Federal State Autonomous Educational Institution of Higher Education
«RUDN University»

Agrarian and Technological Institute
Recommended by ISSC

WORKING PROGRAM OF THE DISCIPLINE

Name of the discipline

Agrobiotechnology in Plant Protection

Recommended for the direction of training/specialty

35.06.01 «Agriculture»

Program Profile 06.01.07 «Plant Protection»

PhD Program

1. Goals and objectives of the discipline:

The **objective** of the discipline is the formation of theoretical knowledge and familiarization with the practical problems of the implementation of biotechnological methods and techniques in the production of healthy planting material for vegetatively propagated agricultural and ornamental crops, in obtaining plant forms with fundamentally new properties and qualities within economically significant species, in the mass production and use of biological products with antibacterial , fungicidal and insecticidal activity.

Tasks:

- to study the principles and methods of plant healing, the peculiarities of their reproduction, distribution and control of their status using modern diagnostic methods.
- to understand the specifics of creating forms and varieties that are resistant to diseases, pests, herbicides and adverse environmental factors using GMO technologies.
- to get a professional understanding of biopesticides, features of their use and formulations.

2. Place of discipline in the structure of GPC BO:

Учебная дисциплина «Биотехнология в защите растений» входит в обязательные The discipline " Agrobiotechnology in Plant Protection" refers to the variable part of the GPC and the professional cycle of the direction "Agriculture" of block 1 of the curriculum.

3. Requirements for the level of mastering the content of the discipline

The process of studying the discipline is aimed at the formation of the following general professional and professional competencies:

GC-5 – with the ability to use in practice skills and abilities in the organization of research and design work

GC-7 – the ability to professionally operate modern equipment and devices

GC-3 – the ability to independently organize and conduct scientific research using modern methods of analysis of soil and plant samples

GC-4 – willingness to draw up practical recommendations on the use of research results

GC-5 – willingness to present results in the form of reports, abstracts, publications and public discussions

As a result of studying the discipline, a graduate student must:

***Know*:**

- biotechnological terms and concepts;
- the possibility of using biotechnology to obtain a targeted end product of high quality;
- scientifically grounded principles, methods and techniques of modern agrobiotechnology;
- features of physiological and biochemical processes occurring in agricultural plants using biotechnology.

Be able to*:*

- to study modern information, domestic and foreign experience in the application of biotechnology in crop production;
- apply modern methods of scientific biotechnological research in accordance with the approved plans and methods.

- to determine the factors and choose scientifically grounded methods for optimizing biotechnological processes in crop production;
- to provide scientific justification for agrobiotechnological measures to obtain a target product of good quality;
- advise on the production of competitive crop production using agrobiotechnology.

Own:

- skills in processing and analyzing experimental data, systematizing the results of agrobiotechnological research;
- basic skills in the application of modern agrobiotechnological techniques (or their elements) in scientific and technological activities.

4. Scope of discipline and types of educational work

The total workload of the course is 4 credit units.

Type of educational work	Total hours	Semesters			
		1	2	3	4
Classroom Lessons (Total)	80				80
Including:	-		-	-	-
Lectures	40				40
Practical lessons (PL)	40				40
Seminars (S)					
Laboratory work (LW)					
Independent work (Total)	37				37
Control	27				27
Total work rendered hrs	144				144
units.	4				4

5. Content of the discipline

5.1. Contents of discipline sections

№	Name of the discipline section	Lec.	Practicum	Lab work	Seminar	CP	Total Hours
1.	Modern tasks of biotechnology in crop production and its biosafety	3	6			10	19
2.	Improvement of vegetatively propagated plants, their reproduction and distribution	4	8			9	21
3.	Increasing the resistance of agricultural plants to pathogens and environmental factors	2	4			4	10
4.	Production of biological products,						

	their effectiveness, formulations and application	4	8			10	22
	Total hours	13	26			31	72

6. Material and technical support of the discipline:
Laboratory of phytopathology, laboratory of entomology, laboratory of plant immunity, laboratory of phytopathogen diagnostics, illustrative material, handouts, multimedia complex.

7. Information support of the discipline

a) Software

- Windows 7 Corporate.
- Microsoft Office.
- Adobe Acrobat.
- Microscopes.
- Visual tabular material.
- Pathogen Collection.

b) Databases, reference and search systems:

1. Биотехнология – агропромышленному комплексу // В.И.Артамонов. – М.:Наука, 1989г. – 160 с.

