



“Development of an innovative network for the promotion of extroversion of agro-food companies in Adriatic – Ionian Area”



Best Practices Guide

This report was prepared for
Network of the Insular Chambers of Commerce and Industry of the European Union (Insuleur)
and submitted to the “INNOVAGRO” Project by:



This document been produced with the financial assistance of the European Union. The content of the document is the sole responsibility of Insuleur and can under no circumstances be regarded as reflecting the position of the European Union and/or ADRIATIC-IONIAN Programme authorities”.

© Copyright by the “Innovagro” project

The “INNOVAGRO” partnership consists of:

| Name | Role | Country |
|--|--------------|----------|
| Chania Chamber of Commerce and Industry | Lead Partner | Greece |
| Region of Crete | Partner 2 | Greece |
| Technical University of Crete | Partner 3 | Greece |
| Network of the Insular Chambers of Commerce and Industry of the European Union | Partner 4 | Greece |
| Province of Potenza | Partner 5 | Italy |
| E-institute, institute for comprehensive development solutions | Partner 6 | Slovenia |
| Italian Confederation of Agriculture | Partner 7 | Italy |
| Union of Chambers of Commerce and Industry of Albania | Partner 8 | Albania |
| Chamber of Commerce and Industry of Serbia | Partner 9 | Serbia |
| University of Basilicata | Partner 10 | Italy |

History Changes

| Version Number | Date of Issue | Document Title | Author(s) | Controller |
|----------------|---------------|----------------------|----------------|------------|
| 1 | 31/03/2019 | Best practices guide | C.Papachristou | G.Asonitis |

Table of Contents

| | | |
|------|---|----|
| 1 | SCOPE AND OBJECTIVES..... | 3 |
| 2 | BEST PRACTICE GUIDE METHODOLOGY | 4 |
| 3 | BEST PRACTICE CASES REJECTED | 6 |
| 3.1 | Case 1: Organic Products Cluster | 6 |
| 3.2 | Case 2: AVOEL..... | 7 |
| 3.3 | Case 3: KASELL..... | 7 |
| 3.4 | Case 4: Corfu Beer | 8 |
| 3.5 | Case 5: Caseificio Lioi SAS..... | 9 |
| 3.6 | Case 6: Birra Morena..... | 10 |
| 3.7 | Case 7: Cantine Strapellum | 10 |
| 3.8 | Case 8: La Chiocciola | 11 |
| 3.9 | Case 9: Melagico..... | 12 |
| 3.10 | Case 10: PULCAP..... | 13 |
| 4 | BEST PRACTICE CASES SELECTED | 14 |
| 4.1 | ALBANIA Best Case 1 Questionnaire: Geruja wine | 14 |
| 4.2 | ALBANIA Best Case 2 Questionnaire: Minzi | 14 |
| 4.3 | GREECE Best Practice Case 3 Questionnaire: Wines of Crete..... | 15 |
| 4.4 | GREECE Best Practice Case 4 Questionnaire: Terra Thessalia | 17 |
| 4.5 | ITALY Best Practice Case 5: Lucanapa | 19 |
| 4.6 | ITALY Best Practice Case 6: Bioeconomy Cluster | 20 |
| 4.7 | SERBIA Best Practice Case 7: Biofermented Beetroot Juice | 21 |
| 4.8 | SERBIA Best Practice Case 8: KABINET | 21 |
| 4.9 | SLOVENIA Best Practice Case 9: Nasa Superfood Hrana..... | 22 |
| 4.10 | SLOVENIA Best Practice Case 10: PONICA..... | 23 |
| 5 | INNOVATIVE PRODUCTION, PROMOTION AND VALUE CREATION (LITERATURE)..... | 25 |
| 6 | CONCLUSIVE REPORT AND GUIDELINES..... | 27 |
| 7 | REFERENCES..... | 28 |

1 Scope and Objectives

In the context of the INNOVAGRO project and in order to strengthen up the networking, the cooperation and the clustering within the project, the deliverables include as a specific deliverable a presentation of guidelines based on best practices under the name, “best practices guide” on innovative production of agro-food products and their promotion to the international markets.

This deliverable was allocated to be assumed by Insuleur [*Network of the Insular Chamber of Commerce and Industry of the European Union*] and fulfills the relevant objectives. For the implementation of the deliverable Insuleur and its external expertise, ANETEK, invited all involved partners to participate. According to the Application Form, involved partners were: a) Region of Crete, b) Insuleur [*Network of the Insular Chamber of Commerce and Industry of the European Union*], c) Province of Potenza, d) E-Institute, e) Italian Confederation of Agriculture, f) Union of Chambers of Commerce and Industry of Albania, g) Chamber of Commerce and Industry of Serbia and h) University of Basilicata.

In fact a best practice questionnaire was developed by Insuleur [*Network of the Insular Chamber of Commerce and Industry of the European Union*] and sent to all involved partners for their contribution which was consisting of best practice questionnaire replies that are proposed in a selection process. The selected ones will be the backbone of the best practices guide. As a result the target of developing a best practices guide is attained by Insuleur (Network Of the Insular Chamber of Commerce and Industry of the European Union) through a framework of the following methodological steps:

- ❖ Collective Backbone Creation: Contribution of Innovagro involved partners of any a number of best practices.
- ❖ Creation of Literature policy and research documents on innovative production and promotion of agro food products, innovation and value creation for review
- ❖ Selection and Presentation of two best practices per country
- ❖ Conclusive report of guidelines

2 Best practice guide methodology

The best practices of course they have meet the ADRION area characteristics and also the Innovagro scope and objectives. ADRION area is characterized by:

- low innovation performance,
- limited capacity of SMEs,
- inadequate cooperation among companies and research institutes,
- low synergies among agro-food and tourism sector, and,
- low implementation of environmentally - friendly farming practices

INNOVAGRO focuses on the development of links and synergies between farmers, agro-food enterprises, Research Institutes and Public Authorities, for the promotion of agro-food products' extroversion, the development of agro-food companies' internalization, and the promotion of environmentally – friendly farming practices.

One major argument of INNOVAGRO is that the strengthening the links between R&D Institutes, SMEs, and Regional & Local authorities in the field of innovative entrepreneurship will support their development and therefore a best practice cases presentation and guideline is unquestionably very supportive to that.

As a result Insuleur, with its international insular expertise and its hands-on experience along with its external experience ANETEK, invited involved partners to participate with their contribution by proposing practices from success stories, if there is any, in their area based on a formatted template questionnaire.

The implemented methodology consisted of the following steps:

- 1) Insuleur [Network of the Insular Chamber of Commerce and Industry of the European Union] designed and delivered to all involved partners a best practice case template to fill.
- 2) All involved partners of INNOVAGRO, except the Italian Confederation of Agriculture, sent a total of twenty (20) best practice cases. In particular: a) Region of Crete sent two (2), b) Insuleur [Network of the Insular Chamber of Commerce and Industry of the European Union] sent four (4), c) Province of Potenza sent three (3), d) E-Institute sent two (2), e) Union of Chambers of Commerce and Industry of Albania sent two

- (2), q) Chamber of Commerce and Industry of Serbia sent three (3) and g) University of Basilicata sent four (4).,
- 3) Insuleur with the contribution of the LP (Chania Chamber of Commerce and Industry) selected the best ten (10), two from each country, out of the twenty (20) collected best practice cases.
 - 4) Insuleur created and sent to the involved partners the specifications of the Best Practice Guide (32 pages printed on A4, 3 colour illustrated 130-150gr paper according to the deliverables layout presented by L.P.) accompanied with the Content Table.
 - 5) The involved partners sent a feedback.
 - 6) Insuleur finalized the deliverable's specifications and content table.
 - 7) Insuleur synthesized the content of the Best Practices Guide based in:
 - a) the filled Best Practice Case Templates filled by the involved partners and
 - b) the results of the 1st Networking Workshop.
 - 8) Insuleur designed (lay-out, graphics), issued and sent to involved partners for feedback the draft version of the deliverable.
 - 9) All involved partners sent feedback.
 - 10) Insuleur finalized the deliverable and sent to involved partners a digital version of the final deliverable to upload to their web-sites.
 - 11) Insuleur produced 1.500 copies of this guide for all the partnership.

