

Contents

The Rector's message.....	3
The project office.....	4
The educational policy.....	5
Internationalization of education.....	11
Campus and infrastructure policy.....	15
The open data policy.....	18
Science and Research policy.....	22
Strategic project in the field of the Genetics and selection in animal husbandry...	24
Strategic project Genetics and selection in the plant production.....	28
Strategic project in the field of feed and feed additives.....	37
The center of Biotechnologies.....	42
The Aquaculture Innovation and Technology center.....	50
Health Nutrition Project.....	52
The strategic project of the Prosperity in rural areas.....	54



Priority 2030[^]

The Leaders are made

Dear Colleagues and Friends

In 2021, The Kuban State Agrarian University has become a participant of the federal program "Priority 2030" in the direction of "The Territorial and industry leadership." 2022 was not an easy year for us, but quite successful. During this time we have managed to accomplish all our goals.

Today we have decided to summaries the results of our actions and tell you about the most successful and breakthrough projects. Perhaps our experience might be useful for managers and employees of other universities who take part in the "Priority 2030" program.

Alexander Trubilin

The Rector of the Kuban Agrarian State University



приоритет2030⁺
лидерами становятся



The Project office

The University Management system

”

We continue to demonstrate leadership!

Svetlana Morozkina

The head of the project office

The Educational policy



**Education
is the most
valuable investment**



Alex Petuch

The head of the Educational policy



The main directions are:

- > Modernization of educational processes and higher education programmes
- > Internationalization of education
- > Formation of digital competences and skills of using digital technologies among the students
- > Development of additional vocational education and scientific literacy
- > Introduction of the modern educational technologies

In the transition to a new target model of the university, the educational space will be formed based on the principles of openness and inclusiveness, promoting learning potential of students. The main guidelines for the model are professional practice and mentoring, interdisciplinary approach, networking.

8 Targeted educational programs of higher education

73 Programs of additional professional education

6 Programs of professional education

4 Network partners

4 Grant competitions to support talented students

5 Projects "Startup as a diploma" daily



Department of development of innovative educational programs



A rapidly changing world requires new knowledge and skills. We have been developing modern educational programs, adapted to the trends and needs of the labour market, analyze the latest teaching methods and expand knowledge in our field. Due to the Priority 2030 program, we successfully update and modernize the educational process of the university.

Olga Okorkova


The head of innovative educational development



Existing areas

- Agronomy, Genetics and breeding in crop production
- Zootechnics, Genetics and breeding in animal husbandry
- Economics, digital economics
- Management, Agricultural management
- State and municipal management, Agricultural management of rural areas
- Technology of production and processing technology of storage and processing agricultural products
- Foodstuff of vegetable raw materials, healthy eating: quality and safety
- Foodstuff of vegetable raw materials, Biotechnology of vegetable food products

The main principles of the educational policy:

 Foresight session
as a tool for query analysis
of the employer

 Project-based learning

 Individual educational
course

 100% compensation of the cost

 Network approach

 Guaranteed employment

 Advanced level of English language

 Scholarship support



In 2022 a group "target" programs
were opened.

This group is associated with
the priority of the development of science and technology field
and implemented within four strategic projects.

Lifelong Learning, Education and Science consulting in the agro-industrial complex



We help to create an individual educational trajectory from a wide spectrum of educational programs (professional retraining, advanced training, professional and informal training). Developing professional competencies and opening up opportunities to change qualifications. We broadcast scientific knowledge, achievements in the science, scientific-technical, innovative activities of our scientists to the professional community and all the inquisitive minds. We help the younger generation to make an informed choice of their future profession.

Galina Yasmenko

The head of Lifelong Learning program, Education and Science consulting in the AIC

Key results for 2022.

1

We have developed 5 unique programs of the Professional retraining and 68 programs of the advanced training. 1300 people have been trained

4

There is a possibility of implementing additional educational programs for State civil servants of Krasnodar district on the basis of their diploma

2

Have been developed 6 programs of the professional training

5

833 full-time students have obtained additional qualifications

3

Have been hold 4 training seminars for agricultural commodity producers

6

There are about 11 000 people being trained by the Further Educational Programs

Numbers of the project

33

Programs of the professional retraining

8


educational development programs

>11000

The number of the students every year

211

programs of the advanced training



Based on the results of the analysis of global challenges, goals development of the region and the agro-industrial sector, we have developed a unique bank of additional professional education programs. Moreover, the topics of priority directions of non-formal learning were determined. Implementation of the developed programs created the conditions to strengthen the human capacity of rural areas and meeting business needs in high-quality who are capable of working with new technologies, effectively introducing scientific developments into production and managing production processes.