2. Льюин. Б. Гены, Изд-во «Мир», 1987

3. Мамонтов С.Г, Захаров В.Б. Общая биология. М.; изд. «Высшая школа», 1996 г.

Молекулярная биология (структура и биосинтез нуклеиновых кислот, «Высшая школа», 1990.

4. Муромцев Г.С., Бутенко Р.Г., Тихоненко Т.И., Прокофьев М.И. Основы сельскохозяйственной биотехнологии. М.: Агропромиздат, 1990.- С. 384

5. Помазков Ю.И., Заец В.Г. Биологическая защита растений (краткий курс). – М.: Изд-во РУДН. - 1997. – 116с.

6. Сельскохозяйственная биотехнология: Учебник/В.С.Шевелуха, Калашникова Е.А. и др.; Под ред. В.С.Шевелухи – 2-е изд. перераб. и доп. – М.: Высш. шк., 2003. –С.468.

7. Ченикалова, Е.В. Биотехнология в защите растений: практикум по выполнению лабораторных работ . - Ставрополь: АГРУС Ставропольского гос. аграрного университета, 2013. – 108 с.

8. Чулкина, В. А. Интегрированная защита растений: фитосанитарные системы и технологии: учебник для вузов по агрон. специальностям . - М.: Колос, 2009. - 670 с. - (Учебник. Гр. МСХ РФ)

9. Штерншис М. В.Биотехнология в защите растений : Учеб. Пособиею–МСХ РФ. Новосибирск :Новосиб. гос. аграр. ун-т, 2001. - 153 с

Программа составлена в соответствии с требованиями ОС ВО РУДН/ФГОС ВО

10. Educational and methodological support of the discipline:

11. Methodical instructions for students on mastering the discipline (module)

Postgruate students must observe discipline, come to classes on time, submit homework for testing, prepare for the test and control work provided for in the course, be active in the classroom. An important place in the educational process is occupied by the independent work of graduate students. To organize independent work on the course, modern information technologies are used: online complexes of educational and teaching materials (program, list of recommended literature and information resources, tasks for self-control), free access to the Internet for working with databases. As part of independent work, students prepare a patent application or a Scopus / WoS article.

Semester work

Job type	Number of tasks	No. of points	Total points
Writing a review article	1	50	50
Seminar work, homework, presentation	6	5	30
Final certification (exam)	1	20	20
TOTAL (maximum points)			100

Features of the implementation of discipline for people with disabilities and people with disabilities. Training in the discipline of disabled people and persons with disabilities (hereinafter HIA) is carried out by the teacher, considering the characteristics of psychophysical development, individual capabilities and health status of such students. For students with musculoskeletal disorders and hearing disabilities, lectures will be accompanied by multimedia tools and handouts.

For students with visual disabilities, the use of technical means for enhancing residual vision is provided, and the possibility of developing audio materials is also provided.In this discipline, training for disabled people and people with disabilities can be carried out both in the classroom and remotely using the capabilities of the electronic educational environment (TUIS) and e-mail.

In the course of classroom training, various means of interactive learning are used, including group discussions, brainstorming, business games, project work in small groups, which makes it possible to include all participants in the educational process in active work on mastering the discipline. Such teaching methods are aimed at teamwork, discussion, group decision-making, contribute to group cohesion and provide opportunities for communication not only with the teacher, but also with other students, cooperation in the process of cognitive activity. Training of disabled people and persons with disabilities can be carried out according to an approved individual schedule, taking into account the characteristics of their psychophysical development and health status, which implies the individualization of the content, methods, pace of the student's learning activity, the ability to follow the specific actions of the student when solving specific problems, making the need, the required adjustments in the training process.
It provides for individual consultations (including counseling via e-mail), the provision of additional educational and methodological materials (depending on the diagnosis).

12. Fund of assessment tools for intermediate certification of students by discipline (module)

Materials for assessing the level of mastering the educational material of the discipline "Modern methods of diagnostics of pests" (evaluation materials), including a list of competencies indicating the stages of their formation, description of indicators and criteria for assessing competencies at various stages of their formation, description of assessment scales, standard control tasks or other materials necessary for assessing knowledge, skills, skills and (or) experience of activity, characterizing the stages of the formation of competencies in the process of mastering the educational program, methodological materials that determine the procedures

for assessing knowledge, skills, skills and (or) experience of activities that characterize the stages of formation competencies are developed in full and are available for students on the discipline page at TUIS RUDN.The program was drawn up in accordance with the requirements of RUDN University.

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