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**
**EDUCATIONAL PROGRAM**
**7M08102 «AGROTECHNOLOGY»**
**for 2024-2028.**

Reviewed at expanded meeting of the Department of Agriculture and Crop Production
Protocol No. _7_ from "08" 04 2024

Astana, 2024

**Content**


1 Passport of the development plan EP 7M08102 "Agrotechnology" 3
2 Analytical justification of the EP "Agrotechnology" 4
2.1 Reference to the educational program 4
2.2 Student information 4
2.3 Internal conditions for the development of the EP "Agrotechnology" 4
2.4 Characteristics of the surrounding society 9
2.5 Information about teaching staff implementing the educational program 9
2.6 characterization of the achievements of EP "Agrotechnology" 10
3 Characterization of the problems that the development plan of EP "Agrotechnology", and justification for the need to solve them 10
4. Main goals and objectives of the development plan of EP "Agrotechnology" with an indication of the terms and stages of its implementation 10
5. Measures to reduce the impact of risks for EP "Agrotechnology" 11
6. Action plan for the developmentof the EP"Agrotechnology" 12
7 Mechanism of implementation of the plan for the development of the EP "Agrotechnology" 13
8.Assessment ofsocio-economic efficiency of the implementation of the plan for the development of the EP "Agrotechnology" 13
9. Level of education of the graduate of the EP according to the level of training 14

**1 Passport of the development plan of EP "Agrotechnology"**

Passport of the development plan of the educational program 7M08102 "Agrotechnology" for 2024-2028

| | | |
|---|---|---|
| 1 | Grounds for development of the development plan of the education | program The development of the educational program is based on new regulations for the implementation of the Law of the Republic of Kazakhstan dated July 4, 2018 No. 171-VI "On Amendments and additions to certain legislative acts of the Republic of Kazakhstan on the expansion of academic and managerial independence of higher educational institutions", and in accordance with professional standards |
| 2 | Main developers of the plan of the EP | Academic Committee (order No. 374-N of 18.10.2023) - Stybaev G. Zh., Shestakova N. A., Kipshakbaeva A. A., Nogaev A. A., Mukhanov N. K., Amantaev B. O., Saurov S. (doctoral student of the 3rd course of the EP 8D08102- "Organic agriculture").<br>Invited guests: Irina A. Zhirnova, M. Sc. of Agricultural Sciences, Head of the Department of Selection of cereals, legumes, forage and oilseeds TOO «of A. I. BarayevAGRICULTURAL RESEARCH CENTER LLP; Pavel V. Lushchak, Director of Naidorovskoe LLP. |
| 3 | Terms of implementation of the EP development plan | 2024-2028 |
| 4 | Scope and sources of funding | State budget |
| 5 | Expected final results of the implementation of the EP development plan | training of specialists with a high level of professional culture, able to formulate and solve modern scientific and practical problems in the professional and educational sphere, successfully carry out production, teaching, research and management activities in agricultural organizations, higher specialized education, and colleges. |

## 2 Analytical justification of the EP "Agrotechnology"

### 2.1 Information about the educational program

The educational program "Agrotechnology" of the scientific and pedagogical direction of the master 's degree was developed in accordance with the National Framework of Qualifications and Professional Standards, coordinated with the Dublin Descriptors and the European Framework of Qualifications, based on the Stateoro Mandatoryoro Standarda of Postgraduate Education (Order Mof the Ministry of Education and Science of the Republic of Kazakhstan No. 604 dated October 31, 2018), and developed jointly with university professors Davis, California, USA.

The relevance of the educational program is primarily due to the need to train highly qualified specialists in the context of the ever-increasing role of knowledge-intensive production in agriculture. This program is aimed at consolidating and expanding the theoretical knowledge of the master's student with their further use in practice.

The peculiarity of the implemented program is its orientation towards training вgraduates for professional activities, which combines knowledge and competencies in the field of general agriculture and crop production, who are familiar with modern methods of organizing pedagogical and научноresearchисследовательской work.

