

ZESZYTY NAUKOWE

**Wydawnictwo Wyższej Szkoły Agrobiznesu
w Łomży**

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FORMATION OF STUDENTS' PROFESSIONAL COMPETENCIES AND SOFT-SKILLS DURING THE STUDY OF PHYTOPATHOLOGY

Summary

A competent specialist must perceive and implement a complex system of acquired knowledge and have the professional thought skills. An important place for the formation of professional competence of the third-year students in the study of phytopathology is given to solving situational problems.

The peculiarity of modern education is that it must comply the demands of society, contribute to the comprehensive development of the individual for his or her successful future. The constant growth of the amount of information that needs to be understood and used in practice contributes to the development of the individual abilities, thinking, satisfaction of cognitive needs and requirements. Ideas, theories, technologies are constantly changing and becoming obsolete. Thus, the amount of knowledge that students receive needs constant updating and readiness for future changes throughout life. The modern education system requires a shift of emphasis from the content of education to the result.

Key words: competence, professionalism, phytopathology, pathogen, physiological condition.

Introduction

Nature has endowed us with plenty of herbs and plants that are a source of health

and longevity. It's hard to imagine the modern world without bright floral landscapes and colorful flowers, modern parks, forests and recreation areas. The plants that surround humanity impress with their brightness and colours, the fruits consumed by mankind are a source of vitamins and micro- and macronutrients, provide support for nutrients in the body. In order for plants to be healthy and retain all the nutrients, it is necessary to ensure their normal physiological condition, but this is not easy to achieve due to the large number of diseases and pests that affect plant organisms [2].

Results of the research

Thus, to ensure the growth of healthy plants and harmony in nature, the third-year higher education applicants of Zhytomyr Ivan Franko State University study the scientific discipline «Phytopathology». 90 hours (3 ECTS credits) are allocated for its study. The main purpose of its study is to provide bachelors with the necessary amount of theoretical knowledge, practical skills and abilities concerning pathogenic processes in plants, their causes and the development of disease control measures by affecting the plant, pathogen and environmental conditions. Students gain theoretical and practical knowledge about pathogenic processes in agricultural, forest crops, flower and ornamental plants, using the relationship «pathogen plant – environment». An important point of studying the scientific discipline «Phytopathology» is the combination of different forms of educational work: lectures, laboratory classes, individual work and educational practice.

The study of disease development in specific conditions allows to obtain profound knowledge of biology of the plant pathogens and environmental factors that promote or prevent the development of pathogens.

The object of study of the modern discipline «Phytopathology» is a diseased plant, which is characterized by the pathological process and is related with the pathogen and the environment, and a healthy plant. This object is especially important for the implementation of preventive measures, as the main task of phytopathology.

Students should be guided by the peculiarities of the detection of various diseases when they master the methods of accounting for the prevalence and intensity of disease. The diseased plant has certain morphological, biochemical and physiological characteristics, which are different from the healthy plant, depending on the activity of the

pathological process and other factors. The development of symptoms caused by the pathogen depends on its systematic position, development cycle, physiological and biochemical condition of the plant.

A competent specialist must be able to perceive and implement a complex system of acquired knowledge and have the skills of professional thinking. Modern society views the specialist not only as a person with knowledge, skills and abilities in the professional sphere, but also as a person able to act effectively in complex, unusual situations, make decisions independently, develop creatively and self-improve, be tolerant of others, be able to communicate with people. These and other professionally important and personal qualities determine the professional competence of a specialist. The future competent specialist must be able to perceive and implement a complex system of acquired knowledge, as well as have the skills of professional thinking. The ability to solve competently and set the main types of professional tasks must also be formed in the course of study at a higher education institution [4].

Professional competence is the ability to use the acquired knowledge, skills and ability to solve the problem, active search for new experience and determination of its independent value, the availability of skills and abilities of independence in planning, organizing, control of personal activities. Competence is understood as mastering along with knowledge, skills and abilities. This is also the ability to behave as effectively as possible in professional situations, which can not always be predicted theoretically. Competence is a systemic concept that has its own structure, equal functions, unique characteristics and properties [6].

