AgroDev project results and follow up steps for sustainability

Co-funded by the Erasmus+ Programme of the European Union

The project «Development of Higher Education Content Aimed to Support Industries for Sustainable Production of Qualitative Agri-food» (AgroDev)
No 619039-EPP-1-2020-1-LV-EPPKA2-CBHE-JP

PARTNERS PRESENTING AGRODEV PROJECT RESULTS

- P5 Tashkent State Agrarian University (Uzbekistan)
- P4 Samarkand branch of Tashkent State University of Economics (Uzbekistan)
- P3 Kyrgyz National Agrarian University (Kyrgyzstan)
- P2 Naryn State University (Kyrgyzstan)
- P8 Hilfswerk International (Austria)

P5 Tashkent State Agrarian University

Asqar Safarov, the Dean
Faculty of storage and processing of agricultural products

Main outputs and results (I)

Curriculum and subjects modernised

Study programme "Technology of storage and processing of agricultural products"	Total credits per subject selected for modernisation	Credits modernised
Agro logistics	4	3,5
Storage warehouses of agricultural products	4	3
Fundamentals of metrology, standardization and certification	6	4,5
The basis of the design and implementation of enterprises for the processing of agricultural products	8	6
Agro-biotechnology	8	2
Sensory evaluation of the quality of agricultural products	6	4
Packaging of agricultural products	4	2
Total credits and total modernised credits for specific subjects	40	**25,0**
Specific weight of modernised credits in comparison to total credits for selected subjects, %	x	**43**
Specific weight of modernised content in comparison to total volume of the professional disciplines in curricula, %	x	**43**
Number of students taught	x	**42**

Main outputs and results (II)

Capacity of the academic staff increased

Number of academic staff trained:

- In teaching methodologies and pedagogic skills - **12 teachers**.

  Trainings were provided by P7 LNU.

- In study course subjects - **20 teachers**.

  Trainings were provided by P1 LBTU and P6 UAK.

- Participated in farm-based training - **17 teachers**.

  Trainings were provided by P8 HWI and an external expert, having in-depth knowledge in specific thematic: «GLOBAL G.A.P. / general provisions» (webinar) and «GLOBAL G.A.P in crop production» (seminar).

Main outputs and results (III)

Study visits to the EU partner countries

Month, year	Venue	Number of teachers participated	Main lessons learnt, knowledge obtained, best practices taken over:
June 2022	Linnaeus University (Sweden)	6	Experience of rural enterprises (e.g., Lantmannen agricultural machinery: site of VIDA forest: Lidsboholms gard) and “Lantmannen agriculture machinery” to implement novel technologies.
June 2022	Latvia University of Life Sciences and Technologies (Latvia)	6	Practical knowledge on integration of a university and industrial sectors activities. E.g., “Piparmetru namins” (products from peppermint), "Kronis“ (vegetable processing), and “Keefa” (ecological food from local origin food raw material).
September 2022	University of Agriculture in Krakow (Poland)	6	Experience of agri-food sector enterprises to innovate, develop and introduce new products and technologies. E.g., “Mularski”, “The group of producers Amplus”, “Horticulture farm Tadeusez Kusibab”, “Jamar food production plant”.
April 2023	Latvia University of Life Sciences and Technologies (Latvia)	6	Approaches used by the LBTU to organise knowledge transfer. Application of dual teaching and learning approach (learning in practice).
April 2023	University of Agriculture in Krakow (Poland)	6	A memorandum of cooperation was signed between TSAU and UAK with aim to organise mobility of the academic staff, elaborate joint scientific publications and implement joint and bilateral training programs.