The uniqueness of the educational program is - conducting practical classes of professional disciplines directly in the field and laboratory conditions, studying crops, conducting agricultural operations, etc. directly on the field.

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.

Advanced fundamental training in the framework of the educational program will allow graduates of the magisтtur to continue their studies in the doctoralprogram.

Theeducational program is designed on the basis of a modular system of studying disciplines and contains modules that form basic (general cultural, special language) and professional competencies.

### 2.2 Student information

The Department of Agriculture and Crop Production of the Faculty of Agronomy of the Seifullin Kazakh Agrotechnical Research University is a graduate in the field of training 7M131-Agronomy.

In the 2023-2024 academic year, 14 undergraduates are studying under EP 7M08102 "Agrotechnology" on the basis of a state educational grant.

### 2.3 Internal conditions for the development of EP "Agrotechnology"

For the implementation of the educational program "Agrotechnology" there is an appropriate material and technical equipment. The department has classrooms for theoretical training and laboratory rooms.

*Classrooms and subject areas with their names and areas indicated:*

No. 5108 - 53 sq. m. 20 seats, multimedia digital podium 190D PODIUM. Interactive whiteboard interwrite DualBoard 1277b comp. co stat. projector, climate camera-TX-80. No. 5208 - 31.5 sq. m., 28 seats, EPSON interactive projector, Dell/Core IZ/ZOO System unit/4096/500/lntel HD Graphi / DVD/Realtek/Realtek. No. 5210 - 41.5 sq. m. 24 seats Interactive projector+ computer per set, drying cabinet. No. 5203 (lecture hall), 85.3 sq. m., 78 seats. Interactive projector+ computer set

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

No.5218 plant production quality assessment laboratory, 51.4 sq. m, 16 seats, Interactive whiteboard interwrite DualBoard 1277b comp. so stats, m / m projector, Grain moisture analyzer EVLAS-2M, Whole grain analyzer infrared, Sample mixing device BIS-1B, Diaphanoscope, IR

analyzer SPEKTRAN, Mill for plant samples, laboratory mill LMC-1M, A set of control sieves for wheat grain analysis-10 pcs, Fat analyzer according to the method Soxleta, Nitrachek 404, Equipment for determining the baking properties of grain and flour, Penetrometer, Device for measuring the shape stability of bread IFC-250, Device for determining the number of falls of 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 devices for measuring the volume of bread in the form of determination of gluten quantity and quality, Spectrum level 4, Dough mixer U1ETK-1M, Refrigerator, drying cabinet -2 pcs, Set of sieves for infection control SPL-303-5 pcs, Juicer, car probe, bag probe, sampling probe Electric furnace with convection, Laboratory mill, Scholander chamber, Laboratory for the express method of mineral nutrition based on FED, steel exhaust cabinet, laboratory table with lamp-6 pcs, laboratory table-5 pcs.

No.5204 laboratory of seed science of agricultural crops, 54 sq. m, 16 seats. Interactive projector EIKILC-XIP2600, Dell/Core IZ/ZOO system unit/4096/500/lntel 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, Sliding 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, Blackboard, Wardrobe, Chair, 2-pillar table, speaker+ webcam.

computer class No. 5211, 20,5 sq. m, 9 seats Monoblock-10 pcs, Computer per set. HP LaserJet 1102 laser printer, Speaker + web camera, Computer table-10 pcs, student chairs-17 pcs.

*Library:*

The library is located in the main building – 1835 sq. m. 1. The library fund – 1360320 units. 2. Republican Interuniversity Electronic Library (books and articles in Kazakh, Rus. English) - 43,000 books, 47,891 articles. 3. Electronic library of the Faculty of KATU University-1983 units. 4. Russian Universal Scientific Electronic Library-3,225 scientific journals. 6. WEB "LAN" (technical and agricultural literature) – 33898 books, 101 journals. 5. Access to Springer Link, Thomson Reuters, and Elsevier databases.

