

Republic of Iraq

The Ministry Of Higher
Education

Scientific Research &

بسم الله الرحمن الرحيم



:University of Diyala
:College- college of Agriculture
Department- Horticulture and
Landscape Gardening
:Stage- Second
Lecturer name- Marir Ekhlal
Metiab Ahmed
Qualification: Lecturer Dr.(Ph.D
Place of work Horticulture and
Landscape Gardening

Flow up of implementation celli pass play

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|--------------------|---|
| Course Instructor | Lecturer Dr: Marir Ekhlal Metiab Ahmed |
| E-mail | ekhlalmetiab@uodiyala.edu.iq |
| Title | Plant nutrition |
| Course Coordinator | Lecturer Dr: Marir Ekhlal Metiab Ahmed |
| Course Objective | <p>The aim of teaching the profession is:</p> <ol style="list-style-type: none">1. Studies the concept of plant nutrition2. Examines the importance of the role of plant nutrients3. It includes dividing nutrients into macro and microelements4. Distinguishing between rare, useful, and essential nutrients5. Functions of nutrients and their deficiency6. Describe the transport of elements within the plant7. The student should recognize the symptoms of element deficiency, its causes, and know its treatment8. The student will learn about water stress, osmotic pressure, water transport within plant tissues, nutrient solutions, and hydroponic and sand cultures. |
| Course Description | <p>Details include the subject's cognitive and scientific objectives for the student</p> <ol style="list-style-type: none">1. The student gets to know the concept of plant nutrition2. The student should describe the types of aquatic and sand cultures and their advantages and disadvantages3. The student should know the symptoms of nutrient deficiency in plants and how to treat this deficiency4. To compare the symptoms of element deficiency and disease infection, whether insect, bacterial, or fungal.5. To know the method of adding each nutrient element, whether by spraying or adding and the concentration of the element in the soil and plants.6. To know the effect of micro and macronutrients on soil and plants |

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|---------------------------|--|-------------------|----------------|----------------|-------------------|
| | 7. To know the environmental effects of using each nutrient and its characteristics | | | | |
| Textbook | 1. Issa, T. A. 1990. Physiology of Crop Plants, University of Baghdad. 2. Hassanein, A. M. 2020. Crop Physiology. College of Agriculture. Al-Azhar University, pp. 221-224 3. Yassin, B. T. 2001. Fundamentals of Plant Physiology, College of Science, Qatar University. 4. Youssef, M. A. and Al-Younis, M.A. 1988. Plant Nutrition Guide. Mosul University Press | | | | |
| Course Assessments | Term Tests | Laboratory | Quizzes | Project | Final Exam |
| | %35 | %15 | %10 | | %40 |
| General Notes | Type here general notes regarding the course | | | | |

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| الملاحظات | المادة العملية | المادة النظرية | التاريخ | الاسبوع |
|-----------|--|--|-----------|---------|
| | 1- Introduction to nutrients: | Explaining the concept of plant nutrition and the plant's element content 2- The importance of the role of plant nutrients and their characteristics 3- Soil salinity and plant nutrition | 2024/2/5 | 1 |
| | - Classification of nutrients | 1- Food crops and their role in plant nutrition 2- Composition of plant material 3- Factors that affect the plant's mineral and organic content | 2024/2/12 | 2 |
| | Supplementing - Classification of nutrients | 1- Different plant growth media | | 3 |
| | Lecture continuation (1) | 2- Readiness of nutrients in the soil and their absorption by the plant | | 4 |
| | 1- Chemical composition (inorganic) of the plant: | 1- Dividing nutrients into macro and micro elements 2- Distinguishing between rare, useful and essential nutrients | | 5 |
| | اجراء امتحان شهري | اجراء امتحان شهري | | 6 |
| | 2- Food farms: | 1- Characteristics of nutrients 2- Nutrient elements: Nutrients, definition and division, mineral composition of the plant and the effect of lack of nutrients on the plant | | 7 |
| | Aquatic and sand farms and their advantages and disadvantages in agriculture | Transport of elements within the plant | | 8 |
| | Necessary nutrients: | Absorption of macro and micro nutrients | | 9 |
| | 1- Carbon, hydrogen and oxygen: | he elements potassium and magnesium and their physiological functions, identification and treatment. The elements calcium and magnesium and their physiological functions. The elements sulfur, nitrogen and phosphorus and their physiological functions, | | 10 |

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| | 2- Lecture continuation (5) | identification and treatment. Characterization and treatment. | | |
| | Functions of elements | Supplementing the of lecture (10) to diagnose and treat deficiencies in the elements calcium, magnesium, sulfur, nitrogen, and phosphorus, and their physiological functions, diagnosis, and treatment. | | 11 |
| | اجراء امتحان شهري (شهر 2) | اجراء امتحان شهري (شهر 2) | | 12 |
| | Symptoms of deficiency of major elements, their physiological functions, diagnosis and treatment, methods of treating cases, and the most important effects of interaction when supplemented | Supplementing the of lecture (10) to diagnose and treat deficiencies in the elements calcium, magnesium, sulfur, nitrogen, and phosphorus, and their physiological functions, diagnosis, and treatment. | | 13 |
| | Tours in agricultural fields to learn about the most important symptoms of deficiency of macro- and microelements and the extent of their impact on plants | The elements iron, manganese, phosphorus, calcium and copper and their physiological functions, identification and treatment. The elements zinc and copper and their physiological functions, identification and treatment. | | 14 |
| When the student needs to review the topic intensively | Supplementing the of lecture (14) | Supplementing the of lecture (14) to The elements iron, manganese, phosphorus, calcium and copper and their physiological functions, identification and treatment. The elements zinc and copper and their physiological functions, identification and treatment. | | 15 |
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توقيع العميد:

توقيع الاستاذ: