

**PRACTICAL TRAINING OF STUDENTS OF AGRARIAN UNIVERSITIES AS A
KEY ELEMENT IN TRAINING FUTURE SPECIALISTS IN THE AGRO-
INDUSTRIAL COMPLEX**

**FORMAÇÃO PRÁTICA DE ESTUDANTES DE UNIVERSIDADES AGRÁRIAS COMO
ELEMENTO CHAVE NA FORMAÇÃO DE FUTUROS ESPECIALISTAS NO
COMPLEXO AGROINDUSTRIAL**

**FORMACIÓN PRÁCTICA DE ESTUDIANTES DE UNIVERSIDADES
AGROPECUARIAS COMO ELEMENTO CLAVE EN LA FORMACIÓN DE FUTUROS
ESPECIALISTAS DEL COMPLEJO AGROINDUSTRIAL**

Aleksander Ivanovich TRUBILIN¹
Vladimir Ivanovich GAYDUK²
Anna Viktorovna KONDRASHOVA³
Anna Evgenevna GOROKHOVA⁴
Sergey Kurbanovich GASANBEKOV⁵

ABSTRACT: The modern labor market places quite high demands on graduates of agrarian universities. The competition in qualifications requires practical skills that can be demonstrated in the agrarian sector of the economy. Increased attention to the practical component of the educational process is required. The system of practice-oriented education includes various forms of interaction: early profiling of future students, their practical training, and research work. Successful training of highly skilled modern agrarians and their adaptation to the modern requirements of the labor market and the needs of future employers is only possible in the best farms constructed based on the examples of modern innovative technologies and techniques. Therefore, it is critical to further develop educational and experimental farms, experimental stations, and experimental sites and productions based on agricultural universities.

KEYWORDS: Practice-oriented education. Innovation. Agrarian university. Educational and experimental farms. Efficiency.

RESUMO: O mercado de trabalho moderno exige bastante dos graduados das universidades agrárias. A competição em qualificações exige habilidades práticas que podem ser demonstradas no setor agrário da economia. É necessária uma maior atenção ao

¹ Kuban State Agrarian University, Krasnodar – Russia. Doctor of Economic Sciences, Professor. ORCID: <https://orcid.org/0000-0001-8777-2086>. E-mail: trubilin.a@kubsau.ru

² Kuban State Agrarian University, Krasnodar – Russia. Doctor of Economic Sciences, Professor. ORCID: <https://orcid.org/0000-0001-9992-7647>. E-mail: vi_gayduk@mail.ru

³ Kuban State Agrarian University, Krasnodar – Russia. Candidate of Economic Sciences, Associate Professor. ORCID: <https://orcid.org/0000-0003-3840-8530>. E-mail: ann.vik.kondrashova@yandex.ru

⁴ Moscow Polytechnic University, Moscow – Russia. Doctor of Economic Sciences, Professor. ORCID: <https://orcid.org/0000-0002-5820-1687>. E-mail: agor_80@mail.ru

⁵ Moscow Polytechnic University, Moscow – Russia. Candidate of Political Sciences, Associate Professor. ORCID: <https://orcid.org/0000-0003-4209-2209>. E-mail: gasanbekovserg@rambler.ru

componente prático do processo educativo. O sistema de educação orientada para a prática inclui várias formas de interação: perfil precoce de futuros alunos, seu treinamento prático e trabalho de pesquisa. A formação bem-sucedida de agricultores modernos altamente qualificados e sua adaptação às exigências modernas do mercado de trabalho e às necessidades dos futuros empregadores só é possível nas melhores fazendas, construídas com base nos exemplos de modernas tecnologias e técnicas inovadoras. Portanto, é fundamental desenvolver ainda mais fazendas educacionais e experimentais, estações experimentais e locais experimentais e produções baseadas em universidades agrícolas.

PALAVRAS-CHAVE: *Educação orientada para a prática. Inovação. Universidade agrária. Fazendas educacionais e experimentais. Eficiência.*

RESUMEN: *El mercado laboral moderno impone exigencias bastante altas a los graduados de universidades agrarias. La competencia en calificaciones requiere habilidades prácticas que se pueden demostrar en el sector agrario de la economía. Se requiere una mayor atención al componente práctico del proceso educativo. El sistema de educación orientada a la práctica incluye varias formas de interacción: perfiles tempranos de futuros estudiantes, su formación práctica y trabajo de investigación. La capacitación exitosa de agricultores modernos altamente calificados y su adaptación a los requisitos modernos del mercado laboral y las necesidades de los futuros empleadores solo es posible en las mejores granjas construidas sobre la base de ejemplos de tecnologías y técnicas innovadoras modernas. Por lo tanto, es fundamental desarrollar aún más las granjas educativas y experimentales, las estaciones experimentales y los sitios y producciones experimentales basados en universidades agrícolas.*

PALABRAS CLAVE: *Educación orientada a la práctica. Innovación. Universidad agraria. Granjas educativas y experimentales, Eficiencia.*

Introduction

Currently, the problem of improving the quality of the higher education system is of particular importance due to the intensification of globalization and the provision of competitive advantages in the global markets, including the educational market.