Main outputs and results (IV)

Quality assurance and assessment methodology (QAAM)

- TSAU has implemented a contemporary curriculum quality assurance and assessment methodology (20 assessment criteria).
- Criteria were used to evaluate the Bachelor curriculum "Technology of storage and processing of agricultural product".
- The assessment results have served the following purposes:
  - Identifying obstacles in the program implementation and assessing the alignment of graduates' competencies with the demands of employers.
  - Pinpointing deficiencies in teaching materials, encompassing both literature and laboratory equipment at TSAU.
  - Evaluating the academic, digital, and teaching capabilities of the faculty members engaged in the teaching process.
  - Assessing the program's pertinence in establishing a strong base of theoretical and practical knowledge, along with fostering research skills and critical thinking.

Main benefits of P5 TSAU (V)

Main benefits:

- The modernized curriculum incorporates more effective teaching and learning approaches designed to nurture students' critical and creative thinking, and research skills.
- Tashkent State Agrarian university has introduced effective teaching methods and approaches with the specific goal of fostering the development of these skills among our students.
- Capacity of the academic staff increased.

Facilities improved:

- Animal origin food processing study laboratory installed (18 units) and put in use (33 995 EUR);
- Special literature (13 books) acquired for the university library.

Main measures planned to ensure sustainability of the results (VI)

- Shift the educational focus towards student-centered learning while incorporating the principles of Good Agricultural Practices (GAP) into the teaching approach.
- Deepening cooperation within the framework of university-science-production partnership. More on-the-job training.
- Targeting training of specialists for production, introduction of dual training.
- Creation and implementation of the system of student entrepreneurship development (start-ups, innovations).
- Agribusinesses and their associations should continually communicate proposals on the needs of the agro industry to universities.
- Involve scientists in solving current problems of agricultural producers.
- Starting from the 2023-2024 academic year.
- Students were admitted to the new "Food Technology" course.

P4 Samarkand branch of Tashkent State University of Economics

Shavkat Hasanov
Coordinator of the AgroDev project at SBTSEU

Main outputs and results (I)

Curriculum and subjects modernised

Study programme "Agribusiness and investment activities"	Total credits per subject selected for modernisation	Credits modernised
Agro consulting	6	6
Storage and processing of foodstuffs	6	2
Agricultural production	6	2
Technology of processing agro products	6	2
Fruit and vegetables production	6	2
Metrology, standardization and certification	6	3,5
Organic food production and management	6	6
Agribusiness management	6	6
Food quality and safety management	6	2
Agrarian policy and food security	6	3
Total credits and total modernised credits for specific subjects	60	**35**
Specific weight of modernised credits in comparison to total credits for selected subjects, %	x	**58**
Specific weight of modernised content in comparison to total volume of the professional disciplines in curricula, %	x	**42**
Number of students taught	x	**61**

Main outputs and results (II)

Capacity of the academic staff increased

Number of academic staff trained:

- In teaching methodologies and pedagogic skills - **14 teachers**.

  Trainings were provided by P7 LNU.

- In study course subjects - **19 teachers**.

  Trainings were provided by P1 LBTU, P6 UAK and P7 LNU.

- Participated in farm-based training - **18 teachers**.

  Trainings were provided by P8 HWI and an external expert, having in-depth knowledge in specific thematic: «GLOBAL G.A.P. / general provisions» (webinar) and «GLOBAL G.A.P in crop production» (seminar).

Main outputs and results (III)

Study visits to the EU partner countries

Month, year	Venue	Number of teachers participated
June 2022	Linnaeus University (Sweden)	6
June 2022	Latvia University of Life Sciences and Technologies (Latvia)	6
September 2022	University of Agriculture in Krakow (Poland)	6
April 2023	Latvia University of Life Sciences and Technologies (Latvia)	6
April 2023	University of Agriculture in Krakow (Poland)	6

Main lessons learnt, knowledge obtained, best practices taken over:

- **Diversification of farm income** through agritourism and value-added products, such as confectionery and perfume from mint in Latvia.
- Sensory lessons and well-equipped university laboratories in Latvia emphasize the **role of sensory evaluation** in enhancing product quality.
- Sweden's independent forest land ownership promotes entrepreneurship and **sustainable practices**, while Poland offers **insights into bioplastics and energy product production from waste**.
- MULARSKI family enterprise in Krakow showcased **profitable agricultural production and advanced methods** like hydroponic tomato cultivation.
- In Latvia, innovative approaches to **student internships and organic fertilizer production** were observed on the Vecauce training farm.