Internationalization of education and youth policy



Together to the Future!



Tatyana Polutina

The head of the Internationalization of education





The Project “A Guest Lecturer”



The University strives to create broad opportunities for international experience of each student and teacher. Efforts are directed towards the development of foreign exchange programmes, incentives for short-term visits, organisation of the effective transfer of knowledge with scientists of leading scientific centres of the world, strengthening the involvement of the university in the implementation of the international education. This is what The Guest-Project team works on. We also hold online marathons and live lectures for famous lecturers and scientists not only of our university but for our foreign partners' universities and organisations as well.



Daria Churianina

The head of the project “A Guest Lecturer”

ПОЛОЖЕНИЯ СОГЛАШЕНИЯ О СОТРУДНИЧЕСТВЕ МЕЖДУ КУБГАУ И СВСХУ

签约仪式



Campus and infrastructure policy



**Improvement of the territories
and safety!**

Maxim Greene

Campus manager and infrastructure policy

Numbers of the project



>200

cameras
of video surveillance
have established



>185

lamp mast
have superseded



>6000 M²

of laboratory and educational
spaces have been renovated



30

recreated areas in the territory
of the campus was created



Since the beginning of the campus activities and infrastructure policy of the Kuban GAU development program, the team of property transformation complex has taken part in the creation of the material and technical base of the biotechnological centre, innovation and technology centre of aquaculture, laboratory of physical and chemical analysis, feed laboratories additives and digital content laboratories. The team has made the campus pedestrian area accessible for persons with disabilities; enhanced safety technology of the campus; conducts annual research landscaping.



Digital transformation and open data policies

The Key Components

- › Digital infrastructure
- › Digital environment
- › Smart campus



Alexey Kramer
Policy maker in the field of open data
and digital transformation

New Data Center

- 8 servers and a system data storage for virtualization cluster
- Network equipment for core network with backbone 40 Gbit/s channels

Open

- 3 multimedia audiences with led screens
- 4 new computer rooms

Upgraded

- 12 multimedia audiences
- 8 computer rooms



New
modernized information systems



- ▲ AIS “Academic achievements”
- ▲ “Curriculum”
- ▲ “Educational programs”
- ▲ “ACD” and others

Within the direction “Digital Environment” components of the university’s program of the infrastructure are developing. The development of domestic digital services is aimed at the formation of a single service hub, ensuring the transition to the model of “everything as a service”.



Laboratory of the digital content



Video recording studio with interactive transparent board and 4K camera for creation of educational and scientific courses.



Three studios for individual recording and online broadcasting.



Group work spaces in which you can carry out project workshops, master classes, hackathons and other activities.

Soon

Opening of another studio for online broadcasting and recording in the format of the “interview”, “round table” and others.



A man with short brown hair, wearing a light blue short-sleeved button-down shirt, is smiling and looking towards the camera. The background is a stylized world map with a blue ocean and a grey landmass, with some green dots scattered across the landmass. The text "Science and Research Policy" is written in a white, italicized font inside a white rounded rectangle with a thin black border.

Science and Research Policy







Advanced scientific research,
embodied into production!

Andrei Koshchaev

The head of Science and Research policy






Today we have focused our efforts on four strategic projects:

-  Genetics and breeding in animal and plant production
-  Innovative feed and feed additives
-  Healthy nutrition
-  Rural wellbeing

Our first priority is from a university that generates scientific knowledge, become a university of innovative development, a platform for the realisation new and original ideas and supporting their transformation advanced.



Key achievements of the 2022 policy.

-  Involved over 500 million rubles from R&D implementation
-  Created 8 varieties of agricultural private crops
-  Realised 89 scientific grants
-  Received more than 400 RIDs
-  **Open**
 - 9 science labs
 - 2 «mirror» laboratories

10

Strategic Process Genetics and Breeding



Created the first
in Russia Center
of Dairy Competencies

Pavel Nosalenko

Chief executive of
the strategic project





*Strategic project Genetics and selection
in plant production*

приоритет2030[^]
лидерами становятся



**Selection: from innovation
to production!**



Natalia Repko

Head of the strategic project
“Genetics and selection
in crop production”



The project develops and implements new approaches and methods of genetic assessment plants for targeted introduction into the breeding process. The project is ongoing research on the creation of new domestic, competitive varieties and hybrids of agricultural plants with high yield, drought resistance and winter resistance, high-quality products.



