicadellidae) is a phytophagous species widely found in tropical and subtropical regions of the world. This species is associated with several agricultural crops, where they are established due to food supply and favorable developmental conditions. The objective was to record the occurrence and damage caused by *E. kraemeri* in sweet potato germoplasm in Diamantina, Minas Gerais State, Brazil. Physical injuries were caused by *E.*

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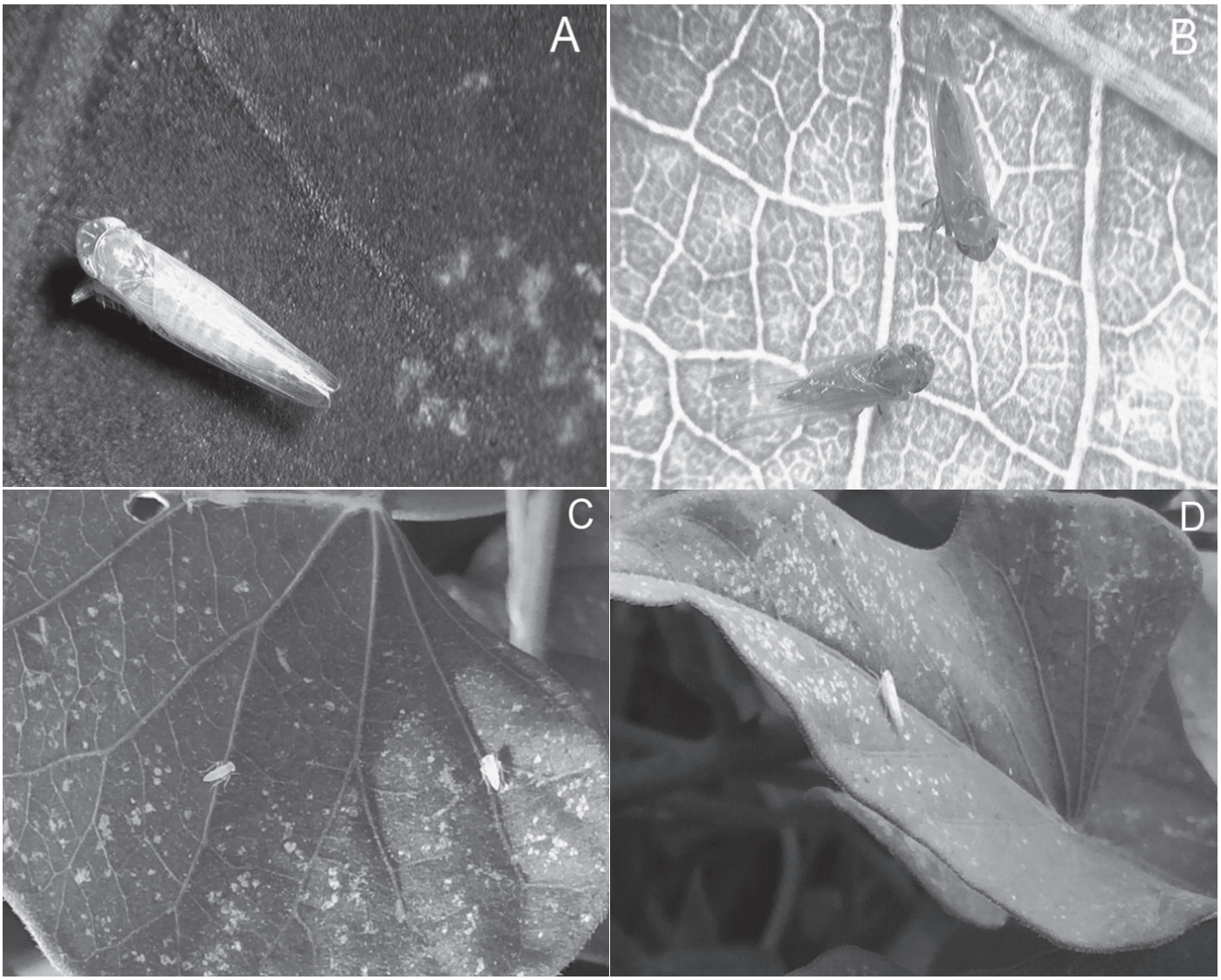

Fig. 1. Adults of *Empoasca kraemeri* (Hemiptera: Cicadellidae) on sweet potato leaves (A, B), immature (C) and resulting injuries; chlorotic spots (C, D) Diamantina, Minas Gerais State, Brazil, in 2017.

kraemeri penetrating the stylet into the phloem of the plant, creating chlorotic spots on the leaves with posterior necrosis. This insect has the potential to cause severe damage. Thus, it is important to include *E. kraemeri* in integrated pest management programs for the sweet potato.

Keywords: integrated pest management; leafhopper; *Ipomoea batatas*

Sumário

Empoasca kraemeri Ross & Moore (Hemiptera: Cicadellidae) é uma espécie fitófaga amplamente encontrada em regiões tropicais e subtropicais do mundo. Esta espécie está associada a várias culturas agrícolas, onde se estabelecem devido ao fornecimento de alimentos e condições favoráveis de desenvolvimento. O objetivo foi registrar a ocorrência e danos de *E. kraemeri*, atacando um banco de germoplasma de batata doce no município de Diamantina, estado de Minas Gerais, Brasil. Injúrias foram causadas por *E. kraemeri* ao penetrar os estiletes no floema da planta, provocando manchas cloróticas nas folhas com posterior necrose. Este inseto tem o potencial de causar danos severos. Assim, é importante incluir *E. kraemeri* no manejo integrado de pragas da batata doce.

Palavras Chave: cigarrinha; *Ipomoea batatas*; manejo integrado de pragas

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