Ministry of Agriculture of the Republic of Kazakhstan
S.Seifullin Kazakh Agrotechnical Research University

«APPROVED»
Acting Dean of the Agronomy Faculty of
NJSC «S.Seifullin Kazakh Agrotechnical
Research University»
_____ G.K. Satybaldieva
" 19 " 04 2024

Reviewed
at the meeting of the Faculty Council
Protocol No. 11 dated « 18 » 04 2024

DEVELEPMENT PLAN
DOUBLE DIPLOMA EDUCATIONAL PROGRAM
7M08111 "AGROBIOTECHNOLOGY"
(double degreediploma, OVPO partner - The Patrice Lumumba Peoples' Friendship University of Russia (Moscow, Russia)
for 2024 - 2028 years

Reviewed at the extended meeting of the Department of Agriculture and Plant Growing
Protocol No. 7 dated "08" 04 2024

Astana, 2024

Content

1 Passport for the development plan of the "Agrobiotechnology" EP

Passport for the development plan of the educational program 7M08111 "Agrobiotechnology" for the period of 2024 - 2028

1	Reasons for developing an EP plan	The development of the educational program is based on the Agreement on the implementation of the joint educational master program "Agrobiotechnology" (direction "Agronomy") between the Peoples' Friendship University of Russia (RUDN) and the NJSC "S.SeifullinKazakh Agrotechnical Research University" dated 02.20.2023
2	Main developers of the EP development plan	Members of the Academic Committee: - Stybaev G.Zh. (KATIU), Rysbekova A.B. (KATIU), Amantaev B.O. (KATIU), Kipshakbaeva G.A. (KATIU), Gabdola Ә. (KATIU),Pakina E.N. (RUDN University), Vvedensky V.V. (RUDN University). *Invited:* Kakimzhanova Almagul Apsalyamovna, Doctor of Biological Sciences, Professor, Head of the Laboratory of Biotechnology and Plant Breeding, RSE "National Center of Biotechnology" of the Science Committee of the Ministry of Education and Science of the Republic of Kazakhstan; Zhirnova Irina Aleksandrovna, M.Sc. (Agricultural Sciences), head of the department of selection of grains, legumes, grain fodder and oilseed grasses of the "A.I. BARAYEV RESEARCH AND PRODUCTION CENTRE FOR GRAIN FARMING » LLP; Ashirbekova Inkar Adilbekovna, 2nd year doctoral student of the "Genetics and crop breeding» EP at the S.SeifullinKazakh Agrotechnical Research University"; Lushchak Pavel Vasilievich, director of«Naydorovskoe"LLP
3	Time frame for implementing the EP development plan	2024 - 2028
4	Volume and sources of financing	The state budget
5	Expected final results of the implementation of the EP development plan	Master's degree - training of highly qualified specialists together with RUDN University (Russia) at the international level, with in-depth knowledge of fundamental and applied problems in the study of plant objects, with the skills of scientific justification and practical approach to solve them, in accordance with the requirements of employers and professional standards in the field of production crop production

2 Analytical justification for the "Agrobiotechnology"program

2.1 Information about the educational program

The educational program 7M08111 "Agrobiotechnology" was jointly developed with a foreign partner university and is a double-degree program. OVPO - partner - Peoples' Friendship University of Russia. Patrice Lumumba (Moscow, Russia).

S. SeifullinKazakh Agrotechnical Research University NJSC is one of the leading universities, constantly searching for ways to develop to achieve high levels among universities that train competitive specialists in relevant fields. In order to deepen integration into the global scientific and educational space, mastering advanced knowledge and technologies, in 2022 KATIU established cooperation and signed a memorandum of understanding with the Peoples' Friendship University of Russia. Patrice Lumumba, the world's leading research university, including an agricultural one.

Educational program 7M08111 "Agrobiotechnology" was developed in 2023 together with scientists from the Agrobiotechnological Institute of the Patrice Lumumba Peoples' Friendship University of Russia. Master's degree students within the framework of the "Agrobiotechnology" EP study for the first year at KATIU, the second - at RUDN University, and masters who complete this type of training, in accordance with the Agreement, will be awarded diplomas from both universities. Students are trained in this educational program at a high scientific and pedagogical level, all classes in special disciplines are provided with material and technical devices and equipment. Students of the "Agrobiotechnology" EP are involved in the implementation of funded projects, and conduct research work at a high scientific level.

The goal of the "Agrobiotechnology"educational program is to train highly qualified specialists together with RUDN University (Russia) at the international level, with in-depth knowledge of fundamental and applied problems in the study of plant objects, with the skills of scientific justification and a practical approach to solve them, in accordance with the requirements of employers and professional standards in the field of crop production.

2.2 Information about students

The Department of Agriculture and Plant Growing of the Faculty of Agronomy of the S. Seifullin Kazakh Agrotechnical Research University is graduating in the field of training 7M131-Agronomy.

The total number of students for the current academic year is 285 people, of which 223 students receive grants from the Ministry of Education and Science of the Republic of Kazakhstan, 61 students are studying on a contractual basis.