*Characteristics of the equipment available at the Department of Agriculture and Crop Production to provide training in the EP "Agrobiotechnology":*

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

2. Whole grain analyzer infrared ZX-50, 2014 The infrared whole grain analyzer ZX-50 is designed to measure the mass fraction of protein, moisture and raw gluten in wheat. This is a microprocessor-based device that allows you to display measurement results on a liquid crystal screen and work together with a personal computer to process measurement results and generate calibrations.

3. Analytical screening machine AS 200 Control, 2015 is used for research and development, quality control of raw materials and finished products, as well as in the control of production activities. The controlled electromagnetic drive ensures optimal adaptation to each substance. Fractions with a narrow particle size distribution can be obtained even with very short sieving times. Usage separation, fractionation, particle sizing. Applications: Biology, Agriculture, Chemistry / Plastics, Geology / Metallurgy, Mechanical engineering / Electronics, medicine /

Pharmacy, environment / Processing, Food, Glass / Ceramics, Building materials. Starting material-powders, bulk materials, suspensions. Measuring range*20 microns - 25 mm. Material movement-three-dimensional sieving-vertical movement with angular momentum. The maximum amount of material is 3 kg.

4. Device for mixing samples BIS-1B, 2005 V. 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 weight of 25, 50 and 100 g.

5. Laboratory scales Cas 1200, 2020 High-precision scales with a stainless steel platform and easy calibration in user mode. There are 8 units of mass measurement, counting mode and percentage weighing mode, tare weight accounting. Included: protective cover and battery. Accuracy class: high. Easy calibration in user mode. The platform is made of stainless steel. Large backlit LCD display. Mains power via adapter or battery. Convenient navigation key. Automatic shutdown. RS-232 interface.

6. Fat analyzer according to the Soxlet method E-812 SOX, 2013 V. Reference extraction according to the Soxlet method is characterized by the fact that the extraction is carried out with a condensed (cold) solvent. Technical specifications: The extraction time, 150 min; the Volume of the extract, 130 ml; the Amount of dishes to sample (glass vial), 115 ml; container Size, 25x100, 33x94 mm; Material casings, cellulose; Temperature range (boiling point), <70 °C; Maximum consumption of cooling water, 72 l/hour; Maximum water pressure, 4 bar; the Samples in the party, 2 PCs; Used solvents - hexane, chloroform, petroleum ether, diethyl ether; Materials in contact with sample - borosilicate glass 3.3, FPM, FEP, Fluorez, Ematal; Compatible with 6-position device for the hydrolysis of E-416; Power 1200 watts.

7. Sholander's Pump-Up Chamber, PMS, 2018. Material of the working pressure chamber: anodized aluminum. Analog pressure gauge. Maximum pressure: 20 bar (2 MPa). One pressure chamber cover is included in the delivery package, and you can choose from three types of covers. Each type of cover is also available as a separate accessory.The water potential of the plant reflects the saturation of plant tissues with water and the ability of xylem to retain moisture. Assessment of the water potential of plants is necessary to objectively determine the water starvation (water stress) of cultivated plants or, conversely, their water supersaturation. A separate area of application of Scholander chambers is the study of cavitation formation in xylem when high pressure is applied to the plant stalk.

8. Feed analyzer (yield sensor) GreenSeeker, 2017 The GreenSeeker portable yield sensor is easy and simple to use as a measuring instrument, which can be used to determine the condition and growth of the crop. Indicators taken from the portable GreenSeeker sensor can be used to make non-subjective decisions about the amount of fertilizer for the crop, which leads to more efficient use of fertilizers – which benefits both the farmer and the environment.

