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Effect of temperature on life history characteristics of *Liposcelis bostrychophila*

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The psocid *Liposcelis bostrychophila* is a worldwide stored product pest of various processed and unprocessed dry foods in households, granaries and warehouses. Recently, post-harvest treatments are not recommended owe to food safety awareness. Therefore, it is necessary to develop an alternative approach of chemical to manage *L. bostrychophila*. However, knowledges of the life history and ecological adaptability of *L. bostrychophila* are important for identifying the optimal timing to implement effective control measures. In this study, we investigated the developmental and reproductive traits of *L. bostrychophila* at 9 constant temperatures from 15 to 35°C at 2.5°C interval. The development period from egg to adult was decreased with the increasing of temperatures until 30°C, then increased at 35°C. At 35°C, most of the laid eggs did not hatched. The lower developmental threshold (T_0) and the thermal constant (K) estimated by using a linear model were 12.9°C and 346.2 degree-days, respectively. The average life span of *L. bostrychophila* was ca. 138 days at 25°C and ca. 90 days at 30°C. The intrinsic rate of natural increase (r_m) was 0.077 at 25°C and 0.138 at 30°C. Our results would be useful for assessing the overall effects of temperature on *L. bostrychophila* and the temperature effects should take into consideration when use the management program of this pest species.

Recent Publications

1. Waguri, S., S. Ogino, Y. Kitashima and T. Gotoh (2016) Effect of light trap size and location on capturing of cigarette beetle, *Lasioderma serricorne* (Coleoptera: Anobiidae).
2. Suzuki, T., Y. Yoshioka, O. Tsarsitalidou, V. Ntalia, S. Ohno, K. Ohyama, Y. Kitashima, T. Gotoh, M. Takeda and D. S. Koveos (2014) An LED-based UV-B irradiation system for tiny organisms: system description and demonstration experiment to determine the hatchability of eggs from four Tetranychus spider mite species from Okinawa. J. Insect Physiol. 62 (1): 1-10.
3. Gotoh, T., Y. Kitashima and T. Sato (2013) Effect of hot-water treatment on the two-spotted spider mite, *Tetranychus urticae*, and its predator, *Neoseiulus californicus* (Acari: Tetranychidae, Phytoseiidae). Internat. J. Acarol. 39 (7): 533-537.
4. Gotoh, T., S. Fujiwara and Y. Kitashima (2011) Susceptibility to acaricides in nine strains of the tomato red spider mite *Tetranychus evansi* (Acari: Tetranychidae). Internat. J. Acarol. 37 (2): 93-102.
5. Ohno, S., A. Miyagi, T. Ganaha-Kikumura, T. Gotoh, Y. Kitashima, T. Ooishi, T. Ando, K. Kijima, K. Futagami, T. Uesato and K. Yasuda (2009) Species composition of spider mites (Acari: Tetranychidae) on vegetables in Okinawa, southwestern Japan. Appl. Entomol. Zool. 44 (4): 627-633.

Biography

Yasuki Kitashima has working at Faculty of Agriculture Ibaraki University since 2006. My research subjects are ecology and control of spider mites and stored product pests.

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