1,5 mln. rubles

Commercialization of breeding achievement

>4

new cultivars

> 9 tons/ha

yield of new varieties
of winter barley

>120

cultivars have genotyped

>15 000

varietals phenotypically



Selection works are carried out for winter wheat, spring barley, tomato, grapes and apple. The program "Priority-2030" allowed conducting research on the new technological and information level and introduce innovative methods in the selection process.

Viticulture and Wine-making



We are expanding the horizons of solar culture, adding new viticultural areas by developing new and eliminating shortcomings in classic and autochthonous grape varieties.

Vyacheslav Cherkunov

Responsible for the implementation of the project "Viticulture and winemaking"



Thanks to the program
“Priority 2030” I do not grow just
grapes, but I grow a bottle of
wine with set quality parameters.

Digitalization in viticulture

We are creating one of the largest in the country ampelographic collection to be serve not only as a source of genetic material but also as a place for practical study of new innovative technological methods in the cultivation of grapes.



>1000

samples
in Ampelographic
grape collection



>100

people a year pass
special program
"Wine culture and art sommelier"

We are currently working on a digital photo-processing product to detect the presence of fungal diseases to monitor the diseases of grapes without human intervention.



Our team helps
Russian winegrowers
in solving the most
difficult Sectoral tasks
arising in their work.



Genetics and Selection of tomatoes



Together with the Rice Foundation Fund we conduct an important and relevant tomato Reference Work and Creation High-yield, disease- and pest-resistant hybrids for outdoor cultivation. The hybrids developed by us are characterized not only by high yield, but also by excellent taste and transportation qualities. Our research contributes significantly to the development of the agricultural sector and food security of the country.

Elena Dubina

Project Manager "Genetics and tomato breeding"



Main areas of the activity

Based on modern biotechnology approaches we have launched a program to create new competitive tomato genotypes with enhanced resistance to phytophthorosis, fusariosis, alternaria and tobacco mosaic virus, economic-valuable traits and adapted to soil-climate conditions of cultivation in the southern regions of the Russian Federation. This allowed the creation of a technological block for accelerating the selected stages of the selection process and increasing the efficiency of selection of promising tomato breeding forms using high-precision, fast and reliable molecular-genetic methods.

>70

varieties of tomatoes
genotyped
and morphologically typed





- Innovative selection program has developed creation of new varieties and tomato hybrids on the basis of MAS-technologies for the conditions of southern Russia.
- Genotyping and morphing of 70 varieties and hybrids of tomato Russian and foreign selection, which are part of the working collection of FBNU «FBNS rice» and VIR collection for selection.
- Sequencing of the donor and recessive alleles of the Alternaria resistance gene Asc was performed to create effective primer pairs for the purpose of identifying the gene-interest. Patenting of this token system has been carried out.
- Developed and Registered Database Phenotypic and Genetic Traits of *Solanum lycopersicum* L., which allows you to store and organize information, quickly operate it, create any queries, generate reports in a convenient way and at the same time avoid entering repeated values.
- Stable tomato line is based on FMS with target stability genes selected and two tomato lines with economic attributes for F1 hybrids..

The physiological and genetic foundations of the apple variety improvement system for intensive stands of different types



Implementation of the project will allow replenishing the assortment of apple trees, suitable for modern gardening.

Fruit producers will be offered various alternative garden management systems, taking into account the biological needs of the range, ensuring sustainable production of apple fruit at a sufficiently high level.

Sergey Chumakov

Responsible for the implementation of the project Physiological and genetic basis of the system improvement of apple variety for intensive planting of different types



The scientific team has developed an original system of physiological and genetic indicators express assessment of economically valuable traits and adaptive properties of apple genotypes. Selected the best apple assortment for modern gardening. The results will be used in creation of database of sources of economically valuable features and adaptive properties of apple varieties Created on the basis of «Kuban» Kuban GAU grinding collection of apple trees.

Molecular-laboratory of the genetic research plants and animals



Using the results of our molecular genetic research, breeders are able to create new varieties of plants and animal breeds more efficiently and quickly. According to genetic features, the best representatives of cattle, plant forms resistant to adverse conditions, soil bacteria as the basis of new biopreparations are selected.

