Improvement of knowledge transfer for SMEs in the olive sector (conventional and organic)

Dr. F. Javier Casado
Name: TRAFOON

“Traditional Food Network to improve the transfer of knowledge for innovation”

Project duration: 36 months
Consortium: 30 partners from 14 European countries
TRAFOON is a network of research institutions, technology transfer agencies and SME associations and covers the value chain of four groups of traditional food products based on:

- **Grain**
- **Fish**
- **Vegetables and Mushrooms**
- **Fruits (Sweet Fruits and Olives)**
Partners of TRAFOON
TRAFOON Work Plan

**Acquisition**
- Performance of inventory of needs (IoNs) (questionnaires and interviews with identified SMEs)

**Analysis**
- Qualitative analysis of IoNs in multi-stakeholder workshops
- Training Workshops for SMEs 2015 answering the identified needs

**Training**
- Feedback Analysis
- Training Workshops for SMEs 2016

**Strategy**
- Strategic Research and Innovation Agenda
Acquisition

Data acquisition for inventory of needs:
Questionnaires or semi-structured interviews were carried out using the TRAFOON innovation audit form.

In total 100 questionnaires were sent to stakeholders across Spain and Portugal and 17 of them were completed by different types of stakeholders (between March and July 2014) CITOLIVA

- 11 olive oil processors
- 3 table olives producers
- 3 olive oil and table olive manufacturers

Innovation audit forms were authorized by stakeholders.
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- Training Workshops for SMEs 2016

Strategy
- Strategic Research and Innovation Agenda
During the Multi-stakeholder workshops, a qualitative analysis of the Inventory of needs took place, including:

- Identification and prioritization of **generic and specific needs**
- Identification of **lacks of innovation**
- Identification of **tools and supports needed**
- Identification of **available technologies and innovations from EU and national research projects**
## Analysis

### Inventory of needs

<table>
<thead>
<tr>
<th>Agronomy</th>
<th>Processing</th>
<th>Commercialization</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Optimization of water</td>
<td>• Optimization of water use in olive oil mills and table olives production plants</td>
<td>• Quality improvement and fraud detection</td>
</tr>
<tr>
<td>• Mechanization</td>
<td>• Valorization of by-products</td>
<td>• Simplification of product labelling</td>
</tr>
<tr>
<td>• Control of soil erosion</td>
<td>• Olive oil extraction systems adapted to varieties</td>
<td>• Shelf-life extension</td>
</tr>
<tr>
<td>• Varieties analysis</td>
<td>• Support techniques to panel test</td>
<td>• Consumers education</td>
</tr>
<tr>
<td>• Pesticides residues</td>
<td></td>
<td>• New recipes</td>
</tr>
<tr>
<td>• Optimal harvesting period</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Fertilization</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**TRAFOON -** Towards the food of the future, network to improve the transfer of knowledge for innovation.
Analysis

Inventory of needs (Agronomy)

- **Optimization of water**: Irrigation management basic for agronomic and quality purposes regarding the quality of olive oil.
- **Mechanization**: Complete mechanization of the harvesting process adapted to different olives varieties
- **Control of soil erosion**: Erosion is a major issue (use of cover crops has been widely studied. Lack of knowledge transfer)
- **Varieties analysis**: Use of new varieties as a long term priority
- **Pesticides residues**: Free-residues labelling is a good claim for producers. More information on management of pesticides application for farmers and producers. Relevant information/results are not available and/or understandable to stakeholders
- **Optimal harvesting period**: Improvement of the optimization of the harvesting time in order to produce the best quality olive oil is a key issue.
- **Fertilization**: More knowledge about fertilization. Excess or defect of some nutrients produces problem in the pulp of olives.
## Analysis

### Inventory of needs (Processing)

- **Optimization of water use mainly in table olives production plants**: Elaboration of table olives needs an intensive use of water. Wastewater with a high environmental impact (lye, salt, etc.).

- **Valorization of by-products**: Interesting issue but not a priority for SMEs.

- **Olive oil extraction systems adapted to varieties**: Each olive cultivar has its own characteristics. It is needed to adapt the olive oil extraction conditions to the variety. Necessary to transfer the existing knowledge.

