

First report of *Bactrocera latifrons* Hendel in the Democratic Republic of Congo

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Abstract

Bactrocera latifrons Hendel is an invasive species detected in 2016 in Burundi, a neighbouring country of the Democratic Republic of Congo. An incubation study was carried out over a one-month period from 15 February to 15 March 2020 on African eggplant (*Solanum aethiopicum*) collected in Kavimvira, Uvira territory. The results of this study showed that *Bactrocera latifrons* is present in the eastern part of the Democratic Republic of Congo. Further studies should be conducted on the geographical distribution of *Bactrocera latifrons* in the different regions of the Democratic Republic of Congo and its host plants.

KEYWORDS

fruit flies, incubation, invasive species, Solanaceae, vegetables

Premier signalement de *Bactrocera latifrons* Hendel en République démocratique du Congo

Bactrocera latifrons Hendel est une espèce envahissante détectée en 2016 au Burundi, pays voisin de la République démocratique du Congo. Une étude d'incubation a été réalisée sur une période d'un mois, du 15 février au 15 mars 2020, sur des aubergines amères (*Solanum aethiopicum*) prélevées à Kavimvira, quartier d'Uvira. Les résultats de cette étude ont montré que *Bactrocera latifrons* est présente dans la partie orientale de la République démocratique du Congo. Des études complémentaires devraient être réalisées afin de déterminer la répartition géographique de *Bactrocera latifrons* dans les différentes régions de la République démocratique du Congo ainsi que sa gamme de plantes-hôtes.

Первое сообщение о *Bactrocera latifrons* Hendel в Демократической Республике Конго

Bactrocera latifrons Hendel – это инвазивный вид, выявленный в 2016 году в Бурунди, соседней стране Демократической Республики Конго. В течение месяца с 15 февраля по 15 марта 2020 года было проведено инкубационное исследование на африканском баклажане (*Solanum aethiopicum*), собранном в Кавимвире, территория Увир. Результаты этого исследования показали, что *Bactrocera latifrons* присутствует в восточной части Демократической Республики Конго. Дальнейшие исследования должны касаться географического распределения *Bactrocera latifrons* в различных районах Демократической Республики Конго и его кормовых растений.

1 | INTRODUCTION

Bactrocera latifrons is a fruit fly of Asian origin (Vargas & Nishida, 1985; White & Elson-Harris, 1994). It infests solanaceous and cucurbitaceous crops (Liquido *et al.*, 1994; Mwatawala *et al.*, 2010; Mziray *et al.*, 2010; McQuate & Liquido, 2013). This solanum fruit fly was detected for the first time in Africa in 2006 in the Morogoro Region, Eastern Central Tanzania (Mwatawala *et al.*, 2007). In 2007, the pest was found in Southern Kenya (Mwatawala *et al.*, 2010). Later, it was detected in Burundi in 2016 on African eggplant (*Solanum macrocarpon*) in Kirundo province, northern Burundi (Ndayizeye *et al.*, 2019).

Populations of Burundi and the Democratic Republic of Congo often cross borders for trade or other reasons. Fruit flies can easily be introduced to new areas with trade of infested fruits (Aluja & Norrbom, 2000; Duyck *et al.*, 2004; Diamantis *et al.*, 2011; Malacrida *et al.*, 2007). Traded fruits and vegetables (including, for example, tomatoes, oranges, mangoes, pepper, aubergines, cucumber, and watermelon) carry a risk of introduction of *B. latifrons* in new areas.

B. latifrons is a species of quarantine importance because of the number of potential commercial solanaceous crops it can infest, such as tomato, eggplant, and pepper (EPPO, 2017; Mwatawala *et al.*, 2010), causing heavy losses in production and affecting exports. In addition to that, the experience has shown that control and eradication of established fruit fly species are complicated and costly (Carey *et al.*, 2017; Cugala *et al.*, 2011).

Fruits and vegetables are a source of income and nutrients to small-scale farmers and protection of these resources can thus contribute significantly to poverty reduction and food security (Badii *et al.*, 2015; Vayssières *et al.*, 2008).

Thus, it is of the great importance to know if this harmful fruit fly is already established in the Democratic Republic of Congo and ensure early detection to prevent losses on fruits and vegetables. This study focused on African eggplant, in the farms in Uvira territory. This region was chosen because it borders Burundi to the west and there is a lot of movement of people and goods across the border. In addition, the agriculture sector is quite well developed in this area.

A study based on fruit incubation was conducted from 15 February up to March 2020 on African eggplant fruit collected in Uvira territory.

2 | METHODOLOGY

Ripe eggplant fruits (*S. aethiopicum*) were collected from a growers' cooperative in Kasenga. Kasenga is located in Mulongwe Commune and borders Tanganyika

Lake to the east. Apart from trade, the economy of its population relies on agriculture, livestock, and fishing. Different kinds of vegetables are grown for subsistence. Thirteen eggplant fruits were collected and processed as follows. Fruits were put in plastic bags to facilitate transportation. Thereafter, fruits were placed in plastic boxes containing sand at the OBPE rearing facility. The plastic boxes were covered by mosquito net tissue to allow air flow. One fruit was placed in each box. The label stated the collection date, number of the fruit, and the incubation date. The rearing facility was cleaned every day to avoid any contamination of samples or predation action of ants. Daily monitoring was done to recover emerged flies. The emerged flies were conserved in flasks containing alcohol at 70%. The incubation process took a whole month until total fruit decomposition. Specimens were identified using a multientry identification key of Virgilio *et al.* (2014). Some specimens were kept in the Laboratory of Biodiversity Research at OBPE.

3 | RESULTS

Of the 13 eggplant fruits incubated, six were infested (46%). The infested samples contained a total of 11 individuals of *B. latifrons*. Two fruits yielded three individuals each, one fruit contained two individuals, and three fruits yielded one individual each. These results are likely to be of concern to Congolese farmers because they confirm our hypothesis that *B. latifrons* is already established in Uvira territory.

4 | CONCLUSION

The results of the study show that *B. latifrons* is present in Uvira territory and attacks ripe fruits of the African eggplant. However, as far as the authors know, unusual damage has not been reported by farmers (although they have not been contacted directly about this as part of this study). As there is trade in potentially infested fruit between Uvira territory and other regions of the Democratic Republic of Congo (e.g. between Uvira and Bukavu, Bukavu, and Goma, as there is intensive movement of goods and people between these areas) it should be investigated whether this fly has already reached other areas in the eastern Democratic Republic of Congo. Further studies should work on the geographical distribution of *B. latifrons* in the different regions of the Democratic Republic of Congo and its host plants.

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