Russia retains a high position on the Human Development Index, but new challenges and, above all, the transformation of the knowledge-based economy, necessitate a significant modernization of higher education, increasing the quality of educational services (ZAITSEV *et al.*, 2020; EMELIANOVA, 2020; OBEDKOVA *et al.*, 2020).

The modern labor market in the agro-industrial complex is in dire need of not only theorists but also practitioners able to apply knowledge in the performance of certain professional functions. Although young specialists graduate from agrarian universities every year, there is an acute shortage of qualified, practice-oriented personnel with innovative, scientific, research, creative types of thinking in the agrarian sector. Therefore, practical

training for professional work is among the most critical issues of education in Russia and around the world.

The Doctrine of Food Security of the Russian Federation entrusts Russian agricultural universities with the most important task – training highly qualified scientists and specialists to create a highly productive agricultural sector that must develop dynamically based on modern technologies (On the Approval of the Doctrine of Food Security of the Russian Federation, 2020).

At present, the system of agrarian education is the largest among the industrial training systems. It incorporates 54 universities located in 51 constituent entities of the Russian Federation. The Kuban State Agrarian University (KubSAU) named after I.T. Trubilin is among the leading agrarian universities in terms of both the number of students and infrastructure.

Methods

The role of practice-oriented education as a factor in the growth of economic competitiveness is demonstrated in the works of A. Douglas (1992), E. Baldacci (2002), Neil J. Smelser (2001), J. Benes (2002), J. Beverwijk (1999), M. Broadwell (1969), J. Conroy (2013), C.S. Dweck (2000), M. Meiers (2007), V. Sekerin (2018), and M. Rayisyan (2020).

E. Baldacci states that government expenditures are an important determinant of social outcomes, especially in the education sector (BALDACCII; GUIN-SIU; DE MELLO, 2002).

Neil J. Smelser stresses the importance of introducing applied vocational training in many American colleges and universities with a focus on liberal arts (BALTES; SMELSER, 2001). There are difficulties in converting theoretical knowledge into applied knowledge (into practical skills).

Vocational education in Australia, Europe, and the United States uses innovative forms of higher education: case studies, on-the-job training, laboratories, role-playing games, simulations etc. (BROADWELL, 1969).

M. Broadwell gives a characteristic of the matrix model of practice-oriented training, which involves a step-by-step development of new skills – behavior and abilities (BROADWELL, 1969).

The works of J. Conroy describe a training model that fosters partnerships between higher education institutions and employers (CONROY; HULME; MENTER, 2013; OECD, 2009). On-the-job training refers to the educational process that places special emphasis on

professional work for the mastery and practical application of knowledge, skills, and abilities and the achievement of real results. Among the key components of successful training are its management, quality, and partnership relations. This model has found wide practical use in Australia and Finland.

D. Boud and J. Pascoe indicate that a critical component of training is students' ability to bear responsibility for the integration of knowledge into their professional experience (BOUD; PASCOE, 1978; KOLB, 1984). In foreign countries, special attention in designing educational programs is paid to the information related to practical or scientific problems.

Results and discussion

KubSAU – the leader in the system of training future agro-industrial complex specialists

In 2022, the KubSAU named after I.T. Trubilin is turning 100 years old. Over its century-long history, the university has transformed from a small agricultural branch of a polytechnic institute into a major multi-profile educational and scientific agrarian complex with a strong infrastructure that, not only allows to successfully carry out educational and scientific activities, but also provides comfortable and safe living conditions for students, as well as the conditions for social and educational activities and sports activities.

Over the past 100 years, the KubSAU has graduated over 150 thousand specialists in various fields. Currently, the university is training about 9.6 thousand students at 18 faculties on a full-time basis and more than 5.3 thousand – on a part-time and extramural basis. The academic teaching staff of the University is training specialists in 15 enlarged groups of specialties that include 141 programs. The faculty includes nine academicians and corresponding members of the Russian Academy of Sciences and, overall, 85% of the teachers have scientific degrees including 22% of doctoral degrees (TRUBILIN, 2021).

