

## 东方蝼蛄体表形态与润湿性

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摘要: 利用扫描电镜分析了东方蝼蛄(*Gryllotalpa orientalis* Burmeister)前胸背板、腹部、翅膀和足部的体表形态,测定了东方蝼蛄体表刚毛的覆盖密度和尺寸。在OCA20型接触角测量仪上测量了水与东方蝼蛄体表各部位的接触角,分析了东方蝼蛄体表几何微结构与润湿性的关系。研究表明,东方蝼蛄前胸背板、覆翅、腹部、足、膜翅的刚毛覆盖密度分别为40.32%、31.82%、23.89%、19.11%、14.17%,水与东方蝼蛄体表各部位的接触角平均值为 $110.8^{\circ} \sim 141.5^{\circ}$ ,表现出很高的疏水性能。东方蝼蛄体表刚毛形成的几何结构表面与刚毛的高疏水性能的综合作用是其体表不沾土壤和水的重要机理。The surface morphologies of the pronotum, abdomen, proala, membranous wing and legs of the oriental mole cricket (*Gryllotalpa orientalis* Burmeister) were examined by scanning electron microscopy (SEM). The coverage density and size of seta of the oriental mole cricket were measured. The contact angles of water on the body surfaces of the oriental mole cricket were determined respectively with an interface tension/wetting-angle measuring instrument (OCA20 Model). Subsequently, the relationship of wettability of the body surfaces of the oriental mole cricket with geometrical structure of its body surface was studied. The results show that the coverage densities of the seta on pronotum, proala, abdomen, legs and membranous wing of the oriental mole cricket are 40.32%, 31.82%, 23.89%, 19.11% and 14.17% respectively. The average apparent contact angles of water on the surface of the oriental mole cricket are from  $110.8^{\circ}$  to  $141.5^{\circ}$ . The strong hydrophobic ability of the oriental mole cricket is appeared. The comprehensive action of the geometrically structural surface formed by seta and their hydrophobic function is the dominant mechanism of preventing adhesion of soil and water from their body surface.

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