

請於試卷上標明題號並依序作答

壹、35%

1. 回答以下有關The concept of pest management 的問題:(共20分)
 - (1) 解釋名詞:(10分)
 - a. pest management
 - b. pest management strategy
 - c. pest management tactics
 - (2) 說明 subeconomic pests 和 severe pests 之意義及可能的防治策略 (likely strategies)。(10分)
2. 回答以下有關 *Bactrocera dorsalis* (Hendel) 的問題:(共15分)
 - (1) 分類地位 (包括中、英文目名及科名)(2分)
 - (2) 危害作物 (2分)
 - (3) 為害習性 (3分)
 - (4) 防治方法 (8分)



貳、35%

- 一、請說明下列名詞：(10%)
 1. 支序分類學 (Cladistics)
 2. 生命表 (Life table)
 3. 功能型反應 (Functional response)
 4. 內在增殖率 (Intrinsic rate of increase)
 5. DNA 條碼 (DNA barcodes)
- 二、請簡述種的概念 (Species concepts)。(5%)
- 三、請寫出下列中文昆蟲俗名所屬之中、英文目名。(15%)
 1. 紅娘華； 2. 牙蟲； 3. 石蛉； 4. 石蛎； 5. 石蠅； 6. 石蠶蛾；
 7. 足絲蟻； 8. 白蟻； 9. 切葉蟻； 10. 蟻獅； 11. 粉蝨； 12. 書蝨；
 13. 龍蝨； 14. 床蝨； 15. 體蝨。
- 四、昆蟲學家 Terry Erwin 曾經使用一個特殊的方法嘗試估算全球昆蟲物種數，你能簡單說明其方法及依據嗎？(5%)

見背面

參、30%

問答題：每題10分

1. 由於農藥過度使用，導致抗藥性問題嚴重，新近基因體解碼，試述如何運用生物技術以達到快速偵測抗藥性之發生與機制？
2. 請闡述 *Bacillus thuringiensis* 在蟲害防治應用之方式及其優、缺點或可能之潛在風險？
3. 請翻譯下面一篇摘要(選自 *Insect Biochemistry and Molecular Biology* 38(2008)346-353

The *Methoprene-tolerant (Met)* gene of *Drosophila melanogaster* is involved in both juvenile hormone (JH) action and resistance to JH insecticides, such as methoprene. Although the consequences of *Met* mutations on development and methoprene resistance are known, no studies have examined *Met*⁺ overexpression. *Met*⁺ was overexpressed in transgenic lines with various promoters that drive overexpression to different levels. Flies expressing either genomic or cDNA *Met*⁺ transgenes showed higher susceptibility to both the morphogenetic and toxic effects of methoprene, consistent with the hormone-binding property of MET. Both the sensitive period and lethal period were the same as seen for non-overexpressing *Met*⁺ flies. However, continual exposure of high-overexpressing *Met*⁺ larvae to borderline-toxic or higher methoprene doses advanced the sensitive period from prepupae to first instar and the lethal period from pharate adults to larvae and early pupae. When expression of transgenic *UAS-Met*⁺ was driven to high levels by either an *actin-GAL4* or *tubulin-GAL4* promoter, larvae showed high mortality in the absence of methoprene, indicating that high MET titer is lethal, perhaps resulting from expression in an inappropriate tissue. Adults overexpressing *Met*⁺ did not show enhanced oogenesis, ruling out MET as a limiting factor for this hormone-driven physiology.

試題隨卷繳回