In total, the University offers 8 Specialist degree programs, 56 Bachelor's degree programs, 45 Master's degree programs, and 32 postgraduate programs training scientific and pedagogical workers. At the end of 2020, the University successfully passed state accreditation of all educational programs and was granted the right to conduct educational activities.

Research work at the university is carried out by 16 scientific schools, which cover 15 branches of science. The primary research is conducted in the field of biotechnology, production and processing of agricultural products, agro-engineering, and ecology and is

aimed at creating import-substituting technologies. Research in the field of economics and scientific and information support of the agro-industrial complex remains important for the KubSAU. Scientific research is commissioned by the Ministry of Agriculture of the Russian Federation, the regional Ministry of Agriculture and Processing Industry, and enterprises and organizations of Krasnodar Krai. The total volume of contracts in 2020 amounts to about 200 million rubles.

Over the past few years, the volume of basic research has increased significantly. In 2020 alone, university scientists carried out research on 35 grants from the Russian Foundation for Basic Research, four grants from the President of the Russian Federation, and nine grants from the Kuban Science Foundation. The total volume of grant funding exceeds 40 million rubles (TRUBILIN, 2021).

The effective functioning of modern intensive agricultural production is unthinkable without the use of the latest technical, agronomic, and biological developments, without high technology, which can only be mastered with quality professional training.

Scientific work and research are an integral part of the activities of a higher education institution that has the status of a university. In the KubSAU, this process has its specifics in contrast to specialized research institutes:

- a wide range of research areas, including a large proportion of applied research and development, in addition to basic research;
- involvement of students in the research process;
- training highly qualified personnel for the university and scientific institutions;
- commercialization of the results of intellectual work for self-financing.

Almost all directions of scientific and innovation activity of scientists of the University are connected with the Federal scientific and technical program of development of agriculture until 2025, as well as with the previously adopted by the Russian government priority national projects “Development of the Agro-Industrial Complex”, “Health”, “Education”, and “Housing” accompanied by a list of critical technologies and the program of perspective development of agriculture of Krasnodar Krai approved by the President of the Russian Federation.

Having all the elements of an educational base demanded from every state higher education institution, the University also has a rather powerful innovation infrastructure, which is developed in accordance with the Program of development of the KubSAU and provides a high level of research work. The Program relies on the “Applied and experimental

ecology” and “Biotechnology and certification of food products” research institutes including the testing laboratory “Food quality center” and the educational laboratory-production complex “Technologist”.

Prominent elements of the University science and innovation infrastructure are the Institute of Agribusiness implementing additional vocational education programs, two educational and experimental farms with the status of agricultural parks, educational and research Russian-Danish pig complex “Piatachok”, an experimental field with a set of imported agricultural equipment, a European research station built under a joint research project of KubSAU and “Syngenta” company, the Center of artificial climate, the Information Technology Center, thermal imaging technology laboratory, botanical garden, student design and construction office, as well as the editorial offices of three scientific journals (KUBAN STATE AGRARIAN UNIVERSITY, 2021).

Through successful implementation of a grant for the innovative development of the University, institutes and laboratories of the KubSAU have significantly updated their fleet of scientific equipment, many of the received scientific instruments are unique for the region.

The innovative orientation of agricultural education cannot be imagined without innovative specialists – scientific and pedagogical staff capable of combining teaching, practical, and research activities. In this respect, the University has a highly qualified faculty.

The wide implementation of research results and their further support is impossible without the system of informing manufacturers about new developments. The University has created and for several years has been operating a system for the implementation and replication of scientific and technological developments demanded by agricultural producers. This system involves the certification of scientific developments and inventions confirmed by patents and authorship certificates and marketing assessment of demand for them. On this basis, a commission including representatives of the Ministry of Agriculture of the Krai Administration, the Association of Farms, and the Krai Information and Consulting Center selects the most promising developments for the “Catalogue of Innovative Projects”. This catalog in electronic format and the form of brochures is distributed through the information and advisory service of Krasnodar Krai in all municipalities of Krasnodar Krai, as well as at the request of organizations from other regions.

The modern labor market places quite high demands on graduates of agrarian universities. The competition in qualifications requires practical skills that can be demonstrated in the real production sphere. Hence the increased attention to the practical component of the educational process.

