ABSTRACTS AND KEY WORDS
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AGRONOMY

Eliseev S. L., Renev E. A., Kataev A. S. **FORMATION OF YIELD AND QUALITY OF TOPINAMBUR TUBERS AT DIFFERENT HARVESTING PERIODS IN THE MIDDLE URALS**

The article presents the results of two-year studies of tubers and green mass harvesting impact on the yield and quality of topinambur tubers during spring planting. Two-factor field experience was laid in 2018-2019 on the basis of educational and scientific experimental field of Perm State Agrarian and Technological University according to the scheme: Factor A – term of tubers harvesting: A_1 – autumn, A_2 – spring (when the soil is physically ripe). Factor B – the time of harvesting green mass: B_1 – 10 days after flowering phase, B_2 –20 days after flowering phase, B_3 – before harvesting tubers in autumn. Research results showed that the highest yield of topinambur tubers was observed during their autumn harvest – 20.5 t/ha, as well as when mowing the green mass before harvesting tubers – 14.5 t/ha. The density of standing plants when harvesting green mass before harvesting tubers is higher by 0.1-0.2 PCs./m^2. This is due to an increase in the survival rate of plants, which was 92% and 3-5% more than in earlier periods of green mass harvesting. A larger number of tubers in the bush is formed during their autumn cleaning – 18.2 PCs./bush, which is 12.5 PCs. more than during spring cleaning. The average weight of tubers in the crop of topinambur does not depend on the period of harvesting the green mass and the period of tubers harvesting. In the spring harvest of topinambur, the proportion of tubers of small fraction was 70%, which is 15% more than in the autumn harvest. The share of tubers of the planting fraction during autumn harvesting is 12% more than during spring and amounted to 34%. The proportion of tubers in the food fraction does not depend on the period of harvesting the green mass. The higher content of dry matter was observed during spring cleaning – 21.9%, and vitamin C during autumn cleaning – 17.2 mg/kg. The content of dry matter in topinambur tubers with a late harvest of green mass is higher by 0.7-1.0%, vitamin C – by 0.9-1.1 mg/kg.

Keywords: *topinambur, term of tubers harvesting, date of green mass harvesting, survival rate of plants, density of plants, number of tubers, weight of a tuber, fractional composition of tubers, biochemical composition of tubers.*

Loshchinina A.E., Vikhoreva G.V., Shishkina S.V. **IMPACT OF AGRICULTURAL TECHNOLOGIES ON WINTER RYE PRODUCTIVITY IN THE UPPER VOLGA REGION**

On sod-podzolic medium-loamy soils of the Ivanovo oblast, agrotechnologies of winter rye cultivation were studied, involving the use of various systems of soil treatment, fertilizers and herbicides. The purpose of the research is to determine the influence of agricultural technologies of different intensity on soil properties, development and productivity of winter rye. Observations of density dynamics have shown that the loosest addition of the arable layer during crop cultivation is achieved in variants with dump tillage, after it is carried out in the autumn period – 1.20-1.31 g/cm3. The content of water-resistant aggregates was the highest in the variants with flat-cut processing – 37.8 %. By the time of cleaning, there was a decrease in the number of water treatment units in all variants by 3-5%. The mineralization of linen fabric was also more intense in the variants with flat-cut soil treatment. In the soil layer of 0-20 cm, the mineralization of linen was 45.4-46.5%, which was 6% higher than the dump treatment of the soil. The use of mineral fertilizers contributed to an increase in the decay of linen by 3% compared to the control. The same trend was observed in the number of earthworms as in the disintegration of linen. Most of them were found on variants with flat-cut tillage of 47-50 PCs/m2, which is 9% higher than the dump tillage. The contamination of winter rye crops was 1.5 times higher in the variants with flat-cut soil treatment, compared to the dump treatment. Taking into account clogging before harvesting showed a significant reduction in the number of weeds from the use of herbicides in all variants of the experiment. In general, their technical efficiency on annual weeds was 80.0%, and on perennial weeds - 70.4%. The study of various agricultural techniques revealed the feasibility of their integrated application. The

greatest increase in winter rye yield was obtained against the background of the use of fertilizers and herbicides -16.2-16.7 C / ha.