Main outputs and results (IV)

Quality assurance and assessment methodology (QAAM)

- During the project the project team has **applied 24 criteria to assess BA program Agribusiness and investment activities**. QA criteria like quality of programmes offered, quality of implementation of the programmes, and results achieved, and the effect of the education programmes on the needs of their respective industries were used.
- Assessment findings have helped:
  - to identify challenges on implementation of program, relevance of the competence of graduates in the context of the needs and requirements of stakeholders (employers)
  - to identify missing gaps teaching materials including literature and laboratory equipment
  - to evaluate the academic, digital and didactic competences of the staff, involved to teaching process
  - relevance of program a good foundation of theoretical and practical knowledge, including research skills and critical thinking.
- The QAAM will be used further to assess and evaluate all study programs.

Main benefits of P4 SBTSEU (V)

Main benefits:

- Using of more effective learning approaches in the modernised curriculum, to develop students critical and creative thinking and research skills
- Increased number of knowledgeable and skilful specialists prepared for agro-food production industry
- Capacity of academic staff increased

Facilities improved:

- Animal origin food processing study laboratory installed (18 units) and in use (33 995 EUR)
- Special literature (13 books) acquired for the university library

Laboratory for determining the quality of crop and livestock products

Educational literature on special subjects

Main measures planned to ensure sustainability of the results (VI)

- Shift the educational **focus towards student-centered learning** while incorporating the principles of Good Agricultural Practices (GAP) into the teaching approach.
- Strengthen collaboration within the university's science and production partnerships, placing a greater **emphasis on practical, on-the-job training experiences**.
- Prioritize the education of specialists geared towards **enhancing productivity and implementing dual training initiatives**.
- Facilitate the development of **collaborative educational programs** with international universities, with a strong **emphasis on hands-on practical learning**.
- Expand opportunities for students to engage in i**nternships within industrial and agricultural enterprises**, fostering mutual cooperation between the academic institution and the industry.
- Embrace and promote the **extensive use of Student-Centered Learning (SCL) methodologies** to enhance the learning experience and outcomes.
- The curriculum “Agribusiness and investment activities” **content revised and re-accredited as “Business administration”** (in agriculture) starting from 2023-2024 academic year.

Involvement and cooperation with the national stakeholders in Uzbekistan

Events organised – 8.

Stakeholders participated:

- **In Samarkand:** food production and processing enterprises - Agromir, Meva Marokand, farms
- **In Tashkent:** food production and processing enterprises - LeoGarden, Gold Dried Fruits, farms
- **Regional Center for Standardization, Metrology and Certification**

Main recommendations received:

- Involving specialists from enterprises in the educational process
- Increasing laboratory classes and practical training for students
- Organization of branches of specialized departments at enterprises

Joint activities initiated and ongoing:

- Summer schools for farmers on organic farming
- Development of recommendations for the implementation of the international certificate Global GAP
- Guidelines for assessing compliance with the international standard Global GAP
- Participation in new regional and international projects
- Creation of a special scientific and educational journal on maintaining good agricultural practices

P3 Kyrgyz National Agrarian University

Dr. Aijan Tolobekova
Administrative coordinator of AgroDev project at the KNAU

Main outputs and results (I)

Curriculum and subjects modernised

Study programme "Zootechnics"	Total credits per subject selected for modernisation	Credits modernised
Fodder production and grassland management	5	2
Zoo hygiene with basic design	10	3
Animals breeding	10	1,5
Animal nutrition	10	1
Cattle and Yak breeding	10	1,5
Sheep breeding	10	1,5
Livestock product standardization and certification	5	3,5
Dairy business	5	5
Quality management	5	2
Basics of veterinary medicine	5	2
Total credits and total modernised credits for specific subjects	75	**23**
Specific weight of modernised credits in comparison to total credits for selected subjects, %	x	**31**
Specific weight of modernised content in comparison to total volume of the professional disciplines in curricula, %	x	**28**
Number of students taught	x	**40**