The system of practice-oriented learning at the KubSAU incorporates various forms of interaction:

- early profiling of future students (vocational guidance, activities of the Small Agricultural Academy, agricultural classes);
- practical training of students (the use of training centers and training farms, internships, business school, professional skills championships);
- research work of students (cases from employers, participation in the scientific student community).

The modern world is dynamically developing, which is why in these conditions, employers are not satisfied with the traditional approach to personnel training. This has served as an impetus for the implementation of the private-public partnership model in education. A company not only creates a classroom, an auditorium, or a center at the university but offers it comprehensive services in the sphere of education. Along with equipment for the center, it invests in the design of an auditorium with its logo, in the retraining of masters and teachers of the university, and in equipping the auditoriums with new electronic resources. In addition, the potential employer is involved in the development and review of the educational programs that form the necessary competencies. The main tasks of such centers are:

- the introduction of innovative practice-oriented teaching methods into the educational process;
- the organization and support of a high level of mastery of practical professional skills;
- improvement of the level of practical training of university students and graduates, the training of a professionally competent specialist, who is able and ready to apply their knowledge and practical skills in critical situations;
- monitoring of the efficiency and quality of the formation and improvement of practical professional competence through situational tasks and practical exercises.

Practical training of students at the university is conducted according to educational programs and meets the requirements of the current federal state educational standards.

The industrial and pre-graduation internships are organized based on contracts with organizations and institutions. The management of practical training is carried out by professors on behalf of the university and by leading specialists of specialized organizations directly at the place of internship. Managers and specialists of these organizations are regularly invited to the university to give lectures to students and graduate students, are involved in the development of programs of practical training, participate in the

harmonization of individual assignments and internship plans based on the expected results, and offer problems for the list of topics of graduate qualification works.

In 2020, the industrial internship of KubSAU students was organized based on 1,250 organizations of Krasnodar Krai and the Republic of Adygea. The structure of specialized organizations providing industrial internships was dominated by agricultural enterprises – 47% (Table 1).

The organizations recruiting students for internships are mainly located in rural areas. In all directions of training, the industrial internship is carried out on the terms provided by the curriculum for the direction of training.

The industrial and pre-graduation internships of students are organized in the organizations that are strategic partners of the University. Among such organizations are the KubSAU's educational and experimental farms "Kuban" and "Krasnodarskoe", "Sad-gigant" JSC (Slavyansky District), "Agrokompleks" JSC, "Kuban" agro-holding (Ust-Labinsky District), "Pobeda" CJSC (Kanevskoy District), "EkoNiva-APK Holding" LLC, "Kuban" AMC corn calibration plant (Gulkevichsky District), "Syngenta" LLC, "Sugar Factory 'Leningradsky'" OJSC, "Nestle Kuban" LLC, "FosAgro-Kuban" LLC, "Fanagoria Agro" agro-firm (Temryuksky District), "Kuban-Vino" LLC (Temryuksky District), "KSP 'Svetlogorskoe'" JSC (Abinsky District), "Ochakovo" JSC (Krasnodar), "Kuban Confectionery Plant" OJSC (Timashevsk), "Kubanenergo" PJSC, Department of "Kubanvodproekt" JSC, "Krasnodarvodokanal", public authorities and local authorities, and other organizations of Krasnodar Krai.

Table 1 – Internship bases by type of activity of organizations

Indicator	Quantity, units	Share, %
Organizations (institutions) in which students were interns, total:	1,250	100
including by type of economic activity:		
agriculture and fishery	588	47.0
food production, including beverages and tobacco products	75	6.0
transportation and communication	43	3.4
manufacturing of machines, equipment, vehicles	31	2.5
construction	88	7.0
wholesale, retail	81	6.5
financial activities	86	6.9
state and municipal government bodies	75	6.0
health care and social service institutions (including veterinary activities)	66	5.3
public utility organizations	37	3.0
other activities	80	6.4

Source: Devised by the authors

The practical focus of the educational process in the University is provided, among other things, by practical field trips based on specialized organizations. Students are taught classes and offered practical training in agrobiological and engineering by highly qualified specialists of organizations “Kalaria” LLC, “Kuban Confectionery Plant” OJSC, “Metropolis” LLC, “KLAAS” LLC, Kuban” AMC corn calibration plant, Crimean experimental breeding station, “Grinhaus-Pro” and “Zelenyi Dom” greenhouse complexes, “Krasnodarskii Ippodrom” LLC, and Fedorovsky hydroscheme (branch of Kubanmeliovodkhoz).

