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EXECUTIVE SUMMARY

The overall aim of STEPS project is to develop a new MSc programme in “Sustainable Food Production Systems”. The MSc programme will offer advanced knowledge to graduates who work or aim to work in private companies and national bodies or start new businesses in particular, in rural, agricultural areas and in this way, can contribute to the transition to sustainable food production systems.

The focus of this report is the presentation of the Study Visit results, organized by University of Agronomic Sciences and Veterinary Medicine of Bucharest (USAMVB).

1 . INTRODUCTION

1.1 SCOPE

Sustainable food production systems offer opportunities for economic benefits, creation of jobs, enhanced food safety and security. The transition towards such systems is based on interventions at all levels, from policies to implementation. Stakeholders' involvement in the design, planning of cooperation projects and internships, continuous improvement and evaluation of study programmes along with the professional development of scientific staff are needed in order to develop the human capital that will support this transition.

In this sense, *D.2.3. Study visit in the University of Agronomic Sciences and Veterinary Medicine of Bucharest (USAMVB)*, is part of *WP2 - STEPS structure and courses design*, in order:

- to transfer the knowledge on scientific, technical and organizational aspects, which will boost the level of education and the capacity of partner countries;

- to inspire with new ideas, but also, to offer the opportunity to discuss and make an exchange of academic cultures and perspectives;

- to analyze how best practices can be adapted to the MSc program that will be developed during the STEPS project;

- to provide participants the opportunity to get to know and compare with their own experience, the strategies and practices for the organization of teachers training initiatives in Romania;

- to disseminate project activities to all interested actors that can find information about the project and its achievements, even after the completion of the project and to bring them forward for public discussion in the relevant communities of interested actors.

1.2 AUDIENCE

This report is addressed to the partners in the STEPS project, as well as to the educational institutions, interested stakeholders, teaching staff.

1.3 STRUCTURE

Chapter 1 contains an overview of this document, providing its Scope, Audience and Structure.

Chapter 2: this section provides information of USAMVB Study visit.

Chapter 3: includes the conclusions and recommendations.

Chapter 4: Annexes

2 . OVERVIEW OF THE STUDY VISIT

The study visit was held at the University of Agronomic Sciences and Veterinary Medicine in Bucharest, Romania, in the main building (59 Marasti Blvd.), in the University Campus and, at Moara Domneasca Training and Experimental Farm of USAMVB. The event took place between 5-8 June 2019, from 9:00 to 18:00.

Therefore, the USAMVB team designed an attractive program with engaging presentation of practical tasks, discussions and good practice examples of USAMVB infrastructures according with STEPS project objectives on food chain.

During the visit a workshop was also held, with the title "*Modernisation of Food Engineering and Food Management Practices - a Priority for a Sustainable Development*" in connection with the International Conference "*Agriculture for Life, Life for Agriculture*", organized by the University of Agronomic Sciences and Veterinary Medicine of Bucharest, Faculty of Agriculture.

Also, STEPS project was presented in the Plenary *Agronomy Session* (Session 1) of the International Conference "Agriculture for Life, Life for Agriculture".

The original version of STEPS project *Study visit Agenda* is added as Annex 1 of this report.

The program of the International Conference "Agriculture for Life, Life for Agriculture" is presented in Annex 2 of the report.

The meeting was attended by all 11-project partner organisations. A detailed list of participants can be found in Annex 3.

Annex 4 present the Abstract published in Volume of Conference "Agriculture for Life, Life for Agriculture".

The tasks of this meeting were to compare the educational strategies and practices, to exchange ideas about technological advancements, and in addition, to develop new contacts and explore opportunities of cooperation. Regarding the STEPS program, a main task has been identified and recorded about how interrelated scientific topics can be combined in the structure of educational programs and how inter-institutional collaboration can improve the quality of the educational program.

Finally, an internal quality procedure was implemented according the Quality Plan D8.1. The main results of the evaluation questionnaire are part of D8.2.

2.1 OPENING SESSION

According to Agenda, Prof. Renata Kongoli, coordinator of STEPS project and Lect. Maria Toader, representative of USAMVB, made a short introduction in the Agenda by presenting the scope and objectives.

Afterwards, Prof. Kongoli gave an overview of current activities in all WPs. It has been highlighted to establish the necessary actions and efforts to finalize the corresponding reports/deliverables in the very next time interval; to establish the next steps and deadlines until the end of the 1st year of STEPS project in order to meet the objectives, aims and workplan activities of the project; to run all the project objectives and activities, in order to anticipate the necessary actions until the end of the project.

Mr Petros Chondros from ReadLab, the leader of WP8-Quality Management, presented a draft report about “Quality Management issues in connection with IAQT members meeting”. The quality assurance of the STEPS program is an important part of the project quality. Internal and external evaluation will be based on the “Standards and Guidelines for Quality Assurance in the European Higher Education Area” (ESG) report, considering the provision and diversity of educational systems, the needs and expectations of students, stakeholders and the society at large. Internal and external evaluation of the STEPS program will be performed by MT and the External Team (ET), respectively. The establishment of systematic (periodic) quality assurance procedures and the development of a relevant culture in partner countries HEIs will be promoted by the Quality Plan.

Quality monitoring and evaluation motivated partners to discuss and review the performance of the project activities, to analyze strengths and weaknesses, plan and apply corrective action in order to improve the quality of tasks and project outputs and outcomes implementation. One of the most important concerns is to develop a culture of quality assurance across the entire partnership by monitoring the relevance, the effectiveness, efficiency, impact and sustainability of project results.

2.2 EXAMPLES OF FOOD CHAINS (“FROM FARM TO FORK”) IN USAMVB

The next step of the STEPS meeting was the visit to Moara Domneasca Training and Experimental Farm to present the potential ideas/topics for the MSc Course on “Sustainable Food Production System”.