In the 2023-2024 academic year, 4 master students are studying in the EP 7M08111 "Agrobiotechnology" on the basis of a state educational grant, and 1 foreign student is studying on a contractual basis. In total, there are 5 master's students in the 1st year of the EP 7M08111-Agrobiotechnology, of which 4 are students who applied in summer, including a foreign student), and 1 is a student applied in winter.

2.3 Internal conditions for the development of the educational program "Agrobiotechnology"

To implement the educational program "Agrobiotechnology", there is appropriate material and technical equipment. The department has classrooms for theoretical training and laboratory rooms.

Auditoriums, subject rooms indicating the name and area:

No. 5108 - 53 sq.m. 20 seats, multimedia digital podium 190D PODIUM. Interwrite DualBoard 1277v interactive whiteboard from stationary projector, climate chamber - TX-80. No. 5208 - 31.5 sq.m., 28 seats, EPSON interactive projector, Dell/Core I3/33OO/4096/500/Intel HD Graphi/DVD/Realtek/Realtek system unit. No. 5210 - 41.5 sq. m 24 seats Interactive

projector + computer included, drying cabinet. No. 5203 (lecture auditorium), 85.3 sq.m., 78 seats. Interactive projector + computer included.

Training laboratories (sq.m.) and a list of technical teaching aids, educational and educational laboratory equipment indicating the type:

No. 5218 laboratory for assessing the quality of crop products, 51.4 sq.m., 16 seats, interactive board interwrite DualBoard 1277 in comp. with static, m/m projector, Grain moisture analyzer EVLAS-2M, Whole grain infrared analyzer, Apparatus for mixing samples BIS-1B, Diaphanoscope, IR analyzer SPECTRAN, Mill for plant samples, Laboratory mill LMTs-1M, Set of test sieves for wheat grain analysis - 10pcs, Fat analyzer using the Soxhlet method, Nitrachek 404, Equipment for determining the baking properties of grain and flour, Penetrometer, Device for measuring the dimensional stability of bread IFK-250, Device for determining the falling number PChP-5, Device for determining the volume of bread OHL -2, Device RZ BPL, Purka liter with scales without verification with electronic scales, System of instruments for determining the quantity and quality of gluten, Spectrum level 4, Dough mixer U1ETK-1M, Refrigerator, Drying cabinet -2 pcs., Set of sieves for controlling contamination of SPL- 30 budget-5pcs, Juicer, Automotive probe, Bag probe, Sampling probe Electric oven with convection, Laboratory mill, Scholander chamber, Laboratory for express method of mineral nutrition based on FED, Steel fume hood, laboratory table with lamp - 6 pcs, laboratory table - 5 pieces.

No. 5204 laboratory of seed production of agricultural crops, 54 sq.m., 16 seats. Interactive projector EIKILC-XIP2600, system unit Dell/Core I3/33OO/4096/500/Intel HD Graphi/DVD/Realtek/Realtek/, Weighing table, Laboratory table - 3 pcs., Laboratory table with lamp and shelf - 7 pcs., Cabinet , Chair with 2 soft elements - 15 pcs, Rolling cabinet with three drawers - 3 pcs, laboratory stool - 3 pcs, metal cabinet - 5 pcs, seed counter, laboratory scales, laboratory thresher MKL-1-2 pcs, portable sheet area meter CI-203 -2 pcs, collapsible boards, dry air thermostat TS-200 SPU, Thermostat -5 pcs.

Computer classes, computers, equipment, furniture, cabinets for individual use, video cameras:

computer class No. 5215, 31.8 sq.m. 9 seats, Monoblock - 10 pcs, HP LaserJet 1022 laser printer, HP ScanJet G2410 scanner, HP LaserJet Pro1025 laser printer, MFP copier, Computer table - 10 pcs, Student chair - 16 pcs, Student board, Dressing cabinet, Armchair, Table of 2 cabinet, speaker + web camera.

computer class No. 5211, 20.5 sq.m., 9 seats Monoblock - 10 pcs., Computer included. laser printer HP LaserJet 1102, acoustic speaker + web camera, computer table - 10 pcs., student chairs - 17 pcs.

Library:

The library is located in the main building - 1835 sq.m. 1. Library fund – 1360320 units. 2. Republican interuniversity electronic library (books and articles in Kazakh, Russian, English) - 43,000 books, 47,891 articles. 3.Electronic library of teaching staff at KATU University – 1983 units. 4. Russian universal scientific electronic library – 3225 scientific journals. 6. EB "LAN" (technical and agricultural literature) – 33898 books, 101 magazines. 5. Access to databasesSpringer Link,Thomson Reuters,Elsevier.

Characteristics of the equipment available at the Department of Agriculture and Plant Growing to provide training in the "Agrobiotechnology" EP:

1. Grain moisture analyzer EVLAS-2M, 2014. The Evlas - 2M moisture analyzer is a compact, affordable and high-precision moisture analyzer, which is ideal for product quality control, as well as for providing incoming control in receiving departments. The ease of maintenance and operation allows you to attract personnel of any qualification. Equipment: sample bowls - 15 pcs., tweezers, spatula, methods for working with products, 5 gram weight (M1 accuracy, with verification certificate).

2. Infrared whole grain analyzer ZX-50, 2014. The ZX-50 Infrared Whole Grain Analyzer is designed to measure the mass fraction of protein, moisture and raw gluten in wheat.