In our view, work in the field of agriculture will become truly in demand when it will be perceived as a business strategy, as an effective trajectory of self-realization according to the norms and standards of living in the third millennium. It is this idea that must be planted in the minds of students to motivate their learning. Their work in small innovative enterprises, where they can acquire the skills of running an independent business, can contribute to this in many respects.

At the present, 10 small innovative enterprises effectively operate at the KubSAU. These business companies implement in their activities 10 scientific developments of the University protected by patents of the Russian Federation. At these enterprises, 30 workplaces were created. The enterprises employ representatives of the teaching staff, researchers, and graduate and undergraduate students.

For example, “Kubanskie agrotehnologii” LLC SIE was founded in 2011 to implement advanced agrotechnology and plant protection products created by the research team. Employees of the company work on increasing resistance of various crops to several diseases, primarily fusarium and bacteriosis of wheat, as well as on the creation of unique plant protection agents – inducers of immunity to diseases.

“Kormovye kontsentraty” LLC SIE works in direct cooperation with the department of biotechnology, biochemistry, and biophysics of the KubSAU. The products produced, namely, feed concentrates for animals, compound feedstuffs, bio conservatives, and probiotic agents, are supplied to farms of Saratov and Ryazan Oblasts, the Karachay-Cherkessia Republic, as well as Azerbaijan (KUBAN STATE AGRARIAN UNIVERSITY, 2021).

Thus, the priority direction of the University’s development in terms of education is improving the practice-oriented and project-based learning and creating a unified digital educational environment, which will prepare highly qualified specialists needed by the modern economy.

Educational and experimental farms of KubSAU – leaders in crop and livestock production in the Kuban

The rapid development and changes in technology raise the need for the development of graduates' practical skills at a level that would allow them to confidently begin to perform their labor functions upon coming to production, to their first job. Therefore, a special place in the infrastructure of the University is occupied by two educational and experimental farms – “Kuban” and “Krasnodarskoe”. The farms are dynamically developing in accordance with the new requirements for the educational process, as well as in connection with the new directions of science (TRUBILIN; GAIDUK; KONDRASHOVA, 2020; TRUBILIN; GAIDUK, 2017).

Both farms have been structural subdivisions of the University since their creation. During the difficult period for the educational and experimental farms in the late 1990s and early 2000s, the university financially supported them. On the other hand, the university allows the farms to invest the maximum of their profits into the development of their material and technical base.

A few years ago, the farms underwent a generational change. Both farms became headed by young managers, scientists, and PhDs from among the university professors. These changes have yielded results. The material base of the farms has been significantly strengthened. Both farms are now in possession of modern technologies of agricultural production.

At present, these are highly profitable farms, the constant leaders in the production of crop and livestock products in the Kuban. They serve as a modern base for the practice-oriented training of students, as well as for research and the implementation of innovative technologies in the agro-industrial complex (TRUBILIN, 2021).

In the “Kuban” educational and experimental farm, the leading industry ensuring the economic stability of the farm is crop production. Over the past three years, the farm has significantly altered the structure of cultivated areas and improved the technology of crops cultivation. This allowed not only to increase gross yields but also to ensure the preservation of soil fertility. Thus, the gross production of winter wheat grain reached the level of 14.0-15.0 thousand tons with an average yield of more than 70 q/ha, which is 10-15% higher than a earlier decade (Table 2).

A unique feature of the “Kuban” educational and experimental farm is the presence of a rice irrigation system. In recent years, its modernization has led to the consistent production of more than two thousand tons of rice at an average yield of 72 q/ha.

A significant sphere of the farm's functioning is premium seed cultivation. The "Kuban" educational and experimental farm is included in the register of seed farms of Krasnodar Krai with the right to produce and sell premium seeds of crops in the territory of the Southern Federal District and the countries of the Commonwealth of Independent States. Every year, the farm sells 3-3.5 thousand tons of seeds of high reproductions of winter wheat, 700 tons of winter barley, 300 tons of rice seeds, and 100 tons of oats. Seed material is sold not only in Krasnodar Krai and the Republic of Adygea but also in Rostov Oblast, Stavropol Krai, the Republic of Dagestan, and the Chechen Republic, while rice seeds are also supplied to Kazakhstan.

The educational and experimental farm has also achieved notable success in cattle breeding. In a relatively short time, the farm managed to completely recover the dairy herd from leukemia. In three years, about 90% of the herd passed through the health program. This experience is unique in that the work on the elimination of leukosis was carried out without reducing the number of livestock. This allowed to increase the milk yield per cow up to 10,180 kg in 2020 and to increase the gross milk production by 33% up to 4,220 tons per year over the last 3 years.

