

國立中興大學101學年度碩士班招生考試試題

科目：果樹學

系所：園藝學系甲組

本科目試題共 / 頁

- 一、某生採摘幼小番木瓜鮮果進行呼吸率測定，結果所得之值為零(0 mgCO₂/Kg hr)，請說明此結果的意義或造成此結果的原因。(10分)
- 二、柑桔果實採收後是否適合行真空預冷(Vacuum Cooling)? 為什麼?(10分)
- 三、若將‘無酸橙’分別嫁接在‘廣東檸檬’及‘酸橘’上，之後所結的果實之果汁可滴定酸的含量是否會有差異? 為什麼?(5分)
- 四、果樹作物常易發生缺鈣之生理障礙，請從遺傳特性及環境條件說明其原因。(15分)
- 五、解釋下列各名詞。(10分)

Apoplast transport

Chilling requirement

Macronutrients and micronutrients

Nitrate and ammonium

Deciduous fruit crops

- 六、近年調節性限制灌溉 (regulated deficit irrigation, RDI) 已被廣泛用於控制果樹的生育與果實品質，請試以台灣之麻豆文旦 (*Citrus grandis* (L.) Osebeck) 為例，並仔細參考附圖 (圖 1) 後，回答下列問題：
 1. 如欲增加麻豆文旦採收時的果肉糖度，應在果實那個發育階段進行 RDI，為何? (5%)
 2. 承上題，其生理機制為何? (8%)

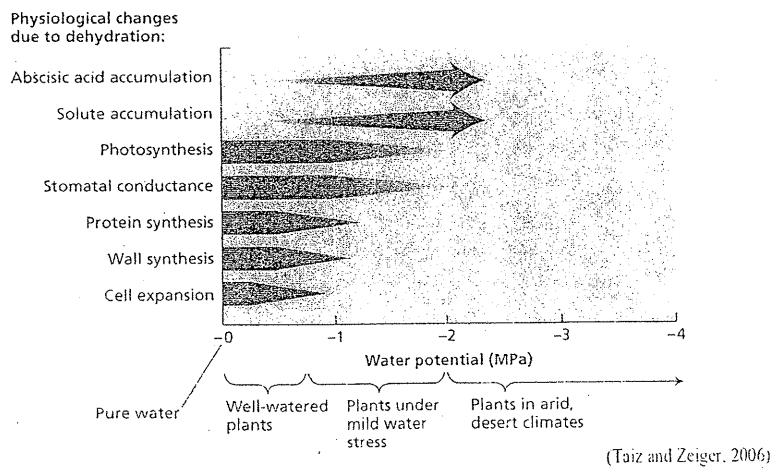


Fig. 1. Water potential of plants under various growing condition, and sensitivity of various physiological processes to water potential.

- 七、矮性砧木 (dwarf rootstock) 如 M9、M26 的育成，使得蘋果得以進行矮化/半矮化密植栽培，並大幅提高其生產力，試說明其生理基礎 (12%)。
- 八、試依序說明光合產物由葉片行光合作用細胞(sources)轉運至果實果肉貯藏細胞(sinks)之過程及主要調控機制。(15分)
- 九、試說明乙烯及乙烯接受器(ethylene receptor)調控果實後熟的可能機制。(10分)

一、試將下述文章翻譯成中文。(10%)

Lisianthus (*Eustoma grandiflorum*) was first introduced into Taiwan at 1968, and had been cultivated as cut flower by growers of Puli area. The business was not successful owing to many undisclosed myth for Taiwan growers at that time. Many of the barriers, such as the uneven germination of tiny seeds on the plug tray and the rosette seedling problem, are solved by the efforts of various researchers. Growers in central Taiwan, including Chunghwa, Yunlin, and Chiayi counties, produce the majority of lisianthus cut flowers in this nation. According to a report made by Takii Seed Company in Japan (a major Eustoma seed selling company), Taiwan exported 2.6 million stems of lisianthus cut flowers to Japan in 2008. It was about 81% of totally 3.2 million stems imported to Japan in 2008.

二、台灣外銷切花中(不包括蘭花)，有那些花卉主要是在冬季外銷？試說明其理由。(15%)

三、試繪圖說明 CAM (景天酸代謝)之花卉作物的蘋果酸合成速率及二氧化碳固定速率的日韻律變化。(10%)

四、花卉作物進行組織培養時，培植體可經器官或體胚發生途徑再生幼苗，試從植物之塑性(plasticity)與細胞全能性(totipotency)的觀點來解釋花卉作物體細胞再生的原理。(15%)

五、試述外銷日本之火鶴花切花之產銷關鍵問題及改進策略。(10%)

六、試述文心蘭切花生產及產品處理之關鍵問題及改進策略。(15%)

七、試述下列花卉開花之光週期反應屬於那一類。(15%)

1.玫瑰花，2.洋桔梗，3.落地生根，4.夏菊，5.蝴蝶蘭，6.雞冠花，7.翠菊，8.宿根滿天星，9.聖誕紅，10.長壽花，11.金魚草，12.香石竹，13.秋菊，14.百合花，15.火鶴花。

八、下列作物在台灣經濟(大量)栽培所需種苗用何種方法繁殖？(10%)

1.洋桔梗，2.玫瑰花，3.唐菖蒲，4.非洲菊，5.聖誕紅，6.菊花，7.火鶴花，8.天堂鳥，9.晚香玉，10.仙客來。

- 一、試比較說明蔥(青蔥)(*Allium fistulosum* L.)主要栽培品種之植株特性、繁殖方法、生育環境?(15分)
- 二、試寫出甜瓜、西瓜、苦瓜之學名及說明各作物開花習性、整枝方法?(15分)
- 三、試說明以下作物栽培方式之目的。(每小題3分，共15分)
 - (1) 隧道棚栽培甜瓜
 - (2) 番茄於鹽分地栽培
 - (3) 水耕葉萵苣
 - (4) 茭白筍電照栽培
 - (5) 金針於黑暗下軟化栽培
- 四、試述利用分子生物技術改良蔬菜品種，主要是改善那些性狀?並說明基因工程育種的主要步驟?此產品將面臨那些問題?(15分)
- 五、試說明以下現象發生的原因及預防的採行方法。(每小題5分，共20分)
 - (1) 大蒜鱗莖萌芽
 - (2) 蘿蔔根部畸形
 - (3) 番茄果實日燒
 - (4) 甘藍葉球裂球
- 八、試將下列英文翻譯成中文。(20分)

Molecular markers are 'tags' that can be used to identify specific genes and locate them on the chromosomes. There are a number of different kinds of molecular markers that can be used to confirm the presence of a gene or even locate its relative position on the chromosome. Geneticists are able to use the markers to develop genetic maps of the arrangement of genes in the chromosomes and to identify individual plants containing specific advantageous combinations of genes. Molecular markers for DNA allow the geneticist to "see" the genes and their arrangement on the chromosomes directly, without having to rely on the expression of the trait. An example of the use of biochemical markers in vegetable breeding is the introduction of the Root Knot Nematode resistance (*Mi*) gene into commercial tomato varieties. This gene was discovered in a wild relative of tomato and was directly adjacent (linked) to a distinct form (or isozyme) of a common enzyme, acid phosphatase. Once this association, or linkage, was discovered, breeders could determine whether an individual plant had inherited the *Mi* gene simply by testing which form of the acid phosphatase enzyme was present. This made further breeding and selection of nematode resistant plants much more convenient.