Moara Domneasca Training and Experimental Farm belonging to the University of Agronomic Sciences and Veterinary Medicine in Bucharest, is training future professionals in agriculture, horticulture, animal breeding, veterinary medicine, etc.

Examples of food chains, processing agricultural products and quality control of agricultural products and raw materials for processing industries in Moara Domneasca Farm were:

-Food Chain – “Production, Processing and Utilization (Marketing) of Dairy Cows Products” – cheese, cream, fresh milk.

In this sense, it is important to say that the farm brought 24 Montbeliard milking cows.

This is an acknowledged and highly appreciated cattle breed which originates from France and is part of the group of mixed breeds of milk and meat. It is considered the most perfected breed for milk production within the Simmental family.

Montbéliarde is placed in the first rank for its breeding qualities and functional characteristics:

- produces milk that is rich in Casein B, which helps increasing yield and cheese production and is in the top of cheeses with protected origin;
- 24 liters of milk a day;
- 305 lactation days;
- 3.2-3.4% protein;
- 3.4-3.6% fat;
- resistance to mastitis;
- fertility (high percentage of gestation);
- longevity;
- Calving ease;
- good growth rhythm of fattened male.

Calves are very healthy due to the milk produced by cows and they record a short-time weight increase. In addition, the main economic advantage of the species is that the female of this breed can become pregnant at two years of age and can produce up to 13 calves.

Weight varies between 600 kg (the cow) and 1.000 kg (the bull).

All these attributes make the Montbeliard breed both efficient and easy to grow. It responds well to the growth in the mountain area (grazing – summer, hay – winter). At the same time, the breed is characterized by near-perfect to near-perfection, well-extended (previously and subsequently): high and wide grip; well-marked urinary ligament; horizontal planar above the hock, middle sized nipples located in the middle of the quarters and slightly outwardly oriented.

In this context, the business innovation is crucial to the success and sustainability of an organization because it keeps the business up-to-date. Innovation requires creativity, technology, and knowledge acquired by research and development, means a good example for future students to start-up a business in this domain. The applied research within the Dairy Cows of Moara Domneasca is driven by a desire to provide practical, economical, humane, and scientifically-evaluated solutions for commercial dairy farms. This example offer its students to discover, develop and disseminate knowledge that improves the quality of milk and milk processing, the efficiency and profitability of its production on the market. This programme is geared towards: owners and managerial staff of private, public, or cooperative dairy farms, dairy training institute staff, extension workers, staff of advisory services who deal with all management aspects of dairy farms.

-Food Chain – “Production, Processing and Utilization (Marketing) of Fields Crop Production” – wheat, maize, barley, peas, etc.

The total area of the farm is about 250 ha, where: wheat, triticale, peas, sunflower, corn, rape and lucerne crops are cultivated.

Several varieties and hybrids from the most important seed-producing companies are sown precisely to observe their evolution in the southeastern part of the Romanian Plain.

The farm also has 21 ha of land that is used for research activities by some university departments (Technology, Agro-technical, Pasture and Hay, Mechanization, etc.). In this area, teachers, students and researchers can observe and test varieties and hybrids with applications in agricultural practice using the most efficient and modern technologies.

Raw food materials quality is a complex term that includes nutritional, sensory, hygienic-toxicological, and technological points of view. Food has to fulfill all quality requirements, but above all, it has to be safe. High quality products can be produced only from high quality raw materials. One can say that raw materials influence the quality of the end products in the highest degree. Of course, the quality of products is further influenced by the technological procedures used. Quality depends not only on the technological procedure itself, but also on the hygienic level of machinery used, and on the total hygienic situation of the manufacturing surroundings.

Moara Domnească is a complex farm, both from the point of view of cultivated crops and the diversity of agricultural works, which allows students to take part in practical training and research activities.

This enables future engineers and MSc to acquire new, modern agricultural information and techniques that will help them in their chosen career. Also, these activities provide to students advanced knowledge in the field of agricultural systems as well as skills to develop and manage sustainable production systems.

-Food Chain – “Production, Processing and Utilization (Marketing) of Fruit (Orchards) Products” – fresh fruits (sweet cheery, apple), fruit juice (apple); fruits brandy; storage of fruits in own cold store.

The orchard is structured as follows – 45 ha established in 2004 and 20 ha established in 2006, grown with native and foreign fruit species. Cultivar varieties are developed for each fruit and monitoring activities are carried out for each individual variety. The orchards are structured on modules for observing, checking, control and investigation of fruit trees evolution in different vegetation stages.

The orchards consist in:

- Apple trees – 22.5 ha with basic varieties: Florina, Generos, Idared, Starkrimson, Ionathan, Golden delicious and 0.5 ha collection: Granny-smith, Elton, Royal-galla, Romus 3, Mutzu;
- Plum trees – 7 ha with basic varieties: Stanley, Centenar, Annaspath, Agen and a collection varieties on 0.5 ha;
- Apricot trees – especially Dacia, Tudor, Favorit, Excelsior;
- Cherry trees – 5 ha with basic varieties: Germersdorf, Hedelfinger, Stella;
- Walnuts trees – 5 ha with Romanian varieties: Jupânești, Vâlcea.

Apples for processing should be harvested at optimum maturity for good fresh market storage and handling.

The fruit warehouse was inaugurated in 2010 and covers an area of 800 m² (width = 22 m, length = 36 m).

The warehouse includes six cells of 45 m²/cell with a controlled atmosphere, two refrigeration cells with a surface area of 45 m²/cell, a precooling cell with a surface area of 41 m², and a fruit sorting hall with a surface area of 132.35 m². Each cell has a 100 tons capacity.

In addition to the current cells, the warehouse includes a laboratory, an office, a cloakroom, two toilets and a cell-parameter monitoring room.

The entire warehouse was designed to sort and preserve fruit production obtained in the horticultural farm, with the aim of obtaining the best price.