Another special feature of the farm is the educational and production complex "Piatachok". The complex was built in 2005 and became the first farm in Krasnodar Krai to raise pigs using Danish technology. Today, the complex houses 200 sows, the average annual gross production of meat in live weight is 620 tons, the average number of litter is 6,027 heads, more than 30 piglets per sow, and the average daily gain of pigs in fattening is 1,005 grams.

A relatively new branch of livestock farming is poultry. Today, 20 thousand laying hens provide the gross yield of eggs at 3.5 million eggs at an average egg production of 228 eggs per hen, and the average daily weight gain of fattening poultry is 58 grams per day.

Table 2 – Economic performance indicators of the “Kuban” educational and experimental farm of the KubSAU

Indicator	2018	2019	2020
Total land area – total, ha	7,474	7,474	7,474
including: the area of agricultural land	6,865	6,865	6,865
of which: arable land	6,008	6,008	6,209
Average annual value of fixed assets, thousand rubles	297,262	139,343	173,022
Average annual value of current assets, thousand rubles	259,503	257,848	332,400
Average annual number of employees, people	305	291	297
Yield, q/ha:			
winter wheat	75.2	75.7	71.2
winter barley	65.7	72.3	59.14
rice	73.9	70.4	71.8
sunflower	22.7	26	25.3
Production:			
milk/dairy cow	7,908	8,259	10,180
average daily gain of cattle	850	821	873
average daily gain of pigs	950	956	1'005
Monetary revenue of the organization, million rubles	480	566	541
Profit of the organization, million rubles	16	9	115
Profitability of production and sales, %:			
winter wheat	57	42	101
winter barley	51	169	105
rise	-	-	52
sunflower	85	15	150
milk	1	15	30
pork meat	23	6	35
Profitability of production and sales in the organization, %	8	13	41

Source: Devised by the authors

The main direction of production activity of the “Krasnodarskoe” educational and experimental farm is milk production. Crops are produced mainly to provide forage (Table 3).

Since 2012, the farm has been actively introducing digital technologies in both livestock and crop production. By now, the entire livestock complex has been fully technically re-equipped based on automated equipment and modern software. There is a monitoring system for each animal. In addition, the farm has completely switched to winter individual calf housing.

Same as in “Kuban”, cow leukemia was eliminated with the help of KubSAU researchers. A unique feature of this work is that the health program was implemented within a single farm.

Both farms continue consistent work on the reconstruction and improvement of the material and technical base of livestock facilities, and all this work is carried out by their efforts. This aligns with the chosen economic model – “How to successfully conduct agricultural business with the shortage of financial resources”.

Through consistent and systematic work, the farm has achieved high productivity indicators. In 2020, milk yield per cow reached 12,948 kg, which is twice as much as in 2011. For the last three years, the farm has been among the top three most productive cattle-breeding enterprises in the region.

Table 3 – Economic performance indicators of the “Krasnodarskoe” educational and experimental farm of the KubSAU

Indicator	2018	2019	2020
Total land area – total, ha	4,080	4,080	4,080
including: the area of agricultural land	3,755	3,755	3,755
of which: arable land	3,146	3146	3,146
Average annual value of fixed assets, thousand rubles	474,001	486,465	647,889
Average annual value of current assets, thousand rubles	271,918	278,196	267,526
Average annual number of employees, people	167	165	165
Yield, q/ha:			
grain	69.4	74.2	69.0
sunflower	27.4	38.2	40.0
Production:			
milk/dairy cow, kg	11,873	12,523	12,948
average daily gain of cattle	933	898	884
Monetary revenue of the organization, million rubles	442.5	529.5	598.1
Profit of the organization, million rubles	51.3	69.7	134.9
Profitability of production and sales, %:			
grain	72.8	75.6	66.7
sunflower	77.3	35.5	100.0
milk	7.8	9.6	40.0
Profitability of production and sales in the organization, %	13.4	15.6	27.7

Source: Devised by the authors

We are convinced that successful training of highly skilled modern agrarians and their adaptation to the modern requirements of the labor market and the needs of future employers is only possible in the best farms constructed based on the examples of modern innovative technologies and techniques.