- **Support techniques to panel test**: Panel test is essential in the classification of olive oil, but any supporting analytical technique would be very welcome for SMEs.
## Analysis

### Inventory of needs (Commercialization)

<table>
<thead>
<tr>
<th>Need</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality improvement and fraud detection (olive oil)</td>
<td>Really relevant problem (Horizon2020 OLEUM)</td>
</tr>
<tr>
<td>Simplification of product labelling (olive oil)</td>
<td>Nutritional quality and health benefits</td>
</tr>
<tr>
<td>Shelf-life extension (table olives and olive oil)</td>
<td>Local market because of short shelf-life of table olives elaborated without sterilization/pasteurization. For olive oil, preservation of their parameters and characteristics during store time (problem mainly for exportation)</td>
</tr>
<tr>
<td>Consumers education (table olives and olive oil)</td>
<td>Priority for both sectors. It is important that consumers are able to distinguish the different types of oils and preparations of table olives</td>
</tr>
<tr>
<td>New recipes (table olives and olive oil)</td>
<td>Not considered a priority. Adaptation of products to foreign markets (e.g. Asia)</td>
</tr>
</tbody>
</table>
Analysis

**Strengths**
- Authenticity
- Tradition
- High quality
- Mature market

**Weaknesses**
- Poor marketing
- Low consumer education
- Barriers to enter new markets
- Difficulty in ensuring a consistent quality

**Opportunities**
- Health products
- Labelling
- Wide consumer market
- By-products
- Exploitation

**Threats**
- Labelling frauds
- Sustainability
- Supplies and costs
- Offer increase
Needed improvements #1

<table>
<thead>
<tr>
<th>Agronomy</th>
<th>Processing (olive oil and table olives)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Improved knowledge of water effects in crops and further strategies for water saving</td>
<td>• Optimization of water use in olive oil mills and table olives production plants</td>
</tr>
<tr>
<td>• Optimization of mechanization regarding the orography, type of soil, crop system,…</td>
<td>• Establishment of efficient and profitable effluent treatment systems</td>
</tr>
<tr>
<td>• Strategy for soil preservation regarding the climatology, type of soil,…</td>
<td>• Valorization of by-products for obtaining energy and high value added products for application in the cosmetics industry, food industry,…</td>
</tr>
<tr>
<td>• Improved knowledge of crop varietes and their specific features</td>
<td></td>
</tr>
</tbody>
</table>
### Needed improvements #2

<table>
<thead>
<tr>
<th>Commercialization (olive oil)</th>
<th>Commercialization (table olives)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Knowledge of the factors affecting quality and development of tools for fraud detection</td>
<td>• Studies for product shelf-life modellization according to the type of packaging, storage,…</td>
</tr>
<tr>
<td>• Knowledge of labelling regulations</td>
<td>• Consumer education campaigns</td>
</tr>
<tr>
<td>• Studies for shelf-life modellization according to the type of packaging, storage,…</td>
<td></td>
</tr>
<tr>
<td>• Use of complementary tools for panel tests</td>
<td></td>
</tr>
<tr>
<td>• Consumer education campaigns</td>
<td></td>
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</tbody>
</table>
Potential innovations #1

**Agronomy**

- New olive varieties in base to their healthy features for table olive and olive oil (2013) - National project
- Mechanized harvesting for table olives (2012) – National project
- Identification and optimization of the main varieties of olives in the region of La Serena (2011) – National project
- Strategies for optimizing the efficiency in irrigation in olive crops (2009) – National project
- **E-FLYWATCH**: Development of an innovative automated and wireless trap with warning and monitoring modules for integrated management of the Mediterranean (Ceratitis capitata) & Olive (Dacus oleae) fruit flies – FP7-SME
- **VERTIGEEN**: Inexpensive and reliable on-site solution for olive producers to contain Verticillium – FP7-SME
Potential innovations #2

Processing (olive oil and table olives)

• **ACTIVEOLIVE**: Preservation of food products by using active packaging including natural compounds from the olive industry (2013) – National project

• **RESOLIVE**: Adaptation of renewable energies technologies for the olive oil industry – FP7-SME