This sector gives the students the possibility to: acquire knowledge of the different physical, chemical and nutritional properties of fruits and vegetable based products; acquire insight in the various chemical and biochemical changes which can occur during processing and which can influence the functional properties of the possible end properties; acquire insight into specific product and process related factors in the processing of fruits and vegetables; know how fruits and vegetables are industrially processed. They learn various ways of designing and monitoring processing chains with the emphasis on how quality, safety, authenticity, etc. of raw materials, processes and products are preserved.

-Food Chain: “Production, Processing and Utilization (Marketing) of Poultry Growing Products” – eggs, growing of duckling and gosling in commercial farms (or family farms), their processing in slaughterhouse for meat.

The basic activity is growth, reproduction and selection of palmipeds. The original biological material is represented by a collection of 11 breeds: 7 duck lines, 4 goose lines and the incubation of their eggs for the selection and preservation of the *unique genetic fund of Romanian palmipeds*.

By participating in these activities, students learn the basic knowledge on production, processing, hygiene and marketing of eggs and duckling and gosling meat, can visualize physiological relations, complexity of quality, and importance of interactions between factors affecting quality. This knowledge

is the basis for identifying the meaning of extensive production systems and quality assurance systems for eggs and meat production and processing.

-New systems/technologies for avoiding/preventing pesticides contamination of the environment and agricultural products/food.

Modern farming relies on the use of machinery (tractors, spraying equipment for crop protection, fertilizer application machines and equipments) to improve operational efficiency, and on natural and synthetic chemicals in order to fight against pests and diseases and to enhance crop growth. These technologies are not only affecting the farmers but also have a negative impact on the environment. Thus, farmers have a dual responsibility: to supply agricultural products with acceptable levels of chemicals, in large enough quantities, at affordable prices, and to minimize any damage caused to the environment.

Topics such as: reducing the deviation for applied plant protection products to field, handling and safe use of treated seeds, keeping a healthy soil and clean water, seed treatment technology, sustainable waste management solutions containing plant protection product residues, along with proper storage, are the theme of the project. The purpose of the platform is to prepare agronomic students and future generations of specialists. Thus, this concept aims at knowledge and sustainable use of plant protection products in line with good environmental practices. As future agronomists, the students learn practical advice on how to properly clean and calibrate the spray equipment, as well as how to manage empty containers and to promote the safe use of pesticides. This system improves the safety of farmers and farm workers when handling and applying crop protection products and supports rural development and the welfare of farming communities.

List of experts and short CVs

Eng. Costel MIHALASCU, Manager of Moara Domneasca Farm graduated the “Sustainable Agriculture” MSc Program of Faculty of Agriculture, USAMV of Bucharest. Its activities involve the coordination, organization and management of the entire activity of the agrozootechnical farm and monitoring of production, transport, storage and processing activities and product capitalization.

Eng. Madalin RADU is agriculture engineer and MSc student at the “Sustainable Agriculture” MSc Program of Faculty of Agriculture, USAMV of Bucharest. Mr. Radu has a good experience in planning, organizing, coordinating and controlling the activities of vegetable farm and agricultural raw material processing units.

Eng. Violeta RADU is agriculture engineer and MSc student at the “Sustainable Agriculture” MSc Program of Faculty of Agriculture, USAMV of Bucharest. She coordinates and organizes activities in

accommodation, feeding, breeding and care of the species / categories of animals on the basis of their biological features.

Eng. Nicoleta OLTENACU is agriculture engineer, MSc and PhD in Agronomy, Faculty of Agriculture, USAMV of Bucharest. Eng. Oltenacu ensure that all products (from the vegetables-fruit category) entering the logistics platform comply with the agreed quality standards. Also, her checks compliance with storage conditions (constant temperature, clear temperature and humidity monitoring program so that the products are kept in optimal conditions) and follows the preparation of the goods before being delivered to the shops or juice processing, in the agreed quality standards.

2.3 ORGANIZATION OF WORKSHOP

In the second day, project partners, teaching staff and students participated at the STEPS workshop with the title: *Modernization of Food Engineering and Food Management Practices - a Priority for a Sustainable Development*.

. The results of the workshop were presented and disseminated in the Conference Program (“Agriculture for life, life of Agriculture” Conference) of the University of Agronomic Sciences and Veterinary Medicine in Bucharest

The workshop had two sections.

The first topic was about the *Final version of the questionnaires and stakeholders of STEPS partners* related to universities partners and the second section was about *Analysis and adaption of relevant master programme in EU countries and worldwide delivered from Programme countries*.

In this sense, Msc. Kebjana Haka (UET), Dr. Enkeleda Berberi (AUT), Mr Uran Raci (UC) and Mr. Blesic Milenko (UNSA) presented the online version of the questionnaires and the interview/Focus group templates which are going to be used for the engagement of the relevant stakeholders during the research phase of the project.. Areas of interest are the needed level of students scientific background, commonly used teaching/learning methodologies and tools, the level at which the methodologies can be adapted and supported by the existing infrastructures and the equipment that will be purchased during the project, the level at which the seminars reach the attendees expectations, etc.

In the second part of the Workshop, Prof. Roman Gheorghe Valentin (USAMVB) made a presentation of 21 relevant Master Programs in Food Chains in Romania, Bulgaria, Hungary, Republic of Moldova, Ukraine, Slovenia, North America, Poland, etc. He made an analysis regarding the course title, syllabus, compulsory and optional or facultative courses, number of credits, and period for realization of dissertation work, the structure of the MSc academic year. These courses were presented in comparison to the future curriculum of Master STEPS courses. The presentation highlighted the importance of **studying food production processes as an integrated system and their relationship to legal, economic,**

risk management and communication aspects of food safety. Also, Prof. Roman pointed out that through the integration of scientific, technological and managerial aspects, the MSc students will learn how to use and manage food resources more efficiently (agriculture, logistics, food analysis, consumers, food management, certification, food innovation), in order to achieve sustainable, secure and safe food supply chains across the globe.