On the other hand, the maintenance and development of modern high-tech material and technical base requires significant expenditures. However, the activities of the educational

and experimental farms are not financed from the budget. Funding is provided exclusively through organizing their work on the principles of self-sufficiency. Thus, the only option for the existence of educational and experimental farms is ensuring the high effectiveness of their production.

Owing to their highly profitable production, modern equipment, and new technologies, both educational and experimental farms serve as an effective base for the development of professional competence in the production of competitive, environmentally safe agricultural products in the country's future agrarians.

Every year, more than 2.5 thousand students visit the educational and experimental farms to gain practical skills. Of course, the organization of these off-site lessons, which are all included in the general schedule, requires careful planning, which is performed by the educational-methodological department.

For these purposes, in addition to modern facilities, both farms have equipped classrooms and laboratories that allow for full-fledged lessons. Practically speaking, these are classrooms on the farm and in the field, where teachers conduct classes.

An experimental station serving as a base for training and industrial internships has been functioning as part of the "Kuban" educational and experimental farm for many years. The station has a research laboratory of the European type equipped with modern agricultural machinery, including that for small-scale experiments.

The experimental station also functions as a base for scientific research and a site for the demonstration of new technologies to farmers of the region.

Four multifactor stationary experiments launched 30 years ago became the basis of fundamental research of several generations of scientists. The results obtained in these experiments form the basis for the "Agricultural system of Krasnodar Krai on the agrolandscape basis" adopted in the region. Overall, more than 140 dissertations were defended on the materials provided by the station over the past three decades.

A tradition of the "Kuban" farm is the "Field Day" conferences, in which more than 100 managers and leading specialists of the agricultural sector of the region annually learn about the latest innovations in crop and farming.

The land and property of the farms are owned by the University. This played a positive role in the 1990s and early 2000s during the redistribution of property. Up to a certain point, it was possible to maintain some isolation, some financial autonomy of the educational and experimental farms. This allowed them to solve current production problems quickly and with interest.

However, changes in legislation curbed this already small autonomy and pushed the farms to complete integration, they became divisions of the KubSAU, and, naturally, are not separate legal entities.

In their essence, the educational and experimental farms are full-fledged production enterprises. However, they do not have any independence: neither operational, nor organizational, nor financial, or legal. Naturally, this state of affairs is far from conducive to their successful development.

Regretfully, the current federal legislation does not allow educational and experimental farms to work in other organizational and legal forms as part of the university or at the university.

As structural subdivisions of an educational institution, these farms, unfortunately, cannot take advantage of the mechanism of state support for agricultural producers. Calculations show that with the existing production volumes, the farms could receive about 10-15 million rubles as subsidies.

We believe that it is necessary to find an option allowing for some isolation and independence of these units, which would allow the educational and experimental farms to quickly carry out their production activities on the one hand and enjoy the preferences of agricultural producers on the other.

Conclusion

The experience accumulated by the KubSAU in the development of educational and experimental farms is unique. In the 1990s, most agricultural universities lost their educational farms for various reasons. Even in the cases that these farms were saved, for the most part, they are not an example of a successful agricultural business and a place to learn modern, innovative technology. Taking this into account, the Ministry of Agriculture of the Russian Federation is currently taking significant steps to restore the lost educational farms and productions for both science and practical training of students. In April 2021, based on the KubSAU, on behalf of the Minister of Agriculture Dmitry Nikolaevich Patrushev, a seminar-meeting was held on the role of educational and experimental farms in training personnel for the agro-industrial complex. It was attended by most of the agrarian universities and the leadership of the Ministry.

Thus, the further development and improvement of educational and experimental farms as a basis for practical training and research is a key element of training future professionals for the industries of agriculture.

Summarizing the experience gained, as well as suggestions made in the scientific literature, in the materials of the meetings, the University defines the main directions of work as follows:

- the creation of an innovative system of higher and additional agrarian education (including the obligatory presence of an education quality management system in the university);
- the improvement of conditions for the development of scientific areas and schools (with the active involvement of graduate, postgraduate, and doctoral students in the research process);
- the improvement of university interaction with business and state structures, in particular, the development of direct connections of universities with strategic partners from among the largest companies and agricultural holdings;
- implementation of applied developments with further commercialization.

The main effect expected from the realization of these directions of work is that it would give an innovative nature to all university activities – from fundamental and applied scientific research to the implementation of the results in the educational process and agricultural production.

REFERENCES

BALDACCI, E.; GUIN-SIU, M. T.; DE MELLO, L. **More on the effectiveness of public spending on health care and education**: a covariance structure model. WP02/90, 2002.

