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STRATEGIC RESEARCH AND INNOVATION AGENDA FOR TRADITIONAL FOOD INDUSTRY: CASE OF TRADITIONAL SWEET FRUIT SECTOR IN SERBIA

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Abstract: *Small-scale producers of traditional food across the Europe are nowadays facing the challenges of having to meet many existing regulations and to acquire new knowledge on improved technological solutions related to their products, while at the same time preserving the tradition and the authenticity of their products. The research presented in this paper was aimed to detect problems and collect opinions from all stakeholders from this part of agro-food sector. The other aim was to provide business-related solutions for knowledge transfer, and concrete suggestions to enhance the business and marketing aspects of those traditional products to make producers more competitive or to keep them in the market at all. Project also aims to interlink European Research Sector and Traditional Food Industry on grain, fish, vegetables, mushrooms, sweet fruits and olives to improve transfer of knowledge for innovation. The expected result of the project was the establishment of the knowledge transfer network through the organization of different training and stakeholder workshops throughout the Europe. In this paper is showing the final deliverable of this project which is Strategic Research and Innovation Agenda (SRIA) for Traditional Food Industry. Serbia is involved in formation of sub-network "Traditional Products of Fruits". Raspberry and plum are recognized as the most important traditional fruits. Information obtained through the project activities will be valuable for the creation of the National and European Strategic Research and Innovation Agenda for traditional foods.*

Keywords: *traditional sweet fruits, raspberry, plum, SRIA, TRAFOON, innovation, knowledge transfer, Serbia.*

1. TRADITIONAL FOOD IN SERBIA

Research presented in this paper is partly realised under the project: "Traditional Food Network to improve the transfer of knowledge for innovation" (TRAFOON, FP7 project, Network for the transfer of knowledge on traditional foods to SMEs, 2014-2016).

TRAFOON defines *Traditional Food* as: "*Food which is produced according the gastronomic heritage by at least three generations, which shows specific feature(s) that distinguish it clearly from other similar products of the same category in terms of the use of 'traditional ingredients' (raw materials of primary products) or 'traditional composition' or 'traditional type of production and/or processing method'. Furthermore, it is associated with a certain local area, region or country.*" [1]

Main objectives of the project are:

1) Improvements in technology transfer to SMEs producing and processing traditional foods:
- for improved food quality, safety and environmental performance;
- stabilized production protocols;
- correct use of IPR, European food law, use of labels, marketing, product development strategies.

2) Development of Strategic Research and Innovation Agenda (SRIA) for traditional foods responding to the needs of all stakeholders; and
3) Stimulation of entrepreneurship among food researchers, commercial take-up of food R&D results, and entrepreneurial networking.

Project partners from Serbia within TRAFOON consortia have selected two fruits as traditional food from Serbia: raspberry and plum.

Raspberry

Raspberries are one of Serbia's best known and most widely exported fruits. Serbia is one of the biggest producers and exporters of raspberries in the world. They are prized worldwide for their colour, unique taste and firmness. Between 90-95% of Serbian raspberries is the North American Willamette variety from Oregon [2].

During the recent years in Serbia, average annual production of raspberry was about 80.000 t which is 5,5% of total production of fruit. Over 90% of raspberry produced is being frozen and exported and the rest is being sold fresh or made into other products [3].

The Republic of Serbia occupies a high position in value of produced quantities of raspberries, in comparison with world countries producers of raspberries. In 2012, it was fourth, in 2011 second (238287 thousand dollars) and 2010 took the fourth place. In the export of agricultural and food products, 10.84% is the share of raspberries in the period 2004 to 2011. Raspberry exports in the mentioned period reached a maximum in 2011 and amounted 210 million dollars. The biggest competitive battle between manufacturers, Republic of Serbia and Polish, are heading to the markets of Germany, France, Austria and Belgium [4].

Plum

Plum is the most common species of fruit trees in Serbia, and has the greatest economic importance. However, it the most cultivated one variety - Stanley. In addition to large and versatile use value, good quality and high rankers, the distribution has contributed and easy propagation of shoots and selfing.

According to the number of plum trees and the production of 40,822,000 from 581,874 tons in 2011 which represents a drop in the produced relative to 662,631 tonnes per year in 2009, when Serbia was second in the world, following the United States, Romania, Turkey, Spain, etc. [5]

Serbia holds second place, after China, with 158.000 ha under plum trees, which is 6.24% of total world area under plum. In renewed Serbian export, fruit participate with 17%, plum participate with 10% in fresh fruit export, and less than 1% in agricutural export in total [6].

2. SRIA FOR TRADITIONAL FRUITS IN SERBIA

At the beginning of the project, the needs of traditional fruits SMEs in Serbia have been investigated and collected (Inventory of Needs, IoN). With this purpose, four questionnaires, one for each traditional food category, were developed including issues from the entire food production chain, but also questions related to food safety and quality, and entrepreneurship & legal aspects. After extract the needs, SWOT analyses of the results for traditional fruits in Serbia were carried out with the following findings:

Strengths:
- Abundant raw material base for innovation
- Great potential of research sector in Serbia and great participation of research in food area
- Present and forthcoming investments in research infrastructure
- Developed international collaboration
- Patent and technical solutions database

Weaknesses:
- Absence of organized interconnecting (horizontal and vertical) in large systems and insufficient educated human resource for engagement
- Lack of applicable innovation on large number of subjects
- Lack of trust in protection and exploitation of intellectual goods and ignorance of the rules in protection system
- Weak interaction between industries and academic institutions as well as lack of innovation capacity and researchers' motivation for improving research in agriculture and food production
- Low networking among and inside research institutions