Prof. dr. Michal Lostak (CULS) presented some aspects about **the importance of sustainability of the MSc Courses.** Also, pointed that the STEPS program will give students the opportunity to learn, practice and take on challenges and opportunities that can lead to sustainable development. The program will focus on development of sustainable circular food systems. It recognizes the many actors from the society that have a role in the development of innovative solutions. It was made clear that a STEPS MSc student will have the possibility to work in several linked areas in the Food industry including: primary production, food industry, food retail, service organizations, governmental agencies, to proceed to PhD-studies and working in policy oriented organisations in a national or an international level.

2.4 PAPER PRESENTATION ABOUT STEPS PROJECT IN THE INTERNATIONAL CONFERENCE

Prof.dr. Renata Kongoli, coordinator of the STEPS project, had a presentation in the plenary session of “Agriculture for life, life of Agriculture” International Conference.

The team of AUT (Kongoli Renata, Hoxha Luziana), USAMVB (Roman Gh. Valentin, Toader Maria) and ReadLab (Petros Chondros, Chatzipetrou Vassiliki) prepared a presentation and an abstract with title: *The importance of sustainable food production systems in helping to face today challenges in agricultural production and rural development.* The abstract was published in the Book of Abstracts, Section 1, Agronomy, of the International Conference, the main objective being to promote the STEPS project activities and outcomes.

The abstract is presented in Annex 4.

2.5 EXAMPLES OF TRAINING AND RESEARCH FACILITIES IN USAMVB

During the third day of the meeting, participants were able to visit and analyze the USAMVB education and research infrastructure. Thus, a visit was made to the USAMVB **Soil Fertility Museum (in relation with Environment and Crop Production)** at the Department of Soil Science, Faculty of Agriculture. Prof. Mihalache Mircea (Vice-Rector of USAMVB) **presented the existing Soils Collection from USAMVB patrimony that represents an important teaching material for students.**

Soil Museum was exposed for the first time in 1964, in Romania, during the 8th World Congress of Soil Science held in Bucharest. The Exhibition was officially opened on August 31, 1964.

The soil profiles were collected during 1963 and 1964 period by the modern varnished film method with some requisite adaptation. The collection includes 126 soil profiles, 2 m high (for the mountain soils, the profiles were 1 m high or even less). The soils were grouped as follows:

1. Zonal soils: steppe soils, forest-steppe soils, forest soils in the plains and hills, mountain forest level soils and subalpine and alpine level soils.
2. Intrazonal soils: lithomorfic, hydromorphic, phytohydromorphic and halomorfic soils.

Soils Museum includes a Soil map of Romania at 1:200.000 scale and a collection of minerals, igneous, metamorphic and sedimentary rocks.

Prof. Mihalache emphasized that soil is the core of terrestrial ecosystems, the basic support for life on Earth. In time, the concepts of soil, its role and importance have evolved, passing gradually, in stages, from a naturalist concept to a technician one. At this stage, the role of soil is widely accepted, not only in promoting and developing sustainable agriculture, in maintaining environment quality, in global climate change, in biodiversity conservation, but even in the economy development as a whole. The soil has three main active ecological functions: production of biomass, environmental protection and living environment and the provision of a gene reserve for plant and animal organisms. Three other functions relate to non-agricultural human activities: a physical medium for technical and industrial structures, a source of raw materials (gravel, minerals, etc), and a cultural heritage. As a result of the action and processes caused by environmental factors, soil continuously adapts to changes in natural or artificial environment, recording and storing the main events of this evolution. Physical-geographical conditions of Romania have a great diversity for the main landforms (plains, hills, mountains), resulting in a wide variation of parameters such as altitude, slope, land use types, edaphic units, as well as quantitative and qualitative characteristics.

At the same time, it was possible to observe laboratory equipment that can determine different aspects of soil quality: field soil pre-amplified pH and temperature meter, Soil penetrometer, Soil moisture meter, Suction Lysimeter for Root Level Soil Monitoring Hydrometer Analysis Set.

The next objective of the visit was the **Research Center for the Study of Quality Food Products - HORTINVEST**. Prof. dr. Badulescu Liliana, director of the Centre, presented some aspects regarding: the study of the integrate fruit growing plantation as an enduring ecosystem; the research of new varieties and mother plants suitable for low environmental impact fruit growing; research of the optimization culture technologies in integrated fruit growing plantations; the study of the relationships between plant and environment through a climate change point of view.

This infrastructure of research centre includes 13 research laboratories and a research greenhouse:

- Laboratory of integrated fruit growing
- Laboratory of molecular plant physiology
- Laboratory of diagnosis and plant protection
- Laboratory of plant multiplication
- Laboratory of post-harvest technologies
- Laboratory of agrochemistry
- Laboratory of sensorial analysis
- Laboratory of physico-chemical analysis
- Laboratory of molecular virology
- Laboratory of molecular plant biology
- Laboratory of microscopy and plant anatomy
- Laboratory of plant physiology
- IT Laboratory
- Research Greenhouse

Specific equipment for analysis of raw material of agri-food products are: penetrometer, portable refractometer, system for leaf image analysis, system for root multiple image analysis, digital image analyzer for canopy structure, machine for chopping grass and branches, orchard milling machine with feeler, trailed orchard sprayer, electronic scanning microscope, GC MS with function like "electronic nose", ICP-MS (Inductively coupled plasma mass spectrometer), UPLC system with FLR detector, etc.

Also, GS Junior 454 Sequencing System provides rapid sequencing a fragment of a gene of interest novo sequencing of the entire genome of microbial DNA, sequencing complementary assembly novo transcriptome, data analysis and high performance.

Functional system for proteomics-metabolomics analysis LCMS-QTOF Agilent 5990-6221EN with Chromatographic and Metabolic Pathway software 5989-4895EN is designed to provide advanced analytical analysis of exceptional quality in order to separate, identify, characterize and quantify low molecular weight compounds and biomolecules.