3 Best practice cases rejected

3.1 Case 1: ORGANIC PRODUCTS CLUSTER

Name of case: Organic Products Cluster

Agrofood sector: Organic products

Website: <http://www.biocluster.gr>

Brief description: Organic Products Cluster (O.P.C.) is a non-profit, nationwide organization that has been set up by the Federation of Industries of Northern Greece (F.I.N.G.) on March of 2006 with a vertically integrated structure, which supports all actors involved to the supply and marketing chain of the organic sector. Furthermore O.P.C. provides supporting tools and information services for the promotion of the organic products to enterprises and consumers. The goals of the Organic Products Network are to contribute to the promotion of Greek organic products and to strengthen the sector through suggestions and strategic interventions at government level as well as to constitute a tool for promoting organic products to consumers through systematic information provision and awareness raising. In addition, the timely updating of its members on trends and market developments in organic farming and livestock farming, the transfer of know-how, the resolution of members' problems and the joint promotion of their products is a key concern of the Network.

Description of the innovation: The cluster is constantly investing in innovations development, research and promotion. Indicative examples are:

- The preservation of agricultural biodiversity, through awareness-raising campaigns, educational activities and participatory decision-making processes. Indicative specific objectives are to raise awareness among local communities of the importance of sustainable management of agricultural biodiversity, soil cover and animal species to protect local ecosystems and to inform consumers about the benefits of organic food consumption their health and environmental protection.
- The creation of a cross-border and intersectoral ecosystem that combines the competitive forces of a traditional industry (agrifood) with three major emerging industries (eco-industries, mobile services, personalized health) to provide a holistic framework of support to European SMEs, the rate of adoption of advanced technologies and business models for emerging industries in the agri-food ecosystem.

Transferability: The network is aimed at small and medium-sized organic products producers nation-wide, which want to offer customers quality products. The case is an excellent example of how to develop alternative solutions for the dissemination of natural products and preservation of quality. The example is certainly transferable to places of agricultural production, where agricultural producers and enterprises are active and want to innovate and diversify with the aims of promotion, quality guarantee and research and development.

Best Practice Contact: Organics Products Cluster, info@biocluster.gr, Thessaloniki, Greece.

3.2 Case 2: AVOEL

Name of case: AVOEL Premium Avocado Products

Agrofood sector: Processing and manufacturing of agricultural products

Website: <http://www.avoel.com/>

Brief description: In 1971, Lerakis family created one of the first Avocado cultivations in Mournies, Chania, Crete, Greece. 43 years later and after 3 years of research in cooperation with the Harokopio University of Athens, Greece, AVOEL Company developed a product line based on fresh avocado, giving to the consumers all the beneficial elements of the fresh pulp in a variety of flavours following the Cretan-Mediterranean Diet. AVOEL products have long life during which they preserve their freshness and healthy benefits, and can replace food products based on powders, artificial colours and saturated animal fat. The avocado products can be found in super markets, health shops and airline caterings.

Description of the innovation: The problem with the fresh avocado crops is that they need lots of days to get matured. They also need big storage space and involve high cost for making recipes like dressings, dips and spreads. Last not least, avocado presents enzymatic browning after 10 minutes of unpeeling. In contrast to these, the AVOEL solutions offer:

- (a) fresh avocado products, without enzymatic browning, readily available for everyday use;
- (b) products of healthy nutrition, rich in vitamins, non-saturated fat and fibers;
- (c) delicious fresh non powder products;
- (d) quick, easy, cheaper and convenient ways to consume fresh avocado.

Transferability: The particular case provides an excellent example of how:

- (a) alternative solutions for long-life uses can be developed for agricultural products;
- (b) the cooperation of agro-food companies with Universities can improve the knowledge and capacities of the companies, leading to improvements of their existing products and/or development of new, and creating new opportunities in existing and/or new markets.

Both examples are transferable to places with agricultural production, where companies are active and wish to innovate and diversify.

Best Practice Contact: Manolis Lerakis, info@avoel.com, Crete, Greece

3.3 Case 3: KASELL

Name of case: K.A.S.E.L.L.

Sector: Agro-food production

Website: www.kasell.gr

Brief description: K.A.S.E.L.L. S.A. is the former Association of Olive Oil Cooperatives of Epidaurus Limira, Laconia – abbreviation K.A.S.E.L.L. – which was established in 2002. Head office with the standardisation facilities is located at Sykea, Municipality of Monemvasia, Laconia at the South-East Peloponnese, while olive oil mills are placed at distance about 10 km. around the standardisation facilities. KASELL produces packs and trades extra virgin olive oil of fine quality. Therefore its potential comprises modern standardisation and packaging

facilities for olive oil, 9 sophisticated and upgraded olive oil mills and about 3,500 olive producers – members (shareholders). K.A.S.E.L.L.'s annual production of extra virgin olive oil is around 5,000 tons with maximum guaranteed acidity level < 0.4%.

Description of innovation: KASELL is the result of the vision of people, who were members of small cooperative companies. They were working on land, producing a high quality product, and they were trying to find ways to place the product in the market. OLIVE OIL production in traditional way with innovation in packaging and promotion has capitalized the value of olive oil product and after almost 15 years they are on a very competitive position. A major managerial act is to invest all the time in knowledge, infrastructures and management of how to promote in order to conquer the external markets and always keep the high quality. The goal of K.A.S.E.L.L. is the promotion of qualitative extra virgin olive oil in distribution channels of foreign markets. The countries we already export olive oil are: the U.S.A., Canada, China, Taiwan, Australia, South Africa, Iran, Great Britain, Germany, France, Denmark, Moldavia, Bulgaria and we keep on....

Transferability: It is considered important adaptations are required to relevant sectors locally. Scope of Transferability Other regions appropriate for transfer include Southern Europe regions and MED countries.

Best Practice Contact: George Asonitis, asonitis@uhc.gr, Laconia, Greece

3.4 Case 4: CORFU BEER

Name of case: Corfu Beer

Sector: Microbrewery, real ale

Website: <http://www.corfubeer.com/index.html>

Brief description: In northern Corfu, in Arillas, Corfu is produced a real ale, a fresh beer, in a small but modern brewery. The Corfu Microbrewery is the only company of its kind on the island. Beyond innovation in the manufacture of fresh beer presented combining marketing and innovation activities in the five-day Festival Corfu Meets Bavaria seeking to give a different face service. Perhaps without knowing the concept of "wellness" was under the. combined the business of production of beer with its gastronomy, educational seminars and cultural events in order through them one meeting of two cultures through beer, cuisine, dance and music. Extraversion developed provided an opportunity for two different cultures to meet and to travel a bit to the depth of their own tradition in such a way that they become ambassadors of another tourist "product" for Corfu and possibly creating a new tourist - cultural product.

Description of innovation: The idea was born following a trip to the villages of Germany, where small breweries a tradition. Spyros Kaloudis (main shareholder of Corfu Microbrewery), together with G. Kaloudi, Cl and B. Mouzakiti decided to build their own brewery in Arillas, northern Corfu. The investment reached a million (160,000 euro grant and rest equity and bank loans), and the operations began in the crisis (in 2009) with production of 80,000 bottles, seventy thousand euro turnover and three employees. In 2012,

production reached 500,000 bottles (half a million turnover) and new investment to increase production having to respond to growing demand resulted in a production and sales increase of 30%. Recently about 5000 visitors and lovers of good beer attended in Arillas for the official launch of Corfu Beer Festival 2018⁴ with the distinctive title «Corfu meets the UK». The high flying proves that throughout the crisis there are people who are struggling, businesses are doing well, brands that stand out and stand the demanding markets of Europe. It is an achievement to distinguish a Greek beer brewing when, for example, the German market operating 2,000 companies, 3,000 breweries in Britain, as opposed to Greece which do not exceed a total of 20 companies. For a microbrewery extroversion includes to be present and sold in other regions of the same country. Extroversion in other countries, like Germany, Great Britain, Italy is achieved through participation in popular beer festival International Real Ale Festival like the one organised by the largest pub chain in Britain, where Corfu Beer was ranked among the first positions. Ranked among the three best beers in the world, became an issue last year in English and German SMEs, while in London is the first most demanded beer have made those holidays in our country, especially the magnificent Corfu.

Transferability: requires to utilize local special channels whereas the utilization of international scope touristic events locally is considered a very valuable strategy. Scope of Transferability Other region(s) include both other regions of the country as well as of other countries.

Best Practice Contact: Spyros Kaloudis, info@corfubeer.com, Corfu, Ionian Islands, Greece.

