

1. 解釋名詞：(每小題3分，共15分)
 - (1) Phytoplasma
 - (2) Viroid
 - (3) Disease triangle
 - (4) Polycyclic disease
 - (5) IPM
2. 植物病毒所引起的植物病害不容易診斷，請問有哪些方法可以應用在植物病毒病害 (plant virus diseases) 的診斷上？(15分)
3. 請說明耕作防治法 (cultural control) 在蟲害防治上的應用，並請舉出三個例子說明。(10%)
4. 請舉三例說明目前田間使用之殺蟲劑類型及其殺蟲機制為何？(10%)
5. 請舉出三種雙翅目 (Diptera) 害蟲，並請詳述其危害特性、危害作物及可能的防治方法。(10%)
6. 小菜蛾 (*Plutella xylostella*) 是世界性重要的十字花科蔬菜害蟲，植物保護手冊上建議的防治藥劑有 60% 庫斯蘇力菌、80% 賜諾殺可濕性粉劑、58% 乃力松乳劑及 10% 百滅寧乳劑等等。試說明使用上述四種藥劑進行防治的利與弊 (8分)？若你種植的蔬菜遭受到小菜蛾危害，你會選擇哪一種防治藥劑或方式，為什麼 (4分)？
7. 下面兩段文章摘選自 Pacific Northwest Plant Disease Management Handbook，請將其翻譯成中文 (專有名詞盡量使用中文名，沒有中文者可直接寫英文名稱) (8分)？

Phosphorus (abbreviated P) is one of the essential elements for normal growth and development of plants and normally found in the form of phosphoric acid (H_3PO_4). The amount of phosphorus a fertilizer contains is represented as the middle number on the bag expressed as P_2O_5 (such as 5-10-15 where the first number represents the nitrogen percentage and the third number potassium percentage as K_2O). The P_2O_5 unit used to represent P content in fertilizer is a conventional unit (in reality, there is little or no P in the form of P_2O_5 in fertilizer).

見背面

Phosphoric acid should not be confused with phosphorous acid (H_3PO_3). A single letter difference in the name of a chemical compound can make a big difference in its properties. It is well documented that phosphorous acid is able to control diseases caused by organisms that belong to the Oomycetes that are on agronomical crops. For example, phosphorous acid was shown to be effective when applied as a root drench against *Phytophthora cinnamomi*, *P. nicotianae*, and *P. palmivora* in lupin (羽扇豆), tobacco, and papaya, respectively. Phosphorous acid has both a direct and an indirect effect on oomycetes. Phosphorous acid releases the phosphonate ion (HPO_3^{2-}), also called phosphite, upon disassociation. Like phosphate, phosphonate is easily taken up and translocated inside the plant. Because phosphonate is systemic and stable in plant, it should be applied infrequently. A clear distinction exists between phosphoric acid and phosphorous acid. Claims suggesting that either compound may fulfill the functions of the other are not supported by current literature and are therefore misleading.

8. 請討論土壤施用有機質對於植物營養要素供給的影響。(10分)
9. 一塊農地隨耕作次數增加，逐漸發生水分入滲率下降，進而導致土壤水分管理之困難。請討論此現象之成因，以及改善方法。(10分)

試題隨卷繳回