The System for Proteomic - Metabolic Functional Analysis uses chip based on Agilent LCMS-QTOF Technology for the qualitative and quantitative analysis of proteins, small molecules, N-glycans, etc., as well as dedicated software for protein identification, recombinant protein or synthetic peptide testing, molecular profiling, as well as databases for the analysis of pesticide residues and internal metabolites, etc.

GC-MS with head-space and MS/MS detector provide a qualitative and quantitative field of analysis at the minimum ppb level.

In conclusion, protecting the health of humans, animals and plants, at every stage of the production process, it is a key priority of economic and health policies public. Improving living standards through policies and reforms, combined with practical support in terms of capacity, tools, technology, infrastructure and access to basic services should be a priority for national and international efforts for durability conservation of the environment, biodiversity and natural resources.

The next point of USAMVB visit was the **Greenhouses**. These have the role of familiarizing USAMVB students, MSc students or PhD students with new technologies in the field. One of the most interesting crop systems used in these greenhouses is hydroponic culture or perlite bed. Thus, in USAMVB greenhouses encounter tomato, cucumber, pepper, salad or basil crops **all being cultivated without soil**.

Afterwards, the visit continued with the **Dendrological Park**, the **Botanic Garden**, the **Laboratories of Field Crops Quality Product** and the **Field Crops Museum**.

The Field Crop Department was created 162 years ago (1853) at the beginning of the Romanian Agronomical Education in South East part of Romania. Ever since, crops production education passed through various stages of development and organization. This department brings together the disciplines that are the basis of the Field Crop (Technology of plant cultivation): cereals, grain leguminous, technical crops, medicinal and aromatic crops, fodder crops, pastures and meadows. In 1898, the first treaty on Field Crop – Phytotechnics, written by Prof. George Maior, appeared.

The Field Crop Museum was established in 1959 by Prof. Nicolae Zamfirescu, with an area of 70 m². The purpose of this Museum is to serve as a learning resource for all USAMVB students, teaching staff and others. It includes many old and commercial crops grown in Romania. The crops are represented by only one type or varieties. Some crops, such as wheat or corn, are represented by a series of varieties demonstrating the natural variability of the crop as well as man's influence on the crop over years.

This museum has a collection of more than 50 species of economic value grouped in accordance with their botanical characteristics and yield destination and it covers the whole range of species of the Field Crops Department. Dried plants, seeds, spikes, inflorescences, parts of plants and a range of manufactured products, old or new varieties and hybrids are included in the museum collection.

At the same time are presented the results obtained over time by the Field Crop Department regarding the ecology and plant physiology as well as details about cultivation technology and growing factors. The collection includes the latest achievements in the crop field domain.

Collections represent a massive store of information on biological diversity and it is indispensable to areas of scientific research such as biodiversity studies, systematic, ecology and conservation of agricultural products.

Also, participants had the possibility to see the equipment from the Quality Laboratory of Field Crops Production: spectrophotometers (Inframatic 9200, Instalab 600) for the analysis of crop seeds chemical composition (moisture, carbohydrates, starch, ash, gluten, proteins, oil, fibers, etc), Soxhlet equipment for determination of oil content for different seeds (sunflower, rape, etc.), Falling Number equipment for bakery wheat, Kjeldhal equipment for the analysis of protein content, the climatic chamber, etc.

Biodiversity conservation is a major part of the solution for sustained economic growth, helping to ensure water supplies, raw materials for agricultural development, health, construction and new commercial products. Developing the capacity to understand, appreciate, explain and conserve biodiversity is crucial for educational and training program of students. The conservation of plant diversity, botanical expertise is also required in order to address a number of current and future grand challenges and issues that society is facing today. These include: climate change mitigation; land management and wildlife habitat restoration; understanding the provision of ecosystem services; and the management and control of invasive species. This is a good opportunity for students to learn about sustainability life. Food products have a crucial significance for human health, the economic and social development of society, and the sustainable development of nature and our living environment. The key principles guiding operations in the food production field include environmental and nutritional consciousness, life-cycle thinking, and responsibility for human well-being and the diversity of nature.

List of experts and short CVs

Dr. Mircea MIHALACHE is Professor of the Faculty of Agriculture, Soil Sciences Department, member of the Romanian Academy of Agriculture and Forestry Sciences, Vice Rector of USAMVB and Expert of the Romanian Agency for Quality Assurance in Higher Education. Also, prof. Mihalache has experience in soil quality analysis, prediction, prevention and remediation of soil degradation and land evaluation.

Prof. Liliana BADULESCU has a horticulture and biochemist engineer Diploma, and PhD in Horticulture. Prof. Badulescu is responsible of Research Center for the Study of Agro-Food Products Quality. Also, she is expert in horticulture production. The research center emerged to ensure a good quality control of agricultural and food products throughout the production flow, to promote the

biodiversity and environmental protection, as well as a higher quality of food products for consumer needs and expectations.

3 . CONCLUSIONS AND RECOMMENDATIONS

As anticipated in the declared objectives of the study visit, the USAMVB visited places, facilities and labs, offered the opportunity to the participants to experience on their own the USAMVB organizational management, the educational strategies and practices employed.

The participants had the chance to visit several USAMVB places, namely:

- The Moara Domneasca Farm where procedures of Production, Processing and Utilization (Marketing) were demonstrated for a diverse range of products i.e. dairy cow products, field crop production products, Fruit (Orchards) products and Poultry growing products.
- The Soil Fertility Museum where the existing Soils collection constitute an important teaching material for the students and the Field Crop Museum.
- The Research Center for the study of Food Products Quality and the Laboratory Field Crops Quality where the participants had the chance to walk through an impressive set of specialised and synchronous devices. The visited labs provided insights and ideas that could be incorporated to STEPS labs e.g. design and flexible use of space, maintaining student safety during lab experiences, methodologies for understanding the complexity and ambiguity of empirical work, etc.
- The USAMVB Greenhouses which serve as a main point for MSc and PhD students towards familiarization with new technologies and innovative crop systems methodologies.