Study programme "Technology of production and processing of agricultural products"	Total credits per subject selected for modernisation	Credits modernised
Technology of meat and meat products	5	2
Technology of milk and dairy products	5	2
Poultry processing technology	5	2
Technology of fish and fish products	5	2
Biological food safety	3	3
Food law	2	2
Total credits and total modernised credits for specific subjects	25	**13**
Specific weight of modernised credits in comparison to total credits for selected subjects, %	x	**52**
Specific weight of modernised content in comparison to total volume of the professional disciplines in curricula, %	x	**27**
Number of students taught	x	**24**

Study programme "Agronomy science"	Total credits per subject selected for modernisation	Credits modernised
Crop production	8	2
Plant breeding and seed production	5	2
Fodder production	4	2
Plant protection	7	2
Total credits and total modernised credits for specific subjects	24	**8**
Specific weight of modernised credits in comparison to total credits for selected subjects, %	x	**33**
Specific weight of modernised content in comparison to total volume of the professional disciplines in curricula, %	x	**6**
Number of students taught	x	**40**

Main outputs and results (II)

Capacity of the academic staff increased

Number of academic staff trained:

- In teaching methodologies and pedagogic skills - **12 teachers**.

  Trainings were provided by P7 LNU.

- In study course subjects - **15 teachers**.

  Trainings were provided by P1 LBTU, P6 UAK and P7 LNU.

- Participated in farm-based training - **21 teacher**.

  Trainings were provided by P8 HWI and an external expert, having in-depth knowledge in specific thematic: «GLOBAL G.A.P. / general provisions» (webinar) and «GLOBAL G.A.P in crop production» (seminar).

Main outputs and results (III)

Study visits to the EU partner countries

Month, year	Venue	Number of teachers participated
June 2022	Linnaeus University (Sweden)	6
June 2022	Latvia University of Life Sciences and Technologies (Latvia)	6
September 2022	University of Agriculture in Krakow (Poland)	6
April 2023	Latvia University of Life Sciences and Technologies (Latvia)	6
April 2023	University of Agriculture in Krakow (Poland)	6

Main lessons learnt, knowledge obtained, best practices taken over:

In Sweden: Insights into the innovation lab, working with digital media and new methods of analyzing priority scientific business research, as well as developing close cooperation between representatives of universities and businesses in Swedish agriculture, with the sources of funding for their activities.

In Latvia: Experience in the development of agrotourism, production of unique domestic products for export with close cooperation of the university with stakeholders, as well as practical skills of product quality assessment and microbiological analysis in university laboratories. Also for us was useful the experience of sheep breeding of "*Mikaitas*" sheep farm, pedigree rams of "*Klimpas*" breeding and control station and animal breeding training farm of the LBTU "*Vecauce"*, as well as the experience of the processing company HK Scan Latvija (meat products), and the scientific laboratory of goat farm *"Licisi"* biotechnology, which deals with the preservation of the gene pool of Latvian animal breeds.

In Poland: Experience of production of fertilizers, biostimulants for crop and livestock farming of "Intermag" company, with advanced methods of the family profitable business Mularsky on hydroponic cultivation of vegetables, as well as technologies of biotechnological processing of organic waste.

Main outputs and results (IV)

Quality assurance and assessment methodology (QAAM)

- The modernized curriculum quality assurance and assessment methodology is adopted at the university. It contains 25 assessment criteria at the total.

- QAAS was presented for discussion at the Academic Council of KNAU, approved and recommended for use in assessing the quality of educational programs and disciplines
- During the project the project team of KNAU has applied most of these assess criteria's in the education and research process.
- Assessment findings have helped:
  - to find the ways and the approach to solve the existing problems;
  - to improve the relationships strongly with the alumni and stakeholders;
  - to analyze of survey and create the new questionnaires;
  - to identify the future steps and task in improvement quality of education

- The QAAM will be used further for the analyze the quality of education, research and relationships with the industries to improving the **quality of graduate**.