3.5 Case 5: CASEIFICIO LIOI SAS

Name of case: Caseificio Lioi SAS

Agrofood sector: Dairy products

Website: <https://www.caseificiolioisas.business.site>

Brief description: Farm with breeding and cultivation of animal feed associated with the processing of the milk of their cows and marketing of the products in their own sales shops located in the neighbouring municipalities

Description of the innovation: Select cows with A2A2 betacasein. The innovation consists in selecting cows that produce milk with beta casein A2 (more digestible) and then obtaining products and milk certified to have only Beta-Casein A. Granbradano is a typical cheese exclusively produced by Caseificio Lioi. Marketing department benefits:

- Improved business reputation as a manufacturer of high-quality and safe products
- Ability to trade with customers requiring third party audits

Transferability: To preserve the genuineness and tradition of dairy products with natural cheesemaking practices and without the use of industrial lactic ferments to protect our biodiversity. Scope of Transferability: The best practice is easy to transfer. The Standard supports the production and marketing departments in their efforts for brand safety and

quality. Create a direct relationship with the consumer and therefore guarantee the best possible quality of the product obtained in a traditional way and at zero distance.

Best Practice Contact: Canio Lioi, C.Lioi@tiscali.it, Oppido Lucano (PZ), Italy.

3.6 Case 6: BIRRA MORENA

Name of case: Birra Morena

Agrofood sector: Beer

Website: <https://www.birramorena.com/>

Brief description: Birra Morena is a local brewer located in Basilicata. During the years Birra Morena got many rewards as the best craft beer. It is on the market as a point of revival between the world of industry and industrial breweries in the area, to create an aggregation of independent distribution qualified with "a project open to all", a production that works on low and high concepts fermentation, as the most important companies in the industry, to adapt to today's requirements for flexibility and quality. The production activity of Beer Drive takes place within a modern, well equipped facility, designed according to the most current standards of efficiency, which is the starting point of the concept of Total Quality introduced by management, authentic guideline for every business operation. The industrial complex hosting plants and technologically advanced machinery is supervised by specialized personnel. The Best Practices of Birra Morena let get it the Organic label in fact there is growing concern about food quality and safety worldwide. There are increasing social expectations and consumer demand for food and agricultural products that bear a specific quality label such as organic, fair-trade or geographical indications. These products possess specific characteristics that may be linked to composition, production method or marketing, which are value-adding and allow for product differentiation on markets.

Description of the innovation: Organic Label. Having the Organic Label is crucial for marketing and let the products getting in an organised large scale distribution. Bioagricert communicate to all the small producers having care to all the process working actively for the development of organic regulations.

Transferability:

Best Practice Contact: info@birramorena.com, Basilicata, Italy

3.7 Case 7: CANTINE STRAPELLUM

Name of case: Cantine Strapellum

Agrofood sector: Wine

Website: <https://www.cantinestrapellum.com/>

Brief description: Cantine Strapellum is a small company that produces wine with an autochthonous "Aglianico" Grape and received many international awards. Cantine Strapellum wines are made through meticulous oenological processes that allowed over time, thanks to twenty years of experience, to produce different types of wines of excellent

quality. The quality scheme adopted is the International Featured Standards commonly known as IFS recognized standard for auditing food manufacturers. The focus is on food safety and the quality of processes and products. It concerns food processing companies and companies that pack loose food products. This quality scheme brings many benefits and insure the Good Practice to get the product to the Large-scale retail trade. Production benefits:

- Improved understanding between management and staff related to good practices, standards and procedures
- Monitoring of compliance with food regulations
- More effective use of resources
- Reduction in the need for customer audits
- Independent third party audits
- Higher flexibility through individual implementation due to a risk based approach

Description of the innovation: The IFS Food Standard is used to audit food manufacturers regarding food safety and quality of processes and products. Attention is paid to quality and for this reason we prefer to follow the production process from the vineyard, transforming grapes grown on vineyards at least twenty years old. The grapes, already selected in the vineyard, arrive in the cellar in boxes and immediately pressed. The production process, for which the company is certified, is the classic one but with the attention and precision that only modernity can give (controlled fermentation temperature, maceration is long and lasts 3-4 weeks, pressing of the pomace and soft, elevage also through micro oxygenation, batch traceability is rigorous). An internal analysis laboratory constantly provides the necessary analytical support to the data collected with sight, palate and smell. Marketing benefits:

- Improved business reputation as a manufacturer of high-quality and safe products
- Ability to trade with customers requiring third party audits
- Use of the IFS logo and certificate to demonstrate compliance with the highest standards.

Transferability: The best practice is easy to transfer. The Standard supports the production and marketing departments in their efforts for brand safety and quality. IFS Food has been developed with full and active involvement of certification bodies, retailers, food industry and food service companies. The Scope of Transferability concerns food processing companies and companies that pack loose food products.

Best Practice Contact Michele Cuseo, info@cantinestrapellum.com, Basilicata, Italy

3.8 Case 8: LA CHIOCCIOLA

Name of case: LA CHIOCCIOLA

Agrofood sector: Processing and manufacturing of agricultural products

Website: <http://www.allevamentolachiocciola.it/>

Brief description: La Chiocciola is a young company engaged in the breeding of the snail HELIX ASPERSA MULLER. The company aims to offer a product with natural raw materials

and absolute quality. This happens thanks to the passion, the love of the land and the strong attachment to values. They produce beauty products, sauces and pates from snail slime. The company also carries out planning and consulting activities for new farms.

Description of the innovation: The snail drool is not replicable in the laboratory reason that makes it 100% a natural cure. The CHIOCCIOLA feeds the snails with organic vegetables grown exclusively for their diet, raised in a habitat biologically perfect and suitable to enhance the qualities, allowing nature to take its course without altering the regular processes of development. The snails grow in open fields and are mainly fed with field vegetables. The burr extraction is done through the method of manual stimulation that avoids any kind of stress to the snails and saves their lives.

Transferability: The special case provides an excellent example of how alternative solutions can be developed for the spread of livestock products. The example is transferable to places of agricultural production, where companies are active and want to innovate and diversify.

Best Practice Contact: Antonio Francesco, lachiocciolaallevamento@hotmail.com, Potenza, Italy.

3.9 Case 9: MELAGIOCO

Name of case: MELAGIOCO Agri-ludotec

Agrofood sector: Processing and manufacturing of agricultural products

Website: <http://www.aziendaagricolatropiano.it>

Brief description: The farm Tropiano was founded in 1973 with the main purpose of taking care of plants and fruits that comes from it. In particular, it deals with the production and distribution of apples, pears and high quality vegetables. The strategic position of the company has always attracted many curious and passionate ornithologists intrigued by the migration of numerous species of birds. In 2016, in fact, the company began to take an interest in teaching, giving rise to the first Agri-ludotec in the Basilicata region, named MELAGIOCO. In 2017 the company was recognized by the local authorities as an Educational Farm, opening its own world, dedicated to research and different types of sustainable agriculture, both schools and universities.

Description of the innovation: MELAGIOCO is based on the principles of eco-sustainability of the agricultural and food sector and therefore organizes educational walks and recreational workshops available to school groups and families. Inside the Melagioco Agri-ludotec specific spaces have been used to stimulate children's imagination and desire to get involved. In the area of the workshops you can participate in Agri-laboratories kitchen, agri-laboratories on lost arts or educational activities on recycling, to learn the importance of respect for the environment. For teaching of the basic notions of agricultural world, a flowerbed has been set up where it is possible to observe the life cycle of plants, and various sensory laboratories with the theme "can you recognize what you eat?" developing: touch, sight and smell.

Transferability: The company is aimed at small and medium-sized businesses in the area, which want to offer customers quality products, at 0 km and affordable prices. The special case is an excellent example of how to develop alternative solutions for the dissemination of natural products and at the same time educate young and old to build an eco-sustainable world. The example is certainly transferable to places of agricultural production, where companies are active and want to innovate and diversify with the aim of inclusion and participation of the community.

Best Practice Contact: Melagioco, melagioco.agriludoteca@gmail.com, Potenza, Italy

3.10 Case 10: PULCAP

Name of case: PULCAP - control of poultry red mite by a mixture of inert oils

Agrofood sector: Animal health /poultry health on egg farms.