This is a microprocessor device that allows you to display measurement results on a liquid crystal screen and work in conjunction with a personal computer to process measurement results and generate calibrations.

3. Analytical sieving machine AS 200 Control, 2015. Used for research and development, quality control of raw materials and finished products, as well as in monitoring production activities. The controlled electromagnetic drive guarantees optimal adaptation to each substance. Fractions with a narrow particle size distribution can be obtained even with very short sieving times. Use separation, fractionation, particle size determination. Scope of application - Biology, Agriculture, Chemistry / Plastics, geology / metallurgy, mechanical engineering / electronics, medicine / pharmaceuticals, environment / processing, food products, glass / ceramics, building materials. Source material - powders, bulk materials, suspensions. Measuring range*20 μm - 25 mm. Material movement - three-dimensional sieving - vertical movement with angular momentum. Maximum amount of material 3 kg.

4. Apparatus for mixing samples BIS-1B, 2005. The device BIS-1U (grain divider) is designed for mixing a grain sample and separating average and average daily samples from it, dividing the average sample in half and separating a sample weighing 25, 50 and 100 g.

5. Laboratory scales Cas 1200, 2020. Highly accurate scale with stainless steel platform and easy calibration in user mode. There are 8 units of mass measurement, counting mode and percentage weighing mode, accounting for tare weight. Includes: protective case and battery. Accuracy class: high. Easy calibration in user mode. Stainless steel platform. Large LCD display with backlight. Powered from mains via adapter or battery. Convenient navigation key. Automatic shutdown. RS-232 interface.

6. Fat analyzer using the Soxhlet method E-812 SOX, 2013. The reference Soxhlet extraction is characterized by the fact that the extraction is carried out with a condensed (cold) solvent. Technical characteristics: Extraction time, 150 min; Extract volume, 130 ml; Sample container volume (glass tube), 115 ml; Sleeve size, 25x100, 33x94 mm; Sleeve material, cellulose; Temperature range (boiling points), <70 °C; Maximum cooling water consumption, 72 l/h; Maximum water pressure, 4 bar; Samples per batch, 2 pcs; The solvents used are hexane, chloroform, petroleum ether, diethyl ether; Materials in contact with the sample - borosilicate glass 3.3, FPM, FEP, Fluorez, Ematal; Compatible with 6-position hydrolysis apparatus E-416; Power, 1200 W.

7. Scholander's Pump-Up Chamber, PMS, 2018. Material of the working pressure chamber: anodized aluminum. Analog pressure gauge. Maximum pressure: 20 bar (2 MPa). The delivery set includes one cover for the pressure chamber, which can be chosen from three types of covers. Each type of cover is also available as a separate accessory. The water potential of a plant reflects the saturation of plant tissues with water and the ability of the xylem to retain moisture. Assessment of the water potential of plants is necessary for an objective determination of water starvation (water stress) of cultivated plants or, conversely, their oversaturation with water. A separate area of application of Scholander chambers is the study of the formation of cavitation in the xylem when high pressure is applied to a plant cutting.

8. Feed analyzer (yield sensor) GreenSeeker, 2017. The GreenSeeker portable yield sensor is an easy and simple to use measuring device that can be used to determine the health and growth of a crop. Indicators taken from the portable GreenSeeker sensor can be used to make non-subjective decisions about the amount of fertilizer to apply to crops, resulting in more efficient use of fertilizers - which benefits both the farmer and the environment.

9. Scales MWP-600 N, 2012 Accuracy class: 2-high, 8 units of mass measurement (grams, carats, etc.). Various operating modes, including counting mode and percentage weighing mode. Easy calibration in user mode. Stainless steel platform. Large LCD display with backlight. Powered from mains via adapter or batteries. Subtracting tare mass. Convenient navigation key. A battery is included. Automatic shutdown membrane keyboard with navigation key; RS-232C interface; calibration with one keystroke.

10. Field moisture meter with temperature sensor Aquaterr T-350, 2013. The professional series of moisture meters T-350 (Aquaterr Instruments & Automation, LLC) makes it possible to quickly and accurately determine soil moisture and temperature by direct contact measurement. The operating principle is based on high-frequency volumetric measurement. Other soil characteristics (pH, salt content, temperature) do not affect the readings. The probe of the device is made of high-strength aircraft aluminum and stainless steel, which gives it increased strength and allows the measuring sensor to be immersed to different depths up to 76 cm.

11. Machine for wet dressing of small batches of seeds Hege 11, 2014. Thanks to the three working containers HEGE 11 (1, 7 and 14.5 l), it is possible to treat seeds in small batches: from 20 to 3000 g. The principle of operation is that the seed material, thanks to the rotating double bottom and centrifugal force in the working container, slides along the outer wall, and the spraying disk evenly distributes the disinfectant throughout the entire seed material.

12. Seed purifier MLN, 2010 Provides secondary purification of all types of seeds to the required level of quality in samples weighing from 1 kg for sowing or laboratory analysis. The multi-step process ensures thorough and gentle cleaning with virtually no noise or vibration. An additional advantage is the convenient location of the control elements and the possibility of quick changeover.