Keywords: *winter rye, soil treatment, fertilizers, herbicides, yield.*

Sabirova T.P., Tsvik G.S., Konovalov A.V., Sabirov R.A. **PRODUCTIVITY AND GRAIN QUALITY OF SPRING BARLEY (HORDEUM DISTICHON L.) WITH VARIOUS CULTIVATION TECHNOLOGIES USING BIOPREPARATIONS**

Barley (Hordeum distichon L.) in the Northwest Region is the main feed crop grown for grain. A high concentration of easily digestible carbohydrates provides high energy nutritional value of grain. The purpose of the research is to study barley cultivation technologies. Extensive technology - without the use of fertilizers (control); organic technology - organic fertilizers (siderate); biologized technology - organic fertilizers + $N_{30}P_{30}K_{45}$; intensive technology - organic fertilizers + $N_{60}P_{60}K_{90}$; high-intensity technology - organic fertilizers + $N_{90}P_{90}K_{120}$; the effect of biopreparations (mizorin-7, rhizoagrin) on the yield and quality of seeds.
The studies were carried out on the experimental field of Yaroslavl — FWRC FPA in a seven-field fodder crop rotation, laid down in 2017, there was an alternation of crops: annual grasses with sowing of perennial grasses (blue alfalfa + meadow timothy grass + meadow fescue), perennial grasses (3 years), winter triticale, and rapeseed sowing on green manure, barley, corn.
The soil of the experimental field is sod-podzolic, medium loamy one with a humus content of 1.87%, P_2O_5 - 278 mg/kg of soil, K_2O - 128 mg/kg of soil, pH - 5.8. The studied parameters were determined by standard methods. The cultivation technologies studied influenced the height of plants, elements of the crop structure, yield and productivity of barley. The barley yields of the «Pamyati Chepeleva» variety were 3.3 t/ha for organic technology, 3.9 t/ha for organic, 4.2 t/ha for biologized, 5.0 t/ha for intensive, and high-intensity - 5.5 t/ha. Seed treatment with biologics affected the quality of the grain, increasing the protein and energy content in it.

Keywords: *barley, cultivation technology, yield, digestible protein, metabolic energy, biopreparation, mizorin-7, rhizoagrin, field germination, preservation, survival.*

Torikov V. E., Pogonyshev V. A., Pogonysheva D. A. **RESOURCE SAVING IN THE FIELD OF AGRICULTURE**

The article considers theoretical and methodological issues of resource saving and digitalization in accurate agriculture. Thus, the introduction of Agroresolution module will lead to a growth in labor productivity of almost 2 times per employee, to a decrease in the share of material costs in the cost of a unit of production by more than 20%. Resource-saving as the most important component in the introduction of innovative technologies in the field of agro-industrial complex is considered as a scientific, technical and practical activity. It includes modern economic and agro-ecological approaches, existing resource-saving technologies, digital solutions in crop production, based on modern achievements in science and technology. During the implementation of the set of organizational and technical measures, special attention is paid to the phased support of all stages of production facilities life cycle and is aimed at the rational and economical use of available resources and funds. The basic and ultimate goal of resource conservation was to produce high-quality and biologically valuable agricultural products, while optimizing the economy's logistical, financial, labour and energy resources. Digital methods, algorithms, technologies for the collection of digital plant data, useful microorganisms, soil mapping methods, updating and use of selection and genetic material would be created in the coming years for digital transformation; Introduce digital tools for individual market actors; to create technologies and technical tools for automation, robotization and intellectualization of the industry with elements of BigData and AI; Introduce Internet of Things technologies, block chain for the management of agricultural facilities; create electronic document management systems between participants in the agricultural market; create a modern

educational environment; ensure the growth of competitiveness of ex-tailor products; provide high-speed communication, etc. So, in the context of digitalization of the industry, the introduction of precision farming technology would ensure the maximum possible increase in crop yields, allow for significant financial benefits and minimize the burden on the environment.

Keywords: *agro-industrial complex, agri-food market, resource saving, cost saving, digitalization, accurate agriculture, rational nature use, quality of life, sustainability of agriculture.*

VETERINARY MEDICINE AND ZOOTECHNY

Glukhova E.R., Kicheeva T.G., Fisenko S.P. **INDICATORS OF METABOLIC ACTIVITY OF BONE TISSUE IN PIGLETS WITH CALCIUM DEFICIENCY IN DIET**