Website: <http://pulcap.com/>

Brief description: PULCAP is the product for the control of poultry red mite (*Dermanyssus gallinae*) in henhouses, offering maximum efficiency, with no harmful effects on poultry, no residual eggs and meat pollution and without harmful environmental impact.

Description of the innovation: The innovative formulation of Pulcap offered by company Pulcap is based on mixture of inert nontoxic oils. It has offered a new approach to PRM control through a physical mode of action. The main advantage of the innovative product is the usage of insecticidal properties of non-toxic oil which is harmless and allowed in human feeding. Unique mixture with emulsifiers and other ingredients allows the formation of a thin and lasting layer on the treated surfaces inhabited by PRM and their suffocation by closing their respiratory system. At the same time, the product does not represent a hazard for the hens and there are no residues in the eggs or meat, so it could be used in organic production. Apart from advantages in terms of the nontoxicity it also does not have harmful environmental effect.

Transferability: Yes, there is a possibility. We believe that the general application of paraffinic oil or inert oil has not been optimized so far when it comes to its acaricidal and insecticidal effect. We believe that our product has the potential to protect plants and control some types of harmful arthropods. Since we have learned a lot from examining the effects of the basic substances of emulsion on parasites (acaricides), besides the research in the field of poultry, there is a real basis for this emulsion to be applied in agriculture, in particular in fruit growing.

Best Practice Contact: Sanja Stosic, sanja.stosic@pulcap.com, Serbia

4 Best practice cases selected

4.1 ALBANIA Best Case 1 Questionnaire: Geruja wine

Name of case: The unique case of the un-grafted eruja wine.

Agrofood sector: Agriculture, Enology and distillation of unique grape variety.

Website:

Brief description: Ceruja is a village in a remote mountain area in the North of Albania. There grows a vine that has not been touched by phylloxera therefore it's not grafted on an American root as all commercial vines in the world. This case is extremely rare if not unique. Description of the innovation: The vine has been spotted in remote areas growing spontaneously. We keep collecting the grapes on these plants that remain as wild as nature allows. We are working on selecting the most appropriate winemaking techniques in order to bring up the full potential of this unique variety. On this process we are improving also the economic impact on this remote poor area.

Description of innovation:

Transferability: The first step is to find any other remote area that can have the degree of isolation for any autochthonous vine to grow without the need of being grafted on American root. Eventually, the enologic process of selection of the best techniques can be adopted.

Best Practice Contact: Flori Uka, floriuka@hotmail.com, Tirana, Albania.

4.2 ALBANIA Best Case 2 Questionnaire: Minzi

Name of case: Minzi Slow Food initiative

Agrofood sector: Agritourism

Website: www.mrizizanave.com

Brief description: Give a brief description the case. Mrizi i Zanave is an agritourism, restaurant, hotel situated in the center of Albania. The core of Mrizi i Zanave Agritourism business is offering delicate taste of rural culinary in its natural habitat with absolute fair pricing, through promoting not only values of environment preservation, but also by enhancing the development of local economy in the region. Agritourism is not widespread in Albania though people are becoming more interested in knowing how their food is produced and what food they consume. A honey and wine tasting activity, learning about cheese-

making, picking fruits or vegetables, or shopping for local hand-crafted gifts can be added value to every local culinary business. These are simple ideas which can add value to a business but also represent the cultural highlights of such localities.

Description of the innovation: Mrizi i Zanave is an agriturismo entity in the centre of Albania where about 67 former unemployed people found job. Almost 400 farmer families are linked and mutually profiting from Mrizi i Zanave business. This modern form of intra-cooperation between local businesses in building sustainable Agritourism can sure lead to an increased interest in the quality of regional products, as well as awareness of replicating such business models in other parts of the country and Balkan region.

Transferability: Mrizi i Zanave agritourism model can be easily transferable in the area of Balkans where the rural context is similar. What Mrizi i Zanave agritourism was facing almost 10 years ago was the land abandonment, rural youth immigration to big cities, lack of hope. Through a successful agritourism model, based on local farming, season food and typical Albanian products, sustainable and ecofriendly agriculture technology, Mrizi i Zanave is the leading and innovative rural reality in Albania.

Best Practice Contact: Altin Prenga, altinpreg@hotmail.it, Lexhe Fishte, Albania

4.3 GREECE Best Practice Case 3 Questionnaire: Wines of Crete

Name of case: Wines of Crete

Agrofood sector: Wineries

Website: <http://www.winesofcrete.gr/cretewines/en/home.html>

Brief description: Wines of Crete is a non-profit organization, created by a small group of Winemakers of the island (2006). Nowadays, W.O.C is representing a 90% of the Cretan Winemakers, focusing in spreading the word for indigenous quality wine and for Crete Island, as an upcoming wine-tourism destination. The key to succeeding that is unity under one brand named “Wines of Crete”, despite the individual market competition among the wineries.

Description of the innovation: Functioning as core production of bottled wines, Prefecture of Heraklion, provided the initial impulse for what would then develop into Wines of Crete. The creation of the Heraklion Winemakers’ Network urged the creation of the Chania - Rethymnon Winemakers’ Network two years later. Subsequently, Prefecture of Lasithi joined

the network of Heraklion's, resulting in the achievement of the first goal, which was none other than the consistent promotion of Cretan wine not only within the island but to other places as well. The two networks proceed in operating in autonomy, yet cooperating at all levels in parallel. All under the umbrella of Wines of Crete and a collective scheduling of activities.

The main objectives of the whole action are two. On the one hand, the promotion and recognition of Cretan wine, both inside and outside Greece now, and on the other, the development of wine-tourist mainstream on the island, taking advantage of a series of 'tourist' advantages the island displays. The education of the consumer and the professional, the presentation of the production to the very audience through organized tastings and exhibitions, the creation of all the necessary tools for the finest achievement of such communication, consist of the actions of Wines of Crete. The joint brochure, the map of the Wineries of Crete, the 20' informative film, the portal www.winesofcrete.gr, the application for smart phones, the use of social networks as well as the organization and participation in exhibitions are promotional tools that help to achieve the goal. The Wineries signs, quality map of visited wineries, participation in tourism fairs operate subsidiary for the consolidation of the wine-touristic power. All the actions are financed in total from resources derived from the contributions of the members, besides, of course, national and European funds both networks take advantage of programmes such as Leader, Interreg, programs of the Ministry of Rural Development- strongly support the efforts of the 30 Cretan wineries participating in the overall shape. The results are obvious over the last three years. Crete now has the image of a very active and dynamic area of production of quality wines, being characterized by the uniqueness of grape varieties grown as well. It has permanently escaped from the image of the region of meaningless wine mass production that was much to its unjust and is moving towards a wine destination of high added value.

Transferability: The network is aimed at small and medium-sized wineries in the area, which want to offer customers quality products. The case is an excellent example of how to develop alternative solutions for the dissemination of natural products and at the same time jointly develop touristic advantages. The example is certainly transferable to places of agricultural production, where companies are active and want to innovate and diversify with the aims of promotion, expansion of recognition and joint exploitation of touristic advantages.

Best Practice Contact: Wines of Crete, info@winesofcrete.gr, Heraklion, Crete, Greece

4.4 GREECE Best Practice Case 4 Questionnaire: Terra Thessalia

Name of case: Terra Thessalia

Agrofood sector: Milk and dairy products

Website: <http://www.terrathessalia.gr/?LANG=en>

Brief description: Thessaly's geography and history have formed between the big plain and the surrounding mountains small regions organized around a small town. These micro-regions developed over time a remarkable local culture and a mediating role between the economy of the mountain populations that is based on pastoral farming and the cities of the plain. Today they continue preserving and reproducing a distinct culture, knowledge, know-how, practices, experiences and values around this livestock and dairy tradition. This heritage has taken the form of small dairy chains organized around small artisanal dairies and hundreds pastoral sheep and goat's herds that continue to utilize, like their ancestors, the Thessalian pasture lands. Despite preserving this tradition and the quality characteristics in their relationships and their productions, those small chains are threatened by the onslaught of businesses that are growing bigger every day and the intensification of livestock farming. The awareness of their common cultural and productive tradition and the ever-increasing interest of the consumers led those micro-regions to a cooperation through which TERRA THESSALIA was created. This act expresses their will to preserve and guarantee the specific characteristics of the products they produce incorporating characteristics, elements and ties into this rich dairy tradition and in the interest of all those involved, especially the livestock farmers. The Thessaly Territorial Assembly for the Dairy Chain (THESGA) supports the assurance and promotion of the quality and identity of Thessaly's dairy resource. Its role is to monitor the promotion and implementation of a commonly acceptable strategy for the exploitation of the local livestock and dairy resources and activities. The cooperation in the dairy sector, that first of all concerns the small but historic dairy regions of Thessaly, is signed (2015) by:

- Small cheese-makers of Thessaly.
- Thessalian livestock cooperatives that are still functional.

