

FIRST REPORT OF A SNOUT WEEVIL *Alcidodes* sp. (COLEOPTERA: CURCULIONIDAE) FIELD INFESTATION ON MANGO *Mangifera indica* L. (ANACARDIACEAE) IN PERLIS, MALAYSIA

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ABSTRACT

An infestation of a snout weevil *Alcidodes* sp. (Coleoptera: Curculionidae) on *Mangifera indica* L. (Anacardiaceae) was scientifically reported for the first time in Malaysia. This snout weevil causes severe damage on young stems and flower panicles. Even though the tree survived from a few infestations, but severe cases could pose a serious economic implication on the productivity of the crop. Thus more research regarding the pest management of *M. indica* is required to maximize mango production in Malaysia.

Keywords: *Alcidodes*, Curculionidae, mango, pest

ABSTRAK

Penularan kumbang muncung panjang *Alcidodes* sp. (Coleoptera: Curculionidae) pada *Mangifera indica* L. (Anacardiaceae) dilaporkan secara saintifik buat kali pertama di Malaysia. Kumbang muncung panjang ini menyebabkan kerosakan teruk pada batang muda and tangkai bunga. Walaupun pokok tersebut terselamat daripada beberapa serangan tetapi kes-kes yang teruk boleh menimbulkan implikasi ekonomi yang serius terhadap produktiviti tanaman. Oleh itu lebih banyak kajian mengenai pengurusan perosak *M. indica* diperlukan untuk memaksimumkan pengeluaran mangga di Malaysia.

Kata kunci: *Alcidodes*, Curculionidae, mangga, perosak

INTRODUCTION

The largest number of *Mangifera* species originate in Tropical Asia (Bally 2006) and occur in the Malay Peninsula, the Indonesian archipelago, Thailand, Indochina and the Philippines (Mukherjee 1972; Mukherjee & Litz 2009). There are 300 varieties with diverse cultivars of mango in Peninsular Malaysia with fruits varying in shape, size, colour, flavor and fibre content. Cultivars which commonly planted for commercial purpose were Arumanis (MA 128), Sungei Siput (MA 159), Golek (MA 162), Maha (MA 165), Malgoa Ramasamy (MA 200), Bombay Green (MA 203), Mas Muda (MA 204), Siam Panjang (MA 205), Karutha

Kolumban (MA 217), Nam Dok Mai (MA 223), Sala (MA 164) and Chok Anan (MA 224) (Jabatan Pertanian Malaysia 2006; Aliakbarpour 2011). Mango cultivation in Malaysia has not shown much increase over the years and produce mainly for the local market. The reason for this situation is most likely because mango is susceptible to many pests and diseases.

Insect pests cause damage to mango tree during adult stage when they are foraging for food or searching suitable surface for oviposition process and during the immature stage when the larvae are feeding on pulp or fleshy parts of the plant (Mohd Noor et al. 2013). Different species of insect pests attack different parts of the mango tree. The most common pest of mango in Malaysia were fruit fly (*Bactrocera carambolae*, *B. papaya*), mango pulp weevil (*Sternochetus frigidus*), leafhopper (*Idioscopus clypealis*, *I. nitidulus*), leaf feeder (*Basilepta musae*), thrips (*Haplothrips* sp., *Thrips hawaiiensis*), leaf-cutting weevil (*Depaurus marginatus*), caterpillar (*Bombotelia jacosatrix*, *Orthaga incarusalis*), termite (*Coptotermes curvignathus*), shoot borer (*Chlumethia transversa*) and stem borer (*Rhytidodera simulans*) (Ithnin et al. 2008). Recently, infestation of *Alcidodes* sp. occurred in managed mango orchard in Perlis. The snout weevil has been sighted feeding on a mango shoot by farmers but their infestations have never been scientifically reported in literature before. However, it has been recognized as one of major arthropod pest of mango in Southeast Asia (particularly in Brunei and Myanmar) by Waterhouse (1993) and mango shoot borer in in western Maharashtra, India (Sathe et al. 2015).