9. Scales MWP-600 N, 2012 V. Accuracy class: 2-high, 8 units of mass measurement (grams, carats, etc.). Various operating modes, including counting mode and weighing mode as a percentage. Easy calibration in user mode. The platform is made of stainless steel. Large backlit LCD display. Power supply from the mains via an adapter or from batteries. Subtraction of tare weight. Convenient navigation key. The kit includes a battery. Automatic shutdown membrane keyboard with navigation key; RS-232C interface; one-touch calibration.

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

11. Machine for wet etching of small batches of seeds Hege 11, 2014. Thanks to the three working capacities of HEGE 11 (1; 7 and 14.5 liters), it is possible to etch seeds in small batches:

from 20 to 3000 g. Working principle-the seed material, thanks to the rotating double bottom and the centrifugal force in the working tank, slides along the outer wall, and the spray disc evenly distributes the mordant throughout the seed material.

12. Seed cleaner MLN, 2010 Provides secondary cleaning of all types of seeds to the required level of quality in samples weighing from 1 kg for sowing or performing laboratory tests. The multi-stage process ensures thorough and gentle cleaning with virtually no noise or vibration. An additional advantage is the convenient location of the controls and the ability to quickly reconfigure.

13. Portable pulse fluorimeter-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 pulse-amplitude modulation (PAM). The MINI-PAM-II is a portable solution, ideal for working in the field.

14. Soil density meter Wile Soil, 2013 V. Soil density meter (penetrometer) is a device that measures the density / resistance of the soil when it is introduced into the soil.

The density meter is supplied complete with two tips: 1.27 cm in diameter for measuring density in hard ground and 1.91 cm in diameter for measuring density in soft ground.

15. Beam thresher LD 350, 2013 V. LD 350 is suitable for threshing, removing spikelets and cleaning grain of such crops as: clover, herbs for seeds, rice, vegetable crops for seeds, cereals, lentils and many others - without crushing grains, losses, and most importantly - mixing.

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

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

18. Seed counter S25, 2015 V. Control via a 10-inch touch screen (keyboard and mouse can also be used). The size of the seed material is from 0.5 to 18 mm. Accurate calculation of the required quantity with 100% accuracy. High counting speed (up to 125 seeds per second). The results of counting, weighing, and weighing thousands of seeds 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 material. Configuring external devices (barcode reader, scales) runs directly on the PC. Ergonomic and fast unloading. Low maintenance costs, easy cleaning.

19. Dry-air thermostat TS-200 SPU, 2019 V. Chamber volume, L 200. Operating temperature range, °C tcomn. +5 … +60. Maximum deviation of the average temperature of any point of the working volume of the chamber from the set one, in the steady-state thermal mode in the range, °C, no more: from (tcomn. +5) up to and including +40; from +41 to +60. Time to set the operating mode when heated from room temperature to 60 °C, min, no more than 120. Continuous operation time, h, not less than 500.

20. Levenhuk MED D10T LCD digital microscope, trinocular, 2022 V. Optical material: optical glass with antifungal coating. The nozzle is 360°rotatable. The angle of inclination of the eyepiece nozzle is not less than 30°. Magnification, multiple of at least 40-1000. Diameter of the eyepiece tube, mm not less than 23.2. Wide-field eyepieces with diopter correction WF 10x / 18 mm (2 pcs.). Achromatic lenses: 4x, 10x, 40x, 100x (oil). Revolver device for 4 lenses. Interpupillary distance, mm no more than 48-75. Slide table, mm not less than 125x130, mechanical double-layer, with preparation guide. Range of movement of the slide table, mm not less than 70/50. Diopter correction of eyepieces, D ±5. Abbe N. A. 1,25 condenser with iris

diaphragm and filter holder. Iris aperture. The focus is coaxial, coarse (30 mm) and precise (0.002 mm). The case is metal. LED illumination. Brightness adjustment is available. Power supply at least 100-240V. The type of illumination lamp is at least 5 watts. Light filters are blue, green, and yellow. Number of megapixels not less than 5. Sensor element 1/2. 5. Pixel size, microns not less than 2. 2x2. 2. Frame rate 15.

