

國立嘉義大學 99 學年度
農藝學系碩士班招生考試試題

科目：專業英文

一.請將下列短文翻譯成中文（每題 20 分）

1. Sesame oil was sequentially extracted with methanol in the ratio 1:1 at different temperatures (60, 70 and 80 °C) and time durations (10-100 min). The methanol extract thus obtained was analysed every 10 min for total lignan content by HPLC. From the results of HPLC, it was observed that time, temperature and number of extractions affected lignan extraction.
2. It is important to understand what heritability tell us. For an individual, all phenotypic traits are the result of the interaction among genes and with the environment. Clearly someone's chance of developing heart disease, for example, results from the individual's genotype (did her parents suffer from heart disease), her environment (such as dietary factors), and an interaction between the two.
3. The formation of the root nodule and the small vacuoles in which the bacteroids live requires plant cells to synthesize many new proteins and involves the expression of many plant genes not expressed in normal root cells. The most abundant of these proteins is the red protein leghemoglobin, a molecule closely related to muscle myoglobin and to red blood cell hemoglobin. Nodules contain so much leghemoglobin they actually look pink. The function of leghemoglobin is to diminish the concentration of oxygen in cells without making them totally anaerobic. The functioning of the bacterial enzymes that reduce atmospheric N₂ to ammonia requires that the oxygen level in the cells be very low.
4. Plant tissue culture is the science of growing plant cells, tissues or organs isolated from the mother plant, on artificial media. Both organized and unorganized growth are possible *in vitro*. The process of *de novo* organ formation is called organogenesis or morphogenesis. The process of somatic embryo formation via callus is called somatic embryogenesis.
5. Plant breeding is based around the identification and utilization of genetic variation. The breeder makes decisions at several key points in the process. First in deciding on the most appropriate parents to use for the initial cross and then in the selection strategy used in identifying the most desirable individuals amongst the progeny of the cross. Molecular markers have proved to be a powerful tool in replacing bioassays. They usually signifies the use of DNA fragments from locations in the genome to map and follow the segregation of these fragments or observe underlying genetic variation.