13. Portable pulsed fluorometer-analyzer of photosynthesis output MINI-PAM II, Walz MINI-PAM-II/B, 2023. The MINI-PAM-II fluorimeter is based on the study of photosynthesis by measuring chlorophyll fluorescence using the pulse-amplitude modulation (PAM) method. MINI-PAM-II is a portable solution ideal for field use.

14. Soil density meter Wile Soil, 2013. A soil density meter (penetrometer) is an instrument that measures the density/resistivity of soil when inserted into the soil.

The density meter is supplied with two tips: a 1.27 cm diameter for taking density measurements in hard soil and a 1.91 cm diameter for taking density measurements in soft soil.

15. Bunch thresher LD 350, 2013 The LD 350 is suitable for threshing, de-awning and grain cleaning of crops such as: clover, grasses for seeds, rice, vegetable crops for seeds, grain crops, lentils and many others - without crushing grains, losses, and most importantly - mixing.

16. Refractometer-salt meter PAL-SALT, 2020. ATAGO salinity meter is widely used in various industries. For food products, in addition to checking the salt content, a salt tester is also used to ensure that the correct amount of salt has been added. In industry, the salinity meter is widely used for testing resistance to aggressive salt action, PAL-SALT is a universal pocket-sized salinity meter with a wide range of 0.00-10.00%.

17. 05.07 Cylindrical soil drill, 2018 With this kit you can conduct a general study of soil structure. The kit allows you to take a soil sample with a preserving structure of 100 cm in length and 90 mm in diameter. The cylindrical drill is driven into the soil using a gasoline jackhammer (or an electric hammer). The drill has a removable side cover, which allows for preliminary analysis of the selected sample on site. The standard set includes: a gasoline jackhammer, a cylindrical stainless steel drill, a hand drill, an extraction device for removing the sampler, containers for transporting samples, and other accessories.

18. Seed counter S25, 2015 Control via a 10-inch touch screen (keyboard and mouse also possible). Seed size ranges from 0.5 to 18 mm. Accurate calculation of the required quantity with an accuracy of 100%. High counting speed (up to 125 seeds per second). The counting, weight and thousand seed weight results are saved in an Excel spreadsheet. Automatic calculation of the mass of a thousand grains or the mass of a thousand seeds. Automatic calibration for all types of seed. Configuration of external devices (barcode reader, scales) is performed directly on the PC. Ergonomic and fast unloading. Low maintenance costs, easy cleaning.

19. Dry air thermostat TS-200 SPU, 2019. Chamber volume, l 200. Operating temperature range, °C troom. +5 ... +60. The maximum deviation of the average temperature of any point in the working volume of the chamber from the set one, in steady-state thermal conditions in the range, °C, no more: from (troom +5) to +40 inclusive; from +41 to +60. Time

to establish the operating mode when heated from room temperature to 60 °C, min, no more than 120. Continuous operation time, hours, no less than 500.

20. Levenhuk MED D10T LCD digital microscope, trinocular, manufactured in 2022. Optics material: optical glass with antifungal coating. The nozzle rotates 360°. The tilt angle of the eyepiece nozzle is at least 30°. Magnification, at least 40–1000 times. The diameter of the eyepiece tube, mm, is not less than 23.2. Wide-field eyepieces with diopter adjustment WF 10x/18 mm (2 pcs.). Achromatic lenses: 4x, 10x, 40xs, 100xs (oil). Revolving device for 4 lenses. Interpupillary distance, mm no more than 48–75. Subject table, mm not less than 125x130, mechanical two-layer, with preparation guide. The range of movement of the object table, mm, is not less than 70/50. Diopter correction of eyepieces, D ±5. Abbe condenser NA 1.25 with iris diaphragm and filter holder. Iris diaphragm. Focusing is coaxial, coarse (30 mm) and fine (0.002 mm). Metal body. LED backlight. There is brightness adjustment. Power source at least 100–240V. Backlight type: at least 5 W. Light filters blue, green, yellow. The number of megapixels is at least 5. The sensitive element is 1/2.5. Pixel size, microns, at least 2.2x2.2. Frame rate 15.

21. Laboratory spikelet thresher MKL-1, 2021. Small-sized laboratory thresher. The thresher is designed for threshing individual ears or bunches (up to 10-15 ears) of grain crops (wheat, barley, etc.) with the separation of light impurities. Productivity is not less than 120-240 ears/hour, not less than 60-120 bunches/hour. Electric motor power is at least 0.25 kW. The threshing apparatus is a whip type. Weight no more than 25.5 kg.

22. Portable sheet area meter CI-203, 2022 The device measures/calculates the following leaf parameters: area, length, width, perimeter, number of leaf gaps, geometric shape coefficient, aspect ratio. The maximum sheet thickness for measurements is not less than 1.4 cm. The maximum sheet width is not less than 15 cm. The maximum sheet length is not less than 300 cm. Scanning resolution is not less than 0.01 cm2. Scanning accuracy is no less than ± 1% for samples with leaf area >10 cm2. Interface for communication with a computer USB. The scanner emitter type is laser, emission is at least 670 nm. Memory capacity of at least 8000 measurements. Display type TFT LCD 320x240. Scanning speed of at least 200 mm/s. Battery: Rechargeable battery, NiMH, 7.2 V. Battery capacity is at least 250 scans without recharging. Operating temperature range 0 – 50 °C.

