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**Department of …Soil and Water Science...**

**College of ……….…....Agriculture……….…….**

**University of ….…..…Salahaddin….………….**

**Subject: ..…Plant Nutrition…..**

**Course Book – (8Year)**

**Lecturer's name: MScYahya Abd-Ulmunim Abd Sabry**

**Academic Year: 2022-2023**

**Course Book**

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| **1. Course name** | **Plant nutrition**  |
| **2. Lecturer in charge** | **Yahya Abd-Ulmunim Abd Sabry** |
| **3. Department/ College** | **Soil and Water science , College of Agriculture**  |
| **4. Contact** | **e-mail: yahya.abdsabri@su.edu.krd****Tel: 07504329047** |
| **5. Time (in hours) per week**  | **Practical: 3**  |
| **6. Office hours** | **6 hours** |
| **7. Course code** |  |
| **8. Teacher's academic profile**  | **BSc in soil science (Soil and Water Science department/ College of Agriculture) Science 2004.Working as Demonstrator a t soil and water science department for 6 years. MSc in soil science (Soil Fertility) at 2015.** |
| **9. Keywords** |  |
| **10. Course overview:** **Soil testing indicates the level of essential plants nutrients in the soil (predict nutrient availability) the plant itself is an indicator of the supply of nutrients available to it (plant nutrient uptake) there is a long history of plant and soil analysis that has determined the critical levels of nutrients needed for desired growth. With both a soil test and a plant tissue test, a complete diagnosis of the soil and plant production system can be made. The combine interpretation can lead to maximum profile by assessing production and fertility.**  |
| **11. Course objective:**1. **To studies the law of the nutrients absorption**
2. **To improve crop yield and improve product quality**
3. **What is the certain essential of macro and micro elements for the plant growth and nutrition**
4. **How can we get a good product of plant by using the best method in cultivation**
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| **12. Student's obligation**. **In this course the student at every lecture should ready to quick test (quiz) of previous lectures. Whereas they asked about what we talked and studied in previous lecture.** |
| **13. Forms of teaching****Data Show****Presentation****Write in white board**  |
| **14. Assessment scheme****examination Sum of daily quick tests (quiz) with reports** **Final assessment =35 final mark** |
| **15. Student learning outcome:** **Studding soil fertility and fertilizers course both section theoretical and practical is extremely important especially in agriculture. As well as soil fertility and fertilizers was very important to increase the yield and production to plants. Also the study of soil fertility and fertilizer is important by teaching how to add fertilizer to soils. This refers to the ability of the soil to supply essential plant nutrients and soil water in adequate amounts and proportions for plant growth and reproduction in the absence of toxic substances which may inhibit plant growth**  |
| **16. Course Reading List and References‌:**1. **Das, D.K. (2005). Introductionary soil science .alit printers, Maujpur.Delhi-53.**
2. **Tandon, HLS (1999) Methods of analysis of soils, waters, and fertilizers, New Delhi (India).**

**3.John, S. (2004). Nutrient Deficiencies and Application Injuries in Field Crops. Dept. of Agronomy. Iowa State University.** **4.Niu, Y. F., Chai, R. S., Jin, G. L., Wang, H., Tang, C. X., Zhang, Y. S. (2012). Responses of root architecture development to low phosphorus availability , The Author Published by Oxford University Press on behalf of the Annals of Botany Company.** **5.Pettigrew, W. T. (2008). Potassium influences on yield and quality production for maize, wheat, soybean, and cotton. Physiolgia Plantarum 133: 670-681.****6.Rich,C.I. (1972). Potassium in soil minerals. In proceeding of the 9yh Colloquium of the IPI. Landshut, Federal, Republic of Germany: 3-19.****7.Tandon, H. L. S. (1987). Phosphorus research and agriculture production in India. Fertilizer development and consultation organization. New Delhi, 142-154.** **The internet researches** **Hazemsakeek.com/physics-lectures/electctronic/index.htm** |
| **17. The Topics:** | **Dr. Alwand T. Rashid**  |
| **18. Practical Topics**  | **Lecture s name** |
|  **Soil sample collection and preparation*** **The objectives of soil sampling and analyzing**
* **Method of the soil sampling**
* **Type of samples**
* **Points were taken into consideration of sampling**
* **Equipments of soil sampling**
* **How to prepare the samples to analysis**
 | **Yahya Abd-Ulmunim** **(3 hrs)** |
| * **The objectives of plant sampling**
 | **Yahya Abd-Ulmunim** **(3 hrs)** |
| * **The importance of plant nutrition**
 | **Yahya Abd-Ulmunim** **(3 hrs)** |
| * **Plant analysis**
 | **Yahya Abd-Ulmunim** **(3 hrs)** |
| * **Analysis of plant samples**
 | **Yahya Abd-Ulmunim** |
| **1 st Examination** | **Yahya Abd-Ulmunim** **(3 hrs)** |
| * **Estimated the percentage of the total nitrogen in plant samples**
 | **Yahya Abd-Ulmunim** **(3 hrs)** |
| * **Scientific gurney**
 | **Yahya Abd-Ulmunim** **(3 hrs)** |
| * **Determination of phosphorus in the plant samples**
 | **Yahya Abd-Ulmunim** **(3 hrs)** |
| * **Estimate the percentage of the total potassium in the plant samples**
 | **Yahya Abd-Ulmunim** **(3 hrs)** |
| * **Nutrient solution**
 | **Yahya Abd-Ulmunim** **(3 hrs)** |
| **2 st Examination** | **Yahya Abd-Ulmunim** |
| * **The media of plant nutrition**
 | **Yahya Abd-Ulmunim** |
| * **Pot experiments and its conducting**
 | **Yahya Abd-Ulmunim** |
| * **Problams & solution**
 | **Yahya Abd-Ulmunim** |
| * **Field experiments and its application**
 | **Yahya Abd-Ulmunim** |
| * **recommendation**
 | **Yahya Abd-Ulmunim** |
| **19. Examinations:****In regard to this subject the type of exam will be as follows: -** **Qustion1/full the following sentences**  **1-variation in slop, -------------, ------------- should be taken into account.****Solution/1-textuer, color** **Qustion2/Answer with true or falls then correct the falls.****1. Under intensive cultivation sampling should be done every three years** **Solution/ 1-falls should be done every year.** * **What are the phosphorus symptoms deficiency?**
* **How can we treat the potassium deficiency , what are the best fertilizer to be add to our soils and why?**
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| **20. Extra notes:** |
| **21. Peer review پێداچوونه‌وه‌ی هاوه‌ڵ** .‌  |