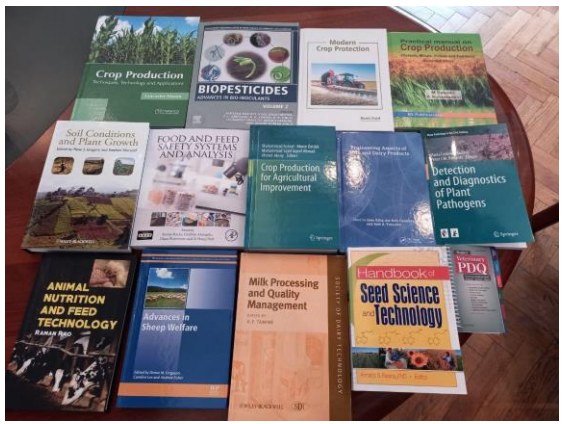
Main benefits of P3 KNAU (V)

Main non-tangible benefits:

- Getting new knowledges and developing skills of teachers in specific direction such as GEO indication, IT-educational resources etc.;
- Learning new teachings methods and approaches, made positive influence to the developing of students' potential for confident and creative presentation of their works, and improved research skills;
- New bold ideas and project initiatives among CA and EU partners;
- Implementation the Global GAP in the agricultural sector (TomatKG), thereby strengthened and improved the cooperation with agroindustry enterprises.

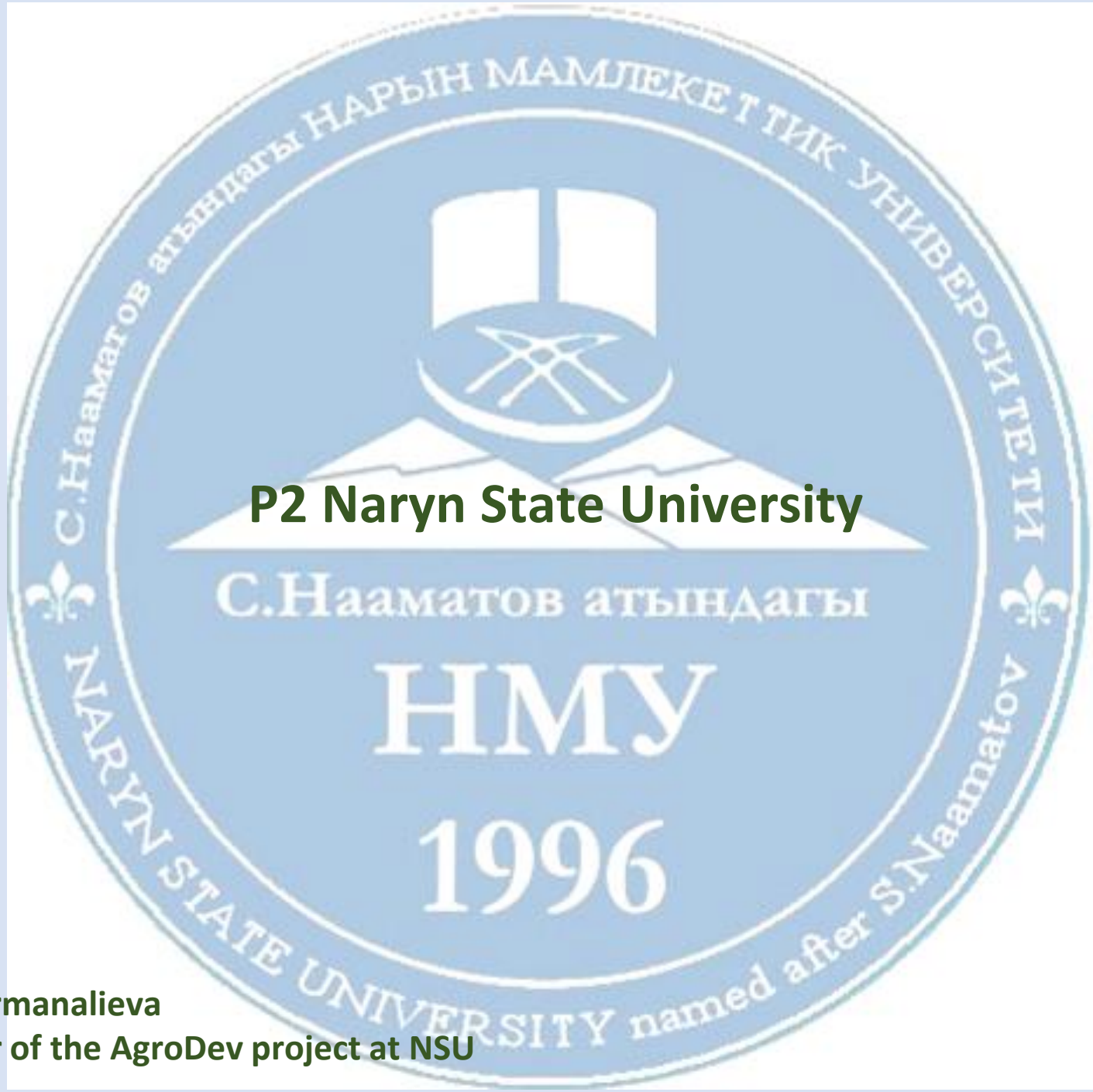
Tangible benefits: equipment - 11 units (30 900 EUR); literature - 14 units.



