

## **MODERN WORLD AGRICULTURAL TECHNOLOGIES**

### **Department of Plant Production**

Lecturer: **V.I. Trotsenko**

Semester: **4**

Educational level: **Doctor of Philosophy.**

The number of ECTS credits: **4.0**

Form of control: **Credit**

Lectures - **44 hours**

Practical or laboratory classes – **44 hours**

Consultations – **16 hours**

#### **General description of the subject**

The program of the course “Modern world agricultural technologies” provides students with the understanding that each specific agricultural technology is a holistic, clearly defined and scientifically-based system with a complex of irreplaceable, interconnected elements, each of which performs a specific function, and all together - the function of the system, essence of which is the development of the intended volume and quality of plant products. In the practical aspect, the discipline is aimed at assessing the potential capabilities of modern varieties and hybrids, soil and climatic resources of a particular zone and economy. The course consists of the following sections: Scientific foundations of modern agricultural technologies; History and stages of development of modern agricultural technologies; Methodology, Theory and practice of modern agricultural technologies; Composition, structure (relationships of components) and functions of agricultural technologies; Abiotic potential of agricultural technologies, Energy and material relationships in the biotic system of agrocenoses.

The students' acquiring of this subject is necessary for the conscious study of other related subjects that form the professional training of a doctor of philosophy.

#### **Lecture topics:**

- Theme 1. Scientific foundations of modern agricultural technologies;
- Theme 2. Agricultural resource of time and its indicators;
- Theme 3. Natural biotic potential of agricultural technologies;
- Theme 4. Composition and relationships between the components of agrocenosis;
- Topic 5. Varietal resources of modern crops;
- Theme 6. Control of pests and diseases in the biotic component of agricultural technologies;
- Theme 7. Non-infectious heterotrophic components of agrocenoses;
- Theme 8. Energy and material structure of agrocenoses;
- Theme 9. Labor resources of world agricultural technologies;
- Topic 10. The practice of using labor resources. Cultural and economic aspects;
- Theme 11. Technical resources of agricultural technologies;
- Theme 12. Formation of systems of machines and implements in specific and zonal technologies.
- Theme 13. Resource potential of agricultural technologies: fertilizers;
- Theme 14. Resource potential of agricultural technologies: pesticides;
- Theme 15. Resource potential of agricultural technologies: growth regulators;
- Theme 16. Systems of technological stages of world agricultural technologies: soil preparation;
- Theme 17. Systems of technological stages of world agricultural technologies: sowing;
- Theme 18. Systems of technological stages of world agricultural technologies: crop care;
- Theme 19. Systems of technological stages of world agricultural technologies: harvesting;

Theme 20. Systems of technological stages of world agricultural technologies: harvesting and storage of crops;

Topic 21. Approaches to the implementation of environmental agricultural technologies;

Topic 22. Obtaining environmentally friendly crop products.

**Topics: (seminar, practical, laboratory)**

Theme 1. Agricultural resource of time and its qualitative indicators.

Theme 2. Natural biotic potential of agricultural technology and its rational use.

Theme 3. Land, soil and climate resources as a complete system and part of agricultural technology. Theme 4. Energy and material relations between the elements of the abiotic part and the laws of formation of the abiotic potential of agricultural technologies.

Theme 5. Influence of the structure of land on the formation and stability of their abiotic environment, productivity of crops, efficiency of agricultural technologies.

Theme 6. Biotic potential of agricultural technologies and their rational use.

Topic 7. Potential resources of modern varieties and hybrids of crops and their realizations in world agricultural technologies.

Topic 8. Laws of saturation of space with cultivated plants, their importance in shaping the productivity of crops.

Topic 9. Correlation between the increasing biota mass and the limiting contours of the outer and inner separating surfaces of physiological exchange.

Theme 11. Labour resources of world agricultural technologies and their rational use.

Topic 12. Calculation of the need for workers.

Theme 13. Methodology, theory and world practice of formation of labor resources taking into account the traditions, social, technical and economic conditions of the countries.

Theme 14. Technical resources of world agricultural technologies and their rational use.

Theme 15. Economic, social, technical and technological principles of forming a system of machines and tools adapted to specific agricultural technologies.

Theme 16. World strategy and tactics for the development of machines and tools and the rules for their use.

Theme 17. Material resources of world agricultural technologies and their rational use.

Theme 18. Material resources of world agricultural technologies and their rational use: Fertilizers.

Theme 19. Material resources of the world agricultural technologies and their rational use: plant protection

Theme 20. Material resources of the world agricultural technologies and their rational use: growth stimulants.

Theme 21. System of technological stages of world agricultural technology in cultivation of field crops.

Theme 22. Methodology, theory and world practice of formation of separate technological elements and agricultural technologies of cultivation of field crops