The three-day study visit organized within USAMVB infrastructures, contributed also, as anticipated, to the design of the STEPS Program through exchange of insights and experiences, knowledge transfer with a view to identify how interrelated scientific topics can be combined under a unified Master Program and assess the implementation of relevant MSc courses in Romania and other European Areas.

More specifically, the key **design points** addressed were:

- Identification of basic **STEPS program structure** taking into consideration critical master program design aspects (120 ECTS, lab courses and equipment finalization, coverage of related disciplines in terms of percentage, elaboration on possible risks always taking into consideration the local context and legal frameworks).
- Provide a roadmap regarding the **STEPS Master courses** description through a well-defined Master Course description template (Deliverable 2.4)

- The term **sustainability** is a key factor. This should be incorporated in the Master Program either as a horizontal aspect for most of the courses or even to develop “sustainable-specific” learning outcomes and dedicated courses.

Finally, as a part of the STEPS internal quality procedure the participants were asked to assess the USAMVB study visit in terms of:

- Preparations made for the organizational of the Study visit including Agenda items.
- Venues and facilities.
- Logistics and accommodation.
- Quality of study visit tours and information presented.
- Relation of visited places to the STEPS objectives.

The following figure summarizes the responses of the participants. In general, the partnership had a very good opportunity to make warm discussions and debates with a view to decision making, elaborate on ways of cooperation and participation, identify possible risks and milestones - especially related to accreditation procedures - and establish a fully working environment with positive attitude and willingness to contribute to problem solutions.

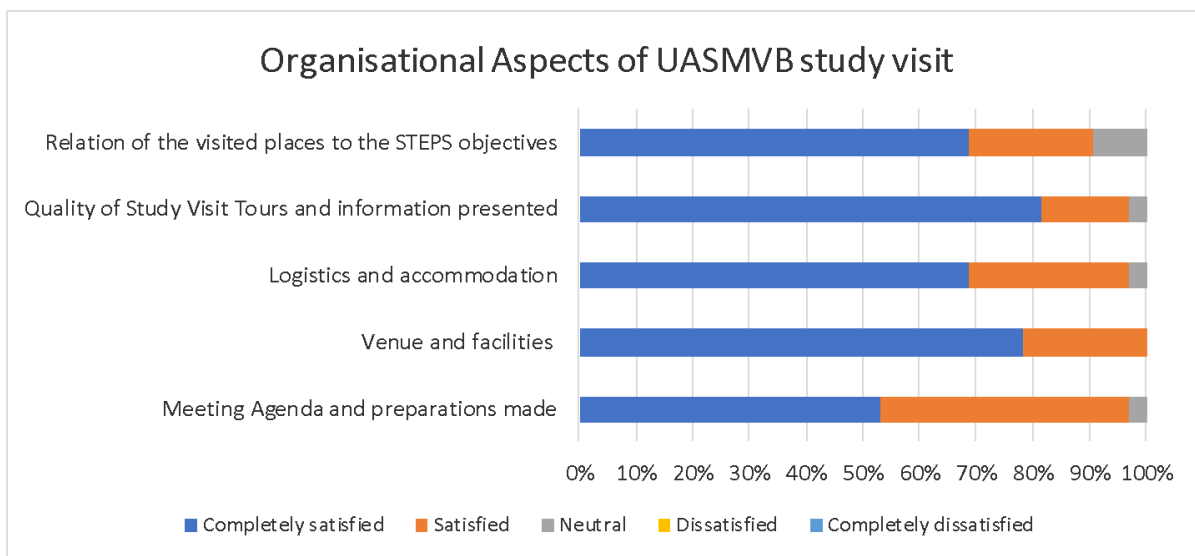


Figure 1 Participants level of satisfaction

The recommendations from participants on how to improve learning experience of next STEPS meetings are listed below:

- Leave some time for different type of meeting rooms, e.g. roundtables in order to encourage participation of all partners.
- More preparation time on agenda structure with the collaboration of all partners.

- Enhance the decision-making progress with clear roles and milestones.
- The provision of more information in advance on participants (background and expectations of the study visit) would might have allowed a more efficient scheduling while reducing the content of the visit.

The full internal quality report is part of D8.2.

4. Annexes

Annex 1. Program of Meeting Agenda

Annex 2. Program of “*International Conference Agriculture for life, life for Agriculture*”

Annex 3. List of participants

Annex 4. Publication abstract

Annex 5. Presentations of sessions

ANNEX 1. AGENDA OF STUDY VISIT IN USAMVB
Wednesday, 5th June 2019, Room 134, 3rd floor, Building A

09:00 - 09:30	Welcome <i>[USAMVB]</i> Agenda overview-goal and expected outcomes of the meeting <i>[Prof. Dr. Renata Kongoli, Project Manager]</i> <i>[Dr. Maria Toader, USAMVB representative]</i>
09:30 – 10:00	Overview of current activities in all WPs <i>[Prof.Dr. Renata Kongoli, Project Manager]</i>
10:00 – 10:30	Quality management issues in connection to IAQT members meeting and drafting Report <i>[ReadLab]</i>
10:30	Departure to "Moara Domneasca" Training and Experimental Farm of the University of Agronomic Sciences and Veterinary Medicine of Bucharest (near Bucharest).
11:30 -14:30	Welcome and presentation of the "Moara Domneasca" Experimental Farm. Examples of production and processing of vegetal and animal raw materials
14:30 - 16:00	Lunch in "Moara Domneasca" Experimental Farm
16:00	Departure to University of Agronomic Sciences and Veterinary Medicine of Bucharest Campus

