

國立嘉義大學九十六學年度
農藝學系碩士班招生考試試題

科目：專業英文

一、請寫出下列名詞之英文：(每題 2 分，共 30 分)

1. 染色體	2. 基因連鎖	3. 顯性
4. 雜種優勢	5. 適應性	6. 上位性
7. 雄不稔性	8. 複因子試驗	9. 試驗設計
10. 變方	11. 植物分子藥廠	12. 轉基因作物
13. 後基因體世代	14. 親和性管柱色層分析	15. 基因晶片

二、寫出下列英文縮寫名詞之全名：(每題 2 分，共 10 分)

1. DNA
2. GMO
3. EST library
4. RAPD
5. TCA cycle

三、請將下列英文短文翻譯成中文：(每題 15 分，共 60 分)

1. Selection for increased yield potential is the main goal of plant breeding. Much of the yield increases over the past 60 years have been due to genetics advances by intercrossing existing varieties. However, yield is a multigenic trait and therefore the yield potential of lines derived by inter-crossing is difficult to predict without extensive field tests.
2. Crop improvement has relied on phenotypic selection for soybean yield that involves carrying a large number of lines with high yield potential to later stages of breeding programs. Phenotypic selection for soybean yield is complicated by significant genotype \times environment interactions ($G \times E$) that influence yield and other quantitative traits. Hence, selection for high and stable yield requires evaluation in multiple environments over several years which is expensive, time consuming, and labor intensive.

3. Genetic engineering depends on our ability to isolate genes, clone them, and then introduce them into the plant genome using Agrobacterium-mediated gene transfer or a gene gun. Genetic engineering will not replace plant breeding. After gene manipulation and tissue culture have introduced a single gene into a crop, several years of plant breeding are always needed to make sure that the new plant has the right agronomic characteristics. In the future, the molecular science of genomics will contribute substantially to crop improvement because genomics will help identify hundreds of plant genes that regulate all the processes of growth and development, adaptation to stress, and defense against insects and pathogens. Molecular techniques will improve crops by altering the regulation of those genes.
4. Using plants rather than petroleum to produce chemicals can help the environment in different ways. First, global warming is believed to be caused largely by huge amounts of carbon dioxide released from burning fossil fuels. When crops are grown to produce chemicals they fix carbon dioxide, helping remove the excess from the atmosphere. Second, production of chemicals from plants will in many cases use less energy and release less carbon dioxide than producing the same chemicals from petroleum. And third, many plant-produced alternatives to petrochemicals are biodegradable, which, in the case of plastics, can reduce their impact on landfills and/or esthetics. Balanced against these positive benefits are concerns that expanding agriculture to produce chemicals could eliminate more undeveloped or recreational land.