FORECAST AND PROGRAMMING OF HARVESTING OF CROPS
Department of Agriculture, Soil Science and Agrochemistry

Training the Doctor of Philosophy on specialty "Agronomy" subject area "Agriculture", "Agricultural chemistry", “Agricultural melioration”

Lecturer: **O.V. Kharchenko**
Semester: **4**
Number of ECTS credits: **4**
Form of control: **Credit**
Classroom hours -**104 (Lectures - 44 hours, practical classes - 44 hours, consultations -16 hours)**

A general description of the subject

The purpose of this subject is to determine and evaluate the dependencies and patterns of influence of the main factors of growth and development of crops on their productivity and the ability to manage their resources through optimization of growing conditions. At the same time, a prerequisite for such study is the assessment of existing natural resources in different natural and climatic zones of the country and taking into account the yield of new varieties and hybrids of crops. The course consists of such parts as the scientific and biological basics of programming; estimation of resource levels of yield with determination of limiting factor; agrochemical aspects of programming; assessing the level of intensity of a particular variety or hybrid based on the efficiency of use of moisture and nutrition resources; peculiarities of programming on the meliorated lands; energy and economic evaluation of crop production. Particular attention is paid to the ecological aspects of cultivation, the necessary conditions for zero deficiency of humus balance and the basic elements of mineral nutrition being the most important. The current problems of agrometeorological forecasting of the yield of basic crops with the quantitative impact on weather conditions are presented in this subject. The mastery of the given knowledge will allow the graduate student to evaluate the actual results of his own research and to formulate conclusions and suggestions reasonably

Lecture topics:

1. Scientific basics of crop programming.
2. Biological basics of crop programming.
3. Climatic conditions and resources of weather factors in different zones of Ukraine.
4. Resource yield levels and assessment of the most likely conditions.
5. Agrochemical basics of crop programming.
6. The level of intensity of the variety or hybrid of the crop and the intensity of use of moisture resources and basic elements of mineral nutrition.
7. Principles of establishing the project yield of a particular variety or hybrid with determining the required rate of fertilizers.
8. Complex influence of limiting factors and efficiency of use of basic resources.
9. Peculiarities of programming of crops on the reclaimed lands.
10. Ecological foundations of crop cultivation, balance of humus and basic elements of mineral nutrition and conditions of its zero deficiency.
11. Fundamentals of energy-economic evaluation of crop production.
12. Fundamentals of agrometeorological forecasting. Influence of weather conditions on crop productivity.

Topics of practical classes:

1. Establishment of a resource level of crop yields.

2. Estimation of the most probable conditions of natural moistening and harvesting provided with resources of moistening.

3. Setting the level of intensity of the variety using the resources of moisture and mineral nutrition.

4. Calculation of fertilizer rates for the planned level of yield, taking into account the conditions of natural moistening and intensity of the variety.

5. Assessment of efficiency of resource use of key factors.

6. Peculiarities of programming of crop yields on irrigated lands. Models of response of productivity on a moisture resource, project productivity.

7. Peculiarities of programming of crops yields on drained lands. Methods of setting fertilizer rates.

8. Choice of economically optimal rate of fertilizers, taking into account the intensity of the variety and the price of fertilizers and products.

9. Balance of humus and conditions of its zero deficiency.

10. Balance of basic nutrients and conditions of its zero deficiency

11. Energy assessment of cultivation of crops.

12. Elements of economic evaluation of crop production.

13. Assessment of the influence of weather conditions on crop yield and the main aspects of agrometeorological forecasting of this value.