

Reproductive Potential, Feeding and Oviposition Preferences of the Mango Pulp Weevil, *Sternochetus frigidus* (Fabr.) (Coleoptera: Curculionidae), on 'Carabao' Mango

Louella R. A. de Jesus

Supported by the Department of Agriculture Regional Field Unit IVB (DA-RFU IVB)

Department of Agriculture Regional Field Unit IVB (DA-RFU IVB), Marauoy, Lipa City 4217, Batangas, Philippines.
e-mail: louelladejesus@yahoo.com

The longevity and reproductive potential of the mango pulp weevil, *Sternochetus frigidus* (Fabr.), and the levels of feeding and oviposition for weevils at different stages of mango fruit development were determined to identify suitable stages to use in succeeding experiments. Males lived an average of 496.7 ± 32.5 d and females 491.5 ± 33.0 d. The oviposition period was 165.1 ± 22.1 d comprising 33.6% of the adult life span. The female laid 796.3 ± 126.8 eggs in its lifetime at a rate of 5.5 ± 0.7 eggs per day. Percentage egg hatch was 90.3 ± 1.0 %. Female adult survival was 50% at 73 wk after adult emergence. Weekly fecundity rate (m_x) was based on the number of female progeny produced by a female parent. It was at its peak 6 wk after adult emergence, with an average of 26.2 eggs. The estimated value of the net reproductive rate (R_0) was 354.0. Female adults lived up to 70.9 ± 15.2 d without mango fruit but on wet bark alone. They lived up to 16.4 ± 1.4 d without bark or food and water. Female weevils had a higher level of feeding at 11–42 d after flower induction (DAFI) (panicle elongation to mungbean size fruit stage). Female weevils preferred to oviposit on mango fruits at the fruit enlargement stage (61–90 DAFI). The mango fruit part, whether the top (base of fruit), mid-portion or the bottom (fruit apex), were found to have no influence on the number of eggs laid.

Key Words: mango pulp weevil, *Sternochetus frigidus*, reproductive potential, feeding, oviposition, longevity

Abbreviations: DAFI – day after flower induction, KNO_3 – potassium nitrate, MLE – maximum likelihood estimation

INTRODUCTION

A major constraint to the export of fresh mango fruit is the quarantined pest – the mango pulp weevil, *Sternochetus frigidus* (Fabr.). With the exception of mangoes exported from the Guimaras Island, this pest has prevented the export of mangoes from the Philippines to the U.S. mainland. It was probably introduced from Borneo into the southern part of Palawan, an island in southern Philippines (Basio et al. 1994). Since 1987, the Palawan Island group has been placed under quarantine to prevent the spread of the pest. A Special Quarantine Administrative Order specifies that the movement, transfer or carrying of mango plants, fruits or parts from Palawan is prohibited.

The larvae of this weevil are the most destructive, feeding and developing on the pulp. Little was known about

the weevil until its life history, host range, feeding and reproductive behavior were studied by de Jesus and Gabo (2000) and de Jesus et al. (2003a, b).

Quarantine disinfestation treatment for the mango pulp weevil using irradiation is being explored in collaboration with other national research institutions. In order to conduct this study, it is necessary to rear thousands of weevils. However, no artificial diet exists to culture the insect in the laboratory. Therefore, the reproductive potential of *S. frigidus* as well as other oviposition parameters need to be determined in order to develop an efficient mass rearing system for this insect. In this study, the longevity and reproductive potential of *S. frigidus* were determined as well as the levels of feeding and oviposition of weevils at different developmental stages of the mango fruit.