Thursday, 6th June 2019, Room 134, 3rd floor, Building A

9:00 - 10:00	Project management issues Documentation archive <i>[Prof.Dr. Renata Kongoli, Project Manager]</i>
10:00 – 11:00	<i>STEPS Project Workshop - "Modernisation of Food Engineering and Food Management Practices - a Priority for a Sustainable Development" in connection with International Conference "Agriculture for Life, Life for Agriculture", organized by University of Agronomic Sciences and Veterinary Medicine of Bucharest, Faculty of Agriculture</i> <u>First topic of the Workshop</u> Discussion on final version of the questionnaires and stakeholders list from all partners related to their Universities and their region <i>[Msc. Kebjana Haka (UET), Dr. Enkeleda Berberi (AUT) for the case of Albania]</i> <i>[UC, for the case of Kosovo]</i> <i>[Blesic Milenko, UNSA, for the case of Bosnia and Herzegovina]</i>
11:00 – 11:30	Coffee break
11:30-13:00	<u>Second topic of the Workshop</u> Analysis and adaption of relevant master programme in EU countries and worldwide delivered from Programme countries <i>[Prof. Dr. Gheorghe Valentin Roman, USAMVB]</i> <i>[Prof. Dr. Michal Lostak, CULS]</i>
13:00 - 14:00	Lunch

14:00 - 16:30	Participation in the First Session of the International Conference "Agriculture for Life, Life for Agriculture", Agronomy Section. Presentation of STEPS project structure and main objectives and outcome of the project in accordance with the Dissemination Strategy
16:30 - 17:00	Coffee break
17:00 - 18:00	WP1: Analysis and Discussion on the mechanism for the continues stakeholders input. Activities and expected outcomes in detail <i>[EUT]</i>
20:00	Social evening <i>[Jadoo Restaurant, Strada Nicolae Racotă, Nr. 3, București]</i>

Friday, 7th June 2019, Room 134, 3rd floor, Building A

9:00 - 9:15	Agenda overview <i>[Prof. Dr. Renata Kongoli, Project Manager]</i> <i>[Dr.Maria Toader USAMVB representative]</i>
09:15 – 13:00	Visit of USAMVB training and research facilities (laboratories, Field Crops Museum, Soil Sciences Museum, didactic collection of fruits trees plantation and vineyard, vegetables greenhouse, field crops collection, Botanical Garden, Rosarium, etc) Specific equipments for analysis of raw material of agri-food products
13:00 – 14:00	Lunch
14:00 - 15:00	Exchange of experience Accreditation of Master Programs in Romania - Case study <i>[Prof.dr. Ion Viorel, USAMVB]</i> Accreditation <i>[Adnan Kreso, MESCS USK]</i>
15:00-15:30	Project management issues <i>Finance-overview for each institution, planning of expenditures for the first period (* equipment, tendering organization, 1st transfer and commission statement). Guidelines for reporting. Web site activities - comments, discussion</i> <i>[Prof.Dr. Renata Kongoli, Project Manager]</i>
15:30 - 15:45	Coffee break
15:45 - 16:15	WP2: Design of STEP master structure <i>[AUT, EUT, for the case of Albania]</i> <i>[UHZ, UC, for the case of Kosovo]</i> <i>[UNSA,UNBI for the case of Bosnia and Herzegovina]</i>
16:15- 17:15	Exchange insights and disscusion on STEPS master programe design and courses structure. <i>[All participants]</i>

17:15-17:40	Next meetings planning time schedule, content, partners tasks, assignment of partner responsibilities. <i>[Prof. Dr. Renata Kongoli, Project manager]</i>
17:40 – 18:00	Concluding remarks <i>[Prof. Dr. Renata Kongoli, Project manager]</i> <i>[Dr.Maria Toader USAMVB representative]</i>

Saturday, 8th June 2019

Departures of STEPS study visit participants

ANNEX 2. PROGRAM OF INTERNATIONAL CONFERENCE AGRICULTURE FOR LIFE, LIFE FOR AGRICULTURE

More details at: <http://agricultureforlife.usamv.ro/index.php/program>



Section 1 **AGRONOMY**

SECTION 1 – AGRONOMY

Agronomy Section Chairman:

Prof. Dr. Viorel ION

Agronomy Section Raporteur:

Prof. Dr. Mircea MIHALACHE

Prof. Dr. Costică CIONTU

THURSDAY, 6TH OF JUNE, 2019

*Building A - Faculty of Agriculture
Ground Floor, P.S. Aurelian Aula Magna*

14:30 – 14:40	<i>Conference Section Opening</i>
14:40 – 16:30	<i>Session 1</i>
16:30 – 17:00	<i>Coffee break - Ground Floor, Central Hall</i>
17:00 – 18:00	<i>Posters display and viewing – Ground Floor, Soil Sciences; First Floor</i>
19:30 – 21:30	<i>Official Gala Dinner – Cultural Event (Ceres Restaurant, USAMV Campus)</i>

SESSION 1

Time: 14:40 – 16:30

*Session Moderators: Prof. Dr. Viorel ION
Assoc. Prof. Dr. Lenuta Iuliana EPURE*

Time	Authors	Paper Title
14:40 – 15:00	Renata KONGOLI, Luziana HOXHA, Gheorghe Valentin ROMAN, Maria TOADER, Petros CHONDROS, Vassiliki CHATZIPETROU	The importance of sustainable food production systems in helping to face today challenges in agricultural production and rural development
15:00 – 15:20	Daniel ALEXANDRU, Elena MATEESCU, Rodica TUDOR, Ilie LEONARD	Analysis of agroclimatic resources in Romania in the current and foreseeable climate change - concept and methodology of approaching
15:20 – 15:40	Dumitru MANOLE, Vasile JINGA, Marga GRĂDILĂ, Ioan RADU, Stefan IORDACHE, Sergiu SOARE	Edition on sunflower crop – Romanian technology under climate change conditions in Dobrogea