MATERIALS AND METHODS

A few field observations were conducted at Universiti Teknologi MARA (UiTM) Perlis, Malaysia; fruit orchard located in Arau district at coordinates of 6°26'59'' N and 100°16'47'' E. Infested stems (with or without flowers) on mango tree of 10-year-old Chok Anan-MA 224 and Sala-MA 164 cultivars were located randomly within two 78m² plots (consisted of 40 trees) during January 2014. The symptoms of infestation observed on the plants were photographed. Infested stems were dissected with sharp knife to observe the presence of larvae. A few specimens of adults and larvae were brought back to laboratory for further observation. Meanwhile, in different study, more than 20 individuals of snout weevil adult were collected only on mango panicles during flowering season 2013 and 2014 (approximately from 500 flower panicles) in the same plots.

RESULTS AND DISCUSSION

Remarks on Biology of *Alcidodes* sp. (Adult and Mature Larva) and Their Damage on Mango Tree

The adult of the snouted weevil is a medium size of insect, 1-1.3cm in length (Fig. 1A). Freshly emerged adults are soft, reddish brown in color which later turn hard and light brown. Body elongated with the long and prominent snout. The elytra are light brown with pale stripes and dark marking. The legs are long and slender, slightly stout in the middle of fore femur and light brown in color especially posterior to coxa. The color of abdomen is much lighter than thorax. Geniculate antenna arises one on either side in a groove in the middle of the snout.

Mature larva (Fig. 1B) 9-10mm has creamy yellow, apodous with stout, cylindrical, moderately curved and wrinkled body. Head capsules are light brown with mouthparts biting and chewing type. Abdomen 10 segmented. The larva remains in the stem, but tunneling downwards into the larger stem where they finally pupate.

The snouted weevils *Alcidodes* sp. usually (in the case of the female adult) combine the act of feeding with the preparation of an oviposition site. Adults feed on soft, tender parts of the plant such as petiole, leaf buds, tender terminal portions and sometimes fruit. The long rostrum is used to make a deep excavation into the host plant tissue (Fig. 1A), the female feeds whilst excavating the hole, then lay an egg there. The larva then develops *in situ*, in the young stem. The larva feeds on pith (soft and spongy succulent tissue in the stem) and later tunneling downwards into the larger stem and inflicted shoot become hollowed and dried out (Fig. 1B). The injury caused by adult turned into gall like swelling and become obvious when the plant grows older (Fig. 1C & Fig. 1D). Usually more than one excavation wounds can be seen on infested stem but only one larva found in single tunnel. This observation consistent with statement by Singh et al. (2016) which have mentioned that usually only one egg is laid in a single excavation by snout weevil *Alcidodes*. The damage done on mango stem by the adults is quite insignificant but excessive feeding by an adult on flower panicles also causes flowers to drops and wilt (Fig. 1E & Fig. 1F).

The recent infestation of snout weevil *Alcidodes* sp. in Malaysia indicates that the insect can be a potential pest of young mango stems and flower panicles. The life cycle of this insect is annual. This *Alcidodes* sp. in both adult and larval stages feed on mango shoot/stem thereby reducing the vitality and vigor of the plant. As a result, many small hollowed branches fall down with the wind and flower panicles wilted thus reducing the fruit output. Even though most of the mature tree survived from the attack, but infestation during young stage may cause serious damage to plant growth. The severe infestation could pose a serious economic implication on the productivity of the crop. There is no detail literature about potential host plants for this *Alcidodes* sp. reported other than mango in Malaysia. However, *A. affaber* has been announced as serious shoot borer on okra from Himachal Pradesh, India by Singh et al. (2016). Meanwhile, a few other species have been reported as seed predators to 70 dipterocarp species with some *Alcidodes* (i.e *A. hoplomachus* and *A. humeralis*) has wide distribution (Ghazoul 2016).

One of the management options in an effort to reduce incidence of *Alcidodes* sp. infestation involves implementation of ecologically sound management strategies such as an environmental manipulation method in order to increase population of parasitoids in the ecosystem. Even though parasitoids of this particular species of *Alcidodes* have yet to be discovered, reports have indicated that two parasitoid species from genus *Euderus* (Hymenoptera: Eulophidae) is an egg parasite to *Alcidodes ludificator* (syn. *Alcides gmelinae*), a borer of *Gmelina arborea* from Assam, India (Singh 2005) and *Alcidodes bubo* a shoot borer of *Sesbania bispinosa* in Uttarakhand, India (Mahendran et al. 2014).