Yuri Podushin

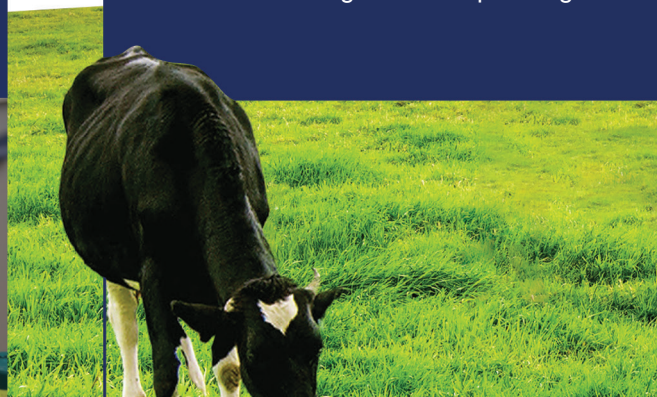
Head of Molecular Genetic Research Laboratory plants and animals



Laboratory equipped with modern equipment, including sequencers and a DNA chip scanner.



For the best breeding cows livestock numbers genome sequencing



An experienced team of scientists of our laboratory conducted sequencing genomes of wild grapes, 14 strains soil and lactic acid micro-organisms. This information is added to the international NCBI database. In 2022, genotyping was carried out using iPBS and SSR markers of collectible grapes, winter wheat and barley. Phylogenetic relationships between different varieties and lines are determined agricultural plants.

Genotyped with iPBS markers

 **120**
grape
varieties

 **100**
cereal
grades

 **100%**

Was fully conducted uterine genome evaluation of the herd cattle educational and experimental economy of «Krasnodar».

*Strategic project Inoculation feed
and feed additives*



**Innovation!
Productivity!
Quality!**



Anna Gneush
Strategic leader of Innovative feed
and feed additives project

Modern technology in feed formulation

As part of a strategic project are being developed and implemented to manufacture new feed additives, feed components and formulations, modern technological solutions, and monitoring and control of raw materials and finished feed production.

Results of the project



Candidate developed vaccine preparation for calf immunoprophylaxis and piglets



Developed 4 feed additives and 7 feeds for 3 species of fish, shellfish and crustaceans



Laboratory developed biosynthesis technology xanthane comedy



The technology of microbiological transformation of high-protein vegetable feed raw material by the method of solid phase



Candidate received eubiotic drug for poultry



Biological developed plant protection agent - biofungicide



Bio-resource cryogenic collection of microbial storage are made

Research laboratory and assessment of feed quality and feed additives



”

The high quality of the executable results, the creation of accurate methods and effective competitive products relevant for the RF agro-industrial complex, give a key task to our division: development of effective formulations and feed compositions with subsequent control of the raw materials at all stages of production.

Oksana Shlyakhova

Head of the Feed Development and Analysis Laboratory and feed additives

- Trial preparation of feed falsification detection using AI has started
- Prototyped automatic calculator on balancing rations for highly productive animals
- Has compiled unique stern premium and dietary composition for agricultural regional enterprises
- High-precision operation established equipment, implemented formulation and testing of methods feed and feed research feedstock
- Attracted by industrial implementing partners for realization of projects
- Increase annually qualifications of specialists in of agro-industrial complex within the framework of training courses implemented in the laboratory

Key achievements of 2022



Physics laboratory of chemical analysis



The work of the project allows for the holistic support of related units to form an analytical base for the creation of innovative feed and feed additives within the framework of the project "Priority 2030"

Artyom Bazyk
Head of Physico-chemical Analysis Laboratory



Achievements and results of the laboratory

1

Defining more than 60 indicators in various biological matrices

2

Validation and verification more than 10 control techniques and assessment of feed quality

3

Unique park of the modern domestic analytical equipment

4

The laboratory uses the latest achievements in the field of «green» chemistry, such as QueChERS and JME

Centre of Excellence nanotechnology



The work of the Centre is proof of the productive collaboration of interdisciplinary teams on the introduction of modern achievements of science in the agro-industrial complex.