Main measures planned to ensure sustainability of the results (VI)

- Strengthened the research and academic mobility between the partners;
- New education or research project among CA and EU partners;
- Using and implementation of a data bank on the project case study;
- Providing advice to enterprises jointly with EU partners in the implementation of the Global GAP certificate;
- Improving dual education on the basis of partner enterprises, with further employment possibilities;
- Consideration of twin programs (double diplomas) by CA and EU partners;
- Joint publication of research results.



P2 Naryn State University

Gulzana Kurmanalieva
Coordinator of the AgroDev project at NSU

Main outputs and results (I)

Curriculum and subjects modernised

Study programme "Technology of production and processing of agricultural products"	Total credits per subject selected for modernisation	Credits modernised
Basics of biotechnology of agricultural products	4	2
Technology of storage and processing of crop production	4	2
Technology feeding animal husbandry	4	1,5
Standardization and certification of agricultural products	4	3,5
Food safety	4	3
Food technology	4	3,5
Packaging materials and food storage methods	4	2
Sanitation and hygiene in processing plants	3	3
Management and marketing	3	3
Basis of fodder production and maintenance of farm animals	4	2
Total credits and total modernised credits for specific subjects	38	**25,5**
Specific weight of modernised credits in comparison to total credits for selected subjects, %	x	**67**
Specific weight of modernised content in comparison to total volume of the professional disciplines in curricula, %	x	**27**
Number of students taught	x	**24**

Main outputs and results (II)

Capacity of the academic staff increased

Number of academic staff trained:

- In teaching methodologies and pedagogic skills - **10 teachers**.

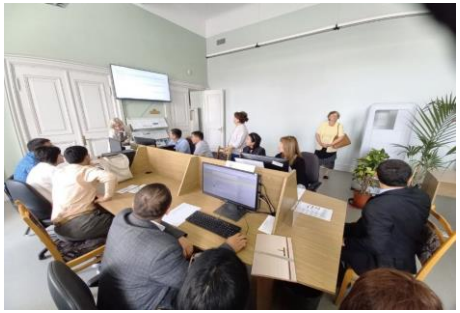
  Trainings were provided by P7 LNU.

- In study course subjects - **15 teachers**.

  Trainings were provided by P1 LBTU, P6 UAK and P7 LNU.

  Participated in farm-based training - **15 teachers**.