23. Laboratory refrigerator POZIS HL-250, 2022. Total volume 250 l. Refrigerator volume, 170 l. Freezer volume 80 l. Temperature in the refrigerator compartment +2...+15°C. Temperature in the freezer °C -25...-10. Overall dimensions 600×610×1450 mm. Weight 68 kg.

24. Water distiller AE-10, 2023 Purpose: obtaining distilled water of type 3 according to GOST R 58144-2018 “Distilled water”. Capacity, l/h 10.0 (-10%). Wall version.

25. LI-6400XT – portable system for analyzing photosynthesis processes, 2016. The LI-6400XT system, in its basic configuration, allows high-precision measurements of plant gas exchange, both in office and in the field, without damaging the sample. The system, as standard, also allows the user to set and accurately control the humidity, CO2 concentration and temperature (within ±6°C of ambient temperature) of the atmosphere surrounding the sample in the measurement chamber. Complete with a fluorometer (supplied separately), the system allows synchronous measurements of gas exchange and chlorophyll fluorescence on the same leaf surface. The system has high accuracy and, at the same time, low weight.

26. Titrator Titrando, 2014 Titrando potentiometric titrators have been developed to meet stringent titration requirements. Titrandos come with a wide range of features that are optimal even for use in highly regulated industries. Automatic titrators are capable of performing all common titration types and offer a variety of automation and control options.

27. Mechanical grain cutter, 2023 The cutter allows you to carefully and accurately cut through wheat and barley grains to expose the sprout and assess the viability of the seeds. The cut grains are separated from each other and then collected in small trays located inside the cutter, which ensures minimal grain loss. The simplicity of the design allows you to work

quickly and efficiently. The cutter is made of stainless steel, which simplifies its cleaning; requires minimal maintenance; easy to maintain (lubrication) GOST 12038-84.

28. Universal grain divider UDZ-1, 2023 The universal grain divider UDZ-1M is designed for mixing and separating representative samples of grains, legumes and oilseeds from a sample of no more than 8 liters. The sample is separated by the method of multiple quartering of the grain flow in successively located dividing and mixing sections.

29. Table for disassembling and visual analysis of seeds, SVAZ-900, 2023. Equipped with its own backlight and a powerful magnifying glass with LED illumination. The left and right borders of the transparent part of the table are made with protruding edges to prevent seeds from falling off. The glass top can be easily removed to replace the lamp. Original holes for convenient seed screening. Wooden structure, ultra-thin viewing platform, additional illumination of the desktop with a magnifying glass.

30. Portable system for studying plant gas exchange and photosynthesis processes, 2016. allows for high-precision measurements of plant gas exchange, both in office and in the field, without damaging the sample. The system also allows the user to set and clearly control the humidity, CO 2 concentration and temperature (within ±6°C of ambient temperature) of the atmosphere surrounding the sample in the measuring chamber. Complete with a fluorometer, the system allows synchronous measurements of gas exchange and chlorophyll fluorescence on the same leaf surface.

Masterstudents of the "Agrobiotechnology" EP conduct research on the basis of the Agroecological Test Center (laboratory), which was created in 2019 on the basis of the "S. Seifullin Kazakh Agrotechnical Research University"NJSC and is accredited in the state system of technical regulation of the Republic of Kazakhstan in accordance with the requirements of ST RK ISO /IEC 17025 - 2019 (accreditation certificate No. KZ.T.01.2238 dated July 22, 2019). The agroecological testing center has the entire necessary base of regulatory documents - governmental standards, technical conditions and regulations, regulatory documents for research methods. Equipped with modern domestic and European equipment, allowing us to provide high-quality services in the field of soil science, agrochemistry and ecology. Students using the center's equipment, under the guidance of a supervisor, conduct experiments and research on the topic of their dissertation. In addition, research centers and large farms are the bases of practice for students of the "Agrobiotechnology" EP.

2.4 Characteristics of the surrounding society

The double-diploma educational master's program "Agrobiotechnology" (direction "Agronomy") was developed on the basis of an Agreement on the implementation of a joint educational program between the Peoples' Friendship University of Russia (RUDN University) and the "S. Seifullin Kazakh Agrotechnical Research University"NJSC dated February 20, 2023. The partner university took an active part in the development of the EP: Pakina Elena Nikolaevna, director of the agrobiotechnological department of ATI, doctor of agricultural sciences, professor; Vvedensky Valentin Valentinovich, deputy director of the agrobiotechnological department of ATI, candidate of agricultural sciences, associate professor; Ignatov Alexander Nikolaevich, Doctor of Biological Sciences, Professor, Zargar Meysam, Doctor of Agricultural Sciences, Associate Professor; Gins Murat Sabirovich, Doctor of Biological Sciences, Professor, Corresponding Member. RAS, Orlov Yuri Lvovich, Doctor of Biological Sciences, Professor of the Russian Academy of Sciences; Lapshin Georgy Sergeevich, assistant.The academic degrees awarded correspond to the national qualification system of the partner countries.

Taking into account the development of a double-diploma program for the master's level, at which the correct choice of research topic is more important, the developers of KATIU and RUDN held a number of online meetings demonstrating the direction of research in this area, in order to demonstrate to students the possibilities of conducting research, and to increase interest in conducting research.