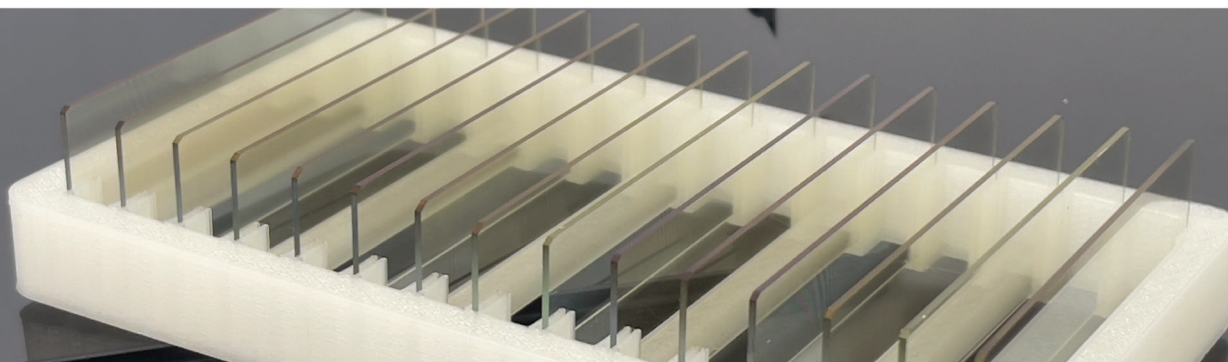
Igor Suhno

Head of Advanced Nanotechnology Laboratory



Key achievements 2022

- Rapid Detection of Falsified Feeds Developed using AI tools and digital microscopy
- Photocatalytic water treatment system for closed water supply plants based on photocatalytic active nanostructured films of titanium oxide (IV) doped by nanoparticles nickel/nickel oxide on the surface of borosilicate substrates.
- Water purification system for closed water supply plants based on porous micro- and nanofiber biocompatible inorganic phases of nickel-zinc ferrite exhibiting photocatalytic activity in visible light and having pronounced magnetic properties.



Biotechnology Centre



Literal expression of the scientific progress!

Sergey Kopyltsov

Head of the Biotechnology Centre

ЦЕНТР БИОТЕХНОЛОГИЙ

В природе одно с другим связано
и нет в ней ничего случайного.
И если выйдет случайное явление
- ищи в нём руку человека

Михаил Пришвин



The team of the Centre for Biotechnology aims not only to gain new scientific knowledge, but also to use mechanisms implementation of scientific developments in biotechnology cycle by topical directions of agro-industrial complex.

Key Achievements of the Biotechnology Centre

15

scientific methods of research

- > 6 works on order commercial companies
- > 6 scientific publications achievements
- > 4 patents and applications to invent

3

unique destinations of research

- > 280 strains microorganisms in the fund bioresource collection
- > 23 elements of the instrumental analytical work

первый такой
центр на юге
России



Laboratory of microbiology



Microbiology Laboratory sets a strategic goal to the challenge of unlocking the potential of each micro-organism, opening the way to new opportunities, scientific discoveries and innovations. By developing knowledge in the invisible world of bacteria, we provide biotechnological process of development of immuno-biological bio-safety products and environmental friendliness.



Alexander Tishchenko

Head of the Microbiology Laboratory

1

Development and study of immunobiological drugs based on inactivated *E. coli* toxins

2

Monitoring and release of production strains for the creation and development of microbial stimulants of bacterial antagonism based on exometabolites of bacteria

3

Selection and monitoring of species-specific strains of microorganisms agricultural animals, fish and bees

4

Selection, identification and development of therapeutic and prophylactic agents for the aeromonosis of fish



Key Lab Achievements

The resource and tool base for the implementation of complex microbiological research, methods of molecular genetic research and time-out spectrometry.

Monitoring of normal honey bee microbiocenoses use in the conditions of biogeocenoses and agrolandscapes of the North-West Caucasus. Selected strains of potential producers of probiotic feed additive.

Intestinal coli isolates with genetic pathogens isolated and sequenced potential, their sequential properties and features of pathohistological manifestations on rabbits and laboratory animals (preparation for deposit strains and patent procedure).

As a result of controlled microbiological sowing of intestinal contents the contents of fish and bees fish and bees have been identified representatives of the norm flora and identified candidate strains for developing probiotic drugs.

Development of a unique immunobiological preparation based on mechanisms of activation of innate and adaptive immunity in animals. Design of intestinal rod inactivated toxins in conjunction with various adjuvant complexes (3 applications submitted on patent).

MALDI-TOF for monitoring of fish aeromonoxide Mass spectrometries have been established epizootically significant pathogenic isolates for fish farms of the Krasnodar region and their sensitivity to antibacterial preparations has been determined.

Laboratory of the phytopathology



Phytopathological research is an integral part of the successful and safe agro-industrial production. Plant diseases, mycotoxin accumulation in plants raw materials are those problematic objects that face phytopathologist. Therefore, the task of our work is development of methods of analysis of plant diseases and creation of biological means of plant protection.

