

# PLANTS IN EXPERIMENT

## Department of biotechnology and psychopharmacology

<b>Lecturer:</b>	A.A.Podhaietskyi, DAgrSc, Professor
<b>Academic term</b>	1
<b>Educational level</b>	educational and scientific
<b>Number of ECTS credits</b>	3
<b>Form of control:</b>	exam
<b>Audit hours</b>	90; lectures-22, pr.classes-22; individual work-46

### A general description of the discipline

Purpose of the discipline: to form right approaches in planning, organizing, conducting of researches as well as the correct interpretation of the obtained data, which must, of course, be statistically processed with evidence of their authenticity and materiality of the difference between the options; to prove to young scientists that a plant is a complex biological object with numerous numerical connections, which have a clearly expressed bipolar structure and are characterized by the existence of physiological fields and their change will certainly affect all other parts of the plants. Due to the fact that the plant cannot exist outside the environment, it is important for the researcher to determine the relationship between the plant and the biotic and abiotic factors of the environment in which they are, as well as the rate of response of the plant genotypes to them. The content of the discipline includes understanding of the systematic approach in the process of studying plant organisms; levels and types of scientific research; the physiological nature of the processes that occur in plants under the change of external conditions; types, mechanisms of statistical and dynamic resistance of plants to experimental conditions; factors that affect plant productivity and crop formation; basic principles of experiment organization; approaches to evaluate the source material in the study. The graduate student must determine the influence of individual factors on the productivity of plants; use the general rules for growing plants in the experiment; conduct an experiment using water, hydroponic, aerial crops; plan the experiment, organize it; use statistical analysis of the experiment.

### Topics of lectures:

1. Basics of the systematic approach to the study of plant organisms.
2. Relationship between plants, soil, meteorological conditions, anthropological factors.
3. Modern conceptual principles of experimental and statistical support of experiments with plants.
4. The ecological approach of determination of the main factors of influence on plants.
5. Types of adaptive response in plants. The understanding what adaptation is.
6. Resistance of plants to stress factors.
7. Premature and anticipatory reactions of plants.
8. Productivity and yield.
9. Modeling in research with plants.
10. The purpose of the experiment and the selection of methods for its implementation.
11. Types of experiments and their characteristics.

### **Topics of laboratory and practical classes:**

1. Peculiarities that distinguish plant objects from others.
2. Agrometeorological support of research with plants. The wind rose.
3. Calculations of average values.
4. Ecological distribution of varieties. To develop ecological characteristics for each of the zones of Ukraine.
5. Adaptability in plants. To describe the patterns of adaptability in plants.
6. Components of productivity of basic crops.
7. Factors that affect performance.
8. To substantiate the model of plant objects.
9. Conditions for conducting vegetative experiments.
10. The peculiarity of field experience with plants.
11. The peculiarity of the observations depending on the agricultural crops.

### **Individual Work:**

1. Basics of the systematic approach for the study of plant organisms.
2. Relationship between plants, soil, meteorological conditions, anthropological factors.
3. Modern conceptual principles of experimental and statistical support of experiments with plants.
4. The ecological approach of determining the main factors of influence on plants. Zoning of research.
5. Types of adaptive response in plants.
6. Resistance of plants to stress factors.
7. Premature and anticipatory reactions of plants.
8. Productivity and yield.
9. Modeling in research with plants.
10. The purpose of the experiment and the selection of methods for its implementation.
11. The peculiarity of the observations depending on the agricultural crops.