- Supportive mechanisms (Union of Hellenic Chambers, Chambers of Thessaly, Association of Thessalian Enterprises and Industries).
- Cooperative Banks of Thessaly.
- Development Agencies and
- University of Thessaly, Agricultural University of Athens and Panteion University, University of Applied Sciences of Thessaly and the competent laboratories.

Description of the innovation: The Participatory Guarantee System (PGS), based upon active participation of the actors and the producers of TerraThessalia, guarantees for the quality of the product, its ties with the production place, the fair redistribution of the added value to livestock farmers and small cheese makers as well as managing a sustainable relationship between people, animals and nature. The PGS:

- is supported by the TerraThessalia specialized services, the local society's participation, the associating university laboratories and uses tools of advanced technology,
- develops its own guarantee instruments and integrates the official certifications (PDO, laboratories)
- is based on specifications that concern all the sectors of the dairy chain (pasture lands, animal breed, animal feed proximity, health and quality of products etc.)
- guarantees the Quality Mark of the Thessaly small dairy regions
- constitutes a best practice guide for the guidance of the herds and the respect of the TerraThessaliaLactis specifications

The PGS supports a common vision of the TerraThessalia producers and the consumers, strengthening their between knowledge exchange, based on the principles of participation, reciprocity, transparency and trust.

Transferability: The network is aimed at small and medium-sized dairy products producers in the area, which want to offer customers quality products. The case is an excellent example of how to develop alternative solutions for the dissemination of organic products and preservation of quality. The example is certainly transferable to places of agricultural production, where agricultural producers and enterprises are active and want to innovate and diversify with the aims of organic production, quality guarantee and research and development.

Best Practice Contact: Terra Thessalia, s.kouzeleas@terrathessalia.gr, Thessaly, Greece

4.5 ITALY Best Practice Case 5: LUCANAPA

Name of case: LUCANAPA

Agrofood sector: Processing and manufacturing of agricultural products

Website: <https://www.lucanapa.com/>

Brief description: The essential objective that Lucanapa has set itself since its birth is not to damage the environment, but to protect and improve it. The producer members respect a regulation that minimises the environmental impact of agriculture. This is made possible also thanks to the cultivation they have decided to adopt, in fact, Cannabis Sativa L, is a fairly robust plant that can guarantee a good harvest while minimizing the canonical cultivation inputs. It can be used for food, cosmetics, textiles, bio-building, pharmaceuticals, etc. LUCANAPA has created a short, ring-shaped supply chain that produces traceable products from production to product packaging.

Description of the innovation: The regulations followed by the producers of LUCANAPA provide different rules including no use of herbicides and pesticides, no use of water supply, use of only organic fertilizers, collection points shared at the production areas depending on the concentration of other cultivated fields. Being characterized by rapid growth, hemp contributes substantially to the fixation of carbon and therefore to the abatement of CO₂ present in the atmosphere. Since hemp is also a bio-accumulator, the products obtained from it become, on the one hand, an instrument of environmental protection and safeguarding of the territory and, on the other, the economic expression of a new informed society.

Transferability: The example is transferable to places of agricultural production, where companies are active and want to innovate and diversify. The primary objective of LUCANAPA is precisely that of activating a sustainable supply chain process that leads to economic development, through agriculture and in the protection of the territory and the environment, improving human living conditions and creating additional employment opportunities against depopulation and abandonment of the territory. The particular case provides an excellent example of sustainability understood as a principle of solid link between agriculture, the environment and economic development and in the possibility of expanding knowledge in this regard using technology and research integrated with activities of information and awareness.

Best Practice Contact: LUCANAPA association, info@lucanapa.com, Potenza, Italy

4.6 ITALY Best Practice Case 6: Bioeconomy Cluster

Name of case: Bioeconomy Cluster

Agrofood sector: Networking operators and institutional players

Website: <https://www.clusterlucanobioeconomia.org/>

Brief description: The Bioeconomy Cluster in Basilicata of was created by an initiative of various public and private entities under the direction of the Basilicata Region that adopted the regional strategy for smart specialization of research and innovation 2014-2020, identifying five thematic areas of potential development based on the structuring of specific cluster. Among these areas is the bioeconomy cluster, which includes the themes of water resource management, genomics for sustainable, precision and integrated agriculture, nutrition and health, green chemistry, non-technological innovation in the agri-food sector.

The purposes of the cluster are:

- 1) promoting the bioeconomy in the regional territory by contributing to the development of the sector at national level;
- 2) promote the development and competitiveness of companies on the strategic lines identified by the bioeconomy;
- 3) to stimulate the aggregation of public and private subjects on research, innovation and technology transfer issues;
- 4) to encourage specialist training and employment;
- 5) promoting the Lucanian Bio-economy Cluster in national and international contexts.

Description of the innovation: The Cluster Activity is structured in 9 thematic areas. In order to pursue the cluster purposes to develop project proposals consistent with regional and national sectorial programs financing innovations in agro-food sector, the CLUSTER has identified the following strategic themes of the food and forestry sector: 1) CEREALICULTURE, 2) FRUIT AND VEGETABLE, 3) ZOOTECHNY, MILK, MEAT AND DERIVATIVES, 4) VITICULTURE, 5) OLIVE GROWING-OIL, 6) WOODEN FOREST, 7) WATER RESOURCES MANAGEMENT, 8) PRECISION, SUSTAINABLE AND INTEGRATED AGRICULTURE, 9) OFFICIAL PLANTS AND GREEN CHEMISTRY. For each of the themes, design tables were organized with the task of bringing together the needs of the companies in order to develop specific project proposals.

Transferability: The cluster is as example of a formal network of operators established as an outcome of smart specialization strategy in Basilicata Region. It represents a form of public-

private link ensuring quality projects to be submitted under Regional EU Programs funded by EAFRD. Ti is a permanent platform promoting dialogue and information exchange among members and between the Cluster and relevant institutional players.

Best Practice Contact: <https://www.clusterlucanobioeconomia.org/>, Basilicata, Italy

4.7 SERBIA Best Practice Case 7: BIOFERMENTED BEETROOT JUICE

Name of case: Biofermented beetroot juice

Agrofood sector: Organic production

Website:

Brief description: Bio fermented beetroot juice is produced by lactic acid fermentation. Fermentation is based of dominant microflora.

Description of the innovation: This process helps to avoid pungency that beetroot has. The advantage of this manufacturing process is that the antocyanins were preserved, along with vitamins and minerals, and they have anti-cancer effect.

Transferability: Final product or licence technology.

Best Practice Contact: Biosil doo, Kosancic Ivana 2b, Belgrade Serbia

Contact person: Natasa Milanovic natasa.milanovic@biosil.rs

4.8 SERBIA Best Practice Case 8: KABINET

Name of case: Kabinet Brewery. The first greenfield craft brewery in the East Europe

Agrofood sector: Craft beer, beer related products, barrel aged beer, organic beer, beer jam

Website: www.kabinet.rs

Brief description: We have started in February 2014 with three beers as the pioneers of the craft beer in Serbia. Today, we are exporting to over 22 countries and we have won awards for both beers and design as each beer has a different label and artist behind. Our unique product is beer aged in rakija barrels as well as Pivolada beer based jam. We have collaborated with some of the best breweries from Denmark, Holland, Russia, Italy, Hungary.

Description of the innovation: In packaging, the innovation is that each beer label is done by a different local artist or international in case of the collaborations. Regarding our beer production, our Kolaboracija 02 beer, a caramel stout, barrel aged in the Monastery Kovilj brandy barrels is amongst the Top 50 best stouts in the world for 3 years now. We are also

the only organic beer producer in the Balkans. Furthermore, with a chef Dejan Maksimovic, we have created a unique all natural beer spread with spices.

Transferability: We believe that collaboration on the local level with either artists or chefs highly transferable to every country. In addition, usage of local culture as an inspiration for the production is essential.