21. Laboratory spikelet thresher MKL-1, 2021 g. v. Small-sized laboratory thresher. The thresher is designed for threshing individual ears or bundles (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 bundles/hour. The electric motor power is not less than 0.25 kW. Threshing machine - biceps. Weight not more than 25.5 kg.

22. Portable sheet area meter CI-203, 2022 V. The device measures / calculates the following sheet parameters: area, length, width, perimeter, number of leaf gaps, geometric shape coefficient, aspect ratio. The maximum thickness of the sheet for measurements is not less than 1.4 cm. The maximum sheet width is at least 15 cm. The maximum sheet length is at least 300 cm. Scanning resolution of at least $0.01^{cm2}$. Scanning accuracy of at least ± 1% for samples with a sheet area>$10^{cm2}$. Interface for communication with the computer USB. The scanner emitter type is laser, with an emission of at least 670 nm. Memory capacity of at least 8000 measurements. The display type is TFT LCD 320x240. Scanning speed of at least 200 mm/s. Battery rechargeable battery, NiMH, 7.2 V. The battery capacity is at least 250 scans without recharging. Operating temperature range 0-50 °C.

23. Refrigerator laboratory POZIS KHL-250, 2022 g. v. Total volume of 250 liters. Refrigerator capacity, 170 l. The freezer capacity is 80 liters. The temperature in the refrigerator is +2...+15°C. The temperature in the freezer is °C -25...-10. Overall dimensions 600×610×1450 mm. Weight 68 kg.

24. Aquadistillator AE-10, 2023 V. Purpose: obtaining distilled water of type 3 according to GOST R 58144-2018 "Distilled water".Productivity, l / h 10.0 (-10%). Wall-mounted version.

25. LI-6400XT-portable system for analyzing photosynthesis processes, 2016. The LI-6400XT system, in the basic configuration, allows you to make high-precision measurements of plant gas exchange both in the office and in the field, without damaging the sample. The system, as standard, also allows the user to set and clearly control the humidity, CO2 concentration$_2$ and temperature (within ±6°C of the ambient temperature) of the atmosphere surrounding the sample in the measuring chamber. Complete with a fluorometer (supplied separately), the system allows simultaneous measurements of gas exchange and chlorophyll fluorescence on the same leaf surface. The system has high accuracy rates and, at the same time, low weight.

26. Titrando Titrator, 2014 V. Titrando potentiometric titrators were designed to meet strict titration requirements. Titrando comes with a wide range of features that are optimal even for use in highly regulated industries. Automatic titrators are capable of implementing all common titration types and offer a variety of automation and control options.

27. Mechanical grain cutter, 2023 V. The cutter allows you to carefully and accurately dissect wheat and barley grains in order to expose the sprout and assess the viability of seeds. The cut grains are separated from each other and then collected in small trays located inside the cutter, which guarantees 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 V. The universal grain divider UDZ-1M " is designed for mixing and separating representative attachments of grain, legumes and oilseeds from a sample of no more than 8 liters. The suspension is separated by the method of multiple quartering of the grain flow on sequentially located dividing and mixing sections.

29. The table for disassembly and visual analysis of seeds, SVAZ-900, 2023 is equipped with its own illumination and a powerful magnifying glass with diode illumination. The left and right borders of the transparent part of the table are made with protruding edges to prevent stalling of seeds. The glass countertop can be easily removed to replace the lamp. Original holes for easy

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. It allows you to make high-precision measurements of plant gas exchange both in the office and in the field, without damaging the sample. The system also allows the user to set and clearly control the humidity, CO2 concentration and temperature (within ±6°C of the ambient temperature) of the atmosphere surrounding the sample in the measuring chamber. Complete with a fluorometer, the system allows simultaneous measurements of gas exchange and chlorophyll fluorescence on the same leaf surface.

Master's students of the EP "Agrotechnology" conduct field research on the basis of the A. Barayev Scientific Research Center, in addition, the bases of practice of students of the EP "Agrotechnology" are scientific centers and large farms.