In this article, based on the study of indicators of osteogenesis in piglets in early postnatal ontogenesis, with long-term content of calcium-deficient diets, it was found that the processes of formation and maturation of bone tissue were slowed down and accompanied by changes in the amount of both organic and mineral components. Thus, in conditions of calcium-balanced nutrition of piglets, the maximum values of alkaline phosphatase enzyme activity are detected by the end of the first month of the experimental period. Subsequently, there is a sharp decrease in its activity by 5-16 times. With a calcium deficiency in the diet, the peak of its activity was found in piglets only at 3 months of age. At 4 months of age, its activity decreased in both the experimental and control groups; however, in all studied bones of the experimental group, its activity was 1.5-3 times higher than in the control group. The study of the enzyme Ca-dependent ATPhase showed that in the first two months , in experimental animals, its activity was significantly lower than in a balanced diet, with the exception of parietal bone, at 2 months of age, and the spine, at 3 months of age. Thus, the formation of bone matrix has critical periods in which possible violations of the processes of osteogenesis due to external and internal factors. In case of calcium deficiency in diet, in early postnatal ontogenesis, critical period of changes is the age of piglets from 3 to 4 months.

Keywords: *osteogenesis, metabolic activity, enzymes, calcium deficiency, diet, piglets.*

Savelieva S. M., Chirkova E. N., Sadykova N. N., Chalkina A. V. **STRUCTURAL FEATURES OF BROWN HARE AND WHITE HARE PANCREAS**

Pancreas is an organ of a digestive system, which has exocrine (the secretion of pancreatic juice, containing digestive enzymes to digest food) and endocrine functions (produces hormones). It takes part in the process of carbohydrate, fat, protein metabolism digestion and regulation and plays an important role in maintaining homeostasis. The study of its structure is relevant at the present time, as any animal species is characterized by certain morphological features, which together determine its biological particularity. The mass of the pancreas is established: in brown hare - 4.96 ± 1.74, in white hare - 3.05 ± 1.77 g. The color of the organ is yellow-pink (in both species). The pancreases of brown hare and white hare have much in common (diffuse type and they are located in the loop of the duodenum). It is anatomically divided into right and left tree-like lobes. The main mass of the pancreas is represented by pancreatic acinuses with an average size of 80 – 140 microns in both species. There are seven – twelve conical shape acinar cells on the basal membrane with well distinguishable homogeneous (basal) and zymogenic zones with core between them. Pancreatic islets of pancreas have different shapes with an area, on average, 56,60 – in rown hare and 23, 23 – white hare microns, located uneven in different lobules. The main excretory duct of the pancreas flows into the duodenum at a distance of 420 ± 23.85 mm from the brown hare's stomach 370 ± 21.60.

Keywords: pancreas, morphology, acinuses, brown hare, white hare.

Panina O. L. Shuvalov, A. D., Mazilkin I. A., Arkhipova E. N. **FATTENING OF BROILERS UNDER DIFFERENT HOUSING SYSTEMS**

Feeding rations of broiler chickens of KOB-500 cross were studied for their balance in terms of main nutrients in different periods of feeding: starting, growth and finishing, as well as the main zootechnical indicators of growing poultry, such as lifetime meat quality and after slaughter. Lifetime is the dynamics of live weight and average daily gain. Post-mortem - the qualities of chick carcasses. Safety of livestock as an important zootechnical indicator when kept in cages and on the floor in an industrial enterprise. In addition, microclimate at different stages of poultry feeding and the length of daylight hours were analyzed. Finally, the cost-effectiveness was calculated. According to the results of our analysis, the background of feeding at the poultry farm is sufficiently high during all periods of poultry rearing. The metabolic energy in the rations of chickens contained from 300 to 317 kcal, crude protein from 19 to 22%. The dynamics of live weight increased with the cellular system more than with the floor one by 1-3%. The indoor climate changed according to the age of the broiler chickens. The temperature dropped from 330C to 160C by the end of fattening, the ventilation level also decreased from 2.75 to 0.80 cubic hours, the level of relative air humidity varied from 30 to 70%, and the subjective daylight hours from 24 hours to 20. Wh The safety of the livestock was higher with the floor keeping within 1-2%. In producing a unit of products (1 ton of meat) of broilers by the cage method, the proceeds from the sale of final products were reduced by 4,560 rubles or by 3.2% due to the fact that in the structure of the received products 5.2% of meat falls on non-grade.