The EP development plan is formed taking into account the availability of financial, information, labor, material and technical resources. Material, technical, information and library resources used to organize the process of training and education are sufficient to fulfill the stated mission, goals and objectives and meet the requirements of the EP.

On questions of the educational process, students can contact the advisor, who provides assistance in choosing a learning path (formation of an individual curriculum) and mastering the educational program during the period of study, as well as information on the organization of the educational process can be seen in the schedule of the educational process. In case of problems related to the educational process, for example: passing an examination session according to an individual schedule, the student contacts the dean of his faculty and provides the dean of the faculty with supporting certificates: about illness, in connection with the birth of a child, with the death of close relatives, in connection with official or a study trip.

If a student has completed the course program in full, but has not achieved the minimum transfer score, in order to increase his grade point average (GPA), he is given the opportunity to re-study certain disciplines for a fee in the summer semester.

If a student disagrees with the exam results, they havean opportunity to file an appeal, analysis of which shows that most often this situation can arise when the student believes that among the correct answers there may be another correct answer, which they report to the members of the appeal commission.

The university has an internal quality assurance system based on the European standards and ESG guidelines. Taking into account the fact that the university recognizes ECTS credits, assessment of the achieved results of students is equivalent both at the KATIU and at the partner universities. The organization of training in the two partner educational institutions is similar: training modules are counted according to the same ECTS system; in both cases, training includes field work and laboratory internships, culminating in academic preparation.

2.5 Information about teaching staff implementing the educational program

The educational activities of 7M08111 "Agrobiotechnology" EP in the 1st year of study are carried out by 2 doctors of science, 12 candidates of science, 4 PhD (Doctor of Philosophy) and 3 masters. The degree is 85.71%, which meets the requirements. The second year of study is conducted by the teaching staff of RUDN, however, if the student wishes to complete with only 1 diploma, the teaching staff of the Department of Agriculture and Plant Growing can fully provide the EP disciplines.

EP teachers constantly improve their professional level in accordance with the Education Law of the Republic of Kazakhstan; advanced training is planned every 5 years at the international or republican level.

Advanced training of teaching staff in the educational program was carried out in various areas. The choice of directions is determined by the need to improve pedagogical skills, introduce innovative teaching technologies into the educational process in EP, and improve the content of taught disciplines in accordance with modern scientific requirements. Within the framework of S. Seifullin Kazakh Agrotechnical Research University teaching staff of the department improved their qualifications in the following courses: "Distance learning", "Study of national and foreign languages", etc. Outside the university, advanced training was carried out on the basis of the IPK, in the central universities of Kazakhstan.

Teachers are proficient in modern methods of assessing learning outcomes, such as tests, portfolios, case measures, contextual tasks, and creating projects.

The educational program is focused on the formation of basic and professional competencies related to research and practical activities, taking into account the requirements of employers and partner universities, as well as the needs and interests of undergraduates. Increased fundamental training within the educational program will allow graduates of the master's program to continue their studies in doctoral studies.

The teaching staff of the department is engaged in scientific research work taking into account the needs of industries. There are publications of teaching staff articles in journals included in the high-ranking databases Web of Science, Scopus, the Committee for Quality Assurance in the Field of Science and Higher Education of the Ministry of Science and Higher Education of the Republic of Kazakhstan.

2.6 Characteristics of the achievements of the "Agrobiotechnology" EP

Educational program 7M08111 Agrobiotechnology is implemented using modern effective teaching methods aimed at actively involving students in the educational process and increasing their independence and responsibility for the results of the educational process. Such methods include problem lectures, stage case studies, and project methods, which allow students to be included in an active position to unlock the realization of their potential, create a creative environment, and also contribute to the operational influence on the formation of the professional qualities of a future specialist.

The effectiveness of the educational program is the achievement of the goal of the program implementation and assessment of the quality of the program implementation.

The main indicator of implementation is learning outcomes, which are reflected in the educational program.

In order to improve teaching methods, the university regularly organizes and conducts educational, methodological and methodological seminars in the following areas: technologies of student-centered education; modern teaching methods; technologies of integration in education.

At the Department of Agriculture and Plant Growing, when organizing the educational process of the 7M08111 Agrobiotechnology, various types of classes are used with a predominance of active forms of learning: lecture-conversation, guest lectures, lecture-discussion, seminars and practical classes, including demonstration and open ones, independent work, as well as classes using TSO. The department annually practices giving lectures by production workers to undergraduate and graduate students.

Assessment and adjustment of pedagogical methods are carried out within the framework of organizing open classes, mutual visits to classes, meetings of methodological seminars, the work of the academic council, and conducting master classes. At the beginning of the academic year, the department draws up a plan for conducting open classes and a schedule for mutual attendance at classes.

Materials of open classes and methodological developments are compiled in a separate folder and are available to all teachers of the department for the purpose of mutual exchange of methodological experience. At the end of the semester, general analyzes of the open classes conducted are carried out, new directions in teaching methods and organizational and educational work of the department are developed. The system of conducting open classes, control visits and mutual visits is carried out in accordance with current plans. Field research, as well as dual training disciplines, are carried out on the basis of the A.I. BARAYEV RESEARCH AND PRODUCTION CENTRE FOR GRAIN FARMING, and in the fields of farms with which there are agreements, contracts and memorandums. In addition, practical classes are also conducted at the Agroecological Center for Collective Use (https://kazatu.edu.kz/pages/nauka/naucnye-centry-i-instituty).

