

## 扶桑绵粉蚧生物学特性研究

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### Bionomics of mealybug *Phenacoccus solenopsis* Tinsley (Hemiptera: Pseudococcidae) on cotton

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#### 摘要

扶桑绵粉蚧 *Phenacoccus solenopsis* Tinsley 是近年在我国新发现的一种重要外来入侵害虫, 特别是对我国棉花生产具有潜在的巨大威胁, 本文研究了实验室条件下 ( $27 \pm 1^\circ\text{C}$ , RH 70%  $\pm$  5%) 该虫在棉花上的发育历期、繁殖能力及各虫态的形态特征。结果表明: 扶桑绵粉蚧雌虫生活史包括卵、1龄若虫、2龄若虫、3龄若虫和雌成虫; 雄虫生活史包括卵、1龄若虫、2龄若虫、预蛹、蛹和雄成虫。卵期很短, 雌虫若虫期15~20 d, 总历期约为47~59 d; 雄虫若虫和蛹期17~22 d, 总历期约为20~26 d; 雌虫寿命明显长于雄虫。该蚧虫繁殖能力强, 雌成虫产卵量200~862粒/头, 平均产卵458粒/头。各虫态主要形态特征为: 卵呈长椭圆形, 橙黄色, 略微透明; 1龄若虫, 淡黄绿色, 行动活泼; 2龄若虫体缘突起显现, 尾瓣突出, 至末期可根据体表黑斑的可见程度区分雌、雄虫; 3龄雌若虫, 体表有薄层蜡粉, 在前、中胸背面亚中区和腹部1~4节背面亚中区可见清晰斑点, 形成纵向黑色条斑, 外表形似雌成虫。雌成虫呈卵圆形, 体表蜡粉厚实, 胸、腹背面的黑色条斑在蜡粉覆盖下呈成对黑色斑点状, 体缘蜡突明显, 共18对, 其中腹部末端2~3对较长; 雄虫蛹包裹于松软的白色丝茧中; 雄成虫, 虫体较小, 黑褐色; 触角细长, 具一对发达透明前翅, 后翅退化为平衡棒, 腹部末端具2对白色长蜡丝。本文通过对扶桑绵粉蚧的基本生物学特性和各个龄期发育的形态特征的研究, 为该虫的进一步研究和科学防控提供了基本资料, 具有重要的理论和实践意义。

#### 关键词:

#### Abstract:

A serious invasive exotic mealybug pest, *Phenacoccus solenopsis* Tinsley, has been recently found in China, with a great potential threat to cotton production. In the laboratory, we studied the developmental duration, reproduction and morphology of the mealybug on cotton. The results showed that there are five stages (egg, 1st, 2nd and 3rd instar nymph and adult) in the life cycle of female, while in the male there are six stages (egg, 1st and 2nd instar nymph, pre-pupa, pupa and adult). The egg stage was short; the nymphal stage of the female lasted 15-20 days and the total life span of the female was about 47-59 days, while in the male the nymphal and pupal stage together lasted about 17-22 days and the total life span of the male was about 20-26 days. The longevity of the female was much longer than the male. *P. solenopsis* has strong fecundity with an egg laying amount per female adult ranging from 200 to 862 (average 458 eggs). Egg, elongate-oval in shape, orange in colour and slightly transparent. First instar nymph, yellowish green in colour, and moves very fast. Second instar nymph, the protuberances on marginal surface of body become visible, anal lobes protrudent; male and female can be differentiated by the dark spots on body surface in late-2nd instar stage. Third instar female nymph, similar to adult female, covered by a thin layer of white waxy powder, with dark dorsomedial bare spots on intersegmental areas of thorax and abdomen from 1st to 4th segment, these areas forming 1 pair of dark longitudinal lines on dorsum. Adult female, oval in shape, covered with a thick layer of white waxy powder; several pairs of dark spots present under the waxy powder on thorax and abdomen, with 18 pairs of lateral wax filaments, posterior 2-3 pairs longer. Male pupa covered in loose white silky cocoon. Adult male, small and blackish brown in colour; antennae long and thin; one pair of transparent fore wings with hind wings degenerated into poiser; and two pairs of abdominal filaments present at the terminal part of the body. The results of this study are the base for the further studies and sustainable control of this serious pest.

Key words:

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<http://www.insect.org.cn/CN/> 或 <http://www.insect.org.cn/CN/Y2011/V54/I2/246>

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