### 2.4 Characteristics of the surrounding society

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

For questions about the educational process, students can contact an adviser who helps them choose the learning path (form an individual curriculum) and master the educational program during the training period, as well as information on the organization of the educational process can be found in the schedule of the educational process. In case of problems related to the educational process, for example: passing an exam session on an individual schedule, the student applies to the dean's office of their faculty and provides the dean of the faculty with supporting certificates: about illness, due to the birth of a child, the death of close relatives, in connection with a business or study trip.

If the student has completed the course program in full, but has not scored the minimum transfer score, in order to improve their GPA, they are given the opportunity to re-study certain subjects in the summer semester on a paid basis.

If the student does not agree with the exam results, he / she has the opportunity to file an appeal application, the analysis of which shows that most often this situation may arise when the student believes that among the correct answers there may be another correct answer, which he / she informs the members of the appeal commission.

The University operates an Internal Quality Assurance System based on European standards and ESG guidelines. Taking into account the fact that ECTS credits are recognized by the universityECTS, the assessment of students ' achievements is equivalent both in the CATIU and in partner universities. The organization of training in the two partner educational institutions also has similarities: training modules are counted according to the same ECTS system; in both cases, training includes field work and laboratory internships, ending with academic training.

### 2.5 Information about teaching staff implementing the educational program

Educational activities of EP 7M08102 "Agrotechnology" are implemented by 1 Doctor of Sciences, 12 candidates of Sciences, 4 PhD (Doctor of Philosophy), and 1 Master. The degree ofsecurity is 94%, which meets the requirements.

EP teachers constantly improve their professional level in accordance with the Law of the Republic of Kazakhstan "On Education", professional development is planned 1 time in 5 years at the international or national 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 in the educational process in the EP, improve the content of the taught disciplines in accordance with modern scientific requirements. Within the framework of

Seifullin Kazakh Agrotechnical Research University, the department's teaching staff improved their skills in the following courses: "Distance learning", "Study of state and foreign languages" , etc. Outside the university, professional development was carried out on the basis of the IPK, in the central universities of Kazakhstan.

Teachers are proficient in modern methods of evaluating learning outcomes, such as tests, portfolios, case measures, contextual tasks, and project creation.

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. Advanced fundamental training in the framework of the educational program will allow graduates of the magisтtur to continue their studies in the doctoralprogram.

The faculty of the department is engaged in research work taking into account the needs of industries. There are publications of teaching staff articles in journals included in the highly rated databases Web of Science, Scopus, KKSNiVO of the Ministry of Internal Affairs of the Republic of Kazakhstan.

### 2.6 Achievements of EP "Agrotechnology"

The educational program 7M08102 Agrotechnology 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-based lectures, case studies, and the project method, which allow students to engage in an active position to reveal the realization of their potential, create a creative environment, and also contribute to the operational influence on the formation of professional qualities of a future specialist.

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

The main indicator of implementation is the results of training, which are reflected in the educational program.

In order to improve the teaching methodology, the University regularly organizeseт and conducts educational and methodological seminars in the following areas: technologies of personality-oriented education; modern teaching methods; integration technologies in education.

The department implements 3 grant-funded research projects, which involve students in the field of agricultural technology.

## 3. Characterization of the problems that the development plan of the EP "Agrotechnology", and justification of the need to solve them

Master's students of the EP "Agrotechnology" conduct research mainly within the framework of funded scientific projects, in which they have the opportunity to improve their professional skills, as well as within the framework of their master's degree, master's students improve their skills by completing internships in leading universities and scientific organizations.

The main problem of students of this EP is global climate change, instability of weather events, which does not allow to fully study the potential of crops, including varieties, in the field, in this regard, undergraduates conduct experiments in parallel in the phytotron environment. However, each of the master's students of the EP "Agrotechnology" conduct field research.