BALTES, P. B.; SMELSER, N. J. (Eds.). Economics of education. *In: International Encyclopedia of the Social and Behavioral Sciences*. Amsterdam: Elsevier Science, 2001 v. 6, p. 4200-4208.

BENES, J.; SEBKOVA, H. Changes and innovations in the governance of the higher education system in the Czech Republic. *In: OECD/IMHE GENERAL CONFERENCE, 2002. Proceedings [...]*. Paris, 2002.

BEVERWIJK, J. **Higher education in the United Kingdom**. Country report CHEPS Higher Education Monitor. CHEPS, 1999.

BOUD, D.; PASCOE, J. **Experiential Learning**: Developments in Australian Post-secondary Education. Sydney: Australian Consortium on Experiential Education, 1978. p. 45-50.

BROADWELL, M. M. Teaching for Learning (XVI). **The Gospel Guardian**, v. 20, n. 41, 1969.

CONROY, J.; HULME, M.; MENTER, I. Developing a 'Clinical' Model for Teacher Education. **Journal of Education for Teaching**, v. 39, n. 5, p. 557-573, 2013.

DOUGLAS, A. **Education and employment division, population and human resources department**. The World Bank, Adrian Ziderman Financing Universities in Developing Countries, 1992.

DWECK, C. S. **Self-theories**: their role in motivation, personality, and development. New York: Psychology Press, 2000.

EMELIANOVA, T. V. Praktiko-orientirovanoe obuchenie budushchikh pedagogov: zarubezhnyi opyt [Practice-oriented training of future teachers: foreign experience]. **International Research Journal**, v. 9-2, n. 99, p. 110-116, 2020.

KOLB, D. A. **Experiential learning**: Experience as the source of learning and development. Englewood Cliffs, NJ: Prentice-Hall, 1984. p. 21-38.

KUBAN STATE AGRARIAN UNIVERSITY. Self-assessment reports of the Kuban State Agrarian University named after I.T. **Trubilin**, 2021. Available: <https://kubsau.ru/upload/university/docs/pol/sig/15-20210401.pdf?842>. Access: 10 May 2021.

MEIERS, M. **Teacher Professional Learning, Teaching Practice and Student Learning Outcomes**. Important Issues. Springer, Netherlands, 2007. p. 11-12.

OBEDKOVA, L. P. *et al.* Formation of competencies in higher education by bachelors and masters. **Utopia y Praxis Latinoamericana**, v. 25, n. Extra 5, p. 215–220, 2020.

OECD. **Creating effective teaching and learning environments**: first results from TALIS. Teaching And Learning International Survey, 2009.

On the Approval of the Doctrine of Food Security of the Russian Federation: **Decree of the President of the Russian Federation of January 21**, n. 20, 2020. Available: <http://www.kremlin.ru/acts/bank/45106>. Access: 10 May 2021.

RAYISYAN, M. G. *et al.* The effectiveness of using virtual laboratory workshops in online education of students studying the discipline inorganic chemistry. **Periodico Tche Quimica**, v. 17, n. 36, p. 934–948, 2020.

SEKERIN, V. D. *et al.* Improving the quality of competence-oriented training of personnel at industrial enterprises. **Quality - Access to Success**, v. 19, n. 165, p. 68-72, 2018.

TRUBILIN, A. I. **Uchkhozy Kubanskogo GAU**: lidery na Kubani po proizvodstvu rasteniiovodcheskoi i zhivotnovodcheskoi produktsii [Educational farms of the Kuban SAU – leaders in crop and livestock production in Kuban]. 2021. Available: <https://www.kommersant.ru/doc/4828877>. Access: 10 May 2021.

TRUBILIN, A. I.; GAIDUK, V. I. Problemy podgotovki vysokokvalifitsirovannykh kadrov dlia sela [Problems of training highly qualified personnel for villages]. **Innovations in the Agro-Industrial Sector: Problems and Prospects**, v. 4, n. 16, p. 42-50, 2017.

TRUBILIN, A. I.; GAIDUK, V. I.; KONDRASHOVA, A. V. Strategia razvitiia agrarnogo vuza v postpandemicheskii period [Strategy for the development of an agrarian university in the post-pandemic period]. **Scientific Works of the Free Economic Society of Russia**, v. 223, n. 3, p. 329-338, 2020.

ZAITSEV, I. A. *et al.* A methodology to assess innovation performance in digital economy. **EurAsian Journal of BioSciences**, v. 14, n. 2, p. 7087-7092, 2020.

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