Best Practice Contact: Kosara Dangic Melentijevic, kabinet@kabinet.rs, Serbia.

4.9 SLOVENIA Best Practice Case 9: NASA SUPERFOOD HRANA

Name of case: OUR SUPER FOOD (NAŠA SUPER HRANA)

Website: <https://www.nasasuperhrana.si/>

Brief description: "Our super food" is dedicated to the promotion of locally grown and processed foods. "Our super food" is a joint project of the state and sectors that have entered the promotion. In order for the consumer to recognize Slovenian quality food better, a new national quality scheme "selected quality" was established, in which each of the eight sectors of food production and processing can enter. So far, the quality scheme has been adopted by the producers and meat processors (beef and poultry meat), milk (milk and milk products) and fruits (fruit and processed fruit products). The promotional campaign "Our super food" is a 3-year campaign co-financed by the state and sectors. Dairy and meat products are also already largely certified and marked with the "selected quality of Slovenia" trademark, and in spring 2018 first marked fruits entered the market. Inclusion in the quality scheme brings many benefits and benefits to the producers and processors of milk and meat. We are pleased that in Slovenia consumers are increasingly aware of the fact that by consuming local food we get the assurance that such food did not travel hundreds of kilometres to help local food, local producers and food processing industry, and in this way to maintain our jobs in this area of work.

Description of the innovation: It nationally connects producers and consumer to recognize Slovenian quality food and enhance its promotion. There are two major groups we communicate the project to: 1) Producers, that are involved by certifying their quality products and co-finance the promotion and 2) Consumers, to whom promotion campaign is dedicated.

The communication strategy of the promotion campaign covers:

- TV campaign, internet communication, OOH - out door tool of campaign, food tasting, culinary events and events, fairs, newspaper articles, advertorials etc.
- Project has it's own web channels: www.nasasuperhrana.si and Facebook site: www.facebook.com/nasasuperhrana/,

Transferability: The best practice is moderately difficult to transfer. It could be transferred also to other sectors according to law. For transferability it is needed: the decision of each sector to enter the quality scheme in the appropriate extent and to co-finance the promotion campaign

- political consensus and priorities (also supported by legislation. In Slovenia the supporting legislation is national law: The Law on promotion of agriculture and food processing products. Sectors included in the promotion are close cooperating with the Ministry of Agriculture, Forestry and Food, who is in charge of implementation of law.

- national set responsible Ministry for execution and monitoring: Ministry of Agriculture, Forestry and Food

- support from consumers and producers: primary producer of local food and food processing industry co-finance the promotion...

- moderately difficult to transfer Other countries - member states of the EU must adopt national law for implementation of promotion of such kind.

The model can be transferred also to other sectors e.g. wood-industry, tourism. It can be according to Law transferred to 5 additional sectors (apart from milk, meat and fruits): olive oil, cereals, vegetables, grapes for wine and honey.

Best Practice Contact: Janja Kokolj, janja.kokolj@gov.si, Slovenia, Slovenia

4.10 SLOVENIA Best Practice Case 10: PONICA

Name of case: PONICA : Watercourse and hydroponics garden

Website: <http://www.ponnod.com/>

Brief description: When Company Ponika started with aquaponics, this was still an unknown innovation. Today, as this is a fast-growing industry. In 2013, the Ponika was founded as the first aquaponic company in Slovenia and one of the first in Europe. It was recognized as a promising start-up on all major Slovenian competitions and had gained an impressive media coverage in Slovene press. The idea came out of the need for food self-sufficiency and the rising food prices in Slovenia and to create gardens in the urban areas (on terraces, roof-tops

etc.). Aquaponics is a combination of growing fish and plants at the same time. It is a combination of aquaculture and hydroponics where, by means of bacteria, a closed flow of nutrients between aquaculture and vegetable part of the system is created. This allows the company Ponika to be very efficient in the cultivation of fish and vegetables in a closed system. Hydroponics and aquaculture have their own weaknesses. By integrating both into one system, these weaknesses are transformed into advantages. Hydroponic plants are grown without soil, in water rich in nutrients. Plants can also be rooted in an inert (one that does not change the chemical properties of the water itself) substrate. The purpose of the substrate is to serve as a support for plants. Plants have steady access to water and nutrients, which results in rapid and lush growth. Inert substrate can be gravel, sand, vermiculite, rock wool or expanded clay. Plants that grow in such a substrate are constantly fertilized, thus achieving optimal conditions for growth. Leaf plants such as various salads, chicory, basil, spinach, Chinese cabbage, and fruits are excellent in hydroponics, for example. tomato, paprika, strawberries, pumpkin. Different bulbs, pulses and root vegetables also grow well. Ponika, research and development, company offers expertise, technology and consulting for aquaponic or hydroponic home garden or commercial system (small or large scale projects). It offers technological and business solutions for aquaponal growing of vegetables and fish.

Description of the innovation: Aquaponic and hydroponic gardens, a combination of aquaculture and hydroponics and so combining fish and vegetable growth. Fish excrements are a natural source of nutrients for plants. In this way, we clean water for fish and at the same time allow regular inflow of oxygen, nutrients and water to plants. Hydroponic plants are grown without soil, in water rich in nutrients. This represents a circular economy.

There are 2 major groups we communicate the project to: 1) Private persons 2) Businesses.

The business idea is communicated via the own web channels: <http://www.ponnod.com/> Facebook site: <https://www.facebook.com/ponnnod> and Twitter. The business idea was publicised in different national media (magazines: Nedelo, Mladi podjetnik, Jana etc.)

Transferability: The best practice could be transferred also to other countries. The model can be transferred also to other sectors e.g. wood-industry, tourism ... It can be according to Law transferred to 5 additional sectors (apart from milk, meat and fruits): olive oil, cereals, vegetables, grapes for wine and honey.

Best Practice Contact: Matej Leskovec, Slovenia, Slovenia

5 Innovative production, promotion and value creation (literature).

An extensive list of policy and research documents has been produced on innovative production, promotion and value creation.

Outstanding are the policy papers for organizations like EU, FAO and OECD which (are numbered 1, 2 and 3 in the table below) in brief state the following.

The paper “A strategic approach to EU agricultural research & innovation EU” concludes in five cross-cutting issues which have been identified:

- ❖ Systems approaches are deemed to be crucial to tackle the manifold challenges of agricultural, food and non-food systems
- ❖ Societal engagement in research and innovation
- ❖ Information and Communication Technologies (ICT) as an enabler. • Enabling research and infrastructures.
- ❖ The systems-based approach requires socioeconomic research to be embedded.

The FAO’s work on agricultural innovation paper “Sowing the seeds of transformation to achieve the SDGs” concludes that agricultural innovation is the process whereby individuals or organizations bring new or existing products, processes or ways of organization into use for the first time in a specific context in order to increase effectiveness, competitiveness, resilience to shocks or environmental sustainability and thereby contribute to food security and nutrition, economic development or sustainable natural resource management. It is stressed that the following are highlighted by the specific paper:

- ❖ Family farmers are innovators.
- ❖ Innovation is more than technology.
- ❖ Innovation is a complex process where multiple actors play different roles.

The BIAC for OECD paper “Innovation in the Agri-Food Chain: BIAC Priorities for the OECD” respecting the ongoing OECD work, BIAC pinpoints three overarching priorities for future OECD work in this space:

- ❖ Enhance the enabling conditions for increased private investment for innovation in the agri-food chain.
- ❖ Improve public perception of innovation in the agri-food chain.
- ❖ Increase cooperation with the private sector to seize innovation opportunities.

The 54 research papers (docs 4-57 in the references table) conclusively argue that since the 1970s, international agricultural research centers have worked with national and regional partners to

stimulate agricultural innovation and growth. In many cases, the benefits derived by smallholders have been constrained by these farmers' limited opportunities to market their products. In an attempt to expand the benefits of agricultural research and development (R&D) for smallholders, since 2000, many organizations have experimented with approaches for promoting innovation on small farms and inclusive VCD. Traditionally, different groups based in different organizations have designed and implemented interventions that focused on production and marketing. While agricultural research organizations have focused on increasing agricultural production and productivity, non-governmental organizations (NGOs) and others concerned with agribusiness development have focused on marketing and VCD. The overall impact of interventions in these two areas has been limited in part by the lack of a more holistic approach that addresses challenges and opportunities all along the value chain, from input suppliers and farmers' fields, through the various stages in the market chain, all the way up to the ultimate consumers. Evaluation has also been commonly identified as an area that requires strengthening in complex interventions, such as those that promote inclusive innovation and VCD.