Keywords: *broiler chickens, microclimate, housing system, live weight, safety, quality of carcasses.*

Pozdnyakova V. F., Melnikova L. E., Maslennikova A.V., Kosterin D. Yu. **COMPARATIVE CHARACTERISTICS OF MEAT PRODUCTIVITY OF DAIRY AND DAIRY-MEAT COWS**

Currently, main production of beef is carried out through the breeding of dairy and dairy-meat breeds of cattle. The share of culled cows, which are sold for meat of average and below average body condition, has increased. Therefore, the study of quantitative and qualitative indicators of the meat productivity of rejected cows is relevant. The article presents the results of assessing the meat productivity of Holstein and Kostroma cows culled due to impaired reproductive capacity and low milk productivity. Research on pre-slaughter live weight, slaughter weight, carcass weight, comparative characteristics of the anatomical parts of carcasses, morphological and chemical composition of meat, calculated the coefficient of meat content. Based on the studies carried out, conclusions were made about the influence of the breed on the quantitative and qualitative indicators of meat productivity. The Kostroma breed surpasses the Holstein breed in the yield of pure meat by 2,5%, and less in the yield of bones and tendons by 2,3%. The proportion of carcasses of Holstein cows has a greater percentage in the spinal rib and lumbar, and in the Kostroma - in the neck, shoulder and hip parts. Meat obtained from animals of the Kostroma breed in comparison with Holstein contains 1,1% less moisture. In terms of dry matter, meat from animals of the Holstein breed is 1,5% lower than the Kostroma breed, including 2% in protein and dominates in terms of fat by 0,4% and ash by 0,1%.

Keywords: *cattle, beef, meat productivity, morphological composition, chemical composition, meat content coefficient.*

ENGINEERING AGROINDUSTRIAL SCIENCE

Aldoshin N.V., Tsygutkin A.S., Mosyakov M.A., Sibiryov A.V. **ENERGY AND RESOURCE SAVING IN MIXED CROP CULTIVATION**

The article notes that crop production remains the most energy-intensive branch of agriculture, accounting for 70% of all costs. Informational analysis and data synthesis were carried out using the comparative method of modern technologies for the cultivation of agricultural crops. The article deals with the developed in the "Russian State Agrarian University - Moscow Agricultural Academy named after K.A. Timiryazev "mixed crop cultivation technology, allowing to save energy on crops and harvesting up to 60%. The data on ratio of lupine-cereal mixture components in sowing are given: legume component

of the Degas variety of white lupine is 60% by grain weight and the cereal component of the triticale variety "Amigo" is 40%. The agrotechnical assessment of the combine harvester KZS-1218 "Palesse GS-12" for harvesting mixed crops with the combing header "Ozon" JON-6 with combs, the tooth solution is increased, in comparison with the classic header ZhZK - 6.0. The per-hectare fuel consumption of the combine harvester for harvesting mixed crops ZhON - 6 was P = 8.3 kg / ha, and with the classic header ZhZK - 6.0 was P = 15 kg / ha. Seed losses behind the ZhON-6 header did not exceed the agrotechnical requirements and amounted to 0.5%, and the losses behind the classic ZhZK header - 6.0 amounted to 1.3%. Refusal from labor-intensive and energy-intensive tillage processes and the use of seeding complexes gives savings of up to 30%.
The use of technology for the production of mixed crops allows reducing the number of equipment passes across the field, thereby to achieve energy and resource conservation, preserve soil fertility, and minimize environmental pollution from fuel combustion products.

Keywords: *mixed crops, energy and resource conservation, white lupine, triticale, harvesting, combing header*

Davydova S.A., Chaplygin M.E., Popov R.A. **MACHINES AND EQUIPMENT FOR BREEDING, SEED PRODUCTION, CULTI-VATION AND HARVESTING OF INDUSTRIAL CROPS**

Fiber flax and industrial hemp are important industrial crops for developing the production of fiber and cellulose raw materials in Russia and producing oil for use in medicine, cosmetology and chemical industry. To achieve profitability of their production, it is necessary to take into account the peculiarities of crop cultivation, comply with all agrotechnical requirements, and pay close attention to sowing and harvesting equipment and mechanization of breeding processes and seed production. The article discusses the issues of technological infrastructure for performing production steps during the cultivation, harvesting and post-harvest processing of fiber flax and industrial hemp in breeding and primary seed production; the current state of production of these industrial crops is covered as well. The main developers and manufacturers of machinery and equipment for breeding and primary seed production are presented. The main problems have been identified in the mechanization of breeding and seed production of fiber flax (shortage of domestic dedicated equipment for the sowing stages [drills having a row spacing of 6 cm and a sowing depth of 2 cm] and harvesting [flax pullers, flax turners, fluffers, and balers]) and industrial hemp: this is mechanization of the sowing and harvesting of crops, since general-purpose machines perform all other production steps (tillage, fertilizer application and crop tending.) The main areas of the development of mechanization of breeding and seed production of industrial crops have been determined.

