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Seasonality and daily flight activity of stable flies (Diptera: Muscidae) on dairy farms in Saraburi Province, Thailand

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Abstract – Knowledge of seasonal abundance and flight activity patterns are required to design effective management programs for insect pests of humans and livestock. In this study, the seasonality and daily flight activity of *Stomoxys* species were observed on two dairy farms in Saraburi Province, Thailand. Data were assessed throughout 1 year using Vavoua traps from September 2010 to August 2011. A total of 2,520 individuals belonging to four species were collected. Most *Stomoxys* species peaked in September (rainy season) and gradually decreased in number toward February (dry season); a second peak occurred between March and April (hot season). *Stomoxys calcitrans* was caught throughout the year and was the most abundant species in this study. The total number of males and females of *S. calcitrans* differed significantly among seasons and time intervals. The weather parameters of relative humidity and light intensity were significantly correlated with *S. calcitrans* abundance.

Key words: *Stomoxys*, daily flight activity, dairy cattle, seasonal abundance, stable flies, Thailand.

Résumé – Saisonnalité et activité de vol quotidienne des mouches d'étables (Diptera : Muscidae) dans des fermes laitières de la province de Saraburi, Thaïlande. La connaissance de l'abondance saisonnière et des patrons d'activité en vol est nécessaire pour établir des programmes efficaces de contrôle des insectes nuisibles a l'homme et au bétail. Dans cette étude, les variations saisonnières et l'activité en vol quotidienne des espèces de *Stomoxys* ont été observées dans deux fermes laitières de la province de Saraburi, Thaïlande. Les données ont éte obtenues pendant un an en utilisant des pièges Vavoua de septembre 2010 à août 2011. Un total de 2,520 individus appartenant à quatre espèces a été récolté. La plupart des espèces de *Stomoxys* avaient un pic d'abondance en septembre (saison humide) et leur nombre décroissait régulièrement jusqu'en février (saison sèche) ; un deuxième pic apparaissait entre mars et avril (saison chaude). *Stomoxys calcitrans* a été capturé toute l'année et était l'espèce la plus abondante dans cette étude. Le nombre total de mâles et de femelles de *S. calcitrans* différait significativement selon les saisons et les intervalles de temps. Les paramètres climatiques d'humidité relative et d'intensité lumineuse étaient corrélés de manière significative avec l'abondance de *S. calcitrans*.

Introduction

Stable flies belong to the subfamily Stomoxyinae in the family Muscidae (Diptera). Among 18 *Stomoxys* species described, six species are recorded from Thailand, of which one is cosmopolitan, *S. calcitrans* (Linnaeus, 1758) [9, 22, 24]. Stable flies resemble house flies but can be easily distinguished by their piercing-sucking mouthparts which are conspicuous, long and project straightforward from under the head. They are important and widely distributed insect pests of livestock, wildlife and sometimes humans. Adult stable flies of both sexes are blood-sucking flies and cause painful bites and significant blood loss in some animals. High populations of biting activity can reduce animal productivity and disturb feeding resulting in reduced weight gain and milk production [2–5, 23]. Moreover, they may act as both biological and mechanical vectors for pathogens such as trypanosomes [19]. Stable flies may also act as an intermediate host of the nematode *Habronema* [21]. In Thailand, little is known about the presence of different stomoxyine fly species, their distribution and their biology. However,

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