6 Conclusive report and guidelines

The 10 selected cases present examples of success stories of best practices in each of which guidelines are is clear and straight forward.

The guidelines for best practices also from police papers from international organizations and researchers are also clearly stated.

Developing that guide believe on top of the above that a non-exhaustive list of areas of innovation in the agri-food production & chain, according to international organizations (OECD, EU. AMO etc) and scientific literature, includes:

- Improved Seeds (Biotech seeds, Drought/Salt tolerant crops, Nitrogen-efficient plants, etc)
- Integrated pest management (use green, mechanical, biological, chemical etc controls as needed)
- Judicious fertilizer use
- Improved water management,
- Bio-fortification and bio-fertilization,
- Reducing greenhouse gas emissions (GHG) from livestock,
- Leveraging information communication technology (ICT),
- Extension research-based knowledge to the rural sector.

We also believe that technology impact is well presented in the following table:

| Technology impact on agri-food value chain | | | | |
|--|--|---|---|--|
| Topic | | Food Safety, Security and Quality | Agriculture and Biodiversity | Sustainability |
| Phase | | | | |
| R&D | | <ul style="list-style-type: none">Food conservationSanitization - SterilizationTraceabilitySpecial dietsRaw materials diagnostics | <ul style="list-style-type: none">BiotechnologyNutraceuticals | <ul style="list-style-type: none">Energy efficiencyPollution reduction |
| Production | | <ul style="list-style-type: none">Active packagingAdvanced analysis / imagingNatural additivesDetection / RFIDFunctional food for allergies | <ul style="list-style-type: none">Energy efficiency«Green» fertilizers and cattle feed | <ul style="list-style-type: none">Recyclable / biodegradable packagingBiomass PlantsPhotovoltaic greenhouses |
| Distribution | | <ul style="list-style-type: none">Big Data and predictive analysis tools | <ul style="list-style-type: none">Logistics solutions towards «Km 0» | <ul style="list-style-type: none">Virtual Store, Social Network AnalysisMobile Solution e-payment |

7 References

The table in the next page lists all the selected policy and research papers we have referred to:

| | |
|----|--|
| 1 | A strategic approach to EU agricultural research & innovation EU final paper |
| 2 | Sowing the seeds of transformation to achieve the SDGs FAO |
| 3 | BIAC Innovation in the Agri food Chain OECD |
| 4 | Aramyan, L., Lansink, A. and van Kooten, O. (2005), "Testing a performance measurement framework for agri-food supply chains (abstract)", Developing Entrepreneurship Abilities to Feed the World in a Sustainable Way, 15th International Farm Management Conference, São Paulo, August 14-29. , |
| 5 | Ashby, J. (2009), "Fostering farmer first methodological innovation: organizational learning and change in international agricultural research", in Scoones, I. and Thompson, J. (Eds), Farmer First Revisited: Innovation for Agricultural Research and Development, Practical Action Publishing, Rugby, pp. 39-45. , |
| 6 | Ayele, S., Duncan, A., Larbi, A. and Tan Khanh, T. (2012), "Enhancing innovation in livestock value chains through networks: lessons from fodder innovation case studies in developing countries", Science & Public Policy, Vol. 39 No. 3, pp. 333-346. [Crossref], ISI |
| 7 | Bamberger, M., Vaessen, J. and Raimondo, E. (Eds) (2016), Dealing with Complexity in Development Evaluation: A Practical Approach, Sage, Los Angeles, CA. , |
| 8 | Begovic, M., Linn, J. and Vrbensky, R. (2017), "Scaling up the impact of development interventions: lessons from a review of UNDP country programs", Global Economy & Development Working Paper No. 101, The Brookings Institute, Washington, DC. , |
| 9 | Berdegú, J. (2001), "Cooperating to compete: associative peasant business firms in Chile", doctoral thesis, Wageningen Agricultural University, Wageningen. , |
| 10 | Berdegue, J.A., Bebbington, A. and Escobal, A. (2015), "Conceptualizing spatial diversity in Latin American rural development: structures, institutions, and coalitions", World Development, Vol. 73, September, pp. 1-10. [Crossref] |
| 11 | Bhattarai, S., Lyne, M. and Martin, S. (2013), "Assessing the performance of a supply chain for organic vegetables from a smallholder perspective", Journal of Agribusiness in Developing and Emerging Economies, Vol. 3 No. 2, pp. 101-118. [Link] |
| 12 | Biggs, S. (1990), "A multiple source of innovation model of agricultural research and technology promotion", World Development, Vol. 18 No.11, pp. 1481-1490. Crossref, ISI |
| 13 | Cash, D., Clark, W., Alcock, F., Dickson, N., Eckley, N., Guston, D., Jager, J. and Mitchell, R. (2003), "Knowledge systems for sustainable development", Proceedings of the National Academy of Sciences of the USA, Vol. 100 No. 14, pp. 8086-8091. [Crossref], ISI |
| 14 | Cavatassi, R., González-Flores, M., Winters, P., Andrade-Piedra, J., Espinosa, P. and Thiele, G. (2011), "Linking smallholders to the new agricultural economy: the case of the plataformas de concertación in Ecuador", Journal of Development Studies, Vol. 47 No. 10, pp. 1545-1573. [Crossref], [ISI] |
| 15 | Clark, W., Kerkhoff, L., Lebel, L. and Gallopin, G. (2016), "Crafting usable knowledge for sustainable development", Proceedings of the National Academy of Sciences of the USA, Vol. 113 No. 17, pp. 4570-4578. [Crossref], [ISI] |
| 16 | Deaton, A. (2010), "Instruments, randomization, and learning about development", Journal of Economic Literature, Vol. 48 No. 2, pp. 424-455. [Crossref], [ISI], , , |
| 17 | Devaux, A., Horton, D., Velasco, C., Thiele, G., López, G., Bernet, T., Reinoso, I. and Ordinola, M. (2009), "Collective action for market chain innovation in the Andes", Food Policy, Vol. 34 No. 1, pp. 31-38. [Crossref], [ISI] |

| | |
|----|--|
| 18 | Devaux, A., Ordinola, M., Mayanja, S., Campilan, D. and Horton, D. (2013), "The participatory market chain approach: from the Andes to Africa and Asia", Papa Andina Innovation Brief No. 1, International Potato Center, Lima. |
| 19 | Devaux, A., Torero, M., Donovan, J. and Horton, D. (Eds) (2016), Innovation for Inclusive Value Chain Development: Successes and Challenges, International Food Policy Research Institute, Washington, DC. |
| 20 | Dolan, C. and Humphrey, J. (2000), "Governance and trade in fresh vegetables: impact of UK supermarkets on horticulture industry", Journal of Development Studies, Vol. 37 No. 2, pp. 147-176. [Crossref], [ISI] |
| 21 | Donovan, J. and Poole, N. (2014), "Changing asset endowments and smallholder participation in higher value markets: evidence from certified coffee producers in Nicaragua", Food Policy, Vol. 44, pp. 1-13. [Crossref], [ISI]. |
| 22 | Donovan, J., Stoian, D. and Poe, K. (2017), "Value chain development in Nicaragua: prevailing approaches and tools and persistent gaps", Enterprise Development and Microfinance, Vol. 28 Nos 1/2, pp. 10-27. [Crossref] |
| 23 | Donovan, J., Franzel, S., Cunjha, M., Gyau, A. and Mithofer, D. (2015), "Guides for value chain development: a comparative review", Journal of Agribusiness in Developing and Emerging Economies, Vol. 5 No. 1, pp. 2-23. [Link], [ISI]. |
| 24 | Dror, I., Cadilhon, J., Schut, M., Misiko, M. and Maheshwari, S. (2016), Innovation Platforms for Agricultural Development: Evaluating the Mature Innovation Platforms Landscape, Rutledge, London and New York, NY. |
| 25 | Giuliani, A., Hintermann, F., Rojas, W. and Padulosi, S. (Eds) (2012), Biodiversity of Andean Grains: Balancing Market Potential and Sustainable Livelihoods, Bioversity International, Rome. |
| 26 | Haggblade, S., Hazell, P. and Reardon, T. (2010), "The rural non-farm economy: prospects for growth and poverty reduction", World Development, Vol. 38 No. 10, pp. 1429-1441. [Crossref], [ISI]. |
| 27 | Hall, A. (2009), "Challenges to strengthening agricultural innovation systems: where do we go from here?", in Scoones, I. and Thompson, J. (Eds), Farmer First Revisited: Innovation for Agricultural Research and Development, Practical Action Publishing, Rugby, pp. 30-38. |
| 28 | Hartmann, A., Kharas, H., Kohl, R., Linn, J., Massler, B. and Sourang, C. (2013), "Scaling up programs for the rural poor: IFAD's experience, lessons and prospects (Phase 2)", Global Economy and Development Working Paper No. 54, The Brookings Institute, Washington, DC. |
| 29 | Hazell, P. and Rahman, A. (Eds) (2014), New Directions for Smallholder Agriculture, Oxford University Press, Oxford. |
| 30 | Humphrey, J. and Navas-Alemán, L. (2010), "Value chains, donor interventions and poverty reduction: a review of donor practice", IDS Research Report No. 63, Institute of Development Studies, Brighton. |
| 31 | Lambert, D. and Pohlen, T. (2001), "Supply chain metrics", International Journal of Logistics Management, Vol. 12 No. 1, pp. 1-19. [Link] |
| 32 | McCalla, A. (2014), "CGIAR reform – why so difficult?", Working Paper No. 14-001, Department of Agricultural and Resource Economics, University of California at Davis, Davis CA. |
| 33 | Mayanja, S., Barone, S., McEwan, M., Thomas, B., Amaya, N., Terrillon, J., Velasco, C., Babini, C., Thiele, G., Prain, G. and Devaux, A. (2016), Prototype Guide for Integrating Gender into Participatory Market Chain Approach, International Potato Center, Lima. |
| 34 | Narine, L., Ganpat, W. and Seepersad, G. (2015), "Demand for organic produce: Trinidadian consumers' willingness to pay for organic tomatoes", Journal of Agribusiness in Developing and Emerging Economies, Vol. 5 No. 1, pp. 76-91. [Link], [ISI], |
| 35 | Patton, M. (2008), Utilization-Focused Evaluation, Sage, Los Angeles, CA. , |