Keywords*: industrial crops, fiber flax, industrial hemp, breeding, seed production, technological infrastructure.*

Nikolaev V.A. **DETERMINATION OF TRACK PARAMETERS OF A SEMI-AUTOMATIC GRAIN CLEANING MACHINE**

The main disadvantage of grain cleaning machines with rectangular grates the limited throughput. To overcome this contradiction, a grain cleaning machine with a sieve representing an inverted truncated cone, which performs vertical oscillations, is proposed. The kinematics of the sieves vibrations determine the profile of the track on which they rest by means of the lower rollers. Difficulty in determining the parameters of the track lies in their mutual dependence. Therefore, the calculation is carried out by the approximation method. The essence of this method lies in the initial assumption of the value of one of the parameters of the object under consideration. Based on it, other parameters of the object are calculated, and as a result, a new value of the initially accepted parameter is obtained. After that, other parameters of the object are calculated again and the third, refined, value of the initially accepted parameter is obtained. So, step by step, we perform calculations until they approach the optimal values of all the desired parameters. Based on the earlier analysis of the grain path, the initial profile of the track is set. From the design features, the outer diameter of the roller and, corresponding to it, the radius of curvature of track sections when approaching the upper point of the trajectory and when approaching the lower point of sieves trajectory are determined.

The rational oscillation amplitude of track lifting angle sieves is revealed. By taking several values of the track slope angle during the lowering of the sieve, the approximation method was able to calculate: the time of sieves lifting at a constant speed, time of sieves deceleration when approaching the upper point of the trajectory, time of sieves deceleration when moving to the lower position, the time of their movement to the lower position with constant acceleration, the period of sieves oscillation, and remaining kinematic parameters of their oscillations. As a result of the calculation by the approximation method, the optimal geometric parameters of the track of a semi-automatic grain cleaning machine are revealed.

***Keywords**: Grain-cleaning machine, inverted truncate, vertically oscillating sieve, track profile, sieve deceleration time, track slope angle*

Rodimtsev S.A., Eremin L.P., Gulyaeva T.I. **USE OF AN AUTOMATIC WEATHER STATION WITHOUT GSM CONNECTION**

Digital transformation of agriculture can significantly increase production efficiency and reduce the cost of manufacturing products by obtaining and accumulating information about the ongoing technological processes, making appropriate management decisions. An important role in this is played by the ability to obtain operational data in real time. To a large extent, this relates to the operation of automatic digital weather stations, the data of which can be used to control operations that require on-line monitoring. In most meteorological complexes, GSM connection protocols are used to transfer information, the absence of which in the "shadow" zones can reduce the effectiveness of the use of digital technologies. Most developers offer options for using "black boxes" to save some of the undelivered information and then "throw" it on a thematic server, when a connection is available, optional use of enhanced GSM antennas or personal communication services provided by a civil system of low-orbit satellites. However, these solutions, in some cases, do not provide the possibility of on-line mode, in others - they are too expensive for use in the conditions of small farms. In this work, a review of some automatic weather stations that have found application in the domestic agro-industrial complex is carried out and the experience of operating one of the domestic developments in the experimental digital farm of the Oryol Agrarian University is presented. The structure of a system for transmitting information from a weather station to a user in on-line mode, in areas where there is no GSM connection, is proposed, which is based on the implementation of the principles of MESH technology - a seamless cellular communication architecture. The work was performed within the framework of a thematic plan-task for research work ordered by the Ministry of Agriculture of Russia at the expense of the federal budget in 2020 (registration number R&D AAAA-A20-120021190096-3, dated 11.02.2020).