## 4. The main goals and objectives of the development plan of the EP "Agrotechnology" with an indication of the terms and stages of its implementation

The aim of the educational program "Agrotechnology" is to train specialists with a high level of professional culture who are able to formulate and solve modern scientific and practical

problems in the professional and educational sphere, successfully carry out production, teaching, research and management activities in agricultural organizations, higher specialized education, colleges. To achieve this goal, the following tasks are being implemented: cto form the graduate's readiness for professional activity, mobility, continuous professional and moral improvement and growth throughout life; ıtraining highly educated, enterprising and competitive specialists in the field of crop production in accordance with the existing and future needs of the individual, society and the state; preparation of a master's degree for the crop production industry students with advanced professional and pedagogical training, as well as adaptation of graduates to industrial, technological, organizational, managerial, and pedagogical activities in accordance with the needs of the regional economy and the labor market.

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

The tasks of the development plan of the educational program "Agrotechnology" include the development and implementation of planned activities aimed at the formation of a new type of educated scientific personality that meets the needs of the regional economy, the international labor market, involvement in scientific research, expansion of the partner scientific environment, etc.

## 5 How to reduce the impact of risks for EP "Agrotechnologiya"

| Possible risk | Risk mitigation measures | Responsible and timely implementation |
|---|---|---|
| **external risks** | | |
| 1. High competitive environment in the educational segment | Development and implementation of distance learning courses, including MOE for use by external users | of the Department's teaching staff, during each academic year |
| | Increase in the number of author's certificates from the material developed | by the department's teaching staff, during each academic year |
| 2. Lack of modern equipment in laboratories | Equipping with modern equipment and devices due to the funding of the GF, PCF and international projects | of the Faculty of the department, during each academic year |
| 3. Low motivation to use the e-learning | system Training at specialized trainings and training seminars | head of SEP, teaching staff for 2023-2027 |
| 4. Administrative risk in implementing a two-degree 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 proficiency of teaching staff in foreign languages | Planning of teaching staff in advanced foreign language studies | Head of the Department, teaching |
| staff 2. Insufficient funding for research projects | Increase in the number of contractual topics and research projects | Head of the Department, teaching staff |

## 6 Action plan for the development of EP "Agrotechnology"

| № | Name activities | Deadlines | Responsibility | Expected result | Resource provision |
|---|---|---|---|---|---|
| 1 | Improving EP graduate by updating the content of relevant disciplines, with the involvement of stakeholders - partners, people's friendship University, employers, students | 2024-2028 | Head. the Department, hLena Academic Committee of | Editing of the educational program, with a renewed disciplines, the results of which meet the requirements of the time, including in manufacturing and science | PPA, recommendations, partners, employers and other stakeholders |
| 2 | the Development of a new UML in the state, Russian and English | 2024-2028 | Head. the Department, teachers of the Department | Will have developed a new UML in the state, Russian and English languages, taking into account the need to ensure | the Development of scientists, academics and others. |
| 3 | the increase in the number of faculty, foreign language speaking people | 2024-2028 | Head. the Department, teachers of the Department | Increase the number of faculty who have passed the exam with international standard with certificate, every year 10% of | the English language courses offered by the University and at its own expense |
| 4 | Equipping classrooms | 2024-2028 | Head. the Department | Is equipped laboratory in the direction EP | through research projects and to the student |
| 5 | to the Increase in the number of research projects and contracts with business entities | 2024-2028 | Head. the Department, teachers of the Department | Are submitted entries for the contest GF | Potential PPP |
| 6 | Holding the dual form of training on the production enterprises of the country | 2024-2028 | Head. the Department | Will be organized at least 1 discipline per year in the framework of the dual training | In accordance with the plans and contracts |
| 7 | Publication of scientific articles in journals included in the database of Thomson Reuters, Scopus, and Springer, in scientific journals with impactfactor | 2024-2028 | Head. the Department, teachers of the Department | Will be published at least 1 article per year | In the framework of scientific works |
| 8 | Attracting leading scientists from near and far abroad countries to give lectures, conduct seminars, etc. students | 2024-2028 | Head of the Department | Will be invited to read guest lectures, at least 1 per year | In the framework of inviting foreign scientists on scientific projects, and other sources |
| 9 | Passing an independent national specialized accreditation | 2024 | Head of the Department | Will be held accreditation EP | **- / / -10** |
| 10 | International and republican scientific and industrial internships of teaching staff, including | 2024-2028 | Head of the department, teaching | staff At least 1 teacher will be trained | At the expense of the project, or with/from the university |