  Trainings were provided by P8 HWI and an external expert, having in-depth knowledge in specific thematic: «GLOBAL G.A.P. / general provisions» (webinar) and «GLOBAL G.A.P in crop production» (seminar).



Main outputs and results (III)

Study visits to the EU partner countries

Month, year	Venue	Number of teachers participated
June 2022	Linnaeus University (Sweden)	6
June 2022	Latvia University of Life Sciences and Technologies (Latvia)	6
September 2022	University of Agriculture in Krakow (Poland)	6
April 2023	Latvia University of Life Sciences and Technologies (Latvia)	6
April 2023	University of Agriculture in Krakow (Poland)	6

Main lessons learnt, knowledge obtained, best practices taken over:

- At the Linnaeus University (Sweden) NSU teachers learned how to **apply new research and analysis methods**. NSU staff received the necessary **knowledge and skills, which is used to increase quality of education** at the own university.
- Experience and outcomes of c**ooperation of higher education and agricultural stakeholders** in Sweden: funding and networking: STINT and SIANI.
- **Methods and approaches used to empower students with practical skills**, obtained in the study and research laboratories at LBTU (Latvia).
- Experience in development and **implementation of product and technology development projects** among agricultural enterprises and the university (LBTU).
- NSU **teachers were involved in practical - laboratory works** (laboratories of milk, meat, fruit and vegetables production; sensory evaluation; packaging).

Main outputs and results (IV)

Quality assurance and assessment methodology (QAAM)

The criteria for quality control and evaluation have contributed to the achievement of the following objectives:

- Identify the skills needed in agro-industrial and processing industries.
- Improve the content of the curriculum.
- Identify the missing teaching materials - literature and laboratory equipment.
- Improve the practical skills of the teaching staff of NSU on the production, processing and storage of agricultural products.
- Facilitated communication between students and enterprises for further training and possible employment after graduation.

The QAAM will be used further to modernise other study programs

Main benefits of P2 NSU (V)

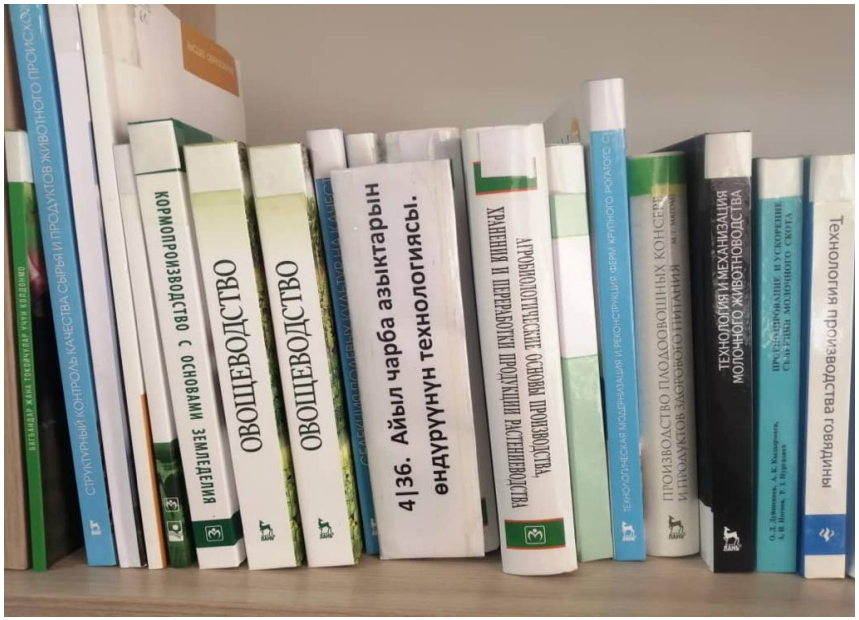
Main non-tangible benefits:

- Capacity of teaching staff increased – they were able to see the real system of production at the enterprises by their own which helped to improve the curriculum of their teaching subjects; more practical works are included in the teaching hours.
- The quality of practical teaching improved and students interests to the study process increased.
- New cooperation initiatives with NSU and EU partners – to conduct joint research works in the future.
- Strengthened and improved cooperation with agroindustry organisations and enterprises.