Competence is an integrated system of skills, abilities and values which are necessary for the professional and social activities and personal development of graduates and which they are obliged to master and demonstrate after completing part or all of the curriculum.

The higher education applicants have to master the necessary theoretical information, be able to apply it in practice, bring their knowledge and skills to automatism.

Professional competencies of future biology specialists are divided into the following groups:

1. Ability to implement an individual educational research program.
2. Ability to innovative scientific creativity.

3. Ability to obtain competitive scientific and practical results.
4. Ability to communicate in state and foreign languages both orally and in writing.
5. Development and implementation of state science-intensive targeted programs for plant protection and quarantine.
6. The use of psychological and communication technologies.
7. Carrying out of joint scientific researches, experimental and innovative development in scientific establishments and introduction of scientific results in different farm properties.
8. Conducting high-quality scientific research, processing, analysis and integration of acquired scientific knowledge.
9. Implementation of the ideas of scientific and pedagogical and innovative activities.
10. Application of scientifically based skills and scientific experience for personal highly professional development and self-improvement.
11. Ability to self-organize and develop scientific potential.
12. International scientific and innovative investment activities.
13. The use of theoretical knowledge and practical experience for career growth, management and teaching.
14. Implementation of safe research and production activities in accordance with the legislative and regulatory framework.
15. Monitoring for environmental protection.

A very important point is the combination of different forms of educational work.

The formation of professional and soft-skills competencies during practical classes and internships is especially effective. The higher education applicants master the skills and methods of identifying different types of plant diseases by external signs, independently determine the types of diseases, identify their pathogens, predict the emergence and spread of diseases, motivate measures to limit their development [4].

During the training practice, the higher education applicants must perform a number of tasks independently:

1. Conduct field surveys and identify signs of disease in different crops.
2. Master the methods of accounting for the prevalence and intensity of diseases of different cultures.
3. Organize measures to protect crops from disease directly in the production environment.
4. Prepare the herbarium of affected plants of at least 100 samples of 2-3 plants affected

by the same disease.

Herbarium collection is the most important stage in the study of phytopathology. Herbarium is carried out according to the «Guidelines for the collection and installation of botanical herbarium». The student mastering the methods of accounting for diseases of agricultural plants should know that the most important elements of accounting are the prevalence (number of affected plants) and intensity (degree of development) [3].

Plant damage is the number of diseased plants (organs), expressed as a percentage. The intensity or degree of development of the disease is a qualitative indicator of the disease. It is determined by the area of the affected surface of plant organs covered with spots, pustules, necrosis, etc.

Students mastering the methods of accounting for the prevalence and intensity of disease should be guided by the peculiarities of the detection of various diseases.

There are diseases whose pathogens affect only certain plants or their organs. These are different types of smut, potato cancer, cruciferous disease caused by the fungus *Plasmodiophora brassicae*. To study these diseases, their prevalence in the field is recorded. Two persons take part in carrying out the accounting. One conducts a review and evaluation, the other records dictated data. Assessment of all plant varieties for disease is carried out as soon as possible [5].

Another group of diseases is characterized by the formation of spots, plaques, pustules on various organs. These are peronosporosis, rust, spots, late blight. The degree of plant damage is determined by the area of the affected surface or organs covered with spots, plaques, pustules. Specially designed scales are used to do this. The area of the damage is accounted visually on individual vegetative organs (stems, leaves, fruits).

The results are recorded in special cards of damage (forms), developed for different types of crops and perennials. On the basis of the conducted inspections measures of protection of plants against diseases are planned.

Conclusions

Therefore, the formation of professional competencies is the knowledge that students acquire during their studies and the ability to apply them in practice. However, a good specialist must also have soft skills for career growth, be creative, stress-resistant, sociable,

quickly adapt to new conditions, be able to think logically, solve difficult life situations. During the study of phytopathology the higher education applicants develop all these qualities. Prospects in the formation of professional competencies of the higher education applicants is that they focus on continuous self-development and promotion to the top of professional, spiritual and moral development of the individual. Students learn proficiently to use the acquired knowledge, skills and abilities, to think critically and independently, to look for ways to solve problems.

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