Elizabeth Smirnova

Head of Plant Pathology Laboratory



1

Phytosanitary monitoring of agro-industrial crops and soils use

2

Scientific justification of pesticide use including biological protection of plants

3

Study of phytopathological biological agents associated with the North-North agrolandscape of Western Caucasus

4

Development and introduction of biological plant protection agents

Key achievements



Phytopathological monitoring of winter crops spikes , vegetable crops, as well as vineyards on the territory of the Krasnodar with the formation of a collection of phytopathogenic strains was made.



Biofungicide based on the selected strain krd-20, deposited in the All-Russian collection of microorganisms G.K. Skryabin RAS IBFM under registration number VKM V-3516D.

Results of the Laboratory and field tests confirm the proven effectiveness of the resulting strain as a biofungicide on winter wheat crops.

Microbial laboratory of the Synthesis



Today man can not imagine his life without the products of microbiological synthesis. Enzymes, amino acids, thickeners, yogurt and even insulin are all products of microbial biotechnology. We aim to create new and the development of biotechnological processes of obtaining economically valuable substances.

Svyatoslav Fedorovich

Head of Microbial Synthesis Laboratory



Main research areas

1

Modelling biotechnological processes for agro-industrial industrial applicability

2

Research and modelling nutritional effects of the media, external factors on the rate of accumulation of metabolic products and their properties

3

Production of inputs, perspectral for industrial use

4

Genetic transformation of micro-organisms

5

Development of methods of biosynthesis of fungistatic substances, plant growth stimulants and polysaccharides thickeners for the food industry

6

Organization of a collection of the industrial-significant strains of microorganisms

Key achievements



Formed a collection of lyophilic and cryogenic storage of industrially significant producers and generic strains.



To develop probiotic feed additives for agricultural birds in the All-Russian collection of microorganisms G.K. Skryabin RAS IBFM deposited three species of probiotic microorganisms.



Developed laboratory methods of depth cultivation of probiotic microorganisms and their long-term cryogenic storage.



Xanthon Gumedi Production Technology has been developed using *Xanthomonas Campestris* Producer When Using Agroindustrial By-products as Raw Materials productions.



*Innovative Technology Centre
of the Aquaculture*



Fish abundance inland water
bodies Russia and Prosperity
aqua farms!

Ekaterina Maxim

Head of the innovation aquaculture technology centre

Introduction of methods in the Russian Federation of the stimulation of ripening sturgeon fish

Aquaculture Innovation and Technology Centre develops, tests and optimizes feed and feed additives for fish, crustaceans, molluscs. These are a strategically important tasks in the import substitution of aquaculture feeds.

>1200

**Ichthyological and hydrobiological probe
has been researched**

+ 5

**fish
farming partners**

+ 6

**innovative feed additive
have developed**

> 50

**people trained at the program
Innovative feeding in aquaculture**



Health Nutrition Project



Healthy eating-healthy nation!



Lyudmila Donchenko

Strategic leader of the Health Nutrition Project

Major challenges functioning of the system



Voluntary confirmation food match provisions of the documents, setting the requirements to its quality and safety



Consumer assistance in competent product selection



Improving competitiveness of products on the Russian and international markets



Creating a risk mitigation environment.
Deliveries of counterfeit food products to the consumer



*Strategic project
"Rural wellbeing of the territories"*



People. Solutions. Knowledge.



Maria Zelinskaya
Strategic leader of the project "Rural wellbeing territories"

Project's success:



> 4 Specialized Centres was established by:

- Continuing education/Lifelong Learning
- Support of graduates
- Careers
- Competences

> 200 people

Study annually on
DPA Programmes

> 500 people

participate annually in the
informal education activities

> 200 schoolchildren

Study annually at the School
for Integrated Nature Research

> Agroclasses

- 80 schools
- 133 Agricultural Classes
- > 2000 pupils

> 500 farmers

and rural residents
receive legal advices
every day

> 1000 students

were tested supra-professional
competencies, shaped
individual development trajectories

> 600 graduates

of KubSAU together with
the diploma on higher education
received unique Skill
Passports of Competence



PROJECT'S SUCCESS:

- Training agro-program for teachers has launched
- Vocational guidance is provided with talented students
- Established School "Agrotechnopolis"
- There is economic Digital weekend School for Youth
- The digital platform of Monitoring was organized. It is focused on students and graduates of agrarian universities' employment
- Database of interactive map of land potential of the territories of municipal districts of Krasnodar was developed
- Database of good practices in the field of the management of rural territories was formed
- Has been developed the potential of pilot rural areas of Krasnodar, conducted an assessment of the effectiveness of the use of its elements, developed 5 business plans for development alternative employment of pilot locations

