

**01S1-GSPR**

**PLANT NUTRIENT MANAGEMENT**

**ECTS: 2.0**

**HOURS PER SEMESTER/WEEK:** LECTURES: 10/1; CLASSES: 20/2

#### **COURSE CONTENTS**

**LECTURES:** Fertilization laws related to the management of nutrients in soil and agricultural crops. The content, abundance and balance of nutrients and the mechanisms of their movement in the soil. Symptoms of the excess and deficiency of macro- and microelements in crops. Ionic balance of plants, antagonistic and synergistic interactions between nutrients. Optimal standards in plant nutritional status. Effect of fertilization on the yield and quality of plants. Possibilities of the fertilizing computer programs use.

**CLASSES:** Collection of soil and plant samples as the basis for the proper management of plant nutrients. Determination of P, K, N<sub>min</sub>. Soil pH (KCl and H<sub>2</sub>O), rapid soil and plant tests. Establishment and carrying out a fertilization experiment (NPK) - observations of plant development. Selection of fertilization for selected plants - balance, nutrient abundance classes, limit numbers.

**EDUCATIONAL PURPOSE:** Getting to know the principles of the proper selection of nutrients for crops, the reasons for the deficiency or excess of these ingredients. Mastering the principles of taking soil and plant samples in order to optimize the yield of plants and their qual

#### **LEARNING OUTCOMES**

**Knowledge.** The student understands the need for rational nutrient management. The student knows the basics of mineral plant nutrition.

**Skills.** The student can make a balance of nutrients.

**Social competences.** The student knows that must to deepen his/her knowledge. The student shows a pro-ecological attitude. The student adheres to the health and safety rules.

#### **TEACHING FORMS AND METHODS**

**Lectures.** Information lecture with multimedia presentation.

**Classes.** Chemical analyzes of soils and plants, nutrient balancing, NPK balance. Observation of plant development in conditions of nutrient deficiency. Design classes: preparation of an exemplary design from the NPK balance sheet..

#### **FORM AND CONDITIONS FOR VERIFICATION OF LEARNING OUTCOMES**

**Lectures.** Written test - credit with a grade.

**Classes.** Plant development and observation report. Presentation - making and presenting a presentation on the management of plant nutrients. Project - execution and completion of a project for a selected farm..

#### **BASIC LITERATURE**

1) Grzebisz W., Technologia nawożenia roślin uprawnych - fizjologia plonowania - Oleiste, okopowe i strączkowe, wyd. PWRiL Poznań, 2011, t. 1; 2) Grzebisz W., Technologia nawożenia roślin uprawnych - fizjologia plonowania - Zboża i kukurydza., wyd. PWRiL Poznań, 2012, t. 2, s. 284; 3) Fotyma M, Mercik S., Faber A. , Chemiczne podstawy żyzności gleb i nawożenia, wyd. PWRiL Warszawa, 1987 , s. 320

#### **ADDITIONAL LITERATURE**

1) Lityński T., Jurkowska H., Żyzność gleby i odżywianie się roślin, wyd. PWN Warszawa, 1982, s. 644; 2) Finck A., Fertilizers and Fertilization: Introduction and Practical Guide to Crop Fertilization, 1982, s. 439

#### **THE TEACHER/S CONDUCTING THE CLASSES:**

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