UNIVERSITI TEKNOLOGI MARA

AGA722: PLANT NUTRITION AND FERTILIZER TECHNOLOGY

Course Name (English)	PLANT NUTRITION AND FERTILIZER TECHNOLOGY APPROVED
Course Code	AGA722
MQF Credit	2
Course Description	This course is aimed to provide students with a comprehensive understanding of soil fertility, plant nutrition and nutrient management plans. Various means of determining nutrient levels in soils and plants are covered in this course. The detailed knowledge regarding soil fertility and plant growth performance can then be applied to other growing media. This course also provides students with a comprehensive understanding of fertilizer technology. The detailed knowledge of fertilizer technology for plant production is stressed without abandoning the sustainability and environmental issues.
Transferable Skills	Technical Skills Communication Skills Analytical Skills
Teaching Methodologies	Lectures, Blended Learning, Demonstrations, Field Trip, Case Study, Discussion
CLO	CLO1 Explain the influence of physical, chemical and biological properties of soil on plant production CLO2 Demonstrate the relationship between soil fertility and plant productivity CLO3 Describe the sustainable soil nutrient management practices for optimum plant productivity
Pre-Requisite Courses	No course recommendations

Topics
1. Introduction 1.1) World population and food production 1.2) Principles of plant growth – the growth curve 1.3) Law of the minimum 1.4) Plant and soil – general overview
2. Soil Fertility 2.1) Soil formation and classification 2.2) Soil solution and essential elements 2.3) Ion exchange in soils 2.4) Functions of macronutrients and micronutrients 2.5) Nutrient deficiency symptom 2.6) Nutrient application injury
3. Soil-Plant Relationship 3.1) Nutrient movement in soil 3.2) Nutrient transport within plants 3.3) Factors affecting nutrient uptake
4. Soil Fertility and Nutrient Deficiency Evaluation 4.1) Soil sampling 4.2) Soil testing kit 4.3) Plant tissue analysis 4.4) Sap test 4.5) Data analysis and interpretation

5. Technology of Fertilizer Production and Application 5.1) Solid fertilizer 5.2) Foliar fertilizer 5.3) Fertigation 5.4) Slow release and controlled release fertilizer 5.5) Organic fertilizer
6. Economics of Fertilization 6.1) Fertilizer budget and supply for plant production 6.2) Economic yield
7. Sustainable Fertilizer Application 7.1) Sustainable plant production 7.2) Soil health 7.3) Environmental quality

Assessment Breakdown	%
Continuous Assessment	70.00%
Final Assessment	30.00%

Details of Continuous Assessment

Assessment Type	Assessment Description	% of Total Mark	CLO
Case Study	Journal Review	15%	CLO1
Group Project	Report and Presentation	15%	CLO1
Test	Topic 1, 2 and 3	30%	CLO2
Written Report	Field Trip Report	10%	CLO2

Reading List

Recommended Text

- **Banga, J. 2018, *Soil Fertility*, Canada Delve Publishing Oakville**
- **Deshmukh, N.D. (2016, *Soil Suitability for Crop Productivity*, Scitus Academics New York**
- **Doshi, R. 2016, *Soil Fertility and Nutrient Management*, Scitus Academics New York**
- **Hank, J. 2015, *Agronomy: Science and Technology of Plants*, Callisto Reference New York**
- **Lal, R. and Stewart, B.A. 2016, *Soil-specific Farming: Precision Agriculture*, CRC Press Florida**
- **Weil, R.R. and Brady, N.C. 2017, *The Nature and Properties of Soils*, Pearson Columbus**

Article/Paper List: This Course does not have any article/paper resources

Other References: This Course does not have any other resources