| | |
|----|--|
| 36 | Patton, M. (2011), <i>Developmental Evaluation</i> , The Guilford Press, New York, NY. |
| 37 | Pingali, P. (2010), "Global agriculture R&D and the changing aid architecture", <i>Agricultural Economics</i> , Vol. 41 No. 1, pp. 145-153. [Crossref]. |
| 38 | Polar, V., Babini, C. and Flores, P. (2015), <i>Technology for Men and Women: Recommendations to Reinforce Gender Mainstreaming in Agricultural Technology Innovation Processes for Food Security</i> , International Potato Center, La Paz. [Crossref] |
| 39 | Pritchett, L. and Sandefur, J. (2013), "Context matters for size: why external validity claims and development practice don't mix", Working Paper No. 336, Center for Global Development, London. |
| 40 | Raj, S.P. (2011), "Editorial", <i>Journal of Agribusiness in Developing and Emerging Economies</i> , Vol. 1 No. 1. [Link] |
| 41 | Reardon, T. and Timmer, P. (2012), "The economics of the food system revolution", <i>Annual Review of Resource Economics</i> , Vol. 2012 No. 4, pp. 225-264. [Crossref] |
| 42 | Reardon, T., Barrett, C., Berdegue, J. and Swinnen, J. (2009), "Agrifood industry transformation and small farmers in developing countries", <i>World Development</i> , Vol. 37 No. 11, pp. 1717-1727. [Crossref], [ISI] |
| 43 | Reardon, T., Chen, K., Minten, B. and Adriano, L. (2012), <i>The Quiet Revolution in Staple Food Value Chains: Enter the Dragon, the Elephant, and the Tiger</i> , Asian Development Bank and International Food Policy Research Inst. Mandaluyong City and Washington, DC. |
| 44 | Ricketts, K., Turvey, C. and Gomez, M. (2014), "Value chain approaches to development: smallholder farmer perceptions of risk and benefits across three cocoa chains in Ghana", <i>Journal of Agribusiness in Developing and Emerging Economies</i> , Vol. 4 No. 1, pp. 2-22. [Link] |
| 45 | Saenger, C., Torero, M. and Qaim, M. (2014), "Impact of third-party contract enforcement in agricultural markets – a field experiment in Vietnam", <i>American Journal of Agricultural Economics</i> , Vol. 96 No. 4, pp. 1220-1239. [Crossref], [ISI] |
| 46 | Schut, M., Andersson, J., Dror, I., Kamanda, J., Sartas, M., Mur, R., Kassam, S., Brouwer, H., Stoian, D., Devaux, A., Velasco, C., Gramzow, A., Dubois, T., Flor, R.J., Gummert, M., Buizer, D., McDougall, C., Davis, K., Homann-Kee Tui, S. and Lundy, M. (2017), <i>Innovation Platforms in Agricultural Research for Development: Guidelines for Research, Development, and Funding Agencies on how to Design, Budget, and Implement Successful Innovation Platforms</i> , International Institute of Tropical Agriculture and Wageningen University under the CGIAR Research Program on Roots Tubers and Banana, Kigali. |
| 47 | Shanoyan, A., Ross, R., Gow, H. and Peterson, H. (2014), "Investment responses to third-party market facilitation in Armenia", <i>Journal of Agribusiness in Developing and Emerging Economies</i> , Vol. 4 No. 2, pp. 98-114. [Link] |
| 48 | Stoian, D., Donovan, J., Fisk, J. and Muldoon, M. (2012), "Value chain development for rural poverty reduction: a reality check and a warning", <i>Enterprise Development & Microfinance</i> , Vol. 23 No. 1, pp. 54-69. [Crossref] |
| 49 | Stür, W., Tan Khanh, T. and Duncan, A. (2013), "Transformation of smallholder beef cattle production in Vietnam", <i>International Journal of Agricultural Sustainability</i> , Vol. 11 No. 4, pp. 363-381. [Crossref], [ISI] |
| 50 | Swaans, K., Cullen, B., van Rooyen, A., Adekunle, A., Ngwenya, H., Lema, Z. and Nederlof, S. (2013), "Dealing with critical challenges in African innovation platforms: lessons for facilitation", <i>Knowledge Management for Development Journal</i> , Vol.9 No. 3, pp. 116-135. |
| 51 | Thiele, G., Devaux, A., Reinoso, H., Pico, H., Montesdeoca, F., Pumisacho, M., Andrade-Piedra, J., Velasco, C., Flores, P., Esprella, R., Thomann, A., Manrique, K. and Horton, D. (2011), "Multi-stakeholder platforms for linking small farmers to value chains: evidence from the Andes", <i>International Journal of Agricultural Sustainability</i> , Vol. 9 No. 3, pp. 423-433. [Crossref], [ISI] |

| | |
|----|---|
| 52 | Tschirley, D., Snyder, J., Dolislager, M., Reardon, T., Haggblade, S., Goeb, J., Traub, L., Ejobi, F. and Meyer, F. (2015), "Africa's unfolding diet transformation: implications for agrifood system employment", <i>Journal of Agribusiness in Developing and Emerging Economies</i> , Vol. 5 No. 2, pp. 102-136. [Link], [ISI] |
| 53 | UNIDO (2011), <i>Pro-Poor Value Chain Development: 25 Guiding Questions for Designing and Implementing Agroindustry Projects</i> , United Nations Industrial Development Organization, Vienna. |
| 54 | Webb, R. (2013), <i>Conexión y Despegue Rural</i> , Instituto del Perú de la Universidad de San Martín de Porres, Lima., |
| 55 | World Bank (2012), <i>Agricultural Innovation Systems: An Investment Sourcebook</i> , World Bank, Washington, DC. [Crossref] |
| 56 | Yusuf, M. and Trondsen, T. (2014), "Competitive forces and innovation strategies: a study of the Indonesian crab industries", <i>Journal of Agribusiness in Developing and Emerging Economies</i> , Vol. 4 No. 1, pp. 78-96. [Link] |
| 57 | Zylberberg, E. (2013), "Bloom or bust? A global value chain approach to smallholder flower production in Kenya", <i>Journal of Agribusiness in Developing and Emerging Economies</i> , Vol. 3 No. 1, pp. 4-26. [Link] |