昆虫学报
ACTA ENTOMOLOGICA SINICA
ISSN 0454-6296
CN 11-1832/Q
主办：中国科学院动物研究所
中 国 昆 虫 学 会

昆虫学报 » 2013, Vol. 56 » Issue (11): 1286-1293 DOI:

不同环境变量下银胶菊叶甲的生命表(英文)

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Life table of the parthenium beetle, *Zygogramma bicolorata* (Coleoptera: Chrysomelidae), under different environmental variables (*In English*)

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全文: PDF (6675 KB) HTML (1 KB) 输出: BibTeX | EndNote (RIS) 背景资料

摘要 在室内研究了不同环境变量(如食物、温度、光周期和不同光波长)下银胶菊杂草*Parthenium hysterophorus* L.的食叶昆虫和生物防治因子银胶菊叶甲*Zygogramma bicolorata* Pallister 的生命表。不同发育阶段的该种叶甲取食银胶菊不同部位时，取食花的甲虫死亡率指标Kappa值最低，其次是取食叶片和茎；而取食花时甲虫世代存活率最高。温度显著影响主要发育阶段该种叶甲的死亡率和存活率。27℃下饲养的未成熟期甲虫的Kappa值最低，其次是30, 25, 20 和35℃。世代存活和存活率表现相同的趋势。不同光周期显著影响死亡率，在14L∶10D (长日照)下世代存活最好，其次是 12L∶12D (昼夜相等), 10L∶14D (短日照), 24L∶0D (连续光照) 和0L∶24D (连续黑暗)。甲虫对不同波长光的反应上，在白光（广谱）下Kappa值最低，世代存活率最高，其次是黄光（λ≈570 nm)、蓝光 (λ≈475 nm) 和红光(λ≈650 nm)。卵的死亡率最高。不同发育阶段的甲虫在27℃长日照白光下用银胶菊花饲养最佳。死亡率趋势具有严格和显著的阶段特异性，表现出内在的存活效应，与研究的因素无关。

关键词： 银胶菊叶甲 银胶菊 寄主植物 存活 死亡率 生命表

Abstract： The present study was aimed to understand the patterns in the development, survival and mortality of the immature stages of parthenium beetle, *Zygogramma bicolorata* Pallister along with the behavioural patterns associated with them under different environmental variables. This may aid in the improved mass multiplication of this weed biocontrol agent. For the purpose, life table of *Z. bicolorata*, a defoliator and biocontrol agent of a parthenium weed, *Parthenium hysterophorus* L., was studied in the laboratory under environmental variables, like food, temperature, photoperiod and different wavelengths of light. Kappa value, as mortality indicator, was lowest when beetles at various life stages were fed on inflorescence of weed, followed by leaves and stem, while the generation survival was highest on inflorescence. Temperature significantly affected the mortality and survival rate of key life stages of the beetle. Kappa value was lowest when beetles at immature stages were reared at 27℃, followed by 30, 25, 20 and 35℃. The generation survival and survival rate followed the same pattern. Mortality was significantly influenced by different photoperiods and it was least with best generation survival at 14L∶10D (long day) followed by 12L∶12D (equinox), 10L∶14D (short day), 24L∶0D (continuous light) and 0L∶24D (continuous dark). In response to different wavelengths of light, Kappa value was lowest with highest generation survival under white light (broad spectrum), followed by yellow (λ=*ca*. 570 nm), blue (λ=*ca*. 475 nm) and red (λ=*ca*. 650 nm). Egg experienced highest mortality. The life stages of the beetle can be best reared under long day white light at 27℃ feeding on inflorescence of parthenium. Mortality trend was rigidly and significantly stage-specific, showing an innate survival effect which was independent from the factors studied.

Key words： *Zygogramma bicolorata*; *Parthenium hysterophorus* host plant survival mortality life table

引用本文:

. 不同环境变量下银胶菊叶甲的生命表(英文)[J]. 昆虫学报, 2013, 56(11): 1286-1293.

. Life table of the parthenium beetle, *Zygogramma bicolorata* (Coleoptera: Chrysomelidae), under different environmental variables (*In English*)[J]. ACTA ENTOMOLOGICA SINICA, 2013, 56(11): 1286-1293.

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