***Keywords:** precision farming, remote sensing data, automatic weather station, GSM coverage, on-line connection, Oryol State Agrarian University*

SOCIO-ECONOMIC SCIENCES AND HUMANITIES

Baldin K.E. **AGRICULTURAL PROPAGANDA OF ZEMSTVO IN VLADIMIR PROVINCE IN THE EARLY 20TH CENTURY**

The article deals with activities of local Zemstvo assemblies, councils and specialists-agronomists of the Vladimir province for promotion of agricultural knowledge and skills among peasants. Zemstvo regularly arranged lectures, which were intended for all peasants, including the illiterate. After the lectures, some of the peasants were ready to study at agricultural courses, which gave more detailed information. The article examines the activities of both universal and specialized courses, which gave knowledge and skills in certain branches of agriculture – livestock, beekeeping, growing feed grasses, etc. Most of the courses were held in rural areas, which allowed to expand the audience of their students. Agricultural propaganda used such principles as visibility and accessibility, material set out on the principle of transition from simple to complex. The principle of visibility was manifested in the fact that a large part of the time on the courses occupied practical classes in the field or on the apiary. Technical innovations such as projectors were used during lectures and

courses. In addition to oral propaganda, i.e. readings and courses, printed propaganda was also used. Special literature was widely distributed among peasants. Some of these brochures were written by local agronomists from Vladimir province. The effectiveness of this work was manifested in the fact that many peasants were convinced of the imperfection of the previous methods of farming. They began to use the new knowledge and skills, gained during lectures, courses and in agronomic literature.

***Keywords**: zemstvo, the Russian peasantry, agronomic specialists, agricultural lectures and courses, popular agronomic literature.*

Itkulov S.Z., Komissarov V.V. **DISPUTED ISSUES OF THE HISTORY OF BIOLOGICAL DISCUSSION IN THE USSR IN THE 1930-1960s.**

The article examines controversial issues in the history of the biological discussion that took place in the USSR in the 1930s – 1960s. The relevance of the topic is determined by the fact that in recent years in journalism attempts have been made to revise the assessments of those events, to rehabilitate T.D. Lysenko and his supporters. Some authors justify the defeat of genetics, or declare the persecution of geneticists to be fiction. This article attempts to objectively analyze the events that took place. The authors analyze the well-established myths and stereotypes that distort the history of biological discussion. A wide range of sources is involved, including encyclopedic articles, memoirs of participants in the events, modern popular science publications. The article shows the ambiguity of the situation, the one-sidedness of black and white assessments. It is noted that the situation in agrobiological science is not unique: similar processes in those years were observed in humanitarian research, in the classical physiology of some other disciplines. It is concluded that the history of biological discussion cannot be considered in isolation from the history of Soviet society, from the processes that took place in the field of science and among scientific intelligentsia. This does not remove the responsibility of the state and party leadership, who inspired these negative phenomena. But the readiness of the Soviet intelligentsia to support these devastating ideological campaigns and the inability of scientists to resist these processes also played a big role. The article may be of interest to a wide range of readers, including teachers of agrobiological disciplines, humanities scientists, graduate students, undergraduates, bachelors, and specialty students in various fields of study.

***Keywords**: Soviet intelligentsia, science, agrobiology, genetics, Lysenkoism.*

Karmanova G.V. **IVANOVO STATE AGRICULTURAL ACADEMY STUDENTS' PRACTICE IN GERMAN FARMS AS A COMPONENT OF A PRACTICE-ORIENTED TRAINING**

The article is devoted to the students' practical training in Germany while studying at an agricultural higher school. Issues of practice in the professional training of graduates of higher schools and colleges have always been given special importance to, since it is in practice that students generalize their theoretical knowledge; they also get practical skills, and the first serious experience of working with plants, animals, equipment, materials, depending on the direction of training. Today, the issues of a professional training from the perspective of a practice-oriented training are also paid much attention to. The problem is of current interest now. It is addressed by both scientific and teaching community; conferences are held, digests of scientific articles are published. Practice-oriented students' training can be viewed from different perspectives. In some cases, this is a practice within the walls of a higher school, at enterprises or on the farms, which, according to the current federal state general education standard of higher education, is educational, technological, industrial or research. In other cases, it is teaching practical aspects during the lessons. Within the framework of our subject, we talk about practice-oriented training, for example, from the point of view of teaching knowledge, skills and abilities in a foreign (German) language that can be useful for a present day student and a future graduate in real life. In particular, it may be the basis of business communication (conversational clichés) and documents (portfolio, resume, motivation letter) in German, which are necessary for going to Germany for practice, for admission to a German Higher

school or for a job in a Russian branch of a German company. But due to the fact that our academy has been promoting students practice in German farms for the past 25 years, our main task in this article is to consider in details the issues related to practice abroad; to present data on students who have completed practice during the period of our cooperation with foreign organizations LOGO e. V. and PRAXX, as well as to review the language and country studies training of future trainees.

Keywords: *practice, practice-oriented training, German language, language and cross-cultural training.*