| | | | | | |
|---|---|---|---|---|---|
| | young scientists of the department | | | | |
| 11 | Monitoring of employment of graduates | 2025-2028 | Head of the Department, responsible for the employment of graduates | will be conducted annually monitoring of employment | Analysis of data on students |
| 12 | Conclusion of contracts on the passage of research internship of undergraduates | 2025-2028 | Head of the Department, responsible for practice | Conclusion of contracts, if necessary, on the passage of research internship, depending on the number of undergraduates | Analysis of the provision and base of practice of practice |

## 7 Mechanism of implementation of the development plan of EP "Agrotechnology"

The main mechanism of implementation of the development plan of the EP "Agrotechnology" are:

- regulatory framework - Development programs of "Seifullin Kazakh Agrotechnical Research University" for 2024-2029, Regulatory documentation developed by Seifullin Kazakh Agrotechnical Research University
- clear distribution of areas of work among the main 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 participants in the development plan by the head of the main development group;
- information on intermediate and final results, broadcast to the public, by publishing on the official website of the university;
- o- students ' completion of the main educational program in accordance with the RUP;
- providing students with the opportunity to test themselves in various areas: social and moral, artistic and aesthetic, research, scientific, cognitive in relation to each other;
- creating an appropriate development environment: educational, creative, social, etc.;
- ensuring a favorable moral and psychological climate.

## 8 Socio-economic efficiency assessment of the implementation of the Agrotechnology development plan

As a result of the implementation of the EP development plan, it is assumed that the following socio - economic effects will be achieved:

- improving the quality of professional education and, as a result, the competitiveness of specialists in the field of agricultural technology;
- improving the professional literacy of graduates and better meeting the needs of potential employers;
- increasing the role of employers in the training of professional personnel;
- increasing the demand for qualified personnel, optimizing their age structure;
- improving the system of training specialists at all levels;
- increase in the number of educational services;
- expanding the opportunities for professional self-realization of young people;
- raising the level of income of employees in the field of education;
- preventing the outflow of promising teaching staff to other industries;
- an increase in the number of young people employed in the economy (an increase in the number of graduates who are employed or have moved to the next level of education);
- increased academic mobility of students, academic and administrative staff;

- growth in the export of educational services (an increase in the number of citizens of other countries studying in institutions of higher professional and postgraduate education of the Republic of Kazakhstan);

- updating of the educational and material base (educational and laboratory, computer and technological base that meets modern requirements and standards).

**9 Model of the EP graduate by levels of study**

Graduates who have mastered the program ofthe educational program "Agrotechnology" can work in research, scientific-production and production organizations in the field of agriculture, breeding and seed production, protection of agricultural plants, seed farms; local and republican state institutions, as well as in enterprises of various types of agricultural formations; educational spheres of higher and secondary special education institutions of agricultural and biological profile; research and production institutions, in the offices of local, district, regional, republican structures of the Ministry of Agriculture of the Republic of Kazakhstan.

Graduates of the educational program" Agrotechnology " have key skills and know the competencies described in the educational program, and must also be competent in the practical use of in-depth knowledge in the field of scientific agronomy, in theapplication of modern cultivation technologies; in management of a group of employees with responsibility for the result of their actions at the site of the technological process.

Head of the Department
Of Agriculture and cropproduction  A. A. Baitelenova