3 Characteristics of the problems that the development plan of the "Agrobiotechnology" EPis aimed at solving, and justification for the need to solve them

Master's students of the "Agrobiotechnology" EP conduct research work mainly within the framework of funded scientific projects, within which they have the opportunity to improve their professional qualifications, as well as within the framework of master's studies, master's students improve their skills through internships at leading universities and scientific organizations. This educational program is a double-diploma program, respectively, for the double-diploma "Agrobiotechnology" EP admission of students is carried out flexibly, taking into account all

categories of students, for Kazakh applicants, Russian and foreign applicants, diplomas of the established form KATIU and RUDN are issued equally, however, there are a number of possible problems: the emergence complex geopolitical situation, reforming the educational process in accordance with the practice of the world's leading agricultural research universities and strengthening the material and technical base.

4 The main goals and objectives of the development plan of the "Agrobiotechnology" EP indicating the timing and stages of its implementation

The goal of the educational program "Agrobiotechnology" is to train highly qualified specialists together with RUDN University (RF) at the international level, with in-depth knowledge of fundamental and applied problems in the study of plant objects, with the skills of scientific justification and a practical approach to solve them, in accordance with the requirements of employers and professional standards in the field of crop production. Objectives of the educational program: creating conditions for acquiring high-quality professional education; formation of universal and social-personal values of the graduate, as well as environmental, physical, ethical, legal culture, culture of thinking; formation of knowledge of basic disciplines necessary for mastering professional disciplines in the field; creating conditions for the acquisition of theoretical and practical skills in agricultural technologies in crop production, terms, concepts and principles of agronomy, as well as the acquisition of analytical skills for use in the production of crop products; prepare a Bachelor of Agrobiotechnology for professional activity, continuous professional and moral improvement and master's studies; developing the competitiveness of graduates in the labor market to ensure the fastest possible employment in their field of study.

In this regard, the goal of the development plan for the educational program "Agrobiotechnology" is to develop various types of activities aimed at creating conditions for the successful development of the educational program.

The objectives of the development plan for the educational program "Agrobiotechnology" include the development and implementation of planned activities aimed at creating a new type of educated scientific personality that meets the needs of the regional economy, the international labor market, involvement in scientific research, expanding the partnership environment, etc.

5 Measures to reduce the impact of risks for the "Agrobiotechnology" EP

Possible risk	Measures to reduce risks	Responsible persons and implementation deadlines
external risks		
1. Highly competitive environment in the educational segment	Development and implementation of distance courses in the educational process, incl. MOOC for use by external users	Teaching staff of the department, during each academic year
	Increasing the number of copyright certificates from material developed by teaching staff	Teaching staff of the department, during each academic year

2. Lack of modern equipment in laboratories	Equipping with modern equipment and instruments through funding from the Global Fund, PCF and international projects	Teaching staff of the department, during each academic year
3. Low motivation to use the e-learning system	Training at specialized trainings and educational seminars	head of SEP, teaching staff for 2023-2027.
4. Administrative risk when implementing a double-diploma educational program	Strict compliance with all requirements of the legislation of the Republic of Kazakhstan and the Russian Federation, standards, regulations and instructions	head of SEP, teaching staff for 2023-2027.
internal risks		
1. Insufficient level of teaching staff proficiency in foreign languages	Planning teaching for teaching staff in advanced study of a foreign language	head of department, at least 2 teachers per academic year
2. Insufficient funding for research work	Increase in the number of contractual topics and scientific projects	head of department, teaching staff

All actions necessary when moving students to a partner university are provided for and discussed in the "Agreement on cooperation in science and education between the Peoples' Friendship University of Russia (RUDN) and the S. Seifullin Kazakh Agrotechnical Research University dated January 31, 2023

6 Action plan for the development of the educational program "Agrobiotechnology"

NO.	Name of events	Implementation time frame	Responsible	Expected results	Resource support
1	Improving master's degree programs by updating the content of specialized disciplines, with the involvement of stakeholders - RUDN partners, employers, students	2024-2028	Head department, members of the Academic Committee	An improved educational program, with updated disciplines, the results of which meet the requirements of the time, including in production and science	Legal acts, recommendations of partners, employers and other stakeholders

