

Biology of Plant Mineral Nutrition

1. Lecturer: Tymoshenko Volodymyr Fedorovych, associate professor of the department of plant and microorganism physiology and biochemistry.
2. Status: optional for bachelors.
3. Course, semester: 4th academic year, 7th semester.
4. Number of credits – 3, general academic hours – 72, lectures – 32, seminars – 4; self-study – 36.
5. Preliminary requirements: basics of Plant Physiology and Biochemistry, Microbiology, Ecology
6. Description of the course: Physical, chemical and microbiological characteristics of soils. The role of microorganisms in the biogeochemical cycles in nature. Mechanisms of soil formation and transporting minerals to plants. Physiological role of the separate elements in a plant mineral nutrition. A specialist mastered this course will have theoretical knowledge for the intensification of crops.

Sections: Soil as natural environment of plants` mineral nutrition. Fundamentals of soil microbiology. Absorption and transport of minerals by plants. Mineral elements in plants. Fertilizers.

Knowledge and skills:

- knowledge of physical and chemical characteristics of soil;
 - knowledge of soil microbiology;
 - knowledge of the mechanisms of nitrogen fixation;
 - knowledge of the mechanisms of absorption and transport of minerals plant;
 - knowledge of the physiological role of mineral nutrients;
 - knowledge of an effective use of fertilizers.
7. Course organization: lectures, seminars, labs. Forms of control: tests, reports, exam.
 8. Language: Ukrainian.
 9. Educational and methodological support: program, schedule of classes, educational and multimedia presentations, methodical complex, guidelines for practice.

Studentbooks:

1. *Villenbrinck I.* Transport of Assimilates through Floem: regulation and mechanisms // *Fiziologia Rasteniy*, 2002, Vol. 49, P.13-21.
2. *Musiyenko M.M.* Plant Physiology. – Kyiv: Lybid, 2005.–806 p.
3. *Kots S.Ya., Petersen N.V.* Mineral Elements and Fertilizers in Plant Nutrition. – Kyiv: Logos, 2005. – 150 p.
4. *Yurin V.M.* Plant Mineral Nutrition. – Minsk: Publish Centre of Belarus State University, 2004.– 165 p.
5. *Marschner H.* Marschner's Mineral Nutrition of Higher Plants, 3rd edition. - Elsevier Science Publishing Co Inc, 2011. – 672 p.