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A Note on the Mango Gall Midge (*Procontarinia matteiana* Kieffer & Cecconi) (Diptera: Cecidomycidae): A New Threat to Mango Industry in South Kordofan State, Sudan

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Abstract: This study was conducted to survey the incidence of mango gall midge (*Procontarinia matteiana* Kieffer & Cecconi) in South Kordofan State, Sudan. Twenty - two sites were visited. All inspected mango trees were infested. Field observations on the life cycle of *P. matteiana* showed that egg and larval periods lasted 7-10 days, while the pupal stage took 5-7 days. The survey concluded that *P. matteiana* is widely distributed in South Kordofan State. Further studies on the life cycle, distribution and economic importance of the mango gall midge is needed.

Key words: *Procontarinia matteiana*; mango; Sudan

The mango (*Mangifera indica* L.) fruits are widely consumed throughout the tropical world. The mango tree has been grown in the Sudan since 1904, being introduced from Egypt and India. More recently, a number of cultivars has been introduced from South Africa by the Ministry of Agriculture and Forestry and the Farmers' Union (Dawoud 2008). Mango is a major horticultural fruit crop in the Sudan for local consumption and export. The total production of mango fruits in 2008 was 651 000 tons, 36% of which was produced in South Kordofan State (MOAF 2008).

The gall forming cecidomyids, as commonly known, are minute delicate insects. About 20 species of midges are reported to infest flowers, leaves and twigs of the mango plant (Srivastava 1997). Among these species, the mango gall midge (*Procontarinia matteiana* Kieffer & Cecconi) is one of the most common midges infesting mango crop all over India. Beside India, this species has been reported in Mauritius, Trinidad, Oman and South Africa (Raman *et al*. 2009). The mango gall midge was first reported in the Sudan in 2004 at Wad Medani (ARC 2004); its eggs are laid in the tissue of tender leaves. Within a week after oviposition, galls

having lenticular thickenings develop. The larva is the destructive stage; it takes 2-12 months. Pupation takes 5 - 7 days (Gupta 1952). Shoots of heavily infested trees have almost no inflorescences, resulting in low yields of fruits (Srivastava 1997). No studies were done on the biology, ecology, distribution and economic importance of *P. matteiana* under Sudan conditions (M. A. Ahmed, 2009, pers. comm.).

A survey was conducted during June - July 2007, covering 22 sites in South Kordofan State, to study the distribution of *P. matteiana*. Ten orchards were chosen randomly at each site; and twenty mango trees were chosen within each site; five in each main direction. The percentage of infested trees was recorded. Daily observations on the developmental periods of eggs, larvae and pupae were also made. In all surveyed sites, *P. matteiana* attacked fresh mango leaves and showed symptoms similar to those described by Srivastava (1997) (Fig 1). High humidity improved the larval and pupal survival capacity and more galls were formed. A similar observation was recorded by Askari and Bagheri (2005) in Iran. Development of eggs and larvae was completed within 7-10 days, and mature larvae dropped to the ground to pupate. The adults emerged 5-7 days later. We do not know how and from where *P. matteiana* came to South Kordofan State, but we assume that the gall midge larvae may have been transported by mango seedlings from infested soil or other materials covering the roots of mango plant in the nurseries. Apparently, *P. matteiana* has become a wide-spread in South Kordofan State. Further studies on the biology, ecology, distribution and economic importance of *P. matteiana* under Sudan conditions are needed.

Fig. 1. Close-up of galls caused by gall midge on mango leaf (*Procontarinia matteiana*)

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ذبابة أوراق المانجو
:Procontarinia matteiana Kieffer & Cecconi (Diptera: Cecidomycidae)
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موجز البحث: أُجريت هذه الدراسة لمسح وجود ذبابة أوراق المانجو فى إثنين وعشرين موقعاً بولاية جنوب كردفان (السودان). اتضح ان كل اشجار المانجو المختبرة مصابة وأن فترتى البيض واليرقات إنتهت فى 7 - 10 أيام بينما أخذ طور العذراء 5-7 أيام. يبدو أن لذبابة أوراق المانجو إنتشاراً واسعاً فى ولاية جنوب كردفان مما يستدعى إجراء دراسات على دورة حياة وإنتشار هذه الذبابة بالإضافة الى أهميتها الإقتصادية تحت ظروف السودان.