2	Development of a new UML in the state, Russian and English languages	2024-2028	Head department, teachers of the department	A new UML will be developed in the state, Russian and English languages, taking into account the need to ensure	Developments of scientists, teaching staff, etc.
3	Increase in the number of teaching staff who speak a foreign language, people.	2024-2028	Head department, teachers of the department	Increase in the number of teaching staff who have passed an international exam with a confirming certificate, 10% annually	Studying English in courses organized by the university and at your own expense
4	Classroom equipment	2024-2028	Head department	A laboratory will be equipped in the field of EP	Due to scientific projects and s/s of the university
5	Increase in the number of scientific projects and agreements with business entities	2024-2028	Head department, teachers of the department	Applications will be submitted for the Global Fund competition	PPP potential
6	Conducting dual forms of training at manufacturing enterprises in the country	2024-2028	Head department	At least 1 discipline per year will be organized as part of dual training	In accordance with plans and contracts
7	Publication of scientific articles in journals included in the Thomson Reuters, Scopus and Springer databases, in scientific journals with an impact factor	2024-2028	Head department, teachers of the department	At least 1 article will be published per year	As part of the implementation of scientific work
8	Involving leading scientists from near and far abroad countries to give lectures, conduct seminars, etc. students	2024-2028	Head department	A scientist will be invited to give guest lectures, at least 1 per year	As part of the invitation of foreign scientists on scientific projects and other sources
9	Passing independent national specialized accreditation	2024	Head department	EP will be accredited	-//-
10	International and national scientific and industrial internships for teaching staff, incl. young scientists of the department	2024-2028	Head department, teaching staff	At least 1 teacher will undergo internship	At the expense of the project, or from the university
ELEVEN	Monitoring of graduates' employment	2025-2028	Head department, resp. for employment of	Employment monitoring will be carried out annually	Analysis of student data

			graduates		
12	Concluding agreements on undergraduate research internships	2025-2028	Head department, resp. for practice	Concluding agreements, if necessary, on research internships, depending on the number of undergraduates	Analysis of support for both students and the organization's capabilities for completing research internships

7 Mechanism for implementing the development plan of the educational program "Agrobiotechnology"

Main implementation mechanismsdevelopment plan for the educational program "Agrobiotechnology"are:

- normative base
- development programs of S. Seifullin Kazakh Agrotechnical Research University for 2024-2029
- regulatory documentation developed by S. Seifullin Kazakh Agrotechnical Research University
- clear distribution of work areas among the core group of developers and stakeholders;
- a system for planning the work of the main group of developers and stakeholders;
- reflexive management of the work of participantsby the head of the core development team;
- information about intermediate and final results broadcast to the public by publication on the official website of the university;
- students' learning of the main educational program in accordance with the RUP;
- providing students with the opportunity to test themselves in various directions: social-moral, artistic-aesthetic, research, scientific, cognitive in interconnection;
- creation of an appropriate developmental environment: educational, creative, social, etc.;
- ensuring a favorable moral and psychological climate.

8 Assessment of the socio-economic efficiency of the implementation of the development plan of the "Agrobiotechnology" EP

As a result of the implementation of the EP development plan, it is expected to ensure socio-economic effects:

- improving the quality of professional education and, as a consequence, the competitiveness of specialists in the field of agrobiotechnology;
- increasing the professional literacy of graduates and better meeting the needs of potential employers;
- increasing the role of employers in training professional personnel;
- increasing the demand for qualified personnel, optimizing their age structure;
- improving the system of training specialists at all levels;
- increasing the number of educational services;
- expanding opportunities for professional self-realization of youth;

- increasing the level of income of education workers;
- preventing the outflow of promising teaching staff to other sectors;
- increase in the number of young people employed in the economic sector (increase in the number of graduates employed or moving to the next level of education);
- growth in academic mobility of students, academic and administrative;
- growth in the export of educational services (increase in the number of citizens of other states studying in institutions of higher professional and postgraduate education of the Republic of Kazakhstan);
- updating the educational and material base (educational and laboratory, computer and technological base that meets modern requirements and standards).

9 Model of EP graduate by level of study

The graduate model is a system of personality traits of a specialist graduate of a higher educational institution; it is a goal, an ideal representation of the result of the educational system.

In accordance with the National Qualifications Framework (NQF), a master's degree graduate is 7.

Based on the NQF, to ensure cross-industry comparability of qualifications and confirm compliance and assignment of qualifications of specialists, as well as a more detailed description of the results, industry qualifications frameworks (QFs) and professional standards describing the requirements for the qualifications of workers and graduates have been developed. Based on NRC, ORK, prof. standards and Dublin descriptors, a model of an EP graduate is being developed separately for each level of study.

The learning outcomes of undergraduate educational programs are determined on the basis of the Dublin descriptors of the first level in the form of competencies, the learning outcomes of master's programs - on the basis of the Dublin descriptors of the second level, doctoral studies - of the third level.

Thus, the necessary key and professional competencies of graduates of the master's program of the "Agrobiotechnology" EPand form a graduate model.

The key and professional competencies of graduates of the master's degree program "Agrobiotechnology" combine knowledge and competencies in the field of general agriculture and crop production, mastering modern methods of organizing teaching and research work; a greater orientation in training is aimed at mastering fundamental disciplines, as well as disciplines offered by employers, i.e. necessary in modern production. Competencies (know, understand, have skills) are presented in details in the educational program.

The uniqueness of the educational program is a wide range of theoretical and practical knowledge in the professional field, they are able to independently develop and put forward various options for solving professional problems using theoretical and practical knowledge, they have the competencies of independent management and control over the processes of scientific and production activities within the framework of strategy, policy and goals of the organization, discussion of the problem, argumentation of conclusions and competent handling of information. During their first year of study graduates of this educational program will be able to study at the S. Seifullin Kazakh Agrotechnical Research University, during the second year - on the basis of RUDN, and will get two diplomas from the these partner universities.

Head of Department
Agriculture and Plant Growing A.A. Baitelenova