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 » 2011, Vol. 54 » Issue (3): 279-285 DOI:

越冬过程中桃小食心虫结茧和裸露幼虫体内耐寒性物质动态变化

王鹏， 于毅， 门兴元， 张思聪， 张安盛， 许永玉， 李丽莉

Dynamics of cold-resisitant substances in overwintering cocooned and non-cocooned larvae of the peach fruit moth, Carposina niponensis Walsingham (Lepidoptera: Carposinidae)

WANG Peng, YU Yi, MEN Xing-Yuan, ZHANG Si-Cong, ZHANG An-Sheng, XU Yong-Yu, LI Li-Li

全文: PDF (0 KB) HTML (1 KB) 输出: BibTeX | EndNote (RIS) 背景资料

摘要

为比较桃小食心虫*Carposina niponensis* Walsingham越冬过程中种群耐寒性的差异， 本文研究了其结茧和裸露幼虫自然种群的耐寒性，分别测定了不同时期桃小食心虫越冬幼虫过冷却点、体内含水量、总脂肪、总蛋白和总糖含量。结果表明：从10月至翌年2月份结茧和裸露越冬幼虫的过冷却点、结冰点、总蛋白含量、总糖和总脂肪含量及结茧幼虫的含水量均呈下降趋势。裸露幼虫含水量持续增加，在2月达到最高61.42%，在其存活的整个时期的含水量高于同时期结茧幼虫含水量。裸露幼虫的总糖含量持续降低，在2月份含量达到最低（0.65 μg/mg），存活的整个时期显著低于同时期的结茧幼虫总糖含量。在裸露幼虫存活的整个时期总蛋白含量和总脂肪含量都和结茧幼虫没有显著差异(P>0.05)。在越冬过程中， 裸露幼虫体内高含水量和低含糖量可能是其不能正常越冬的原因。

关键词：

Abstract:

To elucidate the difference of cold-resisitant substances in overwintering cocooned and non-cocooned larvae of the peach fruit moth, *Carposina niponensis* Walsingham, cold tolerance of the overwintering larvae was investigated, and their supercooling capacity, water content, total fat content, total protein content and total sugar content were measured respectively. The results showed that the supercooling point (SCP), freezing point (FP), water content, total protein content and total sugar content of cocooned and non-cocooned larvae decreased from October to February of the next year. The water content of non-cocooned larvae increased continuously during the winter, and reached the highest level (61.42%) in February. The water content of non-cocooned larvae was higher than the cocooned larvae in the whole winter. The total sugar content of non-cocooned larvae decreased continuously during the whole overwintering period, and reached the lowest level (0.65 μg/mg) in February. The total sugar content of non-cocooned larvae was significantly lower than the cocooned larvae in the whole winter. There was no significant difference in total protein and total fat contents between the cocooned and non-cocooned larvae, respectively (P>0.05). The higher water content and lower sugar content of non-cocooned larvae might cause them fail to overwinter successfully.

Key words:

出版日期: 2011-04-11

通讯作者: 许永玉， 李丽莉

引用本文:

. 越冬过程中桃小食心虫结茧和裸露幼虫体内耐寒性物质动态变化[J]. 昆虫学报, 2011, 54(3): 279-285.

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