WORKSHOPS WITHIN THE CONFERENCE		
June 6 10:00-12:30	Modernisation of Food Engineering and Food Management Practices - a Priority for Sustainable Development	Faculty of Agriculture, 3rd Floor, Gheorghe Ionescu-Șișești Amphitheatre
June 6 14:30-17:30	EHEDG: Hygienic Design for a Sustainable Food Industry	Faculty of Biotechnology, 2nd Floor, A2 Amphitheatre
June 7 14:30-18:00	Professional Standards and Quality of Landscaping Education, 7th edition	Faculty of Horticulture, 2nd Floor, Attic, Lecture Hall
June 7 16:30-18:00	Eco-Fruit for a Better Life	Faculty of Horticulture, 1st Floor, Room 13

ANNEX 3. LIST OF PARTICIPANTS**Meeting in Bucharest Agenda**

**University of Agronomic Sciences and Veterinary Medicine of Bucharest (USAMVB),
Bucharest,
4-8 June 2019
Meeting language: English**

LIST OF PARTICIPANTS**Agricultural University of Tirana (AUT), Albania [Leader]**

1. Prof. Dr. Renata Kongoli
2. Prof. Asoc. Anila Kopali
3. Dr. Enkeleda Berberi

Czech University of Life Sciences Prague (CULS), Czech Republic

4. Prof. Michal Lošťák
5. Dr. Jakub Husák
6. Dr. Petra Šánová

Technological Educational Institute of Sterea Ellada (TEISTE), Greece

7. Mr. Ioannis Tsoulfas
8. Mrs. Aikaterini Marinagi
9. Mr. Panagiotis Trivellas

Research Innovation and Development Lab Private Company (ReadLab), Greece

10. Mr. Petros Chondros
11. Mr. Yannis Mouzakitis

European University of Tirana (UET), Albania

12. Prof. Dr. Elvin Meka
13. Prof. Dr. Arlinda Ymeraj
14. Dr. Irina Canco
15. Msc. Kebjana Haka

University "Haxhi Zeka" (UHZ), Kosovo

16. Prof. Asoc. Dr. Nexhdet Shala
17. Prof. Asoc. Dr. Arsim Elshani
18. Prof. Asoc. Dr. Ibrahim Hoxha
19. Prof. Asoc. Dr. Agim Rysha

Universum College (UC), Kosovo

20. Mr. Uran Raci
21. Mr. Ardit Berisha
22. Mr. Florent Bacaliu

University of Bihac (UNBI), Bosnia and Herzegovina

23. Emir Mujić
24. Jasmina Ibrahimpašić

25. Suzana Jahić
26. Halid Makić

University of Sarajevo (UNSA), Bosnia and Herzegovina

27. Prof. Dr. Sabahudin Bajramovic
28. Blesic Milenko
29. Nermina Spaho
30. Emir Becirovic

Ministry of Education, Science, Culture and Sport of Una-Sana Canton (MESCS USK), Bosnia and Herzegovina

31. Adnan Kreso
32. Una Redžić

University of Agronomic Sciences and Veterinary Medicine of Bucharest (USAMVB), Romania

33. Lect. Dr. Maria Toader
34. Prof. Dr. Gheorghe Valentin Roman
35. Prof. Dr. Viorel Ion
36. Assoc. Prof. dr. Lenuta Iuliana Epure
37. Prof. dr. Mircea Mihalache
38. Lect. dr. Mirela Elena Dusa
39. Lect. dr. Adrian Gheorghe Basa
40. Assoc. Prof. dr. Leonard Ilie
41. PhD Student Paula Ionela Nastase
42. Prof. dr. Georgeta Temocico
43. Ec. Nistor Stefania

ANNEX 4. ABSTRACT

UNIVERSITY OF AGRONOMIC SCIENCES
AND VETERINARY MEDICINE OF BUCHAREST

FACULTY OF AGRICULTURE

International Conference
"Agriculture for Life, Life for Agriculture"

BOOK OF ABSTRACTS

SECTION 1

AGRONOMY

2019
BUCHAREST

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THE INTERNATIONAL CONFERENCE
"AGRICULTURE FOR LIFE, LIFE FOR AGRICULTURE"

**THE IMPORTANCE OF SUSTAINABLE FOOD
PRODUCTION SYSTEMS IN HELPING TO FACE TODAY
CHALLENGES IN AGRICULTURAL PRODUCTION
AND RURAL DEVELOPMENT**

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Abstract

Today consumers are being more aware for the food they consume, as an important factor affecting their health, but what is less known is the impact of food producing and consuming on the world's resources. This work aimed to present the challenges facing today agricultural production and rural development, and the need for cooperative actions on modernization of food engineering and food management practices. Structural impediments, traditional practices and low-level of education of people living in rural areas undermine the restructure of the sector, which is still characterized by weak planning, out-dated technology, low productivity, competitiveness and income. The diversification of rural sector along with transition towards a knowledge-based agriculture, mostly related to the organic agriculture production, post-harvest processes, environmental footprints, supply chain management, industrial ecology, etc., may be achieved through interventions at all levels, that support the implementation of national policies and priorities related to agriculture restructure, rural development, food safety and security and sustainable food production systems. Furthermore, sustainable food production systems, may offer opportunities for economic benefits, creation of jobs, enhanced food safety and security. Related to above challenges, is addressed the need for creation of a new educational program aligned to the needs of the labour market and society at HEIs in Western Balkan countries. Based on above in the framework of Erasmus+ Project STEPS: "MSc in Sustainable Food Production Systems", funded by EU Commission, a new master program is being developed in Albania, Kosovo, and Bosnia and Herzegovina. This modern educational program will have an important role in capacity building of HEIs, as well as offering highly educated engineers and manager, able to tackle the challenges of modern food production systems, restructure of the sector by exploiting the benefits of the institutional frameworks and policies on the road to social, economic growth and integration with the EU.

Key words: agriculture, food safety, sustainable food production systems.