

Kafrelsheikh University
Fac. Of Science
Bot. Department
2nd Term/ May 2019/2020



3rd level/ Boatny
Course Title: Plant Mineral
Nutrition and Nutrient Cultures
Code: Bot. 313
Research Subject

Write in only one research point of the following

- 1- Nitrogen assimilation (nitrate reductase-ammonium assimilation –toxicity of stored nitrate and ammonium-nitrogenase,).
- 2- A comparative study for different techniques that are used in mineral nutritional research (nutrient solutions, Hoagland solution composition, chelators,).
- 3- A comparative study between 1st and 2nd groups of essential elements (physiological roles, characteristic deficiency symptoms, available forms for plant uptake, ...).
- 4- A comparative study between 3rd and 4th groups of plant essential elements (physiological roles, characteristic deficiency symptoms, available forms for plant uptake, ...).
- 5- Impact of phosphate supplementation on tomato plant growth (P assimilation, physiological roles, photosynthesis enhancement, fruiting,).
- 6- Effect of nitrogen fertilization on plant growth and productivity (comparison between nitrate and ammonium fertilizers, nitrogen concentration required for optimal growth, cost, solubility,.....).
- 7- Solute transport mechanisms (active and passive transport, chemical potential, membrane transport processes, potassium channels.....).
- 8- Excess minerals in soil limits plant growth (saline soil, halophytes, metallophytes, heavy metals toxicity,).
- 9- Effect of soil PH on minerals availability, absorption and root development (sources of hydrogen ion, cations exchange, treatment of acidic soils,).
- 10- Crop yields can be improved by addition of fertilizers (straight fertilizers, mineralization, treatment of mineral deficiencies, methods of plant analysis to determine deficiencies,).

Best Wishes