Opportunities:
- Strategic development of Serbia in the area of food and agriculture
- Branding of traditional and new products
- Financial opportunities in international pre-accession funds
- Increasing consumers' awareness on food products with additional value
- Building clusters and networking among subjects of innovation activity

Threats:
- Absence of strategic planning of innovation activity
- Absence of standardization and harmonization of legal regulations
- High regional competition and loss of existing markets
- Insufficient presence of institutions for technology and innovation transfer
- Unstable environment for investment

TRAFOON partners, relevant SME associations and external specialist has analyzed during the multi-stakeholder workshops (MSWs) the results of IoN for the traditional fruits in Serbia with the main objectives: 1) prioritizing the needs collected in the IoN, 2) matching the needs identified in the IoN with the available transferable innovations identified by partners, 3) identifying those needs which do not require in depth research and may be solved without the development of new research projects, finding the solutions within the consortium experts, external scientists, or in collaboration with ongoing projects and 4) identifying those needs requiring new scientific approaches to be included as recommended research lines/initiatives in the Strategic Research and Innovation Agenda (SRIA).

During 2015 and 2016, based on the results of MSWs, four Training Workshops (TWs) for SMEs have been held in Serbia on topic "Innovation in production and processing of raspberry and plume", attended by number of participants, including representatives of SMEs, individual producers, Faculties, Institutes, Innovation center, Science and Technology Park, Intellectual Property Office, Clusters, Laboratory of Food Control, media and press. Exchange of opinions, discussions and presentations has ser-

ved as crucial input for generation of ideas and proposals for improvement innovation and knowledge transfer in traditional sweet fruits sector in Serbia. In addition, questionnaire based survey is conducted for assessment of state of the art in traditional sweet fruits production, processing and distribution in the view to deliver relevant information for innovation in food supply chain and provide basis for proposal of the most important steps which should be undertaken to improve production of traditional sweet fruits in Serbia. Several important topics were recognized as very important for improvement of fruit sector: continual educations of all actors in food chain, better communication with local and national authorities, more involvement of academic community in creation and transfer of novel knowledge, straightening of associations and development of Innovation Strategy. During the TWs, the technological, legal, or business-related solutions for these previously identified needs/demands have been transferred to SMEs.

As additional knowledge transfer tool, a multi-lingual online Information Shop (www.trafoon.org) containing the information gathered and implemented within the TRAFOON network has been created. This free access online tool includes information (PDF files, e-books, audio and video files etc.) about innovations in primary production, processing and marketing of traditional food using regional raw materials in different languages.

Based on the detected innovation gaps and the identified needs that require further research, and complemented by SWOT analysis of the demands of SMEs during the MSWs, TRAFOON has developed national SRIA for the traditional fruits in Serbia in order to inform national policy makers about future research need of traditional fruits SMEs. Additionally, a general SRIA (no product-specific) for traditional foods at European level has been developed in collaboration with the FP7 TRADEIT project. This joint TRAFOON-TRADEIT SRIA will inform the European Commission and European policy makers about future research answering the identified needs of SMEs in Europe.

Major topics for national SRIA for traditional fruits in Serbia, are presented by the rank of the evaluated importance, are:

Primary production:
1. faster and better implementation of food safety management systems
2. development of multi resistant varieties for organic production
3. implementation of technical solutions for controlling pest and diseases management in organic and conventional production
4. cost-efficient implementation of water management system
5. establishment and development of certified planting material
6. breeding issue trade-off between productivity and quality

Processing (technology, energy, etc.):
1. better implementation of waste management and development of value-added by-products
2. adaptation of the processing technology in order to lower the energy consumption
3. development and implementation of modern processing technology
4. modernization of storage technology of raw materials and products
5. implementation of modern packaging to enhance shelf life, to reduce waste and to improve the post-harvest technology (storage)

Product (labelling, health/food safety, etc.):
1. reducing the diversity in forms, materials and numbers of packaging by raising consumers awareness (communicate on local environment, tradition and regional trademark)
2. producer targeted dissemination of knowledge on health, nutritional properties of their products
3. faster and better implementation of food safety management systems

Business (marketing, organization, consumers, regulations, etc.):
1. implementation, harmonization and creation of laws and regulation policy
2. simplification of the procedure leading to obtain certification
3. new business model (supply chain actor's balance)
4. building associations, clusters and food technology platform
5. increase the awareness on traditional food through continuous education and communication
6. branding of traditional products
7. constant improvement of policy conditions for labour management and organization of support.

3. CONCLUDING REMARKS

In addition to the development of the national Strategic Research and Innovation Agenda (SRIA) for traditional fruits in Serbia, all participants (stakeholders, decision makers, chamber of commerce, producers – SMEs, researchers, etc.) are discussed idea of establishment of the national technology platform in the agro food sector in Serbia.

Technology Platforms are industry-led stakeholder fora that develop short to long-term research and innovation agendas and roadmaps for action at EU and national level to be supported by both private and public funding. European Technology Platforms (ETPs) are policy instrument of the European Union, whose main goal is raising global competitiveness and building leadership positions of European economies. This will be achieved using new approach in linking science and industry – introducing 'bottom up' concept which brings industry in the position of leader that initiates and controls the process. ETPs span a wide range of technology areas and have to date played an important role by developing joint visions, setting Strategic Research and Innovation Agendas and contributing to the definition of the research priorities including those un-

der the Research Framework Programmes. Their aim was to contribute to increasing synergies between different research actors, ultimately enhancing European competitiveness.

Representatives from SMEs, higher education and research institutions, included in workshops, surveys and other research and evaluations within this project are asked whether they are willing to join initiative to create technology platform in the agro food sector in Serbia: National technology platform "Food for life". Big majority – 93.85% has expressed their willingness to join this initiative; no matter how big is their knowledge or ignorance about technology platforms.

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