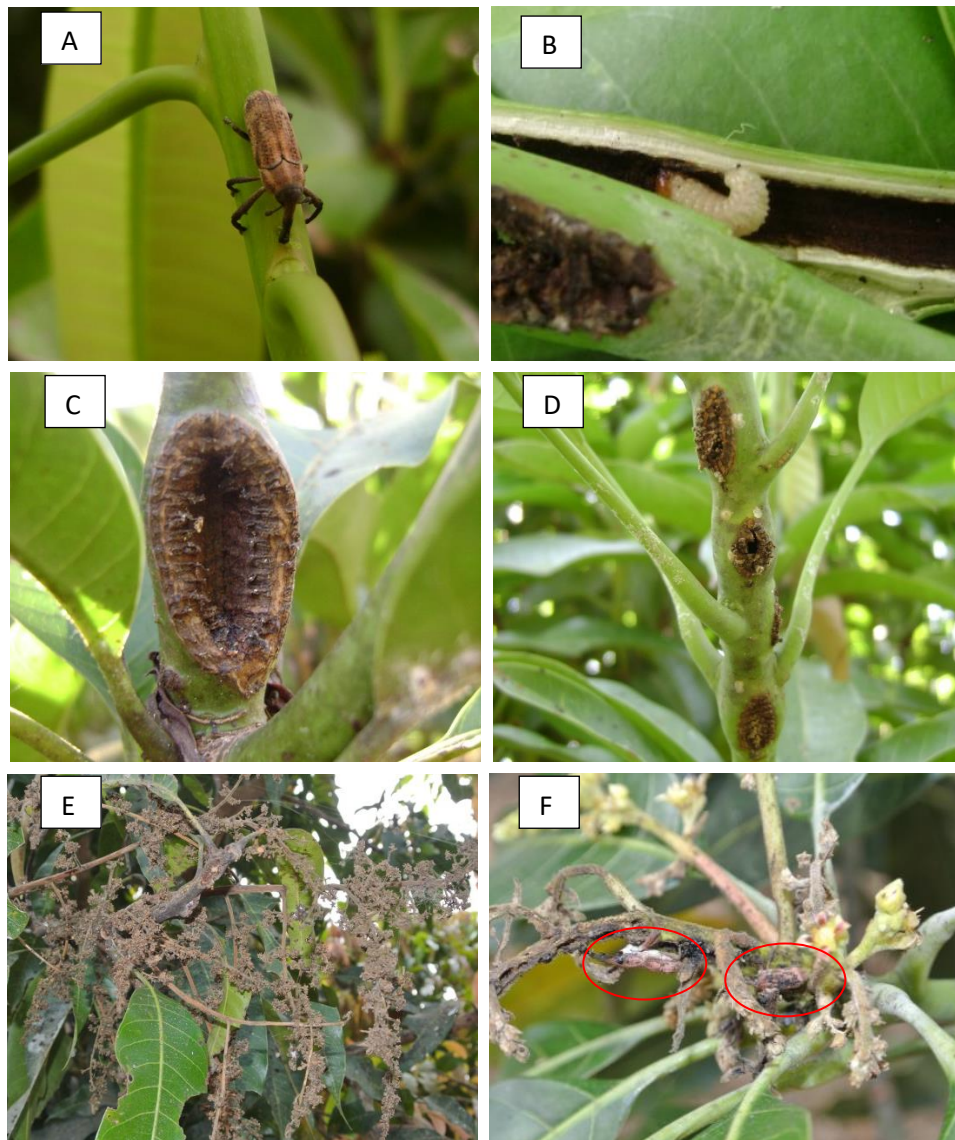


Figure 1 Adult (A), mature larva in hollowed stem (B), the excavation wound (C), wounds of heavily infested shoot (D), infested flower panicle wilted (E) excessive feeding by adults on young flower panicle (F)

CONCLUSION

It was observed that *Alcidodes* sp. is a serious pest for mango tree that feed particularly on tender parts of the plant. The feeding injury on internal tissues of young stems and flower panicles results in retarded growth and reduce the fruit output. Therefore, detailed study on biology and life cycle of this pest is currently needed in order to establish sustainable management in mango plantation. Hopefully, this report may serve as a foundation for more extensive research regarding the pest management of *Mangifera indica* to maximize mango production in Malaysia.

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