Tangible benefits:

- Food processing study laboratory equipment - 17 devices procured (24 772 EUR)
- Literature acquired - 66 books procured (2 207 EUR)

Main benefits of P2 NSU (V)



Main measures planned to ensure sustainability of the results (VI)

- Joint research and publication agreed with EU partners
- Student mobility – education and practice at the EU enterprises strengthened
- Consulting the enterprises jointly with EU partners in the implementation of the Global GAP certificate are planned

Involvement and cooperation with the national stakeholders in Kyrgyzstan

Events organised – 3.

Stakeholders participated:

In Naryn: food production and processing enterprises – At-Basy Sut, Toibos, Umut milk farm, small enterprises, farms and public authority: representatives of the Naryn Center for Standardization, Metrology and Certification.

In Bishkek: the contracts with Seed Association of the KR, Department of Organic Agriculture under the Ministry of Agriculture and Department of Crop Examination under the Ministry of Agriculture of the KR, with Agricultural Support Center “Bai Dyikan”, with peasant seed-producing farming enterprise “Tomat.kg”, Dan Agro Products Ltd. and Agricultural production commodity-service seed production cooperative 'ECO-GREEN-AGRO'.

Main recommendations received:

- Involving specialists from enterprises in the educational process
- Increasing laboratory classes and practical training for students
- Organization of laboratory testing center at NSU

Joint activities initiated and ongoing:

- Strengthen the cooperation between practice at enterprises and theory – to fill gaps mutually
- Participation in new regional and international projects
- Joint development of a special scientific and educational journal on maintaining good agricultural practices

Field (farm-based) trainings in Global G.A.P. for the teaching staff

Two 3-day webinars & six 3-day advanced field trainings in Global G.A.P. in crop production & livestock sector for the involved Central Asia universities

Participants:

- 108 (out of them 47 women) participants in the webinars
- 94 (out of them 47 women) participants in the advanced trainings

Content:

- Step of obtaining and confirming the certification Global G.A.P.
- Control points & compliance criteria
- Internal inspection & traceability
- Completion of Field Journal
- Hygiene, health and safety
- Environment & conservation, etc.

Field (farm-based) trainings in Global G.A.P. for the teaching staff

- Participants **understand the requirements of the standard** related to sanitation and hygiene, labor protection, environmental protection and environmental aspects, efficiency, and labeling.

- Participants **know about all sources of information on the standard**, i.e., they are informed when the standard is updated or supplemented, which is important for continuing self-learning.

- Participants **can advise and help farmers & producers introduce the standard**, prepare the internal documentation, conduct preliminary and internal audits and prepare for external audit.

SUMMARY of the AgroDev RESULTS

Result	Indicators	Involved CA universities				
		P2 NSU	P3 KNAU	P4 SBTSEU	P5 TSAU	TOTAL
Attractiveness of the curricula increased; relevance verified (piloted)	Number of curriculum modernised	1	3	1	1	6
	Number of subjects modernised	10	20	10	7	47
	Number of students taught in the modernised curricula	24	104	61	42	212
Capacity of the academic staff increased	Number of academic staff trained and upskilled:	x	x	x	x	x
	In teaching methodologies and pedagogic skills	10	12	14	12	48
	In study course subjects	15	15	19	20	69
	During farm-based training	15	21	18	17	71
	During study visits (total number of visitors / persons)	30/6	30/9	30/12	30/11	120/38
Technical capacity of the involved CA HEIs increased	Number of devices acquired for teaching purposes	17	11	18	18	64
	Number of study literature acquired (per number)	66	14	13	13	106

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Erasmus+ Programme
of the European Union

AgroDev

Thank you for the attention!

AgroDev project consortium

Website: https://agrodev.knau.kg/en/home/