• **ASOAN**: Biotechnological valorization of by-products from olive crops applied to the food and agrarian sector (2012) – National project

• **FFW**: Liquid and gas Fischer-Tropsch fuel production from olive industry waste: fuel from waste FP7 – Environment

• **ETOILE**: Bioethanol production via lignocellulosic fermentation of olive oil residues – FP7-SME

• **OLIVEPOWER**: Demonstration of a sustainable CHP concept using residues from olive oil production – FP6 - SUSTDEV
Potential innovations #3

Commercialization

• New types of dehydrated olives with bioavailability of phytochemicals (2013) – National project

• Olive oil mill for the obtention of extra virgin olive oil of high quality (2013) – National project

• Solubility and stability of phenols in virgin olive oils and extracts (2010) – National project

• PROBIOLIVES: Table olive fermentation with selected strains of probiotic lactic acid bacteria. Towards new functional food (2008)
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- **Strategy**: Strategic Research and Innovation Agenda
Based on the results of the qualitative analysis of the Inventory of Needs during the different Multi-stakeholder Workshops, **26 Training Workshops for SME have been held in 2015**, answering the identified needs (transference knowledge and innovation).
Training Workshops

Two training workshops in Spain (AAC/IFAPA) in 2015 and 2016

First training workshop with focus on olive oil was held in the framework of **EXPOLIVA 2015 International exhibition** (Jaen, 05-06 May, 2015)

Second training workshop will be focused on table olives (2016)

Two training workshops in Portugal (SPI) in 2015 and 2016

First training workshop was held in the framework of the **National Olive Oil Congress 2015** (Santarém, 08 June, 2015)
Training Workshops

EXPOLIVA 2015
International exhibiton (Jaen, 05-06 May, 2015)

National Olive Oil Congress 2015
(Santarém, 08 June, 2015)
Training Workshops

8th June 2015
National Congress
Oliver Oil
Feira Nacional de Agricultura, CNEMA – Santarém

10:00 - OPENING SESSION
- António Barreira - President of the Board of GEFMAL
- Jean Louis Barilol - Executive Director of the International Olive Council

10:15 - TRAFOON WORKSHOP • INNOVATION PANEL I • PRIMARY PRODUCTION
Moderator: João Victor Mendes - Escola Agrária de Santarém

11:30 - TRAFOON WORKSHOP • INNOVATION PANEL II • INDUSTRY
Moderator: Luís Duarte - LNEG:
- Product Quality: Adaptation of Extraction Conditions to the Variety and Olive Maturation - Ana Carrilho - Esporão, SA
- By-Products Valorisation - Carlos Martins - UCASUL, CRL
- Treatment and Recovery of Oil Mills By-products: Advanced Oxidation Processes and Biocombustible Technology - José Alcides Pérez and João Claro - UTAD

12:45 - LUNCH

15:00 - TRAFOON WORKSHOP • INNOVATION PANEL III • MARKETING
Moderator: Luís Folarde - Casa do Azeite
- Labelling and Food Security - Beatriz Oliveira - Redurime
- Storage and Shelf Life: Traditional Production of Olive Oil and Table Olives - João Gomes - Consultant
- Fraud Detection - Rita Carvalheiro - ASAE

16:45 - OLTOURISM AND ASTRONOMY PANEL
Moderator: Anibal Coutinho - Journalist
- Olive Tourism - José Santos - Encontro Regional de Turismo Alentejo Ericeira
- Olive Oil in Gastronomy - Chef - To Be Confirmed
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In addition to training workshops, SMEs can gather information from the TRAFOON information shop, which:

- provides information about innovations in production and marketing of traditional food, using regional raw materials
- fosters entrepreneurship in the sector of traditional food producers and researchers
- develops strategic research and innovation agendas for the traditional food sectors to be competitive on future markets
The production of organic table olives: technologies and perspectives

**Total polyphenol (biophenols) found in the pulp of the table olives processed with the “Natural” (■) or the “Chemical” (□) method.**

- For every 100 kg of olives processed using the "Chemical method" are produced 500 kg of wastewater.
- For every 100 kg of olives processed with the "Natural method" usually are produced about 80 Kg of wastewater.
Thank you for your attention. Any questions?

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